ERNI Experience reports on management, processes and technology

Experience

No.65
JULY 2015

THE RIGHT STRATEGY FOR SOFTWARE DEVELOPMENT
«The best strategy is an economy of resources»

FOCUS ON INCREASING THE MATURITY OF IN-HOUSE SOFTWARE DEVELOPMENT
Streamline in-house software development

FOCUS ON CORE COMPETENCIES
Create win-win situations

INVEST IN THE CUSTOMER JOURNEY
Build a professional digital identity

EVOLVING A COMPETITIVE EDGE

ERNI
enables & delivers

MARTIN GRAF
martin.graf@erni.ch
Business Area Manager at ERNI Switzerland

Consultancy services: strategic IT consultancy, nearshore and offshore consultancy, project management

The digital transformation of the economy and society requires companies to raise their tempo. Thus, innovation, both from the outside and from within becomes the motto: doing so means meeting the needs of customers in a timely manner. This means that the processes and technologies within a company should be constantly optimised to remain innovative and competitive. With this in mind, the value chain should be put under a microscope on a regular basis: Which links in the chain are strong and viable enough for future success? What do I have to do to be better, faster or more productive? And which parts of the chain are not worth investing in, if a specialised partner could do the job more effectively?

Because of this, the first article is dedicated to strategy evaluation and the question of how to determine whether a company has positioned itself correctly in terms of software development. This does not just refer to the here and now, but in particular, casts an eye to the future.

If a company is set up to keep business-critical elements of software development in-house, the internal development organisation must be optimised for this. The second article explores how efficiency can be increased to achieve the same quality in less time and with lower costs.

A reliable network of partners complements internal software development in adding value. The third article looks at what the ideal partner must bring to the table, and why trust is a crucial element in establishing this network.

And since we are on the topic of networks: Since people and businesses are increasingly networking online nowadays, a digital «business card» can be the key for success in business. You can read more about this in the fourth article.

Wishing you an enjoyable and stimulating read,
Martin Graf

THE RIGHT STRATEGY FOR SOFTWARE DEVELOPMENT

«THE BEST STRATEGY IS AN ECONOMY OF RESOURCES»
If the innovative capacity of products lies in their associated software, the software development strategy must be reviewed on a regular basis.

BY JEAN-CHRISTOPHE DUMÉRIL AND MARTIN RAVIZZA 4

FOCUS ON INCREASING THE MATURITY OF IN-HOUSE SOFTWARE DEVELOPMENT

STREAMLINE IN-HOUSE SOFTWARE DEVELOPMENT
In-house software development, tailored to customer needs, is dependent on the company being aware of where its strengths lie.

BY MARKUS GUGGISBERG, JEAN-CHRISTOPHE DUMÉRIL AND MATIAS FERNANDEZ 12

FOCUS ON CORE COMPETENCIES

CREATE WIN-WIN SITUATIONS
The software associated with a company's products differs as much as the companies themselves. Thus the right partner needs to know about the right model for success in development.

BY CARLO CRONAUER, MARKUS GUGGISBERG AND ADRIAN KÜNZLER 20

INVEST IN THE CUSTOMER JOURNEY

BUILD A PROFESSIONAL DIGITAL IDENTITY
Having the right digital presence is becoming a key factor in generating new business. Making contact with customers online can be done automatically, helping to bring that all-important first impression into the digital age.

BY CARLO CRONAUER, ADRIAN MÜLLER AND TOBIAS ACKERMANN 28

Now you can also read all articles online!
We will gladly answer your questions sent to: info@erni.ch

«THE BEST STRATEGY IS AN ECONOMY OF RESOURCES»

If the innovative capacity of products lies in their associated software, the software development strategy must be reviewed on a regular basis.

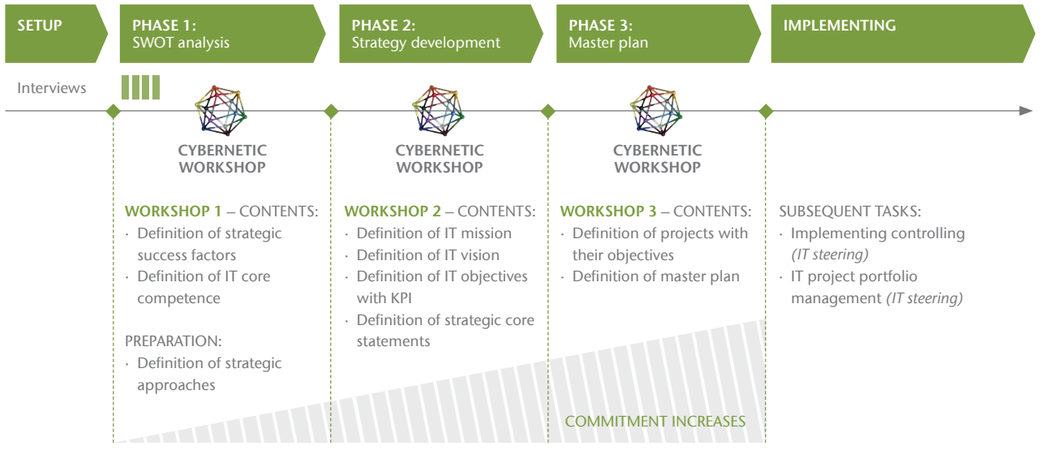
Software development is not a core competency for companies in most industries, except of course in the software industry itself. But if the importance of software in the products and services increases, an adequate software development strategy becomes necessary. The question is usually «make or buy», but intermediate solutions are also possible. An objective strategy assessment helps to find both individual and tried-and-tested partnership models.

BY JEAN-CHRISTOPHE DUMÉRIL AND MARTIN RAVIZZA

Markets are changing – sometimes vastly and radically. For example, disruptive innovations can come almost out of nowhere and play havoc with traditional suppliers, turning established business models on their head. For the most part, though, sectors are slowly evolving. They are evolving in response to changing customer requirements. Each new need arises from existing offers, which are further refined and upgraded on a step-by-step basis. This is done with the aim of offering the customer even more convenience, more functionality, and more value for their investment. Those who can anticipate customer demand and fulfil that demand innovatively are ahead of the competition. In short, if you want to be good, you must get better. In the digital age, this means that products are becoming «smart» and services are becoming e-services. Software is at the root of everything that adds digital value. But very few companies have their core competence in software development. When all of the sudden the innovative capacity of products and services depends on digital intelligence, every provider is faced with the question of developing the required software know-how within or securing it from outside. As value added up until now was primarily a dividend of hardware improvements, manufacturers now face various problems due to their limited experience with software development. On the dry landscape that is the market for specialist personnel, there may not be enough qualified software engineers available for the demands of product development. Or perhaps the company just is not attractive enough as an employer for these specialists, for example, if the software development department is too small or has yet to reach a certain critical size.

But even if a company already has its own internal software development department, it is well advised to regularly put it to the test – to what capacity is my software development department occupied with the existing product development? How efficiently is it working? Is there any synergy between the different projects or products? How much capacity is left for the necessary innovations? What new features and special knowledge does it need for our products to continue to stand out from the competition? In other words, is our software development department working closely enough with the business? Do we have the necessary skills if the market suddenly demands a web application alongside embedded software? Do we have enough resources to test the additional applications thoroughly before launching them on the market? How do we ensure regular maintenance and updates? What can we potentially buy in as a standard software package more conveniently and cheaply? How much are we able and willing to adapt to standard software packages, and how flexible are they if our requirements change? Will support still be guaranteed in 10 years? On the other hand, what kind of expertise in software development is so

FIG. 1: METHODICAL ACTION PLAN



«The strategy a company follows in terms of software development is dependent on criteria such as competition and innovation, efficiency, scalability of know-how and resources as well as relevance to the core business.»

essential for us that we need to maintain or develop it in-house? At what level of vertical integration must it be done? Or rather, what do we have to tailor *(or have tailored)*? And last of all comes the question: Is our development organisation in a position to manage all these varied tasks in terms of expertise and staff numbers? Therein often lies the crux: If the organisation is lean, it runs at maximum capacity regarding ongoing projects. If the organisation is built up for every innovation project, it is not easily «scaled down» in periods of normal operation and perhaps may no longer be efficient. Particularly in the manufacturing industry, the value-adding core competence is in the design and production of physically tangible products. Software playing an increasingly central role is a relatively new development, and due to the technical opportunities available today, often leads to complex challenges within projects. And yet software impacts on market success more and more. The «make or buy» decision for companies in these industries is of strategic importance. For service providers too it is also worth considering whether it is always proportionate and economically feasible to develop the specialist expertise needed to create an internal software development department spanning all disciplines.

