Contents

Accenture

Management Consulting "Dutch Telco" for Accenture

Accenture is a global management consulting, technology service and outsourcing company. The incorporated headquarters of Accenture are in Dublin, Republic of Ireland. It is the world's largest consulting company as measured of revenues and is also a Fortune 500 company, currently at position 404. Accenture's current clients include 96 of the Fortune Global top 100, and more than 75% of the Fortune Global 500. Accenture its mission is to help clients to create their future, and its vision is "To become one of the world's leading companies, bringing innovations to improve the way the world works and lives."

Currently, Accenture has more than 319.000 employees, spread on approximately 56 different countries, serving their clients in 120 different countries with $31 billion in revenues for fiscal year 2014. In the Netherlands, Accenture has about 2500 employees spread on 2 main offices, Amsterdam (headquarters) and Almere.

I've found this internship position on the Accenture homepage, after a long search for an internship. Knowing Accenture already from a work-shop I've attended during the Science Based Business course, I had high expectations of this company, and therefore my internship and the learning experience I would gain. Though I did not have a direct fit in terms of my affinity or knowledge of the telecom industry, Accenture looks further than that. They look for skills that you possess which will benefit the company in any way. Because of my different background and analytical skills I was hired.

An internship at Accenture is a great challenge, as most of the work you have to do is on ad-hoc basis. This means that some days you will have stashes of work, while the other day you are just drinking coffee with colleagues all day long. Though this mind sound like a bad experience, it was the best for me, as I like working fast, but also like to network. There is space for both at Accenture.

My internship was about market research and other research for the telco client I was working for. Because of my lack of knowledge of the telecom industry this was a struggle in the beginning, but this way you learn the most. I've also done general tasks that a starting analyst at Accenture would do, giving me the full Accenture experience.

When doing an internship at a company the size of Accenture you might think at first that there are too many people, and you might drown in the organization. This might be true, as you have to keep your head up and make a spot for yourself. But there is also always someone willing to help you, and make sure that you do not drown in the mass. Overall, Accenture is a great company to do your internship at, and I've achieved lots of personal and professional growth.

Achmea

Mapping and prioritizing biosimilars in the pipeline, and developing an effective strategy to diminish the resistance against their usage

A biological or biopharmaceutical is "a drug from which the active substance is a product of a living organism". Insulin for instance, can be produced by a living organism (like a bacterium or yeast) which is equipped with a gene that makes the production of insulin possible. Biopharmaceuticals are large, complex molecules that are sensitive for degeneration in the gastrointestinal tract. That is the

reason why these drugs are often administered as subcutaneous, intramuscular or intravenous injections. In Figure 1 you can see the difference in complexity between a small molecule and a biopharmaceutical.

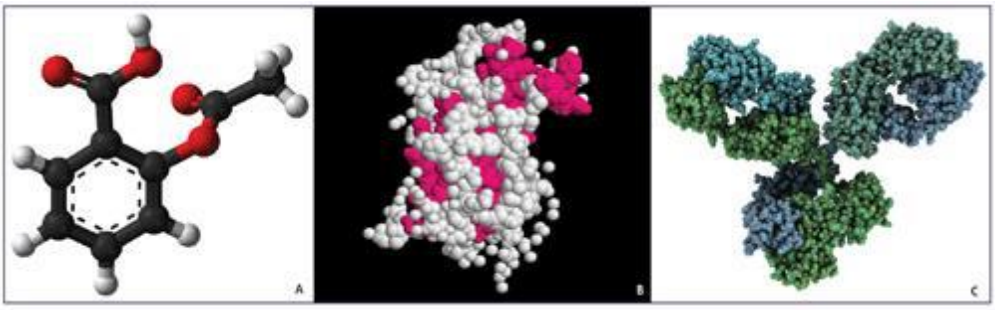


Figure 1. Example of traditional and biopharmaceutical molecules. A. Aspirin, 21 atoms, MW 180 Da. B. Human Growth Hormone,~3.000 atoms, MW ~22 kDa. C. IgG Molecule, ~20.000 atoms, MW ~150 kDa

Currently, there are more than 250 authorized biopharmaceuticals on the market in the US and Europe. A lot of these drugs have resulted in tremendous advantages for patients suffering from diseases with large unmet medical needs like rheumatoid arthritis, multiple sclerosis, Crohn's Disease and hemophilia. However, the rise of the biopharmaceuticals also leads to challenges in the field of cost containment in the health care systems. Biopharmaceuticals are often expensive medicines and the part of health care costs that is spent on biopharmaceutical drugs is increasing. The biopharmaceutical market is expected to grow 7% to 15% in the next few years. The part of biopharmaceuticals will be increasing more because in the next years a lot of patents of small molecules that are prescribed worldwide will expire. The high costs put more and more pressure on the health care systems worldwide.

A biosimilar is a drug that is comparable with a biopharmaceutical which is authorised (the innovator product or reference product). The active substance of a biosimilar is comparable to the active substance of the reference product, but it is not identical. Biosimilar drugs and reference products are normally prescribed in equal doses and for treatment of the same conditions. The name, appearance and package of a biosimilar product can be different from that of a reference product. Biosimilars are cheaper compared to reference products, because they build on the experiences from the reference products. This is the reason why different research has to be done on biosimilars in order to get market authorisation compared to the reference products. The conditions for market entrance are tailor-made for biosimilars and the admission generates the same reassurance concerning effectiveness and safety for biosimilars as for their reference products. Overall uptake and prescription of biosimilars would be a step in the right direction in order to contain the health care costs. Currently fourteen biosimilars are registered in Europe, but unfortunately their prescription level is relatively low.

In 2010, 110 billion dollars was spent on biopharmaceuticals worldwide, and only 75 million dollars of this amount was spent on biosimilars. A reason for this bad uptake of biosimilars in the work field is the concerns of doctors about the safety profiles of biosimilars. Eventually, the trust of doctors and prescribers in biosimilars will be essential for the uptake of these drugs. In order to keep medicines affordable and accessible for every patient, it is important that biosimilars are going to be prescribed and used more in practice.

Achmea wants to implement an effective policy on the uptake of biosimilars in the field in order to increase the prescription of biosimilars in practice in the future. This resulted in my internship assignment: investigate the problems around the uptake of biosimilars. The question that I would like to answer is: "What policy should the team intramural and policlinic pharmaceutics use in order to achieve overall uptake of biosimilars?" To answer this question I collected as much information as possible on the internet, at field parties, from experts and internally at Achmea. I combined all information and experiences I gathered during my internship and used them to write this advice report on effective biosimilar policy.

Aescap Venture BV

Investment Analysis in a Venture Capital Firm

Aescap Venture BV is a venture capital company investing in private medical companies in Europe. Aescap was founded in 2005, and is investing in high-potential companies with realistic product opportunities in all phases of development. Aescap Venture Fund I has €104 million under management and has invested in 12 promising European companies.

I was an Analyst Intern in Aescap Venture. My daily activities included analysis of business plans, research on potential new investments and communications with all interested parties including entrepreneurs seeking funding and Aescap internal communications, updating the Dealflow table, as well as other small or bigger projects of interest to the daily activities of the firm.

Researching the science behind the incoming business plans was the main task I had to do when I was receiving a business plan for evaluation after I made sure that it fitted Aescap's investment strategy (Aescap invests in life science companies in Europe). Researching what was the idea behind the company and understanding the science behind it, as well as researching the IP status, competition and market need for the (potential) product or service. When a business plan was potentially interesting for Aescap I was bringing it to the attention of one of the partners and then, if there was interest, either I or the partner would follow up with the company for more information.

Updating the Dealflow table was my responsibility as well. Dealflow is the rate of incoming business plans that are submitted for consideration for investment. Aescap has a Dealflow document that is constantly updated and consists of the key characteristics of all the incoming business plans, such as the company name, country, summary of the technology, product or service provided and many more details of the business plan and the company as well as categorization of each business plan according to various factors for future reference.

Other tasks I had during my internship included contributing to the update of the company's Private Placement Memorandum, the document describing the firm to potential investors, and also small projects on various topics of interest of the company's activities. All these projects deepened my theoretical knowledge on the industry as well as on the general investment procedures in the life science sector.

Purpose for the internship was to gain insight in all aspects of the VC investment environment and industry dealings. My aim was to find an internship that would allow me to use many of the skills acquired in my master, especially from my SBB training, but I also wanted my internship to be more focused in the health- biopharmaceutical sector, where my background training and experience lies.

This internship rounded up all knowledge acquired during my master in Biopharmaceutical Sciences and Science Based Business; the science training was essential in understanding the opportunities presented to Aescap, and the SBB training allowed me to fully comprehend the business plans presented to Aescap from entrepreneurial companies or other VCs, and all in all the workings of a VC firm in the biopharmaceutical sector.

AMC

Management Information and Process Optimization at the Academic Medical Center

The Gastro-Intestinal Oncology Center Amsterdam, established in 2009, is a novel fast track outpatient clinic for rapid multidisciplinary diagnostics of gastro-intestinal malignancies. A way to reduce costs is to reduce costs of poor quality which are caused by process inefficiencies and mistakes. I was responsible for the creation of the GIOCA management reports for Q1 and Q2. I was also interested what the mechanism behind the data generation of the NormaDIO database was, in order to improve the system that generates management information. I and a colleague found multiple ways to obtain data for management reports. A Lean Six Sigma project for GIOCA was also done to identify process inefficiencies and reduce processing time by 15%. Using the DMAIC model, we collected data of all processes that concern GIOCA from patients suffering from hepato-billiary cancer. A revision of the process that takes place when a new employee joins Division A was done, and work was done on the "onderlinge dienstverlening" prognosis for 2015 and 2016 and expensive medicine and the oncolytics prognosis for 2015 and 2016.

Astellas Pharma International

Assessing the Market Opportunities in the MENA Region

I have undertaken my Science Based Business internship at Astellas Pharma International (APINT), an affiliate of the research driven pharmaceutical company Astellas. APINT operates in markets without a fully-fledged Astellas entity and is currently focused on the Middle Eastern and North African markets. As an intern I played a role within the Business Intelligence division by helping organise and analyse essential information about the markets in which APINT works and into which it can expand. In fulfilment of this role, I was involved in projects and routine assignments as well as actively taking part in department meetings and presenting my work.

My main project was based on the development of country reports. As APINT has been focusing on the Middle East and North Africa since 2011, a lot of tacit knowledge has been accumulated within the departments. However, there was no combined information stored on the specific countries and there was still data missing regarding health care systems. Through external and internal sources of information I was able to set up the structure of the reports and create the reports for the main markets of APINT. I was involved with several other projects including the development of databases and patient models. Furthermore, I was given the opportunity to hold a PR launch campaign to integrate my work within the departments of APINT.

During my internship, I learned about the pharmaceutical industry, the company's structure, setting and sticking to objectives, the trade-off between quantity vs. quality, and gained more insights on my future career. I further developed my knowledge on the pharmaceutical industry and gained specific insight on the Middle Eastern and North African region. Being part of the corporate structure of Astellas has been an invaluable experience to my knowledge of corporate structures: observing

how goals can differ, how ''politics'' play a large role, and that it is therefore important to invest time into the elucidation of a company's hierarchal structure.

My supervisor was very satisfied with my work and added value to the organisation. Strong personal points were noted with regard to my analytical/writing/presentation skills, assertiveness, self-starting capability, my high organisation level while paying good attention to layout and organisation of documents and presentations, my proper formal and informal communication abilities, and delivering more than expected. Points of improvement were directed with regard to my determination to find answers, as a result of which I sometimes lost track of the main objective.

In conclusion, I have been able to add value to Astellas and to myself throughout a challenging and exciting internship. The internship at Astellas Pharma International has exposed me to the challenging pharmaceutical industry and given me the opportunity to develop on a personal and professional level, with an increased network and new future career outlooks.

Atos consulting

Driving digital transformation in Healthcare

From December 2013 to April 2014 I worked as an intern at the technology firm Atos Consulting. My assignment was to create in-house knowledge regarding digital transformation in the healthcare industry that could then be rapidly deployed for future projects. This was achieved with the completion of several business cases, a proprietary readiness test and a report on the subject of innovation selection and implementation.

The cost of long-term healthcare in the Netherlands is rising rapidly, due in part to the ageing population on both the caregiver and the patient side. If this trend were to be left to continue without restraint, the average two-income family can expect to be paying roughly half of their combined income in taxes to cover just this. Understandably, the entire healthcare industry is looking for ways to reduce costs and increase efficiency. A promising trend is that of self-care, wherein the patients/clients are allowed to and even expected to do more for themselves and make their own decisions regarding their care. This system of self-care is based upon the following four pillars: Ownership, Social Network, Motivation and Empowerment. There are many digital innovations available to facilitate the move towards self-care, with many more in development. All of these support self-care by aiding one or more of the aforementioned four pillars. These digital innovations include but are not limited to- smartphone apps (health), GPS tracking for those suffering dementia and serious gaming platforms. These are all examples of innovations already in use by early-adopters.

Another rapidly growing market, albeit one not yet ready for wide deployment, is that of so called "wearables". These wearables are electronic devices that continuously measure and transmit one or more body metrics or environmental data, crafted into wearable object such as clothing, jewellery and bracelets. This data is then uploaded to a server for analysis. In the future these wearables will be used combination with big data analytics to allow complex measurements to be performed wherever the patient may be, in contrast to the present day situation of the patient having to come into the care facility to obtain interval based test results. It is obvious that this future aids the concept of self-care, as patients can safely live at home longer, whilst the care is improved by measuring continuously instead of in intervals.

The selection of which digital care innovation to implement will always be

dependent of both qualitative and quantitative factors. The former involves careful change management planning, the latter requires the use of comprehensive business cases.

Furthermore, there are some generic first steps that fall within the scope of digital transformation which can be implemented to improve efficiency and facilitate the adoption of innovations within a care organization. These steps involve the improvement of reporting and post-report analysis, which can be achieved with the basics of 6 Sigma. During my internship period, I could apply the knowledge I gained directly by working for a client care organization. Here, I assisted in the selection and set-up of two pilot programs, implementing a platform for serious gaming and of a face to face digital communication system.

Avery Dennison

Indirect Procurement for a global leader in labelling and packaging materials and solutions.

With a strong background in biology and after following the science based business fundamentals course I started looking for a business related internship. My purpose was to find a place where I could learn as much as possible about the functioning of a large multinational. I wanted to understand how such corporations function, how they are organized, how they communicate, what systems they use and what they need to operate smoothly. After a long search my eye fell on an internship of a company I had never heard of fulfilling a position I didn't know existed. My interest was raised, my enthusiasm elevated and after elaborate preparation I solicited. Soon after, I got the position of Global Indirect Procurement Intern at Avery Dennison.

First a bit about the company, Avery Dennison is a business to business company specialized in adhesives, labelling and packaging, both the materials and solutions. Every day you see Avery Dennison products everywhere, from the labels on your shampoo bottles to the reflective labeling on road signs. Since the company is not directly selling to consumers it is relatively unknown to the general public. For many companies on the other hand, it has been an important supplier for many years. Avery Dennison is an international company with operations in more than 50 countries, employing more than 30.000 people, across the globe. It is public company with an annual turnover of over 6 billion USD. Its sales are grouped into 3 categories, pressure-sensitive materials, retail branding & information solutions and Vancive medical technologies.

While doing my internship at Avery Dennison I worked with the indirect procurement department, which is located in the European headquarters in Oegstgeest. Indirect procurement is a subdivision of procurement, the other being direct procurement. Procurement is the process of the process of acquiring good or services starting with identifying the need all the way up to managing the logistics.

Procurement first identifies the need from internal stakeholders or strategic planning, they then identify possible suppliers that could fulfil this need. Next, they communicate with potential suppliers on what items or services that the supplier can deliver and the detail of those. Then they do the negotiations, usually a tender is started and different suppliers are invited to give quotations on items, services, specifications, warranties, lead times etc. Once a comparison has been done and a supplier has been picked procurement goes around the table with the supplier to discuss everything in detail and set up a legal contract. When the deal has been made, procurement handles

the logistics by making sure all parts, such as loading, handling, shipping, import, warehousing etc., have been arranged.

The indirect part of indirect procurement has to do with the type of things that they procure. Direct procurement only manages the procurement of materials and items that eventually end up in them product that is sold to the customer. For a rubber duck this could be anything from the chemicals used to produce the item, the pedestal it is mounted on and the box it is packed in. Indirect procurement on the other hand manages all other items. This can be anything from toilet paper to consultancy services.

My activities in this department were extremely varied, I did complete tenders as described above but I also looked at spend data to look for savings opportunities, made financial reports, created new ways to show savings, worked on improving procurement systems, phased out obsolete reports, wrote contracts, travelled to other countries for negotiations or trainings, helped create a new way to segment suppliers, implemented a new way of distributing protective equipment and so much more. I learned about what procurement is, how they work and how they spend their day. I learned about how a big company works, what items they need to operate and that there is someone for any position you can

think of. I learned what kind of tools and systems a company like this uses and what other systems are out there. I learned the intricacies of corporate politics and what it means to work in an office.

I would definitely recommend others to do a similar internship. I think procurement is a function that offers insight into a whole business and lets you see all the aspects of running a business efficiently. You come into contact with employees from practically every field because savings projects can be found in every part of the business. Avery Dennison is also a great company to work at, they are not solely focused on buying for the lowest possible price and selling for the highest. They use innovative methods in communications, systems, facilities, meetings and targets. I did a lot of varied and challenging work, learned a lot of new things, and gained a tremendous amount of new knowledge. The indirect procurement department I worked with is a strong team who work well together My colleagues and supervisor were very nice to work with, experts in their field and always willing to teach me new things. I think I added a lot of value to myself and to the organization by the deliverables I created and by all that I learned.

Berenschot Groep B.V.

Road mapping the building integrated photovoltaic sector

Berenschot is one of the biggest Dutch consultancy firms. Berenschot has experts in many areas from strategy to safety. At Berenschot I did a 6 month internship in the strategy, funding and innovation department. This internship provided me with a great insight into the consultancy world and learned me a lot. During my six month internship I worked on a roadmap for building integrated photovoltaics (BIPV). BIPV is the evolution of building applied photovoltaics (BAPV). BAPV is added onto the traditional building materials in contrast to BIPV which replaces the building materials and is an integral part of the building, as can be seen in Figure 1. The main benefits of BIPV are better aesthetics and the potential to be cheaper than BAPV.

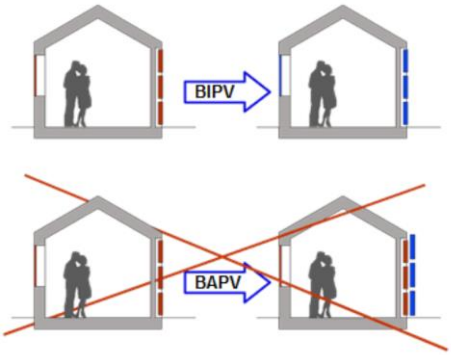


Figure 1: The difference between BIPV and BAPV. Where the red parts are traditional building elements and the blue parts elements with PV Even though BIPV shows much promise especially in French where more than 50% of all PV systems are BIPV. It is not a huge success yet in the Netherlands. In order to find out what is holding BIPV back the I road mapped the Dutch BIPV sector. A roadmap provides a strategic plan for a new product, process or an emerging technology. The roadmap gives a strategic overview of the current state and trends of the BIPV market and technologies. Combining this information barriers can be identified along with possible solution for the barriers. In these barriers combined with the solutions lay potential business opportunities. The roadmap provides answers to three main issues; it helps reaching a synergy between needs and the technologies required to satisfy the needs, it gives workable mechanisms to forecast technology developments and it generates a framework which can be used to plan an coordinate these technology developments. The process of creating a roadmap is pretty intensive and entails, literature research, interviewing stakeholder throughout the value chain, analysing the data by using various tools like SWOT analysis, identifying hurdles and generating new ideas and business opportunities to overcome these hurdles while still fitting the current technology. Furthermore during my internship I aided in a subsidy request for a company in the photonic sector. Meeting with the costumer and writing a project plan in order to get the subsidy granted. This plan combines technical knowledge and market knowledge with organisational of project management knowledge. The six months at Berenschot showed me what consultancy entails as well as giving me a clearer vision on what I want career wise. Furthermore it allowed me to test and develop my business skills in practice.

Bol.com

Commercial Development at bol.com Plaza

bol.com and Plaza bol.com started in 1999 as an online bookstore. Now 15 years later, the company sells over eight million products in more than ten product categories, serving 4.5 million customers per year in the Netherlands and Belgium. Bol.com is one of the most popular web shops in the Netherlands and Belgium and is market leader in the online retail of books, entertainment, electronics and toys. The head office is located in Utrecht, where more than 700 employees are working.

In 2007, Plaza, the platform for selling through bol.com, was opened. Private persons could sell their second hand products in the books, movies, music and games categories. In 2011, Plaza also opened for other businesses. Other shops, online or not, could put their products on the bol.com website, reaching a greater public and offering more choice in products, prices and delivery times to the customers.

Together, these sellers added more than one million unique products to the assortment. Plaza created a win-win-win situation: the sellers can sell more to a greater reach, the customer has more choice and bol.com offers a better shopping experience.

My work as an intern

I did my internship at the Commercial Development team of Plaza. This team exists since March 2014 and I was the first new employee in the team. The goal of Commercial Development is to optimise the business on the short term, with the focus on the small businesses and second hand market. I was the Business Analyst of the team and being the only one in that role meant that anything that had to do with analytics or data belonged to my tasks. Bol.com stores a huge amount of data about all the products on the website and all the information of the sellers, and it was my job to use this data to provide useful insights in our Plaza business. The tasks varied from monitoring Key Performance Indicators and creating reporting tools and dashboards, to helping with one time analysis requests from my own team, the other Plaza teams or sometimes people from entirely different departments like PR or Buying & Merchandising. The software I used to get the data from the database was called BIT, and I was truly seen as a BIT expert, of which there were not many. In that role, I was also a sparring partner of the business analysts of other teams and I also gave advice about action points that should be taken to follow up the conclusions of my analyses. Hence, I had the important job of providing my colleagues with business insights and in that way I made a great contribution to the whole organization. One of my tasks was to provide the business with insights in the Key Performance Indicators, the metrics that showed how well our team was performing. The KPI's that were important for our team were, amongst others, revenue, sales volume, number of active sellers and number of products and offers, where the number of offers on a product is equal to the number of sellers of that product. I created more than twenty dashboards with graphs and tables that showed different relations between these KPI's. For example, there were dashboards for the revenue per seller per month or the number of products and offers per product category and condition (second hand or new). I watched the development of the KPI's per week and I analysed any abnormalities and tried to explain them.

Caldic Nederland B.V.

Bio-based products – a highway to the future

The economy is changing from a petrol based economy into a bio-based one. It becomes more circular, also called cradle to cradle. Products are being re-used or recycled. Companies need to adapt to this change, and Caldic needs to change too. From Caldic's point of view, it is necessary to know where in the different markets, bio-based products are wanted. During my internship at Caldic Nederland, I was looking for the best product- market combination for Caldic to pursue with bio-based technology and bio-based products. This was achieved in various ways: I sent out a questionnaire, interviewed the employees of Caldic, and made a list of new bio-based product possibilities. From the questionnaire I received a lot of information about Caldic's clients and their clients. Information such as: their interest in bio-based and durable products, is prize an issue, are companies already active in selling bio-based products, and what products do they want to see replaced by bio-based products. The interviews with the various employees active in sales, gave information about the products Caldic sells and their course of action. They explained me about the way they work, and how to introduce new products. Information about the products that are already biobased, was also provided. They also shared their personal view on the future of bio-based, hereby indirectly indicating if they are open for change into bio-based product-sales. To

compose the list of new bio-based technologies, I searched the internet for companies that sell products related to bio-based and durability. It currently consists of over 300 companies with various products and market applications. It includes contact information and production locations, and also the timespan of the product; now available, in the near future (within 5 years), or in the future (within 10 years). Furthermore, I learned a lot about how a company operates, not only internal, but also how it operates in the field. Sales have to be made, meetings are arranged, company-visits are necessary, and also part of the service is the arrangement of transport. Communication is essential, in order to make the sales and leave a good impression with clients. Being part of an organisation will learn you more than any theoretical book.

Catalyze

Subsidy Advice for Biotech Companies and Universities

For my SBB internship I performed the tasks of Junior Consultant Life Sciences at Catalyze. Catalyze is a life science consultancy company located in Amsterdam. Their main activity is to coordinate and write grant applications. During my internship I was involved in many projects. My main objective was to prepare and write grant proposals for clients. Two major projects I was involved in were the writing of a large European horizon2020 project for the subject 'New approaches to improve predictive human safety testing'. This project included 25 partners from all over Europe. The programme which aims to stimulate personalized healthcare provides funding over all activities, making it very attractive for academic partners as well as small to medium sized enterprises. After connecting partners to this project, the main challenge was to maintain contact with all partners and to receive their input and administrative documents in time. Towards the end of my internship, I participated in two similar projects for the horizon2020 programme, which will be submitted after the end of my internship. Another project I worked on was a Eurostars project. Eurostars aims to improve cooperation between R&D-performing SMEs. The funding rate is lower, requiring a higher investment from partners. This made it harder to connect partners to the project. My main roles during these projects were to contact partners, design research and development projects, write the project proposal and draft the budgets. I have learned a lot about the process of grant writing, as well as improving soft skills such as commercial attitude, writing skills, project planning. In my performance review, it was concluded that I can improve several more aspects to perform certain tasks better. I thus gained a lot of experiences during this internship. Both my scientific background in life sciences and my business education in the SBB program have helped me a lot in performing the tasks during this internship. Because the work fits me and the company is expanding, I was offered a job as Junior Consultant immediately after the internship.

CHDR

Identification of funding sources for early stage drug development

Currently the biopharmaceutical financing gap is causing problems for companies that focus on early stage drug discovery, to raise enough funding. This gap does not only affect companies that research new drugs but also companies that perform the trials, like contract research organizations (CROs). One of these companies is the Centre for Human Drug Research (CHDR), which is an organization specialized in early stage pharmacology services. CHDR is noticing a shift in their type of clients, from big pharmaceutical companies to the smaller biotechnology companies, which are more affected by the financing gap. According to CHDR it is important to find a way to help their clients to close this gap, because it will help CHDR gain projects, but it will also positively affect the image of CHDR when

they have an extra service to help their clients. CHDR needed someone to inventory and map the different types of financing options for early stage drug development. And because of my interest in the financing part of research projects I decided to team up with CHDR and do my Science Based Business internship there. During my search I discovered a lot of different types of financing that are potentially available to help early drug development companies to fill the gap. While researching whether or not these funding options were realistic I took several conditions into account, like the costs of an early stage drug trial (0.5-1.5 million euros), where in the discovery pipeline funding sources usually spend their money and the amount of money available. After analysing all types of funding options, not all of them seemed suited for early stage drug discovery. The funding options that in my opinion are most realistic to solve the problem are SEED capital funds generated by venture capital companies, business angels, governmental subsidies and crowdfunding. In addition I advise the use of combinations of non-profit funds and venture loans with crowdfunding as a potential type of funding. On top of this, during the analysis of different sources of funding I developed a database that will be put online as an extra tool to help fill this funding gap in early stage drug development. During this internship at CHDR I learned a lot about the financing of early stage drug discovery. It is a very dedicated and enthusiastic company, which shows great interest in the development of its employees. And even though I want to keep continuing with research, I believe this internship has given me extra insight in an important part of the research world.

