Building an innovation fleet at Hella

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Managing Innovation

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This case reviews the ways in which an organization builds additional capacity for innovation as it grows. It uses the metaphor of putting together a fleet of ships designed to undertake different kinds of 'innovation voyage'. It also highlights the need for continuing review and for 'innovation model innovation'.

Once upon a time…

Westphalia is good farming land spread out like a green blanket across the north-west of Germany. Rolling plains, gentle forests marking the boundaries at the edges of rich fertile fields, contented cattle grazing in the afternoon sun. The year is 1877, a good time and place to be in the animal feeds business which is where we find Sally Windmuller taking over the family's operation. They've been around a long time, can trace their roots right back to the 13th century but are now well-established in the fabric of Westphalian farming society. Plenty to do, closer personal links and reliable service are the hallmarks of his work with local farmers – but for a young entrepreneur like Sally there's a sense that there is more he could do.

There are plenty of opportunities beyond animal feeds – for example, a whole population of farming clients, most of whom own some form of carriage which they use to get around in. And each of these carriages is going to need various accessories – some for essential use, some for decoration. He gradually builds a business alongside the animal feeds which specialises in making and selling whips, harnesses, door handles, lamps and horns – all the fixtures and fittings without which no horse-drawn vehicle is complete.

And it works. His vision turns into a successful business, combining a variety of skills in leatherwork, metalwork and engineering and he grows the company from the original 4 employees selling feeds to around 120 people.[i] It wasn't an overnight success; he

expanded it slowly but steadily. But by 1888 he was selling to a growing number of customers outside the region and increasingly focusing on the accessories and expanding fast enough to need a factory in which to make the volumes required. In 1895 he was able to buy up some machinery from a local company which made lamps but had gone bankrupt; using this as the core he set up a factory in Lippstadt and employed 30 people making for horse carriages and bicycles.

Meanwhile in another part of the country other entrepreneurs were at work pursuing their versions of dreams and opportunities. In particular two men – who never met but worked along similar parallel lines for many years – were busy with their new ventures in the southwest. In 1886 Carl Benz demonstrated the world's first automobile in Mannheim while a little further up the road Gottlieb Daimler did the same in Stuttgart. Both men had been fascinated by early discoveries around the internal combustion engine and together with friends and work colleagues they explored how to create a motor vehicle.

Up in Westphalia Sally Windmuller heard about this and his entrepreneur's brain clicked into gear. 'Horseless carriages' still sound like carriages – and so there might be space for him to join the party. While much of the attention by the manufacturers is on the engine and the power transmission he reasons that someone has to pay attention to the rest – the chassis and the body. That's going to need lights, horns and many of the other things he's already supplying to the mainstream carriage trade……

It's a new kind of challenge – and a high-risk opportunity. If this new idea catches on there will not only be the old business of horse-drawn carriage fixtures and fittings but also a new market for the emerging car industry. He persuades some backers and on the back of his growing success in the carriage trade he is able to set up a company in 1899 - Westfälische Metall-Industrie Aktien-Gesellschaft (WMI) - to make horns and lights for both carriages and the new horseless carriage industry.

Fast forward

By 1905, WMI was a thriving mid-sized business with almost 200 employees that exported its products to many Western European countries as well as to Hungary and Russia.

Ever the entrepreneur Sally W saw another opportunity with the emergence of the first electric light for cars. Up until then lamps were acetylene, paraffin, oil, even candles; the year 1906 saw the first light bulb suitable for use in automobiles invented by German light bulb manufacturer Osram. Two years later, WMI began to make battery-powered electric lamps for cars, including sidelights, rear lights with a red glass cover, and license plate lights.

Formalising innovation

The early days of horns and simple lights drew on a simple knowledge base, one grounded in making and repairing horse drawn buggy equipment. But soon came the need to specialise and learn to understand and control. Sally W had seen the need to invest in what we would now call R&D; for example early on he saw a key development was going to be the new acetylene lamp – a big move forward compared to the old oil or even candle powered lights. Recognising the importance of technology led to the award of their first patent, in 1901; although this was for a very different kind of machine to their core business it gave them valuable experience in the process of assembling and protecting intellectual property.

Building process innovation capability

Learning about making – process innovation - as well as about product technology was also an important early piece of the puzzle. A local firm went bankrupt and WMI bought the firm's machinery, using it to set up a factory in Lippstadt in 1895. This provided the opportunity to learn valuable first hand lessons about factory organization and volume production.

To keep up with the growing demand, another brand-new factory was built in 1911 and WMI took on the production of additional accessories for carriages and cars,

including whip holders, locks, ashtrays, and a variety of handles. By 1912, subsidiaries had been established in London, Paris, Vienna, Barcelona, Milan, and New York.

