Aalto University - Department of Communications and Networking

ELEC-E7830 - Value Network Design for Internet Services

GE Healthcare

Digital post-acute patient home monitoring

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Abstract

The healthcare business has been a quite stable business area at last years. General Electric Healthcare is currently providing monitoring devices to the hospitals. They have started to innovate new designs which could totally change the healthcare system.

In this report we consider the business case related to GE Healthcare's home-monitoring devices. We use four methods to analyze this case. First we define key trends and key uncertainties as a part of scenario planning method. After constructing the scenario-matrix by the grounds of the two most important uncertainties, we utilize the value network configuration method forming 4 different VNC:s. VNC method is used to describe our case company's network and roles of the different stakeholders .The analysis continues with Business Model Canvas (BMC) method, where the cost structure and value proportion of most potential VNC is presented. Finally, we evaluate the competition situation using the Porter's Five Forces analysis

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1. Introduction

“Healthcare delivery is being redefined,” says Gregg Malkary, founder and managing director of the Spyglass Consulting Group. Healthcare delivery has established a remarkable trend in the last years. This can be confirmed just by looking at how health-centered people are and how much more wearable devices are used by people to support or analyze their personal health. However, one of the missing niches in this healthcare trend is post-acute patient home monitoring.

The group has researched case company General Electric Healthcare’s possibilities to transition towards a digitalized patient home monitoring service. General Electric is traditionally viewed as a hardware manufacturer and that has been established as their core business in the past. The transition towards being a service provider is therefore a remarkable change for a company which has its roots so deep as a hardware provider.

General Electric has especially as of late, been concentrating more on post-acute patients’ health and monitoring devices. This report will take into consideration multiple different approaches General Electric Healthcare could take in the future in becoming a service provider for post-acute patients in addition to its core business of medical devices sales.

This report introduces three different methods the group has applied to General Electric Healthcare post-acute home monitoring service. First the report showcases these three different methods as a general approach. These three methods include scenario planning, value network configuration -analysis (VNC) and business model canvas (BMC). These methods consider the business case from three different perspectives. Scenario planning works as a tool to understand the key trends and uncertainties different approaches would include. Value network configuration -analysis (VNC) presents configuration maps for each of the scenarios from a

technical standpoint. Finally, business model canvas (BMC) considers the potential business case from a business perspective by presenting the value offering, potential customers and business infrastructure which result in costs and revenue generation. This report will also analyze the business case's competition and attractiveness by applying Porter's Five Forces -analysis.

With these methods, or tools, the report establishes different approaches' pros and cons and points out the most suitable approach for the case company. Finally in the last chapter the group will conclude the report and summarize the recommended actions for the case company. This report will ultimately help the case company to decide on the most cost-efficient and the most potential approach if it chooses to enter a new niche as a post-acute home monitoring service provider.

2. Methods

In this section we present different methods used in this paper to analyze our company case. We have used four different analyzing tool and each method has own specific role and the methods are chosen to support especially our company case analysis. The next chapters presents Scenario Planning analysis, Value Network Configurations (VNC), Business Model Canvas (BMC) and Porter's Five Forces analysis.

2.1. Scenario Planning analysis

Scenario planning is a useful method for analyzing possible future scenarios related to specific company case. This method consists of several different steps for finding relevant scenarios. First it is important to set the time frame, scope and decision variables of the case. Also major stakeholders are identified at the beginning of the analysis. After that the key trends related to the specific business area are examined. It is important to know what political, economical, social, technological, legal and industry trends affect the case. The next step is to identify key uncertainties. At this point idea is find the outcomes which are uncertain and could significantly affect the case.

After the time frame and scope are set and the stakeholders, trends and uncertainties are defined it is time to start scenario construction. Construct the scenarios include itself a several steps. First the initial scenario themes are defined and the scenario matrix are constructed with two axis. Usually those axis are two most important uncertainties. After that it is important to check the consistency and plausibility of each scenarios. Because real world is very complex it is normal that some of the first defined scenarios would be irrelevant. During the analyzing case profoundly usually scenarios can changed. Also it is possible that first defined axis are irrelevant and these can be redefined. (Schoemaker, 1995)

2.2. Value Network Configurations

Value network is a business analysis perspective for a specific business area or a specific business case. It describes technical and social resources
between and within businesses. The main point of the value network is understand, visualizing, quantifying and optimizing value networks in the specific company case. Value network consist of actor types and technical components. (Casey et al. 2010)

Value Network Configuration is method used in this paper to analyze the value network related to our company case. We have defined the key stakeholders and role of them. It is important to understand the role of the actors and connection between them. VNC analysis consists of the actors, actor's role, technical components, business interfaces and technical interfaces. VNC is result when actors take on roles and establish interfaces with each others. Method includes several steps. First actors and technical components are defined. After that the interfaces between the actors are defined. There are usually many different possible VNCs for same case. In our analysis VNCs are based on our scenarios. (Casey et al. 2010)

2.3. Business Model Canvas

Business Model Canvas (BMC) is a method used in the paper to analyze our case company's business model. BMC is visual tool for identifying the different elements that affect the company's business model. BMC consists of the building blocks. The blocks are Key Partners, Key Activities, Key Resources, Value Propositions, Customer Relationships, Customer Segments, Channels, Cost Structure and Revenue Streams.

The Key Partners block describes the company's network. There are included suppliers and other partners which affect the business model and make it work. The Key Activities block includes the most important elements the company must do to make their business model work. The Key Resources block represents the most important resources and assets required to make the model work. The Value Propositions block describes the most important elements which create the value for the customers. It is important to identify which value propositions create the value for which customer segment and what is the connection between the value propositions and the revenue stream. In the Customer segment block the different groups of customers are defined. Idea of the Channels block is to describe the company's communication with different customers segments and how the company deliver the value propositions to the customers. The Cost Structure block represents the most important costs related to the specific business model. The Revenue Streams block describes the revenues which the company gets from the different customer segments. (Osterwalder, A., & Pigneur, Y., 2010)

Each building block has own individual purpose but there are also connection between blocks. It is important to see for example which value proposition is affected by which revenue stream. It useful to draw the arrows between the building blocks which illustrates the connections. In section seven we have further discussed how we have used BMC to analyze our case company's business model. (Osterwalder, A., & Pigneur, Y., 2010)

2.4. Porter's Five Forces analysis

Porter's Five Forces Framework is efficient method for analyzing competition in the specific business area. The analysis is divided in the five categories that affects company's ability ; Threat of new entrants, threat of substitutes, bargaining power of customers, bargaining power of suppliers and competitive rivalry. We have used this analysis and understand the competition from our case company's perspective. (Porter, M. E. 2008)

3. Case description

In this report the group takes a look at the case company's, medical hardware provider General Electric Healthcare's, potential to enter a new niche market as a post-acute patient home care -service provider.