Cosine

Applications for a new type of X-ray sensor

Cosine BV is owned by a holding company owned by Marco Beijersbergen, Max Collon and potentially participating employees. Cosine BV supplies all of the management to the other companies in the group. The company contains very little in assets, except for the ownership of the other companies.

The biggest part of Cosine is cosine Innovations. This company does most of the research that is required for innovation and product development. Using this part of the company, custom products are designed and then sold by cosine Measurement Systems.

cosine Innovations and cosine Measurement Systems contain most of the assets of Cosine. IP is contained in cosine Research BV, while equipment is shared. Both Cosine Research BV and Cosine Measurement Systems BV are fully owned by Cosine BV and these 3 companies form the core of the Cosine group.

In this internship, I have evaluated the market for spectral cameras and for X-ray cameras. Also I have searched for a good opportunity and written an opportunity analysis for an application of a new type of X-ray sensor. The opportunity analysis is close to a business plan, however it is not an immediately implementable business plan, since some pre-research is still required to verify the opportunity.

In this internship, I have been given an enormous amount of freedom. I believe I have learned a great deal, particularly concerning the business to business market and networking. It has been very educational to begin from nothing and build up to an entire business opportunity, seeing the entire process take shape. In this “forming” of the final opportunity I have seen many opportunities pop up only to become invalid due to many different reasons. This has allowed me to learn what makes an

opportunity in the real world. I have particularly enjoyed speaking with contacts and potential customers (even though most of them were not interested in the technology).

De Nederlandsche Bank

Asset Liability Management

The company De Nederlandsche Bank (DNB) was founded in 1814 and is the central bank of the Netherlands. Since 1999 DNB is part of the Eurosystem, together with central banks from other member countries and the European Central Bank (ECB). DNB is responsible for maintaining financial stability in the Netherlands. DNB has three main tasks to accomplish this:

• Maintaining price stability in Europe together with other central banks within the Eurosystem

• Enabling a reliable, efficient, and safe money transfer system

• Supervising of financial institutions Financial Markets and Risk Management

The Financial Markets division controls the money reserves of DNB and executes monetary policies. In total DNB invests 50 billion, of which about 20 billion is gold. DNB is financially independent from the government and therefore should at least cover its operational costs. 95% of the profit is paid as dividend to the government, the only stakeholder of DNB. The Risk Management (RM) department is responsible for the analysis of the financial risks. Also, RM reports to the portfolio managers and the management about the size of the portfolios, returns, exposures, etc. Project As I have a quantitative background rather than a financial one, the sort of work I did was developing and programming financial models. During my internship I worked on an Asset Liability Management model. This model is used to analyze both the asset and liability side of the balance sheet and calculate how it will evolve for a specific period of time. The profits and losses that are generated from buying and selling assets and the interests that are earned are calculated. With this model the potential profits and the risk profile is made visible. Experience I enjoyed doing my internship at De Nederlandsche Bank for several reasons. The first reason is that it provided me with the opportunity to see a company from the inside and obtain work experience. Before doing this internship I was not sure in what field I wanted to work, but this internship definitely inspired me to work in this area. The second reason is that it I learned a lot about financial markets. During my education in physics I did not have the opportunity to follow many finance related courses. Without a financial background it is still possible to develop financial models and while doing it you learn a lot. The knowledge I obtained and the skills I learned are a good preparation to work in a finance related environment.

Deloitte

Actuary for several non-life insurances

I did my internship in Deloitte Advisory in the Actuarial department in Warsaw (Poland). I chose this internship because I was always interested in the Actuarial profession and consultancy. The mixture of both seemed a really interesting idea. Moreover, it is worth mentioning that the managing partner in this department – Krzysztof Stroinski - is the person who started the Actuarial profession in post-communist Poland. I remember that, when I was a first year student of mathematics in University of Szczecin, I researched the Actuarial profession and I found lots of articles and videos containing Krzysztof explaining this profession. I was passionate about beginning work in this well-respected organisation, within the department and profession I always wanted to explore.

The department represents very skilled and professional people. During my work there I was never bored and was always learning something new. The most interesting part is that, due to Deloitte's well-established name, its clients are some of the most well-known and biggest companies in the CEE (Central Eastern European) region. A large number of technical skills are required to keep up with the workload and to prepare proper analyses. The information influx is high and there is always something new going on. It is always interesting to discover trends and make analyses based on these. Additionally, it was interesting to learn new skills and to see how my work could be improved. I noticed that, after couple of weeks, tasks that used to take me a couple of hours, started to take me only twenty minutes.

The tasks were varied. I did purely actuarial tasks, such as various types of reserves and premiums reconciliations. I also helped with more consultancy-based tasks, such as various types of research and analyses regarding new and up-and-coming technologies, ways of counting premiums, and markets. I got in touch with the newest solutions in the insurance market and got to know how these can be implemented.
Due to the fact that the firm invests in the development of its staff, I had many opportunities to participate in training courses. I took Advanced Excel courses, Prophet software training and many more, including purely non-life actuarial training about how to calculate various types of important in insurance business reserves.

I would like to say a couple of words about what I have learned and how this internship helped me in my development. I saw how a large and established consultancy corporation works. I came to understand fully what an actuary does. I saw how my university knowledge was able to be implemented and what should be improved. Moreover, among other things, I saw which skills the financial market requires, such as an advanced level of Excel, how technical skills are used in business and the preparation of analyses, and which technical skills are needed elsewhere. For these things, I am infinitely grateful to this company.

In conclusion, I would like to say that I highly recommend this internship to everyone who is interested in mathematics and business, and to people who want to work in a big, well-known companies and do more technical tasks. My mathematics and SBB background helped me to catch up with work. SBB courses prepared me to work in a big company and to understand lots of financial concepts, as well as to understand how it works, what my supervisors expected from me and how to improve my work results. My mathematics background gave me the necessary knowledge and analytical skills in order to prepare proper analyses, helped me learn more advanced technical skills such as Advanced Excel, Cros, Tableau, and VBA.

DSM Food Specialties B.V.

Market analysis and the development of a value proposition for Maxinvert®

During my SBB internship I was able to get a taste of what it is like to work for a science based business: I was part of the Marketing & Sales group of Food & Dairy at DSM Food Specialties in Delft. DSM is an international company that delivers products in three different areas: Nutrition, Health and Materials. With my background in both Chemistry and Food Technology this is exactly the industry I would like to be in. My internship assignment was to do a market analysis and to develop a value proposition for an enzyme, Maxinvert®, which is used in confectionary and sugar inversion.

My technical background was useful to understand the product and understand how it benefits the customer's product. My work basically consisted of desk work (reading market reports and looking at new product launches), interviews (with sales managers, technical sales managers and distributors) and writing (a report and the value proposition). Many different aspects of the business were important for my research, besides the sales people, I also spoke to people from Regulatory Affairs and R&D.

During the internship I got the chance to speak to people in many different occupations and ask them what their jobs entail, which has helped me to get a better view of what is possible and what I would like to do. Fortunately my supervisor also encouraged me to do so. If you are going to do an internship, I would also recommend you to take time during the internship to do so, this is your chance to learn more about jobs in business. That is also an advantage of doing your internship at an international company; there are many different occupations and many people to speak to. I also did projects outside my main project, for example I wrote an article on the importance of good quality enzymes, which will be published in several industry magazines. For this project I also spoke to many DSM-ers who know a lot more about enzymes than I do.

I would certainly recommend other students to do their internship at DSM. It is stimulating to work for a company that is trying to make the world a better place. I have learned a lot during my time there, ranging from conducting interviews, marketing plans to practical skills in Excel. I also learned that there is much more to value propositions than you would think. It is not so easy to find the real benefit of the product. I also joined in many social activities organized by DSM. For example I ate schnitzels at a cultural lunch about Austria and listened to live music at the ceremony for the kickoff of the construction of the new R&D building. It was a diverse and very interesting experience!

Dutch Space

Implementing change management

Dutch Space supplies subsystems for the European space industry and is the main player of the Dutch space industry. The organization originated from the Dutch aircraft manufacturer Fokker and was established as an independent company in 1995. Dutch Space is a subsidiary of EADS Astrium N.V. Currently, the organization counts about 300 employees. The turnover in 2011 amounted to €75.3 million. More than 90% of the company's business is in Space, with 70% oriented to the European Space Agency (ESA) and 24% oriented to the commercial space market. The remaining 6% of the business is terrestrial (defense & science).

Dutch Space recently left on a journey with the visionary goals of 2020 as its destination. In 2020 Dutch Space aims to have reached a steady turnover of at least €90 million, have increased its EBIT to 8%, operate as a social responsible company and have become the preferred space company in the Netherlands for employees, customers and other stakeholders. To actually reach this destination, the Project Voyager was established. As the name already indicates, Dutch Space has departed on a journey, a journey that will lead to the realization of long term instead of short term goals and that needs endurance to succeed. Five enthusiastic teams based on five Key Success Drivers were brought together: Cost & Process Efficiency, Supply Chain Performance, New Product Innovation, Competitive Workforce, and Inspiring Leadership & Workplace.

During my internship at Dutch Space I supported the Voyager Team in implementing diverse change programs to realize the objectives for 2020. My activities consisted of four main tasks. Firstly, I

supported the project leader in implementing change management. More precisely this includes keeping the overview and guarding the intention of the project, linking the different programs together, attending to opportunities and threats, communicating the successes and measuring progress.

In order to do this, I helped organize regular meetings, updated the Obeya bord, communicated progress and actions by publishing news articles, and helped set-up key performance indicators (KPIs) for each program. Secondly, I supported the program manager "Inspiring Leadership & Workplace" in taking the leadership performance of Dutch Space to a higher level, both on a personal and on an organizational level. I was actively involved in the choice of an external party and the forming of a leadership development plan for Dutch Space. My third task was supporting the "Competitive Workforce" team in realizing the 2020 objective "being the preferred space company in the Netherlands", by establishing an engaged workforce and providing employees with the opportunity to work on their development. I gave engagement workshops for managers and helped to set-up the Personal Development pilot. Finally, I worked on "New Product Innovation" with the aim of improving the output of new products and services from Dutch Space. I attended a training session on "The Human Side of Innovation" and designed a creative toolkit, the Ideation Toolbox, which offers tools and techniques to brainstorm in a more creative and effective manner, to meet, and to innovate.

Next to factual knowledge, I found the diversity of programs I worked on highly valuable. I have the feeling that I got to know the organization, some of its departments and many employees very well. The different projects I worked on varied in the degree of responsibility, interaction with colleagues and external parties, and personal involvement, making my internship extremely exciting and asking for my utmost flexibility. As I worked on all projects simultaneously, I learned a lot about prioritizing, time management and clear communication. During workshops, but also during one-on-one discussions I was able to practice change resistance management and talent management, foremost by engaging in supportive listening and paraphrasing. Through close contact with my supervisor as well as other program managers I practiced providing and receiving constructive feedback. ¶

Eli Lilly

Investigating the Dutch insulin pump market; defining the operational space within the market and finding out which strategic marketing position should be taken in

My internship took place at Eli Lilly and Company. Eli Lilly and Company is among the 10 biggest pharmaceutical companies in the world with an R&D budget of over $4 billion. They are active in the fields of oncology, diabetes, bio-medicines and animal health. Within the diabetes market they are active with oral anti-diabetics and various types of insulin. Their rapid-acting insulin Humalog® is used for both pen and insulin pump therapy. My internship was focused on the growing market of insulin pump therapy, in which other companies selling rapid-acting insulin do not seem to focus.

Because the market share of Humalog® in the Netherlands is under the global average, my task was to seek opportunities in the insulin pump market to increase Humalog® market share and to add value to the product or brand.

To achieve this I did a market research on the insulin pump market which contained prior knowledge on the subject and insulin pump market, an internal analysis and an external analysis. These should give me insight in the insulin pump market, the competition, the needs and the company's strengths

and weaknesses. Altogether this should give me a proper SWOT-analysis, which should indicate where opportunities and threats lay in line with the company's strengths. After the market research I had to map out these opportunities, investigate their feasibility and give my recommendations for the future.

At the end of the internship period I was able to give a good market insight and show were the opportunities lie for Eli Lilly and Company in the Netherlands. Furthermore, I could show which projects were feasible in practice and I gave them my recommendations on how to pursue these opportunities. At the end, I had time left to create and design a marketing tool (interactive visual aid) which could be used as a starter for these strategies and with a focus on the insulin pump market. I also created an educative presentation for the sales force, which should help them to implement the interactive visual aid in external communications.

During this internship I have learned a lot about marketing within the pharmaceutical industry and the pharmaceutical industry itself as well. I have learned to do a market research in which I could make use of the theoretical deepening from the SBB fundamentals. Furthermore, I had the opportunity to learn more about the health care industry and which parties are involved. I could also see what their powers were and how they could influence each other and the pharmaceutical industry.

My internship also elaborated on sales within the pharmaceutical industry and what resources they use. It showed me their ways of differentiation via services, creating goodwill, the use of marketing tools and supporting materials. Additionally, I had the opportunity to make an interactive visual aid which gave me more insight on the creation of marketing tools, the rules of marketing within the pharmaceutical industry and how these tools are actually implemented.

Because Eli Lilly and Company, the diabetes team and my supervisor gave me a lot of freedom and trust, I was able to optimize the learning outcomes and further develop myself. Their attitude towards me as a student and their willingness to help, greatly contributed to the smooth process of my internship project. In addition to their practical experience, the knowledge gained from the SBB-fundamentals was highly applicable in practice. The eventual practical work was a great follow up on the theory and skills gained from the SBB fundamentals. Within a marketing project in the pharmaceutical industry, most concepts learned during innovation management and strategic marketing management will be implemented during your internship.

I consider this internship as being highly successful, because it helped me to reach all my intended learning outcomes and even gave me additional experiences which I didn't expect at the beginning. Furthermore, the SBB fundamentals and my initial study in Bio-Pharmaceutical Sciences have given me a great basis for working in marketing and the pharmaceutical industry. The company and supervision have contributed greatly to my personal development and learning outcomes from this internship. Concluding, it was an amazing opportunity to do my internship at Eli Lilly and Company and I can greatly recommend this company for SBB interns.

Erasmus MC TTO

Researching market opportunities for novel biotechnologies

For the science-based business track of my biology master program, I chose to do my internship within the Erasmus Medical Center Technology Transfer Office (Erasmus MC TTO), located in Rotterdam. This is a large academic hospital which has as core tasks; education, research and patient care. Valorization and technology transfer are also being adopted as core activities. Erasmus MC accommodates 182 departments; about 70 out of these departments are active in research. The TTO department's mission is ''to transfer Erasmus MC's research results and technologies into useful products and services, thereby creating value for society in general and healthcare in particular''. The TTO is the department which is responsible for assessing new knowledge and discoveries generated from research. It assesses mainly the societal and the economic potential of technologies and their patentability. To create value from this new knowledge and discoveries the TTO either looks for industrial partners, to license the technologies, or starts spin-off companies. A new incubator has been opened to accommodate the spin-off companies. There are 19 start-up companies related to Erasmus MC. Since 2010 TTO finalized a total of 43 license agreements with industry. The process of technology transfer is carried out by a close cooperation between scientists, business development managers and legal counselors.

My work as intern was on the side of the business development management; I was assigned tasks of new discoveries assessment, and searching for industrial companies to license the technologies. The assessment process consists of, 1) understanding and analyzing the new discoveries, which need a solid background in science, 2) examining their usefulness and applicability, 3) investigating competition and products available on the market. In some cases the decision about patenting new inventions needs to be made, because this is crucial to attract industrial licensees. Another duty of the business development manager is to search for partnering companies to license the technologies and establish collaboration relationship to generate funding for research (3e geldstroom). Maintaining a good relationship with scientists within the organization and working closely with them is also a key role of the business development manager.

I choose for this internship because I was intrigued about how the process of making value from scientific knowledge in the field of healthcare works. Whereas, value means the economic and the societal benefits of the knowledge. As expected the internship placement taught me the ins and outs of the technology valorization process, besides all the issues and threats that surround technology transfer in an academic hospital environment. Moreover I gained practical experience in technology intake and evaluation, in the art of writing non-confidential disclosures, and in the process of interacting with industrial partners both in a confidential and a non-confidential context. In summary I have gained broad knowledge and experience in functioning as a business developer in the TTO of an academic institution.

Project Management in technology transfer

My internship took place at the Technology Transfer Office (TTO) of the Erasmus MC. As the largest university medical hospital of the Netherlands the Erasmus MC produces a lot of findings that can be protected as intellectual property. The TTO has been established to valorize a finding and facilitate its transfer to the public domain where the finding can be commercialized for the benefit of the general public. It serves as the boundary between the academic world and the commercial environment.

The main goal of this internship was to help the TTO restructure its information management system and streamline the business development part of this process. These management systems are important to the work of the TTO, because they help keep track of the various projects. They do this in the form of registering project status updates, important documents and financial information. There were two parts that needed restructuring.

First the registration of the and tracking of new projects needed to be optimized. This needed to be done to increase the efficiency of the workflow of the business developers and legal councils. Second the handling of aftersales follow-up needed to be defined and reinvented. This would increase the efficiency of the cash flow.

Both the registration of new projects and the aftersales activities were registered in two ways. First is the information management system Sophia (by Wellspring). This system stores all information on the projects that the TTO works on. In addition to storing information it also track the progress on a project and serves as a database for all agreements related to a project. The second information storage system is a network drive called the 'V-drive'. This drive functions as an archive to store all information regarding projects and agreements which are still in the form of drafts. Furthermore, it also contains legal agreements that are not part of a business development project.

I was to restructure the data found in these information management systems and in concert with these changes write new guidelines to ensure correct use of the information management systems in the future.

With regards to the aftersales there would be a new set of guidelines and a redistribution of the aftersales tasks to decrease and even out the workload of the TTO employees. These guidelines also needed to ensure that aftersales follow-up was performed correctly and efficiently.

In addition to these data management tasks I was involved in the daily activities of a business developer. This meant I would assist in business development projects. In these case I would support a business developer by doing market research, researching patent positions and drafting legal agreements. In addition to this I also set up meeting with inventors and external parties and attended these meetings. These business development cases have given me a clear insight in the actual day-to-day activities of a business developer and legal counselor in the field of technology transfer.

Business development - Valorization of Biological Materials

In the past six months, I worked on my Science-Based Business (SBB) internship in business development at the Technology Transfer Office (TTO) of the Erasmus Medical Center (Erasmus MC). Erasmus MC is the largest university research hospital in The Netherlands, with more than 60 research departments and around 13.000 employees. In this context, the mission of the Erasmus MC TTO is "to promote valorization of findings by fostering the interaction of Erasmus MC inventors with academic institutions, funding organizations and industry, to secure ownership thereof, and to disseminate these findings, thereby creating societal exposure, economic value, and income to invest in further research, better education and excellent patient care". In other words, the Erasmus MC TTO offers support to Erasmus MC researchers and clinicians in creating value from all the inventions and findings originated within the institution, and it helps to make new developments available for society and industry. Since this is a medical institution, all the inventions and findings are related to the medical industry, including novel biological findings, medical treatments and tools, and innovations in care. Business development is a crucial step in technology transfer because it is

the starting contact point for any valorization (value-creation) process. At the TTO, this unit is where the possibilities of licensing and launching new developments to the market are evaluated, and managed to be commercialized. This unit manages and supports the processes of out-licensing and/or co-development with third parties, supports the process of setting up spin-off companies, and provides support concerning legal, financial and administrative affairs. In this unit is where I performed my SBB internship working as a business developer, mainly focusing on a project of valorizing biological materials developed at Erasmus MC. This project was aimed increase the technology transfer output of the organization, by exploring business development opportunities in biological materials developed inhouse and by promoting valorization of this unexploited sector within Erasmus MC. In this internship, my core objectives were finding new business opportunities in biological materials developed at Erasmus MC, and managing and supporting business cases concerning both biological materials and other technologies. In order to find new business opportunities, I screened and scouted for these opportunities in departments and their research groups, and I searched for publications of the last five years from the principal investigators of the groups. Based on that search, I contacted researchers to promote valorization of materials they developed and tried to engage them in exploring valorization possibilities. Concerning the task of managing and supporting cases, my activities mainly consisted in assessing the materials in terms of commercial potential (e.g. advantages and uses of the material, market research) and commercialization restrictions (e.g. legal restrictions, ownership, previous agreements, etc.), and later, in valorizing the material, which included marketing the material and contacting potential industrial partners (through e-mail or in conferences) that may be interested in getting access to the material either through licensing, sponsored research or other type of commercial agreement. With this internship I contributed to the organization through my work in several aspects. First, I took care and manage old and new cases concerning technology transfer at the TTO. I organized the biological materials cases and created an updated database of all the materials known at the TTO at the moment. Second, I contributed by promoting technology transfer at Erasmus MC, and in particular, by promoting valorization of biological materials. Valorization of biological materials does not necessarily mean creating value as in money, but also refers to create value by having a societal or scientific impact. From that perspective, value creation occurs by making these biological materials available to both forprofit and non-for-profit institutions, and during my internship, I contributed to making them available by setting up for several cases different types of agreements (license, sponsored research, and material transfer agreements) with diverse institutions. Additionally, I brought in the TTO new business cases, meaning that I opened new opportunities to increase the technology transfer output at Erasmus MC. I also managed and supported business cases in this area, which were not receiving enough attention before, and thus, I actively promoted technology transfer in this field. Third, I contributed in expanding the internal and external network of the TTO. The internal network refers to the network within Erasmus MC, which I expanded by contacting and establishing relationships with researchers (around 30 researchers in total) and different departments. By networking internally, I also contributed to inform researchers about technology transfer and the help TTO can provide, and I make them aware about the possibilities they have for valorizing published and unpublished biological materials. On the other side, the external network refers to people or institutions outside Erasmus MC, and I also expanded this network by contacting more than 90 companies. By networking with external parties, I contributed to create awareness about the Erasmus MC TTO, the research done at Erasmus MC, and of course, about the technologies available for commercialization. Finally, this internship experience had an impact in my personal and professional development. I gained extensive knowledge and expertise about technology transfer and its associated legal aspects, about the functioning of technology transfer offices, and about different commercialization strategies. I also learned about contract law, and I

learned about different types of agreements and their most important terms and conditions, and I became capable of drafting and revising agreements (which of course are finally revised by an attorney). With this internship I also got an insight in the biomedical, biotech and pharmaceutical industries, as well as in the last scientific developments in different research fields. Working in business development also had an impact in the development and improvement of organizational and communicational skills. Especially in the latter, my experience in this internship was very fruitful and I learned about aspects to consider when participating in meetings, or during negotiations.

European Patent Office (EPO)

Science and Engineering Patent Reclassification work

The mission of this internship was to add value to the organisation and to myself. This internship was completed at The Hague branch of the European Patent Office, involving patent reclassification work in the medical appliances department. My technical fields included cardiovascular implants, namely stent grafts and filters. I chose the European Patent Office because I wanted to step out from my area of astrophysics and experience working in a whole new field, gaining knowledge of a different type of organisation to help balance my predominately science background. My internship at the European Patent Office was; educational, engaging, interesting and very valuable. After completing this internship I can now make more informed choices about the direction and orientation of my future career. Inside this report you will find: a brief description of the organisation in which I did my internship; information on my work; what I learned during the duration of my internship; a discussion on my performance and how I have improved because of it. The report describes how this internship was successful according to the SBB internship guidelines and objectives. I am very impressed with the European Patent Office as an organisation and with the individuals who work there. My internship at the EPO was a great opportunity to improve myself and to contribute to work that makes a difference to innovation. Both myself and the organisation gained value as a result of my internship.

Patent reclassification in the applied physics cluster

The European Patent Convention (EPC), also known as the Convention on the Grant of European Patents of 5 October 1973, is a multilateral treaty instituting the European Patent Organization (EPO) and providing an autonomous legal system according to which European patents are granted The European Patent Office (EPO) is one of the two organs of the European Patent Organisation, the other being the Administrative Council. The EPO acts as executive body for the Organisation while the Administrative Council acts as its supervisory body as well as, to a limited extent, its legislative body.

The European Patent Office is self-financing with a budget of 2 billion euro in 2013. In 2012 257.000 patents were filed, 25% of which filings came from the USA. Also Japan is a big contributor with 20% of the filings. Only 67.000 patents were granted in 2012. The patents granted by the European Patent Office are called European patents. (epo.org 2013). Samsung and Siemens filed more than 2000 patents each in 2012. The EPO employs some 7000 people of 30 different nationalities. The EPO headquarters are in Munich, with a branch in The Hague. Supporting offices are found in Berlin, Vienne and Brussels. (EPO Facts and figures 2013)

Within the European Patent Office, examiners are in charge of studying European patent applications which are filed by applicants, in order to decide whether to grant a patent for an invention. The process of evaluating a patent application by an examiner requires expert knowledge

the relevant technical field, the patent law and the languages English German and French. The European patent office has a rich database of almost 100 million classified patents and other technically relevant documents. In order for an examiner to quickly retrieve relevant documents they are being classified in classes, sub-classes, sub-sub-classes etc. The classification system in place (Cooperative Patent Classification) has a quarter million classes. Quick identification of relevant documents is key for the EPO to deliver high quality work while examining new patent applications, and to enforce the global patent system. A patent that cannot be found, is almost worthless.

This report will firstly introduce the two different jobs I did during my stay at the EPO. Second I will assess the work I did. There is no assessment of the supervisor available because of official EPO policy stating that the supervisor is not allowed to write a report or assess the intern in any way. The reasons for this seems to be a combination of the confidentiality requirements of the position that the examiners are in, as well as the fear that occupying with this might be at the expense of productivity of the examiner. The only official EPO communication is a certificate of finishing the internship. I will therefore reflect on what I learned and I will self-assess my performance myself, based on the verbal feedback I received during the internship.

My duties were related to the re-classification of documents in order to retrieve them more quickly in the future. I was doing a re-classification job of patents in the applied physics and optical department. Whenever the classification system is being re-organized, a backward re-classification of all the documents is required. Most of this re-classification may be done automatically, but in some cases a class has been split in several sub-classes in the new classification scheme, and very detailed knowledge is needed to manually decide which group suits best. This work is very suitable for technically skilled students that want to have a peek in the day-to-day business of a big international organization like the European Patent Office. Even though not intended initially, my supervisor soon gave me the authorization to classify documents independently, only leaving the documents that I had doubted to discuss. The table in appendix I shows the classifying work I did over time. It must be noted that classification is an ambiguous process where many interpretations are possible. The only way to deliver high quality and consistent work is to keep open communication with your colleagues about which documents exactly belongs in which class.

The internal EPO patent database may be accessed using different tools, that were designed to make searching through the documents easier and faster. Because the tools are evolving organically with the organization, efficient use of the tools is an ongoing learning progress. Advanced text highlighting, keyword/synonym search, keyword translation, statistical analysis of keywords or complete texts are examples of the available tools. On top of that, a developer environment is available for examiners to write or modify their own tools for the specific task that is done. Improving my skills in working with those tools was an ongoing process, as well as thinking about new tools to the specific job efficiently.

