

# GE Healthcare VS Nightingale Health

## Case Analysis

Corporate Entrepreneurship and Design -course

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## Introduction

For this project, our team compared two healthcare industry companies, both of which are focused on creating healthcare technology solutions - GE Healthcare and Nightingale Health, to understand more their design practices and what design means to them.

GE Healthcare was established in 1994 and is a subsidiary of General Electric, specialising in, as the company title suggests, healthcare solutions, as well as manufacturing and distribution of them. The company focuses on different healthcare fields, such as cardiology, oncology, neurology, rheumatology, intensive care and women's health.

Nightingale Healthcare is a Finnish biomedical company that was established in 2013, with a focus on creating solutions for chronic diseases. The company acquires information using their proprietary blood analysis platform and using the data is able to more concretely assess the potential risk of different diseases, such as cardiovascular diseases and diabetes.

Though in the same industry, the two companies have a very different reach, and their level of expertise varies too, affected more by the size of companies rather than the general healthcare knowledge. Whilst GE Healthcare is a huge corporation, operating in over 100 countries, Nightingale Health is a startup with headquarters and laboratories in Finland, and with two franchising laboratories in UK. This affects many things: the structure of the companies, the way that design is interpreted and applied, and the way different priorities are set within the companies and their approach to innovation and risk taking, though both companies have a lot of similar constraints set by the industry and related (healthcare and other) instances around the world, for example, as brought up in our interview with Nightingale Health - in marketing documentation.

So what exactly is design to these companies and how big of a role does it take in them? To understand this, we've taken different approaches to discover proof of design thinking in GE Healthcare and Nightingale Health, by researching resources available online as well as engaging Nightingale health in an interview, and even talking to some representatives of GE Healthcare.



Figure: Nightingale Health milestone timeline

## Framework for Analysis

To really discuss the role and value of design-centric or design-driven approach, it would be important to be able to clearly define what 'design' actually is. Throughout the course, we have taken multiple stabs at attempting to define the term, but have been unable to come to a generally accepted conclusion. Instead of trying to forcefully apply a certain definition to the term, we decided on two alternative approaches. First, take a quick look at how GE Healthcare and Nightingale Health themselves attempt to define 'design' both explicitly and implicitly.

Our team also analyzed the entrepreneurial approaches of Nightingale and compared them with GE through the lens of some of the basic principles of effectuation listed below

- Bird-in-hand - start with your means
- Affordable Loss - focus on the downside risk
- Lemonade - leverage contingencies
- Pilot in the Plane - control vs predict

This led to interesting perspectives, both on the differences between the two, but surprisingly also on similarities. In addition to analyzing the information available online, in journals, case studies and in GE Healthcare's case, even some TED talks, our team also had the opportunity to interact with employees from both companies.

We spoke to Kristiina Tolvanen from Nightingale about their approaches to innovation and much more. We also had the fortunate chance of meeting GE Healthcare representatives at Slush and spoke to two people in their Life Care Solutions division - Brandon Henak, Global Marketing Director and Jack Page, Global Product Manager. Both of the GE Healthcare employees helped our team understand the extent to which GE had embraced the entrepreneurial mindset and the conversations showed how any initial assumptions of drastic differences between startups and large corporations might be off the mark now. The remaining sections will provide further insight into why this is the case.

## Signs of Design Thinking

### Organizational Structure

When comparing the level of design thinking in each company, GE Healthcare exhibits more of structured design thinking built in its organizational structure than Nightingale Health. For example, GE Healthcare has a designated design thinking team consisting of 60 design thinkers, led by a General Manager of Global Design and User Experience. Other functions of the GE umbrella organization also testify to the role of design as a part of the organizational structure as well. For example, GE Digital, that produces digital tools and services and works closely with GE Healthcare, has a designated Design Director and a separate studio dedicated to Design and User Experience alone. There has also been a number of cases where design thinking has played a key role in affecting the customer experience (e.g. when GE Healthcare's Doug Diez noticed how children were scared of MRI scans and used a human-centric design

process to redesign the MRI scanning device from a dark and noisy machine to a pirate adventure room.).

As Nightingale Health is a start-up with a very flat organization and can't be compared in size to GE Healthcare, it can be expected that such structures are not present there. However, as is the case with many start-ups, design thinking could be described to be present more as an intuitive and ambiguous element of the organizational culture itself, rather than some specific roles in the hierarchy. The flat hierarchy with autonomous teams and constant push towards unknown waters and new innovation often is both – a result and a prerequisite for this type of intuitive, or design thinking culture. It could be said that unlike in GE Healthcare, design thinking is not created through structure, but it happens by having multidisciplinary, diverse personnel that is very passionate about their specific fields. They share and sometimes even challenge each others ideas in day to day discussions. A concrete example of design thinking just “happening” learned from the interview was that even though Nightingale does have weekly company-wide meetings to share ideas, still the best initiatives have been born organically in the daily discussions with a coffee cup in hand in the company's new office's kitchen.

### Job Posting Analysis

We wanted to look at job postings detailing the word 'design' from both of the companies, and then analysed what kind of required skills the company lists for that position. To analyse the job postings, we used one of the classifications that was made in class which divides the meaning of design to three main types:

1. Artistic Design – It is design that focuses on aesthetic aspects of design. Focus on hard skills with tools (such as InDesign, Autocad) to conduct such design. Considered a function in most companies.
2. Engineering Design – It is design that focuses on designing of functional aspects of the product/service. Focus on hard skills with tools (such as programming languages, Matlab, Autocad). Considered a function in most companies.
3. Innovation Design – It is design that has emphasis on innovation through methods and ways-of-working. Focus on soft skills such as human-centrism, rapid iteration, ambiguity and failure tolerance, etc. Mainly considered a working culture, but also is incorporated as a function by some precursors.

While we could find a long list of various active job postings for designers for GE, Nightingale does not have any current job postings for designers, but hasn't even had any in the past. This can be explained by the small amount of employees of Nightingale (and thus limited sample size), but it might also point to an interesting assumption that perhaps the Innovation Design is a dominant culture in start-ups, and thus separate functions are not required.

When looking at the job search engine at GE (now referring to the whole conglomerate, not just Healthcare), it listed 30 separate job functions, and none of them were even remotely close to

'design'. Out of the 180 job postings under Healthcare, 9 of them included the word 'design' or 'designer', which 5 % of their total job postings (see listings and full results in Appendix A).

The majority (6/9) of the 'design' postings were purely under Engineering Design with no reference towards Innovation Design, much like we had assumed as the high technology focus of the healthcare field most definitely skews this towards engineering. In other fields the trend can be drastically different.

Of the remaining three postings, two of them were directly mentioning Innovation Design concepts in the job descriptions, albeit, they were sunk into long lists of other requirements of tools and skills required for the job, which can indicate of somewhat diminished role of Innovative Design methods in the day-to-day work. The things they were looking for that fall under the design umbrella were for example: "Engage in all phases of product development, including **concept**, architecture, **documentation**, **design**, **prototype**, **test**, supplier interfaces, manufacturing introduction and service support" and "Applies principles of SDLC and methodologies like **Lean/Agile/XP**,..."

One of the postings thoroughly and in multiple places either directly referred to or, through the description of the work, implied the inclusion of Innovative Design in their day-to-day work. It was also the only posting which was under 'Digital Technology' -function, and not under 'Engineering/Technology' -function like all the other 8 design postings. The aspects of design they were looking were benchmarking, user-centric methods (interviews, in-person observations and user testing), utilizing every team member's personal point-of-views, effective documentation and communication of the design process. The above mentioned are a fraction of the elaborated innovation design skills that were highlighted in the job posting, but sufficient to give a picture.

There were zero postings which looked solely for Innovation Design skillsets (not coupled with engineering or artistic skills).

Overall, it would seem that by the lack of Nightingale design job postings, the lack of any Innovation Design oriented functions at GE and all of the GE job postings requiring some Artistic Design/Engineering Design skills in addition to the Innovative Design, that the role of Innovation Design is more of a supportive function, way-of-doing and a culture, than a core function - not only in the start-up circles - but also for big corporations.

Likewise, in GE's case, the word 'Design' sees very strong contrast within the company. In the majority of the cases, when the job posting was described as 'design', it referred to job that required engineering skillsets and had virtually no aspects of Innovation Design. Then again, the one posting which by 'design' meant Innovation Design, showed phenomenal awareness and tackled all of the best practises of good Innovation Design. This points towards a very siloed corporate structure, which is somewhat assumed of a company of the size of GE, but which then leads to the inability to look at GE as a single company, but that it requires awareness and understanding of the appropriate silos within GE wherefrom to look for Design practises.

## Interview and Case Study Analysis

### Overview

GE Healthcare very openly speaks of their usage of Design Thinking process in various fields. One example that surfaces a lot is the Adventure Series MRI – a case which was part of the Creative Confidence book by fathers of Design Thinking, Tom and David Kelley (GE Healthcare, 2017; Köppen, 2014). It highlights how GE embraced the entirety of Design Thinking methodology to create an MRI experience that children would love.

Nightingale on the other hand does not directly identify with Design Thinking due to the multitude of definitions to its term. To Nightingale, design is about identifying a core purpose: identifying what they are doing and why. After that the, based on the core purpose, the best process is selected to fulfill this goal. For some day-to-day purpose they will use SCRUM, for some more creative purpose, they use another process.

