Institut für
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CASE STUDY

LEGIC – digital business transformation

LEGIC Identsystems Ltd: From selling ID cards to providing access to an ID network

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LEGIC, a technology provider in the field of identification technology, has successfully mastered a challenging transformation from being analogue-driven to becoming a digitally driven business model. It began as a product business, which because of proprietary features had some stickiness. This, however, diminished and the product commoditized over the maturation of its market. Faced with this situation, LEGIC initiated a bold move to transform the business model from south to north, ie from a non-sticky product business to a platform business. Integrating its physical product offerings with software and service components, it managed to leverage its technology competences, an established partner network and brand assets into an innovative holistic offering. Not only has this been successfully launched in one of its key vertical markets, but it has also enabled LEGIC to successfully re-enter market segments it had lost during the maturation of its industry.

LEGIC and its roots in the ID technologies market

Since 1992, LEGIC has designed and provided contactless radio frequency identification (RFID) technology for ID applications, ranging from access control and time and attendance to e-ticketing. The company was launched by Kaba AG, a Swiss-based, internationally leading provider of innovative access solutions for the security industry. LEGIC acts as a self-sustained company in the smartcard market, serving its partners, amongst them the Kaba Group.

RFID technologies are at the heart of what is frequently addressed as the 'internet of things' (IoT), and has revolutionized how we can identify objects and people. Such systems consist of one or more transponders, carrying identifying information, and a reader that accesses (ie 'reads') the identifying information stored on the transponders without line of sight. RFID applications span a large number of areas such as access control (eg automobile ignition keys) and ID management (RFID-enabled passports) or payment (eg proximity card features in credit cards). But it also deals with asset tracking (eg automated check-in and checkout of stock or cattle tracking) and activity monitoring (eg medication intakes of elderly people).

The internet of things now aims to connect people and things any time, anywhere, for interacting, communicating and sensing purposes, based on exchanging data and information. Contactless identification is one of the core technologies that provides infrastructure for this seamless interconnection with a dynamic global network with self-configuring capabilities. Here, RFID seamlessly integrates people, physical 'things' and their personality into information networks. This 'personality' encompasses both physical and virtual attributes. Thereby, 'things' in the real world may 'sense' and react autonomously without human intervention.

At its kick-off, LEGIC was the first company to present a secure, contactless smartcard technology for access control and other identification applications at 13.56 MHz. Its direct customers are mainly implementers, ie system integrators that design, implement and maintain customer-specific solutions or products like ID terminals. More than 250 such partners are licensed to use the LEGIC ID intellectual property (IP) and technology for developing reliable ID systems for their end-user companies. Every day, more than 150 million people in more than 100,000 companies and institu-

tions identify themselves with LEGIC ID technology. The origin of LEGIC's profitable and growing business fuelled its self-conception as an innovative pioneer in technology for access control.

At its core, LEGIC's technology traditionally materializes as a product-based, key-and-lock type of offering, with reader chips (part of the reader terminal identifying the respective smartcard) as the 'lock' at one end, and transponder chips (part of a smartcard) as the 'key' at the other. This product offering is complemented with a token-based control system (Master-Token System-Control) for convenient management of rights and applications at the end-user company. Designing these components in Switzerland, LEGIC traditionally operates as a fabless semiconductor company in the ID security domain.

LEGIC's product offerings, following a lock-and-key characteristic, show fundamentally different life cycles: the 'lock' parts, ie reader chips, are designed for stationary devices (eg door lock, point-of-sales terminal) and are built to last, not only in terms of durability but also with regard to forward compatibility. They are fairly complex, as their architecture anticipates compatibility with future technologies, and addresses LEGIC partners at the point of design-in decisions. Once designed into, for example, a partner's reader terminal product, subsequent design-out is unlikely, creating further demand along the life cycle of the product into which the reader chip has been designed. The 'key' parts, ie the transponder chips, are in contrast simpler, cheaper, consumable devices: in the US, per hotel lock, 100 key cards are consumed per year, while the lock itself (and the built-in chip) will typically last for about 10 years.