Famar AVE

Assistant in Reporting and ControllingGroup within the Finance Department

FAMAR is one of leading healthcare production services within Europe and was established in 1949 in Greece. FAMAR is part of Marinopoulos Group, an industrial and commercial group with operations all over Europe. FAMAR owns production sites in five different European countries (Greece, France, The Netherlands, Spain and Italy). The main operation of the company is manufacturing and only in Greece there are 4 business units including one health & beauty unit.

Within these business units, production of Rx (recipe), OTC (nonprescription products), Food Supplements, Generics and Health & Beauty products takes place in one of following forms: solid, semi-solid, liquid, sterile and freeze-dried. Apart from manufacturing services, FAMAR offers also packaging solutions for all finished products. Furthermore, being the leading provider of distributions services, to the Greek pharmaceuticals, FAMAR possess 2 distribution centers.

Doing the Science Based Business Fundamentals course, a whole new world opened to me, the business world. More specifically, I found that attending the Financial Management odule was really intriguing andI decided that I want to enrich my knowledge in thisfield. Therefore, I searched for a finance internship. From July 2015 till January 2016 I did my traineeship at FAMAR AVE in Athens, Greece. I completed my internship in the Reporting and Controlling Group within the Finance Department.

At first I created ad-hoc reports and monthly presentations requested by the financial manager. Moreover, I was responsible for the consolidation of data coming from all Greek business units and the building of various databases from scratch. Later on, I participated in the budget process-that started in September- through several tasks such as registration of data on Business Warehouse Tool and creation of reports requested by upper management. Since I was seeking to learn as much more as I could, apart from my “written” goals, I also took the initiative and helped the accounting department whenever I could. (e.g. registration of payments/paymentson company's database).

Looking back, I can say that I made a great choice regarding the subject of my internship. These six months I was exposed and I had to deal with real situations in the pharmaceutical world. I experienced firsthand how an international company, like FAMAR, is managed and how individual departments interact with each other. Although I had a physics background and there was no direct connection with my academic background, I did not encounter any difficulties throughout my traineeship. I would consider FAMAR as a school for the beginning of my career in the financial field and now I am ready to take the next step in my career.

Fluvius Media

Starting a company that offers software and services for internet radio broadcasting

The best reason to start a company is to make the world a better place. I have always been looking for such opportunities, and I found one when I needed to start an internet radio broadcast, which turned out to be difficult and time-consuming. Existing software to do this had a large number of shortcomings. Frustrated, I began writing software that would do things right – the mantra being: “Quality kept simple”. I soon realized that I might commercialize this software.

When you have a great new idea, the hardest thing is often to actually get started. I learned that it is important to focus on implementation and prevent over-analyzing. Having a diverse team also helps tremendously – I found a colleague with a very different background and skill set. In practice, this provided me with more fresh insights, quick feedback, valuable contacts and more time to focus on the things I do best. I implemented Kawasaki’s advice of using prototype software as a market research tool, which allowed me to kill two birds with one stone, further accelerating the startup.

To create a total solution for people that want to run a live internet radio broadcast, we decided to provide a service that consists of two parts: a software program and a stream service. The program allows the user to create the audio for his broadcast, while the stream service allows his listeners to

listen to it. Both elements work together harmoniously without any setup required, and are offered bundled as a single subscription service.

Basic research I conducted revealed that our target market is not very large, but slowly growing, and existing competing software is all very similar, which created an opportunity for unique positioning. I exploited this in various ways in the design of the software. Much attention was also given to making a 'contagious product' (one that automatically promotes word-of-mouth marketing) and lowering the barriers to adoption of the new product.

Starting a new venture gave me a large amount of practical experience in many fields. Most startup-related courses provide knowledge and a small amount of practical experience with business planning, but doing this while actually working on prototypes, conducting real-world testing and building the necessary business infrastructure (see Appendix) is a very different experience. I think this may prove very useful in the future, since I really like doing this entrepreneurial work.

Futureconsult BV

Junior Advisor Internship

Futureconsult helps organisations map out their future. Futureconsult does this on the basis of future exploration surveys, trend analyses, and contextual scenarios. An open, fact-based future survey will improve the quality of your strategic decisions and opens up a vista of new possibilities. Every organisation wants to be prepared for the future. Yet many strategic decisions are still based on the present and sometimes on the past. An opportunity missed. Sound exploration and forecasting improves the quality of decision making.

Futureconsult specializes in scenario planning for vision and strategy development. We either create the scenarios ourselves, or work as process managers to help prepare, develop and implement the scenario processes in your organisation. Futureconsult also gives master classes on the theory and practice of scenario planning. Scenarios are consistent, plausible and radical visions of the future. Contextual scenarios help you map your future playing field. Contextual scenarios are aimed at mapping future developments in a contextual environment, such as technology or politics, of which the outcome is uncertain. Therefore Futureconsult always develops multiple contextual scenarios. Futureconsult prepares the scenarios in various forms such analytical texts, reports and dialogues. The scenarios are presented in short films, stage plays, books, posters and/or internet sites.

Futureconsult helps organisations shape the future, based on the following underlying principles:

• Scenario development is an interactive process in which all stakeholders are expected to contribute, through development and discussion, opportunity is created to develop a common language on future planning. The scenarios developed incorporate the knowledge, presuppositions and value orientations of all parties participating.

• Futureconsult acts as a dedicated facilitator and a critical outsider.

• The substantive development of the scenarios is as important as the development process itself in building support and involvement from stakeholders.

• In addition to the actual content of the scenarios, presentation style and creative projection are key success factors.

• In sum: process, format, content and communication are inseparable.

Interns at Futureconsult are interested in strategy, trends and developments. They are analytical, creative thinkers and writing skills come in handy. As an intern you will participate in one or multiple projects for clients of different sectors e.g. profit, government and non-profit NGO's. Your work ranges from the preparation of meetings and workshops, writing accounts of those meetings, help develop future scenarios and participate in writing reports for our clients. With respect to the content of this internship and my personal experience at Futureconsult I can only say that I recommend fellow students to do an internship here. Next to the fulfilment of my personal goals that I set out to achieve at this position I learned so much more. I feel highly strengthened and prepared for my first steps as a graduate in the business world due to the insights I got by working at Futureconsult and the talks and laughs I had with the people working there.

Generation of Change

Product development

I did my internship at the startup company Generation of Change. During the SBB courses my interest for entrepreneurship sparked and for my internship I preferred to work at a small company or a startup. Lucky for me, the internship found me instead of the other way around when I was contacted by a professor from the IBL. He had received an email asking for a MSc-student in microbiology to work on biodegradable packaging. After an hour-long meeting I was convinced this company would add value to my personal development and that I would be able to help this company in starting up their business. And so, for the next 6 months, I worked with the founders to create biodegradable packaging products. Following in the footsteps of a U.S.-based company, we grew our products using a mixture of substrates and the root structure of mushrooms, called mycelium. Our challenge was to bring a product to market that would be unhindered by existing and still pending patents, and we tested a variety of products, growth methods, substrates and fungal species to solve this problem. I assumed our product would be ready for the market by the end of my internship; however, the product development process takes significantly longer than we anticipated, and we're still optimizing our product for our market entry.

Genzyme

Brand planning for Cholestagel, a cholesterol lowering agent, and a study of the Balanced Scorecard and its position in Genzyme.

Cholestagel® (colesevelam hydrochloride) is a bile acid sequestrant which was launched onto the market by Genzyme in 2007 for the indications Familial Hypercholesterolemia and hypercholesterolemia patients with intolerance for statins. However, as a result of parallel trade and a co-payment system by Genzyme, this product became unprofitable for Genzyme the Netherlands and the company decided to halt all promotional activities. Late 2012 Cholestagel® became profitable again as a result of a price reduction in the Netherlands. Genzyme took this opportunity to look into the potential of this product in a new (off-label) indication, and at the same time into re-launching the product in its original indications and making it a viable business again. In June 2013 I was hired as an intern to manage this product, perform market analyses, base strategy upon these, and investigate the off-label indication.

A strategic marketing campaign was developed based on the results of two market analyses: an analysis was carried out to find out which area (province) in the Netherlands had the most potential to grow in volume, based on market penetration and size, and an analysis was carried out to investigate the source of the first prescription of the product. The latter showed that the general practitioner was underrepresented, representing only a minor portion of the first prescribing groups. Based on these two outcomes, two communications were send to all general practitioners in Zuid-Holland: a mailing with a review article about Cholestagel® and a card with product information was send with a weekly magazine for physicians. This campaign has yet to show results in sales figures for Zuid-Holland.

Results from a response mailing, visits to physicians in the field, and an analysis of a competing "inferior" product suggest that Cholestagel® has not yet grown to its full potential on the cholesterol market. An analysis of Questran (direct competitor) sales was carried out and the results show that the competitor's drug still has a large market share in the cholesterol market, selling a number equivalent to more than 50% of the total volume of Cholestagel® bottles sold. This unexpected high number might be related to the low number of general practitioners prescribing Cholestagel® as these physicians will probably not be familiar with Cholestagel® and still prescribe the 'classic' bile acid sequestrant of the competitor.

Market research in the area of the off-label indication shows that this indication affects a large population. A KOL-analysis resulted in a small group of physicians, representative for their specialty, which were brought together for an advisory board. From the advice following from this meeting, the conclusion was drawn that the population for this indication is indeed large, and that the prevalence is terribly underestimated. Additionally, the attendees of the advisory board all agreed that Cholestagel® has potential to become first line treatment for this population.

I think that my internship was successful considering the two main objectives for Genzyme. Whereas it is still unclear whether or not the re-launch strategy for Cholestagel® in the cholesterol market was successful, the market and its potential were extensively analyzed to support the strategy used in this marketing pilot, making it a viable re-launch strategy. Furthermore, the results from research and the advisory board show that there is a very clear potential for Cholestagel® in the new indication. Genzyme can potentially play an important part in developing this market by educating physicians.

HAL Allergy

Contract manufacturing organization

I got the opportunity to do an internship at HALIX BV, a Contract Manufacturing Organization (CMO), newly set up Business Unit of HAL-Allergy BV, focusing on Contract Manufacturing Activities. A CMO is an organization that serves the pharmaceutical industry and provides clients with comprehensive services from drug development through manufacture. HALIX services mainly focusing on contact manufacture of monoclonal antibody for clinical trial purpose.

When I joined the Internship in HALIX, I was given a warm friendly welcome by the CEO, my Supervisor and other staffs. I had the chance to straight away settle in and handle a multitude of tasks and responsibilities. During 6 months period of my internship, I was working to develop Quality Management System (QMS) for HALIX as well as HALIX Business plan. For QMS work, I did some research on the regulations and requirements of Quality Management System eg. EU GMP

Guideline, 21 CFR FDA part 211, ISO 9001: 2008 and ICH Q10 on Quality Management System. I compared these requirements in order to develop HALIX's QMS that comply to these requirements. I also developed HALIX's Site Master File. It is a document prepared by pharmaceutical manufacturer that contains specific information about the quality management policies, activities of the site, the production and/or quality control of pharmaceutical manufacturing operations carried out at site. I also involved on the drafting of HALIX's Quality Policy and Quality Manual based on ISO 9001:2008 on Quality Management System. I did the feasibility study for ISO 9001:2008 certification as HALIX might go for ISO certification in the future. I mapped the current QMS document of HAL-Allergy to incorporate these documents in to HALIX's QMS and filled the gap by identifying and drafting other procedures needed specifically for HALIX.

For the Business Plan project, we developed tools for screening HALIX's targeted companies. The matrix called HALIX business matrix. This matrix was adopted from Boston Consultant Group matrix, a chart to help organization with analyzing their business units or product lines. We valued the targeted companies based on its potential (financial, portfolio fit, service profile fit, retention, alliances, geographical presence, number of pipeline projects) and capabilities (platform fit, consistency – business model, tech transfer capabilities, network contacts / KOL, patent - licence In / Out). I also made the guideline on how to use this matrix. After we know the position of each company in the matrix, we create the data including all necessary information for example geographical area, product type, website, contact etc. By this way, we have comprehensive data base that can be easily retrieve as needed.

All experiences I gained from HALIX working environment have been helping me to grow both professionally and personally. It is amazing how fast I have been learning here. The hands-on, real life experience that I've gained through my internship at HALIX has proved to be invaluable. Choosing HALIX as a place of my internship was the best choice I have ever done. This internship had taught me more than I expected. I would for sure recommend other students to do an internship at HALIX so they can also gain valuable experience as I did. This is not only a training period in my life; this is a great life experience!

Heineken Nederland

Reducing Extract Losses Brewhouse and Cellars

The Heineken company was founded in 1864 by Gerard Adriaan Heineken with the intention to introduce a 'beer culture' in Amsterdam cafes, to the city's artistic and intellectual elite. Today, Heineken® is the world's most valuable international premium beer brand that reaches people in 178 countries around the world. The company has operations in 71 countries employing more than 75.000 people, ensuring a broader reach for its brands than any other brewer. In 2012 Heineken had a turnover of €18,3 billion, with a net profit of €1,7 billion. It is the number one brewer in Europe by volume and the number three worldwide. In addition to the Heineken® brand, the company owns, markets and sells more than 250 other brands (e.g. Amstel®, Pepsi®, Crystal Clear®).
Heineken tries to bring joy to consumers around the world through the responsible promotion of its high-quality products, and the sponsorship of events that are important to them.
To its employees, Heineken is trying to cultivate a work environment that embraces differences and it encourages and supports them to achieve their full potential.

In The Netherlands, Heineken has its Head Office HEINEKEN Nederland in Zoeterwoude, where also its 'number one brewery' can be found. It is the biggest brewery in Europe and produces large

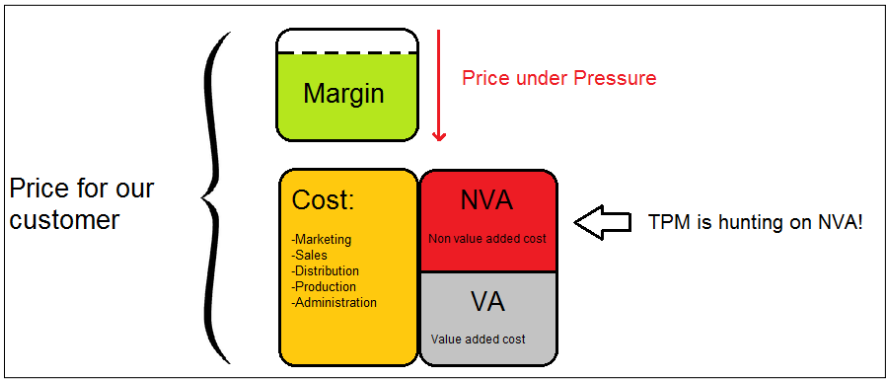
amounts of Heineken®, Amstel® and (since 2013) SOL® beer. It has a brewing capacity of 13,5 million hectoliters per year, of which ± 70% is exported.

It is at this highly advanced brewery in Zoeterwoude where I did my internship. As part of the Brewing Department (within the unit *Technology & Quality*), I worked in multiple project teams in which we were focusing on the optimization of the production process. As Heineken's flagship, the brewery at Zoeterwoude is seen as an example to Heineken's other breweries and therefore it must always be looking for ways to optimize its (production) processes. In order to do this, Heineken introduced a new, leading method to its organization in 2005: **Total Productive Management** (TPM). TPM was developed in the 1970s in Japan and can be defined as:

- the continuous and consistent quest to eliminate losses in all processes through active participation of all employees in an organization. -

When the selling price of, for example, Heineken® beer is under pressure, then the costs have to be lowered (*see Figure 1*). TPM is focusing on the reduction of Heineken's costs/losses for which the customer does not want to pay (e.g. wasted man-hours, energy and raw materials). These losses are called: Non Value Added costs (NVA).

Figure 1. Product price determination.



My unit (Technology & Quality) was focusing on an important TPM-element: **the reduction of extract losses** (in the brewhouse and cellars).

These extract losses are all losses of the raw material *malt* that occur from the moment it enters the brewery by shipments, until the moment it leaves the *brewhouse* and *cellars* (and arrives at the Packaging Department). Two kinds of extract losses can occur: *technological losses* (e.g. limitations of the machinery, limitations of (bio)chemical reactions, etc.) and *avoidable losses* (due to human mistakes or broken installations). Only the latter can be reduced.

The extract can have different forms throughout the production process. It starts as malt, but can be found later on in the production process in the form of a sugary water solution (called *wort*), grown yeast cells or actual beer.
Our main goals were to *analyze* where the extract losses occur in which stages of the production process, to *quantify* these extract losses and (if possible) to *reduce* the extract losses.

There were *three* main projects in which I participated.
For one project, I had to map all transports of the yeast batches in the cellars and the collateral extract losses. Yeast was transported from tank to tank through pipes with the aid of pumps. These transports were necessary for several reasons and happened automatically. When no yeast was transported, the pipes were filled with water. This was because the pipes had to be 'pre-runned' (right *before* a transport) and 'post-runned' (right *after* a transport) with water in order to transport a volume of yeast. During these runs, certain amounts of yeast were wasted sometimes, because the settings in the software were incorrect. This was a result of the wrong amounts of water that were being flushed through the pipes, which caused the yeast to get lost into the drains. In order to prevent this, the right amounts of water had to be determined and the parameters had to be adjusted in the computer settings. Eventually, a balance could be made of how much extract was lost per year (and thus was saved by adjusting the settings) and this was expressed in a cash balance.

The second project was similar to the first one, but for this project the transports of other routes and products within the cellars had to be mapped. Again, possible extract losses had to be quantified and reduced.

In the third project, we had to inspect the contracts we had with our suppliers of the raw material: malt. In these contracts, the specifications of the malt (e.g. total amount, humidity, and price) were enclosed and the suppliers needed to meet these standards. Heineken had always assumed that these deliveries were within the standards, but it had never been checked accurately. Therefore, there could be a chance that we received less than what was promised. With a certain measurement method we were able to check the total amounts of the deliveries accurately. If the amounts were less than what was promised by the supplier (this meant that the margin of 0,2 % of the total weight of the cargo had been exceeded), then we received less malt than we had accounted for and we would have a loss in our extract.

Besides these three main projects, there were many other diverse tasks and assignments (e.g. taking wort-samples, giving guided tours to interns/students, etc.) and that was what made my internship challenging and fun. I had a really great time at Heineken, that offers a professional and convenient platform to interns, in which you can learn and develop many new skills and where you meet a lot of new and interesting people.

Hoogheemraadschap Rijnland

Drafting an administrative proposal for blue-green algae control in public waters

From November 2015 till May 2016, I worked as an intern at the Rijnland district water control board, or in Dutch: het hoogheemraadschap van Rijnland. Rijnland is a public governing body located in Leiden, which income comes solely from taxes. Their mission is expressed as "Dry feet, clean water". This means that they protect us from floods and droughts, clean our waste water and monitor the water quality of surface water. Where necessary and possible they take measures to protect or improve surface water quality.

I worked as a member of the department BPO (Beleid en planontwikkeling or policy and plan development) and team IWA (Integraal Water Advies or Integrated Water Advice). My project was about cyanobacteria (in Dutch often called "Blauwalgen"). These bacteria grow fast in warm water. In the summer the water gets warmer very quickly, which in the presence of light and adequate nutrients, results in a quick growth of cyanobacteria. This can result in floating scum layers which

stink, look bad and are often toxic. Rijnland tries to prevent these cyanobacteria from growing into these layers. This is done by using a number of controlling mechanisms.

For the period 2017-2021 a plan had to be made about how and at which locations controlling mechanisms should be used. With a Multiple Criteria Analysis (MCA) I made a clear, transparent and well-argued planning of mechanisms and locations for the next few years. To make this planning I had to use my academic (statistics) and analytical skills. Furthermore, I was responsible for making all the documentation (6 final documents and multiple in-between versions). In this documentation I had to ask permission of the portfolio holder for water quality to execute the plan. The process to getting this agreement included making different versions, well thought through questions, determining what was important for the board and what else could be left out etc.. In the end my supervisor, mandator and portfolio holder agreed on the planning I made.

I improved many personal skills. Because of the helpful colleagues and the compliments I received, they praised my work as precise and methodical, my confidence grew. Furthermore I have practiced my communication, analytical and writing skills. Surprisingly, I found out that I like to work on innovation which was only a side job in my internship. For my Subject Matter Expert subject I specialized on the existing innovation processes in multiple companies. When I began I did not like to search contact and talk with strangers. Furthermore, I thought that innovation was really abstract. I like to have a clear idea about what something is. To find out that I enjoyed discussing the innovation process, to search the ways how I could proceed and to find a definition for innovation was therefore surprising to me.

During my internship I had a lot of freedom to find my own way. I liked the working atmosphere and the stimulating environment. I was motivated and supported to take initiative and to give my own opinion. It was exactly the kind of work I was searching for. My internship was on the border of biology and Science Based Business. This resulted in having to use both my academic Biological skills as my acquired SBB skills. For people who are seeking application of their education and working in a company, I would really like to recommend an internship at Rijnland. Rijnland has functions which are very diverse and therefore not only Biology students are suitable.

Idris Solutions

Getting a new company to the market

My internship was at the start-up company Idris Solutions where I was responsible for the business development around their first product. This start-up, based in Leiden, began with a focus in micro-3D-printing. The two founders developed a working prototype of a printer with which they were able to produce objects with a smallest-feature-size of 1 µm versus the more common and equally expensive market alternative of 100 µm. The intention was to bring a printing service to the market for small, but exceptionally precise objects. By providing a printing service, companies who needed small objects did not have to buy a printer, furnish a dedicated clean room for the use of this printer and not even train

personnel for the use of it. They just had to order what they wanted and they would get it.

I met the two founders, Hans Peter and Peter, at the Leiden University entrepreneurial student association called Lugus (www.lugus.nu). Harmen Jousma told me to visit this place since I was interested in working in a start-up and said I might find an internship here. Once there I quickly met

several people who were looking for a new team member. The professional attitude and the product of Idris Solutions appealed to me and therefore I decided to join them. The responsibilities I would devote myself to were the mapping

of and applying for funding possibilities, help in the development of a flagship product which would show the printer's potential, and assist in all other tasks that would show up along the way of creating a new company.

Luckily for me, most of the governmental funding possibilities are quite well mapped on the website of Rijksdienst voor Ondernemend Nederland (RVO) and others on the websites of some subsidy consultancy bureaus or Life Science associations like HollandBio. Furthermore, RVO has proven itself to be a really informative source via both phone and mail. While I was searching for possible financing strategies, Idris Solutions was already in the middle of the application for the Valorization Grant from Luris. Although this grant was not awarded to Idris Solutions, it did not stop the company. However, this outcome together with some conversations we had at the time with advisors and customers, made us realize we had to

change strategy. We had to focus more on one product and less on providing a service.

That was when we picked up some projects which would result in a single product and started doing a market analysis about the appropriabilities of these products. These products involved a corneal implant and a medical device for the treatment of cancer. These products then should be produced with the printer available at Idris Solutions. Where the corneal implant had not so much technical difficulties, it did suffer on the market size. With the medical device in cancer it was the other way around: a lot of technical ifficulties, but a very promising market size. After speaking with a lot of experts in both projects it became

clear that the technical difficulties in the medical device could be solved, but the market size in the corneal implant couldn't. However, the technical difficulties of the medical device could only be solved if we would drastically change the design. It was even so drastically that the micro-3D-printer was not necessary anymore. However, due to the promising potential of the medical device, we decided to pursue it in its new form and cut off the corneal implant. After we solved all technical problems on paper we revisited the experts again to ask their opinion on the matter. They were all convinced about the technology and told us to start testing.

However, for tests we need a laboratory and chemicals, for a laboratory and chemicals we need money, and for money we need an investment. The Vroege Fase Financiering (early phase financing) suited our company and strategy best. It's a loan with very low interest given by the government to validate innovative products which have not been tested yet. However, there are some conditions before you can get this funding. We first need to find an investor who might be willing to invest after the early phase project and also we needed to earn the title innovative starter. This title can in turn only be earned when a successful WBSO application (R&D stimulation subsidy) has been granted to the company. And to get all previous, we also needed a fully developed business plan about this new project. Since the product is also very sensitive for competition, we decided it would be best to also apply for a patent.

This was the moment where we went 'shopping' for patent attorneys. During this time I learned a lot about the process of getting and maintaining a patent, both in the Netherlands as well as abroad, which countries are hard to have a patent in and what the costs are. We also learned that

Octrooicentrum Nederland can do a patent search for free (which can easily cost up to €1000,- at a patent attorney). In between these meetings we started writing our business plan. I was responsible for the planning part using the different possible scenario's regarding potential subsidies, grants, loans and investors. I also made an overview of the required budget and started with the WBSO application. Doing my internship in a start-up felt like a rollercoaster. There were moments where everything seemed to go fine, but within no time a small thing could cause a lot of trouble. There was even a moment where there was no sight in the near future on a product anymore which was when I wondered why I actually did this internship. However, when something did go right (for instance when we came up with the new product and every expert seemed to like it), it immediately felt so incredibly rewarding that it overshadowed the negative aspects. At first I didn't really know what I learned from this internship, but looking back I can say I learned so much from this experience. I learned a lot about finance strategies for early phase start-ups, product development, patenting, the investor landscape, legal forms of enterprises and thinking more like an optimist. At the moment I will continue in Idris Solutions to acquire capital for valorisation of the product and act as one of the co-founders of the company around this product.

ING

Data Management at a Financial Institution

The Organisation

ING is a Dutch multinational banking and financial service corporation, founded in 1991 through the merger of NMB Postbank Groep and Nationale-Nederlanden. Today, ING serves over 48 million clients in over 40 different countries. ING primarily operates in the domains of: retail banking, direct banking, commercial banking, investment banking, asset management, and insurance services. Consequentially, the group is ranked 49th on the Fortune global 500, with a revenue of $114,295,000,000. The group is also the Dutch representative of the inter-alpha group of banks.

Data Management

Data Management is a part of Bankwide Customer domain, resulting in the department providing a service to the entire bank. The three main objectives of Data Management are to:

- Provide a 360° customer view – displaying of all customer information, processes, and key financials to a bank-wide dashboard
- To integrate customer related processes – simplifying the process to gather customer information by using the output of one process as the input of another
- To coordinate customer related data strategy – Defining who are data controllers, and who are data processors.

The department is also responsible for ensuring data is not polluted, as well as providing risk related data to Corporate Credit Risk Management (CCRM).

Projects

One of the best aspects about performing an internship with Data Management was the ability to choose projects that were of most interest. Having a scientific background, two of my greatest strengths are my analytical skills, and ability to understand processes. With these skills, I chose to work closely with CCRM on producing Risk extracts from various financial models, as well as ensuring

the quality of data is maintained. Along side these projects I would also perform the operational work of the department.

Some exciting aspects of performing an internship with ING are the extra-curricula opportunities, such as attending courses and seminars, or entering an internal innovation competition.

