persönlich
Swiss magazine for the communications industry
STAR special edition, October 2016 G/V

Thirty years of STAR Deutschland GmbH

Information enhancement for the digital revolution

Josef Zibung: How a two-man operation has grown into a global company · Daimler, Hilti, Ferrari, Credit Suisse, SBB and Vaillant: How global companies collaborate with STAR · Business models for the Internet of Things · The technical writer is dead. Long live the technical writer

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Katrin Schütz

Congratulations to STAR Germany!

Katrin Schütz, State Secretary for the Ministry of Economy, Labour and Transport Baden-Württemberg.

Ladies and Gentlemen,

At the end of September 2016, STAR Deutschland GmbH celebrated thirty years at Sindelfingen. To mark this occasion, I would like to pass on my congratulations and appreciation.

Complete solutions in the areas of specialist technical translation, software localisation and automation tools are now more essential than ever for customers from the IT, mechanical and plant engineering and automotive technology sectors when it comes to remaining competitive. They also supply key components in order to make better use of the options for digitalisation.

The location in the region of Stuttgart, with its outstanding business-friendly research and IT infrastructure, great transport links and its proximity to important customers, also offers attractive jobs to employees.

Companies such as STAR Germany are what makes Baden-Württemberg a leading European location for IT and innovation. Above all, the IT services have made above-average contributions to the overall growth in the region.

I would therefore like to wish the owners, managers and the workforce continued success in the south-west of Germany because: They fit right in here and there is great potential in this region.

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Happy Birthday, STAR Deutschland GmbH!

Cross-border innovations

Matthias Ackeret.

Successful communication has a lot to do with languages and so it follows that those who master languages are excellent communicators. STAR AG, which is based in the small village of Ramsen, right at the German border, is a global pioneer with its translation systems. Just two years after the company was founded, it expanded into Germany, where it set up its first foreign subsidiary in Böblingen – this marked the founding of STAR Deutschland GmbH. That was 1986. Thirty years have passed since that time. For "persönlich", the leading communication magazine in Switzerland, it is a great honour and pleasure to be able to congratulate STAR Deutschland GmbH by issuing its own dual-language special edition of the magazine. In this edition, we will attempt to trace the development of this two-man operation from the Canton of Schaffhausen into a global company with 51 subsidiaries in over 30 countries. We would also like to thank everyone who contributed to the editing process in bringing this issue to publication.

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This special edition has been produced in collaboration with STAR.
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persönlich Verlags AG, Birmensdorferstr. 198, 8003 Zürich, Switzerland, Tel. +41 (0) 43 960 79 00 **E-mail:** info@persoenlich.com **Publisher / Editor-in-chief:** Matthias Ackeret **Editorial team:** Edith Hollenstein, Michèle Widmer **Publishing and advertising management:** Roman Frank **Subscription:** Nicole Seyd, NZZ-Fachmedien **Job advertisements:** Flavio Niederhauser, Roman Frank **Administration:** Andrea Vargas **Graphics:** Corinne Lüthi **Proofreading:** Birgit Roth, Sandro Fässler **Printing:** GDZ AG, Spindelstrasse 2, 8041 Zürich, Switzerland, Tel. +41 (0) 44 488 81 11 **Printing materials:** Data carrier (InDesign) **Magazine format:** 235 x 320 mm **Run:** 7000 copies., **Paper:** *Cover* MultiArt Gloss 200 g/m², *contents* MultiArt Silk 100 g/m² papyrus.

Cover photo: Alberto Venzago

Daily news at persoenlich.com

Josef Zibung

Intelligent information – the raw material of the future

The 59-year old entrepreneur, Josef Zibung, founded STAR AG in the Swiss town of Stein am Rhein in 1984. The two-man operation has since grown into a global company which now has 51 offices in over 30 countries. In 1986, STAR Germany was founded as the first branch office outside Switzerland. The company's founder talked in person from the headquarters in Ramsen about the challenges and opportunities facing his company in a globalised world.

Interview: **Matthias Ackeret** Photos: **STAR AG**

STAR AG

STAR AG was founded in Stein am Rhein in 1984 and, as the headquarters of the STAR Group, is now located in a former monastery in the neighbouring municipality of Ramsen. The STAR Group is a technology and service company involved in product information lifecycle management and employs over 900 staff around the world.
More information can be found at: www.star-group.net

Mr Zibung, the headquarters of your global company with over 900 employees is located in Ramsen, away from the major economic centres.
How is it organised?
The number of employees in our individual national offices varies greatly, from 5 to 200. Our corporate culture is organised in a highly federalist manner and has a structure slightly similar to that in Switzerland. We have common interests and a common strategy. The STAR Group considers information and language processes to be an integral and synchronised part of product development with which we can offer our customers significant added value. The individual markets, on the other hand, have entirely different setups when it comes to strategy implementation. What works in Italy, for example, might be a flop in Germany and vice versa.

Can you explain what you mean by a flop in more detail?

In Italy, there is a tendency to outsource the entire process. They look for a supplier that can deal with the entire task using its own technology and its own tools. The company benefits from not incurring any investment costs. But this means finding the right partner who will not only provide the right innovation and technology, but who can also provide the service. In Germany, on the other hand, there is a tendency to keep knowledge in-house. This, in turn, requires appropriately trained staff. So to be successful in multiple markets, you also need different business models. The language service (translation, localisation and transcreation) is an important backbone of our company. This essentially requires a local presence in the relevant market. In many countries, particularly in the Asian and Arab regions, these activities can only be carried out with permanently employed staff. Although this is partly due to organisational reasons, it is also because the local customer contact in the relevant target market places extremely high importance on quality assurance. This is why, for example, we have always employed a small team in Iran despite the decline in orders owing to sanctions. This is, of course, a huge advantage when the situation then changes again, as is the case now in Iran.

"We are not a one-man show"

How is your company structured?

Our headquarters are located in Ramsen. Incidentally, the name STAR is nothing more than an abbreviation of Stein am Rhein – the place where we originally started the company. In the meantime, we have been able to acquire a former monastery in the neighbouring municipality of Ramsen. Every one of our national offices is responsible for its own finances and also makes investments on its own accord. One of our basic principles is that the profit generated in the individual countries is also invested there – a policy which generates goodwill. The software development carried out by the STAR Group is concentrated in three locations: We develop our products for language technology in Sindelfingen and solutions for information management, business process management and workflow automation in Ramsen, whilst the development site in Málaga is primarily responsible for applications for mobile devices (e.g. apps) and customer-specific implementations.

What makes your corporate culture unified?

We are team-oriented and maintain flat hierarchies. We think it is important that all our staff can make optimum use of their individual skills. Many of our employees have been with us for a long time and we experience very little fluctuation. This creates continuity, stability, customer loyalty and, above all, prevents us from losing knowledge. Staff who are suitably committed can also further develop their skills within the company.

The company has been focused on you for many years now. Does that not pose a problem?

We were never a one-man show. Since I turn sixty next year, I have reorganised the organisation accordingly. A couple of years ago, I extended the management team at the headquarters of the STAR Group in Ramsen by three members – Kristin Radlmayr, Bruno Cervilla and Florian von Lepel – who have different key tasks.

But you are still the main shareholder?

Yes, but in the individual countries we involve our employees in the company. This strengthens loyalty to the company.

What are the biggest problems your Group has to face?

For us in Switzerland, it's definitely the high exchange rate of the Swiss Franc. But other political developments such as Brexit are also posing a major challenge.

And how are you dealing with such challenges?

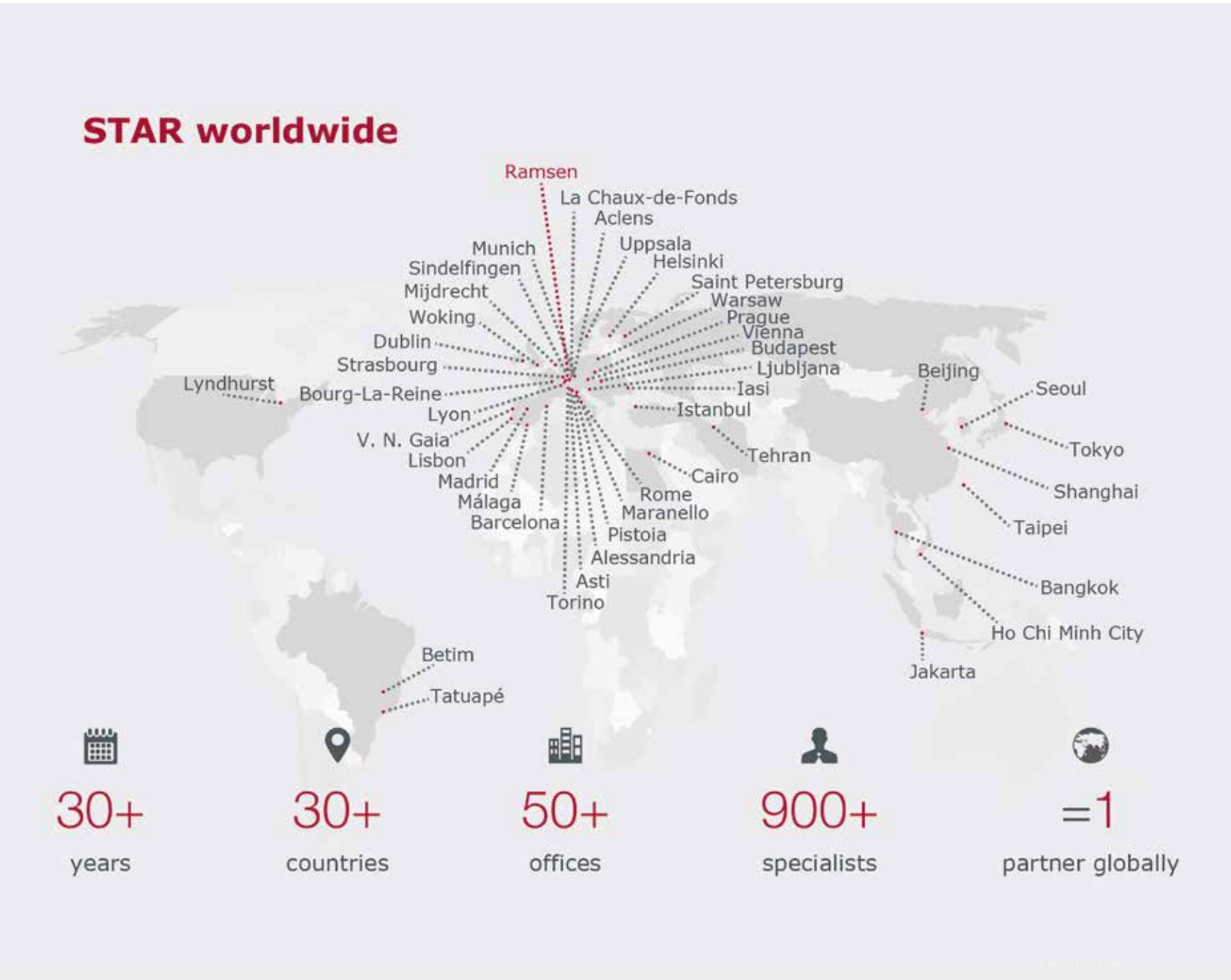
It's understandable that customers in England prefer to pay in pounds. But there is also a currency risk with the USA, the former Soviet states, Asia and South America. We can counteract this risk to a certain extent by also providing services in these countries. And we naturally continue to rely on innovation. We have been working in the area of semantic information processing for over twenty years now, but it is only in the past couple of years that this has been important in association with trends such as digital transformation or Industry 4.0.