The complementing Master-Token System-Control has built LEGIC's reputation

for enabling convenient handling of multi-applications, ie use cases where one smartcard serves various applications (eg a student ID card: to pay for meals, buy coffee, check out books, enter access-controlled laboratories, enter a car park). LEGIC's licensed partners profit from this by being able to provide top-class ID solutions to their end-users – without having to be experts in ID technology. In contrast, the partner's selling proposition is typically close to the end customer's use case (eg a hotel, a university).

LEGIC's product business model as a vendor of physical ID security

LEGIC's 'traditional' product business model is based on a physical offering that entails a proprietary key-and-lock characteristic: the design-in decision of a LEGIC partner not only binds the partner's product to the designed-in reader chip but also binds the partner's corporate end customers to LEGIC's matching transponders. Partners driving these design-in decisions thus represent LEGIC's strategic customer base.

For this reason, the reader-to-transponder ratio of numbers sold reflects the development of the market. In its early days at the end of the 1990s, this ratio was far above 100 for LEGIC. However, the market quickly adopted affordable, contactless access applications for low-cost environments such as ski ticketing. This, in part, was fueled by reader-chip prices being cut in half from one generation to the next. Emerging low-security, contactless applications, together with technology advances, enforced commoditization of the market as a whole and of the low-end segment in particular. In order to cope with this market evolution, LEGIC strategically and gradually focused its

product business towards more demanding, ie multi-application, scenarios, which in turn resulted in a significantly decreasing ratio of about 50 in the mid-2000s.

As a further effect of this market maturation, the product business model's inherent key-and-lock scheme lost its proprietary characteristic: LEGIC's reader chips now also worked with competitors' transponders, eg MIFARE® cards. While this improved competitiveness for the design-in decisions of partners, it caused an even further ratio drop, which caused the transponder part of the business to remain flat (in terms of numbers). The impact on revenue was even greater. Facing commoditization on the transponder side since the late 1990s, towards the mid-2000s growth in numbers sold no longer compensated for decreasing prices. The company, with its fabless value structure, was thus forced to revise its strategy.

Along the way, the management board of LEGIC found its long-standing product business model being put into question. Even though the market adoption of contactless applications was growing impressively, and though LEGIC's number of units sold was growing, LEGIC's revenue was expected to flatten out. This rendered future IP development, the core of LEGIC's brand and reputation, no longer affordable.

In anticipation of this, the company management board of LEGIC considered various scenarios for adapting the business model in order to create additional streams of revenue for sustainable growth. However, considering this, path dependencies occurred. Moving the established product business model further up the value chain into project or solution business may have seemed obvious. However, this vertical expansion would probably bring LEGIC into conflict with its partners and thus spoil the existing product business. Instead, a horizontal expansion was considered. By adding complementary software and service offerings to the existing product portfolio, a transformation northward into a platform business model was prioritized.

As a result, the inception of near-fi communication (NFC), technology-wise in 2003, market-wise in 2004 (NFC Forum), to be featured in a mobile device in 2006 (Nokia), caught LEGIC's attention: it was one of the pioneers to experiment with this new technology. Integrating NFC into its technology roadmap, LEGIC began to ship NFC-enabled reader chips in 2007 and pioneered a card-in-card solution that ported on to an NFC-equipped Nokia mobile phone to work as a smart device. The same year, however, with Apple's iPhone, the smartphone paradigm hit the market, not only erasing NFC-supporting Nokia but also diverting attention to the app ecosystem – converting prospering NFC expectations into a sleeping beauty. This backlash of LEGIC's intended business model transformation was further amplified by the dramatic impact of the financial crisis.

While LEGIC was still recovering from the deep financial impact of the crisis, its blueprints for software and service expansion were reawakened in 2011 by hospitality customers pointing to a major US market companion, which showcased opening a hotel's door locks with a mobile phone. Profiting from the dozing assets of the past, LEGIC was prepared to jump aboard. It started exploring the mobile ID case with new enthusiasm, both on the technology and on the customer side. Based on positive results, a software and service project to showcase mobile ID as testimonial case for LEGIC's transformation towards a platform business model was kicked off. Confidence was regained and employees were informed of the strategic intent beginning in 2012.

