



Hella overview and innovation history

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Chapter two: Hella's innovation history

BEING INNOVATIVE

Since 1899 HELLA has been continuously making its mark on the market with outstanding ideas. This innovative power is both the origin and the future of the company. Those who want to be global leaders must be – and stay – curious, persistent and flexible. Networking at all levels is the primary reason behind this wealth of ideas. Our employees from around the world contribute new, fresh ideas for safer products and more efficient processes day by day.

(From the 2013/14 Hella annual report)

In the beginning....

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 company called Cöppius-Schulte-Röttger 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 vehicle.

Daimler joined with his friend Wilhelm Maybach fitting a kerosene powered engine to a two-wheeler car and took it for a successful test run in November 1885. Meanwhile Benz had earned enough from his 1879 stationary single stroke engine to fund his dream of creating a lightweight car powered by a gasoline engine, in which the chassis and engine formed a single unit. As a stepping stone towards a four-wheeled vehicle he developed the "Velocipede" which he demonstrated in July 1886 after having first applied for a patent for his “vehicle powered by a gas engine.” The patent – number 37435 – may be regarded as the birth certificate of the automobile.

The idea soon moved from demonstration to practical application; Daimler began exploring where else he could use the principle, looking at rail, marine and even aviation markets. And Benz’s wife Bertha took their two teenage sons on what was probably the world’s first long-distance journey, driving an improved version of her husband’s car on a meandering 180-kilometre road trip in 1888. In the process she demonstrated the potential of the motor car not just as an engineering curiosity but a practical means of transportation. It wasn’t cheap but for a few wealthy early adopters it looked interesting and so both Daimler and Benz began to grow their businesses.ⁱⁱ

An opportunity and an entrepreneur....

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.

The first cars that cruised Germany's unpaved roads in the early 1900s had lamps similar to horse coaches: paraffin, candle, or gas lamps. However, lighting was not standard equipment in the already extremely expensive vehicles and was therefore considered a luxury. To drum up business, Windmüller, who was the first to own an automobile in his hometown, used his vehicle as a sales tool. He equipped his car with the lighting fixtures his company made and drove around town. He also visited trade shows in Germany and abroad, showing off WMI's products.

Characteristic of this early stage was a commitment to skills and technology; a good example was his recruiting of 40 musical instrument makers from Saxony to work in the expanding horn factory. Persuading skilled craftsmen to migrate from one side of the country to the other required considerable faith on both sides!

The company's newly established advertising department and traveling salesmen marketed WMI's products throughout Germany and Europe. 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.

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.

A more direct success from applying technology came in 1908 when the 'Hella system' was used for the first time. Based on a product developed in 1906 this involved using a foil reflector in the lamp and a focusing lens in front of the acetylene burner; it effectively doubled the range from 150m to 300 metres and heralded the era of the headlamp as opposed to a simple lamp. This design was also easier to make with higher precision and manufacturing costs were reduced.

It was also at this time that the 'Hella' brand was formally registered and the strong association with lighting emphasised. There are several ideas about where the name came from; in German the word 'hell' means light so there is a plausible link. But Sally's wife Helen was also nicknamed 'Hella' giving us another strong contender for the inspiration behind the brand. Whatever the source of the name it stuck; although the company name remained WMI until the 1980s it traded under the brand name of Hella and increasingly became associated with that.

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 Sally W 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 and survival – just

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, including handguns, grenades, and other weapons components. 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. For Sally W this was a tough time – he'd managed to lead the company through the difficult war years but now faced the bigger challenge of keeping things going. Part of the problem was extreme shortages of key raw materials and so, in true entrepreneurial fashion – he looked far and wide to try and find these. In the process he ventured a little too close to the wind, approving the purchase of scrap metal, tools and other resources from German army stocks. This was illegal at the time and he was sued in 1921 with the charge of 'causing damage to the State'. He escaped jail but had to pay a heavy fine and was put on probation.

The personal damage was significant; from founding and running the company he had to step down, losing most of his assets in the process. (This included the magnificent house on the edge of the factory in Lippstadt which still stands there today, now serving as the Hella Forum, a meeting place for

workshops and special events). He stayed linked to the company but moved to Berlin where he ran the sales agency for Eastern Europe; he died in 1930.

For the company this was also a traumatic time. 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

As if that weren't enough there was also a battle for ownership and control. The original WMI investors were a mixed group and their shares had been bought in many cases by a group of bankers seeking to gain a majority shareholding. But there was also a new player in the game – the Hueck family from the nearby town of Lüdenscheid.