What exactly does that mean?

Industry 4.0 means better networking between man and machine. This creates new opportunities for companies to further optimise their business processes, or to implement entirely new business models, in the production and service areas through more networking, improved efficiency and better flexibility. The solutions from STAR can achieve significant added value for our customers, particularly in the aftersales area. Automobile companies are planning self-driving cars and the integration of healthcare seats in vehicles. All this requires information which needs to be evaluated and made available ad hoc. Semantic information engineering can do this, whilst document-based solutions cannot. Even though semantic information models are set out as the standardised basis for Industry 4.0, the challenge remains to convince the right people in the company of the benefits. It is often a reluctance to take on new projects or failed projects which keeps customers from making the right decisions in favour of a future-oriented information management system. This requires a great deal of energy on our side as well as proof of having successfully implemented projects – and we have both.

In a face-to-face interview, you once said that in many companies the CFO has now become the most important partner and that the financial aspect has priority over quality.

In the services industry, for example, people like to talk about the good quality they can provide. But if we take a closer look, many invitations to tender are in fact solely decided based on price. In this respect, I stand by my original statement, and the high exchange rate



of the Swiss Franc is not, of course, particularly helpful. Digitalisation and Industry 4.0 have already had an impact and triggered a jerk response. All of a sudden, based on a fear that the Silicon valley giants such as Google and Apple could dominate, many companies started to look for solutions which would have been unthinkable a few years ago. I am thinking in particular of the automobile industry which is having to deal with new competition in light of increasing digitalisation. This is the chance for our technologies since we generate 40 to 45 percent of our turnover in the automobile industry.

Who else do your customers include?

We have a stronger presence in some industries than others. With our solutions and services, we can essentially serve all sectors.

How did you "invent" this business?

I didn't invent anything. A company grows based on customer needs and the challenges associated with these. We were originally a service company, but had to quickly find solutions in order to be able to offer our services more cost-effectively than international competitors. This pressure was what forced us towards innovation right from the beginning. When STAR AG came about in 1984, the first PCs were just coming onto the market. This was our chance to improve our competitiveness by means of our own software solutions. These were initially limited to the translation sector. Our solutions now cover all the information processes in the product lifecycle. This means that our range of services covers everything from translation through to fully automated publication in all languages and in all media. If they wish, customers can therefore outsource entire information processes to STAR.

How many languages do you speak yourself?
Four or five, depending on whether lots of gesticulation counts, maybe more.

And how do you communicate with your offices in Vietnam, Russia or Egypt, for example?
That's not a problem. Most managers speak English or even German. And after all, we do work in the translation industry so language barriers should be no obstacle.

How do you see the future of your company?
Off the top of my head, the French philosopher Jacques Derrida comes to mind. I've always found his approach to differentiating between the French terms "futur" (the future which is calculated, predictable and preprogrammed) and "avenir" (the future that simply happens and cannot be calculated or foreseen) highly interesting. On the one hand, this an example that I often quote which shows how important terminology work can be. On the other, it is also a good philosophy for life. To answer your question: We will do everything we can to assure a "futur" with targets, innovation, the right strategy and drive – naturally always in the hope that the "avenir" will also turn out to be positive for us. This is where the loyalty of our customers plays an important part – for which I would like to take this opportunity to express my thanks.

"Many companies still implement the idea of pillars of thinking, which means that they lose their shared goal."

Bruno Cervilla

Mr Cervilla, you joined the management team at STAR AG, or the STAR Group, two years ago. Which task areas are you responsible for in your new role?
In short: Everything needed to successfully get customer projects off the ground and ensure customer satisfaction in the long term. Developing innovative technologies is one thing, integrating them successfully into the customer's relevant processes is quite another. To do this, it is extremely important to have a thorough understanding of the customer's point of view and to identify the "pain points", to draw up pragmatic migration scenarios and to accompany project implementation with a customer-oriented change management process. In addition to always having a keen ear for customer requests, this requires a great deal of experience and flexibility in order to ensure that the right methods and resources can be used for the relevant project-specific framework conditions. What is exciting is that every project is the same but different. Obviously, we sometimes also need to be able to improvise, but for me as a Swiss national with Spanish roots, and after many years of working in Japan, that's always an appealing task.

What do you mean here by "improvise"?
I am not referring here to the actual implementation of customer projects since these are coordinated in advance and planned taking into account the various eventualities. Ultimately, international projects – regardless of whether these take place in Japan, Germany, the USA or anywhere else – are always influenced by cultural peculiarities which generally take us by surprise. Improvisation can help here to avoid a show stopper.

Kristin Radlmayr

Ms Radlmayr, you joined the management team at STAR AG, or the STAR Group, two years ago. Which task areas are you responsible for in your new role?
Marketing and sales. Since I have been responsible for the sales of our language technology for several years now, it was obvious that I would represent these areas in the newly formed management team. In terms of my tasks, essentially very little has changed. Sales means acquiring new customers. This is generally more successful the more carefully you maintain existing customer relationships. This involves taking feedback from customers and local offices seriously and being in the right location. The link to development and marketing required for this also needs to work well. This is where forums, our external and internal user groups and our Software and Marketing Board are very useful. The exciting challenge, demonstrating the added value of products and services which do not have a physical presence, will continue.

The management team comprises three male colleagues and you. Does that work well for you?
Yes, definitely. This certainly has a lot to do with the fact that the professional skills of women have always been recognised and appreciated within the STAR Group. Naturally, we sometimes have intense discussions, but these generally tend to take place between the male colleagues, only to reach the conclusion that everyone was more or less of the same opinion anyway. All I need in this kind of situation is a bit of patience and to choose the right moment to put forward a female point of view. Overall, I would say that we have a very productive coexistence. Ultimately, the "muscle power" of the man-machine interface era which has historically been so keenly sought after is increasingly losing its importance.

Florian von Lepel

Mr von Lepel, you joined the management team at STAR AG, or the STAR Group, two years ago. Which task areas are you responsible for in your new role?
While I used to be primarily responsible for the engineering of our semantic data model for our information management system, GRIPS, I now have overall responsibility for all standard technology solutions at STAR. However, this does not mean that I alone determine the further development of our software solutions. Our Software Board – a committee comprising representatives from the various development teams, marketing and sales, as well as IT, and which I have also been on for many years now – continues to make decisions based on the roadmap. In addition, all STAR technologies are also used for services internally, i.e. every innovation is tested in practice in advance and our development teams receive valuable feedback at an early stage. My task is primarily to continue to promote the standardisation and methodology of development across the product range in order to optimally cover the integration between the individual solutions for the entire information process. In addition, however, this means optimally integrating more and more upstream and downstream third-party systems of customers or technology partners, for example CAD/PDM from development.

What do you consider to be the challenges for the future?
The rapid changes in the media sector and the use of information associated with these require highly-integrated and complex solutions but which must remain very open and flexible at the same time. This balancing act will continue to keep us very busy in the future and require even more cooperation with our development teams in the information management, language technology and process engineering and automation areas. I am, however, convinced that with our solutions and the concepts on which they are based, we are well-positioned for the future.

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Daimler

Success factor for best customer experience

Why Global Language Management at Daimler AG is so successful and ensures crucial potential cost reductions.

Text: **Johannes Bursch** Photos: **Daimler AG**

Johannes Bursch

Dipl-Ing. Johannes Bursch (born in 1964) studied engineering at the University of Stuttgart and joined Daimler in 1992. After holding various (senior) roles in quality management and organisational and personnel development, he has been head of the Global Language Management department in the Corporate Business Service Management division since 2004.

Daimler AG is one of the world's most successful automotive companies. With the business fields Mercedes-Benz Cars, Daimler Trucks, Mercedes-Benz Vans, Daimler Buses and Daimler Financial Services, the vehicle manufacturer is one of the largest suppliers of premium cars and is the largest global manufacturer of commercial vehicles.

Daimler sells its vehicles and services in almost all of the world's countries and has production facilities in Europe, North and South America, Asia and Africa.

In 2015, the company, with a total of 284,015 employees, sold around 2.9 million vehicles. Turnover was 149.5 billion euros. EBIT was 13.5 billion euros.

Business model and challenges of Global Language Management at Daimler AG

As a company management function, Global Language Management is responsible for organising and standardising multilingual processes and the global language service business of Daimler AG.

This has nothing to do with the traditional role of a language service provider, which is usually focused on the management and provision of language services.

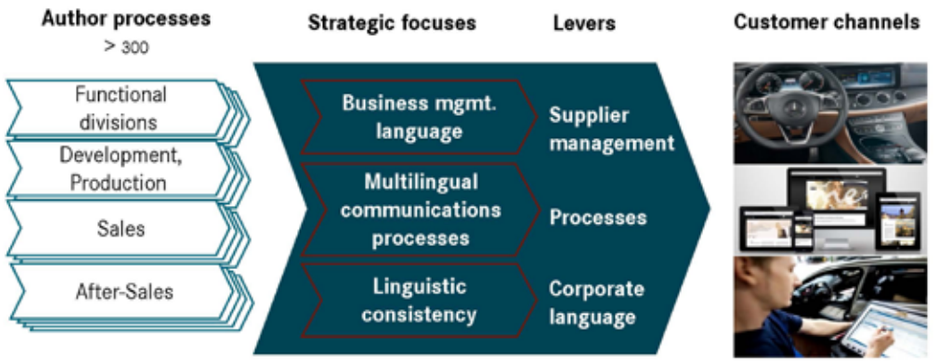
In this case, the most important properties are:

- Defining a vendor strategy which is suitable for the company; developing and managing the suppliers by means of key figures for quality and efficiency
- Developing and standardising IT infrastructure which:
  - Meets all requirements of a global company's various communication processes
  - Offers efficient translation management in terms of managing deadlines, quality and costs
  - Optimally supports the translation service providers in the provision of services
- Developing and managing multilingual company terminology, starting with product development

The objective also considerably differs from that of a language service provider. The primary objective of Global Language Management is to contribute towards ensuring cost-effectiveness and winning over vehicle customers.