Crisis, pivoting and innovating to survive

But then came the first of many crises in Hella's history – the First World War. Alongside most of German industry the company was required to switch production to manufacture war goods. This kept the business going and people employed but stifled the export trade and also forced their innovation hand in new directions. Development of product technology stopped – but was replaced by a lot of fast learning about production – how to make things in high volumes to reliable quality, and quickly!

By the end of the war the company's fortunes were looking less than rosy; annual turnover in 1918-1919 stood at less than half of the pre-war levels and the prospects for growth in a war-damaged economy were not good. Quite apart from the day-to-day challenge of keeping the business going there was now a major economic crisis in the country. Inflation rocketed and the government issued more and more currency to try and manage the debt burden resulting from the war; by the time of a major currency reform in 1923 WMI along with most of German industry was in a very weak position. No exports, a collapsing internal market and a climate of high uncertainty.

WMI at least had firm hands on the tiller even if the ship was now heading for some very stormy waters. One of their original suppliers of metal parts, the Hueck company, bought a major shareholding and the firm was reborn as Hella-Hueck. Linking with the Hueck business brought with it some valuable resources in terms of technology and production experience; for example they had learned a great deal about mass production methods which had been pioneered in the USA but were only beginning to be used in Germany. Early automation and the first use of conveyors in the factory were a feature of WMI's production in the 1920s.

But on the product and market front the 1920s and 30s proved very difficult; the company moved between its 'core' business of automotive fittings and a much wider world of products. At a time when stock markets were crashing around the world and where depression was rolling in the opportunities in cars were limited and Hella was forced to switch production to make anything for which there was at least some demand. They learned how to make household goods such as kettles, saucepans, cans, and spoons as well as working with markets at the fringe of their auto business – products for bicycles, motorcycles, and motor boats. By the early 1930s over a third of Hella's turnover came from these markets, and whilst there were some opportunities to learn about different markets, technologies and materials the impact on building core competence around automotive-related knowledge was limited.

The turning point – becoming a key supplier

The turning point came during the 1930s with increasing state intervention in industry. Tax on automobiles was abolished in 1933 and the market grew from around 120,000 vehicles to nearly four times that volume by 1938, with Hella benefitting from supplying various fittings for these. And on May 28 1937 the '*Kraft durch Freude*' (KDF) car was launched, its name meaning 'strength through joy'; this was the forerunner of the Volkswagen 'Beetle' and had been designed to be a 'people's car' (*Volkswagen*) with an affordable price for everyone.

Hella were engaged to supply lights, indicators, horn and other components for this project - laying the foundations for what became a major relationship during the later years of growth of the company. Their expansion also included a major contract with Ford on an exclusive supply basis in 1936 and by 1939 Ford was WMI's most important customer. Business finally was improving, the company was employing over 1700 workers, up from the 250 in 1933. And, importantly, the 1930s saw a systematic investment in recruiting and training young people, laying the foundations for what is still a key commitment to the local region and ensuring a steady supply of intermediate skills to support manufacturing.

Another war, another smackdown

All their progress was, of course, brought to halt by the Second World War and the consequent destruction of Germany as a major power. By the end of the war there was again near collapse in the economy and although Hella was permitted to continue trading the overall German market was tiny – less than 7000 vehicles and growing slowly. The workforce had almost disappeared; in 1945 only 45 people were on the books. In order to keep production going Hella switched once again to making anything and everything - coffee pots, crankshafts, bicycle lamps, alarm clocks, headlamps for the British Rhine army, a vegetable drying installation, a sugar beet processing plant, and crop spraying equipment!

Riding the waves of the Wirtschaftswunder

1948 saw the beginning of the 'Wirtschaftswunder' – the economic miracle – through which German industry began to re-establish itself. Hella's fortunes rose with the gathering tide, helped by some luck. Although some of their more sophisticated measuring equipment was confiscated the bulk of the plant and machinery remained intact and ready or use. Their pre-war links with Ford were reinstated so that they had early access to a big export market and exposure to differing customer demands. And they were able to position themselves as a technology leader – for example by delivering the first blinking turn indicators for the Taunus and Goliath models in 1951. The relationship with Volkswagen (VW) was also extremely important; in 1950 they accounted for half of Hella's sales and this rose to 60% by 1955.

But Hella's growth during this period was not simply about being part of a rapidly expanding market; they were also reaping the rewards of their continuing commitment to innovation. For example in the product technology field they led with many key innovations including flashing indicators and lights, different headlamp shapes and geometries enabling cheaper lenses, asymmetric dipper beams and new reflector technologies. And with the development of integrated circuits and simple programmable devices in the 1960s came the possibility for applying solid-state

electronics (SSE) in a range of components. Hella was an early entrant into the marketplace with an electronic indicator flasher launched in 1965.