The definition of what exactly Design Thinking is, is actually very poorly defined. Much like with the definition of what is 'Design', the definition of 'Design Thinking' is up to the person using that term. For this section we decided to take one of the more basic (and thus more easily acceptable) version of Design Thinking, which divides it to five main non-linear steps: Define, Ideate, Prototype, Test, Empathise.

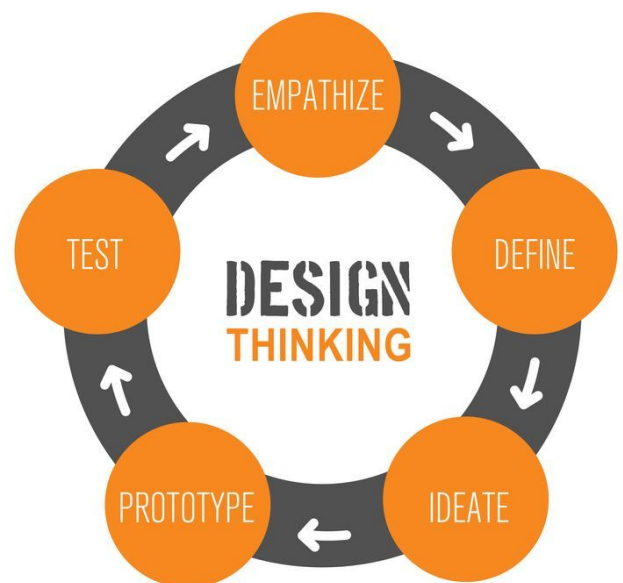
### Define

Based on the Adventure Series case study, in such cases, GE's problem definition process is very straight forward, where they identify a problem and then use the Design Thinking methodology to solve the issue. It is possible, that to create a compelling story, the redefinition process was omitted.

Kristiina Tolvanen mentioned in the interview that in Nightingale, the time for preparation and planning is a lot shorter than in any of the other companies she has worked for. They only preparation, planning and preparation meetings they do is to think if what they are about to do is a priority of not and if it is, they just try it out. Their main method of defining a problem is just trying things out and constantly redefining their goals on the run.



<http://newsroom.gehealthcare.com/from-terrifying-to-terrific-creative-journey-of-the-adventure-series/>



<https://slowottawa.ca/2015/03/17/a-tactical-urbanism-primer/>

## Ideate

For both Nightingale and GE Healthcare the ideation process is – much to the best practices of Design Thinking – closely tied to proper need-finding and benchmarking. They both elaborate how the first step after having an idea of a problem to solve, they go outside.

For Nightingale they stated an example process to be interviews with users, prototype something, and realize it's not working and try a different thing. Just going out and doing something usually leads to 20 better ideas. For them the idea generation and selection is very organic and there is almost a natural jump from need-finding directly to prototyping.

For GE Healthcare they neither highlighted any significant idea generation process, but did demonstrate a lot higher focus on the need-finding process. Just for the Adventure Series MRI, the initial stage was talking to a variety distinctively different stakeholders such as parents, children, various experts, hospitals, children's museums, and more.

## Prototype & Test

Both of the companies emphasized prototyping as a core part of their design processes. For Nightingale, it seems to be what they live and breathe, in every step of the process, they had a certain urgency to get out to prototype and try things, to the point where they almost skipped the earlier stages of the traditional Design Thinking methodology. For GE Healthcare, the prototyping seems to be at a slightly higher scale, where for example the (seemingly) first prototype of the Adventure Series MRI was to paint entire rooms at a hospital with a Pirate Adventure theme and test the impact on the children.

For both of the companies, testing was never mentioned separately but always with prototyping as if it was an inherent part of it.

## Empathize

Seemingly neither of the companies have an individual emphasis on empathizing, but it is something inherently present throughout the steps. This lines up with some versions of the Design Thinking frameworks, where the Empathize step is removed as an individual step and is emphasized in all of the other steps of the process.

## Conclusion

Overall, both GE Healthcare and Nightingale seem to integrate Design Thinking way of working in one way or another. For Nightingale, it shows more through as a way of working, and they have close to no structured processes to facilitate it. For GE Healthcare, a much more structured way of operating can be observed, but that is most probably due to the targets of observations being individual projects instead of exploration of the overall corporate modes of operation. It has to be highlighted also, that targets of observation in the GE Healthcare are run in collaboration with IDEO, the inventor of Design Thinking.

It is also interesting to observe, that Nightingale has a very significant urge to build, test and try things out. It can be attributed to the small size, which allows such nimble mode of operation, but also raises the question of what are the barriers of preventing such culture in a bigger corporation.



Lastly, as highlighted through the job posting analysis, there are significant signs of siloing in GE, and the status of Design Thinking in GE Healthcare can easily be outliers generated by IDEO interference. As will be highlighted later on in this report, a larger company wide mode of operation for GE is the Fastworks framework, which utilizes Lean methods (which are at core very similar to Design Thinking) to achieve similar goals.

## Sustainability

When creating a design, a big part to consider is the sustainability element to it and as part of our research we tried to understand how far is the reach of the design practices within the two companies. Do they think of only technological advancements and innovation in technology, or do they remain environmentally conscious considering the effect of the healthcare system on the ecosystem?

Much like design in general, sustainability is a wide defined term and therefore can be interpreted in different ways, generally collectively addressing four different fields of sustainability:

- Environmental sustainability,
- Economic sustainability,
- Social sustainability,
- Cultural sustainability;

Though all of these are important and play a role in a healthy business, the main point to address was the environmental sustainability in the design process in the scope of our research. Healthcare field creates a vast amount of waste every year, with just vaccines producing approximately 16 billion needles and syringes, not all of which are appropriately disposed of, and with an approximate of 0.2-0.5Kg worth of medical waste created per every bed according to the income level of the country. As such, it's up to healthcare technology manufacturers to consider the creation of sustainable technology that would be environmentally less hazardous, or additional tools that would limit the waste produced by allowing for the medical tool reuse.

Though Nightingale Health is a start-up with smaller reach and therefore smaller distribution of their products, the fact that their healthcare module focuses more on analysing through blood makes it more important to them to consider the impact that they are causing. According to World Healthcare Organisation data, blood is listed as infectious waste alongside other bodily fluids, and therefore requires an appropriate disposal to ensure the safety and health of the environment and general public within and outside the hospital environment. (WHO, 2015) Unfortunately, it was a topic that was not discussed in detail during the interview but it was clearly indicated that the company is considering the effect that their products have on the environment and public and that it is part of their product design.

In addition, the company displays a sustainability-oriented mindset not only within their products but also in the company culture, with the company's visual brand manager bringing his values to the company even when redesigning their office kitchen space. As one of the other mentioned proofs of this mindset within the company was the consideration of best reusable materials for when the company is at conferences and the like, finding creative ways to use the same resources for a lot wider field of uses than originally intended. Finally, the company opts for offering digital materials rather than producing unnecessary print.

In comparison, it's harder to find such daily life examples from GE Healthcare, as it's such a huge company with so many locations around the world. In turn, the company has many resources discussing their attention for the sustainability factor. For example Ecomagination is GE's growth strategy that aims to seek global, commercial solutions which would enhance the resource productivity and reduce the environmental impact. (GE Ecomagination, 2017) But how does this expand to their healthcare solutions?

For about 10 years, GE as a whole has been applying expertise in Life-Cycle thinking, assessment and ecodesign in their design to assess the environmental impact of the products and to help understand the overall impact caused by each step of the product's life cycle. This extends also to the GE Healthcare products. Through the application of this and also Ecodesign which integrates environmental criteria into the product design, GE can ensure minimising of the environmental impact of every product at every stage of its life cycle while also not affecting the costs and even improving the reliability of the product.



Figure: Product Life-Cycle

Though often the importance in sustainability is placed on making the materials/products more reusable, the GE Healthcare has developed a process for Single-Use Bioprocess Technology, explaining how the technology actually uses less water and energy in production than the traditional stainless steel products. Due to the high standards of sanitization in healthcare, by creating the stainless steel products rather than single-use ones, the additional by-processes in the product's life cycle included in the sanitizing process uses a lot of water (steam, process water and ultra-pure water) and large quantities of sanitizing chemicals. This in turn creates a lot bigger environmental impact that the entire lifecycle of a single-use product although new processes, materials and disposal have to be included in it.

Another example of GE Healthcare using the Ecodesign and Life-Cycle thinking is in product design with the CARESCAPE Respiratory Module which is smaller, lighter and has a reduced power consumption by 69% from the previous versions of the same product. (GE Sustainability, 2017)

These are some of the examples of how the two companies have integrated the environmental awareness in their design and work culture, proving that the companies have a strong awareness of the needs not only within their field but outside it, and how their product affects the life of the general public not only the healthcare professionals and customers. It's a proof of

human-centric design thinking which is often pointed out as one of the major components in the innovative design practices, and therefore implies a level of innovative design in the core of both companies.

## Effectuation Framework

### Bird in Hand - Nightingale First Focused on Alignment

According to the effectuation principles, “bird in hand” is the starting point when tackling new endeavors from an entrepreneurial perspective, as it is an in-depth assessment into the current state of capabilities, connections and resources available at their disposal.

