DevOps & Continuous Delivery

Sogeti – DevOps Customer Enablement

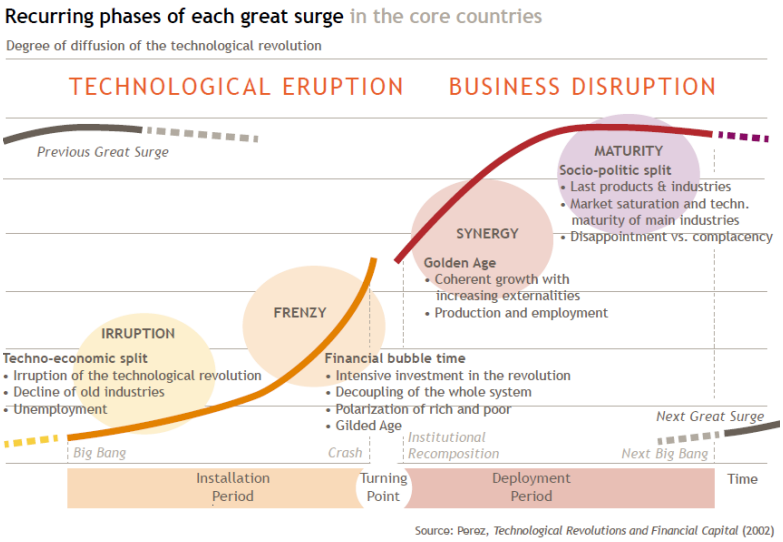
2016

Businesses have to adapt fast in order to survive, and old, trusted ways of doing things are being overturned in favor of new models and methods. In the recent State of DevOps 2015 Report it was found that “Firms with high-performing IT organizations were twice as likely to exceed their profitability, market share and productivity goals” and that “IT performance strongly correlates with well-known DevOps practices such as use of version control and continuous delivery.” DevOps is an emerging and rapidly maturing movement and philosophy with varying definitions and perspectives discussed in technology circles. Agile practices and integration are key pieces of the DevOps story and inherently introduce new levels of change that Sogeti, with its market position and pedigree, is well placed to navigate and manage. Sogeti’s Point of View (PoV) stems from an outside-in view with user experience being the focus. For Business, Development, Quality Assurance and Operations this implies continuous software delivery as-a-service, quality assurance as-a-service, and infrastructure as-a-service in an integrated manner. Silos should disappear and all people and processes merge to focus on key drivers: customer satisfaction, resilience, time-to-market, and cost efficiency. A key enabler for the success of these is end-to-end automation.

The Digital Enterprise

We are living in extraordinary times as the pace of business and life accelerates at an ever-increasing rate, fueled by growing levels of connectivity between people, devices, software and sensors. Such hyper connectivity enables access to real-time information that is changing the behavior and expectations of both worker and customer. Uncertainty really is 'the new normal' and the only constant in this new universe is change.

IT is truly changing and rapidly impacting our lives and businesses. The most recent State of DevOps 2015 Report released by Puppet Labs found that "Firms with high-performing IT organizations were twice as likely to exceed their profitability, market share and productivity goals" and that "IT performance strongly correlates with well-known DevOps practices such as use of version control and continuous delivery." Businesses have to adapt fast in order to survive, and old, trusted ways of doing things are being overturned in favor of new models and methods. Technology is the driver of the digital revolution currently sweeping through business and society, and players in the tech world are at the forefront of change. They must supply the software, products and services that engage with internal and external customers in a time, place and manner of their choosing – or risk extinction.



Source: Perez, *Technological Revolutions and Financial Capital* (2002)

Carlota Perez is the champion of the neo-Schumpeterian school of thought, who examines the great shifts in society that are brought about by technology. She portrays a period that lies behind us: the ICT installation stage. It took about 30 years to build this ICT infrastructure. After the outburst and excitement caused by this technology, a crisis (the dotcom crisis of 2000, and the stock exchange crisis of 2008) and a turning point follow. Next is the deployment stage, in which the technology is adopted. This is a transition from technology push to consumer pull, from disconnected to connected customers, from unrealistic expectations on the part of shareholders to high expectations of customers: this is the age of the digital enterprise. The digital enterprise makes the most of these digital opportunities at any given place in the organization, is equal to rapid changes, is data-driven, which enables it to operate smartly, is fully engaged with the customer and thinks and operates in ecosystems.