Transformation: From a physical key-and-lock-type product business to a software and service platform offering

At this point, LEGIC's management board and CEO were clear in their intent to transform LEGIC northward from a product business model into a platform business driven by software and services. This was further amplified by significant changes in the market environment: LEGIC partners in the hospitality industry, eg system integrators and door lock providers, were pushed by their end customers, ie hotels, to provide a credible perspective that mobile ID technology and capabilities would be on their product roadmap in the near future. This suddenly turned mobile ID capability from a sleeping beauty into a prerequisite for remaining on a hotel chain's supplier list. It was to be expected that other vertical markets would follow this scheme.

This turned LEGIC's idea of software and service expansion into an opportunity at the core of its business, providing its partners with a convenient yet capable solution to offer mobile ID technology to their corporate end customers. Facing this, LEGIC pushed to develop a technical analogy for its physical ID architecture – a trusted service to manage credentials on mobile devices. This trusted service management (TSM) platform would be provided as a white-label service to LEGIC's partners, thereby enabling them to provide mobile ID solutions to their end customers. Such mobile ID solutions would allow end customers to run their ID infrastructure (door locks, terminals, etc) with credentials signaled via mobile networks to mobile devices of single users, as an alternative to the smartcard. With technology IP and experience available from the early attempts in 2007, building the technical core of the TSM proved to be a comparably easy task, as did using NFC alongside Bluetooth. However, despite early wins in the technology field, transforming the organization as a whole proved to be the true challenge.

The software and services project, initially intended as a horizontal business expansion, turned out to be a business model transformation, impacting the company as a whole. In this respect, an external expert was hired and installed as the entrepreneurial leader of the software and service team. He brought to the table his experience in the software industry and processes within diverse vertical smartcard markets. To strengthen that role and enable strategic autonomy of the team, he directly reported to the CEO and was appointed a member of the management board. His job was to implement the software and service project as an embedded entrepreneurial team, and to build up what was supposed to be the future competitive edge for LEGIC. Notably, he was appointed a member of the board without any operational responsibility other than for the software and service team, which was at the time a small project in its very early stages. However, the team was not only expected to harvest the new business opportunity laid out with a mobile ID solution but also strategically intended as the root for the transformation into a platform business that would not only affect LEGIC as a whole but also pave the way to digitized businesses for LEGIC's parent company, Kaba AG. The entrepreneurial spirit and leadership style moving in with the hired and installed entrepreneurial leader motivated previously rather reluctant people to join the team and support the project: early movers now received recognition for pursuing new paths, for example agile developing and testing, which soon also resonated beyond the team.

Front-end transformation: Towards a holistic offering the LEGIC way

The software and service project was positively perceived on the market as a revival of LEGIC's front-running role in innovation. However, besides successfully tackling technology challenges, LEGIC still had to develop a comprehensive value proposition and monetization scheme to encourage the adoption of its service in its customer base.

The comprehensive value proposition would feature not only mobile-enabled reader chips and a TSM platform but also a software development kit (SDK) enabling LEGIC partners to create customer-specific mobile phone apps and a low-cost transponder as an offline back-up. LEGIC did not expect smartphones to render smartcards completely obsolete. Instead, smartcards were expected to play a role in most applications for the foreseeable future. Therefore, LEGIC synchronized development of a very low-cost transponder by backward-integrating and developing a proprietary physical chip design, whose cost price was to match the lowest end of the transponder market. This enabled the market readiness of LEGIC's comprehensive value proposition by the second half of 2014: the LEGIC way.

In addition, the newly developed LEGIC Connect services bundle packages tailored to different customer segments and use case complexity. As a part of that, onboarding services provide professional service that supports customers to conceptualize their use case, customize the relevant features and update their infrastructure. This onboarding is offered not only to LEGIC partners but also to the end customers of LEGIC's partners. The market, still in an early stage, results in end customers struggling with integrating mobile ID technology into their business processes and pricing. LEGIC aims at automating these services by way of standardized training, tutorials, webinars and the like. This, however, cannot be expected until sufficient saturation of use cases is reached.

This new, holistic offering, as well as the increased complexity in customer interaction, required new sales capabilities compatible with longer sales cycles and consultative support. For LEGIC, being a traditionally hardware-driven company at heart, this formed a tough challenge, for example regarding adoption of controlled market experiments as part of agile (software) development.