The initial challenge here was alignment of views towards the same vision, and understanding the “why”. The key to doing this was communication and in time employees recognized that they’re driven by a solid vision from management and learn to trust decisions. They also brought employees on board for a project to do a rebrand of the company. This project served multiple purposes

- Employees were interviewed to understand the essence of why they were at Nightingale and what their goals were.
- This was used the input of employees to define what the company goals were and what they stood for.
- Ultimately it helped the organization understand its employees better, align everyone to a collective vision that they helped define
- This was done even though there was already a well designed book about the vision and goals of the company that was shared with investors.
- And finally, it helped identify a more suitable name that fit the healthcare space

In addition, when employees start a new project, they don’t question whether it can be built, but rather they seek the “why” behind whether they should build it or not and “what” the priority needs to be. This is perfectly aligned with how Lean Startup principles would like entrepreneurs to think about their decisions “The big question of our time is not Can it be built? but Should it be built?” (Ries, 2011). They also don’t waste too much time in planning, but would rather try it out and see in a more organic manner.

### Bird in Hand - GE Healthcare in 2000 vs now

In a way, it could be said that for a long time, especially in the early 2000s, GE was a little too attached to their “bird in hand”. They were among the market leaders in many categories and felt they didn’t need to do anything radical unless there was irrefutable proof that pointed towards changing that. They constantly looked at their current offerings and capabilities and preferred a risk-free approach that stuck to what they knew rather than doing something disruptive. They rarely asked for outside help and only started running innovation contests seeking new designs in the late 2000s after their market capital began to drop.

As GE Healthcare evolved more and more into a design centric and entrepreneurially minded firm, they got better at admitting when they had the ability to tackle things in house and when they needed to seek help from those who knew better. One such example is the 2015 project

with IDEO to create a better user interface for CT scanners in order to improve the experience for both patients and technicians (IDEO, 2015).

### Lemonade - Nightingale and Change Management

The Lemonade principle of effectuation essentially says that entrepreneurially minded companies leverage contingencies that arise from failures and surprises. They use these surprises as the foundation to generate new ideas and possibly a new direction for their efforts.

One of the things Nightingale accepts and embraces is how the best laid plans often need to change and you need to be agile enough to adapt and pivot if needed. They learned to let go of clinging to what was pre-planned and embrace the unknown that arises from “surprises” as this gives room for more to happen and helps think of new ideas that don’t fit into traditionally organized processes.

They have accepted the nature of the constantly changing startup environment and see the purpose behind decisions being made even if things can at times come up in an ad hoc manner. They collectively recognize the good opportunity in the task ahead and the leads push the vision and the message for why the changes are happening while ensuring that those who are affected by the change remain motivated.

They follow principles of SCRUM to ensure that things aren’t completely in an ad hoc and free flow manner and everyone is able to visualize their current goal for the next few weeks. For creatives in the company, uncertainty drives them on as they recognize the potential to have an impact, and simultaneously, they aren’t wedded to their designs and can admit if previous ideas aren’t going well and they need to do something else, thus allowing for rapid pivoting if needed.

However, they don’t yet have a fixed process for learning from previous challenges and adapting new situations. Since they’re a new company, there’s a lot to learn and they’re currently discovering ways and learning new ways and giving new people a chance to bring new stuff to the company and brand.

### Lemonade - GE’s Big Pivot in 2012

One member of our team was involved in a project with GE Healthcare in 2010/11 around envisioning designing an X-Ray machine for their next cycle (2020). The culture at the time was very rigid and required extreme perfection in order to even take a small step towards innovation. Every design change required sufficient evidence of ROI for making that change, and if that wasn’t met, the change would not happen because the basic principle used to be “we’ve always done it this way, we need overwhelming evidence that this new way is better, and then we’ll change”. Their focus was on a myth of getting things perfect and because of this their product launch cycles happened every 5 years and they maintained secrecy about their products and never showed them to users and patients until the actual launch.

In 2012 GE as an organization pivoted how they do everything from individual product launches to internal processes in a manner that enabled them to make faster pivots in response to rapidly changing conditions and scenarios, thus bringing them closer to a startup level of agility than most considered possible.

After Fastworks was brought in (this is discussed further in the next section), the same project for X-ray machines from 2010 (mentioned above) was taken up and through a process of iteration involving 11 MVPs, a new version was built in less than 6 months (Little, 2016). The team built their first lab mockup in just 3 weeks, engaged with customers and identified what mattered to them. Within weeks of launch, 4 major orders were already in hand.

### Lemonade - GE Predix Design System

Another example of GE's ability to pivot in recent years is their Predix system. In 2012, GE launched an internal design system to help standardize their designs across various divisions and departments (Crossman, 2016). However, this system was flawed and struggled with scalability and organization and eventually became an unusable mess. In order to reinvent the system to allow for better scalability, GE pivoted from their existing system looked toward Brad Frost's Atomic Design methodology (Frost, 2013) for creating design systems, which set up a better hierarchical system for design artifacts. They realized that in time these principles couldn't be applied directly to their system and instead put in the time and effort to mould this system to their needs, leading to the foundation of the Predix system which is now being applied across various departments of GE (not just healthcare). The Predix system has been effective and scalable to the point where, in time, GE designers and developers were able to expand it to incorporate standards for Internet of Things (IOT) standards as well (Cronin, 2017).

### Pilot in the plane (Control vs Predict)

Under Pilot in the Plane, it is the contrast between the logic used by causal reasoning vs effectual reasoning. Causal reasoning says that "To the extent we can predict the future, we can control it" vs effectual reasoning that says, "To the extent we can control the future we do not need to predict it".

Entrepreneurs choose to view the future through effectual logic. They believe that future out there is uncertain and not to be discovered but the very action and strategies the one chooses may very well shape the future. Also, being in the market that is predictable is not so good especially for the young entrepreneurs because there will always be someone with bigger pockets and data and resources that predict future far better than you, which cuts off you with any kind of advantages. But being in an unpredicted market means market could be shaped through their own decisions working in the conjunction with the pre-committed stakeholders and customer partners (Sarasvathy, 2001). So, in a sense for startups low predictability of the circumstances is beneficial unlike a big corporate company where they will find new markets and innovate things. However, for established corporate companies, higher predictability serves them better since they have more hard data than the startups but at the same time competition increases as circumstances are more predictable.

Uncertainty and how to deal it often relates to the effective Planning and control of the project, which defines the success or failure of that project: One has to be very careful in terms of realizing the difference between Planning and control and its relative implication to the certain project which is especially true to that of big corporate organization than that of start-ups.

Planning is a formalization of what is intended to happen at some time in the future. But a plan does not guarantee that an event will actually happen. Customers change their minds about what they want and when they want it every now and then. Whereas, Control is the process of

coping with changes. It may mean that plans need to be redrawn. It may also mean that an 'intervention' will need to be made in the operation to bring it back 'on track'. Control makes the adjustments which allow the operation to achieve the objectives that the plan has set, even when the assumptions on which the plan was based do not hold true. (Slack, Brandon-Jones and Johnston, 2011)

In the situation of the uncertainty, the startups and corporate organization deals with it very differently amid contrasting working scenarios. In terms of strategy there are two distinct paths on deciding what to do next. That is either try harder to predict better (rational strategies advocated by the planning school) or move faster to adapt better (adaptive strategies espoused by the learning school). (WILTBANK et al., 2006)

Figure 1 shows how the role of prediction and control determines which path and strategy the company will take on how to deal with the uncertainty.

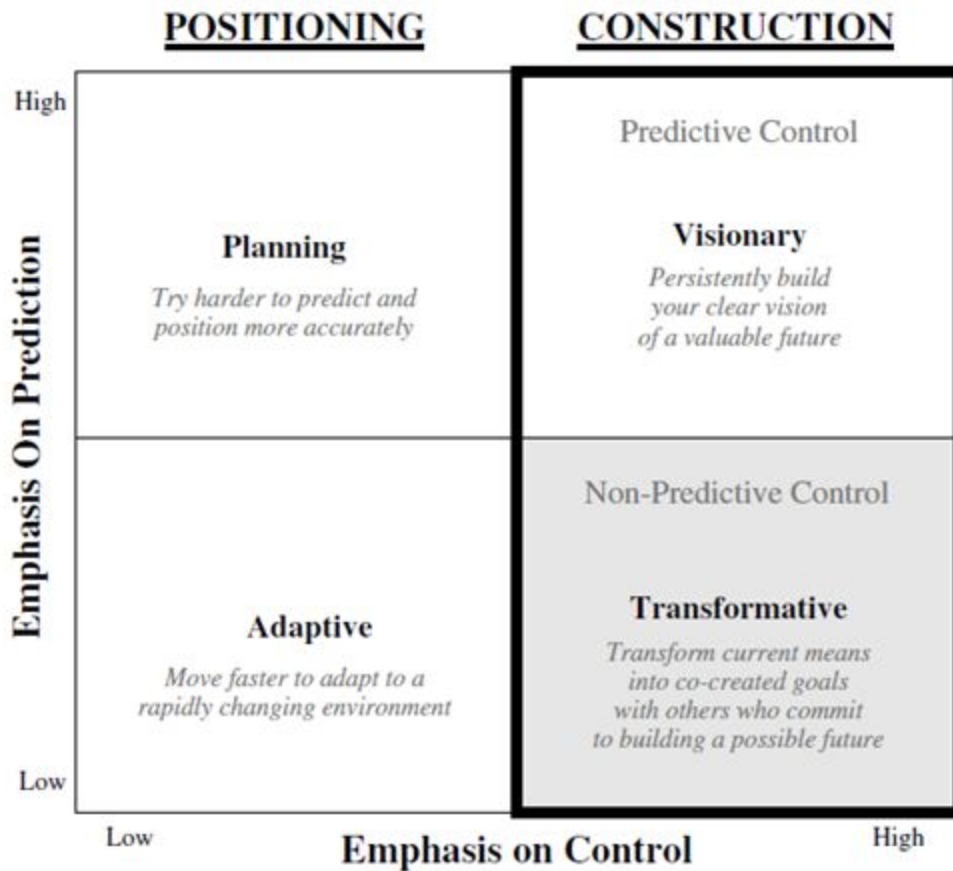


Figure: Framework of prediction and control (WILTBANK et al., 2006)

It is however very difficult to pinpoint where corporate companies will be on these four sections namely adaptive, planning, visionary and transformative due to the complexity of the organization and the field they operate. Most of the big corporate companies have hybrid

strategy depending upon the specific case scenarios. But for the startups they adopt mostly adaptive strategy and sometimes transformative.