For the past three decades Sogeti has enjoyed a reputation as a global leader in Quality Assurance and Information Technology. We embrace the rapid changes that are impacting the world and are leveraging our expertise to support our customers to respond to the new ways in which software is being developed, tested and executed in order to enable our customers to go to market faster. The emerging paradigm of DevOps reflects the new "Mashup World" and organization; here, business, developers, quality assurance and operations teams work in collaboration and the customer journey is referenced and validated in one virtuous, continuous cycle, leading to delivering a continuous time to market.

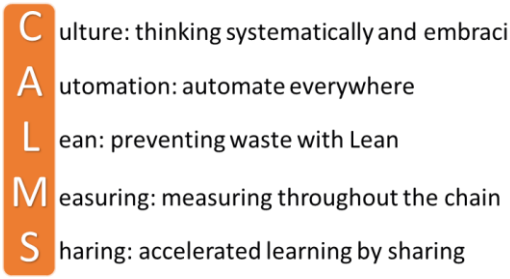
Agile practices and integration are key pieces of the DevOps story and inherently introduce new levels of change that Sogeti, with its market position and pedigree, is well placed to navigate and manage.

What is DevOps?

DevOps is an emerging and rapidly maturing movement and philosophy with varying definitions and perspectives discussed in technology circles. People do agree, however, that it's about tearing down silos, collaboration, and increasing value to customers and business, all supported by process, behavior and hybrid roles. It's a world where 'release' doesn't mean hard and scary but, more often, small and just 'normal'.

Gene Kim, author of The Phoenix Project and thought leader in the DevOps movement, provides some valuable guidance and offers the following definition: "The set of cultural norms and technical practices that enable organizations to have a fast flow of work from development through test and deployment, while preserving world-class reliability, availability, and security."

To further define DevOps there is also emerging support for five key pillars captured by the CALMS acronym.



A thorough explanation of CALMS and the Management Innovation required for a successful DevOps transformation may be found in Sogeti's recently released "Design to Disrupt – Mastering Digital Disruption with DevOps" report.

Instead of working in separate silos, business, software engineers, quality assurance and technical operations collaborate continuously to bring products to market faster that are highly usable. This entails moving away from the 'big design' that is worked out sequentially, from business to development through QA to operations, to an industrialized process where every facet is orchestrated and testing, provisioning and deployment is automated end-to-end. The regular release of smaller increments of function is a key facet of DevOps. Some of the more spectacular release statistics come from digital giant, Amazon. With 0.6 seconds mean time between deployments, and 5,700 deployments per hour, software is coded, tested, deployed on an industrial scale. However impressive these stats are, taken in isolation they are in danger of over-simplifying DevOps to a purpose of ever faster. In fact the goal is to be ever more responsive, ensuring code deployed is validated by the user requirements drawn from continuously updated customer sentiment.

In an ability to deliver software at these rates, the convergence of the end-to-end value delivery cycle is as much about a culture and ethos as a particular set of tools or methods. A culture of zero silos, built on agility that can build, release, run and repeat is intrinsic. Important too, is automation consisting of common and integrated tool sets, supported by Platform as a Service (PaaS) and Infrastructure as a Service (IaaS).

DevOps also triggers a possibility of a different architecture. We'll no longer build monolithic systems but instead look towards micro services that can be independently serviced and updated. Once you break everything into components and micro services, it's possible to separate functionality and to innovate items at different speeds.

An ecosystem where you don't rely on one single thing also creates new testing imperatives. When you go from rigid, to dynamic - or anti-fragile - the end goal is to deliver to production and respond to any issues that arise. Testing the fragility of technology by purposely killing things/services to see what happens is already part of the process in companies that are DevOps pioneers. It keeps programmers sharp and on task to code for the eventuality that a service might not be there.

Drivers

Customer Satisfaction

The customer experience and flow of value add services to the customer in a timely and responsive manner is the focus. The result is a system of engagement as a continuous service with the aim of quickly and continuously improving.

Resilience

The DevOps mindset improves resilience for both the organization and the systems used. Resilience is created because the organization allows itself to explicitly learn from failures and setbacks. Risks are mitigated by reducing the batch sizes and by enabling continuous interaction (feedback) between all team members and stakeholders.

Time-to-Market

Reducing the units of work and automating steps like integration, testing and deployment lead to faster implementations. Next to that, early stage experiments (e.g. hypotheses and prototyping), but also sharing knowledge and work among developers and support engineers before and after go-live enables continuous optimization of feedback loops.