Founded in 1814 in the hills of Sauerland the brass and other metals business of Edward Hueck and Sons had grown from its original role making buttons to cover a wide range of industrial goods. They had pioneered steam power, built one of the first brass rolling mills in 1879 and installed Germany's first extrusion press in 1908. They continued to build their capability as a specialist supplier to – amongst others – the WMI business. One of the sons of the original founder, Oskar Eduard Hueck began buying shares in WMI after the end of the war and when the bankers tried to raise additional share capital he recruited the services of his eminent lawyer brother, Alfred. They managed to see off the challenge and after a long legal battle acquired the majority shareholding of 60%. Oskar Edward became chairman in 1923 and three years later brought in a relative (his wife's cousin), Dr Wilhelm Röpke to help him as Commercial Director.

So WMI at least had firm hands on the tiller even if the ship was now heading for some very stormy waters. Linking with the Hueck business brought with it some valuable resources in terms of technology and production experience; for example Oskar Edward had spent time in the USA and 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.

Riding rough waters

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. These years were essentially a fight for survival with a serious economic slump in 1925 which led to the closure of the factory for two months during 1926. The 1929 Wall St crash sent another shock wave around the

world and depressed markets still further; in Hella's case their turnover in 1933 was only a third of the 1929 level and the number of employees contracted from over 800 to 250 during that period.

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 came during the 1930s with increasing state intervention in industry. Against this backdrop the National Socialist government was forced to intervene in the economy and during the 1930s there was an increasing level of state control and direction. 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, back down again

But once again this steady growth was stopped in its tracks by the outbreak of war. Export markets – including the key deal with Ford – disappeared and instead 60% of turnover shifted to military applications although this time there was a stronger emphasis on core components like headlamps rather than diverting production to armaments. Shortages of skilled labour were another problem as most of the men had been recruited into the armed forces.

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 for 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 figures for vehicle production over the following decade underline this with Hella supplying a wide range of components:

1949	163,000
1954	680,000
1959	1.7 million

The relationship with Volkswagen (VW) was particularly important; in 1950 they accounted for half of Hella's sales and this rose to 60% by 1955.

The growth can also be seen in employee numbers:

1945	45
1948	1500
1959	5500
1961	7000

And in exports; between 1950 and 1955, these roughly doubled. Besides going to the United States, Hella products also found their way to Austria and Switzerland, Benelux, and Scandinavia. In 1957, a Brazilian manufacturer acquired a license for a number of Hella products.

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.

All of this required investments in learning and competence building – in optics, mechanical engineering and especially in the emerging field of control with some of the new possibilities opened up by electronics. This was a critical turning point for Hella; although some simple electromechanical devices were in use and the company understood the basic physics behind electronics it was not until the invention of the transistor in 1947 that significant new possibilities began to appear. 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.

Maintaining continuity – the family connection

Steering the ship through this ocean of new possibilities was the son of Oskar Eduard Hueck, Arnold. A physicist by training he joined the company in 1950; soon after the Hueck family negotiated to buy all the remaining shares in WMI, setting up in the process a limited company. To preserve their autonomy in decision-making the company changed its form again in 1959 to be a limited liability partnership with Arnold Hueck as executive general partner. He was joined in 1957 by Wilhelm Röpke's son, Reinhard who became another executive general partner in 1966.

These two led a small management team overseeing the growth during the years of the Wirtschaftswunder. They expanded production facilities continuously during the 1950s, adding another Lippstadt site in 1958 and moving into several other cities including Todtnau, Recklinghausen, Hamm-Bockum-Hövel, and Bremen. Similar expansion in the product range included supplying windshield wiper and washer control systems and rotating beacons for police cars and special vehicles. WMI's sales tripled during that period, passing DM 100 million in 1959 for the first time.

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 Mentone, Australia and followed this with a series of moves into South America, Asia, and Western Europe. The trend continued for three decades, culminating in a major eastward expansion as the Soviet Union

collapsed and new facilities were established in the Czech Republic, Slovakia, and Slovenia to serve these opening markets.

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.

Crisis strikes again

During the 1980s the company continued to grow and consolidate, expanding on the electronics side in particular. Another family member joined in 1987, Jürgen Behrend who was married to Arnold Hueck's daughter. Dr Behrend, a lawyer by training, had worked in the Hueck business in Ludenscheid since 1982 and was familiar at a distance with the Hella operation. (In fact he was not a newcomer to the Lippstadt site itself, having worked in holiday jobs around the workshops and driving cars for the company). He came in to work alongside Reinhard Röpke, overseeing some of the newer developments and providing further strength to the senior management team.

