PHOTO_SAP

Jim Hagemann Snabe, Co-CEO

The software giant SAP is undergoing a transformation: The world-renowned German high-tech company is no longer focusing exclusively on its core business of enterprise software but is branching out into new growth markets. With cloud computing, mobility, and in-memory computing, information can be accessed anytime, anywhere. "We have to be even faster and more innovative," says co-CEO Jim Hagemann Snabe.

SAP® BOSS SPEEDS UP WITH THE PORSCHE TURBO

_RAINER HUPE AND SARAH KAISER
_ULI REGENSCHEIT

It's no surprise that both the German insurance company AOK and the Japanese electronics retailer Yodobashi use enterprise software from SAP. Just how quickly the two companies have been able to accelerate their processes with the new SAP HANA in-memory database, however, is notable: AOK now needs a mere 20 minutes to execute evaluations that previously took 150 hours. And Yodobashi now filters loyalty rewards for its customers from incoming data within two seconds—a stunning improvement over the three days it used to take.

In media reports, the SAP HANA in-memory application, which no longer stores data on the hard drive but in memory, is already being lauded as a silver bullet: for the first time since SAP released its R/3 enterprise information system 20 years ago, the company has succeeded in bringing a groundbreaking innovation to market.

SAP had to work hard to make it happen. "A few years ago, we noticed that we were having difficulty in consistently bringing innovations to market," says Georg Kniese, the man responsible for the organization →

of the development units at SAP. "We've since made significant improvements in terms of quality, speed, and efficiency in the development process." And SAP won't be able to rest on its laurels: "Major changes are taking place in the software business right now," says co-CEO Jim Hagemann Snabe. Until now, SAP has been able to maintain its position as the global market leader by developing software for managing enterprise processes. "And we want to remain the global market leader in this area as well," says Snabe. The changing landscape has added three new fields to SAP's core business whose importance is sure to grow over the next few years and which depend on one quality above all: speed. Cloud computing, mobility, and in-memory computing. These three big software trends—(see below)—mark the most significant transformation in the world of IT since the advent of the Internet 20 years ago. At the same time, competitive pressures are on the rise, as are customers' expectations: they want to be able to access information efficiently at any time and from anywhere—via smartphone or tablet apps or through cloud services on their laptops. Snabe knows the stakes are high: "SAP is getting a lot faster. We are now delivering innovations after just a few weeks rather than months. And we have made our processes much more customer-oriented so that we understand what they really need."

HANA is proof positive that SAP has recognized these three new growth markets. And it shows that SAP has found a solution to the challenges associated with the transition: systematic processes according to the principles of lean management (see right: The Path to Lean Knowledge Work). Over three years ago, a small team within the company began to examine whether knowledge work could be compatible with an interval-based approach. Software development, after all, is a highly complex, creative process. And the organization is huge: 15,000 employees in eleven countries working on around 150 projects simultaneously. That's why it took SAP up to one and a half years to bring a new product to market. During a visit to the Porsche production facility in Stuttgart-Zuffenhausen in 2008, Snabe came into contact with Porsche Consulting. He knew right away that he wanted to have the Porsche turbo working for his company too: "I was completely convinced that lean management is the right approach for us. But we had to find a way to make it work for SAP, because we can't organize software development in four-minute intervals."

Subsequent discussions within the company were not easy—many SAP employees were of the opinion that software development cannot →

THE PATH TO LEAN KNOWLEDGE WORK

Is a takt-based approach suitable for knowledge work? Can creative processes like software development be managed according to lean production methods? Organized, disciplined, standardized, according to strict time specifications, in teams for clearly defined goals? And the answer is: yes—if the methods are adapted to the requirements of knowledge work. After a pilot project in 2008, SAP rolled out lean management principles in the entire development organization. Currently sales and support functions are getting lean. Not only structures and processes, but also the leadership culture, is under scrutiny.

On the production line, it quickly becomes obvious whether or not waste has found its way into the process. For example, when employees look for parts. A software developer's work is less

transparent. "We realized very quickly that we would have to tailor the lean principles to meet the specific needs of knowledge workers," says Dr. Ulrich Guddat, partner at Porsche Consulting. His team therefore began the process by looking at the company not as a whole but at individual SAP employees and their work processes: "We accompanied individual developers during their work to get an idea of what their days look like and what tasks and challenges are associated with their jobs," says Darius Khodawandi, principal at Porsche Consulting. It emerged that only a quarter of their time was occupied with value-creating activities. The cause was the fundamental modus operandi according to the V model: at the beginning of any development process at SAP, the product manager would compose a multi-page document containing the required specifications for the software based on customer requirements. Then the tasks would be distributed among the various teams, which, however, worked independently of each other. Frequently a developer would be involved in 5 to 10 different projects →