General Electric is an American multinational conglomerate corporation. GE market capitalization is currently 120.44 billion dollars (YCharts, April 2018). GE was the second-largest company in the S&P 500 behind only Exxon Mobil (NYSE:XOM). Since then, GE has lost $240.7 billion in market cap and has experienced a great decline in market capitalization value. (Bespoke Investment Group, November 2017)

Figure 1. General Electric Market Capitalization (Bespoke Investment Group, 2017 November)

General Electric operates in multiple different fields, such as Aviation, Healthcare, Lighting, Renewable Energy, Transportation and Medical devices. GE Healthcare is a division of GE, which provides healthcare technological solutions for example in fields such as medical imaging, information technologies, medical diagnostics and patient monitoring systems.

As of late, GE Healthcare has been focusing on a concept called Mobile Digital Health, which is especially concentrated on post-acute patients' health and monitoring. Digital post-acute patient home care service offers patients in a post-acute state a possibility to leave hospital premises earlier and continue their recovery in a remote location, for example at patient's own home.

Post-acute state is a medical state between acute-state and rehab. During post-acute -state, a patient is not anymore in an acute medical state. Acute medical state is typically a state a patient is in for the next 1-3 days after surgery or other medical procedure. Rehab-state occurs when patient is ready to start recovery from the procedure for example by performing recovery exercises with a goal to reach the best possible recovery from a medical procedure. However, post-acute -state is also already a state where movement has to be established to achieve a speedy recovery. Therefore patients have to be able to move around on their homes and even visit outdoors during the recovery phase.

GE healthcare's vision is to create a complete "Life Care" -ecosystem, which would be a combination of medical recovery in hospitals and patients' homes. Life Care -ecosystem offers GE-provided medical devices and smart devices to ensure an acute-state patient recovery at hospital premises. When patient reaches a post-acute -state, the recovery can continue through self-management and wireless systems. These two parties are connected to each other though remote services Platform, which includes database of patient information and communication mechanisms to keep

third-party service providers and hospital staff aware.

4. Case analysis

In this analysis the group has used three methods to analyze the case company's potential to offer a new service for post-acute patients. These three methods are Scenario Planning, Value Network Configuration Analysis and Business Model Canvas.

Medical devices are connected to a patient when released from the hospital premises. Medical devices are connected to a platform through a reliable mobile 4G connection. Platform includes a database, which is connected to a data analysis center through Ethernet connection. Data-analysis center analyzes the data patient's medical devices send to the database. Data-analysis center is monitored by monitoring center through Ethernet and/or WLAN connection.

If post-acute patient experiences an emergency during recovery at home, an Emergency Protocol will take place. Emergency Protocol includes an Emergency Buffer, a third-party service which monitors emergency-state. If post-acute patient emergency-state reaches a level of high urgency, a third-party Emergency Service will be notified. Emergency Service will then proceed to take care of the post-acute patient by arriving at the location.

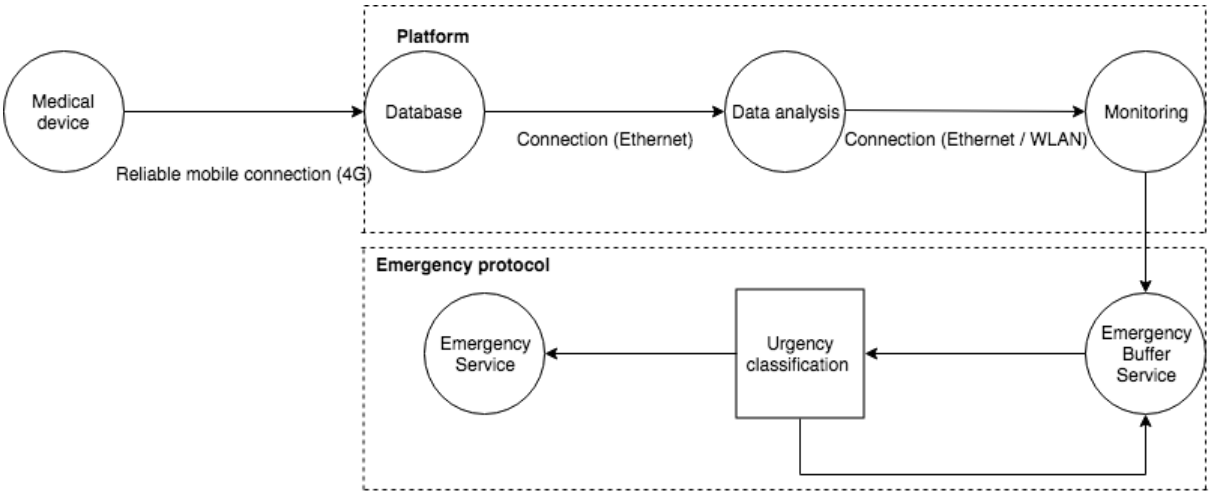

Figure 2. Technical infrastructure & Service delivery of the home-care service

The main question in this analysis is to figure out the most potential business model and third-party collaborations for the case company to generate value without differing too far from the core business of providing medical hardware. GE Healthcare does however have a great incentive to start offering product services, as the parent company GE has been declining rapidly as can be seen from the Figure 1.

Currently the market for post-acute patient home monitoring service is new and there are very few competitive solutions in the market. The most probable competitor for the case company is another medical hardware provider, Philips. Philips does however neither currently offer a service for the post-acute patient, but has great interest to enter the niche with it's own service offering. Philips USA's David White says that the potential for cost-effective patient monitoring in skilled nursing and home has never been greater. According to White, changes in vitals could be tracked, trended, and analyzed by software in the cloud, eliminating the need for any additional hardware or software in the facility. In case of urgent emergency, caregivers can be alerted, automatically. [1]

5. Scenario Planning

In this section we start our case analysis using the scenario planning method. The aim of this section is to clarify the ecosystem through key trends and key uncertainties. After shaping the drivers of post-acute patients home monitoring environment, we focus on two most important uncertainties while taking the key trends in account. Finally, we create a scenario-matrix with four different scenarios using these two most crucial uncertainties. Clarifying the ecosystem through scenario planning builds a solid base for further analysis.

Scenario planning was set up to be as generic as possible covering stakeholders worldwidely. In other words, it is not designed for specific country. However, due to the generic approach it can be utilized in different parts of the world. The scope is adjusted for five years.

5.1 Key Trends

Below are the trends we consider the most important for our case:

T1. Digitization of Healthcare industry

Digitization is one of the megatrends that has been changing the world for decades. However, healthcare industry has not been a early adopter of this trend. Instead, healthcare industry has taken major steps for digitization during past ten years. It is sure that digital transformation will change the healthcare industry. In any case, rapid technological changes will create new problems such as siloed information and data security issues which need to be solved. (Cisco, 2016)

T2. Artificial intelligence and big data

Increased computing power and advanced algorithms allows computers to make decisions automatically. In general, this means that decisions can be made without humans. Artificial intelligence is based on data in the context of post-acute patients monitoring. This leads to massive amount of data collected by the sensors of

post-acute medical device. Eventually, even more complex decisions can be made automatically.