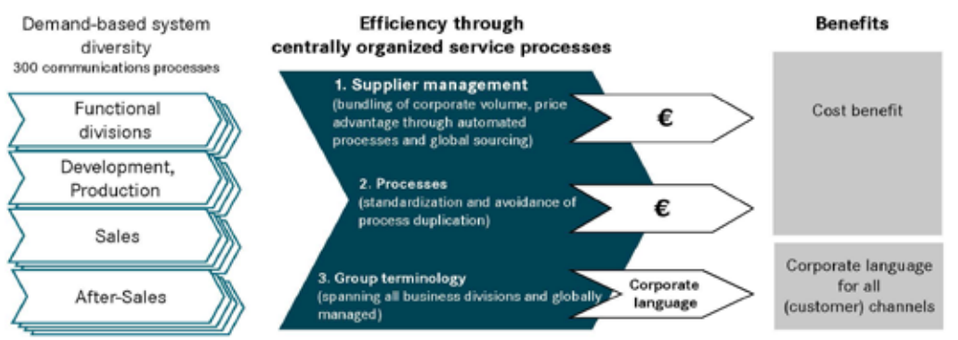
- Managing the global language service business with the objective of maximum effectiveness and efficiency of the language service provided externally
- Organising the company's multilingual communication processes to achieve maximum automation and to avoid developing multiple versions of increasingly complex language processing systems
- Linguistic consistency of all customer information in terms of a corporate language to promote the best customer experience and internal communication to create efficient and effective processes

Global Language Management – responsibility



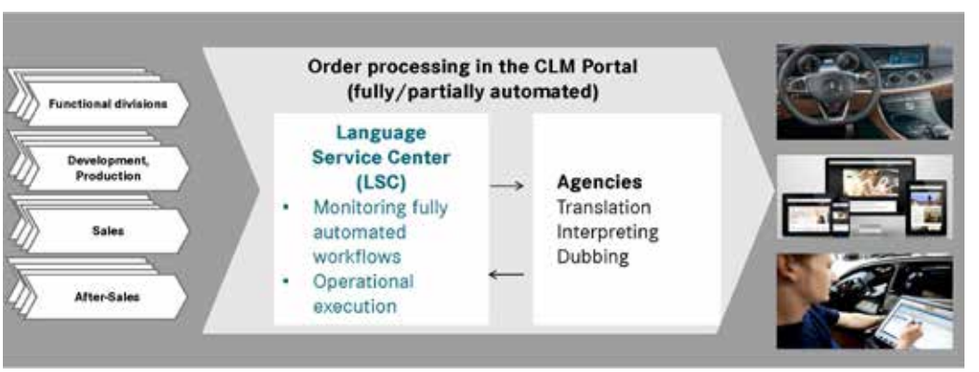
CBS/L is responsible for organising, integrating and managing multilingual communication for all information processes in the whole company.

Global Language Management – contribution to cost-effectiveness



CBS/L improves efficiency through grouping and standardisation in the language business.

Business model for Global Language Management



Global Language Management develops processes as a business partner with service purchasers in the Daimler Group and manages the language business. The Language Service Centre manages business operations. The language service providers perform the translation, interpreting or synchronisation service.

To carry out this task, Global Language Management must:

- Be able to issue guidelines for the entire language service business, i.e. have a company management role
- Have a cross-departmental role and be a business partner for multilingual communication for all business fields in a company
- Be a centre of competence in order to develop and implement innovations in the language service business for corporate processes with strategic industry partners, such as STAR AG

With the business model, Global Language Management focuses on organising, grouping, integrating and managing the language business across the whole Daimler Group.

The roles are clearly defined:

- Global Language Management develops processes as a business partner with service purchasers in the Daimler Group and manages the language business.
- The external Language Service Centre manages operative business activities.
- The language service providers perform the translation, interpreting or synchronisation service.

Success story of collaboration with STAR AG

The history of successful collaboration with STAR AG spans more than 30 years.

1986 to 1988

First orders from Daimler AG for translations and layout for the Japanese market. Initially through Daimler Japan, then through the company headquarters in Stuttgart. Operating instructions (including layout) and workshop literature were translated using the GlobalView author and content management system with Transit translation memory. Interleaf was used for standard and scheduled time catalogues.

1990

Orders for other languages (English, French, Spanish and subsequently Turkish too) sent to STAR AG.

1993
Translation of operating instructions into nine languages (English, French, Italian, Spanish, Portuguese, Dutch, Finnish, Russian and Arabic), including layout with FrameMaker and Transit.

1995
Introduction of WebTerm with specific adaptations for Daimler AG (DCTerm). Introduction of Transit translation memory at Daimler AG.

2000
Joint development of one of the first fully automatic translation workflow systems (TWS) for Daimler workshop literature. Introduction of GRIPS (Global Real-Time Information Processing Solution) at EvoBus, a subsidiary of Daimler AG, based on semantic XML. The system is still used to this day.

2003
Joint development of interfaces between the translation workflow system and commercial processes for managing the language business at Daimler AG.

2005 to 2006
Joint development and introduction of STAR James for the fully automated management of the translation processes for all of Daimler AG's operating instructions in all required languages with an automatic interface to the editing system and commercial processes.

2007 to 2009
Continued development of translation workflow and terminology management systems.

2010 to 2013
Joint re-engineering of all language management processes and systems on the basis of STAR CLM. Redevelopment and integration of commercial components for managing Daimler AG's language business. The first orders went live in mid-2012.

STAR CLM – systems for translating and interpreting:

- Single sign-on (LDAP Active Directory, central user management with roles and permissions)
- Central Transit NXT servers
- Central WebTerm system (DCTerm)
- Web portals for customers, suppliers and project managers
- Supplier management
- 30 fully and partially automated translation management workflows
- 19 standardised interfaces to content management and editing systems
- Integrated commercial components with reporting functions

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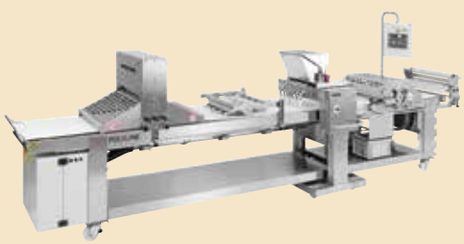

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Thirty years of STAR Deutschland GmbH

Global success from the “Silicon Valley of Swabia”

In 1986, STAR Deutschland GmbH was founded as the first foreign subsidiary of the STAR Group. The company quickly became the leading supplier of technical translations in the German market.
STAR Deutschland GmbH attributes this continuous growth to the outstanding technical and linguistic expertise of its over 150 employees, the innovative streamlining and automation concepts, and the high standards of quality. Continuous training, utilisation of the latest technologies, and the pleasure that the company finds in offering its services all come together to secure their position in the market.

Text: **Bernd Glöckle, Manfred Hoelzgen, Martin Kunz** Photos: **STAR Deutschland GmbH**

In the beginning, there was software: In the mid-1980s, the importance of software localisation was increasing. This was the ideal starting point for the new STAR subsidiary in Böblingen: This town was home to notable IT companies like IBM and Hewlett-Packard, but it was also home to many highly skilled IT professionals – it was no accident that the region was also known as the “Silicon Valley of Swabia”. With this, the foundation was laid for establishing linguistic skills and IT expertise in parallel – which was a completely novel approach in the sector at that time.

Large localisation orders from IBM brought about the opportunity for the young team to automate the translation process. Translators and programmers defined two essential requirements that were necessary for this automation: Filtering texts; in other words, extracting them from their initial environment, and preparing and automatically translating identical sentences that had already been translated in the same document or in the previous version. The results were impressive and, in 1990, led to the decision to develop a product from this – not just for internal use within the STAR Group, but also for users in other companies. This led to the product Transit, which was one of the pioneers in translation memory technology and which has become the international standard in the translation process. Following this success, new tasks awaited the development team in Böblingen. TermStar, as a Windows application, and WebTerm, as a browser ap-

plication, were developed as products for global access. As a response to the growing volume of support and development tasks, STAR Language Technology & Solutions GmbH was founded in 2003. It encourages the continuous further development of language technology, and develops new innovative products – such as STAR MT as a solution for corporate machine translation – right through to market readiness.

STAR Deutschland GmbH was one of the first professional translation service providers to offer its own automation technology which could be individually adapted to the special demands of the customer. The company therefore experienced rapid growth, with double-digit annual sales growth. With increasing staff numbers, the number of specialists in process steps also grew, e.g. technical editing, terminology, IT, DTP and prepress. This resulted in additional services, such as multi-lingual catalogues, that are produced for companies such as Otto-Versand, Bosch or Walter AG (Sandvik Group), including the creation of print data.

STAR Deutschland GmbH can call upon the global network of STAR subsidiaries in over thirty countries for translation services. Another advantage is the large number of multilingual in-house staff in the Project Management and DTP teams. This adds a level of in-house quality assurance for almost all European languages, but also for non-European languages such as Chinese, Brazilian Portuguese or Hindi. And this continued growth led to a new milestone: In autumn 2014, after two years of planning and construction, the company moved into their own building on the airfield in Böblingen/Sindelfingen, a building that they share with STAR Language Technology & Solutions GmbH. Throughout the last thirty years, STAR Deutschland GmbH has established itself as a globally active partner for medium-sized German enterprises – one that offers all of the traditional services relating to product communication: Creation of information, technical editing, graphics production, translation and localisation, interpreting, DTP, publishing (web, app, print, ERP, DMS, CMS), logistics (delivery to the production line). Furthermore, current requirements, such as web design, search machine optimisation (SEO) or the development of data models for augmented reality applications, are being met. This means that all of the requirements for technical documentation that come with the future Industry 4.0 development and production environments can already be fulfilled. They also offer solutions for the ever-growing trend towards the outsourcing of complete information processes.

Bernd Glöckle

Bernd Glöckle, Dipl. Ing. (FH) Maschinenbau (BSc in mechanical engineering from a university of applied sciences). Employed at STAR for 23 years. Worked for STAR as a technical editor and draughtsman when he was a student. As Managing Director at STAR Deutschland GmbH, he is responsible for the areas of Tools and Processes.

Martin Kunz

Martin Kunz, born in 1969, graduate translator of Chinese and English, has worked for STAR since 1999, and spent seven of those years as head of the company’s subsidiary in Beijing. Since 2006, he has been working in Germany again and, since 2013, he has been a member of the executive board at STAR Deutschland GmbH.

Manfred Hoelzgen

Manfred Hoelzgen, computer scientist, founding director since February 1986. Had already worked for over ten years as a freelancer and managing director of a limited company within the sector and can look back on over 40 years of professional experience within the translation sector.

Vaillant Group

Digital transformation with “GRIPS”

The success story of the family-owned company Vaillant goes back to 1874, when it was founded by Johann Vaillant in Remscheid. Since the company was founded, the Vaillant Group has significantly shaped the market for heating technologies with its pioneering innovations. In 1894, Johann Vaillant obtained the patent for his “gas bath boiler – closed system” and therefore brought about a revolution in bathrooms. That the company also invented wall-hung gas-fired central heating is also a sign of its innovative spirit. With over 12,000 employees across the world, and around €2.4 billion in sales, the Vaillant Group, with its headquarters in Remscheid, has become one of the market and technology leaders in the heating technology sector. “persönlich” spoke with Carsten Auf dem Kampe, Head of Technical Information Management.

Interview: **Matthias Ackeret** Photos: **Vaillant**

Carsten Auf dem Kampe

Carsten Auf dem Kampe has a diploma in chemical engineering. Since 1992, the 52 year old has worked for the Vaillant Group in various specialist and managerial positions in Development, Product Management and Customer Service. Since 2009, he has been Head of Technical Information Management.

Mr Auf dem Kampe, what were the challenges that Vaillant faced before introducing semantic information management with GRIPS (Global Realtime Information Processing Solution)?

Due to the complex customer, product and market requirements, in 2010, the Vaillant Group was faced with increasing problems when it came to providing technical product, training and planning documentation that met the required time, cost and quality requirements. As part of extensive analyses of customer requirements, documentation processes and their costs, the following objectives were defined: Reduction of throughput times and the need for corrective work, reduction in editing, translation and publishing costs by a total of 55 per cent over four years, improved quality by using standardised terminology and improved documentation structures, and additional system and installation documentation.

Were these objectives achieved?