At the same time, the 'traditional' hardware business entered choppy waters, as the industry was still recovering from the impacts of the financial crisis. This caused a situation of continuous conflicts of interest. At the same time, there was a need for cost efficiency in the traditional business and for investment in an uncertain software and services opportunity. This was fueled by a 'no loss-making unit' paradigm in the Kaba group. Therefore, it was discussed whether merging LEGIC's innovation capabilities with Kaba's R&D might provide a viable strategic option. At this point, however, the value of direct market access for the innovation team prevailed. Following this, sales personnel were asked to test the waters to seize market opportunities for the transformation into a platform business, and simultaneously urged to meet their counterparts in the product business. These inherent conflicts, as well as varying levels of acceptance and enthusiasm regarding the intended business model transformation, caused concerns to the extent that the management board began using change barometers to determine what was happening. These highlighted that the need for change was perceived as crucial and urgent, while the mid-term strategic targets seemed rather unclear. While this signaled that the transformation had yet to gain momentum, the

holistic offering enabled LEGIC to successfully re-enter market segments it had lost during the maturation of its industry. In particular in the hotel industry, the holistic offering, the convenience provided and the well-balanced security offered an attractive package that enabled LEGIC to get the Cromwell hotel in Las Vegas operational with the TSM-based mobile ID technology at the end of 2014. In the first quarter of 2015, four global hotel chains followed. Since then, more global hotel chains have become operational, hundreds of thousands of mobile-ID enabled locks have been sold meanwhile.

Back-end transformation: Towards an integrated architecture and agile software development

Traditionally following the 'failure is not an option' paradigm of the security industry, LEGIC had to adopt agile software development with customer-centric application prototyping and platform design in order to push the software and service business. In addition, for accelerating the ramp-up process, the software development was to a larger extent externalized. While this led to quick wins on the technology roadmap, the externalization of the newly established competences further increased agitation about the strategic reasoning.

Facing this situation, the CEO identified the need for entrepreneurial leadership and invited all employees to pose their questions to the company management in company public Q&A sessions. Answering those questions was not only found to support clarification of the strategic intent but also supported the management in identifying open issues on their side. The first Q&A session was opened by the CEO with a longer address on his entrepreneurial vision and anticipation of the future, naming mobile ID solutions as a tremendous opportunity as well as a serious threat – the business solution for the company thus being somewhat open, as it once again intends to pioneer the market.

After this opening address, numerous questions were posed by the people attending. The board members' answers were found convincing and together with the opening address fueled acceptance of and curiosity about the software and service project among the attendees. On the other hand, this clarified the shift in paradigms for employees – raising questions as to whether they would feel confidently matched with the envisioned future – leading to a slightly increased personnel fluctuation. This, however, provided the opportunity to extend and renew LEGIC's competence base in anticipation of the challenges ahead.

To further fuel this renewal of the company's capabilities, the head of R&D, assigned to the 'traditional' R&D side, took the task of internalizing the experiential learning experiences from the software and service project. Thereby, LEGIC's R&D soon went into a learning loop for adopting agile methods on an even broader base. Alongside that, the software and service project team build up competences and resources that initially had been externalized step-wise during maturation of the prototype. These activities allowed for scaling the back end from agile prototyping to a reliably scaling operation of the system.

This back-end transformation was complemented by multisided efforts to leverage the established partner network into new strategic partnerships that would be crucial for the market adoption. Mobile network operators (MNOs) were attributed a key role in this partnership, as they provide

access to SIM cards as a secure element and manage transfer and monitoring of credentials via their mobile network. LEGIC leveraged the ID Network, the legacy of LEGIC's long-standing and established professional management of its partner ecosystem, to offer MNOs a one-stop-shop access to 150 million people in more than 100,000 companies, served by hundreds of LEGIC partner companies.

Monetization transformation: Towards integrated pricing and recurring revenue schemes

On their way, LEGIC's software and service team tackled their challenges successfully, with one question remaining: what would be an acceptable pricing model for their customers?

The beauty of the key card business in this respect is striking: you sell a card, it will be replaced, and you sell it again. The monetization of the new model is far more complex: who is paying for what, in what fashion? A hotel, for example, is accustomed to paying for key cards as they are consumed over time. What would be the analogy for such a situation in the new model?