Internationalisation

As German industry gained confidence it began to move overseas and Hella was part of the early wave of suppliers internationalising alongside their key customers like VW. But Hella had seen the potential in the global market well before that and on its own initiative had begun to move production and sales operations overseas. In 1961 WMI opened its first production facility outside Germany in Australia and followed this with a series of moves into South America, Asia, and Western Europe.

By the mid-1990s, Hella had become a global supplier to some of the world's biggest automakers with roughly $3 billion in sales and a workforce of 17,000. A worldwide network of production plants--often right next to the customer's assembly lines--made "just in time" delivery possible. In 2012 Hella started a cooperation with the Chinese automobile manufacturer BAIC to develop and produce light systems, particularly designed for the Chinese market. And today HELLA operates from more than 125 locations in over 35 countries.

Rethinking innovation

This breakneck expansion along several different trajectories eventually led to a crisis. Their innovation model was still strongly linked to a powerful front end which kept exploring new opportunities. This side of the business, especially in electronics, had grown rapidly to create a very effective 'ideas engine' but one which was not well geared up for delivering innovation – creating value from those ideas. A detailed analysis of the problem was commissioned and this suggested that of the roughly 4000 products in the range at that time the vast majority took up time and effort but made little contribution.

- 95 products responsible for around 80% or turnover and 34% of R&D costs
- 305 responsible for 15% turnover and 35% R&D
- 3100 responsible for 5% of turnover and 31% of R&D

Not only was rationalisation urgently needed but also a process to develop a portfolio approach and selection criteria to allocate resources and progress projects. In 1993 a major restructuring of the innovation approach took place – 'innovation model innovation', essentially aimed at bringing about much closer functional integration. Prior to this there were small 'empires', each working independently and only loosely connected – for example, there were no less than 9 Deputy Managing Directors responsible for various areas. In particular design, planning and manufacturing were highly separated which inevitably meant inefficient use of resources and real risks of duplication of effort.

Managing the knowledge spaghetti

The emerging picture by 1996 was a shift in the underlying innovation model, away from the entrepreneurial idea driven approach and towards one which was more customer-centric and which emphasised planning and review. Innovation became a matrix-based activity, linking different players more tightly together. There was a clear product and market strategy giving shape to future innovation activity and setting out a clear commitment by the company to continuing to invest in electronics as a growth engine. Importantly there was also a small group which took responsibility for exploring products and processes on the fringes of this core strategy; effectively Hella now had a large focussed development resource and a smaller future-oriented group.

A critical element in all of this was mobilising the knowledge base of the company more effectively. Hella had built deep competence in lighting and electronics but was not necessarily getting the full benefit of this knowledge. Reorganization helped with this integration and the new Product Managers played a key role in building links and networks to specialists inside the factory.

Opening up the innovation game

During the 1990s Hella also began to recognise a principle, common now in the era of 'open innovation' that *'not all the smart guys work for us'*. Trying to compete along such a complex technological frontier required developing networks and partnerships

and so Hella began to put these in place via a mixture of acquisitions, mergers and joint ventures.

Don't forget process innovation

But by the 1990s global competition was exposing big differences in productivity in the auto industry with Japanese manufacturers far ahead of the rest on a variety of key performance indicators. This began the search for process innovation which led to understanding the principles behind the 'lean' approach embodied in things like the Toyota Production System.

At its heart was a relentless attack on waste and a constant drive towards improved quality and productivity. This was achieved in part through high levels of employee involvement

For the automotive supplier industry this signalled less a wake up call than a full-scale alarm. The 'Lopez era' as it came to be known (named after the combative Purchasing Director of General Motors, Ignacio Lopez) challenged suppliers to make major improvements in cost, quality and delivery or cease trading with the major car-makers.

Central to the company's way forward was continuous improvement (CI) – finding ways to engage employees in the process of sustained incremental innovation. This wasn't just a new management technique but a fundamental shift in the underlying mental model through which the company operated and a shift in its innovation thinking to include all employees.

CI was embodied in the Total Quality Management concept introduced in 1991 which built on three core principles:

- Customer satisfaction as top target
- Employees to be empowered and able to guarantee customer satisfaction
- Entrepreneurial responsibility – the strategic guideline for processes and organizational structures to support this

It worked – and one measure of success was that it helped HELLA survive and grow. At the end of the 1980s there were 30,000 independent suppliers in the auto industry but 25 years later only 10% of them are left.