Yes – they were actually surpassed. In a five-month pilot project with 250 operating and installation instructions in 30 languages for seven units, we achieved a 45% reduction in costs. When compared with 2010, with close to 4500 documents a year, we now handle four times the project volume with an almost identical budget. Savings of over 75 per cent were achieved for translation projects, while revision projects only cost us 20 per cent now. It is not only the costs which have fallen sharply – the average project time is now approximately eight weeks shorter. Furthermore, the information for the eight brands in the Vaillant Group can be prepared using the same standardised source contents.

What was the key to this success?

Three factors were crucial to this success: Future-proof and object-oriented information structures, powerful and integrated technology components, and our collaboration with STAR. The information model that is used by the Vaillant Group reflects the design logic of the Vaillant Group’s products and is based on the IRIS semantic information model from GRIPS. If a component – such as a pump – is re-used in a product, all of the models automatically “inherit” the associated information modules, together with the translations into up to 41 languages. This means that the same content is now re-used over 20 times on average, which leads to the aforementioned time and cost savings. On the technology side of things, we have to mention the flexible GRIPS information management solution together with the seamlessly integrated STAR technology components, such as author support (MindReader) and the CLM translation process management solution. From the design of the information structures and the pilot

> “In our five-month pilot project, we achieved a cost reduction of 45 per cent.”

testing, right through to the launch and operation in the hosting centre, STAR has been by our side as a skilled partner and also continues to support us in further development and in new innovative applications.

Could you provide us with an example of a current innovative application?
Digital transformation is a big topic in our company – and that also applies to the operating and installation instructions. Together with STAR, we are developing options for providing our end-customers and trade partners with the information that they require via new methods. We can do this by making a few enhancements to the existing information modules in GRIPS. The existing information structures make it easy to display and edit information in various formats – including mobile formats. This makes us well-prepared for the requirements that come with the digital transformation.

> "Digital transformation is a big topic in our company."

The technical writer is dead.

Long live the technical writer!

“Welcome to Technical Communication. I am 89% sure that the profession of technical writer will no longer exist in a few years’ time.” This is how I am going to welcome around 40 hopeful young people to the first-semester welcome event for the Technical Writing and Technical Communication course at Munich University of Applied Sciences on 4th October.
The statement that the days of technical writers are numbered has quickly spread in the field of technical communication and is proving extremely hard to dispel. It is now time to delve a little deeper into this topic.

Text: **Prof. Martin Ley**

In Germany, approximately 85,000 people are currently employed as technical writers, with around 80% of them academics, mainly from the engineering sector. Only a good third of all technical writers have graduated from an appropriate formal education course at a university or alongside their job. tekom (European Association for Technical Communication) predicts a labour requirement of 3500 jobs for 2016, meaning that our graduates will be spoilt for choice when starting their professional career (cf. Straub 2016). However, Frey and Osborne reach a sobering conclusion – which is also applicable to the profession of technical writer – in their study entitled “The Future of Employment: How Susceptible are Jobs to Computerisation?”. As with almost half of all job profiles investigated (in the USA), technical writers are falling victim to computerisation. Almost all of the tasks performed by technical writers can be carried out by computers or computer-controlled machines and devices. Human technical writers would therefore be obsolete. Frey and Osborne consider the reason behind this to be continuous technical development, which has made a name for itself (albeit an exaggerated one) as the Fourth Industrial Revolution or Industry 4.0 among catch phrases such as

artificial intelligence, self-learning devices and machines, smart systems, big data and the Internet of Things (cf. World Economic Forum 2016).

It might therefore appear that a bleak future lies ahead of our future graduates. But not everything is as it seems. Although it is correct that the use of computer technology is constantly advancing, including in the field of technical communication, we have since accepted the departure from classic desktop publishing towards topic orientation and layout automation (with few exceptions). Content delivery, machine translation or natural language generation, i.e. the automated creation of natural-language texts, are areas where the use of computer technology is becoming increasingly widespread.

However, I do not view increasing computerisation as a risk to the professional future of our students, but rather as a unique opportunity in the long run. For example, autonomous driving or predictive maintenance, to give two examples, bring us face to face with developments which are reliant on "smart information". In addition to data security and data protection, smart information is also distinguished from other information in that it comes from different systems under certain circumstances and in that items of smart information can be linked together intelligently in an application for different usage scenarios. For example, for predictive maintenance this would be information about the machine and its condition, reference values for detecting anomalies, maintenance tasks, working hours, spare parts and much more. Ultimately, this information comes from "the pen" of a technical writer. It is highly structured and semantically "distinguished", in both senses of the word. If Industry 4.0 applications are to meet the expectations placed on them, high-quality information must be provided, in multimedia format where necessary. Information will be valuable and profitable for a company and information development can establish itself as an integral component of product development. The significance of technical writers within a company may therefore change (for the better), provided that technical writers use this opportunity. Otherwise, other people in companies would take on these tasks.

For the purpose of educating prospective technical writers, this means that we familiarise our students with both the theoretical and practical aspects of semantic information management. In terms of theory, this takes place in sessions on methods for technical communication, information modelling, linguistics and, of course, semantic technologies. In terms of practical experience, the students work on relevant industry projects and also learn how to use the GRIPS semantic information management system. It goes without saying that, in addition to these aspects, topics such as mobile documentation, creation of animations and videos, and engineering expertise cannot be ignored; these are among the tools of the trade for a technical writer – probably even more in the future than they are now. At the end of my introductory session on 4th October, I will hopefully have made it clear to our first-semester students that it is they who will lay the foundations for the future success of a company thanks to the information they record: Information must be seen as a central resource for a company. This is the only way to provide added value through services, for example, or to produce individual and custom-designed information products or services for users. Information is therefore also the basis for developing new business models as without smart data, there can be no smart products and without smart products, there can be no smart services.

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Prof. Martin Ley.

Martin Ley has been a professor of Technical Writing and Technical Communication at Munich University of Applied Sciences since 2011. His work focuses on structuring and standardisation, information management and the processes of technical communication. Prof. Ley studied linguistics at the University of Tübingen and in Ann Arbor (USA), and wrote his PhD on semantic information modelling.

Munich University of Applied Sciences

With over 18,000 students, Munich University of Applied Sciences is the largest university in Bavaria and the second largest in Germany.
Over 500 professors and 750 lecturers teach more than 70 attractive, future-oriented courses. The Technical Writing course provides students with a comprehensive insight into all of the relevant topics involved in everyday writing work: In addition to the basics of documentation and communication, knowledge of media and technology is imparted. The students are optimally prepared for "reality" in a total of four industry projects and one practical semester.

Ferrari

Speedy, unique and full liner: The Ferrari Technical Assistance Service has it all

Luigino Barp, Head of After-Sales at Ferrari, tells us how every single day at the office revolves around providing their clients with complete satisfaction.

Text: **Matthias Ackeret** Photos: **Ferrari**

Luigino Barp, known to everyone as "Gigi", is a determined, multifaceted and quick-witted man: An industrial manager from a bygone era with his feet firmly on the ground and his mind invested in the future, a man who is relentlessly charismatic and unquestionably authoritative – a man who was born in Venice but has become as Emilian as the Prancing Horse itself.

Barp is 58 years old, married with four children, and has a passion for restoring classic cars and motorbikes. Studying aeronautical construction led him to start his professional career at Aeritalia (now Alenia Aeronautica), where he was the first flight test engineer to trial prototypes of the Tornado, a combat aircraft. He then chose to specialise in meteor drones at the company's site in Monfalcone before moving on to flight test operation on the prototype of the F-104S ASA (Aggiornamento Sistemi d'Arma – Weapon Systems Update). It was precisely this need for speed and fascination for the quintessentially unique that he gained during his early career which later drove him to work for Ferrari.

Barp first passed through the gates of Ferrari's headquarters on Via Abetone Inferiore 4 in Maranello back in 1987, gradually taking on more and more duties and responsibilities over the years to become one of the greatest experts in technical assistance and after-sales the world has ever seen.

He first joined the Experimental Department at Ferrari, where he worked for two years before being appointed Head of Road Reliability Testing (from 1989 to 1994) for all vehicles. He was then asked to manage the first grand slam, and from 1994 to 1999 he acted as Technical Director of the brand in Switzerland. His success in this role led to another big step in his career: Ferrari (who owned Maserati at the time) asked him to head up the Technical Assistance Service between 1999 and 2004.

From 2004 to 2005 Barp worked in China as After-Sales Director for the Ferrari and Maserati brands, and from 2005 to 2010 he worked as After-Sales Director for Ferrari in Western Europe, first in Paris and then in Lyon.

He assumed his current role as Director of the Ferrari Technical Assistance Service Division in 2010, and in 2015 he added another prestigious string to his bow by becoming Head of the Ferrari Classiche Department.

When I put him on the spot and ask him to quote a phrase that sums up his character, he replies with something that Winston Churchill used to say during the Blitz: "Never, never, never give up." It is this philosophy that helps you understand the nature of a man as strong as the steel his cars are made from. He hesitates to answer just once during our entire interview, when I ask him what his favourite Ferrari model is. He looks pensive, as though he couldn't possibly choose, as though each and every vehicle in the history of Ferrari is a part of his DNA, before finally replying that the cars which occupy a very special place in his heart are the 250 GTO, the Ferrari Testarossa, the 333 and the F12. And who could fault his choice? These are the cars of our dreams, cars that still bowl us over with their power and their beauty today.

We spend our two-hour interview in the elegant and high-tech surroundings of the beating heart of Ferrari's Technical Assistance Service Division, among close-knit colleagues who clearly know they are part of a team who bear the credibility and stability of the brand on their shoulders.

Mr. Barp, aside from the Sales Department, it's your division of Ferrari that interacts most with clients. What does being responsible for stimulating and nurturing the intimate relationship between Ferrari and its clients every single day mean to you?
The efficacy of our After-Sales Service acts as the ultimate benchmark against which our clients measure Ferrari as a group.

It's the part of the company that's in direct contact with end clients and is responsible for keeping them satisfied.

Ferrari has always fostered one-to-one relationships with its clients. It's rather like managing a pit stop – the speed with which you can react to the situation and decide what to do are absolutely essential in maintaining a level of service that conveys professionalism, seriousness and propriety. This translates into relationships that are based on implicit trust, trust that turns clients into life-long Ferrari aficionados. This is a huge responsibility, which is why the Technical Assistance Service and the men and women who work there need to be personable. In

Luigino Barp, Head of After-Sales at Ferrari.

many ways our profession is like a mission: You can only get through the stressful moments by showing complete and utter dedication.

It's a lot of work but it all becomes worthwhile when you see the satisfied smile of the client you've just helped out. To us that smile is like that of a Formula 1 driver getting out of their car after winning a grand prix.

This is, without a doubt, the product of innovations that have changed the after-sales world by putting clients and their needs first. What innovations have you introduced since you became Head of Department?

As I said before, speed and competence are the real linchpin of our work at the Technical Assistance Service.

To achieve the exceptional speed at which we work and the level of responsiveness we need, I expanded the Help Desk Service in Maranello and set up other decentralised national Help Desks in the USA, Dubai, China and Japan. I then followed those with Help Desks in Northern Europe, Central Europe and, last but not least, Western Europe.

These Help Desks are all interconnected and they all help each other out. They can solve problems at a national level, which can then be escalated to Maranello if need be.