T3. Data security

Back in the days patient data was transferred in printed form. However, today most of the patient data is transferred via digital methods. Data security is a increasingly topical subject especially in the case of patient data. Post-acute monitoring data needs to be encrypted using state-of-the-art methods to ensure the privacy of the patients.

T4. Advanced mobile communications and IoT

Mobile communications allows information transferring on the move. Advanced mobile technologies not only offer powerful data transfer but also greater capacity for devices. Upcoming 5G will enable features such as 10-100x more connected devices, 1000x more traffic and less than 1 ms latency (Nokia, 2018). Post-acute patients will have opportunity to live normal life and monitoring will be also active outdoors.

T5. Cost reduction

Cost reduction is one of the top trends universally. In our context, cost reduction is related to saving hospital resources. Each patient in the hospital requires necessity resources such as bed, food, treatment, monitoring and care. Post-acute monitoring enables Hospital to save these resources for more severe patients and simultaneously offer treatment for more people.

T6. Population ageing

The world population is getting older. In generally, every single country in the world is facing growth in the number and proportion of older people in their population. According to United Nations report, number of people aged 60 or over is expected to grow 56% during 2015-2030. (United Nations, 2015). This will also affect to number of medical operations. Post-acute monitoring will be essential option to cover these patients by saving the resources of Hospitals.

5.2 Key Uncertainties

The most important key uncertainties are presented below. Hence the digital post-acute monitoring represents totally new technology, some assumptions has been made. Therefore, uncertainties 1 and 2 are not included in further analysis and we focus primarily to uncertainties 2 and 3.

U1. Is it technologically possible to deliver this service?

Post-acute monitoring is something which has never been made before. The device itself is just a tip of the iceberg in the post-acute monitoring ecosystem. The complex ecosystem also needs functional mobile connections, encrypted data transfer, acute treatment buffer and service, data-analytics and more. To make this analysis more understandable, we assume that all technological issues can be solved.

U2. Will the stakeholders make functional legal agreement of responsibility?

Different technologies and actions are supported for different stakeholders. For enabling best possible treatment legal agreement of responsibility is necessary. However, in the context of this course we assume that legal issues will also be handled and legal agreement of responsibility will be made between the stakeholders.

U3. How the service implementation will be organized?

In this context service implementation is linked to main character delivering the post-acute monitoring service. In our case main character is either hospital or non-hospital. Service implementation is thoroughly explained in the next section.

U4. What is the subsidies involvement levet?

In our case subsidies are parties supporting the post-acute monitoring. These parties may include insurance companies or governmental support units. Subsidies have major effect to service scalability. Subsidies involvement is also explained in next section.

U5. Will the patient data encryption be bullet-proof?

Keeping the patient data private is extremely vital in this kind of service. Even if encryption level is at the maximum level, some data leaks may happen. Due to the digital mobile data form, data privacy is one of the key uncertainties.

U6. Will the essential connection be seamless all the time?

Due to the mobility of some patients, mobile connections must be used for transferring the medical data. Therefore, mobile communication technologies 3G, LTE and futuristic 5G will be needed. However, Wireless systems are exposed to different disruptions. To make data transferring trustworthy, different wireless technologies run by different operators must be combined and used together to ensure the connection all the time.

5.3 Scenario - Matrix

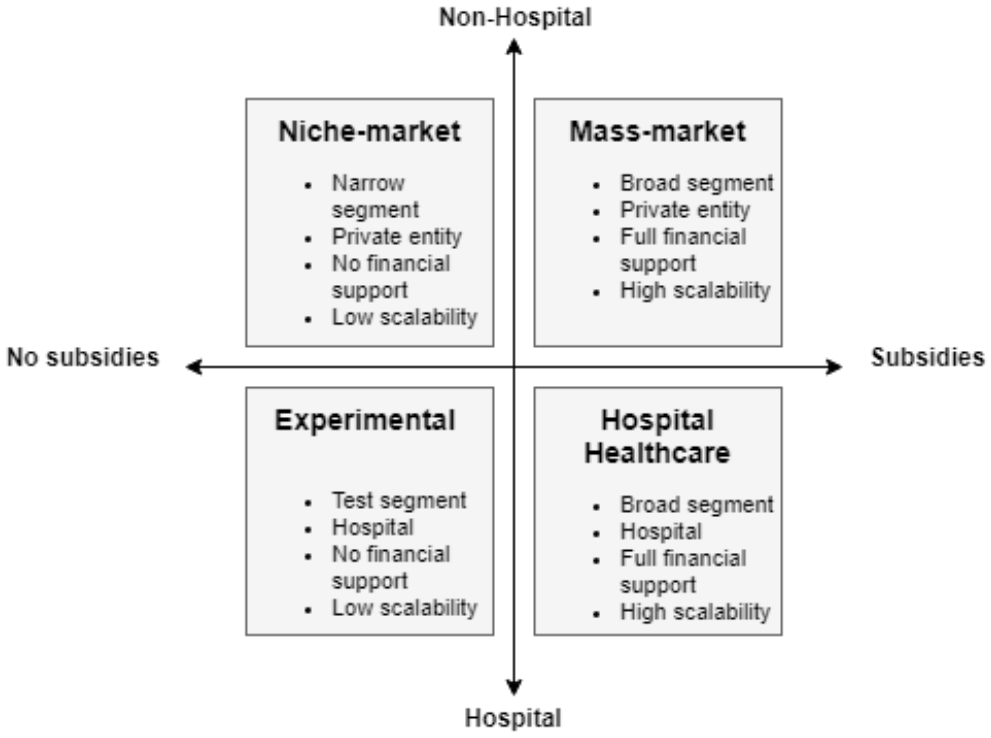

Figure 3. Scenario–Matrix

Figure on the previous page represents the scenario-matrix formed by two most important key uncertainties. Each scenario is possible depending how the medical world and the patients will react to the post-acute monitoring.

As mentioned before service implementation is divided between hospital-character and non-hospital character. This might be a little confusing. To make it clear, in this context hospital-character is mainly a governmental stakeholder, whereas non-hospital character refers to private-stakeholder. Different countries have also private hospitals which can confuse the picture. However, hence our broad approach this scenario matrix can be utilized in many ways depending of the target country.

Experimental scenario is governmental-driven implementation for test segment of patients. Here the hospital takes the responsibility of service delivery, while maintaining the vital elements of post-acute monitoring. Subsidies are not involved, which affects negatively to scalability.

Hospital Healthcare scenario is advanced version of previous scenario. Here the post-acute monitoring is respected among the subsides. This increases the scalability of the service and enables more patients to be monitored outside the hospital. This scenario may also be referred as “new normal procedure of post-acute treatment”.

Niche-Market scenario private-character driven scenario for small number of patients. It is not supported by subsidies, which affect to scalability and the price of the service. Patients being the customers means that the service is option only for the better off people.