THE THREE BIG SOFTWARE TRENDS

Cloud Computing

Put simply, cloud computing means that computer programs are no longer operated by the user or provided locally but made available as a service from an external provider. Applications and data are no longer located on the local computer or in the company computer center but in a "cloud." The remote systems are accessed via a network such as the Internet. Instead of transferring ever-rising volumes of data from one device to another via USB flash drive or e-mail, the cloud ensures continuous access to everything—from a PC, smartphone, or tablet. Cloud computing promises lower costs, greater flexibility, and the possibility of using current applications and technologies immediately.
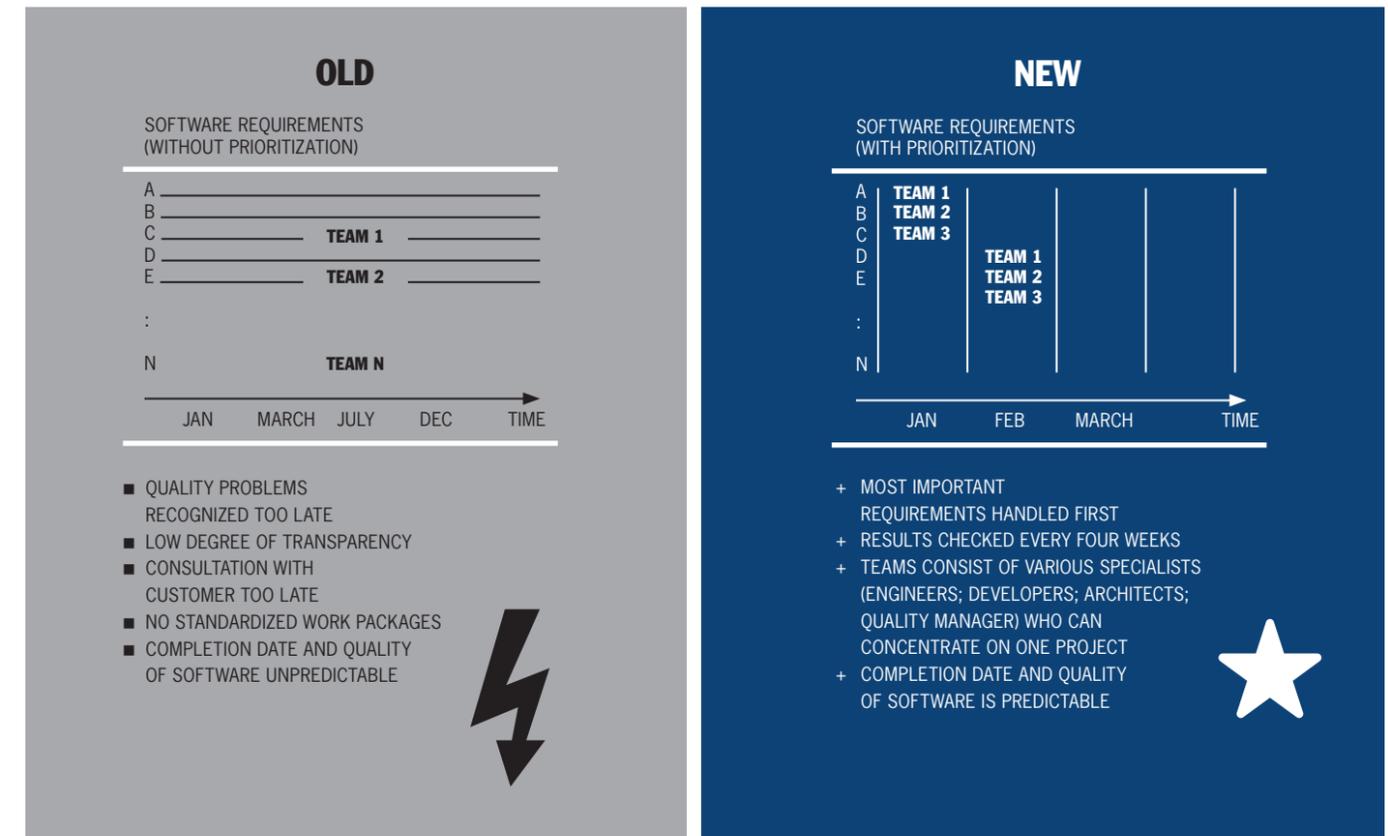
Mobility