### Pilot in the Plane: Nightingale Health

In terms of Uncertainty, they acknowledge that future is uncertain and even if you have planned your way, it could very well change accordingly to the changing scenario. They have very flexible way of doing things, embracing changes and be ready to face the situation. Also looking at the changes and unpredictability of the scenarios as an opportunity to grow. So, it is all about changing the mindset of the employee that everyone is vulnerable to changes and there is no reason not to embrace it and find the opportunity in doing so. However, they do plan in terms of what they want to do but they do not let that decide their future, they tend to focus more on control of their actions than putting much emphasis on the planning.

Also, the company uses the SCRUM in order to keep things in order while maintaining the flow of the work process continuous. SCRUM is an agile framework for completing complex project.

The basic working process of SCRUM is described below:

First is Product Backlog where the product owner creates a prioritized list of ideas for the product, called a product backlog. The product backlog helps the team break the product into smaller, more manageable pieces and build it incrementally in a series of short time periods called sprints. Sprints typically last one to four weeks.

Second is sprint planning. During sprint planning, the team pulls a small chunk of items from the top of the product backlog to create a sprint backlog, and then decides how to accomplish those items during the next sprint.

In sprint the team has a certain amount of time (usually two to four weeks) to complete its work, but it meets each day to assess its progress (daily Scrum). Along the way, the ScrumMaster keeps the team focused on its goal. At the end of the sprint, the work should be potentially shippable: ready to hand to a customer, put on a store shelf, or show to a stakeholder

Then comes sprint Review and Retrospective. The sprint ends with a sprint review and retrospective. As the next sprint begins, the team chooses another chunk of the product backlog and begins working again. The cycle repeats until enough items in the product backlog have been completed, the budget is depleted, or a deadline arrives. Which of these milestones marks the end of the work is entirely specific to the project? No matter which impetus stops work, Scrum ensures that the most valuable work has been completed when the project ends. (Anon, 2017)

Nightingale healthcare seems to be a company that is more adaptive in nature and sometimes transformative, when it comes to dealing with uncertainty. Due to its small and functional size of the company, it helps them to be flexible and adaptive to situations as they develop and successfully outmaneuver competitors who also struggle to deal with the challenge of an uncertain future. It is relevant with the fact that they are developing on incremental basis since they established their first laboratory in Kuopio, Finland with 1.4 million funding in year 2014 while gradually expanding their customer base with the opportunity provided and capitalizing on that resulting having customer in 20 different countries with 1.5 million in revenue in year 2017.



Also, due to its size of the employee and the scope of the field, the cycle of action and feedback is short which facilitates quick decision-making process and in dynamic and uncertain situations planning slows adaptation and that comprehensive planning can actually blind the organization to important changes in its environment.

### Pilot in the Plane: GE Healthcare

With the company as big as GE itself, it is very difficult to predict and analyze how it deals with the prospect of Uncertainty. But it is very true that they operate on multiple platforms and adopt the strategy on the case basis. From the broader perspective the company seems to be Transformative in nature and Visionary in its approach. So, there is fair amount of balance between the prediction and control. This is evident by the fact that it is transforming the health industry through its own innovation shaping the future and at the same time planning for the emerging markets, predicting the scenarios and exploiting the opportunities to survive in the predictive future.

### Four key elements in Strategic Planning in GE Healthcare

First, having a broad and open-minded view of the underlying economic, demographic and epidemiologic trends, such as population growth and disease shifts; here it is key to take a holistic view of the societal shifts that can impact healthcare spending rather than focusing on individual trends such as population aging.

Second, prioritizing investment in new technology, recognizing that this is a short-term expense that can deliver major longer-term efficiencies and savings; this investment will need to go hand-in-hand with the appropriate shift in business model towards outcome-based rewards and incentives, with focus on efficiency and productivity.

Third, maintaining simplicity and flexibility in administration and management, recognizing that the faster pace of technological change makes it imperative to be able to adapt quickly to changing circumstances, with a comprehensive, entrepreneurial and innovative approach.

Fourth, remembering that no matter where they sit in the healthcare ecosystem, global trends will have a stronger and more direct impact on their activities as time goes by: In the era of cloud-based technologies that render physical borders less meaningful, providers are more exposed to intense global competition, but at the same time have access to broader market opportunities, including access to faster technological process. (GE healthcare, 2014)

### Risk-sharing strategic relationship between GE healthcare and Jefferson health

GE healthcare seems to follow the rule of effectual reasoning that is strategic partnership which is evident by the latest risk-sharing strategic relationship with Jefferson Health. In strategic partnership principle of effectual reasoning the focus is on building the partnership rather than on doing the competitive analysis. The idea is that by engaging key stakeholders and obtaining pre-commitment from the partners will help to reduce the uncertainty.

The common goal was of this partnership was to deliver accessible, high quality health care at lower cost. The relationship has the potential to generate up to \$1 billion in operational improvements that can be redirected toward services that best meet patient needs. During the course of the relationship, Jefferson Health and GE staff will work side-by-side in areas throughout Abington, Aria, and Jefferson to acquire a deep understanding of operations and

processes. The teams will focus on strategic growth, operations, integration, and performance improvement opportunities, while leveraging technology to deliver best-in class, seamless care that is convenient and affordable for the patient. (Efficiencies, 2017)

Through a shared-risk model that aligns the economic interests of Jefferson Health with GE Healthcare, both organizations have agreed to critical milestones that must be achieved throughout the eight-year relationship. A portion of GE Healthcare's fees are contingent upon the level of success both organizations have in reaching certain integration goals. (Efficiencies, 2017)

This is one way to share the risk and uncertainty related with solving common issue of the healthcare that is Lower cost and higher performance. Global competition is more intense now than ever before, with the pace of healthcare innovation moving faster. Emerging markets represent more opportunity, as well as a major source of innovation. With the pressure to expand healthcare coverage and improve services in countries such as China, the intense need to deliver better healthcare outcomes endures as a unifying desire across borders. There is a global challenge to develop lower cost/ higher performance solutions, which simultaneously exposes the U.S. to more opportunities—and more competition. (GE healthcare, 2014)

### Affordable Loss Principle

While causal reasoning focus on expected return, effectual reasoning emphasizes on affordable loss. Meaning you can minimize the risk of a project by only investing what you are willing to lose – rather than focusing on what can be achieved if the project succeeds. You should therefore practice how to make decisions and perform actions where you can manage the potential loss if your actions do not get the expected outcome. (Innovationenglish.sites.ku.dk, 2017)

In its extreme case, affordable loss principle translates to zero resources to the market principle. In classic examples of this, the manager analyzes the market and choose target segment with the highest return. Instead of spending the time in the market research entrepreneurs tend to take their products directly to the nearest customers to see the result and iterate accordingly. Sometimes it creates completely new market where there was none before. (Sarasvathy, 2001)

### Affordable Loss Principle: Nightingale Health

In Nightingale as a startup company, the spirit is very much go get the products out in the market and try it and see what happens, even in early stages. In interview they said that if they want to try a new app for healthcare, they start with interviews, and then start making a prototype, and then see if it's working or not. Then they try different way next time if not.(Tolvanen, 2017) This implies that they are willing to take the loss which is affordable in a sense that it would not affect the whole organization in economic point of view. And it would make much sense to try it out early prototype in the market to see if it works or not rather than investing a lot of resources and money in the final product and the fate of the whole organization depends upon the success or failure of that product. Because there is so much opportunity in the field of healthcare, it seems very logical to fail in one field and quickly try other one absent big consequence in its ability to continue as a startup than to fail miserably focusing on the one specific opportunity hoping that it will transform them in new heights if succeed.

## Affordable Loss Principle: GE Healthcare

For the big Corporates like GE healthcare, creating new business is always a risky and challenging. They've found over time that they can't grow rapidly by tweaking existing offerings, taking over rivals, or moving into developing countries. Because of maturing technologies and aging product portfolios, a new imperative is clear: Companies must create, develop, and sustain innovative new businesses. Corporate entrepreneurship is, however, a risky proposition. New ventures set up by existing companies face innumerable barriers, and research shows that most of them fail. Emerging businesses seldom mesh smoothly with well-established systems, processes, and cultures. Yet success requires a blend of old and new organizational traits, a subtle mix of characteristics achieved through balancing acts. (Garvin and Levesque, 2006)

It's no secret that corporations are designed to ensure the success of their established businesses. Existing operations, after all, account for the bulk of their revenues. Finely tuned organizational systems support current customers and technologies. The operating environments are predictable, and executives' goals are stability, efficiency, and making the most of incremental growth (Garvin and Levesque, 2006). So, we also see this trend of minimizing the risk of failure in GE healthcare when it comes to create new business in emerging markets. They cannot invest heavily in a field which is of unknown territory and fail badly. And this is where affordable loss principle come to play in its strategy making process regarding new business opportunities in GE healthcare. So instead of investing heavily in market research in emerging market in this case developing nations such as India and China, they try to engage directly with the local startups and companies providing them a platform in GE global healthcare portfolio with a vision to scaling the product up and finally integrating with GE healthcare service portfolio. This way they can test new innovations directly into the market and see the results, which is a very affordable. This will enable them to continue focusing their major resources and capital into their core business while at the same time involving into new business and markets without much effort and investment.