Although there was a strong hands-on approach from this strategic group (including continuing involvement of the ageing Wilhelm Röpke) this posed some challenges for Hella since decision making was effectively concentrated at a high level leaving the rest of the organization to focus essentially on operations and tactical decisions. The risks of this concentration were cruelly exposed in 1992 when Reinhard and his family were on a holiday in New Zealand. The light plane in which they were travelling crashed and there were no survivors; as a company Hella was effectively beheaded.

Jürgen Behrend stepped into the overall leadership role and became Liabile Partner in 1993 with the support of the rest of the family. But his task was now to try and revitalise a company in shock at a time when major new strategic decisions were needed.

During the next years the urgent task was to steady the ship but it became clear that some major strategic surgery was also needed. In particular the old model of leadership had placed relatively little emphasis on disciplines of strategic planning and control and there was an urgent need to bring these disciplines into play. To bring an external perspective the management consultants McKinsey came in with a team to help review and strengthen the company's operations.

One area of particular concern was around product development. 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% of turnover and 34% of R&D costs

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- 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. Around this time the concept of product managers was also introduced. (There is a more detailed description of this re-organization in chapter 3)

The big change took place in 1993 driven by Behrend and was 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. Before 'Die Änderung' (the change) took place these had operated as very different worlds. As one interviewee explained, *'It used to be that manufacturing did what they were told, never got or gave feedback. Equally no designer knew the price of his changes – there was no cost consciousness. Neither component cost nor final selling price... And R&D never went near Production – that was forbidden!'*

Inevitably this meant inefficient use of resources and real risks of duplication of effort. The 'change' brought the different worlds closer together – for example measurement test equipment which was developed and implemented in parallel with the production people.

Entrepreneurial responsibility

It was not just the arrival of consultants with new approaches and techniques. Much had to do with Jürgen Behrend's different beliefs about management, originally learned and tested during his time with the Hueck company in Lüdenscheid. His belief in 'entrepreneurial responsibility' - the idea that employees have much to contribute and want to do so, are motivated by this rather than simple instrumental rewards – was particularly relevant. Enabling employees to make their contribution required a similar responsibility on the part of management to create the conditions under which they could do so. This philosophy was, to some extent, at odds with the somewhat autocratic style with which the company had grown up, but in walking around and getting to know the Lippstadt plant he became convinced of the value of trying to change the culture towards this more participative approach.

Things had already started to change within the company – one important element was the shift in technology around electronics which brought about a 'changing of the guard' in terms of key players in the innovation game. In order to ride the growing wave of electronics applications there was a need to recruit new young people with no direct experience of the old WMI culture. At the same time there

was a large cohort who had grown up in a more mechanical era and felt uncomfortable with the new one. In 1992 an integrated electronics team was established, bringing hardware and software engineers together and enabling further linkages across the growing knowledge base.

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 (building on the original Future developments organization which dated back to the 1960s) 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 build 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.

Another aspect of the reorganization around this time was a move away from the strong centralization around the Lippstadt headquarters. Although the company had extended its international footprint it was still very much run from a German centre; the 1990s saw moves to establish strong centres in China, the USA and Mexico and to move to a flatter more global model.

Hella in the 21st century – old crises, new storms

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.

But they were not out of the woods yet. Global drivers, especially the increasing emphasis on reducing costs by Hella's powerful customers kept up pressure to rationalise and focus the supply base. Hella needed to step up to the plate of being a reliable top tier supplier – or get out of the game.

The first decade of the new millennium was characterised by a series of shocks – for example the company experienced a crisis in 2005/6 due to problems in their lighting division – and a series of interventions aimed at stabilising the ship. In particular another strong drive towards cost-cutting and increased efficiency helped them to recover in 2006/7, only to then be hit by the after-shocks of the global financial crisis triggered by the collapse of Lehmann Brothers in 2008. This had a significant impact on world industry – for example all the major US car makers needed massive state aid to continue trading – but Hella’s efforts at strengthening their core productivity paid off and they remained profitable in spite of these external shocks

For Jürgen Behrend the responsibility of trying to steer the company alone was proving difficult. One member of the McKinsey team which had been helping in various ways during the late 1990s was Dr Rolf Breidenbach, with whom Jürgen had developed a good working relationship. The two kept in close touch and when Jürgen put it to the family that they needed to bring in a strategic senior manager to help him his proposal of Breidenbach was positively received. Behrend approached him and he joined on a full-time basis as joint Chief Executive in 2003.