Cost Efficiency

DevOps organizations differentiate themselves by explicitly applying the concepts of multidisciplinary teams and cross-functional behavior between team members. E.g. taking over (even partly) each other's tasks, or consistently sharing knowledge, practices and templates. Similar behavior is also identified between teams, which leads to new communities, increased reuse and sharing of knowledge and experience in continuous delivery pipelines.

Enablers

Management Innovation and Cultural Change

Because DevOps affects and changes culture, there is an important role for the leaders and managers in the organization. They have to explain what DevOps means in terms of culture and cultural change. Simply put: the rule set for behavior will change. Some behaviors need to be adapted or others might even be eliminated. New behavioral rules are introduced. Rules are always tested on scope and consequences. Behaviors which are allowed and reinforced become habits. This is true for both desired

and undesired behavior. Slowly but surely a new set of functional and less functional behavioral patterns emerges and becomes the new way of working; the new culture. In "How behavioral change fuels DevOps" a Sogeti publication authored by Dave van Herpen, a detailed exploration of the cultural aspects of DevOps is explored along with effective approaches to achieve change.

Automation

Organizations are rapidly moving towards infrastructure as code and the ability to deploy and refresh their complete application infrastructure in a repeatable model-based policy driven manner. This includes private cloud and public cloud through the operating system and application configurations.

Improvements in source code management and continuous integration tools enable development teams to more easily manage the highly iterative build and integration process and provide much greater traceability to requirements and production deployments. Extending the range of these tools to cover the entire DevOps life cycle through continuous delivery provides true overall process efficiency gains. Automated feedback and reporting on the readiness of an application release build for production every time a change is applied to application code, configuration, infrastructure and data is a critical empowering element for DevOps.

As per research from the latest World Quality Report, organizations currently automate 25-30% of their QA. In order to achieve a high level of maturity and excellence, nearly 100% automation is the logical target. "Almost everything needs to be automated when validation needs to happen earlier". This means automation cannot be limited to testing; automation has to be end-to-end from APM environments infrastructure through service message layer to test data management and build and deployment.

Conversely not as much testing is needed at the end of the lifecycle. So organizations should aim for as close as possible to 100% automation coverage throughout the whole cycle, which reduces the dangers associated with delivery. In order to move closer towards the goal, organizations must move towards continuous integration, build up collaboration with users, and be open to a process-change ethos.

Cloud

The ability of cloud to scale fast and balance processing loads allows for a speed-to-market undreamed of even a couple of years ago. Early suppliers and adopters of cloud once presumed its major benefit was as a budgeting mechanism that enabled a shift from capex to opex, and for customers to access processing on a 'pay as you go' basis. However it turns out that cloud is both an inspiration and a pre-requisite for DevOps for another reason – standardization.

Cloud computing is not only delivering faster speed-to-market, it is also the means for simplifying and embedding processes in an infrastructure in a standardized way. By configuring the infrastructure in this way, testers and developers all use the same deployment techniques and technologies: it's a vital step in virtualization and the end-to-end automation that is the other key component in the DevOps story.

Quality Engineering

Clearly there is a continued need for QA, whichever framework it happens in. Five years into the future - whether or not it is called testing - someone or some process will have to do the QA piece and apply the mind-set. If all the knowledge and process is encapsulated in the cloud, it will likely be a team

competence rather than a person. Our forecast therefore is that there will be a need for process verification, although content verification – fully automated – will remain the major piece of work.

Once QA is embedded in a process, then verification steps up a level and testing is likely to become part of a broader risk management or governance issue. Governance, with its management of risk and reputation, and Quality Assurance will be become more intimately intertwined, through the need to reference customer sentiment. User acceptance and business process may continue as discrete pieces of the testing but will form as part of a broader collaborative exercise.

Such a scenario calls for continuous testing of code through integrated teams and enabled by extensive end-to-end automation. It requires the build and maintenance of automation frameworks with continuous feedback delivered to the team about what's happening, and the use of releases from their job perspective. Once the status of the build has been evaluated, the decision can be made whether to go to the next stage, to stop or rework. With a DevOps style of validation in place, developers go into work knowing the quality of code they programmed the day before has been checked.

Security

Whether DevOps practices improve information security or they simply introduce new risks is a topic of debate. However, one thing is clear – information security considerations should be part of any DevOps implementation and injecting the right automation and operational tools, earlier into the development process, will increase the security of the code that ultimately reaches production. Security is the aggregate result of how all the individual pieces and parts work together and a holistic approach that includes automation of key vulnerability checks is a necessary component to success.