In Maranello the Technical Assistance Service works closely with Quality Management, Technical Management and the Production Department with the aim of reporting the problem at all levels of the factory and receiving maximum support from them, providing information and resolving any critical situation with everyone's support. Real-time reporting across all parts of the Ferrari group is guaranteed by the "Red on Line" system. This acts as a veritable early warning system, sharing information about individual cases and the solutions to them on a database that each and every division or department has access to. This system is constantly evolving, and having it linked to the DEIS diagnostics system in real time enables us to resolve problems at lightning speed.

What's more, we've been monitoring the performance of our Assistance Network in real time for three years now, assessing it in terms of its responsiveness and measuring the results using the HPPS system, which is linked to local DEIS diagnostics systems.

To achieve these objectives it has been necessary to seek out partners who offer the very highest levels of quality and service and who are capable of meeting our high standards.

How do you go about finding partners like this and what do you require of the people you choose to work with?

The human factor is the most important thing we look for, because you need to attend to the client before you can start attending to their vehicle.

Thanks to the experience I've gained from working in different areas of the company and all over the world, I've been able to pick and choose the best partners who are not only superb engineers but who also have the dedication and the interpersonal skills that are indispensable in this profession.

It's extremely difficult to pinpoint what makes service technicians good at their job – they need to be dedicated and hard-working, but most importantly of all they can't ever give in. It's a continual learning curve and most spend an average of five years "on the front line".

If I understand correctly, some of your partners provide numerous services at the same time and cover all your needs in one specific sector or across multiple sectors. With regard to technical documentation in particular, has having a single point of contact benefited Ferrari?

I truly believe it's better to work with a small number of suppliers and this strategy has proven successful thus far. It means that anyone who works with my group becomes a partner straight away and provides all-round support solutions by preparing themselves to

resolve a variety of different problems. Our selection process was methodical and just one group (STAR Group – ed.) made it through, which they did by progressively preparing themselves to cover all our extra after-sales needs.

This has enabled us to boost our efficiency with a clear framework agreement in which effort and cost are discussed in multi-year plans, which guarantee to give this partner visibility and flexibility in the face of peaks in workload.

You've patented the DEIS Intelligence system for diagnosing and solving problems with in-car software from your office in Maranello – what exactly is this and how does it work?

Ferrari has patented the DEIS system – this is an advanced diagnostics system that allows mechanics to use a mobile device in their workshop to communicate with Maranello in real time, interfacing with the Help Desk, diagnostics archives, repair manuals, spare parts and anything else they need to make an accurate, definitive and rapid diagnosis.

Do you manage to arouse the same passion that we can hear in your words and see on the calm and collected faces of the people you work with in your network of dealers around the world?

As I said before, the men and women working in the Technical Assistance Service have passed a meticulous selection process that we have developed over a number of years. These staff know they're part of an elite and they take pride in that, which gives them a positive outlook all through the day because they know they can rely on an organisation that is always ready to help by sharing the load and the challenges, but also sharing the satisfaction that comes with success.

Luigino Barp's favourite Ferrari cars.

How do you train your dealers and evaluate your assistance network?

Whenever somebody new joins, all the people working in the newly authorised workshop are required to undertake assessments followed by preparatory training – both in the classroom and in the workshop – in order to promptly bring their skills into line with those of the other Ferrari workshops. We make them go through this process to discover hidden talent and close any gaps in their knowledge. Training is held at the Ferrari Academy. Participants complete a work placement with the Maranello Technical Assistance Service, where they get to meet the people in charge of the various departments and learn the different strategies. Joining the Group in such a pragmatic way also gives them the opportunity to really get to know the people they will be working with in the future.

Would it be fair to say that Ferrari owners not only have a unique and magnificent vehicle but also a fascination that will last as long as they have that vehicle?

Choosing to drive one of our racers is a sign of passion, maturity and the desire to stand out from the crowd. This warrants our undivided attention, attention that will definitely be rewarded by being faithful to our brand.

Once someone becomes a Ferrari fanatic, they will be a Ferrari fanatic forever.

We all believe, especially those of us in after-sales, that Ferrari owners are like F1 drivers at a pit stop – they're unique individuals who require unique assistance of the highest calibre.

You're also Head of the Ferrari Classiche Department. Tell us a bit about that: Tell us what it's like to work not only on maintaining and restoring splendour but also, first and foremost, on ensuring that tangible pieces of Ferrari's history will be preserved for posterity. It must be magical.

Ferrari Classiche is the heart and soul of the Ferrari world. I'd dreamed of heading this department for many years and finally, after slipping in almost unnoticed, I've had the pleasure of making the magic happen for two years now. I think it's the most coveted position for an experienced engineer who has dedicated more than half his life to Ferrari.

The department houses archives that are more complete and more confidential than those of any other car manufacturer. They contain technical drawings, the assembly instructions for all the Ferraris ever made, right from the first 125 S, our event race books, plus records of the details and features that enable us to restore the original splendour of all the vehicles our clients around the world ask us to refurbish and certify.

Restoration work starts with detailed research to find out how the car was furnished and equipped when it first left the factory. Then, with the owner's agreement, we decide how we're going to proceed.

Restoration work is entrusted to Ferrari's best and brightest mechanics and engineers, because the Ferrari Classiche Department is the epitome of excellence – it's a place for people who've spent their entire lives devoted to our red racing cars.

The department is steeped in history, the smell of mechanisms and machinery that are still at the forefront of technology fills the air; the magical feeling about the place is hard to describe, but it's a feeling that every sports car enthusiast should experience at least once – although it's difficult not to fall under its spell and start longing for your own unique piece of history afterwards. With regard to issuing classic cars with a Certificate of Authenticity, it's important to know that an approval committee meets once a month, which is chaired by the engineer Piero Ferrari and all the men who hold keys to the gates of that inimitable world.

Ferrari is the world's most famous and most respected car brand. This alchemy of passion and mastery is practised in a small centre in the province of Modena, where the air in Maranello and the surrounding area is thick with steel and octanes: What is it that makes this region so special (Lamborghini and Maserati are but a few miles away)?

Enzo Ferrari made the right decision in bringing his Scuderia workshops to Maranello thanks to the modesty and tenacity of the people who live here, people who are capable of sacrificing anything simply to hear the distinctive purr of an engine that you can discern even from many miles away. Whilst equally worthy of the utmost respect, the other brands in the region are our rivals, and their role is to continue spurring Ferrari on to achieve excellence across the board – excellence that drives and inspires those who decide to produce unique cars from sporting DNA.

One last question: What does the future hold for Luigino Barp?

And what a fitting question! Despite spending 30 years at the company, I still have all the spirit I did when I first arrived. I find it hard to imagine living a life without the engines, the problems and the cars that I'm working on today with the same passion that I've always had. Who knows what the future has in store for me? Whatever it is, as always, I'll be ready to greet it!

We say our good-byes and I shake the hand of this man whose expression and whose sparkling eyes bear witness to his abiding, almost carnal passion for his job and his factory: Ferrari.

The Training Centre managed by STAR Group.

Viewpoint from STAR and Dassault Systèmes

Deliver value through digital continuity

Manufactured goods producers are facing the constant erosion of margins. In the meantime, we are entering the age of experience, products are no longer enough, and consumers need to be involved in every stage of the value creation process.

Text: **François Versmée, Matthias Gutknecht** Photos: **Dassault Systèmes**

Adapting to this market trend is having a huge impact on enterprise information strategies. This is the case for the automotive industry, where global car sales should continue to grow, but long-term new car usages (car sharing, mobility urban car services, multi-modal urban transportation) will change business models and impact traditional players. All OEMs today are adapting their strategy to transform their customer value proposition from "car provider" to "mobility service provider."

In this context, after-sales activity used to represent significant margins for manufacturers with very little investment cost because of a captive audience following the acquisition of a vehicle (i.e. individuals favoring branded service stations to conduct maintenance). In parallel, increasing deregulation within the market requires that manufacturers restructure their organizations and the management of their current after-sales businesses to create new offerings and services for consumers in order to remain competitive against increasing competition from independent networks. Recent studies have shown that in 2014, after-sales represented

11% of the global automotive sales revenue, and 38% of the profit [source: Oliver Wyman 2015]. A study published by Bain & Co. in 2015 shows that industrial service champions make as much as 30% of their turnover in service operations and thereby achieve an above-average gross margin (39% compared with 27% in production). In addition, service operations are growing by 9% – almost twice as fast as production with 5% [source: Bain 2015]. Today, the after-sales domain is therefore at the heart of strategic digitalization initiatives for all automotive OEMs.

STAR and Dassault Systèmes have initiated collaboration with their customers to create value through digital continuity from engineering to after-sales. This collaborative initiative delivers:

- reduced cost and cycle time for the provision of after-sales information based on STAR Group's GRIPS IRIS V semantic information model
- increased customer satisfaction through improved quality and accuracy of information by providing configuration specific information
- new after-sales services and practices by tightly integrating on-demand information into smart services/processes and through the usage of feedback channels from after-sales back to engineering

Let's have a closer look at each of those three enabling drivers.

"The acceleration of product and process development through digital mockup and virtual factory forces the technical authoring team to react quickly with no time to rewrite technical information."

Semantic Information Model – Information Mirrors "Things"

The acceleration of product and process development through digital mockup and virtual factory forces the technical authoring team to react quickly with no time to rewrite technical information. The authoring process must be directly synchronized with the development process. Extensive integration of engineering systems (CAD, Product Lifecycle Management or PLM, software development) with the authoring environment allows automated data reconciliation and re-use of released 3D models, parts lists and specifications as well as elements of the software user interface for product documentation. To allow the authoring environment to depict product-centric content, information must be structured semantically: it must "mirror" the main entities/things of the after-sales world such as technical components, materials, consumables, tools, and technical data. In addition, it must have a product-centric organization that mirrors a bill of material instead of a document-centric organization that mirrors document chapters and sections. At the end of the day, such semantic information automates and accelerates the product communication process and its synchronization with development. Only semantic information that is organized in a product-centric fashion can achieve the digital continuity of technical information flows, thus further streamlining and accelerating the information provision process.

Personalization – Information Mirrors Product Families and Configuration

To cope with the increasing variety of models and the trend towards individualization, information management must provide precise and granular concepts that enable automatic personalization of product information. Semantic information simplifies the customization of information for complex products through "inheritance" of information among product families and filters out information that does not match the current configuration:

- An inheritance logic ensures that content can be "inherited," such as from the previous model, the family (e.g. electric side-view mirror) or the most general category (e.g. side-view mirror). That way a constructive change for all members of a family (e.g. replacing V-brakes with disc brakes) requires updates of only a few information units "inherited" by potentially dozens of different models instead of updating that information for dozens of models.
- Filtering capabilities allow the applicability of information to specific configuration options to be restricted (e.g. instructions for testing an electric engine would apply to an "electric mirror" and would not be includ-

François Versmée

François Versmée joined Dassault Systèmes in 2010 and is WW Director for Business Consulting in the sales organization. He previously worked as business consultant for several companies in PLM and digital manufacturing and as manufacturing process engineer in the high-tech industry. François is an electronics engineer from ISEP (Institut Superieur d'Electronique de Paris).

Matthias Gutknecht

Matthias Gutknecht joined STAR AG in 2014 as Business Development Manager for GRIPS. Prior to joining the STAR Group team, he worked as a Service Development Manager at Xerox Europe. Matthias has a PhD in Economics and Informatics from the University of Zurich.