This provided a welcome injection of additional strategic capability, complementing Jürgen Behrend’s vision and challenges for the future with some strong operating expertise. The two began another era for the company, playing an effective double act which balanced entrepreneurial exploration with careful concern for operations and systematic exploitation of the core knowledge base. A wave of initiatives were kicked off exploring and stretching Hella’s capability around open innovation, diversification and developing capability for dealing with disruptive innovation. But in each case the strategic push to explore was balanced by a measured assessment of the relevance of these new approaches and their configuration to make sure they fitted the Hella world.

By 2014 the company had returned to strong profitability and a key new step was taken, floating around 30% of the shares on the Frankfurt Stock Exchange. From its origins as a family business Hella moved into the wider world of the capital markets, recognising the need for additional resources to support future growth but also acknowledging a shift away from hands-on strategic management by members of the family. In 2016 Jürgen Behrend announced his intention to step down and from October 2017 sole direction of the company would be in the hands of Rolf Breidenbach, reporting to a mixture of family and external shareholders.

Continuity in innovation

Throughout its history innovation has been at the heart of Hella’s approach and there has been a steady evolution of its capability to organize and manage the process. Life for Sally Windmuller was by no means easy – start-ups never are. But the early growth of the company as a technology-based business relied on a steady stream of product and process innovations which helped create value in the marketplace. This strength was deeply embedded so that even after the huge setbacks of both wars the company was able to emerge resurgent, riding an innovation wave.

But increasing growth in the automobile industry also brought new challenges to this innovation model. Demand for a wider range of products and more customised solutions sat alongside pressures to cut costs and delivery times while maintain a high quality standard. Close links with key vehicle makers tied Hella tightly to their tight and demanding development cycles. Overall there was growing pressure on Hella's product and process engineers to do more with less as profit margins shrank.

Hella's response was multi-stranded. It invested heavily in pushing its technological frontiers, stretching to deliver novel lighting solutions. On the product innovation side, for example, Hella achieved a number of world 'firsts. In 1991 they showed the xenon headlamp at the International Auto Exhibition in Frankfurt. This novel design effectively doubled the light output compared with conventional halogen headlights and cut the energy consumed by the lamp by one-third. Mass production of the xenon headlights for BMW began a year later setting a trend in the industry and Hella developed different variants over the next years including a headlamp system with both a high and a low beam. Although more expensive than halogen lamps, xenon lamps significantly increased a driver's field of vision at night.

The link to *process* innovation also became tighter. In order to lower development and production cost for the growing variety of car models - each with a distinctly different headlight design - Hella's engineers came up with a modular system based on tiny light emitting diodes. This LED-technology allowed the combination of pre-produced light modules in an unlimited number of variations. First introduced in 1992 for brake lights in a BMW convertible, the modular system was soon also used in other rear lights.

And Hella began to spread the range of application of these technologies, moving across into adjacent markets like commercial vehicles and trailers, motorcycles, bicycles, boats, and trains. In 1996, the company spun off Hella Aerospace GmbH as an independent subsidiary for aviation lighting, which was later sold to Goodrich Corporation in the United States.

It was also during this time that electronics began to play an increasingly important role as a division in its own right, not just supplying controls for lighting systems but extending across a wide range of switches and relays, remote controls, electronic controls, and sensors.

(We'll explore several of these cases in more detail in the following chapter)

Opening up their innovation game

But 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. This view was particularly championed by Jürgen Behrend, who pioneered the 'network strategy' which helped fuel knowledge-led growth across the business.

Behrend also saw the company's future in intelligent automotive *systems* developed, manufactured, and marketed by a network of independent suppliers such as Hella. This move anticipated what was to become an increasingly important shift in the role of automotive suppliers, moving from being simply shops where components could be purchased towards players with strategic knowledge and capability to put together whole systems.

Beginning in 1992, a new Hella plant in eastern Germany put out whole front-end modules for a number of Volkswagen models. In 1999, Hella established a joint venture with the German Behr group, a supplier of air conditioning and motor cooling units and a long-standing business partner. And in 2001, Hella entered two strategic partnerships that resulted in new joint ventures: one with Japanese lighting components manufacturer Stanley Electric and one with German automotive wiring specialist Leoni Bordnetz-Systeme. Two years later, Hella announced a strategic alliance with Japanese manufacturer Taiko Device Techno & Co. to jointly market automotive relays.

Today's elaboration of the network strategy involves strategic partnerships and joint ventures with dozens of companies supporting along the knowledge frontier and feeding into lighting, electronics, aftermarket and special applications fields. A good example is the current ability to work in the strategically important field of camera-based driver-assistance systems. Hella's ability to work in this space comes from their acquisition in 2006 of AGLAIA, a Berlin-based specialist for visual sensor systems.