Mobility refers to the processing of orders and business processes over the Internet, i.e. making information available to any user at any time or place. This has become possible through technical innovations such as software agents and communication between machines. For example, the ice cream company Langnese now couples the weather report with its software and thus calculates the appropriate production amount.
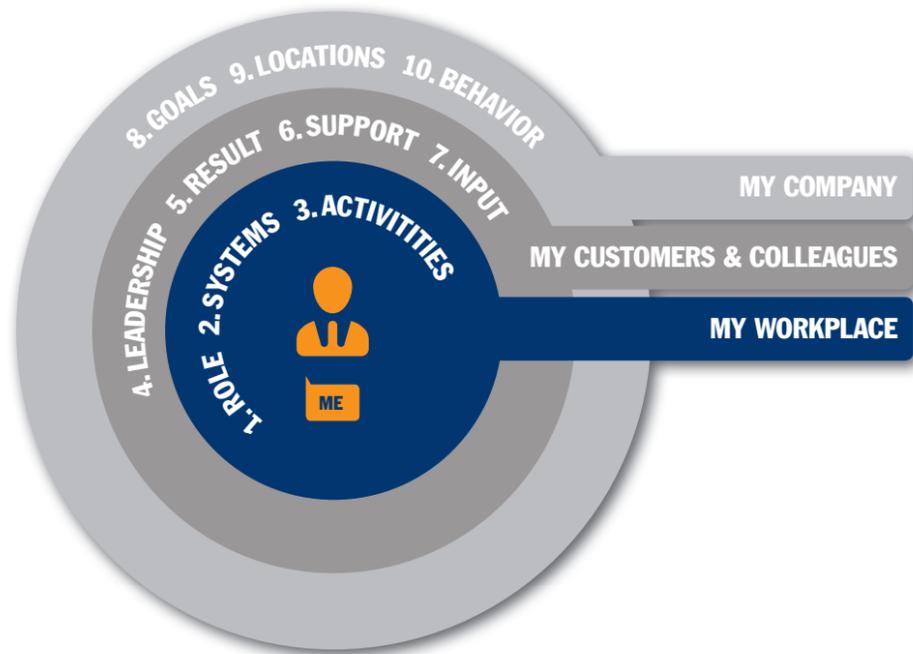
In-Memory Computing

Companies' data volumes are growing exponentially—yet the time available to make informed, data-driven decisions is getting ever shorter. In-memory computing provides information in real time—enabling fast and cost-effective analysis of even large data volumes and reduction of the overall complexity of the IT landscape. It works by storing data in memory rather than on hard drives or in the cache. This accelerates data processing substantially. SAP has made a name for itself in this area with SAP HANA.
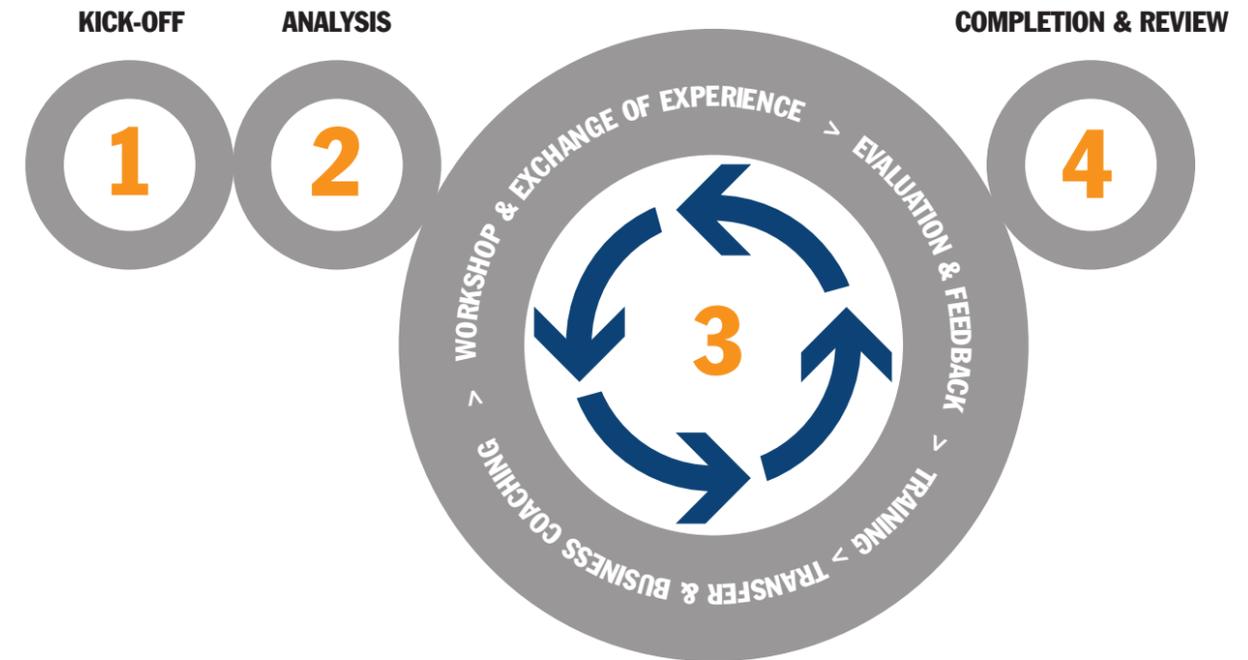
LEAN SOFTWARE DEVELOPMENT