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ed for a mirror without an electrical motor).
- Personalization improves the accuracy, the clarity and therefore the quality of information by providing information that is customized for the individual product.

On-Demand – Information Fuels Services and Processes

The combination of products and services or – in extreme cases – the marketing of products as part of a service (e.g. mobility or transportation service) places greater demands on service information. If a product is no longer sold but made available as a service, it only makes money if it works most of the time without interruption and trips to the repair shop are minimized. This requires dynamically generated information – for example, an individual time- and cost-optimized maintenance plan that is generated based on product configuration, intensity of use and the last performed service. The service information, time, consumables (lubricants, etc.) and tools needed are automatically identified and their availability ensured. The ultimate goal is to eliminate the service plan entirely and instead apply a predictive maintenance algorithm where data about product usage and wear-and-tear is used to determine the product's service requirements so as to avoid downtime or failure. The involvement of customers and partners in development, production and service processes on a large scale and the ever shorter product development cycles require efficient feedback mechanisms. Among other things, the use of user and service information as well as the frequency of causes and repair events must be recorded. End-user feedback in the field is collected and enables further on-demand analysis by technical authors, after sales, and engineering.

"Digital Continuity" from Engineering to After-Sales

In summary, STAR GRIPS semantic information management solutions combined with the Dassault Systèmes 3DEXPERIENCE platform enable collaboration between the engineering and production of highly individualized products and their accompanying services – making information ready for after-sales in the realm of the fourth industrial revolution and the internet of things.

About Dassault Systèmes

Dassault Systèmes, the 3DEXPERIENCE Company, provides businesses and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes, in all industries, in more than 140 countries.

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IoT

Business Models for the Internet of Things

Digital business model patterns are becoming ever more significant in physical industries because they promise huge economic benefits. The key to this is the Internet of Things, which allows physical products and digital services to be merged into hybrid solutions.

Text: **Dr. Markus Weinberger, Prof. Dr. Elgar Fleisch**

In the IoT, classic products are charged with a bundle of new sensor-based digital services and positioned with new value propositions (see fig. 1). These business models, which come in a variety of forms, are defined as Digitally Charged Products.

Their components range from free digital services offered with the product to inexpensive products financed through digital services with a high margin.

Further examples of Digitally Charged Products are: products that prevent counterfeits using a sensor-based digital handshake, products that themselves become sites of digital sales and marketing services, products that independently place orders on the Internet, and "smart" things that can transmit data about their own status or their environment in real time.

The general logic and details of the individual components of Digitally Charged Products, together with an abridged video version, can be found at http://www.iot-lab.ch/?page_id=10543.

In contrast to Digitally Charged Products, with sensor as a service, the data itself, rather than the data-generating products or the resulting services, becomes the central focus. It is the primary currency to be earned.

Measurements from the physical world are vertically integrated and collected, saved and processed not just for a single specific application, but also for a whole range of po-

Fig. 1.

tential applications – for an ecosystem, in other words.

Entrepreneurial challenges in implementing IoT business models

Companies in the manufacturing industries face particular challenges when implementing Internet of Things business models. The core issue is establishing a balance between the strategic and the operational characteristics of products and services and maintaining a sustainable optimum relationship between the two.

The differing characteristics of physical and digital products are particularly noticeable in product development. In the world of the Internet, agile development processes are the norm today. In the hardware business, however, and in the world of embedded computing as well, other conditions apply. Here, for example, an error in a product that has already been widely sold usually results in an extremely costly, image-damaging recall action. These differences due to technology and economics have led to divergent cultures in hardware and software departments.

The technical delta cannot simply be defined away. However, knowledge of the other side – hardware or software – can be built up. This gives key employees the necessary openness for profitable exchanges and a willingness to adopt best practices from the other's disciplines.

Handling application data

In most instances, hybrid solutions mean that the party offering them must have access to data that is constantly generated from application of the solution. This is new for classic production companies and brings with it many opportunities, but also some risks. The opportunities include input that is based on digital data so it is fine grained, unaltered, and complete and can be used to enhance the solution and/or develop new products.

The challenges relate to all the issues concerning the user's informational self-determination, in particular those regarding use in compliance with regulations and data security. It is beyond debate, however, that every hybrid solution needs a clear conception, transparent for all involved and reliably implemented, of how it handles application data that is generated by the customer. That is the only way that both the customer and the supplier can derive long-term benefits from the data.

Summary

Every physical atom that can profitably be replaced by a bit will be replaced. Digitization of hardware functions is advancing. As demonstrated, the IoT offers manufacturing industries the opportunity to develop new business models – and therefore to respond with agility to global challenges. Details of research into "Internet of Things business models" can be found here: www. iot-lab.ch/ and www.im.ethz.ch/.

Dr. Markus Weinberger

Dr. Markus Weinberger is the Director of the Bosch Internet of Things & Services Lab at the University of St. Gallen. During the last 15 years at Bosch he gained experience in such different fields as driver assistance systems, internal auditing and engineering services.

Prof. Dr. Elgar Fleisch

Prof. Dr. Elgar Fleisch is Professor of Information and Technology Management at the University of St. Gallen (ITEM-HSG) and ETH Zurich (D-MTEC). In his research, he and his team aim at understanding and designing the ongoing merge between the physical and digital world, a vision that was recently coined the "Internet of Things / Cyber Physical Systems."

STAR MT

Consolidating market leadership in an expanding translation sector

Two years ago, STAR recognised the need to expand its offering in translation services to include Machine Translation (MT). Despite Transit being one of the leading Translation Memory systems, STAR clients were demanding this additional service, and internally costs needed to be cut to remain competitive in the ever-changing translation and localisation industries. Engaging best-of-breed MT specialists – both developers and users – to ensure that this journey was successful, this culminated with the release of STAR MT in 2016. This report describes the steps taken on that journey, explains the background of the STAR MT system, and the advantages brought about from its complementarity with other STAR tools.

Text: **Professor Dr. Andy Way**

There are many estimates as to how much the translation industry is worth today, and how much it will expand over the coming years. For example, the size of the overall global language industry in 2015 was estimated at $38 billion, with estimates of up to $46 billion by 2016. Thought leaders in this field have even begun to estimate the worth of the machine translation (MT) sector; in August 2014, TAUS stated that the MT industry was worth $250 million.

This was a significant announcement for a number of reasons. First and foremost, it recognised that MT was already being used successfully for a number of use-cases; secondly, it noted that while this estimate might be seen to be on the low side, for MT companies even a small slice of $250 million was not to be sniffed at; and thirdly, it pointed out that MT technology is a key enabler and a force multiplier for new services, with innovative companies in IT and other sectors converging MT technology in new applications and products or using MT to enhance their existing products.

Just a few months before this announcement, STAR management recognised the need to add MT as a new, yet complementary service to its industry-leading translation memory (TM) offering, STAR Transit. Clients were inquiring about the possibility of having customised engines, which, compared to freely available engines such as Google Translate, are well-known to improve productivity in a secure environment, allow users to translate content that was not previously feasible due to time or cost constraints, and reduce time to market. Moreover, as ever in this industry, price pressure pointed to the cost savings that could be made by translators post-editing MT output in addition to TM fuzzy matches.

> "MT technology is a key enabler and a force multiplier for new services."

Recognising that building and deploying such a service could not be done wholly internally, STAR's MD Josef Zibung reached out to best-of-breed MT developers and experienced deployers of MT in industrial workflows. Right from the outset, he proposed a challenging agenda where MT should be incorporated into STAR's suite of offerings to clients, as well as using MT as an internal productivity enhancer, by early 2016. The consultants judged STAR to be well placed to provide MT to both current and new customers, given its status in the language industry as a provider of high-quality translation technology, and its large existing client-base across many vertical sectors. Accordingly, a plan was developed to set out to achieve this goal. Three main deadlines were set: (i) by Q4 2014, to build TM/MT combinations for English and German as source languages, and German, Italian, French and Brazilian Portuguese as target; (ii) by mid-2015, to have a robust, replicable MT pipeline with demonstrable benefit over and above the pure TM-based solution; and (iii) by Q1 2016, to start attracting major clients.

The Moses statistical MT (SMT) platform (Koehn et al., 2007) was proposed as the most likely architecture to deliver the service required by STAR. Moses is the leading freely available toolkit which enables phrase-based SMT engines to be built offline using a client's own training data. Typically, baseline engines built with one million words of text can be created in just a day or two, which with further refinements can be deployed for translating client data with good-quality output in just a few weeks.

While building customised engines was completely new to STAR, there was a broad selection of good-quality translation assets in different industry vertical sectors widely available within the organisation for training prototype SMT systems. There are two main elements to SMT engines: (i) a translation model, where a phrase-table of source–target translation (word and phrase) pairs is creat-

Professor Dr. Andy Way

Professor Dr. Andy Way is Professor in Computing at Dublin City University (DCU). He is also Deputy Director of the ADAPT Centre for Digital Content Technology (formerly CNGL), a world-leading €50 million multi-institutional research centre focusing on multilingual, multimodal globalisation of digital content. His research interests include all areas of machine translation, which he has applied to a career that has spanned academia and industry. As head of the "Transforming Global Content" Theme in ADAPT, Professor Way focuses on achieving translation of controlled quality, handling different levels of noise across multiple language pairs and domains and optimally leveraging human quality interactions for effective and authentic communication across language and cultural barriers. He has secured grants worth more than €64 million and published over 300 peer-reviewed papers. In 2015 Professor Way received the DCU President's Research Award in recognition of his contribution to the field of computing. From 2009–15, Professor Way was President of the European Association for Machine Translation, and from 2011–13 President of the International Association for Machine Translation. He has been Editor of the leading journal, Machine Translation, since 2007.

ed with their probabilities, and (ii) a language model, where target-language word and phrase sequences are stored together with their probabilities. The translation model is built from large collections of parallel sentential data, such as the aligned source and target pairs in a TM, while the language model is created typically from much larger collections of monolingual data, such as that available on the web. These two models are consulted at run-time during the decoding (or "search") phase, when the most likely translation for a given input sentence is output by the system, which maximises the probability of the multiplication of the translation and language models.

Initial tests were conducted on data sets in two domains, namely automotive and tools engineering. These were selected for a number of reasons, including (i) the range of language pairs available, (ii) the different domains of application, and (iii) the different nature of the text types involved. For the automotive tests, STAR built 18 engines for six language pairs (with Italian as the source language) across three sub-domains with very good performance. Using the automatic MT evaluation metric BLEU (Papineni et al., 2002), very encouraging scores could be seen from the baseline engines built. With a score of 100 indicating a "perfect" translation, scores of 70+ were seen for Spanish and French, over 60 for English, over 50 for Dutch and Czech, and above 40 for German.

For the engineering tests, 20 engines were built, again with high BLEU scores: for EN as the source language, scores of 60+ were obtained for Portuguese, above 50 for Dutch, Italian, Romanian, Danish, Swedish, and Spanish, over 40 for French, Chinese, and German, over 35 for Polish, Thai, Turkish, Korean, Hungarian, and 30+ for Czech and Japanese. Given its extremely productive morphology, translation into Finnish is acknowledged as the hardest test of any MT system, yet even here a BLEU score of over 15 was obtained. Where English was not the source language, BLEU scores of 33 were obtained for DE–EN and 55 for SV–EN.