One good example of this is health accelerator discussed below, which sees it increasing involvement into developing countries which is one of the emerging marketplace in the world for healthcare.

## Health Accelerator – Five.Eight

GE healthcare launched its first healthcare accelerator in September of year 2016 named five.eight aimed at improving healthcare outcomes for developing economies. Five. Eight will bring together global health startups with a vision to improve healthcare quality and accessibility in developing or low-resource settings – from education and training to disruptive, low-cost technologies, and digital applications. Through the program, GE Healthcare and each startup will focus on commercially scaling healthcare innovations for emerging economies, with the potential for GE Healthcare distribution of the startup product, or integration of the service into GE Healthcare's Affordable Care Portfolio. In addition, potential funding of up to \$5 Million per startup will be evaluated on a case-by-case basis as the collaboration between GE Healthcare and each startup evolves. (Shs.gehealthcare.com, 2017)

Five.eight joins GE's Innovation Network -a global, connected ecosystem of accelerators, startups, and innovators. The startups joining five.eight will have access to Innovation Network

programming and resources as well as connectivity to other GE global innovation centres in Helsinki, Cardiff, Istanbul, Calgary, Johannesburg, and Dubai among others.

## Experimentation

When it comes to experimentation and the willingness to execute upon new ideas, it seems that both Nightingale and GE Healthcare have found the best process to be fast-paced, iterative work. Short product lifecycles and rapid decision-making are becoming prevalent in most industries, and it appears that healthcare is not an exception.

GE Healthcare's approach to experimentation appears to be much more structured than that of Nightingale. The company has developed a framework called FastWorks; building upon The Lean Startup approach to product development, GE Healthcare is hoping to structure its' experiments more like startups, focusing on quick deliverables (also known as "sprints") and fast learning (Power, 2014).

When following the FastWorks framework, keeping customers involved throughout the process is critical. The earlier stages are all about listening to customer feedback. Even roles that might not traditionally have interacted with customers, such as engineering, are invited to feedback sessions. This ability to hear customer feedback first hand for the first time was a big change for many. After initial meetings with customers, an internal GE Healthcare team develops a "minimal viable product" – a version of the product that is developed with just enough sufficient features to provide the main value to end users. They put it in front of customers, receive more feedback, revise it and test again (Power, 2014).

While Nightingale follows a similar process, it seems to be less defined. They have found success in taking a "just do it" attitude. "It's about trying new things rather than pondering what can go wrong. You don't know. If you try it could go wrong, but if you just ponder about it you probably won't get an answer anyways. You have to do it and at some point you know whether or not it worked," says Kristiina Tolvanen, the Head of Content Studio at Nightingale.

One important factor that makes this approach possible at Nightingale is thinking about failure as something ingrained into the experimentation process. As Tolvanen explains, "I think that has been very much built in, that there will always be failure. You will fail anyways at something, so you need to do enough things that you succeed enough." Or, as she later when on to say, "you can't build anything new by holding onto what you already have."

The difference between the more defined processes at GE Healthcare and Nightingale's "just do it" approach is most readily apparent when looking at how experiments are born and developed. Anybody at Nightingale can propose and then carry forward a project if it is deemed valuable. "From the beginning, our CEO has been saying that if you have a good idea, he will get you the money somehow. And then you're free to just get those good idea," Tolvanen comments (more on this autonomy to act in a later section, Ownership and Autonomy). Sometimes what this experimentation will lead to isn't clear. With so many diverse backgrounds, somebody will

always have something to contribute to whatever is being worked on, usually in the form of suggestions based on their own expertise and passion. “Someone will begin with ‘let’s just do this,’ and then someone else jumps in with what they think is a really important addition.”

Nightingale’s less formal approach to the process of experimentation and testing new ideas is likely to be a result of both the size of the team and the early age of the company. Having been founded somewhat recently, it is likely that Nightingale’s management has had to focus less on getting everybody on the same page, as discussed in the next section. Whether this “just do it” attitude can be kept similar to today’s iteration as the company grows remains to be seen.

## Leadership

At GE Healthcare, leadership has played an important role in helping GE to shift to a more design-thinking oriented process. Meanwhile, such a shift hasn’t been necessary at the much more recently started Nightingale; the focus of leadership there has been more on enabling individuals to push forward projects and initiatives that they are personally interested in.

The realization that GE management has slowly been making, that putting power into the hands of employees is the best way to enable the kind of previously discussed rapid experimentation, has been an important one. Vic Roos, Lead Purchasing Manager at GE, puts it nicely: “You need to invert the pyramid (Power, 2014).” Throughout the process, you’ve had several key members of leadership involved.

One of the first people at GE Healthcare to start pushing the company toward focusing on the “human side of the equation” was Doug Dietz. When visiting a children’s hospital to check up on a magnetic resonance machine in 2008, his visit was interrupted when a crying patient was brought into the room for a scanning. The little girl was understandably scared of the huge machine and unknown procedure. This was a significant moment for Dietz, who began working on improving the healthcare experience for GE Healthcare’s youngest patients. The machine in question was turned from a big scary object to an immersive experience featuring storytelling and a Disney-like adventure. (Wilner, 2015) This change not only made the experience better for the children involved, but it also allowed GE Healthcare’s patients, the hospitals purchasing the machines, to differentiate themselves in the eyes of parents.

In that project, you already saw the early inklings of their current process. They worked closely with stakeholders such as radiologists, technologists, nurses, patients, and families in an effort to design a better experience.

Another step in the right direction occurred with the arrival of a new general manager for the Global Healthcare design practice, Bob Schwartz. Having come from the consumer products-oriented company Procter and Gamble, Schwartz understood and cared deeply about

the importance of creating a good customer experience at every step of the sales channel. Soon after his arrival, a formal “product experience” group was established (Wilner, 2015).

Both Dietz and Schwartz understood the importance of getting everyone at GE Healthcare to understand and appreciate the new process that was being set in place. After all, it's natural that there may have been conflicting short-term interests and goals at such a large company. Even today, managers at GE Healthcare consciously make sure that teams have enough interaction with customers (and managers) to receive validation for the work they are doing, in an effort to illustrate and reinforce the value of the process. Dietz describes his thinking, saying “When you bring people in, does everybody get it 100%? No, you're still going to have cynics. I love them; they've just been at GE so long that they've got this crust over them. We can get through that crust, but it's going to take some time. Usually by about three-quarters through the session, you'll see them start to take a few more risks. If you can build them up, you'll see them do something that's really unexpected. Before you know it, they've changed.” (Wilner, 2015)

It seems that this push to be a more design-driven, and as an extent a customer-focused company, worked. Today the focus on the end customer is heavily focused on. In June 2017, GE Chairman and CEO Jeff Immelt announced the appointment of Kieran Murphy as president and CEO of GE Healthcare. In his comments about why Murphy was the ideal pick for the role, the customer was mentioned extremely early on: “Having led the strategic combination of GE’s Life Sciences and Medical Diagnostics units, Kieran is universally respected across GE **and has distinguished himself as a strong customer advocate with great commercial instincts.**” (Business Wire, 2017)

Meanwhile, the process at Nightingale seems to have been less focused on getting everybody on board with new ways of working. Instead, the management has been trying to both enable better, faster projects while at the same time making sure that the projects being worked on are important.

This latter element, being swift in ending projects that aren't moving in the right direction, is an important part of Nightingale's culture. According to Tolvanen, it comes from the style of management: “they are very open to throwing old ideas into the bin instead of just doing something until the end. They actually think along the way, does what we're working on still make sense to be doing?”

At the same time, starting up new projects is equally important. When it comes to company principles, Tolvanen says that the willingness to take big risks is something that has to be set at the top. “Something our CEO talks a lot about are just being brave enough to make a decision. That's usually a problem in big companies, no one is confident enough, or doesn't have the power, or doesn't have the will to take the blame if something goes wrong.” She goes on to say that if she were to present a tough choice requiring an immediate answer to the CEO, only to have him shy away from answering, it would send a bad signal for her.

Fortunately, this doesn't appear to be a problem at Nightingale. Tolvanen emphasized the leadership's ability to lead by example. This includes being constantly active and continuing to take risks. No one, whether the CEO or founders, is sitting around watching others work. Tolvanen comments on this interaction, saying "that's the best leadership, and the only way to spread the culture within the organization."

## GE, Lean Startup & Fast Works

GE in 2011/12 was around 130 years old and a sense of stagnation was setting in. They were looking at a situation where they were one of the largest companies in the world, but their market capitalization was dropping (GENPACT, 2015). They were very much driven by Six Sigma style principles for running the organization and value creation and this seemed a part of the reason why they were ranked just #90 on the world's most innovative companies and last in the BCG list of most innovative large companies at the time. These rankings in particular were quite embarrassing for a company that took pride their inventive roots from the time of Thomas Edison and Menlo Park. They needed to rediscover the thing that made them successful in the past – constant reinvention – and find ways to identify the next great growth engines, match what society needs and how to deliver in a way that matches these needs at a global scale.