Which strategy a company follows in terms of software development is dependent on criteria such as competition and innovation, efficiency, scalability of know-how and resources as well as relevance to the core business. If a company is planning a strategic review regarding its software development strategy, whether due to complexity that has grown over time or urgently in a critical situation, a neutral perspective can prove very useful. An external consultant examines all aspects of software development with an open mind and assesses the maturity level of the organisation in relation to its processes, technologies and tools. The consultant methodically brings all involved persons on board and identifies the processes which work well and are to be retained and those which no longer function, the tools that are no longer needed, and the structures which will be unable to cope with the new tasks. The actual status is compared with the desired target status by means of a detailed analysis. By using visualisation methods, «laymen» will quickly be able to see what works well and where there are any possible redundancies or gaps. Based on this analysis, action can then be taken to make the company more flexible, speed up any changes and to generally make the company more «transformable». Ultimately, what separates the wheat from the chaff when it comes to external consultants is this: Do they approach the evaluation process without any prejudged views as to its outcome, yet in a structured and methodical manner? Does the consultant only issue recommendations or also assume responsibility for their implementation? Does the consultant only see things from the perspective of senior management or realise the importance of taking the organisation as a whole on a «journey into the unknown»? And finally: How does the consultant define success – as his or her own or that of his or her customers?

Example 1

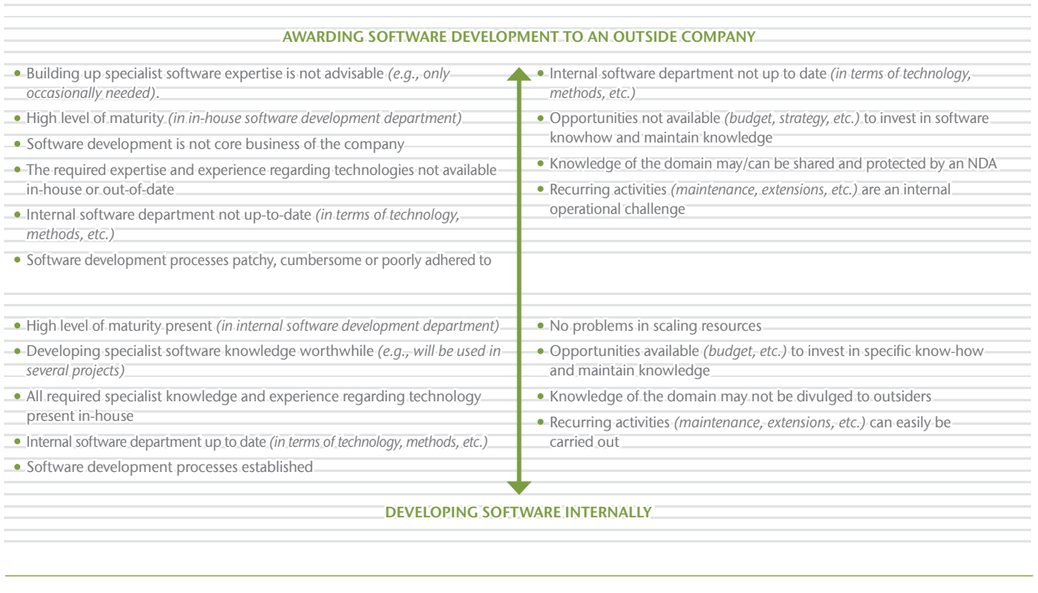
TAKING THE HUMAN FACTOR INTO ACCOUNT AT ALL STAGES

A federal agency reviews its IT strategy every five years. As part of the review, it brings in external consultants and ultimately chooses those who do not want to develop the strategy from a top-down perspective, but instead, those who take the human factor into account at all levels. With the help of structured interviews and a moderated workshop based on the cybernetic approach, a SWOT analysis is created together with the technology consultant. An IT mission and vision are defined. IT objectives and the IT strategy necessary to achieve these goals are devised in additional cybernetic workshops, as well as a master plan containing strategic approaches for the next five years. During the process, the IT functions are looked at as a whole and from an interdisciplinary perspective.

Responsibility for implementing the strategy passes to the customer in time for the last workshop; the consultant stops managing the implementation of the strategy but still remains in the background as a «companion». The strategy and strategic approaches are depicted using «visual facilitation» to make them easier to understand, and thus are structured in a way that is

FIG. 2: CYBERNETIC WORKSHOP – AN EFFECTIVE METHOD FOR STRATEGY DEVELOPMENT

FIG. 3: AWARDING SOFTWARE DEVELOPMENT TO AN OUTSIDE COMPANY



CYBERNETIC WORKSHOPS METHOD

This method makes the innovation process much faster, from the generation of ideas to their implementation. The cybernetic approach in workshops begins by bringing together large groups *(up to 50 participants)* to work intensively to share their knowledge and learn from one another.

Through exchange and networking, around 90 percent of the knowledge available is transferred from the individual to the whole group in just three days as opposed to weeks or months. This not only increases the «collective knowledge» of the interdisciplinary group on a specific topic, but the newly created knowledge base or improved knowledge base leads to comprehensive and sustainable solutions based on a robust and workable consensus. One of the questions posed in cybernetic workshops, for example, is: «What innovations does the company need within the next five years to survive on the market or to defend its leading position?»

The level of knowledge and information generated by the very intensive and deliberately controversial discussions means that the ideas that have been jointly developed will also ultimately also be put in place quickly and any resistance will be overcome. Experience has shown that up to 80 percent of the ideas developed in the workshop are then implemented within the next twelve months.

intuitive to all employees. The consultant is aware of the fact that a strategy must be supported by each individual staff member, and that simply being promoted by senior management is not enough. Overall, the organisation – aware of the need to focus on the essentials and avoid anything unnecessary – is now geared towards achieving one goal, resulting in increased efficiency, reduced complexity and cost savings.