A century on – and still innovating

So at the end of the company's hundredth anniversary year – 1999 – Sally Windmuller's vision had paid off. A business had grown alongside the burgeoning automobile industry and he was right in his gamble that there would be a need for horns, lights and other accessories. But the business had also transformed, growing three valuable additional legs on which to stand. An after-market operation which could help balance the leads and lags and uncertainties in the core OEM world. A growing independent presence as a sophisticated supplier of technologies around electronics. And a focussed special applications business working in adjacent markets and able to leverage Hella's core knowledge base. Importantly the company was also no longer reliant on in-house capacity alone; a network of partners and joint ventures enabled them to cover a complex technological frontier.

Looking to the innovation horizon

Today's innovation environment for Hella has a touch of the *déjà vu* about it. Sally Windmuller might not find it so strange – looking around there is the sense of an industry at the early fluid stages of its development. There are powerful technological forces opening up huge new possibilities – driverless cars, energy efficiency delivered through novel fuels like electricity or hydrogen, low emissions, and above all intelligence. Mobility in the future is likely to involve intelligent devices capable of sensing and acting in strategic fashion, all part of a highly connected world of the Internet of things.

On the market side there are huge social shifts changing the role which vehicles and mobility play and people's expectations around that. Consumers are increasingly

wanting the opposite of Henry Ford's offer – the era has moved in a hundred years from mass production to mass customisation with increasing demands for tailoring and personalisation to individual needs. Ownership models are being challenged by alternatives based on rentals and sharing - and at the limit people are challenging whether they need a vehicle at all.

And there are strong forces shaping what can be done – legislation and regulatory pressures on emissions, safety, sustainability are redrawing the pitch on which the competitive game of automotive manufacturing is being played.

As if that were not enough for anyone to wrestle with the new environment has attracted a whole new set of players to the game. Computer companies like Apple, knowledge giants like Google, independent visionary entrepreneurs like Tesla are pushing ahead reshaping the competitive landscape.

There's no doubt that there will be opportunities in this new landscape – the question is how well Hella is positioned to seize them. Its future success is likely to depend on making sure it has a varied fleet of innovation vehicles capable of handling the many challenges which the future will bring.

Building and upgrading the innovation fleet

If we look back across this hundred year canvas we can see that innovation has been at the centre – but the ways in which it is organized and delivered have gone through many changes. It's a bit like assembling an increasingly varied fleet of ships designed to help make a variety of different innovation journeys so that today's company resembles a huge shipping line rather than a single venture.

We can loosely map this to several key stages:

Stage one is the classic entrepreneurial start-up, a vision and a value proposition focused on a key customer segment and embodied in a handful of designs.

Stage two moves on from this model to one which is about growing alongside a growing industry. This means a capacity for multiple innovation in parallel and the beginnings of a portfolio strategy of several 'safe bets' and a few higher risk ventures.

Stage three involves paying attention to process innovation; by the time you get to this kind of scale there's a completely new kind of innovation which assumes priority – how to make in volume, reliably and at a competitive price.

Stage 4 is where investment in R&D allows a degree of independence; instead of simply making what the market demands the company can now offer its own products. But this requires the capacity to imagine and create their own new products.

Stage five is the deliberate innovation strategy of becoming a key supplier – getting close to major customers but in the process aligning their innovation processes to those customer's projects.

Stage six is learning to operate in new markets, particularly through exports and internationalisation. It's about replicating innovation capability in different locations and adapting the core innovation vessels to cope with those waters.

Stage seven is the inevitable point at which innovation management needs a reset. Even though the core models have worked thus far the sheer scale at which the business now operates means there's a need to rationalise and revise the core innovation routines.

Stage eight is the major shift in process innovation triggered by the external shifts in the competitive environment which requires a rethink of the role employees can play in innovation and engaging them in a company-wide continuous improvement approach.

Stage ten is the recognition that in a complex knowledge world like the one the auto sector is becoming there's a need to recognise that 'not all the smart guys work for us' and a consequent rethink of innovation strategy towards open innovation

Stage eleven is the awareness that, as the industry shifts fundamentally to a more fluid state with new technologies, new markets and new players coming into the picture, there's a need to find some way to explore in exactly the same way as Sally W did in the beginning. Setting up a capacity for entrepreneurial start-ups but with their heart within the existing company.

This underlines the need for continuous review and revisions to the core model for organizing and managing innovation. In other words, the importance of continuing 'innovation model innovation'.

Reflection questions

1. Try and identify the underlying routines for innovation which each additional ‘vehicle’ for innovation contributes to building overall innovation management capability

2. Why and when. Is innovation model innovation needed? Illustrate your response with examples from the Hella case , looking both at incremental improvement of innovation routines and the occasional major realignment which more significant shifts in the environment require.