OLD

SOFTWARE REQUIREMENTS
(WITHOUT PRIORITIZATION)

A
B
C ——————— TEAM 1 ———————
D
E ——————— TEAM 2 ———————

:

N   TEAM N

JAN   MARCH   JULY   DEC   TIME

- QUALITY PROBLEMS RECOGNIZED TOO LATE
- LOW DEGREE OF TRANSPARENCY
- CONSULTATION WITH CUSTOMER TOO LATE
- NO STANDARDIZED WORK PACKAGES
- COMPLETION DATE AND QUALITY OF SOFTWARE UNPREDICTABLE

NEW

SOFTWARE REQUIREMENTS
(WITH PRIORITIZATION)

A TEAM 1
B TEAM 2
C TEAM 3
D   TEAM 1
E   TEAM 2
        TEAM 3
:
N

JAN   FEB   MARCH   TIME

+ MOST IMPORTANT REQUIREMENTS HANDLED FIRST
+ RESULTS CHECKED EVERY FOUR WEEKS
+ TEAMS CONSIST OF VARIOUS SPECIALISTS (ENGINEERS; DEVELOPERS; ARCHITECTS; QUALITY MANAGER) WHO CAN CONCENTRATE ON ONE PROJECT
+ COMPLETION DATE AND QUALITY OF SOFTWARE IS PREDICTABLE

Before/after Comparison of Software Development at SAP

THE PERFECT DAY

8. GOALS 9. LOCATIONS 10. BEHAVIOR
5. RESULT 6. SUPPORT 7. INPUT
4. LEADERSHIP 1. ROLE 2. SYSTEMS 3. ACTIVITITIES

ME

MY COMPANY

MY CUSTOMERS & COLLEAGUES

MY WORKPLACE

LEAN LEADERSHIP IS BASED ON A LEARNING CIRCLE

KICK-OFF ANALYSIS COMPLETION & REVIEW

1 **2** **4**

WORKSHOP & EXCHANGE OF EXPERIENCE > EVALUATION & FEEDBACK > TRAINING > TRANSFER & BUSINESS COACHING >

3

at a time. The product manager would only check the requirements at the end of the development process and only then consult the customer again. The disadvantages are evident: quality problems or the need to adapt to changing customer requirements were only noticed very late in the process. "Individual employees wasted a lot of time with "mental preparation" between the different simultaneous projects," says Khodawandi. Real teamwork was not possible.

With assistance from Porsche Consulting, SAP has instituted a new lean development model ("Lean Software Development," p. 23): tasks are bundled into four-week takts and executed by teams of roughly ten people ("Teams of Ten") working at a single location ("Co-Location"). The developers concentrate on a single project. Specifications are processed according to priority and the results checked after each takt. The results are impressive, with productivity gains of over 40 percent. And thanks to continuous improvement, the gains just keep coming.

The lean development model is not the only change at SAP. Together with Porsche Consulting, SAP created a requirement model for the

"perfect day." Criteria that impact the productivity of knowledge workers were defined in three dimensions: "my workplace," "my customers and colleagues," and "my company." These include, for example, employees receiving role-specific training that corresponds to their positions, or receiving constructive and timely feedback about their work results. "The approaches that improve a knowledge worker's productivity are multifaceted. The greater the degree to which the ten requirements of a perfect workday are fulfilled, the more productive the knowledge worker is," says Khodawandi. "The "perfect day" helps us to make the weaknesses more transparent from the role's perspective and thereby increase the productivity of every single employee," says Herbert Illgner, Chief Process Officer at SAP.