Example 2

CUSTOMISING METHODS STEP BY STEP TO CUSTOMER NEEDS

A company that specialises in the remote monitoring of business premises entrusts its software audit to an external consultant. The background is that the company wants to develop a new, very complex software system for use within the business, but also wants to offer new features to its customers. Responsibility for software development is shared between the company itself and a technical service provider. But the development as well as the development partnership presents the organisation with a number of challenges. The potential for improvement should be more fully understood as a result of the software audit. The goal is to develop the software in accordance with the needs of the company and its customers. The external consultant begins with a coverage analysis. He or she conducts interviews with the relevant parties in both companies based on a questionnaire which has been adapted to the customer. It is important for the consultant to have the widest possible support from stakeholders with key roles. The consultant guarantees the interviewee's confidentiality and enough time in the first place, for all sensitive points

«If the innovative capacity of products increasingly lies in their software, the software development strategy must be reviewed on a regular basis.»

to be openly discussed and secondly for all interviewees to formulate their own thoughts. It soon becomes clear that there are some technical obstacles present. But more importantly, it turns out that the organisational structures of both companies, the processes, information flows, decision-making processes and allocation of roles are obstructing the project from making progress. The status quo, as pooled together from numerous discussions, field studies, desk research and workshops, is compared with typical best practices from the consulting firm's wealth of experience. Strengths and weaknesses are identified by comparing the actual and target situations. All the findings are brought together and displayed in picture form using visual facilitation. Ultimately, it turns out that the company is not adequately equipped to handle a complex project of this magnitude. Filter functions between strategic management and operational implementation are necessary for the co-ordination, abstraction and prioritisation of information and workflows. As a consequence, not only the internal functions, but also the co-operation with the technical service provider is be affected. The consultant is able to convince the technical service provider that the changes are also in his or her interest. Packages of measures are put together with the mutual consent of both companies and working in close co-operation with management, and are classified according to usefulness and cost. A number of pilot projects are launched in order to embed the defined measures in the company and to recognise any adjustments that need to be made at an early stage. Controlled in manageable stages by the consultant and by means of regular feedback loops, the level of maturity in the organisations of both companies increases continuously. The consultant encourages and monitors the measures being processed, but deliberately holds back when it comes to implementation so that the customer can learn from the experience. The consultant's recommendations are implemented on a continuous basis in «digestible portions», and from the visible results come new ways of improving the learning organisation.

DISCOVER
ERNI Experience Digital

Now you can also read our magazine online!

ERNI – Innovation in Process and Technology

JEAN-CHRISTOPHE DUMÉRIL
christophe.dumeril@erni.ch

Consultancy services: requirements engineering, project management, training and workshop moderation, management consulting

MARTIN RAVIZZA
martin.ravizza@erni.ch

Consultancy services: IT consulting,cybernetic workshop moderation, project management, performance improvement

STREAMLINE IN-HOUSE SOFTWARE DEVELOPMENT

In-house software development, tailored to customer needs, is dependent on the company being aware of where its strengths lie.

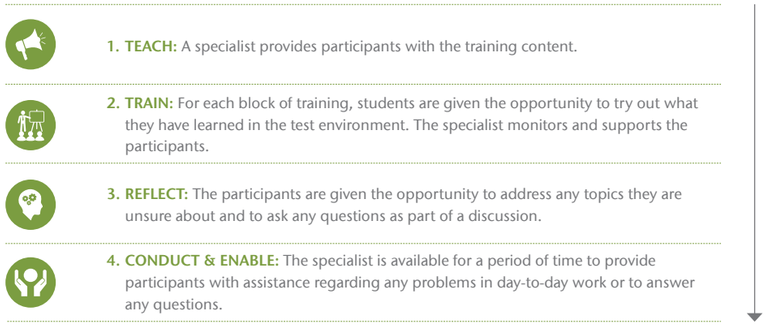
If a company has identified the elements that are key to running the business in its software development strategy, the organisation also has to allow them to be handled in a manner that is relevant to the future. When helped by specialist outside support, this internal control can result in securing higher quality in less time, improved efficiency and therefore cost savings.

BY MARKUS GUGGISBERG, JEAN-CHRISTOPHE DUMÉRIL AND MATIAS FERNANDEZ

If the software development strategy has been reviewed and *(re-)*defined, the company has completed the first important step. It has become aware of its strengths and knows about its core competence. It has decided to keep software development inhouse because it is so essential to its business activities that it cannot be overlooked. Know-how and intellectual property that are key to running the business must not be lost and deserve the highest level of protection. If this does not happen, the capacity for innovation and thus competitiveness may suffer. Another possible reason for keeping software development in-house is a high degree of specialisation. In each case, the question regularly arises as to whether inhouse software development is really up to date and in particular whether it is going to be viable in the future. Companies that want to become more competitive would do well to keep asking themselves the following questions on a regular basis, from a neutral perspective if at all possible: Is the development process fast, transparent, predictable in terms of costs and flexible when it is necessary to make unforeseen adjustments? Are platforms and tools that are suitable for current projects only going to be of limited use for future innovations? Are the processes set up in a way to generate added value and not hinder it? Is the development organisation lean enough that it is really economical and yet agile enough to quickly respond to customer needs? Many companies today still develop according to traditional methods as per the waterfall model. One main reason for this is that the design of physical products – components, equipment, hardware – typically follows different principles to the development of software components. Getting into the right mindset for a software project is particularly challenging for manufacturers used to working according to physical design principles. Although innovation cycles have also accelerated in the manufacturing industry, today the end customer expects more than a functioning product with this or that new feature. The keyword is: Industry 4.0. If future devices are going to be networked together and communicate with each other more and more, web interfaces or other intelligent interfaces and applications are essential. A growing number of industrial companies today already employ software development teams. However, in smaller and medium-sized enterprises, these consist of no more than a dozen software engineers, and with such a small number of employees are not in a position to cover all the various disciplines of requirements engineering, from development to testing and then later maintenance across multiple projects, and they can quickly reach the limits of their capacity in critical situations. These teams also lack experience in agile software development. Because agile does not just mean fast or pragmatic – agile methods such as Scrum are designed to

«Real added value from improving processes is evident if measurable success can be seen in existing organisational structures without having to use any additional resources.»

FIG. 4: METHODICALLY STRUCTURED TRAINING



create value as soon as possible. This is only possible if they are implemented properly and the necessary capacity is available. Costs are converted directly into output, by developing functioning and tested software in manageable time frames *(sprints)* of two to three weeks. Short feedback intervals minimise risks because mistakes can be corrected quickly. Being familiar with the concept of prototypes or agile approaches such as the minimal viable product may run counter to the traditional philosophy of manufacturing companies. Only the most essential features necessary for the use of a product are developed using this approach, and are launched onto the market quickly. User expectations flow from the feedback straight back into product development. This topic was explored in more detail in our previous issue of EXPERIENCE, no. 64. The greatest advantage for manufacturers is that right from the start they can concentrate on what is essential, and for the time being, what is of less relevance to the market can be omitted. Nonetheless, there is ultimately a finished product that is fully adapted to the wishes and requirements of users. With this in mind – skills across the entire value chain of software development, scalable capacities and know-how in agile methods – it is often more effective to look to external partners rather than have a malfunctioning or unstable product shortly before a trade fair or a contractual deadline with a supplier.

Concentrating on the essentials and implementing these to a high standard also means deciding where bespoke software makes most economic sense and where it is most critical to gaining a competitive advantage. Or conversely making the same decision relating to «off-the-peg» software, where the cost savings may be of even greater benefit. Individual software becomes a unique selling point if the company can differentiate it from the competition by means of software intelligence. Even if the software will need to be constantly upgraded and maintained, or if it is unclear how customer requirements will evolve in future or there is no commercial software available for the exact requirement, the software must be custom-made according to the individual commission. However, commercially available software is largely interchangeable, and has little to set it apart from the competition. The costs involved in adapting the organisation or the product to the conditions and limits of standard software are often underestimated. This is especially true when new releases or updates in turn result in extensive adaptations, which quickly also entail major changes to existing networked systems.

Developing tailor-made software in-house has the advantage that the domain expertise is generally available and the software engineers are familiar with the technological platforms. But rigid technological specifications can also have a restrictive effect because software is subject to constant change. Added to that, an internal organisation is much more resistant to change than an external service provider specialising in software development. The service provider can acquire a high level of domain knowledge from a variety of similar projects and is also familiar with the industry trends from their numerous insights into various companies. The service provider must also keep up to date with the latest technology, because this is its core business. The service provider may have new technologies that have not been tried and tested with customers, and may have specialists who can specify, develop and maintain applications in every stage of their life cycle. Companies that do not seek out this expertise and outside perspective are often not surprised when a competitor launches a product onto the market which has more attractive functions than its own.