Mass-Market scenario is private-character driven scenario for broader segment of patients. Subsidies are supporting the monitoring, which leads to higher scalability and lower prices of the service. Mass-market scenario can be seen as outsourced model of post-acute monitoring saving the resources of hospitals.

6. Value Network Configurations

This chapter represents the value network configurations of our case. Each VNC is constructed from the scenario-matrix presented in the previous chapter. All the VNC:s have basically the same components but minor differences are explained in below sub-chapters.

6.1. VNC1 – Experimental

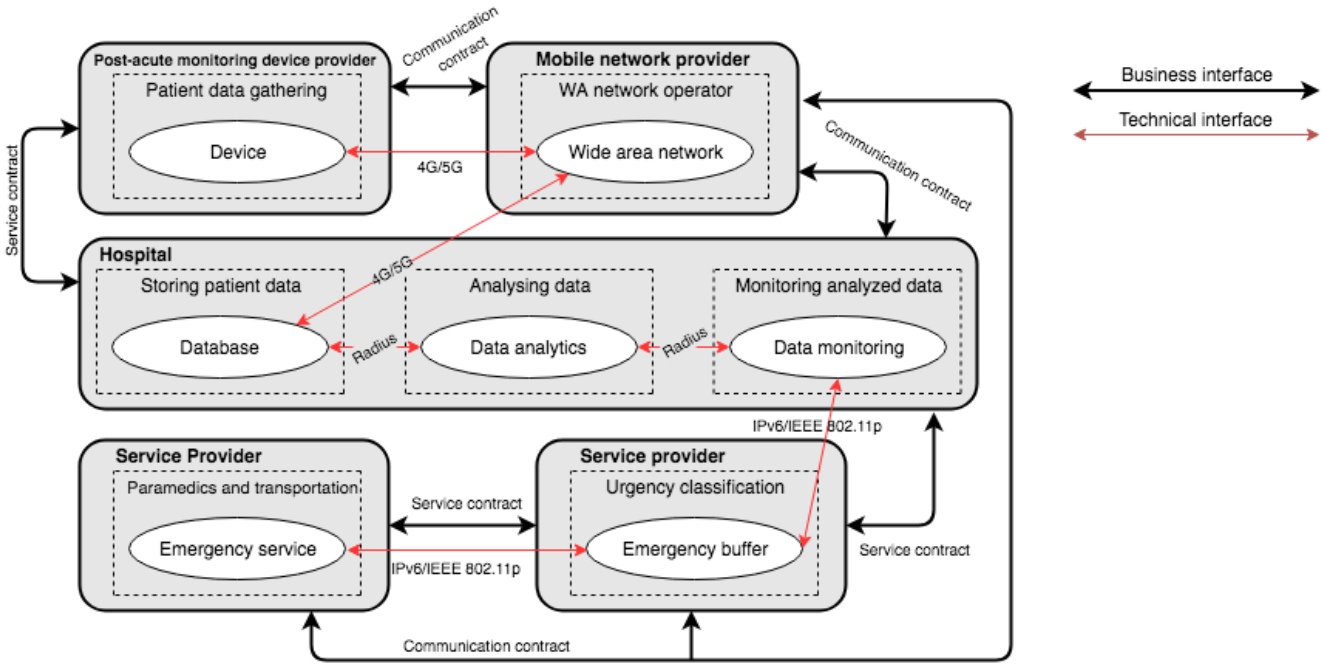

Figure 4. Experimental VNC

Experimental VNC presented above illustrates the hospital-driven implementation of the post-acute monitoring service. Here hospital is responsible of covering database, analytics and monitoring. Hence the limited resources and experimental approach, the urgency classification and emergency service is outsourced. Mobile network provider has communication contracts with all actors. Service contract is created between post-acute monitoring device provider and hospital. In addition, hospital has created service contract with service provider responsible of emergency buffer. Emergency service provider has contract with emergency buffer provider. Post-acute monitoring device provider's role is only deliver the device.

6.2. VNC2 – Hospital Healthcare

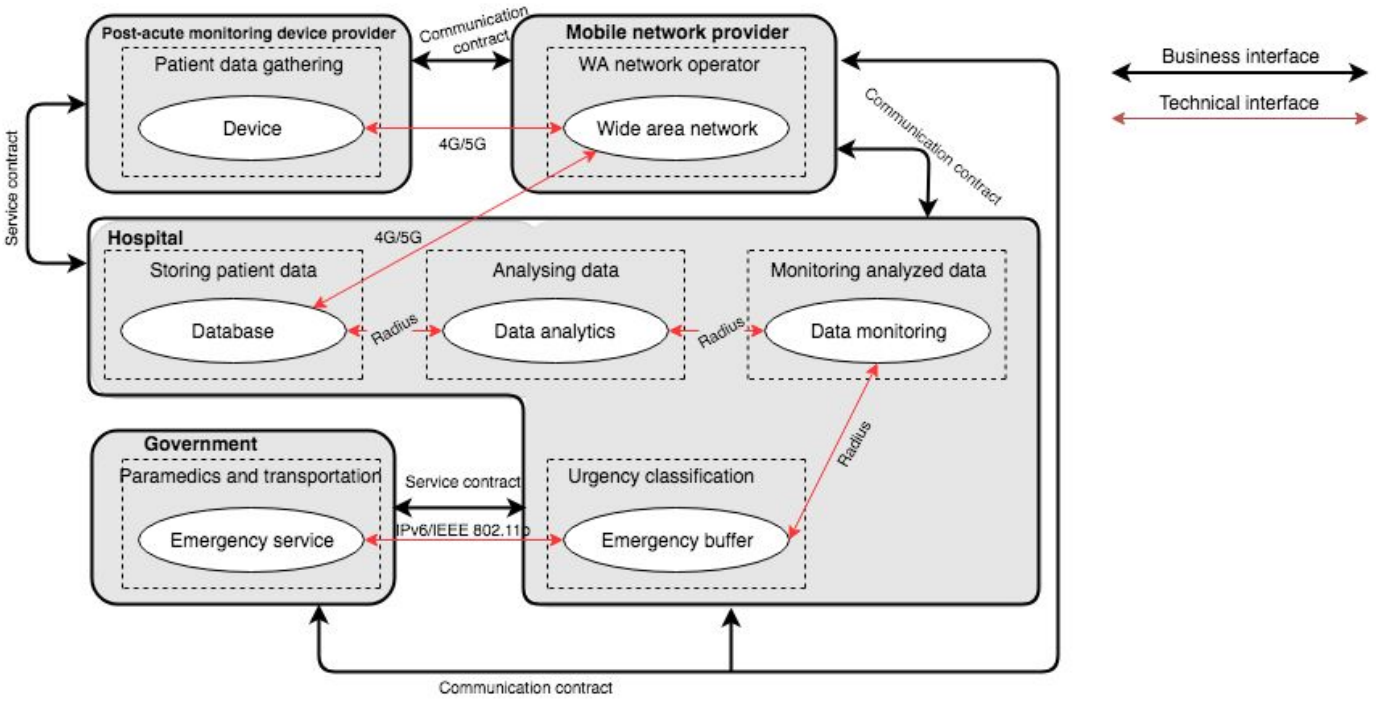

Figure 5. Hospital Healthcare VNC

Figure above represents the Hospital Healthcare VNC. As subsidies are convinced of service usefulness, hospital have more resources to scale the post-acute monitoring service. In general, hospital is able to provide its own emergency buffer and speed-up the service. In-house operated urgency classification offers more flexibility and scalability for the hospital. Mobile network provider's role remains the same and communication contracts are made between all actors. This “new normal procedure service” is respected by the Government and it is also willing for taking care of emergency service. Hence the nature of governmental driver, post-acute monitoring device provider’s role stays the same.