Business Needs

One of the hardest things for a business today is to produce software that keeps up with the pace of change that their customers demand. Gartner has identified a crucial tension in the proliferating demands on IT and prescribed a model to enable IT to respond to them with what it calls bimodal IT, a combination of old-style and modern IT practices.

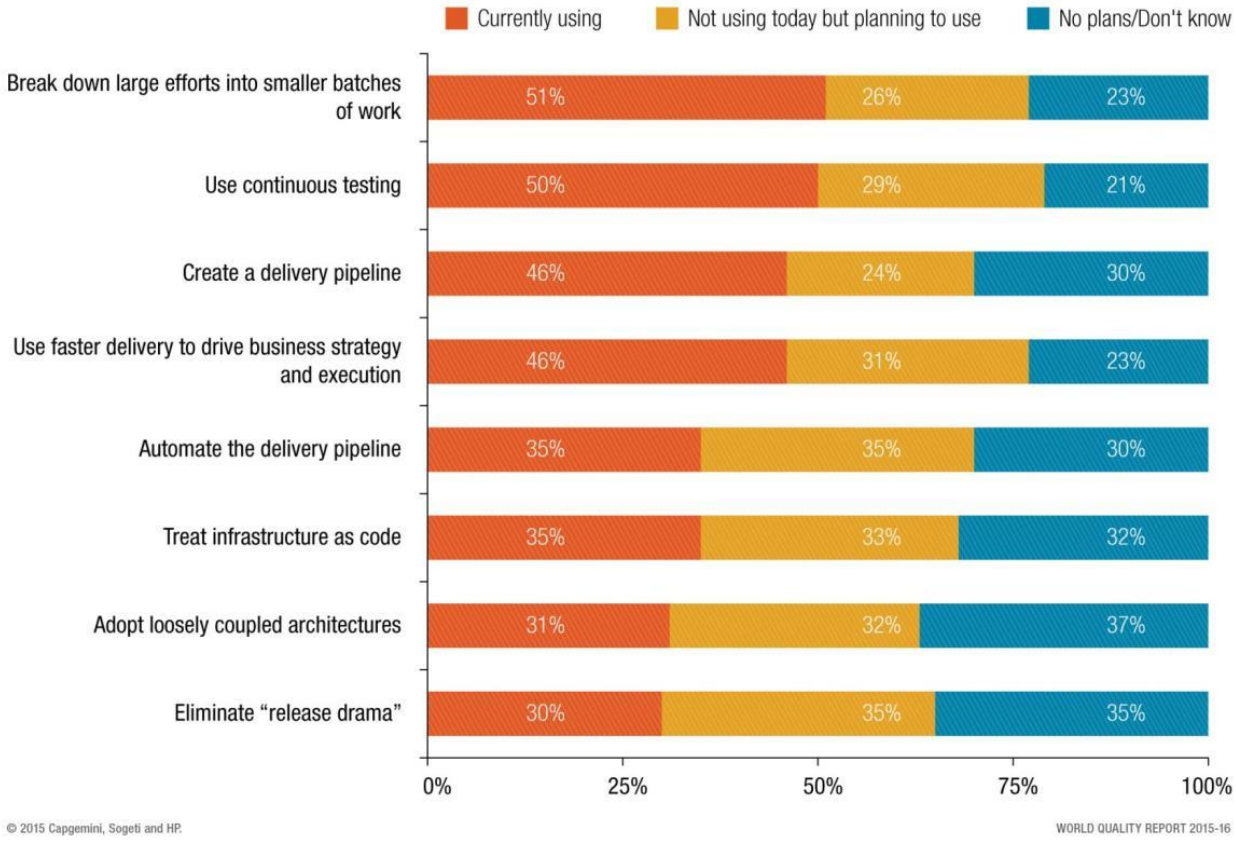
In software manufacturing, the speed of this change is one issue, but when combined with immature Dev, QA or Ops processes, poor alignment between business areas and failing integration, bigger problems occur. Patterns of technology and software adoption are also mutating and harder to predict. Once upon a time, uptake of technology was a predictable curve following on from the early adopters: now it is a case of a few experimenters and then acceptance happens in one Big Bang that companies struggle to adapt to or cope with.