Even if software is developed in-house, an external service provider can still pose useful questions and identify further potential for improvement. What must the organisation ideally focus on, and what processes, organisational structures, technologies and methods does it need to achieve its goals? Additionally, the advice given by the partner should increase the level of maturity of the in-house organisation, as well as its ability to implement projects and scale its resources. This becomes especially true if a customer and user-friendly Web application suddenly needs to be added to the tailor-made component software.

Example 1

USING AN EXTERNAL PERSPECTIVE TO OPTIMISE IN-HOUSE PROCESSES

A customer in the safety technology sector turns to an external partner to define its software development strategy. The insights into the complex project show that operating a new system is fraught with problems: The operations team must use a software platform in live operations, even though it has been inadequately trained for it and not much documentation is available. The situation is made worse by problems relating to the quality of the system on the one hand and a scarcity of resources on the other. The customer has a sense of the difficulties of the project. The external consultant has already been able to convince the customer of the benefit of his expertise with a previous analysis. Based on the trust that has been secured, the customer then issues a follow-up order, so that the

FIG. 5: THE TRANSFER OF KNOW-HOW

TRANSFER OF KNOW-HOW IS ANOTHER FORM OF TRAINING, BUT PROCEEDS DIFFERENTLY IN CERTAIN WAYS:

1. **PLAN:** The project manager plans and organises the respective transfer of know-how.
2. **CREATE:** The owner of the know-how prepares the content of the transfer. This involves documents, use cases etc.
3. **TEACH & TRAIN:** The owner provides the participants with the content, which can be practised on the system e.g. as part of day-to-day work.
4. **UPDATE:** The owner of the know-how ensures that any document updates are supplied to the document owner, or reports any need for further documentation to the project manager *(supplying the document backlog)*.

causes can be researched thoroughly and solutions devised based on the results. The consultant adapts a familiar method to the specific issue at hand. The key stakeholders are identified and the objectives and the scope of the project agreed upon. A coverage analysis is suitable precisely for situations like this, where implicit assumptions need to be made explicit and well-grounded overall findings are required. The situation is worked out in interviews, team meetings and workshops. Those directly affected are confidentially asked to give their honest opinions. The consultant is aware that very personal sensitivities, uncertainties or even fears may be at play. The findings that have been obtained are structured thematically and according to their relevance, assessed and then presented to the customer. The knowledge of the customer on the one hand and the neutral perspective of the external consultant on the other hand are complemented by the instinctive touch with which the consultant conducts the dialogue. In projects such as these, the customer must often be confronted with unpleasant facts about the state of their organisation. It is all the more important to break the findings down into manageable «portions» so that the full complexity of the situation can be taken in and to avoid making the issues seem too difficult to tackle. A target status is drawn up together with the customer and compared with the results of the analysis to point out where gaps exist and what changes are needed. The findings are transformed into appropriate measures. This also includes the estimated costs as well as the time scale for resolving the situation. The consultant not only issues recommendations but also remains on board for the implementation stage, assuming responsibility for implementing performance improvements. For any missing documentation, comprehensive document management will be put in place for the specific case, and all know-how set out consistently in a way that can be reproduced – from the architecture overview and system documentation through to the manuals containing step-by-step guides for processing individual tasks. For the training, there are two aspects to consider. What is being called for by the system supplier? And what kind of knowledge is already available in the team? You can hold the supplier to his word. However, it is not necessary to give extra external training for the knowledge that is already in place. The internal knowledge base is often very high, but is implicit or fragmented, and is not consolidated. Here the consultant brings his or her experience and methodological know-how to the table to evaluate knowledge systematically – how is each topic to be covered, and by whom? Up to what level of maturity must be covered? The topics are worked through in a structured manner, systematised and documented in a number of know-how sessions. In addition to the clear increase in operational efficiency, employee satisfaction is increased, employee turnover is reduced and process maturity increases.

Example 2

UNDERSTANDING AND OPTIMISING PROCESSES

In a media company with several thousand employees working at different locations in multiple languages, every employee works at a computer with general and task-specific software. Previously, IT support was outsourced. Co-operation with the partner originally selected did not proved worthwhile. Thus, the company decided to bring these tasks back in-house. The challenge here is to rebuild the organisation internally and reestablish the processes satisfactorily. An external consultant, who has already acquired extensive insight into the situation at this company in other projects, offers suggestions for improvement to management. These are so well received that the consultant is appointed as interim team leader. This means that the consultant

«The higher the degree of standardisation a process has, the easier it is to outsource.»

will assume responsibility for putting his or her recommendations into practice. The consultant, who has experience in reducing complex tasks into manageable steps, starts off by attending to the documentation, which is still very rudimentary. If processes are documented as they are experienced, they are standardised at the same time. If processes are recorded while they are taking place, details can then be addressed and potential for improvement identified. This approach may seem unspectacular. However, experience shows that large-scale change initiatives usually lead to deterioration in performance to begin with. If the output curve trends downwards for a certain period of time, the process of change is usually stopped in a panic – with the result being a permanent deterioration of the process. Therefore the consultant favours more «digestible» transformations, so that the risk remains manageable and improvements become visible quickly. The consultant also combines a variety of methods: traditional ones such as ITIL or Kanban with more modern ones like «DevOps». The advantage here is that the customer is familiar with ITIL; the consultant only acts as an intermediary between the department which defines the processes and the one which implements it. With Kanban the distribution of tasks within the team is re-organized. «DevOps» on the other hand is still a new discipline and has largely not yet been standardised, so there is room to experiment. In this way, software development processes and tools are merged with their operation, meaning that applications can be provided faster and in better quality. This mixture of methods, customised to the level of maturity of the organisation, has emerged as a success factor. In particular the consultant does not speak about the methods used but applies them, makes concrete proposals based on a wealth of experience, and implements them. A measurable result: The number of support tickets has halved within a very short time, and troubleshooting waiting times have also dramatically reduced. All core processes are also documented using checklists, and documentation is accessible on a Wiki platform to all those responsible, who are invited, motivated and trained to identify and implement further potential for improvement.

DISCOVER
ERNI Experience Digital

Now you can also read our magazine online!

ERNI – Innovation in Process and Technology

MARKUS GUGGISBERG
markus.guggisberg@erni.ch

Consultancy services: project management, controlling, account management

JEAN-CHRISTOPHE DUMÉRIL
christophe.dumeril@erni.ch

Consultancy services: requirements engineering, project management, training and workshop moderation, management consulting

MATIAS FERNANDEZ
matias.fernandez@erni.ch

Consultancy services: team leading, business analysis, training

CREATING WIN-WIN SITUATIONS

The software associated with a company's products differs as much as companies themselves. Thus the right partner needs to know about the right model for success in development.