Experience

I thoroughly enjoyed my experience at ING, in the Data Management team, because it incorporated both learning new skills, and using pre-acquired skills. Moreover, understanding how to effectively use data, ensuring it is of a high quality, is going to be invaluable for the future. The saying 'Data is the new oil' may be cliché, but it is more true than ever as of late as more and more companies turn towards data to make smart decisions.

Being a part of Bankwide Customer Domain was particularly fascinating because of its unique position, providing a clear overview of banks operations and structure. Furthermore, by being able to choose projects you can align yourself with a particular unit of the bank, in my case - Risk.

One of the highlights of the internship came from the Innovation competition, where my idea progressed to the final 90 of over 1800 submissions. This presented a unique opportunity to not only practice my innovative skills, but to also exercise my project management skills by constructing a team to help me develop my idea.

In my opinion, the internship component of Science Based Business was the best aspect of the course. The internship perfectly complemented the theoretical side, giving the chance to exercise and practice your skills in a real environment. I feel I have left ING with a solid foundation of financial knowledge, along with a whole host of new skills. The internship has certainly prepared me for a future career in a financial capacity.

Wrong Way Risk and Default-time Correlations - An Impact analysis and an overview of different models

During this internship at ING, the focus was on wrong way risk (WWR) modelling. Learning about these models required me to do background research into interest-rate models and to look at Credit Valuation Adjustment (CVA). Assume that we have a certain exposure traded between the bank and a counterparty, consisting of interest-rate products for example, with a given maturity. This contract expires at that maturity, but before that given time, it might happen that a counterparty and/or bank defaults which can result in a loss in the underlying portfolio. The price a bank has to charge for this default risk is CVA. Especially since the financial crisis in 2008, CVA models have evolved, because roughly 2/3 of the losses during the financial crisis were due to changes in CVA 1.

CVA can be seen as the price of default of a counterparty and calculating this also involves default of the bank and the exposure. Often it is assumed that default events and exposure dynamics are independent, however there are several practical case where this assumption is wrong and there is an obvious dependency between defaults and the exposure. Models which cover these dependencies are called WWR models. One possible choice of such models are so-called Copula models, where exposure and defaults are independently simulated and the copula then introduces

correlation between these defaults and the exposure. One main advantage of such models is that they are computationally efficient.

Other models introduce dependence via modelling stochastic hazard rates. The idea here is to simulate stochastic hazard rates simultaneously with market factors, where dependence is introduced between the underlying stochastic dynamics of the stochastic hazard rates and the market factors. Showing the impact of using such a model on CVA, especially compared to the Copula model, was the main goal of this internship. Besides that, I had to look at default-time correlation, which is a measure of the correlation between the default-times of the bank and a given counterparty.

The usual method for finding market-implied default-time correlations, would be by using market quoted credit products which are related to both a bank and counterparty. Such a product could be a basket default swap (BDS). Unfortunately, the market for such products has become illiquid in the last years. Hence, we have to use estimation using historical data.

For the stochastic hazard rate models, I have been looking at two different types of models, namely the Cox-Ingersoll-Ross (CIR) model and the Markov chain model. The CIR model is a well-known model, which can also be used to simulate stochastic hazard rates. The Markov chain model is a model that I had to set up myself, which solves some of the issues that the CIR model has.

The CIR model can be used to simulate stochastic hazard rates and by imposing correlations at the underlying Brownian motions of the stochastic hazard rates, we have a joint simulation, where dependence comes from the correlation. The default times which can be sampled from the paths, are then dependent, because of the correlation. Still, this does not lead to default-time correlations over 4% for calibrated processes. When one wants to make this bigger, we can increase volatility, but even in the most extreme cases it does not give default-time correlations over 10%.

The Markov chain model is a model which behaviour is calibrated based on historical observations of the credit spreads, available at the market. This process then jumps randomly and we introduce here a jump to default. The jumps to default are then state-dependent and this is where we choose the structure such that we have a fat tail, which was the issue of the CIR model. In the end, setting up a 2-dimensional Markov chain and sampling default times from there, leads to higher default-time correlations than with the CIR model, but the final values were still below 15%.

It seems for both models that the higher the level of the stochastic hazard rates, the higher the default-time correlation. This is something that is undesirable and does not fit the expectations. Hence, other types of models than Stochastic Hazard Rate models should be used to obtain default-time correlations.

If we jointly simulate the stochastic hazard rates from the CIR model with the market factors by imposing correlation between the underlying Brownian motions, we have path dependencies and this leads to CVA results, where we now included correlation between exposure, the stochastic hazard rate for the bank and the stochastic hazard rate of a counterparty by the correlation between the Brownian motions. If we only impose correlations between the Brownian motions of the stochastic hazard rates, the results for CVA for different values of this correlation are small, which also follows the results on default-time correlation. The Copula model instead gives results which can differ hugely from CVA coming from the stochastic hazard rates, especially for default-time correlation going to +1.

When we would also introduce correlation between the Brownian motions of the stochastic hazard rates and the market factors, we see that the impact on CVA is much bigger, but in comparison with the results of using the Copula model, we see that the difference between these models can become huge, especially for correlations between exposure and default going to -1 and +1.

The CVA value is highly dependent on the three correlation parameters, which are needed for the Copula model. Obtaining these correlations from the market would solve this, but there has been no method to do this so far for all three correlations. More research would be needed to obtain these correlations.

Innovation Booster

Innovation consultancy: Business analysis

My six month internship was one of the most important learning experiences of my entire university education. Innovation Booster is a young company that helps large organizations in their innovation processes to make them future proof in an ever faster changing landscape. They do this by providing solutions and propositions on the boarder of technology, design and business.

The key of Innovation Booster's method is the lean startup, which they use for setting up business units for customers outside the traditional organization. During my time as an intern I worked on a wide variety of projects in a wide variety of sectors. Two examples of such projects are the MAEXchange project and a project for the Watersportverbond. The MAEXchange is a project in which Innovation Booster together with a partner, Kracht in NL, wants to make the sector of social initiatives in The Netherlands transparent and wants to quantify their impact on society. They want to do this by creating an online platform, which was built by two programmers during the course of my internship.

My tasks were, among other things, setting up an online questionnaire for the social initiatives, setting up the requirements for the website and communicating these to the programmers, keeping contact with social initiatives and writing content for the business plan. By the Watersportverbond Innovation Booster was asked for ideas to generate more revenue and/or how to make the activities of the Watersportverbond more visible to their members.

During my internship period Innovation Booster came up with these ideas during brainstorm sessions, presented the created concepts to the customer, worked out a business case for one of the proposed concepts and eventually found a third partner for working towards a first pilot of the concept. For this project I generated almost all written content. I created the report on our ideas, wrote the business case and put together a first version of partnership agreement. I also managed the contact with the customer and researched potential competitors in the market.

Other tasks I performed in the other various projects were spotting trends in society, business and technology, taking part in brainstorm sessions, making sector and trend analyses for customers, thinking along on projects set up in house, visiting inspirational (business) events and researching potential business opportunities. My internship period at Innovation Booster first of all gave me a feeling of how it is like to work in a business environment. Then of course, I learned a lot about business in the past six months, in theory, but more importantly in practice. I got a better idea now on what innovation is, what it means to companies and how it is organized in many companies. Getting familiar with concepts like the lean startup method, the business model canvas and the blue

ocean strategy gave me an idea about how it should ideally be organized. I was very surprised by how short term oriented most (large) organizations are and how they treat innovation in this respect.

A practical point I will take away out of this internship is how to present written and oral in a concise and attractive way. My internship supervisor and the other Innovation Booster's partners were very satisfied with my performance, as was I with my internship period. The internship period really opened my eyes to a whole lot of new career possibilities outside the standard career tracks. I really liked working in a young and small company, like Innovation Booster. It means that you are very closely concerned with everything that happens in the company and that you can really make an impact on the organization. It also means that you get a lot of responsibility and freedom to perform tasks on your own way, since there are no formats or regulations. Besides, the contact with the other (young) team members was very close and often much fun. If I had to choose for an internship again, my choice would definitely be the same. That is why I would recommend everybody to do an internship at Innovation Booster or other young organizations alike. Entrepreneurship really is contagious!

Janssen Biologics BV

Medical information management within the department Medical Affairs

During my six-month internship at the Medical Affairs department of Janssen Biologics B.V. (previously Centocor) I had the opportunity to develop myself besides adding value to the organization. Janssen Biologics B.V. located in Leiden, the Netherlands, falls within the pharmaceutical segment of the Johnson and Johnson companies. Their innovative products focus on three major disease categories: cancer, cardiovascular and immunological disorders. Remicade, Simponi, ReoPro and Stelara are some of the products that Janssen Biologics B.V. introduced.

My application on this internship was not due to interest on a certain project, but on the business structure of the company, especially the Medical Affairs department. After 3 interviews, I had the impression that these activities best suited me, because of my educational background. Besides the interest in their activities, I also noticed a different work environment that made me more curious to perform the internship at that department.

Soon after the start of the internship, I was involved in ongoing projects and also started on the projects related to my internship assignments. Some of the projects were based on team work, but other projects, including my internship assignments, were performed independently. During my internship, I did not only become familiar with the day to day responsibilities, but also understood why specific activities are important within the Medical Affairs department.

The projects during my internship were mainly focused on providing Medical Affairs support for Remicade and Simponi to the Johnson & Johnson affiliates. The projects I was involved in were related to medical scientific information within the gastroenterology and dermatology franchises. The primary focus was on maintaining high quality standards on medical scientific information around Remicade and Simponi to facilitate effective, scientifically accurate and legally compliant communications and interactions between Janssen companies and health care professionals. The aim was to provide medical information support to internal colleagues and external customers who were interested in certain products. Some activities included creating and updating documents

according to standard writing guidelines in order to respectively provide or present the recent information upon requests or international congresses (ECCO and DDW).

Other projects aimed to support the performance of activities within the franchises of the Medical Affairs department. One of these projects had the purpose to improve the management structure on updating medical materials within the Medical Affairs department. Therefore an inventory was performed that comprised an overview of Medical Affairs documents on the shared platform to efficiently maintain the documents up-to-date and compliant.

Another project had the purpose to provide a real-time insight into the global competitive pharmaceutical landscape in interest of the Medical Affairs department. In order to keep a scientific accurate and updated overview of the competitive products launched, a list of pharmaceuticals in interest of the gastroenterology, dermatology and rheumatology franchises was developed. With this project it was possible to track competitor's information more efficiently. Searches on competitive activities were more effective as these searches were stored in a relevant, trustful and up to dated way.

All the internship activities were related to the scientific background of the products which was the main motive for choosing this internship. Besides applying and enhancing my acquired knowledge and skills during this internship, it was possible for me to discover how science is related to the business activities within the Medical Affairs department of Janssen Biologics B.V. Looking back now; I can describe this internship as being interesting and very useful for my further career. According to my feeling and experiences, this internship was completed successfully as it did not only add value to company, but also to me. I would definitely prefer my future career in such particular field of interest, because the combination of science and business activities is really something I see myself continuing with.

Jobvector

Sales Support Intern and Junior Sales Consultant at a Science Career Center

Science, Engineering and Medicine – those are the three divisions jobvector stands for and focuses on as a specialized online job board in Germany, Austria and Switzerland. Jobvector's mission is to help scientists, health professionals and engineers to explore their interests and to pursue their professional endeavors. Therefore, the company offers a highly focused opportunity for professionals and specialists to find jobs and integration into their profession, while it also provides an efficient set-up for firms to find exactly the potential employees they are seeking. Jobvector offers deep insights and advice to enable companies to find the best talent, counting with broad expertise acquired through more than 16 years of market presence combined with candidate focus and industry knowledge. Next to their activities as best specialized online job board for scientist, engineers and health professionals in Germany, jobvector also organizes recruiting events in four German cities each year, the jobvector career day, which attracts around 1,500 applicants at each location. Additionally, the career guides "Karrieretrends für Naturwissenschaftler, Ingenieurwissenschaftler und Mediziner" and "Karrieretrends für Ingenieure" are published twice a year and distributed through the broad partner network, universities and career events, among other expert channels. During my six month internship I was able to experience the Sales Support department for the first three months and to obtain an even broader insight into the company during the second half of my internship as a Junior Sales Consultant. The tasks and responsibilities are quite different, since the Sales Support department coordinates all the processes and

organization in the background, while the Sales department directly interacts with the customers and focuses on customer care. By participating in multiple in-house trainings at the beginning and also over the course of my internship, I was well grounded in all the processes, tasks and duties to significantly support the organization independently of my position. In Sales Support I learned to do market, competitor and industry analysis as well as order transactions, including customer registrations, processing and the purchase of new credits. In addition, the preparation and organization of on-site meetings, exhibitions and fairs, neat documentation, tutoring new interns as well as the maintenance of jobvector's CRM belonged to my main duties. Having a great service orientation and to constantly think along during the different tasks and assignments, taught me to prioritize, to make good decisions quickly and to respond flexibly to changing situations, while I also learned to maintain high concentration, diligence, accuracy and perseverance when working on longer assignments. As a Junior Sales Consultant I represented jobvector at exhibitions, meetings and in conversations with customers, holding sales talks and pitches as well as focusing on personal consultations, new customer acquisition, customer development and customer care. Receiving sales specific in-house trainings and valuable feedback from my colleagues has provided me with the ideal setting to improve my skills on a daily basis and to increase my performance. Therefore, I have made the experience that having success in sales depends on a combination of various factors, including a mix of communication and asking the right questions, empathy, flexibility and quickly adapting to a specific situation, while always being yourself. As a third pillar of my internship I conducted a sales and growth strategies project, theoretically based on the Ansoff Matrix and its four alternative growth strategies, giving focus to market penetration and market development due to representing jobvector's current strategy. I conducted a cost-benefit analysis of new customer acquisition days, differentiating between the successes of new customer acquisition in a new, growing sector compared to established areas. So far my results have shown that new customer acquisition in the novel sector represents a high potential area and first success stories have been accomplished. Nevertheless, I am planning to expand the time frame and dimension of my project by obtaining more data in order to draw significant conclusions, to analyze the medium and long term success to finally give sustained recommendations and suggestions for improvement. The internship at jobvector has been a valuable learning experience and provided the perfect environment to put all the knowledge I had acquired during the Science Based Business courses into practice, while obtaining novel skills and making new experiences in a business setting. I have obtained a good understanding of the business model of jobvector as a specialist career platform, while getting an insight into the current market and industry situation. Next to expanding my professional network, I have gotten a better understanding of job opportunities available in Biology & Business. I have improved my ability to handle various situations simultaneously and to prioritize tasks according to their importance and urgency. I now clearly accept the challenge of making mistakes, while giving focus to what I can learn from them. The internship required me to be very flexible in what I do and to develop an increased ability to feel empathy with every single person. In the context of my internal research project and the theoretical deepening I have broadened my knowledge about sales and growth strategies. Last, but definitely not least, I learned that I enjoy working in sales and that I am doing a good job as a Sales Consultant. This internship has opened my eyes for a business area I did not have in mind as a potential job opportunity after graduating, however now I look forward to starting my job as Sales Consultant at jobvector in 2016.

Kempen en Co

A work experience internship in investment Banking

Finding and securing an internship position

Finance and financial issues have interested me from an early age. During my college years I

have, besides studying, frequently engaged in performing the role of treasurer in various boards and for various foundations. I also found the SBB course in financial management, which I attended in 2014, very fascinating and it strengthened me in the idea that finance was a direction that I would like to continue in and would be a perfect opportunity for my SBB internship.

I tried to determine what aspect of the financial/banking world appealed to me the most by

reading various books and articles and found that corporate finance appeared to me as the most challenging and most interesting part of the banking world and the right area for me to do an internship. I looked for possible internship positions at corporate finance divisions of various (investment) banks. I applied at the smaller specialized investment bank Kempen & Co in Amsterdam because it was a renowned specialized investment bank, with a strong focus on both Corporate Finance and on Life Sciences. I did the application through and with help of Ebbinge, a leading HR consultancy firm, to maximize my chances of being invited for an interview. And indeed I was and after a number of interviews I was hired for an internship at Kempen & Co Corporate Finance for three months.

My time at Kempen & Co Corporate Finance

The saying "Time flies when you‟re having fun" is certainly applicable to my time at Kempen.

Despite working on average 10-14 hour a day, the three months flew by. I learned a great many things during my internship. During my internship I was treated as a regular first year analyst.

This meant that I was assigned to a wide variety of tasks and projects. I was connected to at least 2-3 projects simultaneously during the entire course of my internship. The main features of my work included collecting and analysing market and corporate information, conducting financial analyses (such as valuations), delivering a contribution to internal and external strategies, designing client presentations and being actively involved in discussions. I became a pro at Excel and PowerPoint, became familiar with many different databases and learned a lot about all the aspects of corporate finance, not in the least compliance, legal and cultural aspects.

What was a very nice surprise was the working atmosphere at Kempen Corporate Finance. I had expected to be working in a cubicle all day (and night) and to be in contact with analysts and associates only and the working environment to be quite tough. Instead the floor of Kempen Corporate Finance did not have any walls, so everyone (from interns to the managing directors) is in the same open space, sitting at small islands of 4-6 desks. And the working environment was, next to very professional, also very relaxed. As an intern I could talk easily with everyone, no one was ever too busy to answer a question, from analysts to managing directors. This was also the main reason for me to decide after about two months into my internship that I wanted to continue in this line of work at Kempen. So the last month of my internship, apart from keeping my performance at a high level, I engaged in lobbying for a job offer, getting myself in the picture and making my interests and

ambitions known and with success, because I was invited for the final round interviews, which will take place early January, after the completion of this report.

What was also a welcome aspect of my internship at Kempen Corporate Finance was the fact that, although I was operating in a completely different field, I could still use some of the knowledge from my master (Chemistry) since I was active in the Life Sciences cluster and thus dealt mostly with pharmaceutical, biotech and medtech companies during my internship.

Conclusion

My three months at Kempen & Co was one of the most intense periods in my life. To be emerged in such a different world, with such high demands and expectations, was a very valuable experience. The stories about the steep learning curve etc. proved to be more than true, I learned a very great deal about corporate finance, finance in general, working hard in a super professional environment and I learned a lot about myself too. The internship lived up nicely to my expectations, mostly because I had a clear picture of what the internship would be like from information from the company website, the interviews and the books and articles I read about investment banking beforehand.

So for me it was an excellent choice to do an internship at Kempen Corporate Finance and I would recommend the internship to anyone who has an interest in investment banking. Kempen & Co is a good place for an intern, you are treated well (you get a lot of support from everyone on the floor, no one is too busy to not answer your questions, you don't make the longest days on the floor, you don't have to work weekends and diner/drinks/etc. are paid for) and there is real proper supervision with a personal mentor and an elaborate review moment midway and at the end of the internship. Of course you are thrown into the deep from day one, but that is somewhat the idea and expectation of an internship at an investment bank. Finally it is also the perfect way in if you want to end up working for Kempen & Co Corporate Finance or another investment bank in general, almost all first year analysts that are hired have previously done an internship in finance.

KLM

Safety Checks at KLM Ground Services

My six-month internship at KLM Ground Safety, part of the department Ground Services, revolved around a safety indicator named Ramp Line Operating Safety Assessments, or Ramp LOSA for short. With Ramp LOSA, a sample of in- and outbound flights of KLM at Schiphol is chosen randomly, and all the various ground processes are assessed for their safety and compliance with standards and procedures. Examples of these ground processes are refueling and the loading of luggage, and acts observed are for instance driving speed, wearing protective gear on using safety rails. All these acts are assessed as Safe or Unsafe by an unbiased LOSA observer, employed by KLM, and the results are processed anonymously and used to gather data to improve safety on the airport ramps. In this case unbiased means that the observer only judges if things go according to procedures or not, withholding any personal comments or judgments.

Ramp LOSA was set up in 2011 by interns from the Hogeschool van Amsterdam, commissioned by Gert Jan van Hilten, Manager Ground Safety at KLM. In 2012, Ramp LOSA was fully implemented at KLM and a full-time Ramp LOSA coordinator was assigned.The tasks of this coordinator were to

ensure the integrity of the program, manage and train the LOSA observers and report to the departments involved and upper management each quarter.

When I met up with Gert Jan in August 2015, both KLM and Ramp LOSA were at a crossroads. KLM was undergoing its greatest reorganization in its existence, with a prognosis of 25% of the ground staff losing their current jobs. For LOSA, a new coordinator had just been employed and there were plans to get to project to version 2.0, starting with the development of a Ramp LOSA application for iPad. Until now, the assessments were being done on paper forms.

Gert Jan had seen my resume and was interested in the prospect of a mathematician working on the project, because he was of the opinion that deeper statistical analyses could be done for discovering trends and drawing useful conclusions. Furthermore, he wanted me to build a reporting tool that could work with the Ramp LOSA application to automatically and instantly calculate some key performance indicators, such that ad hoc reporting could be possible and making a report would take the coordinator considerably less time.

Although the exact details of my assignment were yet unclear, I was interested by the challenge it would pose, and thus I started my internship at KLM on the first of October. After reading up on the project and everything that happens in and around an airplane between landing and take-off, I started doing statistical analyses, trying to come up with valuable conclusions. These analyses quickly led to some interesting results, such as a statistically significant difference incompliance at certain gates or at certain times of the day.

ii

But not everything in my internship went the way it was planned. As KLM was reorganizing, departments were being careful in spending funds, not know-ing whether projects would still continue in the new organization. Thus, it became unclear whether resources would be granted for the Ramp LOSA application, on which I had to base my reporting tool.

After deliberating with my supervisor, we decided that instead of making a reporting tool around the application, I would base the tool on the current way of data collection and storing. Thus I started working on a dashboard in Microsoft Excel that could automatically filter out key performance indicators and compare the results to different quarters or years in the past. With the application being delayed over and over again, this dashboard was used to make the Ramp LOSA reports for both the last quarter of 2015, the first quarter of2016 and any ad hoc situation that would come up.

Besides the statistical analyses and building the reporting tool, I got more and more involved in the Ramp LOSA project as a whole. I helped the RampLOSA coordinator in whatever way I could, where my analytical background often came in handy. For example, I assisted a lot in discussing the design of the application, which went on regardless of the availability of resources. Our wishes regarding the app and the flow of it had to be very clear before they would begin building it, because alterations afterward would probably cost extra. To do this I made several flow charts and matrices to make our meaning clear.

Next to assisting the LOSA coordinator, I also came up with some ideas of my own to improve on the project. One of these was employing a weight factor for the severity of violation of certain procedures, and to decide what weights to assign to the processes I organized a survey for several different managerial layers, from VPs to ground staff.

Looking back, the most important things of my internship at KLM were not the things I created or achieved, but the experiences I had and what I learned about myself. I have experienced what it can be like for someone with a purely scientific background to work in a large company, and where the things I learned during my studies can be applied. But the most important thing I learned about myself is that I enjoyed myself the most during my internship when I was working with numbers. This made me draw the conclusion that I am not interested in a purely managerial job, but still want to do some form of analytics, something I would never have discovered had I not done this internship.

KplusV

Market Research for start-ups in the greater Amsterdam Area

I did my SBB internship at KplusV Organisatieadvies from April to October 2013. KplusV Organisatieadvies is a consulting firm with two distinct expertise areas. The first is government consulting and the second is consulting for entrepreneurs. During my internship I focussed on entrepreneurship. Entrepreneurs from all over the country and from all different segments come KplusV to ask for help on e.g. strategy and finance. During my internship I was able to work with entrepreneurs from several of segment, because I worked in three projects. The first was DWI, where KplusV assesses the feasibility of starting companies in the greater Amsterdam area. For this project I did the market analysis, so I assessed the market potential and the competition for instance. The companies in this project were often low tech.

High tech companies I encountered for my work for The Start-Up Network Amsterdam (The SUN, see www.thesunamsterdam.nl), a one-stop-shop for starting companies in the greater Amsterdam Area in the segments of ICT or Creative Industry. The network consists of private and public parties (from the municipality of Amsterdam to ABN AMRO to Vodafone) and KplusV executes the project management as well as taking up the strategy and financial challenges.During my internship, I worked on several business plans to sharpen the strategy and used the immense KplusV network to find informal investors for different starting companies that participate in The SUN.

The third project I worked for was Ready2Scale (R2S, see www.ready2scale.com). This is a similar network as The SUN, but instead of helping starting companies, this network helps companies to grow. The goal of the network is to help companies with a turnover between €500k and €3M to double their turnover in four years.

During my work for these three projects I was able to put all the SBB and RBB theory into practise. All the KplusV colleagues assisted me in completing my learning goal to find out more about the assessment of companies, both by looking at the entrepreneur and the business plan. Futhermore I discussed the possibility of becoming a consultant and found out that I really enjoy this profession. It can honestly say that I had a great time during this internship and I am really proud to say that I am starting at KplusV as a junior consultant from November onwards!

Exploring New Businesses, Innovation and Funding Mechanisms

Ter invulling van mijn Science Based Business stage ben ik gedurende een periode van vier maanden werkzaam geweest voor KplusV organisatieadvies. KplusV is een organisatieadviesbureau met 90 medewerkers, gevestigd in Arnhem en Amsterdam. Het bedrijf richt zich op economische en maatschappelijke vraagstukken en is werkzaam voor zowel de overheid als het bedrijfsleven in Nederland. In Amsterdam speelt KplusV in het veld van Ondernemerschap, Innovatie en

Financiering. Ondernemers uit verschillende segmenten kloppen bij KplusV aan voor strategisch advies en hulp bij het zoeken van financiering. Amsterdam is tevens de plek waar mijn stage zich heeft afgespeeld.

De werkzaamheden die ik tijdens mijn stage heb uitgevoerd hebben betrekking gehad op vier grote projecten die mij in staat hebben gesteld om veel van het bedrijf en haar klanten te leren kennen. Het project waar mijn stage zich in eerste instantie op heeft gefocust was Dienst Werk en Inkomen (DWI). KplusV toets de levensvatbaarheid van ondernemingen in Amsterdam en omstreken, die een kredietaanvraag hebben gedaan bij DWI. Bij binnenkomst van een aanvraag heb ik mij voornamelijk beziggehouden met het uitvoeren en uitwerken van het marktonderzoek. Naar aanleiding van het marktonderzoek en een gesprek met de ondernemer, wordt een sluitend adviesrapport opgesteld en teruggekoppeld aan DWI. Tijdens het uitvoeren van de werkzaamheden heb ik marktonderzoek leren doen, veel van verschillende sectoren geleerd en geleerd om adviesrapporten te schrijven.

Door jarenlange ervaring en het uitgebreide netwerk, is KplusV goed in het opzetten van kennisintensieve ondernemersplatforms. In Amsterdam is KplusV de uitvoerende partij van The Start-Up Network Amsterdam (The SUN) en Ready2Scale (R2S). Beide platforms zijn tot stand gekomen door samenwerkingen van publieke en private partijen (bijv. Gemeente Amsterdam, provincie Noord-Holland, SOLV advocaten en ABN AMRO). Met het geld en de kennis dat door de partijen bijeen is gebracht, bieden de platforms gesubsidieerd maatwerkadvies aan ondernemers. Het netwerk fungeert als een plek waar de ondernemer met alle vraagstukken terecht kan, een zogenaamde one-stop-shop. De platforms zijn bedoelt voor innovatieve starters (The SUN) of groeiondernemers (R2S) die zich in de ICT- of creatieve branche bevinden. Ondernemers die aan de eisen voldoen (bijv. gevestigd in de metropoolregio Amsterdam), kunnen na selectie toegelaten worden tot het netwerk. Voor beide projecten heb ik mij bezig gehouden met het screenen, scouten en het op gesprek krijgen van ondernemers. Voor The SUN heb ik mij daarnaast bezig gehouden met het aanscherpen en herschrijven van businessplannen en pitches. Tijdens deze projecten heb ik vaak contact gehad met klanten en heb ik veel kennis op kunnen doen over ondernemen in het algemeen.