When GE recognized the need to reinvent its existing practices of design and innovation, they brought in Eric Ries, the creator of the Lean Startup concept. It all started when some GE executives were in attendance for a book signing event by Eric in 2012 and some of them got this radical idea in their head that someone with expertise in creating rapid change in the software industry might help them reinvent themselves too (Broderick, Liguori, Mahan, & Gainey, 2013). The primary executive team was very skeptical and needed a lot of convincing, not just due to stubbornness but the sheer magnitude of people who needed to be convinced – 5000 executives across the world, 6000 senior executives, 200 vice presidents.

The goal was to have him on board for an extended duration for the "Largest implementation of Lean Startup on the Planet" (Broderick, Liguori, Mahan, & Gainey, 2013). Once Eric was brought on board, there was an interesting dichotomy that emerged in initial meetings - Teams told Eric that they wanted to be entrepreneurial and embrace lean principles, but felt the executives didn't understand or support these endeavors. At the same time, executives wanted the same thing and told Eric that they didn't trust the teams to execute with these principles. Both sides felt the need to innovate but lacked the communication or the system to do it effectively and this openness to having a system was perfect for the implementation of Lean Startup methods. The methods were tweaked to fit GE's products and needs and renamed as Fastworks.

The process was to be accomplished in 2 steps

1. Train everyone and incorporate Lean Startup into Product Creation processes.
  - a. Restructure teams to be cross functional and engage with suppliers early
  - b. Increase leadership and team autonomy for decision making
  - c. Core Principles
    - i. Get Closer to customer
    - ii. Increase chance of success

- iii. Increase speed to market
  - iv. Make it easier to get things done
  - v. Reject process complexity
2. Would the principles of Lean Startup actually make the company better by tackling even the myriad internal processes?

GE Healthcare also recognized that they needed people to emulate Eric Ries and evangelize lean processes across the organization in order for the process to scale and gain traction in such a way that, in time, it became ingrained as part of their culture. To enable this, they created lean startup coaches within the organization in order to handle the internal start-up-esque endeavors and restore focus on the entrepreneurial spirit and the task at hand. GE Healthcare alone had 10 dedicated coaches within the first year.

In addition, in that same time frame, GE's history with Six Sigma meant that a lot of senior executives had to unlearn both the old way of working and absorb and accept a radical cultural shift. To do this, FastWorks leaders went on a roadshow to share the new program, and eventually train all senior leaders in Lean Startup methodology and culture (Nobl Collective, 2017). Within the first year, every single senior executive was trained and over 1000 people overall were trained in Lean Startup principles. In addition, 100 projects (internal and external, across domains) were started with the Lean process in mind. As of 2016 – There was an internal team of 150 coaches who had guided 100s of Fastworks projects (Prokopenko, 2016).

GE was aided by the fact that the company President actively supported the endeavor and at project levels, Product Managers actively support people being assigned to the right Fastworks projects. The challenge initially was with resources and focus because historically they liked working on one thing at a time and Lean ideas like Fail fast and creating an MVP were initially unheard of. The other challenge was incorporating the users. Initially having engineers in the room while customers are giving feedback and calling their baby ugly, that was a big cultural change. Very difficult in the beginning and stung a lot for engineers who had historically been detached from users (Broderick, Liguori, Mahan, & Gainey, 2013).

GE's method of financial operations needed an overhaul too as a traditional financial system was designed for risk mitigation and it didn't value speed. It also ignored the cost of not showing products to consumers soon enough or the cost of failing after creating a final product (Power, 2014). The whole financial process required rethinking as teams sped up in these Fastworks projects and there was no way to put a value on the learning from "failing fast" and of iterating MVPs.

### Line Between Startups and Corporates is Blurring

Fastworks led to GE working internally almost like a VC firm (which in this case would be the world's largest) that worked with a variety of internal startups. However, as an organization, they didn't just stop there as they recognized the potential for innovation from the healthcare startup world and created structures to support, enable and integrate close partnerships with startups. Incorporating these structures and working with startups also serves the additional purpose of being a constant motivator and spark for internal teams.



A lot of these structures are now integrated as part of GE's Global Innovation Network. This network leverages global relationships with internal and external partners to source innovative ideas that solve the world's toughest problems (GE GeniusLink, 2016). Some of the systems in place to spur innovation include the following.

### GE Ventures

They act as a VC fund that invests in areas tied to GE company's strategy and focus areas. Healthcare is one of these and GE ventures provides capital and consulting expertise for healthcare startups. Outcomes range from licensing to creating a new business (GE Ventures, 2017)

### Health Innovation Village

The Health Innovation Village was founded in Helsinki in summer 2014 and located in Vallila (Reijonen, 2017). The idea was collaboration between big global businesses and small agile growth companies as the GE Healthcare feels this is where innovations arise. The goal was to create a healthcare start-up ecosystem that generates health enhancing and healing innovations.

In essence, this acts as a Y-Combinator style incubator for Healthcare startups. They offer working space and extensive expertise combined with the use of on-site resources after these startups are vetted via a selection process. They currently have 45 startups working out of their main office as part of the village.

## Ownership and Autonomy

As discussed in the Experimentation section, both GE Healthcare and Nightingale believe in lean, customer-focused processes for experimentation and risk mitigation. This would imply that both companies understand the importance of enabling employees to actually carry out said experimentation. Based on our research, this indeed seems to be the case.

Although leadership seems to have a big influence on the company principles and culture at Nightingale, Tolvanen tells us that the overall organizational structure at the company is quite flat. Even though they have functional teams, anybody is free to come up with an idea, to get the mandate to carry it out, and to just do it. In fact, this kind of activity is encouraged, and appears to be a natural result of the types of people working there. "Most people are at the company because they want to do something that takes them out of their comfort zones," says Tolvanen .

"From the beginning our CEO has said: 'if you have a good idea I will get you the money somehow.' And then you're free to just get those good idea. At the same time, if he's not convinced he will say 'ok, do something better.' The motivation comes from the freedom to think about what would make the company more successful, and how to get things to work better. If you come up with an idea, you are free to do it. If I compare that to big corporations I've been an inside consultant at, I never felt that if I had a great idea I could start implementing it the next day. You had to play a different kind of game, while here it is usually straightforward."

This autonomy doesn't stop at initiating projects. When working on something, being excited about what you're doing seems to be essential. Tolvanen recalls seeing the latest version of a design, only to go around asking each team member if they were still excited by what it was they were doing. "They still have to have something new that they want to push forward. That's where you need to see if the excitement is still there," she says.

The ownership of topics and projects at Nightingale is illustrated by NG Academy – a monthly workshop where team members from various functional areas give talks related to their field of expertise. This might mean a science-related team giving a lecture about metabolism, or the marketing team hosting a workshop related to the company's brand materials.

This ownership carries into the creative process. Not only are people experts in a specific topic, they are usually passionate about said topic too. "The way the kitchen in the office works is that people hang out and share ideas. We have a lot of projects and meetings which require a lot of participants from different areas." Not only does this enable people to ask each other for help easily, but it also leads to the aforementioned surplus of suggestions from different perspectives.

Meanwhile, GE Healthcare employees working on such teams seem to enjoy similar autonomy. Under the FastWorks program, cross-functional teams are given the permission to make decisions independently that would otherwise involve getting approval at other companies.

David Schofield, a design manager at GE, comments on this rethinking of responsibility. "The organization worked around and supported us," he said. "Normally we would have had to get approval for pivots. They gave us the autonomy to make those decisions ourselves. (Power, 2014)

## Conclusion – Answering the Open Questions

### **How can startups vitalise or help revitalise large & established corporations or organisations?**

Start-ups represent giant experiments where every initiative is new. When nothing a startup is trying to achieve has been done before, dealing with ambiguity and uncertainty is a normal part of the everyday business. In the other end of the spectrum, large corporations have already been through their existential struggles a long time ago and have established a critical mass that keeps them going. For them it's more about maintaining existing operations and optimizing them. This requires more defined hierarchies and business approaches compared to startups, who typically have no clear hierarchies or paths to advancement.

Due to their nature as giant experiments, start-ups often have creativity and freedom naturally ingrained in their company culture. When nobody knows what the future will look like, it's hard to set strict boundaries either. With the same amount of freedom, flexibility and flat organizational hierarchies a complex system such as a global corporation wouldn't be able to function. Therefore, even though large corporations are often criticized for a lack of innovativeness, or agility and flexibility, one must understand they function in a very different type of business environment and might not necessarily do a bad job at that by using their style of working. (Mallard, 2017)

We can see from the way Nightingale works that, startups, in their ability to be agile in a way that traditional large corporations cannot, can spur rapid innovation in a variety of areas. This can both disrupt the market in drastic ways and at the same time add a significant level of pressure on large corporations to innovate faster as well.

### **How can large & established corporations or organisations energise and vitalise small fragile startups and young companies (outside or inside the corporation)?**

Corporations have the advantage in the way their culture, policies, processes and structures are designed to operate on a large scale, something startups don't often consider for a variety of reasons (Lawrence, 2012). However, these cultural, procedural and structural aspects require addressing for a startup to retain its character and agility even as they scale, as the alternative is getting mired in inefficient corporate practices that simply repeat the mistakes of the past.