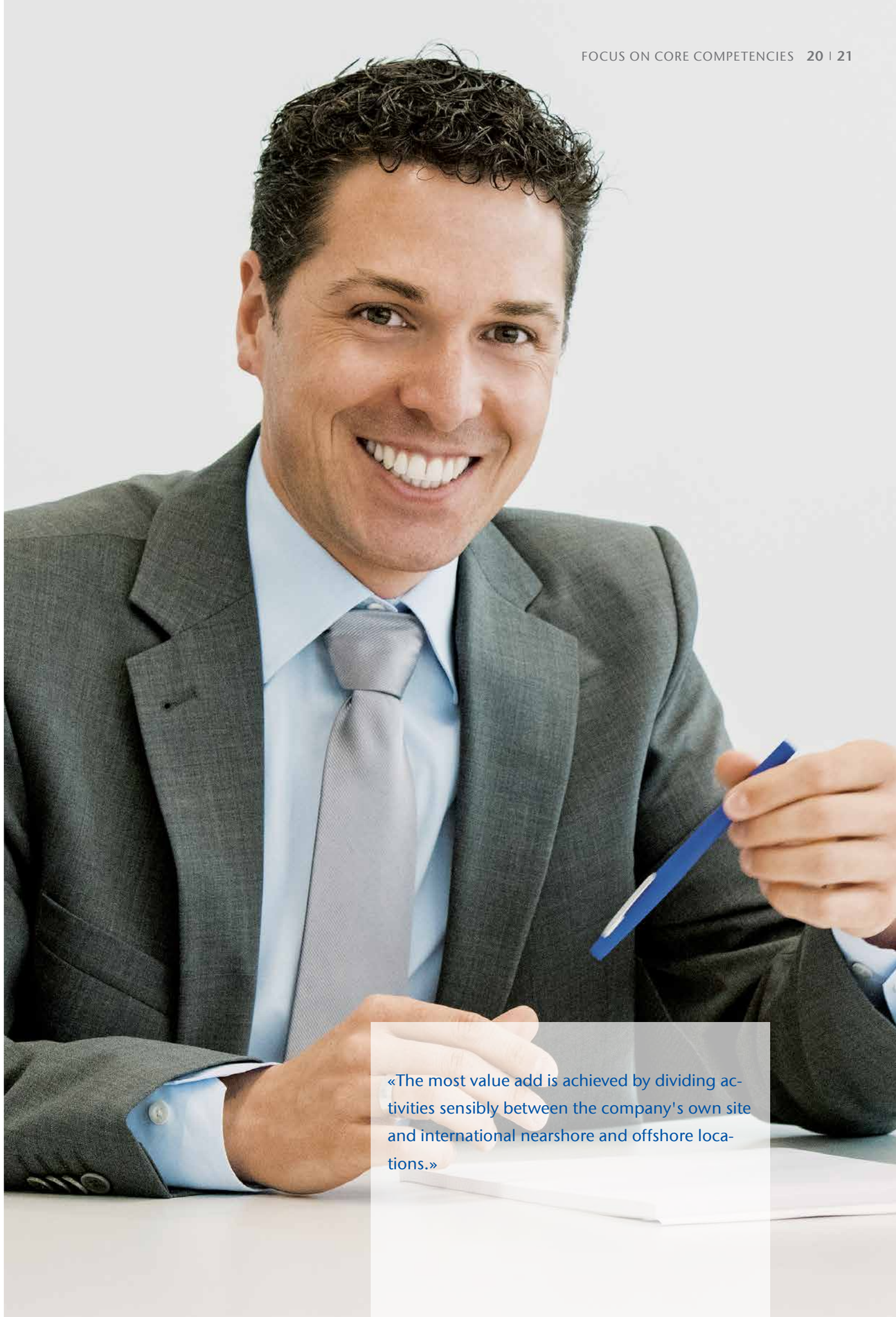
If a company applies high standards within its own organisation, it should do the same with its outsourcing partner. Trust, quality, efficiency – you should expect no less. Then the co-operation is sure to succeed, no matter whether it is an «extended workbench» or a development partnership delivering turnkey solutions.

BY CARLO CRONAUER, MARKUS GUGGISBERG AND ADRIAN KÜNZLER

The software development strategy has been defined and internal software development has been optimised. However, room for improvement can also be found when external support is brought in. The first task is to find the right partner. Expectations are high in terms of efficiency and quality, because otherwise a customer may as well do it themselves. It may sound trite, but people should be told: If a company outsources its processes, it is mostly because they do not belong to its core business. So it makes sense to give them to a partner for whom the jobs form part of their core competence. Everybody asserts themselves in the market with what they do best. This benefits both sides. So, what exactly makes the perfect software development partner?

First, they have sufficient resources to avoid capacity constraints. They come to you to give advice on-site; also in the implementation phase they divide their time across different geographical locations. The latter condition offers a number of advantages: Highly qualified software engineers are rare in Switzerland and Germany. However, there are still enough trained professionals with the necessary skills who can be mobilised to work at most nearshore and offshore locations. In addition to this, a broad geographic spread is more efficient, offers attractive cost structures and time savings. It may be the case, for example, that the specifications are drawn up in Switzerland, developed in Bratislava or Barcelona and then tested in Manila – with the time difference, the developers can send their codes to the east before leaving work in the evening, and by the time they come back in the morning the test reports are ready. But please note that nearshoring or offshoring does not mean handing software development over to strangers who are then just left to their own devices! The ideal partner does not merely delegate software development to foreign companies – possibly with dubious views on the protection of intellectual property rights – but builds up its own sites across which it enforces its own quality criteria and standards in relation to processes, methods and technologies. This means that it can also keep risks to a minimum, and in the event of an emergency or other unforeseen event, work can be transferred from one location to the next without compromising on quality.

And since we are talking about emergencies: It is recommended that any co-operation involving near or offshore services only be considered if you are already coming under pressure in terms of time, resources or costs. This is because co-operation is based on trust, a value which is not created at the touch of a button. Of course every company wants to protect its most important trade secrets. But by definition, a development partner is going to gain very deep insight into how the business operates. In choosing a partner, a company will do well to remember to get a sense of its honesty and credibility. How transparently does the partner inform you on the breakdown of costs? Do they have references vouching



«The most value add is achieved by dividing activities sensibly between the company's own site and international nearshore and offshore locations.»

FIG. 6: PROJECT SCOPE VS. SCHEDULE *(DELIVERY DATE)*

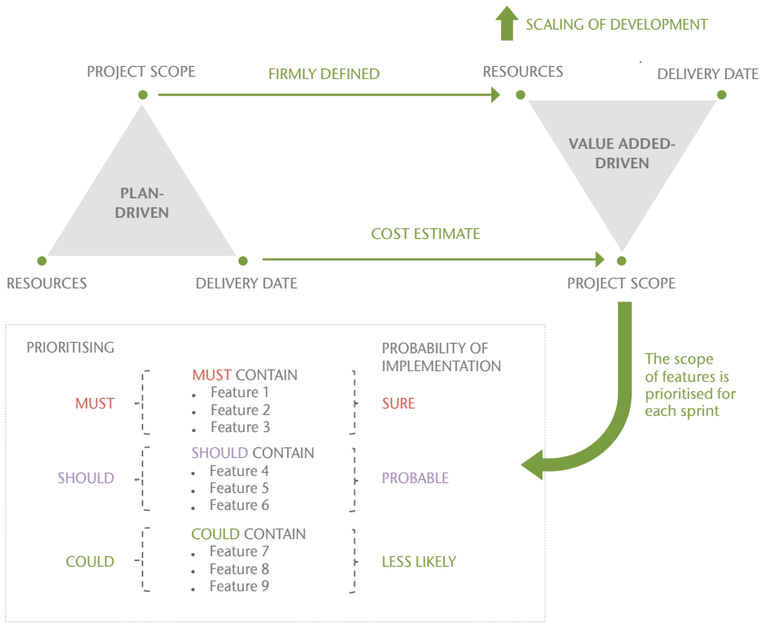
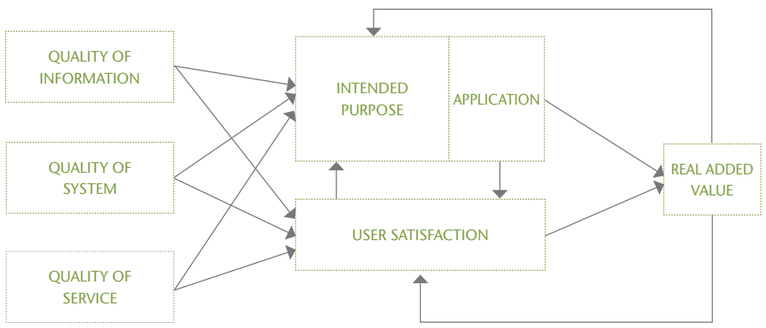


FIG. 7: MEASURING THE SUCCESS OF INFORMATION SYSTEMS ACCORDING TO THE DELONE AND MCLEAN MODEL OF INFORMATION SYSTEMS SUCCESS



«Some forms of co-operation are more or less suitable depending on the needs of the customer, the type and intended use of the software being developed, or the timescale and project volume.»

for their quality? How often do they need information to be exchanged? What are their response times for requests? How do they deal with risk management? And very importantly, how do they deal with errors and problem solving? According to the generally accepted DeLone and McLean model for measuring the success of information systems, the quality of systems, information and services have an influence on the usefulness of the system as well as on the level of user satisfaction. In other words, if one communicates well with one's customers, the products are of good quality and one stays true to customer requirements, the resulting software will serve its purpose and the customer will be satisfied. This yields a benefit for the customer and therefore adds value.