In het vierde grote project heb ik meegeholpen aan het schrijven van een strategisch adviesrapport voor de gemeente Amsterdam, Almere en Utrecht. KplusV kreeg de opdracht om te analyseren en uit te zoeken hoe de kapitaalmarkt in deze regio's het beste (her)gestructureerd kan worden. Meehelpen aan het schrijven van dit rapport heeft mij geleerd om met harde deadlines te werken en snel nieuwe informatie eigen te maken.

Door de verantwoordelijkheid die je toebedeeld krijgt, de diversiteit van de werkzaamheden en de vrijheid om aan projecten deel te nemen, heb ik in korte tijd veel kunnen leren. Het was mijn doel om er achter te komen of de consultancy bij mij past en daar kan ik overtuigend ja op antwoorden. Ik heb mijn stage bij KplusV, ook door de goede sfeer met collega's, als zeer leuk ervaren. Dit gevoel was gelukkig wederzijds en zal in de nabije toekomst wellicht nog een staartje krijgen!

Assessing opportunities for Participatiefonds Duurzame Economie Noord-Holland

KplusV is an company which consults many different types of organisation and companies. There are five teams within KplusV each positioned on a market need. During my internship I was involved in the financing team. This team has as a mission to improve the financial market for (innovative) SME's. In order to reach this mission statement they have created and established different types of platforms, do research, manage funds and collaborate with different partners. One of these

collaborations is the "Money meets Ideas" platform, the informal investment (business angel) platform of Rabobank. Money meets Ideas hosts meetings where informal investors and entrepreneurs meet. Another activity of KplusV, where I worked for the most of my time, is the management of the "Participatiefonds Duurzame Economie Noord-Holland" or PDENH. KplusV manages this fund in collaboration with the venture capitalists of StartGreen Capital. Together they strive to reach the mission of the fund, to decline CO2 emission in the province of Noord-Holland, to boost the local economy and to make the fund revolving. To do this the fund invests in equity of projects or companies that are operating in the field of cleantech. The fund focusses on companies and projects in the following key markets of cleantech: solar energy, wind energy, biomass and sustainable buildings. For these investments the fund currently has a budget of € 30 million, which can grow in the future towards € 85 million. The PDENH ticket sizes range from € 250.000 to € 3 million. The total investment should be at least double of what is required of PDENH, where the rest of the investment comes from private investors. This is due to European rules and regulations on support to companies by (local) governments. Since the founder and shareholder of the fund is the local government of Noord-Holland, the fund uses a thorough stage gate model before a company or project can acquire funding. The first step towards funding is to assess whether or not there is a fit between the investment opportunity and PDENH. This is mostly based on a business plan and an intake interview with the entrepreneurs. If there is a good fit, PDENH works on a document which is presented to the independent Investing Committee (IC), to ask for a "pre-advice" (step 2). If the IC gives a positive pre-advice, the due diligence (DD) and further negotiations can start (step 3). The results of this are then presented to the IC which then gives an "Advice" (step 4). Finally the province has to agree with the proposed investment (step 5). During my internship I worked mostly on the screening of the business plan, to assess whether or not there was a fit with PDENH demands and regulations. Furthermore I worked on the documents for the IC pre-advice. Besides the ideas of the entrepreneur this document also needed to contain general ideas about why the fund invest and what returns on investment were expected (financial, economical and CO2 savings). The creation of these documents was an interesting task because business plans do not always fit the requirements to easily write a pre-advice document. However these challenges made the creation of these advice interesting, it was an good activity to show analytic skill and puzzling the pieces together. Learning outcomes during my internship can both be found in the development of my skills and on a personal level. On the skills level I have learned a lot about the operations of venture capitalist and what the aspects of business plans are important. On a personal level I have discovered what kind of work I like and what not so much. My conclusion is that a SBB internship is a valuable experience, because it allowed me to gain experience on the work floor and to discover in what line of work I would like to start.

KPMG

Financial Risk Management

Why a Science Based Business internship? As a student Astronomy I experienced during my bachelor research that fundamental research is intriguing, complex and challenging. I also experienced that the programming, experimenting and writing are not necessarily producing satisfactory results. To develop more skills outside my study program and introduce myself to the world outside academia I choose the master specialization Science Based Business. The SBB fundamentals courses sparked my interest in Finance. Around this time fellow students told me about their experience in their internships. From these stories I concluded that an internship at a consultancy firm would fit me. At an “inhousedag” at KPMG I clicked with the consultants and a few weeks later I applied for an internship at KPMG. The firm and the department KPMG B.V. is a multinational with offices in many

countries. The national branches are independent legal entities and are a member of KPMG International Cooperative. It's one of the big four professional services networks in the world. KPMG employs 152,000 people worldwide and 3,200 in the Netherlands. KPMG has three lines of services: audit, tax, and advisory. Its headquarters were I did my internship is located at Amstelveen. Financial Risk Management is part of the sector consultancy. In Amstelveen there are around 30 consultants working at the department of Financial Risk Management. The consultants work on various projects for a variable amount of time for banking, insurance companies and pension funds. Tasks and responsibilities My tasks within KPMG were that of a Junior Consultant. For my internship this meant that I participated in multiple projects in the insurance, pension and banking industry. These projects ran both simultaneously as consecutive. As an intern (Junior Consultant) I participated for example in the credit risk evaluation of a large bank. This bank evaluates the risk it has when lending money to a customer by calculating a probability of default (PD for short) for each customer based on their internal credit risk model. My work was to evaluate their model. More specific I looked if their model predictions for various customer groups match real live outcomes. In another project I prepared high quality documents to prepare two of the annual CRO Forum meetings. The CRO Forum is a meeting of the chief risk officer of the biggest insurance companies in the world. In four meetings per year the CRO's come together to discuss best practices in risk management, regulatory requirements and insights on emerging and long term risks. These two examples are just a small sample of the many projects I worked on during my internship. The internship experience During my internship I learned a lot besides new knowledge on banking and insurance. First of all I learned to professionalize my communication with colleagues. I experience the need to set measurable goals and agree on the available time span for the project. I learned to train my time management skills and to be flexible. I discovered the power of politics and the influence it can have on the work. I found my internship challenging, complex, divers and all together Confidential totally worth it. I would recommend every student, especially students in science to apply for an internship cause it will broaden your view and teach you skills that you will have difficultly learning in academia.

LURIS

The assessment of knowledge utilization in NWO grant applications

Leiden University Research and Innovation Services (LURIS) is the Technology Transfer Office (TTO) of the Leiden University and the Leiden University Medical Center (LUMC). The aim of LURIS is to establish as many sustainable and outstanding partnerships, both with academic and non-academic parties, as possible and to attract as much research funding as possible in order to enhance the societal impact of research that is performed in Leiden at the Leiden University and the LUMC. LURIS consists of approximately 25 professionals that are divided into five teams: Knowledge Partnering, Entrepreneurship, Legal Affairs, Public Relations and Grant Development. The Grant Development team, of which I was a team member, is responsible for increasing the chances of getting the best research projects funded. Grants are of increasing importance for academics to perform their research and to advance their academic research careers.

In numerous European grant schemes and in all funding schemes that are currently administered by the Netherlands Organization for Scientific Research (NWO) the impact of research beyond its immediate academic field – knowledge utilization – is now an official criterion in the ex-ante assessment of grant applications. Every academic who submits an NWO grant application is therefore requested to devote some paragraphs to knowledge utilization. According to NWO, knowledge utilization is 'a process promoting the use of the outcomes of scientific research both outside academia and by other disciplines'. My internship was in a broad sense about grant

development, but focused specifically on this new selection criterion, knowledge utilization. The main purpose of this internship was to investigate the role and assessment procedure of knowledge utilization in NWO 'Vernieuwingsimpuls' grant applications. The 'Vernieuwingsimpuls' is a talent scheme and comprises three personal grants targeted at researchers in different stages of their scientific career (Veni, Vidi, Vici). My research into the role and the assessment procedure of knowledge utilization in NWO Vernieuwingsimpuls grant applications provided LURIS employees new insights into these aspects in practice and thereby enables them to distinguish themselves from other TTO staff in guiding and supporting potential grant applicants. The development of a factsheet on NWO Vernieuwingsimpuls grants and the knowledge utilization paragraph provides future applicants a convenient and practical summary, which saves LURIS's grant advisors a lot of time in future consults.

During my internship at LURIS I have learned many things and I fully enjoyed it. LURIS provided me the opportunity to gain new experiences in the field of Grant Development and to see a glimpse of the life as a grant officer, and more generically, as a professional consultant. The meetings, workshops, consultancy sessions and the interviews I conducted to perform my internship assignment, provided me with valuable network opportunities and improved my network skills. It was a great opportunity to be part of the LURIS team and to contribute to gaining more clarity on the role and the assessment procedure of an aspect which is of increasing importance to all (Leiden) academics – knowledge utilization.

Merck Chemicals

Business Analysis

I started my six-month internship at Merck Chemicals B.V., Amsterdam in middle November 2015, working as business analyst intern in the Business Analytics and Reporting team. The recruitment information was found on the website blackboard of Leiden University. I contributed to Merck by supporting operation, improving working process and training a new hire. Meanwhile, I participated in a Lean Six Sigma project (aiming to increase accuracy of first confirmed date to customer) by carrying out all data measurement. I participated in these projects to practice my data analysis skills and enhance my project management skills. During the internship I had the possibility to know Merck in depth. Merck is a leading science and technology company in healthcare, life science and performance materials. Set up in Darmstadt, Germany, in 1668 by Friedrich Jacob Merck, Merck is the world's oldest pharmaceutical and chemical company. Today, the Merck family remains the majority owner of the company. Over the course of 350 years Merck has become a truly global company. Merck's 50,000 employees span over 66 countries and are united by their passion for new ideas, the possibilities of technology, and the potential to make a difference in the world. Merck operates around the world and has a strong presence in the emerging markets.

My role as intern required providing data and analysis for the Customer Excellence organization in Western Europe. During the internship, I carried out routine on performance measurement, operational support and data quality, on multi platforms for western EU. Information was extracted from ERPs2 and BI3 for preparing reports. I performed and controlled data uploads from ERPs to data warehouse, enabling global reporting functionality.

Supplying a service for ad hoc report requests from the Amsterdam platform was the major duty, besides the basic tasks. It included external customers and internal business partners assistance in preparation for the global customer services scorecard, global key accounts scorecard and EU

business partner dashboards, together with accompanying metrics data. Other duties regarded: designing and running reports in line with business requirements; managing reports on the intranet portal to ensure clear presentation and availability of accurate information; supporting business functions, including credit management, order to cash, data teams, expediting, technical support, commercial support and the sales organization.

Many of my business skills were improved as well. I had planned my learning goals in several sections including Communication, Planning, Productivity and Creativity. Communication was a fundamental part of my work. In order to make every request being accomplished efficiently and accurately, I learned how to make information clear and straightforward, which undoubtedly benefitted the entire process. Besides working, nothing helps laying the groundwork for advancement more than cultivating and maintaining good relationships.

I also organized some activities in order to building a close and rallying relationship within our growing team, which contributed to improve working efficiency through a friendly office atmosphere. Public speaking and negotiation were everywhere during the working. What I did mostly was presenting the results provided by me, in a clear way. Not every colleague in the company has a clear picture of data from the technical side, and neither such picture is necessary to them in the fulfillment of their duties. However, it is important for me to explain where I had obtained these data, what information was contained, what could these data tell us in such a way that was simple to understand.

I am encouraged to actively look for requests in the database that I think I can handle with or without assistance and to identify improvement opportunities in how our team does things. Merck is a large company with a complicated database. Not all the requests are straightforward.

A big part of surviving in business is about solving problems fast and effectively. Some of the best ideas have simply been about connecting two of them, rather than two unconnected ideas altogether. I built up a solid knowledge of all relevant processes and applications of the complex system landscape. Problem solving and time management are skills I managed well during the whole internship. By providing proper communication through emails or meetings, I represented the Business Analytics and Reporting team very efficiently towards the other organizations (Customer Service, Credit Management, etc.).

Merck Millipore

Business analyst in the operational excellence group

I chose to do my SBB internship in one of the most rapid growing and challenging field of business intelligence, the business analysis at a global scale, well-known pharmaceutical and chemical company, Merck. Particularly I was part of the business analytics team in the Operational Excellence group of Merck which is located in Amsterdam. Merck is a leading company for innovative and top-quality high-tech products in healthcare, life science and performance materials. Around 39,000 employees work in 66 countries to improve the quality of the life for patients, to further the success of our customers and to help meet global challenges. The company operates in 65 manufacturing sites within 22 countries. In Amsterdam, Merck acts as an intermediate holding, and finance company of Western European countries. It also acts as the European Customer Service Center,

which performs the order, credit and collection activities for affiliated European companies. In my 6 months internship I gained valuable experience and knowledge of working at such an international and diverse company as Merck. The most important thing of my internship is that it was a combination of IT and business; therefore I was able to apply all the skills that I have gained from the academia in the real business world. Being an intern at the position of business systems analyst, I was responsible for preparing various reports for credit management, customer service, organizational, for sales representatives and other Merck departments. We worked on providing regular Key Performance Indicators (KPIs), scorecards, dashboards and other metrics and on proceeding ad-hoc reports coming to us through the reporting database from different Merck divisions. Using different Enterprise Resource Planning systems (ERPs) and their corresponding reporting tools was the most intriguing part. I had to get familiar quickly with various ERPs, processes and tools in order to be able to produce the necessary reports. Furthermore, I was the moderator of the intranet site of the company, the Merck Amsterdam Portal (MAP) where many of the reports and metrics are published. Besides these activities I worked on personal projects that I carried throughout my internship:

- Process improvements by automate procedures to compile recurring tasks;
- Participate in a regional lean six sigma improvement project;
- Document and standardize recurring processes inside the team;
- Testing the implementation of a custom built SAP transaction.

The knowledge I have obtained from SBB Fundamentals course helps me every day, since I worked with many financial reports, prepared different reports for marketing department, analyzed customers' satisfaction, and applied principle of project planning. To conclude, the business analyst position offered me quite a lot of things. First of all I gain valuable knowledge and experience on working with ERPs such as SAP and Oracle, their corresponding reporting tools, performing business analysis and understanding various processes in ERPs. Furthermore, I gain the confidence of working at such a scale international company and create a network with highly-professional people. Communicate and interact with people from different background and departments helped me to understand how to collaborate with them. Lastly, I learnt to deal with a large volume of work, learnt to prioritize different activities, how to improve my time management skills and deal with real business pressure by staying calm and not stressing out. All these parts have significant importance for me since I feel that I have grown as a person and employee therefore I am really glad that I did my internship in Merck.

Ministerie Economische Zaken

Cascading of biomass

When you are trying to figure out what internship you're going to do as part of the SBB-specialization, an internship at the Ministry of Economic Affairs is not the first that pops into your mind. To be honest, the picture I had in my head of a ministry internship wasn't very attractive or inspiring. I was wrong though and I am happy that I let a SBB-alumni inspire me to join his department at the ministry for an internship. I have spent six months at the Biobased Economy department and I have never learned so much as in the past half year. In this public summary, I will try to explain to you why an internship like my internship is a great idea.

Content of my internship

The transition to a biobased economy was the central topic my department focused on. At this moment we live in a fossil based economy. We use fossil fuels to produce chemicals, products and energy, releasing greenhouse gases into the atmosphere with all the consequences this entails. In a biobased economy we no longer depend on fossil fuels but we replace them by different types of biomass. The goal of my department at the Ministry of Economic Affairs is to develop a political environment that will stimulate and promote the further development of the biobased economy in the Netherlands. This overall goal covers quite a big diversity of topics. Technical innovation of new (biorefinery) techniques is necessary to use biomass resources to their full potential. Societal change will be a very important part of the transition, because consumers will have to make the switch from fossil based to biobased products in order for the transition to be a success. And finally logistical innovation in which decentralization will occur and biobased clusters will be formed placing businesses that make use of each other's streams so close to each other that they can exchange component flows via pipelines and there is a minimal energy and efficiency loss due to transport. Another important task of my department was to detect limiting laws and regulations, which could impede the transition to a biobased economy. Certain laws and regulations are in favor of fossil based products or even form a disadvantage for biobased alternatives.

The main assignment I focused on was to write a policy document about the optimal use of biomass resources through cascading. The document was meant to go to the Tweede Kamer (House of Representatives in English) and had to explain among others the political context, the biorefinery techniques used to extract useful fractions out of the biomass, the different types of biomass that could be used and the important considerations that have to be taken into account. A very broad task in which I needed both my technical knowledge and the knowledge I gained during my SBB-internship. Cascading, although you have probably never heard of it, is quite a hot topic. To avoid tough questions in the Tweede Kamer and create a policy document that stakeholders would recognize themselves in, it was important to involve stakeholders both from within and outside the Ministry in the writing process. In total I have spoken to 46 stakeholders ranging from NGO's to biobased business. Opinions about this topics vary widely and are often expressed very strongly. To unit all this opinions in the text was a very educational, but sometimes also very frustrating process.

Work environment

The work environment at the Ministry of Economic Affairs and the Biobased Economy department in particular is very inspiring. Ministry employees are used to meeting a lot of new people each day and are in general very open and friendly. From day one I was included in all kinds of projects and people were very willing to share information and tell me something about their work. Although you will probably focus on one main assignment, there are plenty of opportunities to take initiative and become involved in other projects. I for example joined the organization committee of the departments outing and organized several company visits for my colleagues. Also I joined the Young BBE Professionals Network and organized a visit to Corbion for them. The focus during your internship at a Ministry lays on your own development and if you take the initiative a lot is possible. I was allowed to visit symposia, take a Wageningen University Masterclass and be present at meetings I thought were relevant for me (and some I was just curious about). You meet a lot of people in a very short time period both from the Ministry, companies and universities.

Personal Development

During my time at the Ministry I not only developed myself professionally but also as a person. As mentioned before my own development was most important during my internship. Although I of course had a task to finish, I was given the time to use my internship also as an orientation of what working at a ministry was like. I spend a lot of time outside the ministry visiting events, talking to people and developing a network. Knowing what is out there and who plays what part in the biobased economy is a necessity when you're working at the Biobased Economy Department. One of the tasks of the government in the transition is to function a networking partner, linking parties to each other that need to work together. Through these visits outside the ministry I have developed my social skills. Also I have gained a better understanding of the complexity of policy making in general and the transition to a biobased economy. I had underestimated what was expected of policy makers and had undervalued the divers package of knowledge and skills each of them has to master to be able to execute their job properly. If you are looking for a divers internship in which you can use your technical knowledge to work on societal challenges the Ministry is the place to go. You will not only gain a lot of knowledge, but will also get the chance to talk to a lot of people, each with an interesting story they are very willing to share.

Inventory and evaluation of research in the bio-based economy

After hearing the story about biobased economy by a former SBB-alumni, I was inspired to join the department Biobased Economy at the ministry of Economic affairs for an internship. Also I wanted to learn more about innovation and how the government tries to stimulate this. I have spent six months at the Biobased Economy department and I have learned a lot on both personal and professional level.

Due to concerns of climate change and increasing levels of greenhouse gases, the necessity to replace fossil fuel by sustainable resources increases with the day. Also to the outlook on the available fossil fuel and global political issues makes this urgent. In a biobased economy we no longer depend on fossil fuels but we replace them by different types of biomass. Technical innovation to develop biorefinery concepts is necessary to use biomass resources to their full potential and develop improved and innovative products and materials.

My main assignment was to work on the strategic research agenda for the TKI Biobased Economy. The agenda will provide the programming of research performed in biobased economy and the available financial attributes. My task was to assess several technologies and provide their current status and also give a look on the research developments ahead. Although research sounds very scientific, my task was not exact science which made it probably even more challenging. However, during the internship I learned a lot about the research activities in the biobased economy. Meeting several organizations and people made the work exciting. Meanwhile I learned about the structure and work attitude of the department and ministry. I learned about that the different subsidies and investments try to stimulate research and innovation at each stage of development. I personally experienced the complexity of policy making. I underestimated what was expected of policy makers and had undervalued the divers package of knowledge and skills required to do the job.

On personal level I improved my networking skills, team work, social skills and communication skills. Although my assignment was clear, but I was continuously challenged because I didn't know which tools and methods to use and also how to eventually present it . Basically, there are no protocols. That experience taught me a very valuable lesson: to define my own path. Make your own choices,

come up with own ideas and suggestions rather than expecting from others to tell you how to do your job. But always keep in mind to be open minded and listen to others and keep improving yourself. In the end my input for the strategic research agenda contributed to get an overview of the current research and development. Together with other observations, the strategic research provides suggestions to make research efforts more effective.

I would definitely recommend others to do an internship at the ministry if they are looking for a divers internship in which you can use your technical knowledge to understand developments and then making the translation to implement it so society can benefit from it. It is a very nice environment to work in. My supervisors and colleagues were really nice, helpful and open minded which is required when working with so many different people. You will not only gain a lot of knowledge about how the government works, but also get the chance to talk to a lot of people and learn to see the world from a totally different perspective. It gives also a nice impression of what expect in a real job.

MSD BV

Introduction into clinical research; Inventorise scientific offices within STZ-hospitals

During my master bio-pharmaceutical sciences I chose to follow the Science-based Business specialization. After finishing SBB fundamentals I decided to do a SBB internship at Merck, Sharp and Dohme B.V. to gain more insight into the pharmaceutical industry.

Merck, Sharp and Dohme (MSD) is one of the largest pharmaceutical companies of the world and is established in 59 countries worldwide. It is a private company and has 86,000 employees. In the Netherlands, MSD has three locations which are established in Oss, Boxmeer and Haarlem. Oss focusses mainly on research and development, production and manufacturing whereas Boxmeer is responsible for research and development of veterinary pharmaceuticals and improving the health, well-being and performance of animals. Haarlem, which has 900 employees, is divided into two divisions, Merck Manufacturing Division (MMD) and Human Health (HH). MDD is responsible for production, manufacturing, export and distribution. Clinical operations and Marketing & Sales are performed in the HH division.

I did my internship in the HH division at the Clinical Operations. The Clinical Operations is responsible for clinical research of potential medicines and vaccines. Before medicines and vaccine candidates receive approval for use they undergo extensive and systematic testing in patient volunteers. This process is designed to evaluate whether a new candidate should be approved for use in the broader population.

Clinical research initiated by MSD takes place in different hospitals. Except from the academic hospitals where clinical research is highly established, clinical trials can also be initiated in STZ ('Samenwerkende Topklinische opleidingsziekenhuizen') hospitals. STZ hospitals is an association of twenty eight tertiary medical teaching hospitals. The core function of this collaboration is providing medical trainings. Furthermore they are providing highly specialised medical care. STZ hospitals are also involved in education and training in general, the advancement of high quality patient care, tertiary medical care and tertiary referral functions, applied scientific research and health care innovation.

Clinical research must be conducted following different laws and guidelines. Scientific offices are offices located in STZ-hospitals and have a function in stimulating research. More specifically, scientific offices stimulate clinical research and are involved in quality assurance of research involving humans, give trainings to conduct clinical trials according to these laws and guidelines. Every scientific office works differently and pays attention to other points.

Although MSD performs some clinical studies within STZ hospitals, most of the research takes place within the academic hospitals. MSD had some positive experience with clinical research within STZ hospitals and they want to expand their clinical research into these hospitals. A possible way how MSD can achieve this is by working together with these scientific offices. Therefore, it is important for MSD to investigate how these scientific offices work and how these different offices can be used to initiate clinical research initiated by MSD. In other words, it is important for MSD to determine the advantages of working with these scientific offices. Collaboration with these offices directly can lead to a greater network into these hospitals.

During my internship I have made an inventory of which scientific offices are involved in clinical research at STZ hospitals, what their main tasks are and how they work. Following this, I have given MSD which scientific offices are appropriate for collaboration in the execution of clinical studies.

Another assignment of the internship was to work with various functions within clinical research. Every job role has an important task within the clinical trial process. The main responsibility of the department Clinical Operations is to verify that the rights and well-being of human subjects are protected and that the reported trial data are accurate, complete and verifiable from source documents. The team makes sure that the conduct of the trial is in compliance with the currently approved protocol/amendment(s), with ICH-GCP, laws, regulations and other applicable regulatory requirements.

To initiate a clinical trial, trial related documents such as Informed Consent, Investigator Brochure, Clinical Trial Protocol and Insurance Statement need to be prepared in order to obtain approval. After approval by an ethics committee, the site (the hospital) where the research will take place, will be selected and the trial documents will be submitted to the ethics committee and competent authority. During site initiation, selection will be performed to determine which site is most appropriate for conducting the trial, e.g. resources, patients, medical doctors etc. Thereafter, the site will be initiated which means that the site will be prepared to start the clinical trial. In this part, site personnel involved in the trial will be educated about the ins and outs of the trial. Before the trial can begin, subjects which meet the inclusion criteria must be recruited. During the trial, data will be collected in case record form (CRF). This is very important as 'if it is not documented, it didn't happen'. For example all side effects will be collected in the CRF. This database can be closed when it is made sure that the data are clean and verifiable from source documents. After that, the site can be closed and a clinical trial report can be written. During the trials, clinical research needs to be conducted in compliance with the regulations (ICH-GCP, SOPs etc.).

During this whole process, filing of all trial related documents takes a lot of time and is very important. Different tasks are needed in conducting clinical trials and I have given support to these tasks mentioned above. For example, I have made an Informed Consent, prepared a submission including all the documents, monitored on site to make sure that the data are clean and verifiable from source documents and I have obtained insight into the financial aspects of clinical research.

This internship gave me the opportunity to obtain a very good view on clinical research at a pharmaceutical company. I have learned how different job roles work and what their main tasks are.

This part of the industry is appealing to me as scientific, communicative and commercial skills are needed.

Clinical Trial Management

During my Master Bio-Pharmaceutical Sciences I came into contact with clinical research, which evoked my interest. Clinical research forms an essential part of a country's research and innovation agenda and I wanted to improve my knowledge in this area, and at the same time experience the pharmaceutical industry. Therefore, I performed my SBB internship in Clinical Trial Management at MSD Clinical Operations, to develop skills in this area and to get the opportunity to investigate the climate and development of clinical research in the Netherlands. Also, by being trainee at a large pharmaceutical company, I had the opportunity to experience the structure and culture of Merck/MSD and the overall way the pharmaceutical industry operates.