6.3. VNC3 – Niche-Market

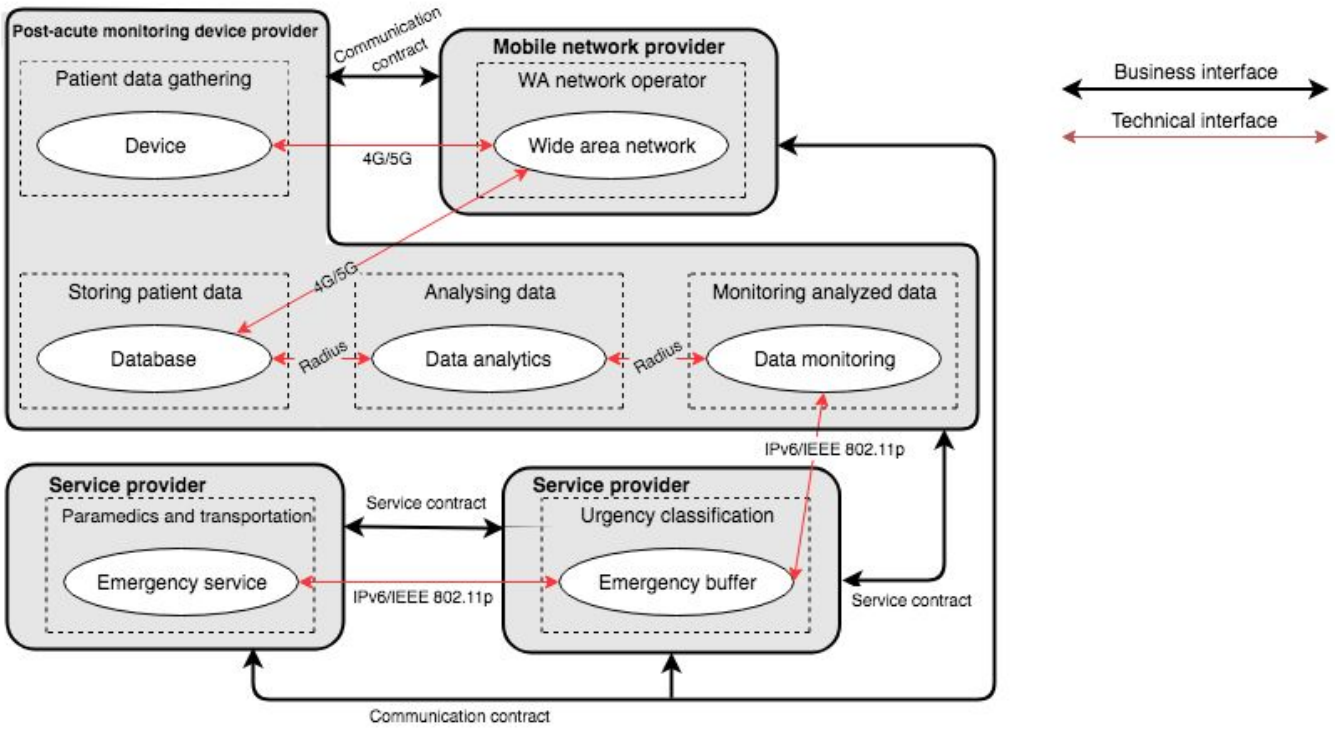

Figure 6. Niche-Market VNC

Niche-market VNC presented above represents the private, post-acute monitoring device provider driven scenario. Due to the limited resources, small segment of patients and low scalability, the device provider is responsible of developing and delivering its own platform. This platform constructs of database, analytics and monitoring. Emergency buffer and emergency service is outsourced and service contracts are composed between the parties. Post-acute monitoring device provider, non-hospital character is the main actor in this VNC. This VNC allows a very few number patients to recover outside the hospital. However, hospital is not responsible of anything but benefits a little in any case.