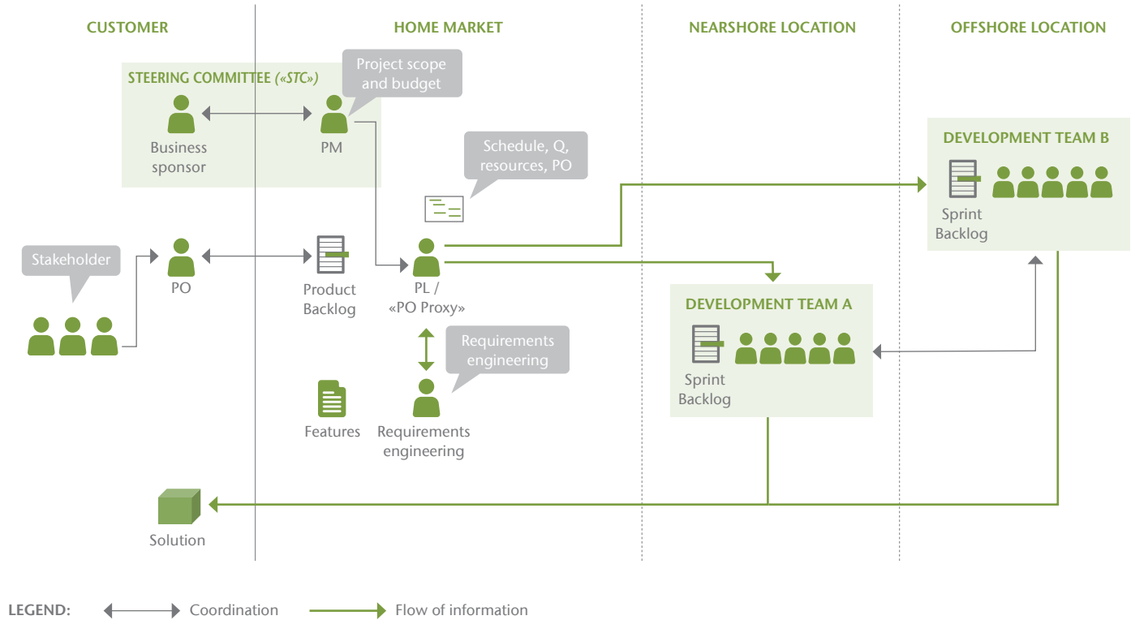
In order for the customer to measure the value created by the partnership, they must understand how the partner got from the customer's idea to a functional piece of software. Hardware-driven companies have a completely different mindset regarding the development of innovation. They believe everything from beginning to end must be «tangible» in the truest sense of the word. Software itself, though, is a little bit elusive, and when it comes to agile software development, it is still completely vague at the beginning. Many customers are suitably hesitant about using these methods, which run contrary to their understanding of traditional project planning. This is because they involve a vision as opposed to a specification; instead of a fixed team, there are roles, and instead of a clearly defined work plan, the project scope is newly prioritised and adjusted in every feedback loop.

However, in most cases, customers can develop a feeling for functions that they consider to be important only when they are able to try them out. And sometimes the company's ideas of their customers' needs do not match their actual requirements. Here the trust factor comes into play again. Many of the challenges relating to software development, in particular in the industrial sector, are either new or unique to the customers. This is reason enough to place your trust in a partner who demonstrates their expertise using best practice and can draw up scalable recipes for success from this experience.

This begins by choosing the right partnership model. Some forms of co-operation are better or less suited depending on the needs of the customer, the type and intended use of the software being developed, or the timescale and project volume. If the customer wants to be or must be closely involved, and/or the project involves continuous *(further)* developments, the consultant will make his or her resources and skills available within the context of the development partnership. If the project can be relatively well defined, then the customer can also outsource it completely, obtaining a turnkey solution.

The added value can be defined by the interaction of deadline, price and project scope as parameters *(«Scope of Work»)*. If the

FIG. 8: PROJECT SET-UP: ORGANISATION OF A MODEL OF CO-OPERATION



customer determines the scope and sets a deadline, the service provider can only «play» with the resources at its disposal – scaling and optimising the resources by including nearshore or offshore capacities in the costs. However, if the project scope can be variably adapted to the requirements, as is possible in agile software development, a product is created that exactly serves its intended purpose according to a fixed price and schedule. A customer must be able to rely on their partner being able to flexibly tailor the co-operation model to their requirements, because various hybrid forms with fluid structures are possible. An experienced consultant quickly gets a sense of what role a customer can play, and how to adapt the partnership model to take this into account. A clever setup with high-quality consultancy on-site and a network of scalable, attractively priced development resources either nearshore or offshore accelerates the development process and reduces the total cost.

Example 1

GUIDING CUSTOMERS FROM TRADITIONAL TO AGILE PROJECTS

A manufacturer of technical building systems is coming under pressure from its competitors. From a technology perspective, its mechanical products are still very traditional. Then the company gets a feeling from the market that it needs to pay attention to a new technology that can network its products better, make them easier to maintain and create new uses for them. The core competence of the company has always been the mechanical components, but now they need data management software to maintain their position. At the same time, internal resources are pooled together in several parallel projects to integrate third-party systems, whose interfaces also have to be mapped into the new management software. An external partner is then sought out. A software development consultant stands out from the competition in the selection process through a realistic cost estimate using proven methodology and an attractive price/performance ratio. The consultant convinces the customer that the quality of the requirements engineering on-site is of paramount importance, and then the software can be developed with cheaper cost structures in a nearshore centre managed according to the same quality standards. The customer appreciates the price transparency and the willingness of the consultancy to pass on the cost savings in full. And the customer is also aware of how difficult it is to recruit software engineers where the company is based and that it is not worth building this expertise in-house.

The customer is highly innovative in its core business. But due to a lack of software experience, the company has not previously been able to adequately position its innovations on the market. While mechanical components previously had to be replaced at every update, for example, now only the software has to be adapted. The major challenge in the software project is moving from a traditional to an agile approach to projects. The customer takes over the role of product owner, directed by the partner, and formulates its requirements to be coded in a computer language by a requirements engineer on-site. The consultant chooses a shoring setup for the implementation stage with which he or she can cover the comprehensive product specification of the customer as well as ensure high-quality software development at a reasonable price. The product is developed at the nearshore and offshore solution factories in Bratislava and Manila. Development services such as architecture and design that are particularly important take place in Bratislava because of the relative proximity to the customer, whereas additional features or web interfaces are developed and tested in Manila. The time difference proves to be a welcome side benefit, because features developed in Bratislava can be sent to Manila for testing and be developed further the very next day. Continuous monitoring and a documented process improvement methodology make it easier for the customer to adapt to the agile approach.

A turnkey software product that adds significant value, both for the customer and its market, is ready to be delivered by the deadline and within the agreed price range.