Clinical research operations in a major pharmaceutical company

From September 1st till December 31st I performed my SBB internship at a large international pharmaceutical company in Haarlem, Merck Sharpe and Dohme (MSD). My internship was at the Global Clinical Trial Operations (GCTO) department. I wanted to be part of the GCTO team, by working within the department and helping the different job roles in their daily job. Moreover I worked on an assignment, which was important for the future of the GCTO department.

MSD is a very large international pharmaceutical company, established in almost 70 countries over the world. The GCTO department of MSD is very important for developing MSD's new medicines and drugs. They perform clinical research by conducting several phase II through phase V clinical trials for new medicines, devices or treatments, which could be used for treatment or prevention of diseases. Recently the international organizational structure of the GCTO department has been changed, making it more customer and patient focussed. All 70 countries are now subdivided in the new Regional Operations Model (ROM), into three different areas. These areas are subdivided into different clusters of two to five countries. In this new model it is important for countries to collaborate closely with the other countries in a cluster. Only one director is responsible for all countries in a cluster, making it important to find an effective and efficient model for a good collaboration.

The Netherlands is clustered together with Belgium to form the Mid Europe 2 cluster. It would be very important for the future collaboration between these two countries, to find an effective operation procedure, convenient for both countries. Therefore my assignment was to search for and analyse potential synergies and efficiencies between Belgium and the Netherlands.

Before I could look for potential synergies, I had to examine all important rules and regulations involved in conducting a clinical trial. There are international rules and regulations, similar for all countries, including ICH-GCP and the WMA Declaration of Helsinki. Moreover there are European clinical trial regulations, arranged by the European Commission, implemented in the legislation of all European countries. Furthermore, the Netherlands and Belgium also have national rules for how to conduct a clinical trial. These national rules have a lot of similarities, but show also some differences within Europe. The biggest differences are in submissions of new clinical studies, timelines, contracts and internal processes.
After examining the rules and regulations, I looked at all different job roles in the two countries. The Clinical Trial Coordinator (CTC), Clinical Research Associate (CRA), Clinical Research Manager (CRM) and the Clinical Operations Manager (COM)job roles should be identical in all countries, in

accordance with the new Regional Operations Model (ROM) and the allocation of the job roles per cluster. Nevertheless, when I went to Belgium I noticed that they still had difficulties in performing the tasks for their job role. The transformation had occurred very recently and the department was understaffed at that moment. When they are adjusted to the new model and job roles, and when all vacancies are filled, all employees within the cluster should work according to the job role allocated by the ROM.

During the elaboration of my assignment I had several conversations with all different job roles in Belgium and the Netherlands to find out their opinion about a good collaboration within the cluster. Moreover, I sent out surveys with job role-specific questions, regarding ideas for good collaboration in the near future. With help of their opinion and experiences I was able to identify some potential synergies and efficiencies.

In November a kick-off meeting took place in Belgium to meet all employees in both countries, to learn more about the new model and to look at the future as a cluster. I gave a presentation to show my findings so far, and to discuss the potential synergies and ideas for a close collaboration.
The potential synergies could be divided in synergies achievable on short term or on long term. Synergies achievable on short term include combined trainings within the cluster, and implementing similar procedures in both countries as much as possible. In times of sickness or pressure it will be easier to look for help in the other country. Another idea on short term is to make cluster based Standard Operating Procedures (SOPs), with attached checklists with the differences per country, whenever the subject allows it. For some subjects it will not be efficient to make it cluster based, due to the differences in rules and regulations in the two countries. On short term it is probably most efficient to divide the studies per country among the CTCs and COMs, because they are handling the operations and country specific trial related tasks of the studies, and are faced with national rules and regulations. CTCs and COMs should perform the same tasks for their studies, making them all round, resulting in a less vulnerable department, than if people have specific tasks. The CRMs and CRAs accomplish more study related tasks, and function as points of contact for the participating trial sites. They are dealing with international rules and regulations, which are similar in both countries of the cluster. If distance, language, time, size of the study and culture allow it, studies in the whole cluster could be divided among these job roles. CRAs and CRMs in Belgium and the Netherlands can already act as each other's back-up, or co-monitor together. The new directive that will be implemented in 2016, lead to more identical rules and regulations. This can lead to even more synergies on long term, within the cluster, especially regarding submissions and COM tasks. These and some other potential synergies will be elaborated within the team in the first quarter of 2015, and they already started.

Vigipik Program, a marketing tool in MSD Animal Health France

Merck is one of the largest pharmaceutical companies in the world. Merck Animal Health, known as MSD Animal Health outside the United States and Canada, is the global animal health business unit of Merck. Merck Animal Health offers veterinarians, farmers, pet owners and governments the widest range of veterinary pharmaceuticals, vaccines and health management solutions and services. This company is dedicated to preserving and improving the health, well-being and performance of animals.

MSD Animal Health is on the second position in the animal health market in France. Vaccines and antibacterials are the main activities. This pharmaceutical company has therapeutical classes for all the species but ruminants and companion animals are responsible of the 80% of the sales in France.

The business activity is located in Beaucouze, an industruial park close to Angers, in the north west of France.

The external parasiticide brand, with 120 M€ is the first market segment of companion animals. Following the launching of Activyl and Acityvl Tick Plus MSD Animal Health has now a complete parasiticides brand. Activyl is a topical ectoparasiticide containing the pro-insecticide indoxacarb. It is the only flea treatment to benefit from metabolic activation (bioactivation). Activyl is effective against all fleas' life stages of the pet and in the immediate environment of the pet. Activyl Tick Plus for dogs combines indoxacarb for effective flea control with permethrin for proven tick protection in dogs for a full month. It repels and kills larvae, nymphs and adult ticks on contact.

The European legislation for veterinary medicinal products is very restricting. Therefore Activyl's advertisement is banned in Europe. In order to be able to communicate its parasiticide brand and following a global strategy to grow in the parasiticide market, MSD Animal Health France has developed a marketing tool called Vigipik.

Vigipik is a communication program about the external parasites dedicated to the veterinarians, the general public and the veterinary nurses (VNs). It is entitled to highlight the specific needs of each animal by offering an adaptable solution under the veterinary doctors' or VNs' advice. My project in MSD Animal Health was to develop and consolidate Vigipik dedicated to the VNs.

The program Vigipik dedicated to VNs comprises:

- The explanation of the program to the sales reps so they can spread the word to the VNs in the veterinary clinics.

- Creation of Vigipik merchandising tools to be installed in the veterinary clinics, such as posters, leaflets, stickers, interactive kiosks.

- Advertisement: emails to the VNs containing a teaser explaining the program and publicity in the veterinary press.

- The creation of Vigipik website dedicated to VNs; including the Vigipik championship (a weekly quiz with a finals in Paris and a educational offering in Quebec for the winners)

- Organizing evening events throughout France where the VNs meet the sales reps.

My tasks were similar to a product manager's: coordinate the design, communication agencies and the suppliers so everything followed the plan on time and on budget. Since Vigipik was a project that I really liked, I did my best. I improved my organisational and analytical skills, now I meet deadlines and follow the planning easily. Communication with my colleagues was excellent and I improved my team working attitude.

The conclusion, the external parasiticides market has a big potential. MSD Animal Health is committed to invest and develop this market segment via marketing tools such as Vigipik. MSD Animal Health France objective is to grow and to develop sales within this market segment.

MVO Nederland

Researching opportunities for Circular Economy at MVO Nederland.

MVO Nederland, the national knowledge- and network organization for corporate social responsibility. Within MVO Nederland I have been working as an intern on the transition towards a Circular Economy. Switching from the current linear system, in which products are created, used and disposed of, towards a circular system.

The Circular Economy is an economical system that is meant to maximize the reuse of products and raw materials, and minimize the value destruction of a product. MVO Nederland acts as a foundation which informs their partners about the possibilities of the Circular Economy and tries to create a cooperation between partners to make a quick transition towards the Circular Economy possible. The underlying urgency for the transition towards a Circular Economy is the upcoming scarcity of raw materials and the continuous growth of the world population.

As the world population keeps on growing, the consumption volume of the world grows as well. To satisfy the future world population we need more and more resources to maintain a stable society in which all consumers are satisfied. So, with a growing population and a decline in available resources we need to get a better insight in our use of commodities and the end of their life cycles.

By making the transition from a linear economic system towards a circular economic system we will be able to meet the needs of the next generation, and indeed get a better insight of the life cycles of our commodities. “Walter Stahel: Today’s goods are tomorrows resources at yesterday’s prices.” MVO Nederland organizes several network meetings and workshops to speed up the transition towards a Circular Economy. They organize meetings such as Introductory meetings in which partners of MVO Nederland get the opportunity to gain additional knowledge about the Circular Economy.

Furthermore, they host the Community of Practice, which consist of six meetings in which MVO Nederland helps their direct partners to explore the opportunities of the Circular Economy within their company. And where possible they try to create a pilot to generate extra input and create support. Another event which is organized by MVO Nederland in cooperation with the Amsterdam Economic Board, De Groene Zaak, Het Groene Brein and Circle Economy, is the Circular Economy BOOSTcamp’14.

This is a three day event to speed up the transition towards a Circular Economy with a diverse group of people from business, government and research. This year the target area of the BOOSTcamp’14 was the Metro pole Amsterdam, with the breakthrough subjects product design, urban development and lifestyle. My internship consisted of assisting my supervisors with the organization and performance of several projects or events which were organized by MVO Nederland and closely related to the Circular Economy.

My assistance consisted of organizational tasks, taking notes, keeping up to date with the most recent developments around the Circular Economy and doing production work on site. In return for my assistance and work I gained experience in working for a small organization with a large network of partners in business, government and research. Furthermore, my internship at MVO Nederland has given me new insights on the economy and the economic system of the Netherlands and the rest of the world. And also showed me a new profitable economic system which isn’t only

sustainable in nature, but will also generate more profit and job opportunities. Besides extra work experience and new knowledge, this internship has improved my organizational skills, communication skills and gave me feedback on my personal development. To conclude I can say that this internship has helped me gain a better understanding of today's business society and learned me essential aspects of the environment when working for a small organization with high potential. It helped me improving my personal skills and gave me new insight on my personal development. I really liked to work at MVO Nederland and would like to thank my supervisors Michel Schuurman and Godard Croon for their guidance and supervision.

NADES Solutions

Formation and development of NADES Solutions

For my Science Based Business internship I decided to create a company emanating from research I had undertaken during the first year of my Master's degree course. The company was based around natural solvent technology and has gone through many evolutions documented in detail throughout my thesis. This thesis presents an account of the journey travelled by my fledgling company to achieve its current form. NADES Solutions is a collaborative research & development company that aims to create tailored natural solvent formulations specific for single compounds. The solvents we will produce are non-interfering delivery systems. They will improve the understanding of interactions between new drugs and test subjects. The company offers solvent tailoring services as well as selling our formulations that are produced by our production partners.

Problem Definition

New drugs are tested on cells before being tested on animals. To test a drug it must be dissolved into a liquid so it can be delivered to the cells. If a new drug doesn't dissolve in water (50%) it must be dissolved in another liquid. Traditional liquids used to deliver new drugs to cells cause changes to the test cells. The researcher does not know if the cell change is caused by the drug, the liquid (delivery system) or the mixture.

Solution

NADES Solutions tailor makes liquids that deliver the drug to the cells but the liquids have no effect on the cells.

Product Advantages

The researcher has a much clearer understanding of the effects of the drug. With better understanding of the drug's action companies can re-engineer the drug to improve performance or discard the drug quicker if it is unsuccessful.

Market Opportunities

NADES Solutions can tailor 15 compounds per year generating a turnover of €225,000 per annum on development alone. 1,000's of compounds in preclinical development could benefit from a tailor-made delivery system systems giving excellent growth potential for NADES Solutions.

Description of Team

Niall Hodgins founded NADES Solutions. Niall has a Bachelor's degree in Biochemistry from the University of Bath and a Masters degree in Biochemistry and Science Based Business from Leiden University. Dr Erica Wilson and Dr Young Choi are leading experts in the field of this technology and provide technical advice to NADES Solutions.

Investment Demands

NADES Solutions requires no investment. With revenues from year one and year two NADES Solutions will move from Leiden University Laboratories to Laboratory facilities in Biopartner. Getting NADES Solutions to its present level of development has been the product of a significant and concerted effort over the period of my internship. As outlined in my thesis the company has gone through several different business models and potential technological applications in order to find the currently considered optimum. My internship has provided unparalleled learning opportunities in every field of business. I now derive considerable benefit from being an integral part of a well-functioning network of people with common business and science interests. I also feel that I have derived significant personal development from the many and varied situations that I have encountered.

Netherlands Space Office / Innovative Solutions In Space BV

Development and use of distributed satellite systems. The OLFAR business case

New developments in the astronautic industry makes this industry a fast changing environment. Satellites and their data becomes more important, increasing the synergy between astronautic technology and other industries. The ongoing technical development with smaller satellites is one of the changes observed in this industry, making these smaller satellites useful for many applications and accessible for more companies and institutions.

Especially the development of miniaturized satellites, leads to new markets. These satellites can effectively be used in various constellations. Constellations are multiple satellites working together to achieve a common goal. Constellations are useful to increase the observation quality of satellites, e.g revisit-time, multi-angle observations and easier replacement/upgrades of the constellation.

Various different types of constellations are mentioned and described in this report. Many constellations already exists, but have never been used with so-called nano-satellites. Many constellations are proposed and one of them is OLFAR (Orbiting Low Frequency ARray). This constellation will be one of the first constellations, constructed of nano-satellites and placed in a non-Earth orbit. ASTRON, TU-Delft, ISIS BV, and Twente University are some of the major participants in the development of this project. Because this scientific constellation of satellites is still in development, the process can be explored and compared with various other existing projects.

Besides constellations, the second trend is also investigated. More small satellites are implemented in space projects. A special type of small satellite is called the "CubeSat". This Cube-shaped satellite is commonly used by universities and institutions, because of the relative low price of developing and launching these satellite. The technical aspects of these CubeSats were investigated and summarized.

But where could these CubeSats be used? Which markets could benefit the most from those cheap satellites and their technical development? It turns out, mostly the communication, logistics and mobility, defense and security and science markets could benefit the most.

To get a general view on the (Dutch) astronautic industry, some markets and applications of satellites were explored. Some of the applications investigated are agriculture, weather and climate, communication and logistics and mobility. Many things have to be decided for OLFAR, wherefore research has to be done. Which launch vehicle can be used? It turns out, the Polar Satellite Launch Vehicle is the most reliable and affordable launch vehicle. How can this project be financed? Using various different funding techniques, like crowdfunding and using spin-offs, this project can be financed. What type of constellation can be used for OLFAR? A so-called formation flying constellation, where the inter-satellite communication and distance is important for the observations to succeed, seems to be the most desirable constellation. Why is a project like OLFAR needed? These questions, among others, have been answered during this internship.

Nutricia Export BV

Category and Channel Development Sales Analyst

Danone is a world food company with more than 100,000 employees and 900 million consumers. Danone is a world leading company in Fresh Dairy Products and world No 2 in early life nutrition. It is a company promotes good health as a state of general well-being for both mind and body with many famous brands like Activia, Actimel, Evian, Aptamil, Nutrilon and Bebelac. It is operating in more than 140 countries with the 60% of sales being outside Europe. Danone is divided in 4 business lines: Fresh Dairy Products, Waters, Early Life Nutrition and Medical Nutrition. I conducted my internship in Danone's Early Life Nutrition Division, Nutricia Export.

Nutricia Export B.V. continuously unlocks and develops markets, offering high quality nutritional products to an ever increasing number of parents all over the world by partnering with local stakeholders to maximize value for Danone Baby Nutrition through a committed and enthusiastic team.

When I started searching for an internship, I had already the preference to combine my scientific background with business. As a result, I was searching mostly for companies driven by research and innovation and related with chemistry (such as food industries and pharmaceuticals). In that way I would be able to have a better understanding of the products, I would be adapted to the culture and more familiar with the rules and the regulations. Therefore, I would earn experience in business and efforts for my future career.

In Nutricia Export B.V I possessed the role of Category and Channel Development Sales Analyst and I was reporting directly to the sales director in the first three months and then to the Category and Channel manager the next three months. As part of the sales department that masters the most important and strategic position inside the company structure, I collaborated with all the departments for analyzing data such as medical, supply chain and marketing.
As a Sales Analyst intern, I was responsible for different tasks within the sales team, as well as, being part of the sales strategy, working on planning, implementation and analysis of agreed sales tasks. My main responsibilities were the implementation of the Pharmacy ToolKit, Category and Channel development management (Channel Focus, Product Availability, and Visibility) concerning the CORE market and the ACUs (Acceleration Countries Units), Creation of a new database of Local Sales, Business Intelligence reports, Performance analysis, Creation of NewsFlash (Company's Newsletter) and Projects within the WISE2 team (Working In Safe Environment).

My main tasks as a Sales Analyst can be summarized in the following points:

- Creation of a New Database for regional and per country market analysis
- Business Intelligence Reports and Performance Analysis
- Enabling information flow cross- functionally through monthly reporting
- Training of team, Briefings and Updates related to Pharma ToolKit project
- Identifying Opportunities and Risks
- Being part of the sales strategy, working on planning, implementation and analysis of agreed sales tasks.
- Creation of company's NewsFlash for all the distributors around the world

The knowledge that I gained through my studies and the SBB fundamentals helped me to understand better all the concepts that we have discussed and I knew them in theory so I could apply them in practice such as Strategic Marketing, Finance, project management and planning.

To sum up, finishing my internship I earned valuable knowledge inside a world leading company and experience in category management, sales strategy, working in projects, marketing and reporting. Moreover, I became more confident and I developed my organizational, analytical and communication skills. I interact with people from different cultures, backgrounds and departments with different priorities and goals and I learned how to be flexible and find the right type of communication based on the situation. In addition, I learned how to delegate responsibilities, working with deadlines and prioritize under real working pressure while remaining calm and cooperative. All in all, these above-mentioned factors shield me with courage and adeptness for my next career challenge.

Ocello BV

Market analysis of 3D assays for drug discovery

During my study Bio-Pharmaceutical Sciences (BPS) I focused on drug development and acquired knowledge about the R&D process behind it. However, my interest gradually shifted towards the business side of the pharmaceutical industry. I decided to choose the Science Based Business (SBB) Master's track, since it allowed me to combine my interest for BPS and business. Even though SBB has provided me with knowledge on different aspects of business, the best way to learn it is by applying it to real-life situations. It was time to put my knowledge to the test and develop my business skills by doing an internship. My search for a suitable internship ended with a business development project at OcellO.

OcellO is a start-up contract research organization (CRO) that offers phenotypic screening and compound profiling services to the biotech and pharmaceutical industry, and academia. OcellO uses a proprietary best-in-class high throughput 3D cell culture-based screening platform. This technology allows high content imaging to be applied to compound screening, lead characterization and target validation, providing rich information about compound properties. It is a spin-off company from Leiden University and was founded in 2011 by Dr. Leo Price and Prof. Bob van de Water.

I wanted to learn as much as possible about the different aspects of running a business during my internship period. This internship position allowed me to develop skills in different fields, since I was responsible for a broad range of tasks. My main task was to conduct a market research in order to identify new customers and analyze competitors. The latter was incorporated to OcellO's business plan by writing the competitive analysis section. In addition, I was responsible for building and maintaining a database that contained our (potential) customers and competitors. This database is now an important tool for our customer relationship management (CRM) activities.

Finally, I was involved with the branding of the company. My tasks were to:

- Make an advertisement
- Set-up our LinkedIn company page with a corresponding social media strategy
- Distribute a press release

This diverse range of tasks allowed me to develop skills in:

- Analyzing competition
- Identifying potential customers
- Managing customer relationships
- Company branding

I can conclude that this internship was a very educational experience and complemented the SBB track greatly. I would certainly recommend anyone to do his or her (SBB) internship at OcellO.

Octoplus/Dr. Reddy's

Project management

Lead by a clear interest for the Healthcare and the Pharmaceutical industries I chose to conduct my SBB internship at Octoplus in Leiden. Octoplus (now Dr. Reddy's IPDO Leiden) is a company active in the Generic Pharmaceutical Industry. It is a B-2-B type of business providing Complex Injectable Drug R&D services to its parent company which is considered the main customer and to a small portion of collected clients out of the norm. More specifically, since 2013, Octoplus is a subsidiary of Dr. Reddy's Laboratories Ltd. Dr. Reddy's is one of India's top drug makers and develops and manufacturers branded and unbranded generic drugs and bulk pharmaceutical ingredients.

Many people throughout the world do not have access to good health because they can't afford expensive medicines. Dr. Reddy's Generic Formulations business addresses this urgent need by offering more than 200 high-quality generic versions of expensive innovator medicines—at a fraction of the cost—in over 20countries around the world. I became involved in this company as a Project Management Intern within the Project Management Office in Leiden.

Throughout these 6 months I was supervised by the Director of the Project Management Office and I was addressed with two main responsibilities.

- I had to execute a short-spanning project that would eventually enhance the company's scientific excellence profile. Hence, I had to develop an Academic Network of Research Groups in specific research fields that the company can use in the near future as a pool of potential co-operation possibilities with Academia. In addition to this, I had to develop a big-data analytics tool via R-Studio in order to establish an automated method of analyzing data from PubMed's data base. Last, I had to develop a scorecard using different assessment criteria that will enable the company to make strategic decisions regarding the scientists to be approached in the near future.
- I was appointed with the task of old project closures as a Project Management supportive task. As the integration with Dr. Reddy's was still ongoing at that time, all of the old business had to be formally terminated and all involved parties formed about the change that Octoplus' s acquisition would bring onto the provided services. I became actively involved in

these processes and coordinated actions and communications with different stakeholders including internal departments and external clients.

All in all, I managed to understand the dynamics of a pharmaceutical company and witnessed firsthand what the role of a project manager looks like in a research-based corporate setting. This internship proved to be a great choice as I was given many responsibilities and opportunities for networking, learning and self-development, including an official external PMP training of the American PMI Institute and an internal course on Lean Six Sigma Green belt basics. Most importantly, I had the chance to work in a very international and diverse environment with very passionate people which I could easily approach for input in my projects.

Orgacure

Business Development Orgacure® Freshcut

Orgacure is a young start-up, founded in April 2012. It provides a sanitizing solution for raw and especially fresh-cut produce, driven by the idea to provide solutions for existing market issues, such as food waste, food safety and reduced shelf-life of processed food. Orgacure has been growing quickly. The company currently consists of a team from different backgrounds that work in Rotterdam in sales as well as R&D.

The mission of Orgacure is to improve every-day work of enterprises in the food-providing and – processing sector by supplying solutions which adds innovative improvement to existing procedures in a convenience and standardized manner.

The vision of Orgacure is to become a major solution provider for existing shortcomings of the market – such as the creation of food-waste, which is not only ethical but also an economic problem. The launch of the company was preceded by more than a decade of research by the company´s founder Roger Bierwas, who had been involved in the development of fresh food preservation solutions since the early 1990s. The possibility to actually convert the idea into practice came when Roger met Jan Paul Schirmer. Paul, at that time still at University completing his Master in Finance, was immediately convinced about the potential impact of Roger´s vision and started to bring the business strategy on paper in order to attract first investors.

Together with the help of the Hamburg based, JVVC GmbH, Orgacure was able to pursue product development and to apply for a patent for its technology. Since the market introduction of Orgacure in 2013, Orgacure has expanded its product portfolio for specific application and is today selling its products from Singapore to Brazil, all around the world. This dynamic start-up environment created the opportunity for me to be deeply involved in challenges faced by new businesses nowadays. I was responsible for Sales Benelux - market research, customer acquisition, company visits, marketing.

Besides this I was also responsible for R&D microbiology - set-up of a low-budget microbiology laboratory, product development, microbiological analysis. Side projects concerned HR, external student project with Rotterdam Business School and investigating rules and regulations (EU food laws) applicable for Orgacure's products and end-customers. I enjoyed my internship at Orgacure and would recommend other SBB-students to also do an internship at similar start-ups. At life-sciences startups you can apply your scientific knowledge and also learn about business skills, while personally developing yourself as a professional businessman/woman. The most exciting feature about working in a start-up is that you really see a company grow by your efforts and this pushes you to do even more.

Business Development, Sales and Marketing internship report at Orgacure

From my previous internship experience of working in established companies, a working internship in Orgacure BV, Rotterdam, provided me with plenty of opportunities to experience the daily operations, tasks and challenges that a start-up company encounters. Orgacure BV is a company founded by Roger Bierwas (CEO), Jan Paul Schirmer (CFO) and Julian Vrolijk (CMO). There are 2 main products that the company offers: Orgacure®Freshcut and Orgacure®Travel Aid. At the start of my working internship, there were 4 people working in the company. Business development preference was given to the product Orgacure®Freshcut due to limited resources. Orgacure®Freshcut is aimed at the fresh convenience industry by extending the shelf life of freshly cut fruits, and also the ability to reduce sulphite residues in freshly cut potatoes. Orgacure®Freshcut differentiate itself from its competitors through a 2-in-1 synergistic action of preservation and sanitation. My internship assignments are broken down Into 5 different parts. The first assignment was to gain adequate knowledge, information, and competitors' analysis in the fresh convenience industry. 2nd assignment was the designing of the product brochure for Orgacure®Freshcut. The 3 rd assignment was in regards to the improvement of the company's website and how Orgacure can concise information much better so that potential customers can have a better browsing experience. The 4th assignment was to be involved in Sales. Roger Bierwas (CEO) was in-charge of the sales process and development in the company and I was introduced to a tool called Customer Relationship Management (CRM). CRM plays a vital role in the management and also prioritizing important tasks in the sales process. The 5th assignment that was assigned to me was the introduction of Orgacure as a brand and also their product into other international markets, especially Asia. The highlight of this internship was the interaction with potential customers. CRM helped in managing time and priorities with potential customers. Cold-calling and cold emailing were the methods that was at my disposal. I managed to have conversation with customers from other countries like the UK, Singapore, Malaysia and China. Although I never had any sales experience, this opportunity made me realized the importance of building a good relationship with customers, looking out for the needs of the customers and also obtaining important information about the industry that the customer was operating in. Ultimately, a good relationship with the potential customers could lead to sales. At the end of my internship, I successfully introduced Orgacure®Freshcut into 3 different international markets (UK, Singapore and China). Ultimately, this internship gave me a lot of insights on how entrepreneurs make vital decisions on tackling different challenges that come their way. I was also given a lot of responsibilities due to the fact that the company was a start-up, decisions that I made could also have an impact on the company. I also challenged myself through the opportunities given to me through learning more about the sales process and the importance of communication with the potential customers. I would highly recommend a working internship in a start-up company due to the fast-paced development that could be happening in the company. In a short span of just 6 months, the company have gone through and evolved compared to when I first started working for Orgacure.

Ortec Finance

Internship at Pension & Insurance Department

Ortec Finance is a global provider of solutions for advice and risk management through the combination of market knowledge, mathematical models and information technology. The company

consists of about 180 employees who work in offices in Amsterdam, Rotterdam, London and Zurich. Ortec Finance provides innovative solutions for improving investment decisions to a wide variety of markets including pension funds, insurers and sovereign wealth funds but also support decision making of housing associations. By serving these markets Ortec Finance has been able to increase its profits with roughly 10% annually over the past decade.