If we analyse these results, the more closely related the two languages involved in the translation pair are, the less divergence we can expect in word order between the two languages, and the higher BLEU score we would expect. This is confirmed in these ex-

periments: for the automotive domain, where the source language is Italian, the best performance is seen for translation into other Romance languages (here, French and Spanish).

Note also that it is typically the case that translating into a morphologically poor language (like English) is easier than translating into a morphologically rich language (like German). Accordingly, note that building SMT systems for English to German and German to English from the same engineering TM gives different BLEU scores, with a significant increase for the latter language direction. Despite the fact that the word and phrase alignments are the same (albeit the other way round given the reverse translation direction), this is easily understood when one considers that the English language model contains far fewer morphological variants than its German counterpart.

These experimental findings were validated by expert human opinion. A selection of STAR translators were asked to evaluate the output, and post-edit certain sentences. These translation experts confirmed the scores obtained from the automatic evaluation, adjudging the output to be good with real speed-ups in translation throughput generated. It was especially noteworthy that many of the higher-scoring sentences output by the MT engines did not need to be edited at all.

Given this encouraging initial performance, across different domains with a variety of source and target languages, engine building continued quickly. System building was centralised in Sindelfingen, and a lot of effort was geared towards creating a robust, replicable MT pipeline that generated good target output no matter what the source and target languages. In further testing, STAR MT was demonstrated to offer more matches than with Transit alone, to double the amount of 100% exact matches, and to triple the amount of fuzzy matches between 75–99%.

In order to support the progress made by the STAR MT team, I was happy to attend the STAR AG 30th-anniversary event in September 2014 to present the benefits of using MT to STAR users, and the opportunities afforded by MT to STAR management worldwide. At the same time, STAR has been confident enough to report this ongoing progress at leading MT conferences such as EAMT-15 and the 2015 MT Summit. At EAMT-15 in Antalya, Turkey, and at MT Summit 2015 in Miami, Nadira Hofmann demonstrated the complementarity of TM and MT in a paper on MT-enhanced fuzzy matching with Transit NXT and STAR MT, where the best fuzzy match and most likely translation suggested by SMT were combined into a single, joint translation suggestion. Furthermore, STAR demonstrated its emergence as one of the main players in the European MT community by acting as the Gold Sponsor at EAMT-16 in Riga, Latvia. In summary, as the 30-year celebrations of STAR Germany approach, STAR MT offers clients a customised MT solution in a secure environment, in addition to a real-time web-based service. Integration with GRIPS permits MT-assisted authoring, while MT-assisted translation is offered with Transit NXT. This impressive suite of offerings appears to cement the organisation's position in the translation technology market, with the future appearing bright indeed. The MT community awaits with interest further reports of the success of STAR MT at future MT events worldwide!

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Hilti Group

Global campaign based in Liechtenstein

STAR enjoys a close working relationship with Hilti, a Liechtenstein-based global group of companies. Bernhard Walcher, Head of Documentation at the Hilti Group, talks about future challenges and Industry 4.0.

Interview: **Matthias Ackeret** Photos: **Hilti**

Mr Walcher, you have worked in technical documentation for many years. In your opinion, what are the special challenges that are faced in this area?
The products are generally more complex and diverse, while the product cycles are becoming increasingly shorter. Furthermore, the level to which software is used in electrical devices is gaining increasing importance. Due to the close link to development, technical editors are increasingly becoming suppliers of technical information – within the company and for end-customers.

"The challenge is to create standardised information structures."

The challenge here is to create standardised information structures in order to manage all languages centrally and to increase the degree to which information is re-used. The IRIS model in the GRIPS information management system offers structures for almost all information needs when it comes to product communication. With just a few enhancements, I have created a standardised yet customised information model. In doing so, it has become clear to me that the work of our technical editors is fundamentally changing: It is moving away from document-specific written texts towards creating and managing standardised and networked technical information modules. Thanks to this standardisation, both re-use and productivity have increased significantly.

The conversion from pure document creation to semantic information management is a real paradigm shift. What did that mean for the team of editors?
Not all of them could get used to it immediately. However, thanks to the extensive support in GRIPS and the many practical examples, the employees were able to familiarise themselves with the working method in a relatively short time.

What was the main change?
What are the "new editors" focusing on?
The editing focuses specifically on creating new information and maintaining it correctly. Thanks to the single-source principle, existing information is "passed on" and only linked. The integrated MindReader guarantees uniform formulations. The editor therefore no longer has to worry about the design of the instructions and information packages. Instead, they can concentrate on the new contents and their interconnections. In short: The technical editors are becoming information engineers.

Where does this road lead to? What are the challenges of the future?
We are constantly working on providing the market with information that is increasingly compatible to the text. If we take India as an example: More so than in other markets, many users here take on the care and main-

Bernhard Walcher

- Studies in mechanical engineering at Augsburg University of Applied Sciences, Head of Documentation and System Logistics (ILS) at RENK – first contact with GRIPS (information management solution from the STAR Group)
- 2006: Moved to the parent company (MAN Truck & Bus) – responsible for the area of System Logistics (ILS)
- Since 2013: Responsible for the overall process for instructions and Head of Technical Documentation

tenance of their devices themselves. To do this, they require more detailed information. With GRIPS, we have the option to prepare individualised information for specific user groups and brands.

Is the topic of digital transformation and/or Industry 4.0 also an important topic at Hilti?

Yes, of course. After all, Hilti also develops networked system solutions and software. This introduces the challenge of providing detailed information for every application from the perspective of processes. I assume that central information pools can supply users across the world with information in two to three years – tailored to the individual work processes.

Are you convinced that you can complete all of the tasks using this system?

Industry 4.0 assumes that information is processed semantically. We have already met this requirement and, with GRIPS, are well equipped for the future.

Hilti Group

The Hilti Group supplies the construction industry across the world with leading technological products, systems and services. These offer the professionals on the construction site innovative solutions with superior added value. More than 23,000 employees in over 120 countries impress customers and provide a better future. In 2015, Hilti generated sales of 4.4 billion francs. Integrity, courage to implement change, teamwork, and a high level of commitment form the foundation of the corporate culture. The Hilti Group's headquarters is located in Schaan in Liechtenstein.

Credit Suisse

Success story in Corporate Language Management

As one of the world's leading asset management companies specialising in investment banking and with a strong presence in its home market of Switzerland, Credit Suisse has varied multilingual communication requirements. To handle the resultant demanding translation and language tasks efficiently and inexpensively, Credit Suisse Language & Translation Services, the bank's internal language service provider which is part of the Global Business Support Services department in the COO division, has been using STAR CLM (Corporate Language Management) software for almost 10 years now. Simona Meucci Cimiotti, Head of Credit Suisse Language & Translation Services, explains the experience gained in the process.

Interview: **Matthias Ackeret** Photos: **Credit Suisse**

Simona Meucci Cimiotti

Simona Meucci Cimiotti is Head of Language & Translation Services (L&TS) at Credit Suisse. After graduating with a degree in foreign languages and literature from the University of Siena, Italy, she moved to Switzerland and joined the language services department of Credit Suisse as a translator 27 years ago. Active in the translation industry for over 30 years, she was responsible for the Italian translation team for many years before becoming the head of the bank's entire language service more than two years ago. L&TS is an organisation which, with a team of internal language specialists and a pool of selected external providers, provides its language services to all Credit Suisse employees around the world.

Ms Meucci Cimiotti, how did Credit Suisse Language & Translation Services come to use CLM software?

When my predecessor became Head of Credit Suisse Language & Translation Services in 2004, he found it to be a traditional internal language service provider: Two-thirds of the total volume was translated internally, incurring high unit costs. Existing translation memory (TM) software was only used selectively and at the discretion of individual translators. In general, the authority to make decisions was distributed among too many people, producing inconsistent results. Many processes were carried out entirely manually and were therefore prone to errors. In short, Language & Translation Services had to be modernised – in terms of strategy, structure, processes and software. After an intensive six-month analysis phase and the formulation of the new strategy – positioning as an in-house translation agency – two calls for tenders were issued in 2005/2006.

What kind of tenders did you seek and how did STAR AG come into play?

First of all, we issued a global call for tenders in order to identify translation service providers for standard texts, where internal resources had little or nothing to offer in terms of added value, with the best price/quality ratio and to conclude a contract with them. The second call for tenders related to the procurement of CLM software with integrated linguistic tools (translation memory system terminology database), interfaces to the internal customers and to external service providers and adequate management and reporting functions. Some leading international providers of these tools were invited to submit tenders, including STAR AG.

And, needless to say, STAR AG came out on top. What made you choose STAR?

In addition to a host of other criteria, four points were critical: Firstly, STAR was the only provider to have a capacity management and order allocation tool which was capable of upgrade and development, a central requirement in the call for tenders. Secondly, the workflows enabled processes to be handled flexibly and they were not bound to rigid hierarchical levels. Thirdly, the fact that STAR is located nearby enabled straightforward on-site support, especially during the project phase. And the fourth, and almost the most important, point relates to STAR's track record. We consider this to be proof that the company sees through to implementation all projects they commit to and will not leave the customer midway through the project if things become a little difficult.

How has CLM proved itself in practice and what impact has the software had?

As with most IT projects, there were some teething problems at the beginning, but we got to grips with these issues relatively quickly, for instance by migrating local server implementation to a central CITRIX environment. In terms of the business model

One of the teams at work in Zurich, where the German and English translation teams are based along with Management Support and Central Services. The other internal language teams are based in the Swiss regions of Geneva and Lugano, as well as in Beijing, Toronto, São Paulo, Moscow and Tokyo.

and daily work of Language & Translation Services, CLM has by far exceeded our expectations and objectives: Processes have been standardised and automated where possible and resources – whether internal or external – are used optimally in a manner adapted to the different text types and quality requirements. Compared to before, the text volumes are managed with significantly fewer resources, which has drastically reduced the unit costs – and this has been achieved without affecting customer satisfaction. To give you an idea of the savings, I would like to mention at this point that the investment in CLM paid off in full after just under two years, which shows that STAR CLM can even be used by a language service provider with a large number of small orders to maximise profit, as is the case with us.

Where are you headed with CLM and Language & Translation Services?

On the one hand, STAR CLM is being developed continuously, for example to include quality assurance functions; on the other hand, the architecture is so flexible that we were able to integrate a machine translation module seamlessly into CLM with negligible effort a whole year ago. Machine translation is another tool which allows us to make optimum use of resources and to reduce costs – issues which are of constant concern to any language service provider. We are currently working on reviewing our business model and various sourcing options again. It is clear that translations and the cost-efficient, centralised management thereof will not lose their importance for a company like Credit Suisse in our globalised world. Each year, we translate just under 100,000 pages of text from around 50,000 individual customer orders that we receive via the CLM customer portal. These volumes can only be managed using suitable software solutions. Technology used for assistance will remain a crucial factor in ensuring that we are well-equipped for the future.

> "STAR was the only provider to have a capacity management tool which was capable of upgrade and development."

SBB

On the right track

Together with SBB Information Technology and SBB Language Services, STAR has developed a web-based terminology platform on the basis of WebTerm 7. Christian Trachsel (Data Architect) and Jean-Claude Genilloud (Head of Language Services) spoke about the project.

Interview: **Matthias Ackeret** Photos: **SBB**

Mr Trachsel, Mr Genilloud, how did this project come about?