Example 2

EMPOWERING CUSTOMERS TO PLAY THEIR ROLE

A global leader in a specific branch of engineering faces a strict deadline for an improved product relaunch. Even when the company decided to renew the product, it was aware that its own resources would not

«The right software development partner is willing to take responsibility for ensuring that the software actually serves its purpose.»

be enough. As a result of this, the company has evaluated various scenarios: setting up internal resources or buying in or shoring external resources. Up to twenty different providers are considered. The partner is chosen based on a number of advantages: the need for quality, the range of potential shoring locations, the mentality at the nearest location, price – in short, the entire package is right.

The customer takes the plunge into agile software development supported by the partner, and in assuming the role of product owner, maintains control over the development process. The consultant empowers the customer to play this role and to provide the necessary information at the appropriate time, so that the extremely ambitious timetable can be met. The partner increases its shoring resources within the framework of the predefined budget, which was calculated for local resources. With a larger team, the process can be sped up considerably. The consultant has experience in coordinating teams in complex projects such as this. A clear arrangement is also worked out with the customer as to who will be responsible for which elements of the software: The company will keep the development of embedded software in-house; the partner is to be responsible for the entirety of the software at the interface from the device to the outside. In the era of Industry 4.0, a high level of skill is required to synchronise physical and virtual components. In addition to being able to do this, it is also important for the consultant to analyse both the process and the co-operation over and over again in order to identify any potential for improvement. It is useful here to have service parameters that can be measured. For example, how long are the response times; or how quickly are the Scrum reports created? These criteria will help the customer to minimise the risk and to check that the partner is fulfilling its promises.

The partner applies the agile model almost down to the letter in this respect: a sprint report appears every three weeks as well as regular monitoring reports, in which aspects are analysed, fixed and adjusted. Improvement is documented, and therefore is transparent. The customer is surprised at how quickly and smoothly both shoring and agile software development work. The project is on course within just two to three months, in particular thanks to how the customer is closely accompanied by the consultant on-site, how consistent standards are adhered to at all its locations, and how the co-operation is adapted to the customer's needs depending on the situation.

ERNI – Innovation in Process and Technology

CARLO CRONAUER
carlo.cronauer@erni.ch

Consultancy services: usability, requirements engineering, project management

MARKUS GUGGISBERG
markus.guggisberg@erni.ch

Consultancy services: project management, controlling, account management

ADRIAN KÜNZLER
adrian.kuenzler@erni.ch

Consultancy services: project management and product owner

DISCOVER
ERNI Experience Digital

Now you can also read our magazine online!

BUILD A PROFESSIONAL DIGITAL IDENTITY

Having the right digital presence is becoming a key factor in generating new business. Making contact with customers online can be done automatically, bringing that all-important first impression into the digital age.

Companies today have to contend with well-informed and digitally connected customers who can inform themselves about potential partners in advance. Digital reputation is supplementing or even replacing the traditional glossy brochure. Software is becoming more and more a part of market cultivation. Though experimenting is still allowed, it is even better to take advantage of existing best practices.

BY CARLO CRONAUER, ADRIAN MÜLLER AND TOBIAS ACKERMANN

Gone are the days when companies only got up close and personal with their customers at trade fairs or company visits. Face-to-face contact with customers has moved further and further into the virtual world. The digital transformation means IT and marketing fit seamlessly together. Customers used to be reliant on company leaflets or product flyers for their information, but potential customers today almost always use the Internet as their first port of call to find out about the products on offer. Reaching out to customers requires a carefully orchestrated approach across a range of digital media, whether it be online communities, company websites or e-shops, search engine optimisation, social media or banner advertisements. Today, digital brand building and customer experience management are increasingly becoming some of the most important keys to success in the business-to-business sector. Depending on how strategically and professionally companies position themselves in this new digital world, they can now use these channels to quickly reach out to customers who were previously completely out of reach. Intelligent Web portals and apps mean even technically complex components can be sold all over the world. Existing customers can be served better. Intelligent product configurators, digitised instruction manuals, and animated installation guides, as well as the supply of spare parts online, can help companies retain their customers.

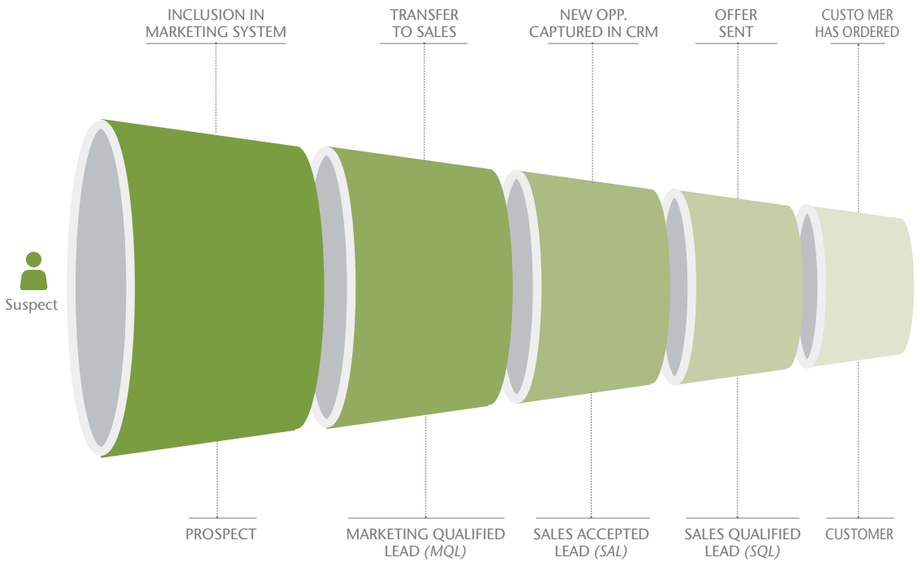
The other side of the coin: Customers can be lost or can go elsewhere if a company cannot be found on the Internet, if it cannot offer its customers any added value in this way, or if customers feel a stronger emotional or user-friendly appeal from a competitor's digital brand experience.

It is well worth investing in a digital presence across all platforms. A variety of tools are already available on the market for offering the omni-channel customer experience. The glut of tools for online, social media or digital platforms can be very confusing for companies – especially for manufacturing companies which are geared towards a long-term timeframe. Whoever thinks of product development, sales and maintainability in terms of decades is likely to shy away from the fast-paced world of the Internet at first. It helps to have a partner you can trust to steer you through the plethora of channels, platforms or tools and to recommend the best ones for your business in a targeted way.

Once an informed customer has done his research online, a company can either benefit from its digital reputation or suffer from it. It is therefore essential to have a digital strategy and to implement it in targeted channels of communication. Of course, countless online and marketing

«Making the right information available to customers at the right time is a competitive advantage. These days we have to be able to exploit this, even digitally and online.»

FIG. 9: DEFINING A «DEMAND FUNNEL»



agencies will be courting customers with their digital marketing offers. Some of these are purely superficial. Although they are appealing enough to draw customers into a website or e-shop, they offer little else of interest. In addition to this, marketing and communication are becoming more and more technology based. A number of relevant interactions can be automated such as measuring the success of online marketing campaigns or the personalisation of content to create individualised customer experiences. Personalised marketing, in which information online is prepared and presented in a way that is based on customer requirements, might perhaps attract attention as a first step – similar to a shop window in the real world. But if the link to a website does not work or it cannot connect to the e-shop and the «customer journey» is interrupted, there is a high risk that the potential customer who was originally interested will go elsewhere – in the worst-case scenario to the competitor, just two or three clicks away.

Simple marketing aspects like design, branding and layout are important for an attractive user experience. But only functionalities and interfaces provide online customers with real added value. A consultant who looks behind the glossy appearance of the marketing asks the following questions: What use is even the most beautiful online form that potential customers are happy to fill in with all their details if the data does not show up straight away in the Customer Relationship Management *(CRM)*? How is the decision made to purchase a complex industrial product, and what is the best way to replicate this using digital channels? What help can we offer the customer in making their decision – perhaps a configurator or calculation tools for technical or economic parameters?