Ortec Finance is an ambitious organization which provides its employees with many opportunities to develop in the national and international financial world. The average employee is 35 years old and has an academic background with a focus on analytical skills. In my experience Ortec Finance is a flat organization with an open and informal culture, of which the fact that the CEO of the company knew me by name in the first month is a striking example.

I did my internship at the Pension and Insurance (P&I) business unit, where I worked as a studentassistant for six months. At P&I our core business is to provide support for policy making by performing strategic Asset and Liability Management studies. After a strategic decision is made we can monitor the performance by a quarterly risk monitor report. We serve our insurance clients for example by calculating the figures for the various reports required by De Nederlandse Bank, or by providing them with calibrated scenario sets that they can use in their own internal models to calculate the development of their financial position.

During my internship I got first-hand experience in many of the projects I mentioned above. I was involved in making a risk monitor for a Dutch pension fund, scenario sets for various insurers and I gave part of a training course for our sophisticated modelling software (ALS) to a client. In order to complete these tasks I had to gain a lot of knowledge about the financial and institutional world, of which there is plenty of study material available and I had to make myself familiar with the modelling software ALS. Furthermore I had to adjust to working life, which is different from being a student in many more aspects than I thought before I started my internship at Ortec Finance.

Ortec Finance is a company that gives interns the opportunity to take responsibility. After just two months I could come along with a colleague to my first client visit. During this meeting I also had a meaningful contribution because I gave the client a demonstration of our model, which I had prepared in advance. Meeting clients is very interesting because I really felt the responsibility to represent Ortec Finance. I felt pushed to perform at my best, while my colleagues always supported me to make sure that I would not mess up.

Overall I would definitely recommend others to apply for an internship at Ortec Finance. A strong analytical background and an interest in the financial/institutional world are the most important prerequisites. I had a great time at Ortec Financed, where I worked with great colleagues and where I learned a lot.

Pelago Bioscience AB

Opportunities for development and commercialization of clinical and in vitro diagnostic CETSA applications

Pelago Bioscience AB (PB) is a Swedish life science Contract Research Organisation that was spun out from the Karolinska Institute in 2013. PB is located at Karolinska Institute Science Park in Stockholm,

and it consists of seven employees and several external consultants. PB was established to provide and develop the patented Cellular Thermal Shift Assay (CETSA) for the use in determination and quantification of drug–target interactions. The company delivers *in situ* target engagement studies to accelerate preclinical and clinical Drug Discovery. The business model of PB is fee for service. Sub-licenses of the CETSA method are available as well. Using CETSA data and applications, drug discovery R&D companies are making better and more informed decisions at earlier stages in their projects. This reduces time and money spent on compounds that would not be efficient due to poor target engagement, and allows faster development of more efficacious new drugs. PB was founded by the CETSA inventor Professor Pär Nordlund, Daniel Martinez Molina (CETSA method expert) and Michael Dabrowski, an expert in Drug Discovery.

The generic applicability of the CETSA method allows for CETSA clinical applications as well. PBs ambition is to develop CETSA for clinical use, as an *in vitro* diagnostic tool to guide patient treatment, dose and duration of treatment. *In vitro* diagnostic tests are tests used on biological samples to determine the status of a person's health. They help to diagnose a medical condition, prevent disease or monitor drug therapies (FDA). When CETSA is validated in the relevant clinical sample matrices, an *in vitro* diagnostic CETSA tool could aid in guiding medicinal treatment selection, dosing and duration of treatment. Matching the right drug to the right patient is referred to as personalised medicine. By developing CETSA as an *in vitro* diagnostic tool, PB aspires to improve the lives and health of patients. Other future clinical applications of CETSA include for example patient stratification in clinical trials, the identification of novel predictive biomarkers, and CETSA companion diagnostic applications.

In order to investigate the viability of the development of clinical applications of CETSA, a feasibility study was necessary. My SBB internship assignment was to conduct a feasibility study with the aim to develop the scope and strategy for applying the CETSA method for clinical and *in vitro* diagnostic applications. A feasibility study is an analysis of a project's viability before proceeding with the development of the project. It analyses a company's ability to complete a project. Feasibility studies play an important role in business development. They provide crucial information to management to prevent a company from entering blindly into risky projects.

In order to conduct this feasibility study, I interviewed several experts, such as Prof. Nordlund (the CETSA inventor), my colleagues from PB, and experts from Karolinska Institute Biobank. In addition, I performed literature research to gain insight in existing solutions on the market (such as gene expression profiling-based tests), the *in vitro* diagnostic market, and the EU and US regulatory requirements for placing an *in vitro* diagnostic product on the market. The daily interaction with my colleagues as well as the weekly meetings with my supervisor helped me to understand about the CETSA method, and its promising future clinical opportunities. During my internship, I also improved an existing proposal for a European Commission Horizon 2020 funding program. It was very valuable to get experience in writing such a funding proposal. Finally, I gained knowledge of the entrepreneurial process, and how PB developed and commercialized CETSA, which is an established Drug Discovery tool by now. I got insight in this subject by attending many customer meetings with my supervisor and by joining the weekly company Project meeting. During project meeting, the PB team discusses the progress and challenges that the senior scientists have come across in customer projects. This meeting also deals with the necessary lab materials that need to be bought for the lab to stay well-equipped.

The outcome of the feasibility study was that, when validated in the relevant clinical samples, CETSA can be developed as an *in vitro* diagnostic tool to guide personalised cancer treatment, dose and duration of treatment. The results of the validation phase of laboratory testing, as well as experience with tumour sample logistics will determine the exact format of the final solution. In order to facilitate the development, heavy R&D is needed to apply CETSA on clinical samples. In addition, the predictive value of CETSA needs to be evaluated in clinical trials of current medicine.

Based on my feasibility study, PBs experience with applying CETSA on tumour samples, and medical expertise from clinical oncologists, PB will have to decide which oncology specialisation and sample matrix will be the first of choice for CETSA clinical applications. The next step for PB is to identify financial resources for the validation and development process of a CETSA *in vitro* diagnostic application. In addition, aspects of the feasibility study that still need attention are a commercialisation plan, SWOT analysis, and market research (interviewing key stakeholders). My feasibility report will serve as an 'investigative research document' that PB will use to make important decisions on the start the validation and development of CETSA as an *in vitro* diagnostic tool. A business plan will follow next.

ProteoNic

Business development: Increasing the amount of prospective evaluation deals

From January 6th until July 6th 2014, I did a business development internship at ProteoNic, a small biotechnology company located in the Leiden Bio Science Park. ProteoNic is a technology provider, meaning, they developed and patented a technology and sell licenses to allow other companies to make use of their technology. The technology they developed, named UNic™, increases recombinant protein production yields. Recombinant proteins are being developed for therapeutic use by many drug developing companies. A lot of the top selling drugs are, in fact, recombinant proteins. These proteins are often produced in-vitro, using living cells. A piece of DNA, encoding a specific protein intended for therapeutic use, is developed in the laboratory and is inserted into a vector, which is basically a vehicle used to transport a piece of foreign DNA into a cell. Cells which have taken up this foreign piece of DNA can now produce the protein, which can be isolated and purified, and can be used for therapeutic purposes. ProteoNic's technology consists of specific elements that can be added to the vector and results in the enhanced translation of RNA to proteins, resulting in more protein per RNA. ProteoNic recently launched a second, improved version of their UNic™ technology, 2G UNic™, or 2GUN for short. At the moment ProteoNic is trying to license this technology to biopharmaceutical drug developing companies. Interested companies can first sign an evaluation contract for an initial fee. This evaluation contract allows the company to test the technology in-house. If the results of the evaluation phase are satisfactory, the company can decide to sign a commercial contract, which should be the main source of revenues for ProteoNic. Since ProteoNic's second generation technology is still relatively new, many companies still want to evaluate the technology in-house, using their own production system, before deciding whether or not to take a commercial license. ProteoNic currently has several of such evaluation deals, but has zero running commercial deals. The goal of this internship was to increase the amount of prospective evaluation deals. By increasing the amount of evaluation deals, the chance that one of them results into a commercial license is increased. For this purpose I developed a database, which ProteoNic can use to keep track of all potential customers. I also added several hundred new potential customers (both companies and contacts) to the already existing list. The second step was

to determine customer needs for the different customer segments. This was done by conducting an online survey among all major pharmaceutical companies, but also among a lot of the smaller companies. After the customers' needs were determined, a new marketing tool was set up that ProteoNic can use for email marketing. During the internship I also developed a strategy to target a, for ProteoNic, new segment. Finally, I did market research into a potentially interesting market for ProteoNic to enter, the biosimilar market. Based on my findings I proposed what actions ProteoNic should take. Even though the goal of my internship is hard to measure, all these projects I worked on definitely added value to ProteoNic, and if they make proper use of the tools and information I provided, will result in more evaluation deals in the near future. Due to the amazing time I had and due to the amount of things I learned during my internship at ProteoNic, I would definitely recommend other students to do a business development internship at ProteoNic.

Developing a strategy to target SMEs and finding means to increase the brand awareness

From May 15th until September 15th 2014, I did a business development internship at ProteoNic. ProteoNic B.V. is a biotechnology company located in the BioScience Park in Leiden. It provides technology to enhance protein expression and recently released an improved version of their technology: 2G UNic™.

This proprietary vector 2G UNic™ based technology improves both transcription and translation resulting in significantly higher yields in eukaryotic production platforms.

The technology is provided via two types of licensing, an evaluation agreement and a commercial agreement. Before entering into a commercial agreement, clients are allowed to test the technology in-house for a fixed period of time.

Launched in 2013, 2G UNic™ is relatively new with a low brand awareness. ProteoNic is looking to speed up the market introduction and thereby its revenues from licensing its technology. The main revenue source comes from deals with large biopharmaceutical companies. However, ProteoNic wants to explore other customer segments as big pharmaceutical companies exist in limited numbers and have long decision processes. Another interesting but difficult to reach and convince market segment is small drug development companies (Small to Medium Enterprise: SME). This market segment is difficult to reach and to convince as they have different needs when compared to large biopharmaceutical companies. SMEs have limited resources and rely mostly on external service providers.

As an intern, I worked together with the chief business officer and my tasks involved developing a strategy to target SMEs and also finding means to increase brand awareness. To perform these tasks, I suggested that ProteoNic could expand their offer to better target SMEs and that this could be done through partnerships with external service providers as SMEs tend to outsource a lot. To perform this, I did a survey and a couple of phone interviews to know what were the SME needs regarding product offer and outsourcing. Furthermore, to be able to increase brand awareness, I planned a seminar and planned a structure to increase the visibility of the website.

I would definitely recommend all the students interested in Business Development to do an internship at ProteoNic. If you are eager to learn, do multiple tasks and you are curious to

experience how business works in a small biotech company with a great atmosphere then do not hesitate to choose ProteoNic.

I really enjoyed working at ProteoNic as I gained a lot of knowledge on different aspects of business development and strategy and even gained more scientific knowledge (e.g. studying all the drug development process). This was a truly science based business internship.

Assessing new business opportunities

From November 16th 2015 until May 31st 2016, I did a business development internship at ProteoNic. ProteoNic is a Biotechnology company, located in the Leiden BioScience Park, which provides an expression enhancing technology to biopharmaceutical companies to improve their protein production.

This proprietary technology called 2G UNictm (2GUN) improves several aspects of the transcription and translation of biopharmaceuticals, resulting in a higher production yield. This technology is provided to biopharmaceutical companies via a licensing model.

Although the amount of deals is increasing, additional revenues are desired. Furthermore ProteoNic's cash flow is very variable due to the uncertain timing of revenues from their licensing deals. ProteoNic is therefore looking for opportunities to both increase their revenues and create a more stable cash flow. The overall assignment of my internship was therefore: search for ways to generate additional sources of revenues and create a more stable cash flow. An idea of the chief business officer (CBO) was already present at the start of my internship, which involved adding a service part to the company.

As an intern I worked together with my supervisor, the CBO, and another business development intern. Since we shared the overall assignment, we split the assignment in two big parts: what does the market want (demand) and what is in the market (supply). I focused on the demand side while the other intern focused on the supply. After conducting a thorough desk research and a questionnaire, we were able to combine our findings and give a well-founded advice to ProteoNic. Two main conclusions can be distinguished, the first being; ProteoNic should start targeting a new product segment. I analysed such a new segment and concluded that with the current in-house technology ProteoNic should be able to enter this new growing market where there is a big need for production improvements.

The insight that 2GUN is (most likely) able to realize the improvement for this, is of big value to ProteoNic. The second conclusion is, ProteoNic should expand by adding a problem-solving service for difficult to express problems. In the market there is a need for companies that can improve the production of biopharmaceuticals which otherwise would not reach the needed production threshold. By adding new technologies or collaborations to the company, ProteoNic would be able to offer this service and increase their revenue stream, and possibly stabilize their cash flow. Besides working on this big project I also helped the CBO prepare for conferences by analysing the interesting speakers and subjects. Furthermore I worked on several other smaller tasks like updating and maintaining the customer database. I enjoyed my time at ProteoNic and was able to learn a lot about business development in general and also about the biopharmaceutical industry. I would therefore recommend an internship at ProteoNic to anyone who is interested in business development.

School of Life Sciences, University of Bradford

Program Assistant for Lab Management and Sustainability Practices

My internship was based at the University of Edinburgh. I worked in the Sustainability department in unison with S-Labs through funding provided by the University of Edinburgh and the Scottish Funding Council. S-Labs is a UK based enterprise which is directed by Peter James, with their goal being to improve laboratory research in terms of safety, sustainability, and efficiency. My internship was 6 months long (initially), and was divided into two major portions. The initial half was geared towards working with laboratories specifically at the University of Edinburgh. Upon arrival, I along with Peter James and the Sustainability adviser at Edinburgh (David Somervell) ran several workshops across the campus to generate interest in some of the good lab practices we were trying to highlight. The main targets for laboratory research efficiency and sustainability improvement are via cold storage management, fume hood utilization, the selection and management of chemicals, and overall lab housekeeping. S-Labs had formulated a framework which may be applied to assess the status of a lab in terms 9 major categories of laboratory efficiency. The University of Edinburgh meantime had a yearly sustainability awards program which rewarded buildings and groups for good practice on campus for a variety of reasons, and within these Sustainability Awards was an undeveloped laboratories category. My initial task was to generate interest in labs and buildings on campus to enter these laboratory awards, allow me to audit and assess them with the aid of the criteria, and then evaluate what kind of award each would receive. The awards were broken up into three categories, Bronze, Silver, and Gold, depending on how many of the criteria of the framework the labs had completed. It is worth noting that this criteria and a similar awards program was being facilitated by Green Impact across the UK. Green Impact is a student run organization that runs a variety of sustainability related programs via students. Initially Edinburgh had used this program, but with the opportunity to bring in a funded intern, decided they wanted to implement a more intensive program (which I would run).

Thus four large research facilities across Edinburgh inscribed into the program, and I worked with them at their respective sustainability meetings to discuss how their facilities were run, and how we could achieve the criteria laid out in the framework depending on which award level they were seeking to achieve. I worked with lab managers, technicians, PhDs, post-docs, and building managers regularly and was faced with a variety of issues pertaining to the specific areas of research each facility specialized in. Once they had completed the framework and provided written evidence of many of the criteria, I evaluated the evidence and conducted audits. To provide some credibility to the audits I had 1-2 staff members (mostly senior) from each facility join me to cross audit another facility. Bringing along and involving staff in the audits was paramount to the success the awards experienced, not only did it provide more sets of critical viewpoints for the audits, but it also allowed the staff to feel more involved and have a better understanding of the issues at hand. Furthermore there were secondary benefits of having cross audits in that despite all being in the same university, there had been a lack of communication of both challenges faced as well as solutions implemented which the audits were able to highlight. The labs were audited, and after consulting the fellow auditors I wrote up reports for each facility detailing observations and recommendations from the audits. Writing the reports was a key for the continuation of the program for coming years as it not only explained to labs why they may have not achieved full marks, but it also set a benchmark for next year's awards on which subjects they should focus on. Finally with the reports written, the award ceremony was held and all findings

were shared. All participants in the program were extremely pleased with the outcomes, even if they did not achieve their sought award level.

The second major portion of my internship focused on further Scottish institutions. I got permission to come and visit multiple laboratories from four Scottish universities: University of Aberdeen, University of Glasgow, Napier University, and the University of Strathclyde. Within these universities I assessed and audited a varying number of labs, though unlike Edinburgh I did not work with them prior to the audits. Also audits were conducted solely by myself. Again I wrote reports for each lab assessed, and also wrote summary reports for each university about common issues that they could focus on with potential solutions.

Furthermore throughout these audits as well as during the Edinburgh audits I was gathering any good practice examples that might be worth highlighting for future framework users. Such examples would be added to the S-Labs Good Practice Guide document which had already been written to accompany the framework to provide case studies of good practice. Near the end of the internship, there was a large S-Labs conference in Liverpool attended by over 300 delegates from across the UK, Europe and the US to discuss a multitude of topics relating to lab sustainability and efficiency. During this conference I gave a talk to highlight the process used at Edinburgh and across Scotland as an example for other UK universities attending as well as sharing the results (though still early) from the program. Finally, to conclude my internship, I interviewed universities across the UK and one US company who had applied the framework for their thoughts on it, as the framework required some small edits for the upcoming year. I also worked with Peter James to write a Process Guide for the framework, an easy to read document which highlighted the different ways universities had used the framework with case studies based on the interviews conducted. Final versions of all the documents mentioned will be in circulation across the UK for the upcoming academic year.

Science Alliance

Creating the bridge between knowledge transfer to commercial viable products

Science Alliance was established in 1997 as an intermediary organization which forms national and international bridges between universities and the society, mainly focussing on Europe, China, the United States and Africa. The expertise of Science Alliance is to structure and improve the collaborations between these parties by creating networks, events, meetings, and via the daughter company Science Works research and consultancy. Science Works primarily advises on valorisation processes and the development of knowledge based economy.

Next to the daughter company, Science Alliance exists of the units Regional Innovation, Policy, China Desk, Life Sciences & Health, Science Communication and International Law. Science Alliance is also responsible for the establishment of multiple networks, for instance the currently independent Dutch Clinical Trial Foundation and Association of European Science & Technology Transfer Professionals. But also networks which are still managed by Science alliance like South Holland-Shanghai Pudong Co-Innovation Program, the Technopolicy Network and the World Legal Forum.

Because of my background in molecular biology and my overall interests in science and business development I applied for a position in the units Life Sciences & Health and Science Communication. *The Unit Life Sciences & Health established in the past the Dutch Clinical Trial Foundation which has* the intention to connect the (inter)national pharmaceutical industry to the Dutch medical knowledge infrastructure in the field of clinical research. This unit is currently *setting up business*

plans for new initiatives in the field of Life Sciences. Furthermore, the unit Science Communication focusses in forming bridges between universities, market and society. In the past this unit launched an international conference on Science Marketing. During this conference aspects of science marketing and joint marketing of science were discussed.

During my five month stay at Science Alliance I focused on four different projects:

Science for Patients

The project Science for Patients is a collaboration between Science Alliance and the patient organisations ME/cvs, MSVN and VOI. The goal of this project is to facilitate the exchange of knowledge between scientists and patients by video lectures on YouTube and organizing chat sessions. Patients, friend, relatives or other interested people can ask questions based on the provided information by the scientist. My tasks in this project varied from communicating with the involved patients organisations, being involved in the filming process of the scientists, publicizing video's, writing several documents like communication plans and tasks like making agendas, following up lists and writing minutes of meetings.

Setup of a network organisation in the horticulture sector

Setup of a network organisation in the horticulture sector is a project to stimulate the valorisation of useful components out of plant debris material by connecting companies and organisations. My tasks in this project was to develop a business plan according to the Sequoia Investing Agency model. Also I had to plan interviews with potential candidate executives and had the opportunity to do some interviews by myself.

Innovation centre in the Bulb region

The goal of the project Innovation centre in the Bulb region in the Netherlands is to connect education, entrepreneurship and research in this area in order to stimulate innovation in the production of bulbs. My task was to organize a meeting for all the participants in this project.

Open Do It Yourself Bio competition

The Do It Yourself Bio Competition is a movement in which biotechnological experiments are performed in an independent setting by sharing information and data. Science Alliance will launch a competition to bring all the pioneers together and to stimulate the further development of Do It Yourself Bio. My tasks in this project was to develop promotion packages,

During this internship, I've got a clear image of project management and how the basics of PRINCE2 can help during the process of a project. During my 5 month stay at Science Alliance I had a clear goal to improve my communication skills. By participating in meetings, contacting project members, interviewing others and helping my colleagues at congresses I have developed and improved myself in communication. I also had the opportunity to gain experiences in organizing and preparing meetings, furthermore I'm able to set up business plans according to the Sequoia Investment Agency model and other forms of reports like communication plans, activity plans, minutes of meetings and more. Overall during my stay I'm able to make suggestions to improve projects and to give my own opinion. I'm positive that my intense experiences at Science Alliance will help me in my further career.

Maintaining the network, explore new opportunities and supporting the organization of upcoming events for stakeholders in Science Based Regional Development

From the end of August 2012 to the 1st of March 2013 I performed my Science Based Business Internship at The Technopolicy Network, an initiative of Science Alliance B.V.. The Technopolicy Network is a membership-based organization responsible for the organization of networking events for practitioners and stakeholders in Regional Development. This term describes the success of a region by taking into account amongst others: the innovativeness of a region, the process of discovery to product, the longevity of start-ups in a region and the region's attractiveness.

The main events of The Technopolicy Network are two large conferences; one discussing best practices in Science Based Incubation and one discussing best practices in Science Based Regional Development. The people who participate in these large-scale networking events of The Technopolicy Network are i.a. entrepreneurs, investors, policy-makers, incubator managers and tech-transfer officers.

My motivation for doing this internship was that The Technopolicy Network, being a networking organization, would provide me with an extended international network. By maintaining the network and trying to acquire new projects I got to get in touch with a lot of professional in various fields related to science and innovation. This was very worthwhile and hopefully will be of value during my own career. Another great feature of the internship was the diversity of tasks and flexibility of the department. Due to the diversity it was always exciting to start a new day at work and the flexibility of my supervisor made that I could work very independently. This way I learned a lot about managing projects, organizing conferences and supporting general management in decision-making processes. What was of importance to me as well is the fact that by looking at the innovativeness of regions you get to see everything in a broader perspective. This means that I, due to the experience and to the theories I learned, can assess regions on their innovativeness and identify what are the best practices and what could still be improved.

During the internship, I was assigned to support the acquisition of projects for 2013, enhance the strategy of The Technopolicy Network, stimulate social media usage for marketing purposes and expand services for the network. These tasks covered a major part of the internship. Other tasks were mainly day-to-day tasks; the diversity of the internship made it that you never knew what you were going to do at work today. A single e-mail or call, for instance, could completely change your schedule.

A highlight of the internship was that I was asked to assist in the organization of the Annual Conference in Leuven & Genk, which was the major event of the year for The Technopolicy Network. I got to support the on-site management and meanwhile used the opportunity to expand my network internationally.

In short, The Technopolicy Network is a great place to do an internship. The assignments are very diverse and as an intern you get a lot of freedom and control over your assigned tasks. The supervisor is young, fun and professional and is open to your suggestions and new ideas to improve business. This gives you the feeling that you are valuable to the department and that you have a right to say in decision-making and day-to-day business of the department. Furthermore you will become a part of a great team that is inspirational and will assist you in any way they can with your

tasks and future career-plans. I am very glad to have performed my internship at Science Alliance and I will definitely keep in touch with all colleagues who worked there.

Syntecnos

Selling breakthrough technologies

Doing an internship at a start-up company can be a challenge. Doing an internship at a biotechnology start-up company doubly so. The biotechnology sector is a sector fraught with uncertainty. It requires flexibility, discipline, skills and a great deal of hard, unpaid work. This type of internship allows for great freedom in expressing yourself and being creative. You must be able to speak your mind and take pride in your accomplishments which can have lasting effects on the future of the company. In short, you need a pioneering mentality.

What you also need are good task management skills, so you can track the progress of tasks and deadlines. In a chaotic environment of a start-up company the environment is constantly changing.

Opportunities are everywhere but you need to focus on what you want to achieve. Too many times the environment or the opportunities are leading the company instead of the other way around. This is a dangerous pitfall.

The rewards are plentiful, there's nothing like seeing your own produce grow and be successful. The prospects of financial rewards are also around the corner if you've choses the right sector and the right product or service. Lastly, your efforts can have a real effect on the world, like Google, Facebook or Apple.

Marketing and Sales for the introduction of the BioWell™ plate and Zebrafish EggSorter™ into the developing Zebrafish research market

Syntecnos is a Leiden University spin-out company founded in 2010 by Eric M. Wielhouwer, with the mission to become the worldwide leader in drug discovery, providing solutions for automated whole animal screening and addressing preclinical drug safety and side effects. It aims to do so via their patented BioWell™ technology, a microfluidic microtiter plate (focused on zebrafish, but compatible with other biological samples) that addresses many of the problems that commercial and academic laboratories involved with (amongst others) drug development and screening encounter using current standards. Next to this, the company has acquired an exclusive license for the Zebrafish EggSorter™ technology from Centre Suisse d'Electronique et de Microtechnique (CSEM). This machine is a vision based automated biosorter, capable of sorting and dispensing individual zebrafish eggs and larvae (and other biological samples) into standard multiwell plates, drastically reducing the time required to set up experimental assays. In his MSc MCB research internship, the student had already worked with zebrafish, using techniques and technologies similar to those employed at Syntecnos. With a friend and fellow SBB student already working there at that time, it was a logical step to apply for an internship at Syntecnos. While the internship project initially focused on performing market research, the focus of the internship changed halfway. Due to circumstances, it was decided that market research was no longer a priority for Syntecnos, and the student project was switched to a sales based assignment, evolving along with the wants and needs

of the company. However, the tasks performed by the student were not limited to sales based activities. Rather, they covered a wide array of topics, ranging from giving sales presentations to potential customers, to attending conferences and conventions, interviewing academic and industry parties, constructing competitor analyses, contributing to business plans and designing promotional material to name a few. This dynamic variety was characteristic of interning at Syntecnos. No protocol or procedure was set in stone, and there was a lot of room for input and feedback at the formative stage of the company. Therefore, doing an SBB internship at a start-up company is highly recommended. The dynamics of a start-up expose internship students to multiple facets involved with running a technology and science based company, allowing them to figure out what they like to do and what they are good at. Interning at Syntecnos was the perfect opportunity to apply the theory and knowledge gained from the SBB curriculum, and build completely new skill sets on top of that. In this particular internship, the experience gained over the past months has been a valuable contribution to the student's development into a starting professional. It has not only been educational, but also dynamic, challenging and exciting. It can best be described as both relaxed and stressful at the same time. Despite being just an intern, the student was always treated as an employee and given a lot of freedom and responsibility in performing his tasks. Everyone made valuable contributions to the team and the work being done was always appreciated. With a small and creative workforce, teamwork was the key word at Syntecnos.