The Internet of Things is also reaching far into the 'real world' with resulting systems of engagement and their fresh challenges for our customers. Systems of record are predictable and catered to by waterfall methods. But systems of engagement are different; they are about humans interacting with technology and the only way to create value with technology is through their adoption. Here it is about speed and quality, with zero tolerance from customers, who can step over to the competition in a click. New features only make sense when they are widely adopted and used, and customers need better awareness of adoption rates.

Organizations thus have plenty of business challenges to think about, not only speed to market but also about bringing down cost of delivery and increasing quality. In addition, they need to embrace and implement the Dev, QA and Ops models that will let them meet and deliver on these challenges. For them it is the coming together of ITIL, XP, Lean and Agile.

Sogeti's internal market intelligence tells us that 82% of businesses currently have problems with the quality and testing of Agile projects. With the extension to operations of Agile development in integrated DevOps teams, a host of new problems can pop up including: integrating QA with the new converged development and operations environment, managing the complexities of DevOps and implementing appropriate governance.

This intelligence also uncovers interesting insights into perceptions about and enthusiasm for DevOps and many of the core DevOps practices. The chart below, summarizes the state of DevOps Implementation practices across a range of areas.



The reality is that businesses require faster release cycles without compromising quality and a continuous, not waterfall, method of delivery. Today's current application delivery is one-way and entails a lot of waiting, bottlenecks, constraints, error-prone processes and lack of visibility. It's not suitable in today's software driven economy. DevOps orchestrates all inputs and enables organizations to find and fix problems. It provides transparency of what's going on from the customer level to the stack level.

Sogeti Point of View on DevOps

Many descriptions of DevOps in the market originate from the perspective that DevOps primarily concerns the integration of the three IT-disciplines and describes a new way for these IT disciplines to come together and produce the deliverable(s). In our opinion, this is a rather inside-out view from a process perspective.

Instead, Sogeti's PoV stems from an outside-in view with user experience being the focus and the correspondent continuous interaction with the user or tool. The result is a system of engagement as a continuous service with the aim of quickly and continuously improving customer experience.

For Business, Dev, QA and OPS this implies continuous software delivery as-a-service, quality assurance as-a-service, and infrastructure as-a-service in an integrated manner. Silos should disappear and all people and processes merge to focus on key drivers: customer satisfaction, resilience, time-to-market, and cost efficiency. A key enabler for the success of these is end-to-end automation. For a detailed perspective on the Sogeti PoV please refer to the recently release "Design to Disrupt – Mastering Digital Disruption with DevOps" report.

Sogeti Offering

Sogeti recognizes that the successful adoption of DevOps practices within a team or across an enterprise is a challenging undertaking that disrupts established processes, role definitions, reward systems, governance models and technology deployments.

While DevOps is a radically different way of doing things, it still needs people to plan, code, build, test, release, deploy and operate applications. Sogeti provides our customers specialist capabilities, and offers integrated execution as a service in a variety of flavors that suit a customer's maturity level.