The relations between start-ups and large corporations can in some instances been considered almost hostile, but during recent times a change in the way start-ups and corporations perceive each other has been emerging. From a corporate viewpoint startups have sometimes been viewed as disruptors and threats, or left without much regard as newcomers who don't know enough to be taken seriously. From a start-up's perspective, corporations have been stuck in their ways, are unable to create anything new, and it's the start-up's mission to disrupt the whole market with their radical new way of doing things. However, a recent trend is that both parties are starting to understand each other's strengths better, and collaborate to learn more from each other. Large corporations have noticed there is a lot to learn from the agile way start-ups work, and start-ups seem to understand better the value of the vast amount of knowledge established corporations have gathered throughout the years. (Mallard, 2017)

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Customization Designer	Experienced	Engineering/Technology		x		33905/Customization-Designer/
Lead Cryogenic Design Engineer	Experienced	Engineering/Technology		x		34005/Lead-Cryogenic-Design-Engineer/
Lead System Designer	Experienced	Engineering/Technology		x		34579/Lead-System-Designer/
Principal Lead Systems Designer	Experienced	Engineering/Technology		x		34725/Principal-Lead-Systems-Designer-Global-Imaging-Technology/
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**Interview by Jukka Malkamäki**

**Transcript by Markus Kirjonen**

**Interviewed Kristiina Tolvanen, Head of Content Studio at Nightingale Health Ltd.**

**Q: At Aalto University we're often thinking about design thinking, have you heard of it? Do you know the term?**

A: I have, but I think there are a lot of definitions, so I'm not 100% sure what yours is.

Q: I'm not sure either, it's quite ambiguous and changes – but I have some design thinking related questions about your design process at your company. Not so much about the specific terms itself. So – **what does design mean to you? How would you define design?**

A: I would define design as molding something into its core purpose. So you're identifying the message and using design you bring it to the forefront. That's how I see it in a general way. The first step is to identify what we are doing and why. And with design you can facilitate that – if you have a purpose, you can use design to bring it out.

**Q: Do you have certain methods or tools you'd associate with this process? (2:15)**

A: Well... it's probably the overall creative process of having a need / idea, and then going through the road of defining the goal, then seeing the options from there, defining them. Then the actual design happens, and probably changes along the way. At the end you have a final product, or message, or image.

I think it's true that you have to decide (on the process) along the way, and especially once you know what the target is. For example, we use SCRUM for our daily work at the content studio. The goal is that we have certain things that need to be done, and then there the purpose is basically that, and then you need a steady process to take things forward. But then if it's e.g. campaign planning, or something more creative, then the purpose is different – but so is the purpose, so the method is different.

**Q: So I mentioned design thinking. Is that something that you keep in mind or is it more intuitive? (4:20)**

A: I think it's both. With some things you really think about the process, "now we'll design this in a certain way," but it's also as a \_\_\_ thing, where you don't really think that you are designing something even though you are, and it doesn't make the outcome any better if you're actually thinking about designing. Sometimes it works that you aren't actually focused on designing things. SO it's probably both.

**Q: How about uncertainty? E.g. do you follow rules of future prediction and try to control it? Or do you try to focus more on the current action to shape the future?**



A: With uncertainty, I think that I've been working here for a year and half, I know that's an every-day thing. So many times I have the week planned out on Monday, and then someone says something, and I know that everything I planned will change – and then you just have to go with the flow. At first you might try to stick to some of what you've preplanned, and then you eventually to let go of that and to better embrace the things you don't know. This gives room for more to happen, and also helps because sometimes you're being very orthodox about what you want to do, and then you have a new idea that doesn't fit into an organized process. But if the process is already shifting then it is also easier to incorporate those new things.

**Q: So you don't see it as a negative thing? You come to work on Monday and... (7:40)**

A: Of course sometimes. Yeah, of course, and it's a weekly occurrence – an “oh shit this is ruining everything” moment. But 90% of the time it goes away and you usually realize that we're in a lucky position with the management, it's not just a whim – doing something because somebody asked – but there's actually a purpose. Even though it comes ad hoc, I understand why it has to be done, and don't feel so negatively about it. You can just say “this is a pretty good opportunity, let's just do it.”

I'm leading the team, so for me the hard part is knowing that I have to be the one who also explains why things are changing to others. And I understand that if you're in the midst of a process and you're almost done and then you find out you can't use it, I understand it's not always motivating. Luckily people here know that things change a lot, and not just the normal “a lot”, but it's a huge pace of change. I know that everything is going to change and I need to make sure that all the different people know that and understand it and are ok with it, and are still motivated. So that's the thing that's personally most challenging for me.

**Q: So it's about communication in many ways. So to recap, the flow is good for not getting too stuck on a process, but at the same time you need a healthy balance. (9:40)**

That's right, and that's why for example with SCRUM we want to keep some balance there; I'm sure that we have the kind of people where even if we didn't have any plans, people could think of tons of things to do – no one would be passive – but still, it's nicer to know that there is a goal and you know that “well my main project for the next few weeks is this thing;” it's nice to have some of those because you already know that 40% of the things you'll do next week you don't know yet, that can be difficult. I think that for a creative team they also like that they don't know everything and can actually have an impact. And in everything we are very open to ideas, it's not top down. We try to leave room for “shouldn't we do it this way? Well yeah.” If I had an idea this week, next week someone might say it's not really working and we'd do something else. We can admit if previous ideas aren't going well.

**Q: So a bit more about the company itself. You've been here for some time and know the history; do you know of any big setbacks in the process of starting the company? (0:27)**

A: Hm.. I think the biggest challenge in the beginning has been aligning all the different viewpoints. You have the scientists and the business men and the software developers; once you nail that down everything is quite clear – yes this is what we want to do and this is the purpose, the why. I'd think that is the main thing – what are we doing and why. That gives input to everything else.

**Q: How did you deal with that, aligning the visions?**

A: Well I wasn't there, but I think it's a lot about communication.

**Q: Did you define common goals for the company?**

A: Well actually we did that. Well we did a sort of project last year when we changed the name of the company. We knew that the name that we had wasn't the best to fit the purpose, it was innovative but a bit misleading in the long run. We decided to look at the name before moving onto healthcare – it had been an ongoing debate, we decided to come to a conclusion. So we had that project, and had people interview us, finding out the essence of why people are working here and what their goals are. From that project we actually came up with the new name. During that project we kind of defined the, even though it was already there – the first investor presentation made in this company was a book that's very well designed, back when we only had 4 people at the company, one of the founders (the CTO), he's also an industrial designer and has done graphic design so he did all the graphics. It's still a very nice book. That was the first presentation. Sorry I lost my train of thought.

**Q: I was asking about setbacks and how you deal with them, the next question is whether there is anything you currently do – a process or practice – that is the result of these setbacks.**

A: Yeah I'm not sure if we're talking about setbacks, but at least a challenge we had to overcome, which was this kind of brand and how we define ourselves. So the thing I was saying was that we had this book, the first investor material, that's where we already defined some things related to the vision and mission. And then during the project we kind of redefined and dug deeper. And yeah we've tried to communicate those within the company, but of course now we've had 10 new people join us in the past months, so it's not clear for everyone probably. So now we're finalizing the contents for this "brand book," maybe it'll be called something else because I personally don't really like the idea of stating a mission and then stating what the brand is, but it's more of a book about what the company is like and defining why we do the things we do and why do we look the way we do brand wise. So yeah you could say that there's new things that we've come up with based on previous challenges, but I wouldn't say that we have the best process for doing that yet, there's a lot to learn as a new company about the onboarding and how you actually bring the things you've written down to life. That probably comes with time, and giving space, so it's not management telling how it should be – now we're kind of

finding (discovering) ways, and learning new ways, and giving the new people a change to bring new stuff to the company and brand. It kind of develops from that. Yes there is kind of a process for how people know about these but there also needs to be space for development and new things.

**Q: So when you're starting a new project, how much time do you spend on things like assessing your own skills? (7:19)**

A: Not much, that's probably due to – I think the preparation time is quite small compared to previous jobs, just because of the urgency of things. I think it's mainly about analyzing whether this is something that we need to do or not, is this a priority, and if it is we do it and try it out, and that's pretty much in everything we do at the company. We don't believe so much in planning and, of course, it's important but you can't predict the future and you don't know if this is the right thing to do, so you need to try it out and see. SO in a way that's the process, rather than having planning and prep meetings. And of course we have those, but it's quite organic. Its more about the decision of whether we do it or not.

**Q: So do you often find yourself in a position where you're out of your comfort zone? (8:55)**

A: Many times. Yeah. Especially because we are working without a biotech background in the marketing and content studio, so yes of course.

**Q: So it's quite often. Is it voluntary?**

A: What is voluntary?

**Q: For example personal development wise, do you think you have enough opportunities to go out of your comfort zone, to try new things?**

A: Yes definitely, like I said there's this thing in here that if you have a good idea, and a good reason, you usually get a go-ahead right away. It's very straightforward, so you can try out new things. But then again we also try to help in a way that there is less uncertainty, so you also develop your "substance" skills here, so we have this NG Academy every month where e.g. one of the science teams gives a talk about metabolism, or some lecture from THL. And then our team might give a presentation, or some kind of workshop, related to the brand materials and what we're doing. That's also part of making the uncertainty more manageable, the purpose isn't to keep everyone in their uncomfot zones. I think most people here are here because they don't want to be in their comfort zones.

**Q: How do you discover new ideas (11:30)?**

A: Hm... I think. Me personally?

**Q: Company level.**

A: Company level.. I think that it's a lot to do with just taking in from the outside world. So thinking "this is related to us and this is a really good thing, shouldn't we do this?" And also trying out things is probably the best thing, not just sitting around thinking about a new idea. Just starting to do something and then along the way you probably find 20 better ideas. That's the main way we find new ideas, actually doing and then it either turns into something or you find new things along the way. But of course sometimes you need to – and at least – and yeah of course there needs to be time for the other thing, taking in from the outside, but yeah, I think it's mainly about doing things and then finding ideas along the way.