Hella had always had an 'after-market' business supplying replacements and spares to third party wholesalers, workshops and garages. During the early years of the 21st century Hella's core lighting business was in crisis, making losses in 2003. Fortunately the after-market business remained strong and to reinforce this area, Hella introduced the "Hella Service Partner" system aimed at building strong loyalty to the company among German car repair shops. And another key partnership was the joint venture Behr Hella Service which was established in 2005 to support the global independent aftermarket for vehicle air conditioning and engine cooling.

Process innovation – birth of the Hella Production System

Hella had ridden well on the coat-tails of expansion in the automobile industry during the 1980s but things became much tougher in the following decade. In particular global competition was exposing big differences in productivity 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. As Dr. Behrend pointed out at the time, for HELLA it was a simple question – *‘to be or not to be!’*

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 which frames what the organization does – a ‘paradigm innovation’. But in many ways it also harked back to one of the core values – entrepreneurial responsibility’

But making CI happen involves more than just waving a flag and expecting people to rally behind it. If we are serious about CI then we need to create the conditions in which it can flourish – a culture in which CI is ‘the way we do things around here’. And that depends on developing people and the organization in which they work. The core value in such a culture – and one which has been with HELLA from its earliest days – is ‘entrepreneurial responsibility’. It’s a two-way thing – from the employees there is the expectation that they will deliver their creativity and energy towards continuous improvement and from the management side, that they will create the conditions within which people can feel fulfilled, supported, given a sense of purpose and the opportunity to make their contribution.

Central to this is the idea of seeing employees as competent and responsible partners – and trusting them to behave as such. It needs leaders who are prepared not only to share these values but also to ‘walk the talk’, creating conditions in which there is reliability and trustworthiness, information and transparency, communication and creativity. And it particularly requires an attitude towards mistakes – innovation involves risks and experiments and these may not always work.

For HELLA in the 1990s this was a challenge and an opportunity; as Dr. Behrend wrote in a report to the Board recommending CI:

‘If our employees are convinced that at HELLA these goals and guidelines can work together, then it is my belief that it will be a significant precondition for greater success for HELLA in the 90s’.

(12th March, 1991)

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

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- 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 but 25 years later only 10% of them are left.

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 success so far owes much to strategic management of the three core elements we mentioned at the start of the book:

- *Competence* – building and managing the knowledge base
- *Capability* – being able to create value from the knowledge base, to translate ideas into innovations. And being able to repeat the trick by learning and embedding key lessons about how to make innovation happen.

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- *Continuity* – finding ways of ensuring carryover of the innovation essence of the company, understanding and transmitting its DNA to future generations

Let's pause and try and look more closely in the next chapter at how this plays out, looking at some more detailed examples from Hella's innovation history.

Notes

ⁱ Much of this chapter is based on interviews and on a detailed history of Hella published by the company to mark its 100th anniversary in 1999.

ⁱⁱ For a detailed description of the early days of the automobile industry see Altschuler, D., et al., *The future of the automobile*. 1984, Cambridge, Mass.: MIT Press.

Further resources

You can find a number of useful resources – case studies, video and audio and tools to explore some of the themes discussed in this chapter at www.innovation-portal.info

In particular:

- Case studies of company histories including Marshalls, 3M and Corning
- Case studies of the early motor industry, especially around the Model T Ford and its revolutionary influence on product and process innovation

Reflection questions

1. Innovation is about change – but simply changing things randomly and in different directions is not likely to move the organization forward. As the old saying has it, ‘if you don’t know where you are going, you’ll probably end up somewhere else!’ So we need an innovation strategy, some kind of roadmap for guiding and shaping change and making sure we try and spend our limited resources as wisely as we can.

Choose an organization and try to research their underlying strategy. What was the original ‘big idea’ which they were trying to exploit when they began and what is their approach today? What are the major directions of change which they are trying to use to move them forwards?

2. Find another example of a company history and compare its experiences with that of Hella, in particular exploring how they rode out waves of external change in the political, technological, market and competitive spheres.
3. Choose a sector and try to explore it in terms of the following questions. (You could use the examples of the lighting, imaging or music industry from the Innovation Portal).
 - To what extent are the changes involved competence-enhancing (i.e. building on what a player in the industry already knows so they can strengthen their position) or competence destroying (i.e. something completely new which requires learning some new tricks) innovations?
 - And for whom? (Think about the different players in the industry - who are the likely winners and losers).
 - What strategies might a firm use to exploit the opportunities? (Again think about the different players in the industry and how they might defend their positions or open up new opportunities).