6.4. VNC4 – Mass-Market

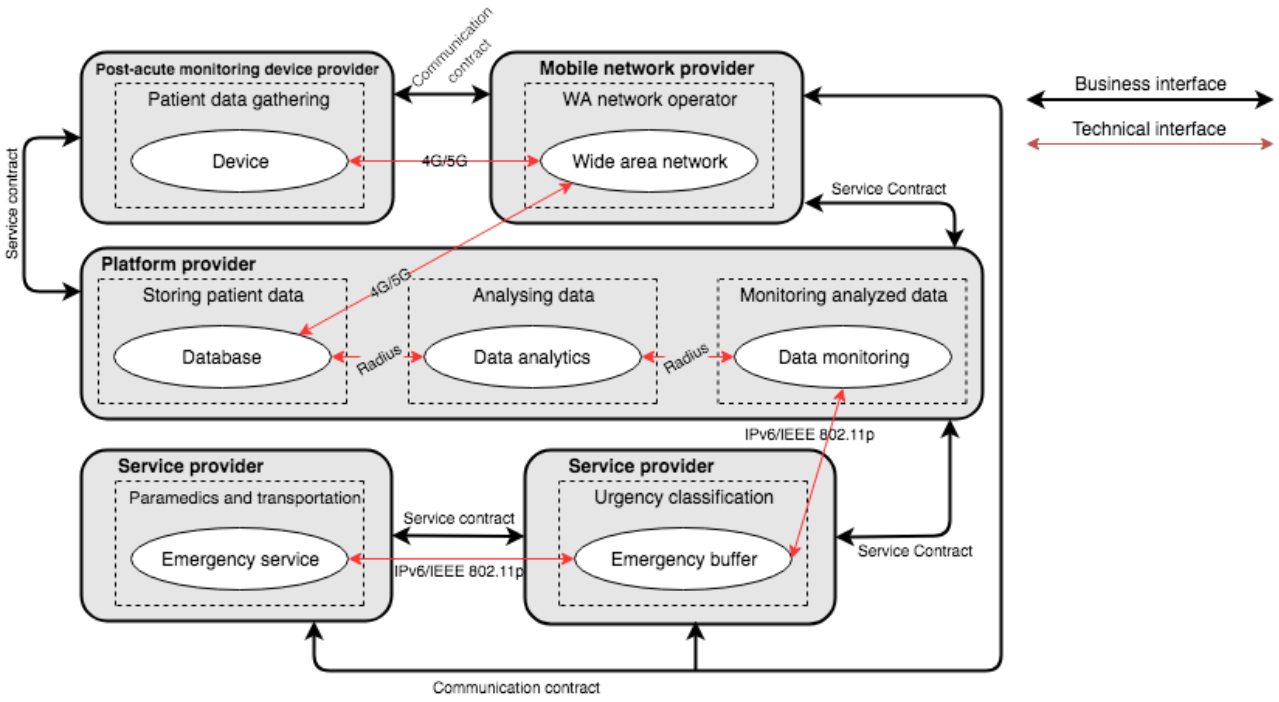

Figure 7. Mass-Market VNC

Mass-Market VNC represented above is high diversified model supported by the subsidies. Post-acute monitoring device provider is only responsible of delivering the device. Due to the increased number of users, external platform provider is needed to enable the higher scalability. This will also allow each actor to focus on their core competence. In any case, this platform provider driven model enables lover prices of service and also offer opportunity for other post-acute monitoring device providers to entry in market. In best case scenario, post-acute monitoring device provider would focus on platform development and offer its service to other device providers as well.

Likewise in the previous VNC models, mobile network provider's role stays unchanged.

7. Business Model Canvas

In this section of the report, the group analyzes General Electric Healthcare's post-acute patient home-care service by using Business Model Canvas (BMC) -method.

As previously mentioned and also expressed in Figure 3, BMC is structured into three different sections and two additional blocks. The analysis for the home-care service in this report is categorized into two different chapters by combining sections together in order to showcase the connections between the BMC-blocks in the most understandable manner. In this analysis we will consider Value Propositions, Customer Relationship, Channels, Customer Segments and Revenue Streams as one chapter. This chapter is named Value Propositions and Customers. The second chapter consists of Key Activities, Key Resources, Key Partners and Cost Structure. The second chapter is named Infra -and Cost-Structure

7.1 Value Propositions and Customers

The main focus in this chapter is to understand and analyze the value propositions, the main drivers which create value for the home-care service, and the most potential customer segments which create revenue for the case company. The focus is also additionally on delivery of the value proposition to the end-users through Customer Relationship and Channels blocks in Business Model Canvas.

Value Propositions

The post-acute patient home-care service consists of four main value propositions. The value propositions are divided towards hospitals, post-acute patients and other medical device providers. As can be seen from Figure X, the first value proposition is that hospitals are able to use their own resources more efficiently by releasing post-acute patients earlier from hospital premises. This saves hospital's facility resources and workforce resources.

The two other value propositions focus on the end-users, post-acute patients. By using the case company's home-care service, post-acute patients are able to have a more comfortable by having the option to be released earlier for example to their own homes. Post-acute patients can also save money, by not paying for expensive additional hospital nights. The fourth value proposition allows other medical device providers, companies which are traditionally considered as competitors such as Philips, to offer their own home-monitoring service through the use of case company's home-care platform.

Customer Segment

Customer segments are divided into three most probable customer types. As with value propositions, customer segments consist of hospitals, the post-acute patient end-users and other medical device providers. Hospitals would buy post-acute medical devices which support the case company's home-care service and which allows hospital's patients to use the devices also at remote locations. Hospitals would also buy licenses to use the home-monitoring service platform. The second customer segment, end-users, are especially targeted towards wheelchair patients, which would pay a service fee to use the home monitoring service at a remote location for example in the patient's home. Third customer segment are once again the other post-acute medical device providers, which would use the case company's home-monitoring platform.

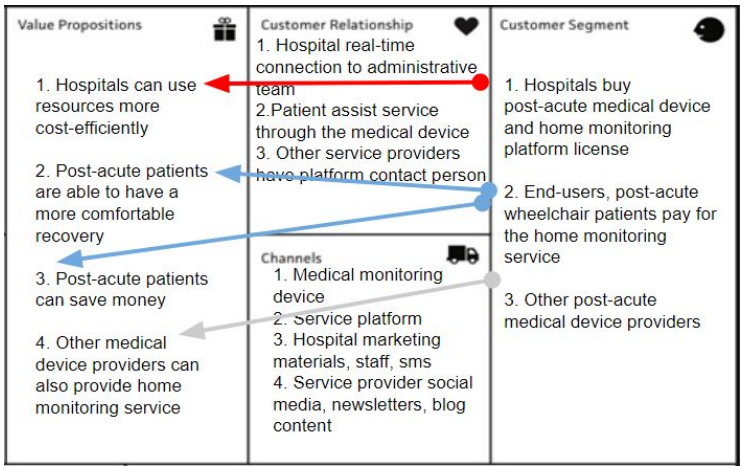

Figure 8. BMC - Value Propositions and Customer Segments

Customer Relationship and Channels

Customer relationships for the home-care service are divided into three parts as can be seen from Figure X. Customer relationships are established mainly through hospitals real-time customer service by an administrative home-care team. End-users are also assisted through the wireless medical devices by giving guidelines for the use of the home-care service. Finally other medical device service providers can be nurtured through the platform by an assigned contact, essentially a customer service, person.

Channels for the home-care service consist of four main factors. Medical monitoring device establishes a channel for the end-user and partners. Service platform works as a customer service channel for the same parties. Hospitals can also establish marketing for the service through hospital staff customer service, flyers, sms marketing and even email marketing. Case company or any other service provider can also establish a marketing channel to end-users or partners through social media, newsletters and other viral content such as by offering informative blog content on the service use.

Revenue Streams

Home-care service business model canvas establishes four different revenue streams which drive revenue for the case company. The same actors which were targeted value propositions, also contribute to the revenue streams. Hospitals pay fixed payments for the home-care service medical devices, which support the use of the home-care service in a remote location. Hospitals also contribute to the revenue streams by paying for the licenses to use the home-care platform in order to establish the service for the hospital's post-acute patients. End-users pay a subscription fee in order to use the home-care service at a remote location. Finally, other medical device providers can also offer home-care service by using the case company's home-care platform by paying license fees to have access to the platform.

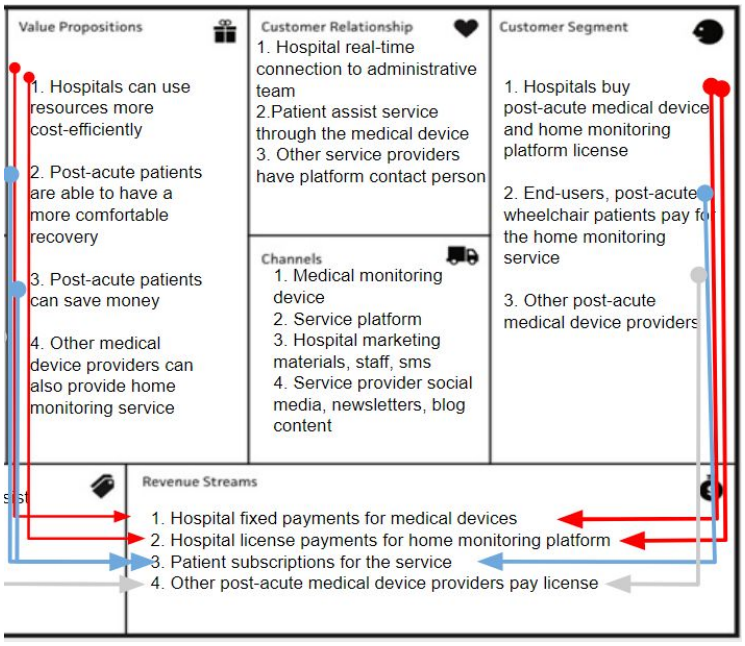

Figure 9. BMC - Revenue Streams

7.2 Infra -and Cost-Structure

Key Activities

The key activities consist of four main activities. One of the case company's main focus is to ensure stable and efficient platform by service administration and offer seamless and transparent user experience. Monitoring analysis-functions and development is also a strong focus point for the case company. Partnership management is a very important key activity in order to create more revenue through collaborations with third-party service providers.