Even in the B2B sector, the «Age of You» has arrived. Customers expect to be addressed individually, and ideally expect you to be available via App – at any time, from anywhere. The bar for the user-friendliness of applications is rising, and tolerance for frustration is falling. The name of the game today is being responsive and device-independent, always up to date, preferably free, but with lots of additional benefits.

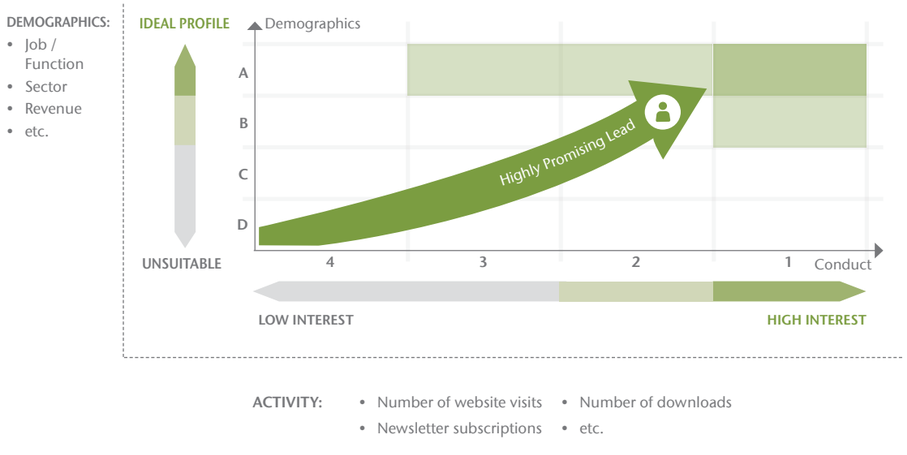
Digital dialogue with customers offers key advantages: Customers leave behind valuable traces on their «customer journeys». Collecting and analysing this information gives more clues about the interests and wishes of the individual customer. In the next step, this knowledge flows into product development. Lots of customers produce lots of data, which is pooled together to become big data. New trends can be deduced from this mass of data if it is structured, evaluated and interpreted correctly. It offers completely new possibilities even for traditional industries to develop new applications and business models by using algorithms. Not every company has to re-invent the proverbial wheel, though – because of their methodological familiarity with the interface between processes and technologies, specialists in software development are predestined to accompany companies in this digital transformation. Digital tools and platforms can be very technical. But for the most part, the right solution does not directly involve the technology, but in the best ways of collecting customer requirements and defining the way of meeting those needs. Only then is it possible to determine the right technology to structure and implement this process. In the best-case scenario, giving advice on processes and technology goes hand in hand with implementing them appropriately.

Example 1

FIRST UNDERSTANDING THE PROCESSES, THEN DEFINING AND MAPPING THEM

A market leader in sensor technology is dissatisfied with the performance of their website. The new website has just been launched, but response times, user-friendliness and availability have been below expectations. A new website needs to be set up. The customer turns its focus to the management of the new project, the return on investment for the new site and measurable objectives. This website is intended to help generate leads. The company wants to win back lost visitors and get to know their requirements better. To optimise the return on investment *(ROI)*, the marketing should be automated as far as possible. The partner involved in managing the project then begins a thorough analysis of the existing website: the traffic, the conversion rate *(the percentage of visitors to the site who reach a defined point, i.e., making a purchase order)*, and the registration and ordering processes. The status is sobering. The consultant starts off by recommending a thorough analysis of the purchasing decision process of the customer base. The

FIG. 10: EVALUATING THE QUALITY OF LEADS USING «LEAD SCORING»



new website should then map this process on a step-by-step basis. And at the same time, it should guide interested parties in a way that the information that is relevant to the decision-making process is optimally filtered. As a result of the analysis to define the requirements for the new website, it emerges that the company has to take its first marketing step by defining the relevant «buyer persona». Only when the target group and their information requirements have become clear can the appropriate algorithms for personalisation be developed and implemented.

An appropriate «demand funnel» is developed, documented and put in place together with the partner. For this to happen, all internal definitions must first be documented and standardised. At what point does a visitor to the website become a lead; when does the visitor become a prospect; and what does it take to finally «convert» them into a customer? Clusters of customer typologies are created from the existing CRM database. Each target customer group is assigned depending on what they are interested in, what they need, and what they are most likely to respond to. Each customer group is also categorised by demographic group. Which industry do they work in and in what capacity; what is their job profile? The matrix is used to extract the target group that represents the most attractive customer – the group with which the company wants to intensify their contact. It emerges that engineers are the most important customer group. The consultant draws up a multi-dimensional «lead scoring model» for the purposes of this survey which shows the qualities of prospects that are most likely to become customers. A prospect's demographic group is shown on one axis and their behaviour on the other. For example, this can be their browsing behaviour and the actions which they either respond to or perform. Thanks to the neutral advice which most importantly is independent of any tool, the purchasing process is simulated, continuously measured, analysed, «algorithmised» further, and finally automated. At the same time, the customer value of the products and services in all areas of the business is prepared and structured in respect of the target customers. The customer determines what content they want to make available on the website in future. The consultant decides what information must be made available for which customer groups. With this structured approach, the consultant accompanies the customer all the way from surveying the requirements of the new website up until it goes live.

as to gain a better understanding of the customers' need for information, so this need can be better met. The appropriate resources for setting up the project are allocated, the brand experience is adequately visualised to fit the online channels, and the content is drawn up. It was particularly important to the service provider that the digital brand experience was structured in a responsive way, which means technically and creatively optimised to different output types such as mobile devices. The requirements for the Web presence are specified on-site in Switzerland and in the main target market Germany, whereas website programming and implementation is done offshore in Manila.

Example 2

SHARING OWN EXPERIENCE IN TERMS OF BEST PRACTICE

A service provider wants to optimise its digital presence. The existing website offered the customer too little digital content. A lot of the marketing materials were only available in physical form. The service provider gets an increasing sense from the market that linked contacts online and business customers in the network are researching possible strategic partners. An online presence is essential, and in accordance with the company's aspirations, a high-quality presence at that. The company launches a project to build the digital brand using the right methodology. The brand experience, which shapes the values that underpin the dialogue between the company and its customers, should be transferred into the digital world. Customer data and interests, which they have either shared personally in conversation or online, should be used in such a way

ERNI – Innovation in Process and Technology

CARLO CRONAUER
carlo.cronauer@erni.ch

Consultancy services: usability, requirements engineering, project management

ADRIAN MÜLLER
adrian.mueller@erni.ch

Consultancy services: business analysis and requirements engineering

TOBIAS ACKERMANN
tobias.ackermann@erni.ch

Consultancy services: brand management, corporate communications, demand marketing and marketing automation.

ERNI

enables & delivers

http://erni-consultants.com/digital-publication/de

LEGAL NOTICE

EXPERIENCE
ERNI Experience reports on
management, processes and technology

Publisher

ERNI Consulting AG,
Baar · Bern · Lausanne · Zürich

ERNI Consulting España S.L.U., Barcelona

ERNI (Deutschland) GmbH,
Frankfurt · München

ERNI Development Center Philippines Inc., Manila

ERNI Development Center Romania S.R.L., Klausenburg

ERNI Singapore Pte Ltd., Singapur

ERNI (Slovakia) s.r.o., Bratislava

Editor
James Shepperd
Tel. +421 2 3255 37 43
leserservice@erni.ch
http://erni-consultants.com/digital-publication/en

Layout
Katarína Beinrohrová

Production
von Ah Druck AG, Sarnen

Circulation
5'000 copies in German, 2'000 copies in English

ISSN 2235-7262

ERNI

enables & delivers

www.erni-consultants.com