**Q: Is there some kind of process for that? Maybe not an official process, but how do you know which ideas are the best? (13:00)**

Well you have some goal that you start with. Let's say it's, I don't know, a new app for health care. We start with interviews, and then start making a prototype, and then realize it's not working. So we start trying different things. Or we're planning a campaign and later on realize we could do it a different way – but of course you have to go back to the starting point and think about why you started doing x, and why it's turning into y, and does it still make sense? And then it turns into y, and the goal might be different, and you think about whether the new goal is better or more important – if the answer is yes you keep doing it, if the answer is no you decide that maybe it's not the thing to do at the moment. But no, I don't think there is a clear process for it, I think it's very built in, and also comes from the style of the management, that they're very open to throwing old ideas into the bin, not just doing something until the end so that it's done, but actually thinking along the way, "does it make sense and why are we still doing it?"

**Q: How do you know whether it still makes sense, what is the point (15:05) where you might change? Sometimes you might get stuck, there's the balance of not giving up too soon vs knowing when to quit.**

A: Yes. Well I think that sometimes it's a meeting or sometimes it's your own feeling, you see that you're hitting a wall. E.g. a meeting that's not going anywhere, you might ask "what are we actually doing, why are we talking about this even though we were supposed to do this;" or its your feeling that there's no excitement around the thing anymore, at least for me, that's personally a good sign. Last Friday we just had a discussion, we were planning some content, and I realized that people were... I saw the latest design and was like, "Um I don't get excited about this, are you happy about this?" And they were like "well we need to think about..." Well actually let's not do any content that we aren't excited about ourselves, because then no one else will be either. But of course sometimes you have to decide on your battles, sometimes you know that something is something you have to put out and its fine. For example, a press release – not the most exciting thing but it's important to let people know something, without a point for turning it into the greatest thing. Then we just do something simple, there I wouldn't judge based

on excitement. You have to put things into boxes – this is the real most exciting thing, and sometimes you have these things that you need to do. That's also something that's important to communicate, that not everything is the most exciting thing. Sometimes there are things that have to be done, and that's fine. You just kind of learn to make the differentiations, sometimes it works sometimes it doesn't.

**Q: I like the idea of being excited by something, would you say that's more like something new? (17:50)**

A: Yeah yeah no and that's how it is, and its also good that the people doing understand that this is the thing, but they still have to have something that they want to push forward and is something new. That's where you need to see if the excitement is still there.

**Q: So what does creativity look like here? What are the sources, how do you handle it?**

A: I don't know, I think it's quite a few things. Probably it's the diversity of people and things we have here; we have people with backgrounds in scientific research and computational medicine and also with corporate business background and then visual design with clothing and merchandise and industrial R&D, it's always different discussions, and if you say an idea out loud there's usually always an opinion – even if someone might disagree, you always think about it – why did they say that? And here it works because everyone is passionate, maybe not about everything but at least about the thing that they do, and they kind of show that, and maybe one thing that shows creativity here is that, its kind of a joke that sometimes the smallest idea (let's do a Finnish independence day coffee) turns into the biggest thing, because someone who really wants to do it can't be satisfied with just the coffee, it has to be grandma's candles and singing and so on. That's the creativity, and it also happens with the business projects. Someone says "let's just do this," and then someone else jumps in with "no no no I think this is really important," there's always someone to push it forward. So I think there lies the creativity, where you always strive for something you haven't seen or done before.

**Q: How do you share the ideas within teams? (21:00)**

A: Mmm.. That's a good question. I think that's also, well in the kitchen a lot of times which is very natural. The way the kitchen in the new office works is that people hang out and share ideas, but then of course we have a lot of projects and meetings which requires a lot of participants from different teams, and then usually you know that you're working with things that you don't know about 100%, so you always ask. And I think that's the most important thing, that people ask and bother each other, which might be annoying at times but it's very much needed. Its fundamental that you don't know all the answers and have to go ask people, that creates the culture of talking which is good.

**Q: So when you're dealing with new ideas, how do you handle risk vs reward? (22:30)**

A: Oh you mean you have an idea and you see it can go either way?

**Q: Yeah for example, or resources, you spend a lot of time on a project and it doesn't go anywhere.**

A: It's a bit weird to say but we don't really think about that.

**Q: So is there a risk of failure at some point?**

A: I think that has been very much built in, that there will always be failure. You will fail anyways at something, so you need to do enough things that you succeed enough.

**Q: So that's quite understood here company wise.**

A: I would say so, its about trying new things and trying to do things, rather than pondering about if it can go wrong. You don't know, if you try it it can go wrong, but if you ponder about it it probably won't give the answer anyway, you have to do it and at some point you know whether it worked or not. Of course with huge investments you have to think a bit more, but even there if you think it should be done you just do it. Something our CEO talks a lot about is just being brave enough to decide, usually that's a problem in big companies, no one is confident enough, or doesn't have the power, they don't have the will to take the blame if it goes wrong. Here if you have that will you have the power to decide and can go all the way; you can lead different projects which is very free, even if you wouldn't be a function lead or whatever. I think that's a good thing, that it's quite open.

**Q: Maybe it's also ingrained in the company culture. If you look at big companies, they usually try to maintain what they already have – you don't want to take risk. But here you are trying to create something new all the time so you understand... (25:10)**

A: That's right, you can't build anything new by holding onto what you already have. "Ok now we have this and let's not-" and I think that's a lot to do with what our CEO is talking about, reinvesting everything and "we do thing," and showing that. It's usually that projects are all in or all out.

**Q: Now that we are talking about the CEO, what is leadership like at Nightingale? How do you think about leadership and what does it mean to you?**

A: I think leadership is at best leading by example, not telling people, but showing. You learn from that. SO for example if our CEO would say "ok just decide something" and if later I asked him a tough question and he was like "well... let's think about it." Well ok sometimes it's ok to think about it, but let's say you really need a decision, if he would kind of hesitate, it would be a bad message for me, and here it doesn't happen, you can see that – and they are doing things, not just the CEO but our founders, no one is here sitting looking at others doing things, they are taking risks too. That's the best leadership and the only way to spread the culture within the

organization. But overall the organization is quite flat, so even though we have function and sub teams, not every function has one, but e.g. sales has sales function lead but then there's academy sales and they have a team lead for that, but still it's quite flat – if anyone has an idea you can come up with that and get the mandate to do it and just do it.

**Q: Ok, how do you motivate your employees? Are these connected (28:20)?**

A: Yeah I was thinking that, that this is the thing also in job interviews, people are asked “what motivates you?” If you're interested in doing new things and shaping the old, then here you have the old. As a startup we're in a good position. The business, we've been making revenue from the beginning so we don't have to think about every penny or about money first. Usually it's the idea that at a startup you can't do things because you don't have money but that's not the case, here you focus on doing the right things and then the money will come, so here you focus on doing the right things. Our CEO has been saying from the beginning “if you have a good idea I will get you the money somehow.” And then you're just free to just get those good ideas. But then again if he's not convinced he will say “Ok do something better.” So the motivation comes from the freedom to think “ok what would make this company more successful, how can we get all these things to work,” and if you come up with an idea you can do it. If I compare that to big corporations I've been at as an inside consultant, I never felt that if I had a great idea I could go the next day and start implementing. You had to play a different kind of game, here it is straightforward – usually. This is the mentality.

**Q: And then we are nearing the end of the questions; as you are in the health industry sustainability is also an issue. How do you approach sustainability?**

A: Well yeah I think sustainability is another term that can be interpreted in different ways, but here we use it to refer to quality and sustainable actions to working in healthcare, and that's already quite regulated, so we've had to put in place all these quality management systems and learn a lot by doing that, what is the way of working and how do we do this and how do we maintain the integrity and quality of things we do. But if we talk about process that's very restricted and very defined process; and that's also interesting because we have to take that into account also in the content studio, so for example marketing materials that are referring to health care products need to be documented in a certain way and there are things we can and cannot say, so that's a good example of taking something very regulated and defined into a creative process – sometimes it clashes because those processes are not made in a fluid way, you define something and that's what you do; but we've worked around, or just understood, what needs to be defined and how can we work with that in a way that doesn't kill our processes, and we're getting better at that.

And that's one, but of course sustainability refers to environmental things; luckily our visual brand manager is very oriented in these issues so when we did a new office, this was always thought of – how could we do it in the best possible way, what can be reused? Or with materials, if we go to conferences then we try to think about what we can actually use multiple times.

Sometimes this leads to using things for uses that they weren't intended for. And of course we have a lot of online materials, and put thought into what should actually be print.

**Q: Healthcare is quite regulated, how much room do you have to develop your own machines and processes to be more sustainable? (37:25)**

A: Hm.. I would say that there is room, because you're doing something new... I'm not sure, I'm not the best to answer because it has to do with the product design. Of course there's the standards that say what need to be done, but its more related to the processes – for example how do you deal with people's ID numbers, or how to do you give back the results, but then there's a lot outside of that which can be better designed. For example you have the standard that says "you need to bring back the results in this amount of time," but the way you do it or how you make that process work, that's where you have room for design or... That's how I've understood it. Of course we need to take the regulation into account, but you can do a lot outside of that with design.

**Q: Ok no more questions!**

A: Ok, hope you got some answers!

Thanks Jukka!