Key Partners

Case company has six main partners for the home-care service. Insurance companies or Government, depending on the legislation and service target market, are a very important partner, in order to provide cost-efficient service by having subsidies which contribute to service delivery. Hospitals are essential, in order to have access to post-acute patients in a scalable manner. From a technical standpoint, MNO partnerships are essential in order to offer stable and trustworthy user experience. Other service providers such as emergency protocol providers and other competitive medical device providers are also important partners.

Key Resources

Case company has five key resources it has to establish to provide a user-friendly service experience. From a staffing standpoint, high-level ICT and hardware competence for technically sound service delivery are essential. Database operations and service platform management are highly important key resources for service delivery. In addition, brand management and customer service staff are also important.

Cost Structure

Home-care service business model canvas establishes five different costs in the cost structure. On-going operative administration of the home-care service is the largest cost for the case company. It is also important to create continuous infrastructure development, which does create additional costs. Customer awareness, marketing expenses and ICT-experts' salaries also create costs. Finally to establish stable wireless communications for the home-care service use, MNO partnerships also create additional costs.

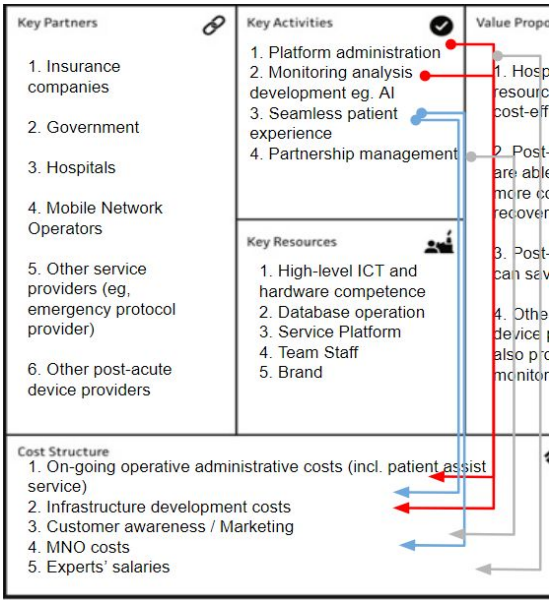

Figure 10. BMC - Cost Structure

8. Porter's Five Forces

In this section we analyze the competition of business related to our company case by using Porter's Five Forces analysis. This method was presented previously in the second section of this paper. We analyze those aspects in the next five chapters and figure 11 illustrates the basic principles of this analyses.

8.1 Threat of New Entrants

The force of new entrants against GE Healthcare related to this specific case is quite low. There is a several reasons for that. The costs of entry to the market is high. New company should have high business capitalization and financial resources to establish operations that could effectively compete with GE Healthcare and other big players in the market. The cost of the brand development are also high. There are basically only two big companies which are currently providing monitoring devices for the hospitals and they have very trusty and strong brand among the customers. It is very hard to build so strong brand that those institutions which are using monitoring devices start to think about changing to some totally new device provider. Economies of scale is also high which means that if company has higher volumes in the production they can sell products with the lower price. To entry to this marker requires also very high specialist knowledge. GE Healthcare has been acting with monitoring device business very long time and they have gathered very much knowledge during this time and it is implausible that some new player could compete against their knowledge in this specific business area.

One possible new entrants would be GE's service provider. As there are presented above in the different VNCs, there are service provider or even many providers in some of the scenarios. Depending on their role one possible threat is that they start to build their own competitive service against to GE Healthcare. All in all, we see that threat of new entrants is low.

8.2 Bargaining Power of Supplier

As previously mentioned there are a several different supplier included to GE's network in this case. Mobile network provider has a great role especially in Finland because there are basically only three mobile operators. Other service provider who are probably providing some platform and maybe maintenance and development services for that platform has also quite good position. If GE has purchased some IT services from some service provider it is usually not easy to change the provider. There are always quite high switching when you want change IT supplier. This is reason why the service providers has quite strong bargaining power. The role of the supplier depends also which scenario will happen.

8.3 Threat of Substitutes

We see that threat of substitutes is low because of low availability of substitutes. This business case is totally new and currently there are nothing this kind of products/services in the market. We think that in some situations the traditional healthcare could be substitutes of this. If hospitals does not accept this kind of service model or if people does not want to use then traditional healthcare system can keep their strong position and disable home-monitoring service model. Also if niche market scenario happens there would be competition between the traditional healthcare and GE's home-monitoring service.

8.4 Bargaining Power of Buyers

We think that bargaining power of buyers is moderate. Their bargaining power reasonable depending on competitors outcomes. If GE's main competitor (Philips Healthcare) bring out same kind of products/services then byers would have quite strong power. But GE has already very strong position as monitoring device provider and probably their customer still trust them in the future. Now there is moderate switching cost for buyers but because this is totally new product and service model it is quite hard to estimate what is the situation in the future if home-monitoring devices

will begin to be basic stuff. If device providers going to be also service providers then switching cost could be higher and bargaining power of buyers could be lower.

8.5 Competitive Rivalry

We see that competitive rivalry is currently quite low. There are only couple of companies who are competing with GE Healthcare and we think that probably only those companies could establish competitive home-monitoring product/service. Only real competitor is Philips Healthcare. In the future situation can be different if the traditional device provider companies going to be also service provider. Then it is possible that the new players comes to the market but as we have already analyzed threat of that is quite low.