As those questions could only be answered by a customer, it was a key target to get a paying customer operational. Working together closely with a system integrator as a strategic partner, the Cromwell was first at the end of 2014, and four further hotel chains quickly followed. This provided valuable insights into accepted pricing models: while the smartcard pricing was based on consumption, mobile ID solutions are accepted as a subscription service for an installed base of reader terminals, ie door locks in the case of a hotel. This recurring part of the pricing model is covered by a per-lock-per-year subscription.

However, as adoption is in an early stage, this model may be considered to be in flux. Prices for such fees cover a broad range – reflecting a similar broad range of service levels offered. Based on a value pricing of what LEGIC has to offer, the price value in hospitality would be more than $100 per lock per year, while the services can be offered at a price of nearly half of that based on the LEGIC Connect services. With that, LEGIC is currently in a pioneer position to shape customers' expectations and their cognitive anchors.

Adding to this integrated, recurring revenue stream based on small amounts is the software development kit. This kit acts as part of the service bundle used by the customer to customize the solution and integrate it into the customer's value chain. Here, the pricing is based on a licensing model; that is, the customers will be charged for the number of smartphone apps being developed with the SDK.

As seen from the hotel cases, these apps seem to provide the highest, directly perceived value to the end customer: a hotel integrating mobile ID technology into its proprietary smartphone app can offer its hotel guests the possibility to skip the check-in procedure and head directly to their room. Such customers may have appreciated the hotel's app, leading to future direct bookings with that app, instead of any arbitrary, price-driven, travel agent e-booking. This would result in a double-digit margin improvement on the directly reserved room – which is a good reason for embracing the mobile ID solution from a hotel's perspective. And, in turn, it seems that the mobile-access-no-need-to-check-in feature of a hotel app is the feature most embraced by hotel customers: a win–win situation delivering a prosperous future for LEGIC's software and service endeavor.

Outlook

Looking back we can see that LEGIC was able to transform its business model several times (see Figure 1). Currently, it seems that LEGIC's business model is well set to survive a disruptive change of paradigms moving into the market. The company has not addressed it primarily as a technological challenge, but rather as a business model innovation. With that, it has put itself at the forefront of the developments and has used these as an opportunity rather than a threat. However, the situation is still quite dynamic, and the dominant paradigm of the future has yet to emerge.

Thus, the roles of partners in LEGIC's business ecosystem might change, as well as the pricing model currently in place. This can be expected to increasingly stabilize as LEGIC enters further vertical and regional markets to establish LEGIC's Connect services as the platform of choice in mobile ID solutions. LEGIC's business model transformation journey in its early days, LEGIC started with a product business that, owing to its proprietary key-and-lock characteristic, entailed some stickiness with retention-oriented customer relations. Market maturation however has affected this proprietary feature, and both the product price and stickiness have gradually decreased over time. This has been anticipated as a strategic threat, given the competence-based positioning of LEGIC within the market.

At this point, LEGIC's management boldly transformed the business model into a platform business that would still encompass its physical product offering (ID transponder and reader chips), but better leverage its technology competences, the established partner network (LEGIC's ID Network) and brand assets. With its holistic offering being positively received and the vertical launch in hospitality implemented, this transformation can be regarded as having been successfully mastered. There were some companies that did not master this challenge of transforming from an analogue to a digital business model.

Nevertheless, the road will probably not end here, as this transformation, now that it has gained momentum and harvested some initial successes, will further evolve. The initial experiences with customer cases seem to indicate that in the future, for example, onboarding services may emerge into more customized services as part of the holistic offering. Moreover, as further vertical markets are added to the portfolio, industry-specific solutions may emerge. Such service customization may entail augmentation of the initiated transformation eastward, toward a solution-oriented business model.

In addition to that, LEGIC's parent company, Kaba AG, has announced plans to merge with Germany's Dorma Holding to form a new market-leading group in building security and access products. This aims at addressing megatrends such as urbanization and digitalization. The merger thus may put LEGIC's software and service innovation into the strategic focus of the newly formed group. The aim of leveraging these assets within the new dorma+kaba Holding may motivate reconsideration of the merging of LEGIC's innovation capabilities with the new group's R&D, as now not only the technology but also the business model is successfully established.

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