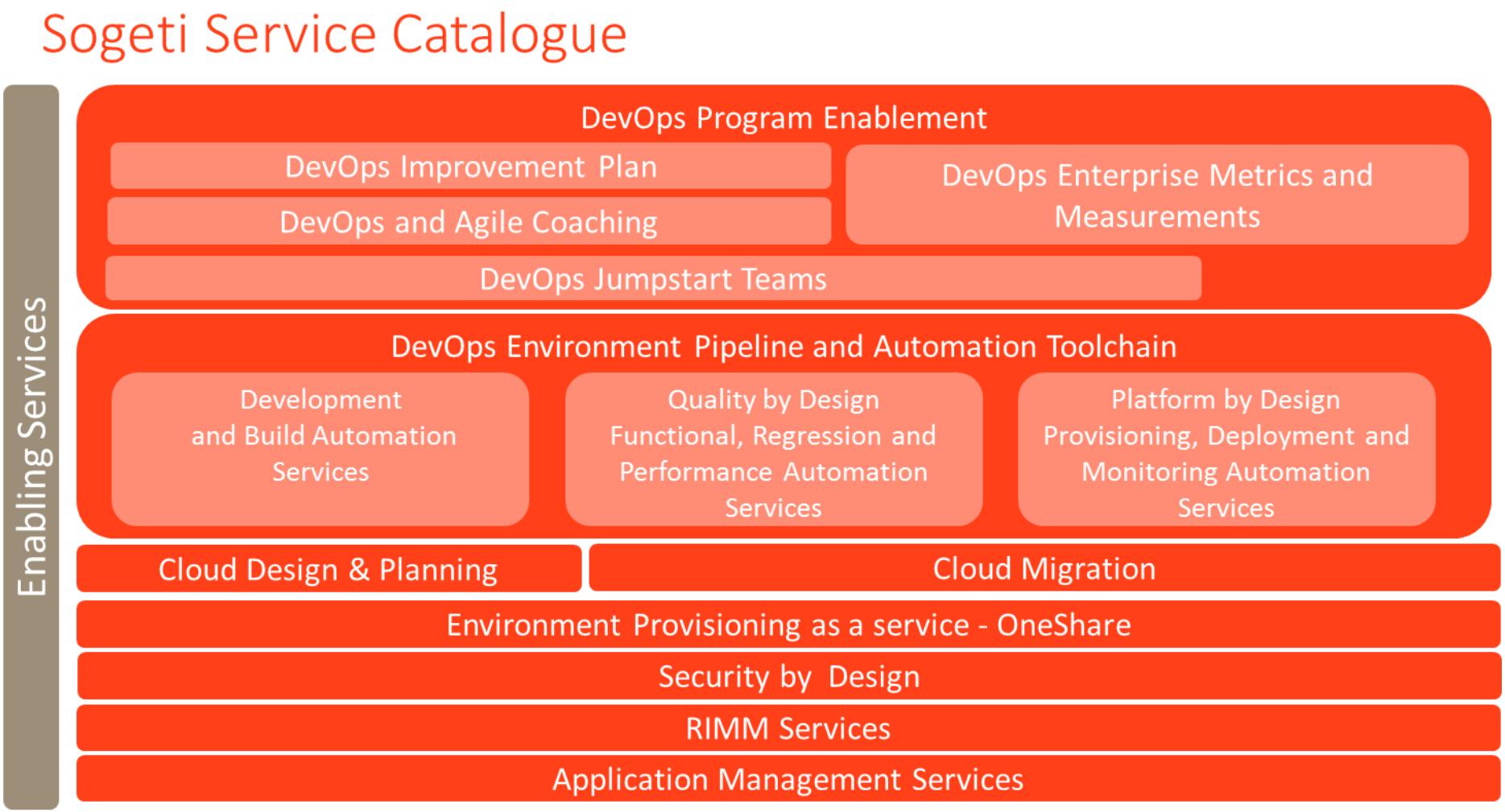
DevOps plays to Sogeti's strengths because, with its start-up feel and local organizational teams that do smaller, faster deals, we know what it means to operate in a multidisciplinary and lean manner. We fully understand our customers' desire to be competitive in a world where there are no business certainties and customers have the prerogative to change their mind – frequently.

For organizations on the DevOps transformation journey, Sogeti offers assistance in designing and implementing DevOps enablement programs. This includes value stream mapping of existing processes, improvement plans, DevOps and Agile coaching, and recommendations on enterprise metrics and measurements. Additionally, we offer services to implement end-to-end automation for the management, development, testing, security, provisioning, deployment and monitoring of services and applications.

Sogeti offers these services as both fully enabled team deployments and mixed team models where trained Sogeti consultants work along-side customer employees to accelerate the adoption of DevOps practices.

Please contact your local Sogeti representative for additional details on our offerings and capabilities to assist your organization.

Sogeti Service Catalogue



About Sogeti www.sogeti.com

Sogeti is a leading provider of technology and software testing, specializing in Application, Infrastructure and Engineering Services. Sogeti offers cutting-edge solutions around Testing, Business Intelligence & Analytics, Mobile, Cloud and Cyber Security, combining world class methodologies and its global delivery model, Rightshore®. Sogeti brings together more than 20,000 professionals in 15 countries and has a strong local presence in over 100 locations in Europe, USA and India. Sogeti is a wholly-owned subsidiary of Cap Gemini S.A., listed on the Paris Stock Exchange.

Credits:

SOGETI US DevOps working group
Cross Practice team of forward thinking IT Professionals

SOGETI Global DevOps Leadership Community
Multi-national group of experienced IT Professionals with wide ranging backgrounds
Key contributors: Andrew Winn, Christian Forsberg, Dave van Herpen, Diederik Vieleers, Erik van Ommeren, Jean-Francois Courtines, John Dial, Menno van Doorn, Yves Le Floch.

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