To ensure that "lean" ideas take root in employees' minds, around 1,000 development managers worldwide go through the Lean Leadership Program (LLP). It is essential for managers to exemplify lean principles to achieve continuous improvement. The procedure at LLP follows a standardized model (see LLP

Business coach and principal Anette Bartram:
"A manager can't be afraid of red lights."

graphic). First, there is an introductory event (phase 1) at which the aims and sequence of the program are introduced and discussed and individual support needs are dealt with. In phase 2, the behavior of management is analyzed as members of

management are 'shadowed' for a day by business coaches. "This enables us to identify particular quirks, talents, and potential of the management as well as features of the management culture. For example, whether management hold feedback discussions or think too little in processes," explains principal Anette Bartram. After phase 2, a decision is made regarding how and when to work on features of the leadership culture and personal potential during the next few months. In addition, talents are strengthened—they are, after all, the basis of the management culture we wish to improve. Management behavior is trained and evaluated in workshops (phase 3). After that, all participants take stock together (phase 4). The results are positive: "Lean Leadership is the most successful program that we've ever done here at SAP," says Björn Goerke, Senior Vice President for Technology and Platform Core at SAP. Anette Bartram observes: "The managers now approach their environment more thoughtfully. They have learned to ask the right questions, assign tasks in a clear way, and talk about pleasant as well as unpleasant topics." ←

Not only processes and management policy have changed at SAP. Lean management also improves the physical work environment. In SAP's "Office Space for Teams" concept, teams will work together on projects in open offices.

PHOTO_ZOOEY BRAUN

"LEAN SUITS SAP BECAUSE IT PUTS EMPLOYEES IN THE CENTER."

"WE WERE HAVING DIFFICULTY IN CONSISTENTLY BRINGING INNOVATIONS TO MARKET."

Georg Kniese, Chief Operating Officer Products&Solutions SAP

Herbert Illgner, Chief Process Officer SAP

→ be pressed into a "lean template." "Lean suits SAP well because it puts employees in the center", says Herbert Illgner, the organization's Chief Process Officer. "Lean gives developers leeway to create innovations through process improvements while also ensuring that they have the full support of management when putting the innovations into effective practice." Porsche Consulting's approach was helpful for the change process. Normally consultants come into the company with a great deal of zeal and tell everyone, "OK, so this is what you have to do," says Kniese. "But Porsche Consulting was open enough to let the dis-

cussion within SAP take place and support it although it was sometimes not easy to do so."

In 2009, SAP began the "go-lean" process in earnest, in each of its major business areas; it became clear that the new web-based software solution Business ByDesign was in trouble and would be launched some 18 months later than planned. It was equally clear to all involved that they would have to produce an update for the on-demand product every six months—and that they couldn't afford such delays in the future. The solution: the development processes were put on an interval schedule in accordance with lean management methods. Instead of stretching out the software development process for up to one and a half years, the tasks were broken down into takts of four weeks and distributed to teams of about ten people. The breakthrough came in 2010: With the relaunch of "ByDesign," for the first time SAP was finished with a product by the scheduled date and in the desired quality. And not only that: Employee satisfaction with regard to teamwork improved and the "lone warrior" phenomenon became a thing of the past. To further support the team-based approach, the "Office Space for Teams" project was created by the technology development department. A new, open-office concept promotes interdisciplinary team communication and cooperation, and has already proven itself in the pilot phase.

In addition to structures and processes, the leadership culture was also examined. "Since with knowledge work there are no physically visible results, leadership is all the more important," says Dr. Ulrich Guddat, partner at Porsche Consulting. Only when leadership behavior changes does the lean management model really take root in the company, and

a continuous improvement process is established that goes beyond the one-time introduction of a new method and begins to be maintained by the employees themselves. But what is "lean leadership?" "A lean leader leads in a results-oriented manner," explains Anette Bartram, principal at Porsche Consulting and responsible for the lean leadership portfolio. "He monitors key figures for quality, costs, delivery, and motivation— and reacts when deviations occur." To do so, a lean leader always has to know what's happening on site and have no fear of "red lights." In traditional companies, by contrast, problems are often concealed out of a fear of looking bad in front of management. Productivity gains of more than 40 percent at SAP are a compelling indicator of success. Snabe also sees major competitive advantages for SAP. In the past, companies presented software to customers after a year of development. "And if they weren't satisfied, we needed another year to implement their suggestions." Now SAP can present results every four weeks. A visibly content Snabe sums up: "The upshot is that we're much faster and much better at responding to customers' wishes." SAP HANA is proof. "HANA is the fastest-growing product in the history of SAP," says Snabe. In 2011, the southern German company had sales of 160 million euros with the new product.

And a new concept called "Design Thinking" is providing a new impetus for innovations. This approach looks at problems strictly from the customer's point of view. A pilot project with the IT talent incubator Hasso Plattner Institut resulted in a new first: it took a mere three months to create an app for planning, executing, and post-processing cruises. Snabe plans to keep the turbo running: "Innovations are the basis for all growth." ←