Tebodin

MSP implementation and ELC summarization

Tebodin is a 70 year old company that started right after the Second World War Tebodin stands for 'Ter bevordering der industrie'. Tebodin's purpose was to help the industry in The Netherlands get back on its feet after WW II. Tebodin nowadays focuses on consultancy & engineering. This is expressed through different ways: consultancy, project management, design & engineering, procurement and construction management. The projects can vary from designing a new plant to supporting the Efteling with the engineering of new attractions. The support is based on demand from clients: from broad guidelines in a project to complete project management. Tebodin provides services in the Oil & Gas, Infrastructure, Industry, Utilities & Environment, Property en Health & Nutrition. Tebodin is an international company that is located in Europe, Asia, The Middle East and Africa. They have nine offices in The Netherlands. There are roughly 200 people working at The Hague, but the amount of people varies per location. The Hague is also the headquarter of Tebodin. There is a board of directors that consists of four people, however they take "business decisions on a wide variety of issues throughout our network". The total amount of people working for Tebodin is roughly 5k. Tebodin has recently been taken over by Bilfinger. Bilfinger SE is a multinational company specialized in civil and industrial construction, engineering and services based in Mannheim, Germany.

The goal of this internship was to experience the ins and outs of a recruitment department, o get a better understanding of the strategy that was used to hire candidates, and what factors were determining which candidates they wanted to hire. Furthermore, I wanted to experience the culture of a multinational.

Furthermore I was allowed to help in certain projects to prepare and execute them. These two projects involved the evaluation of the employee life cycle within Tebodin, from arrival till exit, and

the implementation of a Managed Service Provider (MSP). The MSP puts a broker between Tebodin and the agencies that are delivering Tebodin third parties, in order to save time and money plus perform compliancy in this hiring process for Tebodin. For the MSP implementation I first had to get a better grasp of the theory behind the MSP, and the opportunities that an MSP can offer. This was done by performing theoretical studies and by attending conferences from companies with an already active MSP construction. For the project regarding the employee life cyle, I had to read through several documents and summarize the relevant information. This information was later processed in a single document which will be used for the creation of an online employee self-service website on the intranet. This project also involved several meetings with managers from the involved departments besides human resources (HR), namely the ICT and finance (FA) department. Besides these projects, my day to day tasks consisted out of supporting the recruitment team. During this internship I was taught a lot of new information, and I gained or improved (new) skills. One of the many things I learned is that you sometimes just have to make a call whether or not you'll prosecute some parts of a projects, or that they'll be dealt with later.

This was part of the project management skills that were taught to. Furthermore I learned how to present, and initiate new innovations throughout a company with multiple offices. I learned to organize my tasks, and make my own planning on when to handle what. Besides the planning, I also communicated with Tebodin offices outside of the Netherlands, namely the Tebodin office in Oman, which taught me the tip of the iceberg on how to deal with cultural differences.

My experience within Tebodin was a very pleasant one. The nice part of working in a HR related department is that it allows to quickly meet a lot of people throughout the firm. I had contact with a lot of people, from engineers to consultants and department managers.

This showed me the advantages of having a big network throughout the company. Not only did I get in touch with the higher managers, but they also took their time to listen to anything I had to say when I came by at their office. By letting me join in on the several (business) meetings that either Tebodin or other companies gave, I was able to get quite a good impression on several of the jobs that are performed at Tebodin. This cooperative atmosphere at Tebodin can be used to combine knowledge or collaborate with different departments in order to satisfy Tebodin's clients. Furthermore, it showed me insights on what a consultancy & engineering company is all about. It was an awesome experience to go through.

Technopolicy Network

Roles of the Triple Helix in Science Based Regional Development

I did my 6-month internship at the Technopolicy Network, an international network of knowledge regions specialized in stimulating science based regional development. They achieve this mainly through the organization of events such as conferences and trainings and through several services they provide. In my case I was tasked with the organization of a conference on Triple Helix cluster management and international cooperation in Russia on 23-24 April. A secondary task was to evaluate and improve the business model for the Technopolicy Network.

Organizing a conference in Russia was quite a challenging task, especially considering the political issues regarding Crimea and Ukraine and the political sanctions from the EU and US at that time.

Many people we approached from several countries, especially government officials, were reluctant to commit to a trip to Russia to share their knowledge on cluster management and forge new cooperative bonds. To add to this task, cooperation with a Russian partner was a challenge itself. Luckily, the conference was a great success, bigger than we had expected, and over 300 people turned up from Europe and Russia!

Improving the strategy of the Technopolicy Network was an interesting task. We had various strategy meetings about improving the services and model. The main strategic point was to modernize the services, membership and look of the Technopolicy Network and this was (most apparently) done through the creation of a new website which was my task. You can view the new website at www.technopolicy.net.

My theoretical deepening is about the Triple Helix, the roles of the Government/Business/Academia in regional development and the cooperation between them that is required for a successful strategy. As a practical example of this, co-innovation programs were investigated in which two regions (from other countries) cooperate with each other for several purposes such as; exchange of knowledge/students, shared markets and landing of companies in other countries, technological cooperation, matchmaking between those regions and much more. In general co-innovation programs can be seen as cooperation between the G/B/A on a regional scale, with the regions complementing each other in the areas that it is needed most.

The internship gave me an interesting insight into the needs and attributes of regions in different countries. How far along each region is in their development, the needs of the G/B/A in those regions and how several countries address the development of their clusters and regions. It was also a good experience to broaden my view of the business world and the tasks therein, as I was in contact with many different people from CEO's to regional ministers. It was a nice environment to work in as the office was quite small, giving me enough freedom and responsibility to complete my tasks. In general I had a good time here, learning a lot about the business world and my personal strengths and weaknesses therein.

Measuring & demonstrating the impact of science on the economy, culture and society at large

Scientific research has changed society in so many ways, that life without the scientific developments of the past centuries has become unimaginable. What would life look like without the microscope, atomic clock (GPS), hybrid corn, antibiotics and transistors? The question whether science has an impact on society might seem moot.

Still, in the past years and decades governments and the general public have increased their demands for justification of the huge investments made in scientific research. In the Netherlands alone, € 4.3 billion are being invested annually – amounts that justify the question whether they are being spent most effectively. In the Netherlands and beyond several policy initiatives are ongoing to figure out how this evaluation of the impact on society could be measured. The national government, KNAW, CPB and the "Science in Transition" initiative are actively working on the topic from one angle or another.

In several countries, attempts were made to find an effective answer to this question. Traditionally, evaluation of research was focused on research outputs (publications, citations, prizes) but the

question of impact beyond academia became louder. In the US, the STAR METRICS program was the answer question whether the $17 billion investments into scientific research under the American Recovery and Reinvestment Act 2009 actually stimulated the economy. In this program, run by the NIH, a big data approach was used to follow the money and alumni of institutions. In the UK universities are requested to prepare a case study for every ~10 FTE staff to be evaluated by expert panels. The Higher Education Funding Council for England (HEFCE) will weigh 'impact beyond academia' through this procedure for 20% in their decision to distribute £2 billion per year.

In my internship at ScienceWorks, a company based in The Hague that supports knowledge transfer (and thus the impact of science on society!). During the internship the main project revolved around preparing and organizing a commercial international conference in Amsterdam on 'The Impact of Science" - where the above questions and more were discussed by 21 experts.

The internship included among others: responsibility for managing the project (designing the program, setting up a timeline, identifying tasks, planning a schedule, guarding the process), managing the conference itself, identifying, proposing and inviting relevant speakers, identifying target audiences, preparing letters and other documents, preparing and managing the conference website and managing the registration and invoice process.

But it also allowed for vast theoretical deepening on the topic of how impact beyond academia can be measures or demonstrated, through literature research and attending meetings with relevant experts and stakeholders.

Besides the conference, the internship also included activities in support of the Technopolicy Network, a network of knowledge regions run by ScienceWorks that discusses the contribution of government, business and academia to science based regional development. Activities in this field were mostly focused on identifying relevant news and spreading that through its social media channels as well as preparing a social media strategy for both the Technopolicy Network and ScienceWorks as a whole.

The Sheppard

Marketing and Event Management

For the internship that was required for the SBB Fundamentals course, I wanted to do a marketing internship that was completely unrelated to science. I was interested in marketing because it is one of the most creative industries out there and this fits very well with my personality. Furthermore, I also wanted to do an internship abroad. I am originally from Curacao, so living and studying in the Netherlands has already been a challenge for me but I wanted to try something different and do an internship in the US.

With the help of Internscout, I found a marketing internship at The Sheppard.
The Sheppard is a branded entertainment and alternative marketing company based in Los Angeles, California. They believe that there are far more unique marketing ways to engage and inspire audiences. Traditional, mass methods of communication are becoming less effective, making alternative methods of communication and engagement more effective and more valuable.
I learned a lot about these alternative marketing methods during my internship. Alternative methods

included photo shoots, video shoots and different marketing events like expos, fashion shows, charity events and TV shows. I was involved and learned a lot about planning and managing these events and also helped out as a production assistant during the events. I slowly got more responsibilities as my supervisors gained more trust in me. Furthermore, good teamwork, communication and organization also play a very important role in order to execute these events successfully. These are all skills that I learned to use and improve during my internship.
The knowledge that I gained during SBB Fundamentals course related very well with this internship and was really helpful. Especially what I learned during project management, financial management and strategic marketing management.

Moreover, living in the US also helped me improve my English writing and speaking skills and learn more about the culture. It also helped me be more independent and developed my social skills. I got to meet, work and become friends with a lot of people and this expanded my network in the US a lot, which I didn't have before.

I would definitely recommend others to do an internship at The Sheppard if they are interested in marketing. My supervisors and co-workers were really nice and I became good friends with them. Furthermore, I would also recommend others to do an internship abroad because it makes you really independent and can let you learn a lot about yourself.
Overall, I can say that I really enjoyed this internship and I learned more than I expected. I really hope to work again with the Sheppard in the future.

TI Pharma

Success factors in Public-Private Partnerships

The last few months I did my SBB internship at TI Pharma (will be named Lygature as of 1 January, 2016). My internship was focused on Public-Private Partnerships (PPPs). A PPP is a collaboration between multiple partners, with a minimum of one academic partner and one industrial partner, with the goal to combine forces and knowledge to receive a better end result. PPPs in Life Sciences are established to bridge the gap between basic research and clinical studies, also referred to as the valley of death. By establishing PPPs multiple partners with different backgrounds and a variety of specializations are brought together to share their knowledge. It is hoped this will improve and speed up the path medicines make from their discovery in basic research to their final destiny, the patients.

All these different partners are organizations with their own goals and objectives. These partners do not have the same goals and in an effort to collaborate with each other they set up a contract according to which the project will proceed. You can imagine that in such situations the bigger and richer organizations might be more influential in the PPP and it is quite possible that they steer the project into their own direction, so it will fit their own needs. If their own needs are not in line with the goal of the project, this can most certainly be a pitfall of these projects. It can cause the project to deviate from the intended project goal and it can ultimately cause the project to fail because the project goals are not met. In order to prevent this from happening it is beneficial to have an independent partner present in the partnership, an organization who is only interested in the

success of the project and which has no conflicts of interest. TI Pharma is such an independent organization, whose only interest is to successfully reach the project goals by steering the different partners in the right direction if necessary. TI Pharma is a not-for-profit organization, specialized in the catalysis of medicine development by founding partnerships between academia and industry and by actively managing research programs. They were established by the Dutch government in 2006 and received 137 million euro's from them to stimulate medicine development. With this money they funded 74 translational research projects in the Netherlands.

During my internship I looked at a selected dataset of these research projects with the goal to discover certain factors which influence the project success. Literature states a lot of success factors that can positively or negatively influence the success of a project. Since literature on the topic of Life Science PPPs only addresses these factors qualitatively, I wanted to quantitatively analyze success factors for healthcare PPPs during this internship. These data were obtained by designing a questionnaire based on success factors mentioned in literature and analyzing the obtained data by using SPSS. Since I already obtained a fair amount of knowledge about PPPs in this previous part of my internship, another component of my internship was to write a review on the topic of Public-Private Partnerships, while focusing on their international role in Life Sciences.

I really enjoyed this internship at TI Pharma and I think all the knowledge I obtained will be very relevant for my future career.

To-BBB

Identification of potential ALS compounds for to-BBB

During my 6 months rotation at the company to-BBB, my assignment was to identify potential ALS compounds for to-BBB's ALS drug development program. to-BBB is a private biotechnology company focusing on enhanced drug delivery across the blood-brain barrier. The company is developing novel treatments for devastating brain disorders, like brain tumors, Alzheimer's disease and lysosomal storage diseases, by combining existing and marketed drugs with the G-Technology®, to-BBB's proprietary brain drug delivery platform. The G-Technology®, which stands for liposomes coated with glutathione-conjugated polyethylene glycol (GSH-PEG), mediates safe targeting and enhanced drug delivery to the brain. In fact, to-BBB's G-Technology® is a lisposomal drug delivery system, able to carry a range of compounds (from small molecules to biologics), from hydrophilic to lipophilic and even low soluble drugs, protects the body from side effects caused by peak concentrations of the drug and the addition of PEG shields the liposome to ensure a long circulation time in the blood stream.

During my internship assignment, I had to investigate the disease ALS. Amyotrophic Lateral Sclerosis (ALS) is a neurodegenerative disease characterized by the loss of motor neurons resulting in progressive weakness, muscle atrophy, spasticity and difficulty in speaking, swallowing and breathing. It is a very progressive disease with patients having a life expectancy of only 3-5 years after prognosis. Standard treatment is based on one registered drug Rilutek, offering only low disease-modifying characteristics. Although ALS is the most common motor neuron disease, the pathogenesis has not been completely unraveled. ALS has a very high unmet need due to the lack of effective therapies, lack of a reliable animal model and the progressive nature of the disease.

It was my task to investigate the ALS market and to prioritize possible ALS compounds for to-BBB's pipeline: "Which compound holds the most promise for internal development?". to-BBB has identified five compounds that could be implemented in the G-Technology® for the development of treatment of ALS. The goal of my internship project was to generate background information on these compounds in order to enhance and prioritize to-BBB's ALS drug development program. Three compounds were subjected to more detailed background analysis. The background analysis was focused on 1) technical aspects of the compounds, 2) market analysis and 3) IP situation.

1) A technical analysis of the ALS compounds was performed for the selection of the three compounds. During this technical feasibility study, the molecular characteristics and the chances for implementation with to-BBB's G-Technology® were identified. The R&D status of the compounds at to-BBB was investigated via interviews with researchers at to-BBB.
2) Market research of the global ALS market, possible orphan drug status and ALS compounds currently in clinical development were determined.
3) The IP position of the three compounds was investigated via an in-depth patent search. During the patent search, important competitors of to-BBB were discovered, which were outlined in a competitive assessment.

A SWOT analysis of the three ALS compounds was realized, wherein the strengths and weaknesses of each compound were summarized, regarding IP position, proof of concept, G- Technology® match, availability, costs, additional value G- Technology®, competition and therapeutic concept. Based on the SWOT analysis, the ALS compounds were prioritized and it was discussed how they could be implemented in to-BBB's ALS drug development program. The internship was finalized with recommendations for to-BBB in which I made conclusions about which compound holds the most promise for further internal development and commercialization and why. I also gave to-BBB an overview of which aspects of every compound should be further investigated or amended in order to be a perfect candidate for to-BBB's ALS drug development program.

My internship offered me the chance to combine my scientific background with challenging business issues. I have learned a lot, like performing a technical feasibility study, performing an extensive patent search and stating recommendations for to-BBB with the SWOT analysis results. Furthermore, I have learned to report in a concise way and how to make clear business PowerPoint presentations. I experienced the open environment of a company, in which communication was shown essential. I spent a lot of time behind a computer doing desk research. Nevertheless, I participated in a lot in social activities like meetings and lunches; these activities always kept me up-to-date about the state of the art. Through this internship, I have improved my business competencies and I had the opportunity to put into practice my knowledge of theories and concepts learned during the course SBB Fundamentals. I both added value to to-BBB and myself and I acquired a lot of useful business capacities that will definitely come in handy during my future job opportunities.

Increasing attention for the blood-brain barrier

to-BBB technologies BV was founded in 2003 as a spin-off of Leiden University by dr. Pieter Gaillard, who currently holds the position of CSO. The company employs approximately 25 employees. to-BBB is clinical stage biotech company, which focuses on enhancing the blood to brain delivery of drugs.

This is important, because the brain is protected by a barrier between the blood and the brain: the blood-brain barrier. This barrier protects the brain from many harmful components in the blood, but also prevents many drugs from entering the brain. This is a severe bottleneck in the development of new treatments for devastating brain disorders. Therefore, finding ways to safely enhance the delivery of drugs across the blood-brain barrier is vital for the development of drugs targeting the central nervous system.

to-BBB's combines its proprietary technology, the G-Technology®, with existing compounds to enhance the blood to brain delivery of drugs. In doing this to-BBB hopes to develop treatments for patients with devastating brain disorders, such as brain cancers, ALS and MS. to-BBB's internal lead product is a new chemotherapy for the treatment of brain cancer, which is currently undergoing a phase I/IIa clinical trial.

I chose to do my internship here for two main reasons: I have a background in Biopharmaceutical sciences and doing an internship at this company would allow me to have some points of contacts with my studies. Second, I wanted to do my internship at an organization where my work would actually make a difference and I felt this could be best accomplished in a small organization.

The blood-brain barrier plays a very important role in the development of drugs for CNS disorders. Several core groups (academia, the public, corporations and policy makers) still neglect the bloodbrain barrier. A previous intern had researched why so little attention was being paid to the bloodbrain barrier by various target groups. He came up with several recommendations to increase the attention being paid to the blood-brain barrier. My project was about implementing these recommendations and increasing the attention being paid to the blood-brain barrier. I engaged in many small projects, these included, but were not limited to, making a video pitch for a science meets press event about to-BBB's lead product; starting the process of creating a game-app about the blood-brain barrier; writing an informative text about the blood-brain barrier for the website of the Netherlands Brain Foundation; making a short film about the blood-brain barrier; setting up a communication task force and getting to-BBB's first ambassador on board.

Overall, I had a very enjoyable, diverse and dynamic internship at to-BBB. The employees are all highly motivated and are all working together towards the realization of a common goal: developing treatments for patients with brain disorders. The most important thing I learned during my internship was to think and act like an entrepreneur. Using this approach I was capable of realizing goals, where others would have given up or would have considered a project to be no longer viable.

Exploring the horizon for future funding opportunities with optimized grant-writing procedures

To-BBB technologies BV is a Dutch biotechnology company specialized in drug delivery across the blood-brain barrier (BBB). Currently, to-BBB is developing treatments for several brain diseases including brain cancers, multiple sclerosis (MS) and lysosomal storage disease. It has developed an exciting new platform technology, called the G-Technology®, which can safely enhance the sustained delivery of drugs across the BBB into the brain. Furthermore, it will decrease the indiscriminant biodistribution of the working compound and it will increase its halflife as well. to-BBB is collaborating with several pharmaceutical companies and is looking for funding to further develop their lead products and future follow-up products. to-BBB's proprietary technology is based on the novel use of the endogenous antioxidant glutathione (GSH), which is actively transported across the BBB. This tripeptide is coated onto PEGylated (PEG) liposome in which the drug is encapsulated that

requires more efficient delivery across the BBB. Glutathione on the outside of the liposomes result in as much as a 5 times higher concentration of the drug in the brain as compared to encapsulation of the drug in liposomes without glutathione. Their lead product (2B3-101) for brain cancer is currently being tested in the clinical phase IIa trial in the Netherlands and in Belgium. While 2B3-201 has recently entered the clinical phase I trials on Multiple Scleroris (MS). For my internship, I joined the Business Development department of the company under the supervision of Sijme Zeilemaker. This department focused on the assessing all business opportunities and funding opportunities thereby trying to fund the further development of the two lead products and the potential follow-up products currently in the developmental phase. The goal of the internship was to experience what it is to work as a business development associate in a small to medium biotechnology company. Additionally, I wanted to learn more about assessing funding opportunities and prioritizing the product development throughout the company. Furthermore, I wanted to learn all the ins and outs of the grant-writing process necessary to acquire funding for the product development, including the evaluation process of the submitted proposals. The internship can be divided in four stages based on the above-mentioned objectives:

- September: Education and learning the ins and outs of to-BBB.

- October: Writing of four proposals to acquire funding for product development and assessing funding opportunities.

- November, December: Assessing the European funding program Horizon 2020 (H2020) and determining the opportunities for to-BBB

- January, February: Prioritizing the different opportunities and matching these options to the focus of the company.

The internship began in September by reading the necessary background information as well as acquiring knowledge about funding opportunities and the requirements needed to write excellent proposals. These learning points will enable me to fulfill my internship and meet the predetermined objectives. During the second month we discovered four deadlines and I was involved in the writing process of the proposals. The four proposals were written for products in the early-development phase, of which two proposals aimed on a treatment for amyotrophic lateral sclerosis (ALS) and the other two proposals focused on a potential therapy for spinal muscular atrophy (SMA). These activities taught me how to write a proposal and how to relate the focus of a project with the focus/aim of a certain funding opportunity (call). Additionally, I had the possibility to attend numerous business excursions. The first excursion was a business meeting together with the founder of STOPhersentumoren.nl (Klaske Hofstee), while another excursion was a master class at the Erasmus Medical Center about the proposal writing process in relation to H2020 and the rules and criteria of this funding program. The rest of the activities varied tremendously in focus but were all highly interesting and educative. The last four months focused predominantly on Horizon 2020 and Eurostars 2, i.e. assessing all the opportunities within this funding programs and matching the internal focus of to-BBB with relevant calls. It was essential to discuss and prioritize the potential projects once a funding opportunity was detected. Consequently, multiple meetings were scheduled with the scientific team and the business development team to determine the objectives in relation to the clinical development of the two lead products and the preclinical development of the potential follow-up products. Furthermore, I continued to analyze the procedure for writing a proposal to increase the chance of receiving funding through H2020. Together with my direct

supervisor I attended another meeting especially for Small to Medium Enterprises (SME) in Brussels to gain further information about all the opportunities for SMEs during H2020. Additionally, I attended the launch of Eurostars 2 in Den Haag, which is a European funding program, which will run in parallel to H2020 but will operate separately from H2020. These months were highly educative since I attended several informative meetings about H2020. Furthermore, working on both an individual basis and a team basis were to exciting and educative aspects of the internship. The meetings and discussions taught me to communicate and work efficiently and structured manner.

So, in conclusion, why should you go to to-BBB for your internship?

- You like to work in biotechnology company focusing on drug discovery for devastating brain diseases.

- You like to be involved in the business development of a fast growing SME.

- Open-culture within the company (open-door policy).

- The colleagues appreciate and value your opinion and contribution

TOPdesk

Customer solutions consultancy

During my study I have found that while I find physics very interesting, doing research is not something that I like. I was therefore looking for opportunities to pursue a career in business. Enlisting in SBB was the logical step to take. The main reason for me to participate in the SBB track in my physics master was to do an internship at a company. With practical experience in working in a company to complement my physics degree, I think I have an edge over my fellow graduates. My dislike for physics research stemmed from the fact that it is often a rather solitary affair. When it was time to look for an internship, I thought consultancy was much more team-based and projectdriven than physics. Thus, I decided to look for an internship in consultancy. During my time as a student, I had heard positive things about TOPdesk and decided that it could be a fun place to do my internship.

TOPdesk is a young and fast growing software and consultancy company specializing in service management. The main office in Delft contains around 300 employees of the 450 worldwide. TOPdesk started as a tool for IT departments to automate their processes. Since then, the customer base has broadened to include other service departments such as facility management and human resource management. Besides a software tool, TOPdesk also offers consultancy to implement the software in the customer's organization. It is in the consultancy department that I did my internship.

My internship can be divided into two parts. The first part consisted of the training new employees receive to become consultants. This ranges from in-depth knowledge of several modules of the software product to techniques and soft skills that consultants use. The training track was a mix of interactive sessions and field work, joining consultants in their visits to clients.

After two months the second part of my internship started. I joined the customer solutions team and started to be responsible for my own clients. The customer solutions team is responsible for fulfilling

wishes of clients that cannot be done with the standard solutions TOPdesk offers. The projects I did can be put into three categories: creating forms using XML, altering the look and feel of forms with CSS and creating a coupling between TOPdesk and another software product.

By the end of my internship I was doing projects for clients just like the other customer solutions consultants. Although I can still learn a lot, what I have learned so far allows me to be a productive member of the CS consultancy team. In terms of learning outcomes, I think this is my biggest achievement. By contrast: in physics research your exploits will only yield results toward the end of your project, and often not at all. By the end of my internship I have also learned a lot about what I like and do not like to do for a living and what drives me to do my job.

Both TOPdesk and myself are very content with the work I've done; so much so I will start to work as a customer solutions consultant for TOPdesk after my graduation. TOPdesk is very welcoming to students and are willing to think up an internship that suits a student's particular strengths and interests. It also has a company culture that is about as close to a student organization a professional organization can get. I would therefore wholeheartedly recommend students to apply for an internship at TOPdesk.

Unilever

Category management "Bertolli, Conimex and Knorr"

In September 2014, I applied for an internship at Unilever at the customer development department. I found the vacancy by coincidence at the LinkedIn website. The vacancy was for a position in category management of the Savoury team. I already had affection with Fast Moving Consumer Goods, as I had worked at Jumbo Supermarkets. During my Chemistry master I was trained to point out and solve problems, reduce a great offer of information and to create a short and concise, but meaningful conclusion. The combination of experience in Jumbo Supermarkets and Chemistry master was a good fit with the vacancy in the category management team.

Unilever offers a dynamic working environment where people with energy, creativity and passion work together to achieve ambitious aims. As an intern you are fully part of the department and you get a lot of responsibility, thus giving you good insight into the organization and you will develop yourself quickly. Unilever offers an educational internship in which you can develop yourself as well as category management and commercial skills. Category management at Unilever involves a dynamic function between marketing and sales. Marketing creates, category management develops the story with fair arguments and sales sells to retailers. In category management you get to combine strong analytical skills with intensive contact between many different departments and people.

Category management at Unilever consists of many proceedings. For example you evaluate the promotion strategy of several brands at different retailers and create an advice to retailers for future promotions. Space management of not only Unilever brands, but the whole category, is a large share of your work as category manager. These advices are non- binding, so this is where the challenge lies. Advices should be reliable and unbiased. The advice should persuade the retailer while taking into account the retailers vision, the vision of Unilever and market developments. Last but not least it has to create monetary value for both Unilever and the retailer. During my internship I created

several analysis reports, of which some to be used as standard reports each month. I participated in the category management team as a team member. From day one I was assigned challenging tasks and I felt that I got a great responsibility, which challenged me to deliver high performance answers to questions and problems. My goals and objectives were accomplished at a satisfactory level. I enjoyed working at a commercial company.

Waternet

Creating a change-ready organization

The world is changing and customers are more critical and have high expectations of governmental organizations. From a closed and providing organization to an open and transparent company with more facilitating tasks. In order to be as flexible as society wants us to be, Waternet has to learn to play a different role whilst maintaining its core tasks. With the company culture and structure in mind, awareness can be created by addressing all employees during special events. Furthermore, a continued focus on internal communication improves collaboration and commitment of employees towards becoming a Change-Ready Organization