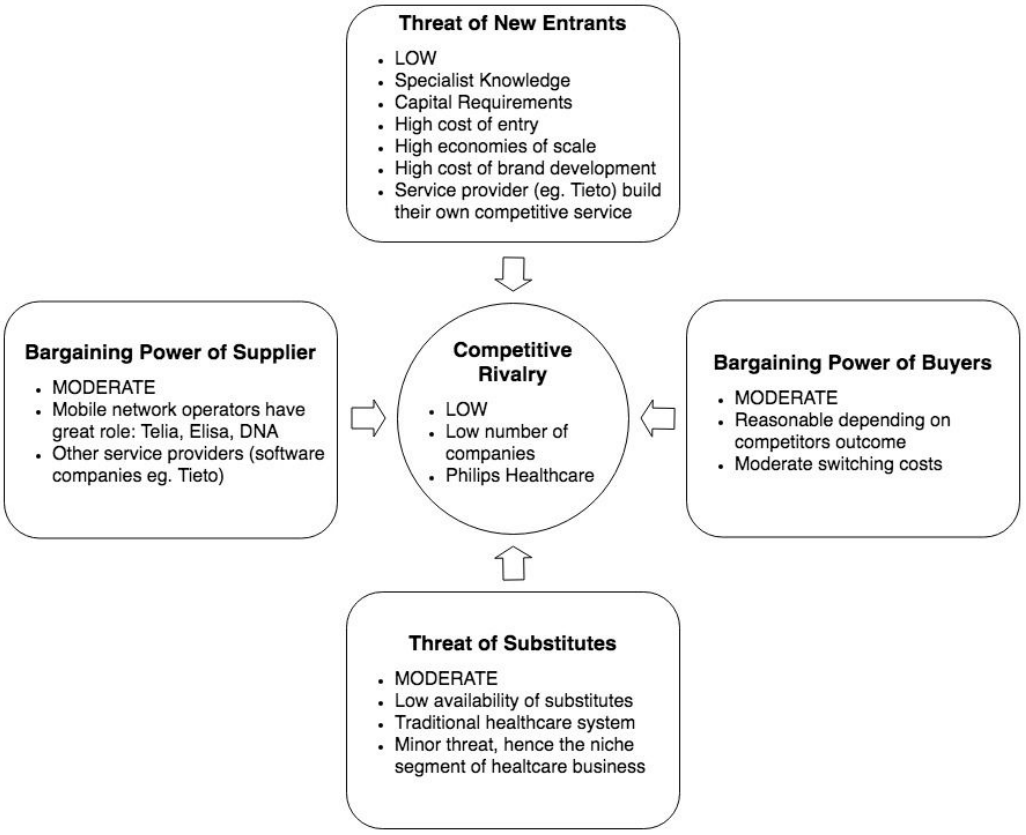

Figure 11. Porter's Five Forces analysis

9. Conclusions and recommendations

In this report the group presented an analysis for the case company General Electric Healthcare's digital home-care service for post-acute patients. The service would allow the case company to transition from it's traditional hardware offering towards an at least slightly more service-oriented offering. The home-care service would present a more cost-efficient solution for hospitals by releasing post-acute patients earlier from the hospital premises, a more comfortable and affordable service for post-acute patients to recover from medical procedures and an additional revenue stream for the case company by offering a digital platform which is usable also by external companies.

The service can be offered in multiple foreign markets, by localizing the standardized service offering. Different markets have some uniqueness regarding the subsidies, which the case company requires in order to offer cost-efficient and affordable service for the users. In Nordic countries Government is a more important subsidies provider, but for example in USA, insurance companies would be required to collaborate with the case company in order to cover some of the costs from the service use.

With the group's analysis of the possible value network configurations, it can be concluded that the most cost-efficient collaboration is a setup, in which case company covers the medical hardware offering, connectivity and platform administration, hospitals cover database, data analysis and data monitoring and third-party service provider covers urgent emergency service. In Nordic market this is the most suitable offering, but other value network configurations are also possibly suitable in foreign markets such as in USA.

With the BMC-analysis it can be concluded that the value propositions are very strong for all customer types and the service can be targeted for a specific end-user segment, such as wheelchair patients at least in the beginning phases of the service launch. BMC also showcases that the key resources and key activities can be very well

established by the case company, as the resources for the service offering are already intact in comparison to for example a startup which is looking to enter the market. Therefore the existing resources of the parent company are an asset which allow a high-quality service offering if the case company chooses to invest in this venture.

The biggest need for further research is regarding the emergency protocol . In Nordic countries a lot of similarities can be found from the elderly care services, which also offer similar type of end-user service for a different need and customer segment.

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Feedback for the course

We think that the workload of the course was suitable for the amount of credits. There was a lot to do and if we compare this course to some other five credits courses, workload was quite heavy but it is still suitable for credits/hours definition. Schedule of the course was mainly well constructed. Only bad thing about schedule was too long presentation sessions. It was hard to concentrate four hours without break. Also feedback from the course staff was very heavy and it was hard to remember all feedback after the presentation sessions. Maybe it could work better if the course staff would give only brief feedback during the session and then there could be other feedback sessions between course staff and group. All in all the schedule was good, not too tight or too loose. We think that the methods used during the course were very good and suitable for our company case. Structure of the course was good and we learned every method well.

Appendix

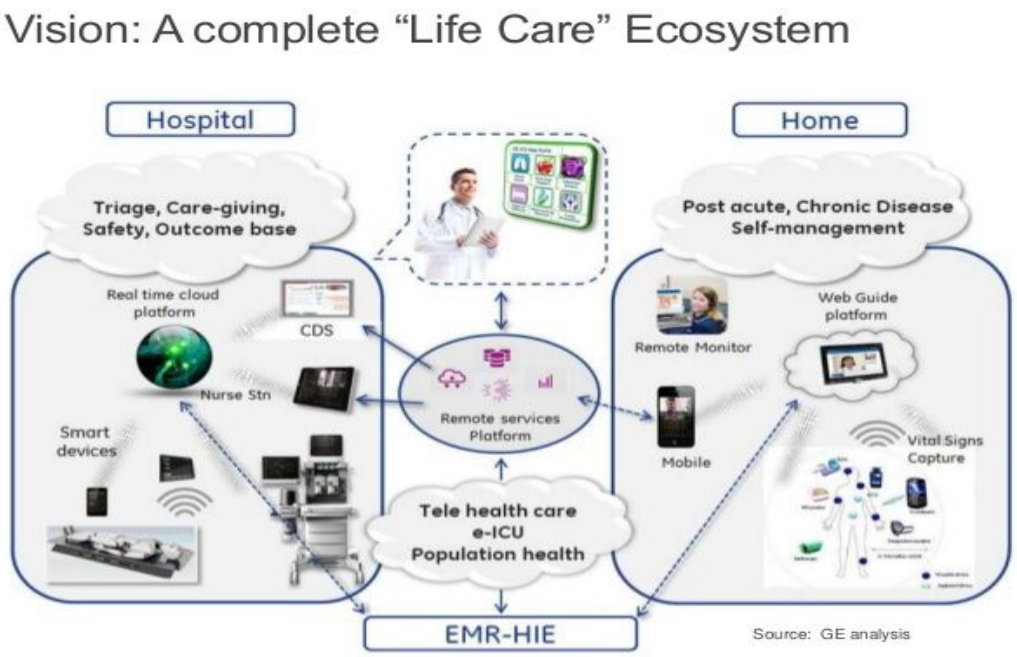

Figure 12. Technical infrastructure & Service delivery of the home-care service