Christian Trachsel: At SBB, we had a thematic glossary for definitions of terms. All employees were able to contribute their specialist knowledge and edit entries themselves on the basis of the Wiki principle. More than 15,000 entries were created in this way. The Wiki principle reached its limits as requirements grew: It was not possible to use data in a structured manner and the search options were limited. Our vision was a structured database with a modern look and feel, which can be used intuitively and is easy to populate.

Jean-Claude Genilloud: SBB Language Services developed extensive multilingual dictionaries with validated terminology which are primarily used for translations. Our idea was for even more employees to benefit from our terminology work and, at the same time, for terminology from the various divisions of SBB to be available in a single system using just one tool. We also wanted to do this to save costs.

What made you choose STAR?

Christian Trachsel: The call for tender showed that very few suppliers have experience with terminology and understand the requirements involved. What we really liked was that STAR did not simply tick off the catalogue of requirements with "Yes" or "No" but actually put a lot of thought into it. They really attempted to understand what we want to achieve and proposed the best solution for this.

Jean-Claude Genilloud: Furthermore, we knew what we were getting ourselves involved with: SBB already uses solutions from STAR, so we already knew STAR to be a reliable partner. In addition, the subject of data exchange between different providers' systems was also "ticked off" and superfluous.

How did you find implementation?

Christian Trachsel: Uncomplicated and focused on solutions. For me, the flexible development was a real highlight: STAR supplied prototypes quickly and regularly so that we could see what the result would be in every step of the process. This allowed us to provide feedback at an early stage so that details could be refined. In the event that we had additional requirements, unresolved issues or problems, they were analysed effectively and dealt with promptly.

Jean-Claude Genilloud: STAR made a valuable contribution towards integrating the varying requirements and processes, for thematic glossaries on the one hand and language service dictionaries on the other, working out common features and identifying where differentiation is required.

Christian Trachsel: After the system went live, the response was impressive: The first two days saw just under 2400 users sign up and 5500 searches performed.

Jean-Claude Genilloud: Within a short time, we received requests for terminology support and were asked to incorporate internal departmental terminology lists into the SBB dictionary. Now more and more departments are obviously recognising the importance of terminology; SBB Language Services has a stronger presence as a contact for matters relating to language.

Where do you go from here? What are your next objectives?

Jean-Claude Genilloud: We are in an excellent starting position to strengthen the creation of terminology, including beyond translation processes, and to continue to develop corporate language – wherever terminology is produced and used, including with external service providers such as advertising and communication agencies. The communicative brand positioning is also being integrated into SBB Language Services on an ongoing basis.

Christian Trachsel: After successfully launching on the Intranet, we have already started to incorporate terminology access into other SBB applications. We believe that the SOAP interface and structured data make us well prepared for this. To use railway terminology, we are on the right track with STAR; the signals are green.

Christian Trachsel

Christian Trachsel has been responsible for data architecture in SBB Information Technology since December 2011. In addition to technical data modelling, this also includes the technical meaning of data.

Jean-Claude Genilloud

Jean-Claude Genilloud, certified translator from the Faculty of Translation and Interpreting of the University of Geneva, has been Head of SBB Language Services since 2001. During this time, he has introduced modern resources to the Language Services department, in particular a terminology database which has been available to all SBB employees and external partners of the Language Services department for many years now.

Disruptive technologies

Structural coupling through semantic systems

Strategic complexity management has become extremely important in times of digitalisation. Our author explains why.

Text: **Dr Jürgen Spickers, Institute of Management, University of St. Gallen**

Dr Jürgen Spickers

Dr Jürgen Spickers has been Director of Management Courses at the Institute of Management at the University of St. Gallen since 1999. His work focuses on designing and implementing public and in-company further education concepts. In conjunction with the St. Gallen management model, which also includes management development issues, modern system theory also plays a significant role.

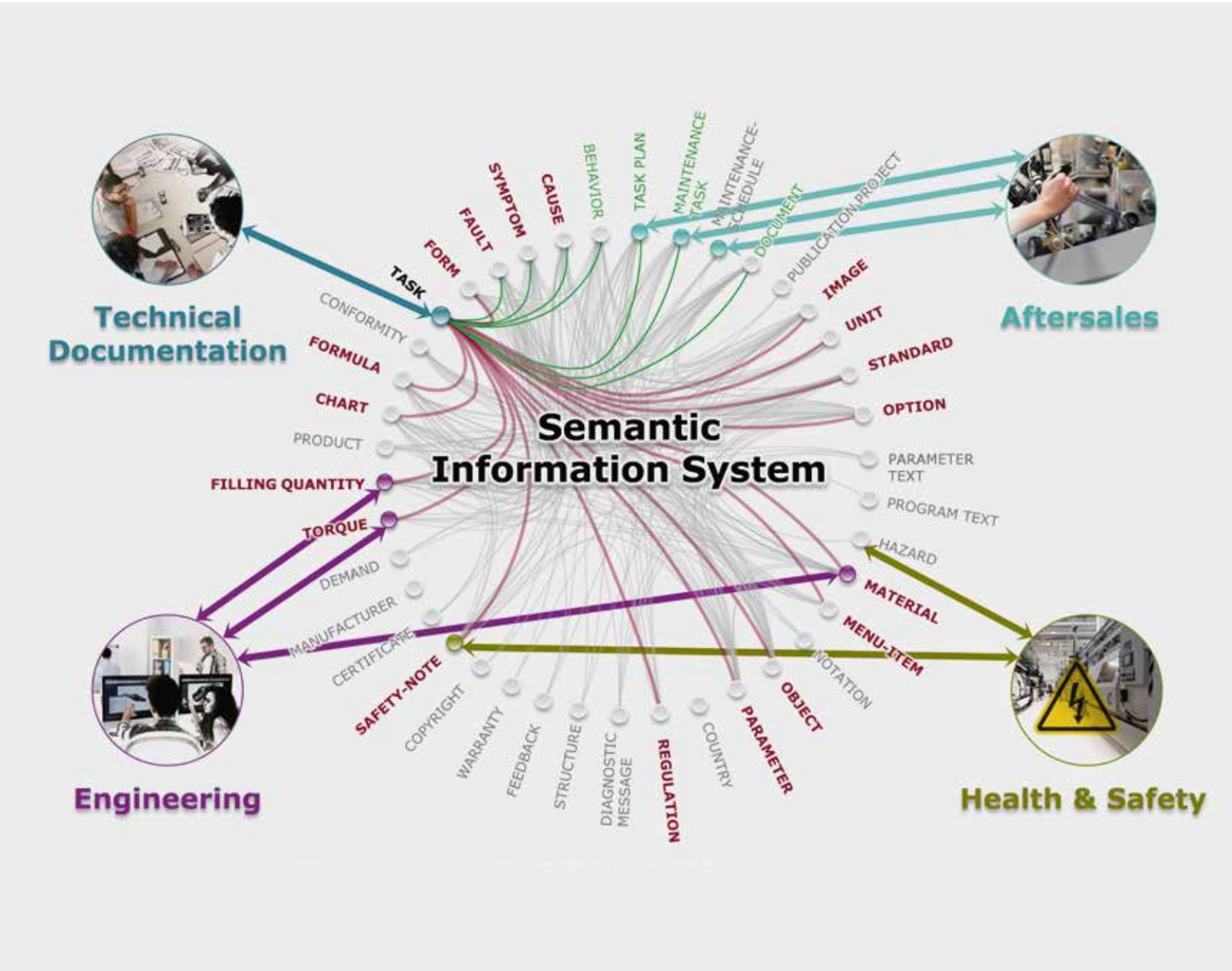
Digitalisation will remain the central driver of business model innovation for the foreseeable future. The Fourth Industrial Revolution and disruptive technologies are subjects that are on everyone's lips. In a trends report written by Accenture subsidiary and innovation agency FJORD, for example, all ten trends are in this context, including the provision of services when the need arises, the flattening of privileges and the atomisation of services.

For companies who appreciate and want to exploit the return potential of this development, the complexity of their environment therefore changes. As a consequence, they have to adjust their internal complexity. This is usually carried out via segments, centrality, hierarchy and functions to a greater or lesser extent (2). Functional differentiation is encountered particularly frequently. A study on the digital future by *MIT Sloan Management Review* and *Deloitte Digital* (3) also lists a whole series of new "digital" roles and responsibilities.

However, according to the study, it is regrettable that there is frequently a lack of alignment of activities, employees, values and structures with the aim of achieving company-wide digitalisation objectives and that there is no sufficient development of expertise in this regard. As a result, the management of digital initiatives reverts to project level, or it remains limited to activities within the functional units. The verdict is that this is not enough to reach "digital maturity" throughout the company. A study on digital transformation written at the Institute of Information Management of the University of St. Gallen reached a similar conclusion (4). A lack of understanding in senior management, rigid team structures and silo mentality are three of the six reasons for failure highlighted in the study.

How is digitalisation gaining importance in companies?

Today's "silos" are the result of past adjustments to internal complexity. If the systems that were differentiated at that time are to continue to exist, they require autonomy to address their reason for existence in order to reliably ensure that they can create value. This may be a particular market segment, technology or function, for example.



Structural coupling of organisational units with the semantic information system.

If other systems (for example management) now confront them with a phenomenon (for example digitalisation), they almost have to process this phenomenon through the primary filter of their initial role. However, this type of distributed digitalisation, as the aforementioned complaint states, still does not result in a mature business from a digital point of view.

The call for integration is made again and again. However, the more strictly the aforementioned autonomy of systems is understood and the more their operative coherence is considered to be an increasingly strict requirement for their highly selective informational openness, the more questionable the idea of parts and whole – and therefore of integration – becomes. Sociologist Niklas Luhmann therefore proposed replacing integration with the concept of structural coupling (5). It applies to the autonomous structural formation of systems and describes the selective, environmental focus of said formation that is being coupled to these structures in a manner compatible with that of closed operation.

Since entrepreneurial value creation is usually organised, i.e. decisions are taken relating to value creation, employees have always been tempted to deal with overarching subjects by organising them around projects. This creates projects as independent decision systems which are then differentiated into further projects for the most part and to which the established systems can be coupled structurally, for example by seconding project members. Firstly, this intersects all forms of value creation organised in hierarchies; secondly, it is a temporalised form of work and thirdly, it does not affect value creation itself but rather the decision relating to the latter. This might be the reason why the MIT and Deloitte report considers the project-based approach to be incompatible with achieving digital business maturity.

Semantic technologies for creating value

For value creation systems, it is attractive for them to be coupled structurally with systems which are closely oriented towards their ma-

terial or immaterial output and also have durable and strong intrinsic logic which can be used to benefit value creation – specifically in their digitalised form too.

Semantic technologies can play a significant role here. The fact that they provide clear information is attractive both from the point of view of subsystems and the entire company. Their bidirectional character, i.e. using and managing the information primarily by the subsystems coupled to the semantic technologies, is based on a concentrated, lasting and company-wide coordinated alignment of couplings.

These semantic technologies are a substantial anchor point in the strategic, future-oriented examination of the potential of digitalisation primarily as a result of the information that is tailored in real time to the individual requirements of the coupled system using these technologies with appropriate security (for example for spontaneous maintenance at an opportune moment, see the micro-moments trend mentioned in the FJORD report).

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HILTI
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