Service Integration and Management:

Motivation, Challenges and Best Practices

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Following the explanation of the SIaM **Motivation**, we describe the structural **Challenges** that our customers are facing when establishing an outsourced SIaM function. Several **Best Practices** such as a functional blueprint, tooling considerations and partner alignment prerequisites (Commonly Shared KPIs, a SIaM Information model and the Service Catalogue) provide guidance for anyone on the SIaM journey.

Finally the **Outlook** chapter explains the evolution of Service Integration towards Business Process Agility and links this capability to underlying technical capabilities such as Service Brokerage, Cloud Orchestration and Cloud Messaging.

The **Conclusions** chapter lists a set of key take-aways.

Service Integration and Management: Motivation, Challenges and Best Practices

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About the Atos Scientific Community
The Atos Scientific Community is a network of the 100 top scientists, representing a mix of all skills and backgrounds, and coming from all geographies where Atos operates. Publicly launched by Thierry Breton, Chairman and CEO of Atos, the establishment of this community highlights the importance of innovation in the dynamic IT services market and the need for a proactive approach to identify and anticipate game changing technologies.

Executive Summary

Multi-Vendor and selective sourcing have become mainstream in the IT market over the last 10 years. This has led to the need for Service Integration and Management (SIaM) as a distinct discipline that aggregates single IT services, aligning them to core business processes and priorities, as well as presenting them to the end-user community in a consistent "one face to the customer" manner.

Today, SIaM is predominantly executed in-house, but there is a tendency for IT departments to grow disproportionally as a result. With the growing need for SIaM, public and private sector institutions are increasingly considering outsourcing the cumbersome SIaM work, to ensure that scale efficiencies are achieved at all levels of the IT Service chain.

Any party defining a SIaM strategy will face several challenges: Some of them are known effects of multi-vendor sourcing, but tend to be magnified in the SIaM context as a result of typically shorter contract durations and more frequent service provider changes. SIaM also introduces new challenges including those relating to the outsourcing of the SIaM function itself.

Atos has considerable experience of working within SIaM environments, as both tower service contributor and SIaM provider – one example is the IT service provision for the Olympic Games, a role which Atos has been involved in since 1988: Every 2 years (summer games and winter games), there is a new venue to be organized and a new eco-system of IT partners to be integrated and coordinated, to deliver a seamless end-to-end experience for athletes, journalists and spectators. Combining our IT outsourcing expertise with such "mission critical" experiences, we have built a set of best practices to help commercial and private sector customer successfully navigate their journey to SIaM.

We believe Service Integration and Management does not stop at managing internal IT efficiently, When paired with supplementing capabilities such as Cloud Orchestration and Business Process Management, it becomes a foundation for a new level of process agility.

Introduction

Motivation

Multi-Vendor Outsourcing

For around the last 10 years (see Figure 1), the concept of multi-vendor sourcing has been heavily pushed by advisors and industry experts. There is strong evidence from the market that the majority of medium to large companies across all industry sectors are now following multi-vendor IT sourcing strategies.

The classical way of organizing a multi-vendor environment splits the IT delivery functions into technology towers such as 'data center operations' or 'workplace,' contracting them individually to different outsourcing vendors.

This approach promises a relatively smooth selection process for potential vendors as "de facto" standard portfolio has become established, offering distinct demarcation lines between the service components. Comparison of offerings from different vendors has become relatively easy, helping to increase selection flexibility and reduce lock-in.

The technology tower approach leaves customers' IT organizations with the task of creating and operating an integration and management layer to achieve three main objectives:

1. Create end-to-end services that link IT vendor portfolios to ensure overall business requirements are met;
2. Define and manage service quality by creating and measuring end-to-end service levels;
3. Execute end-to-end support processes by configuration, change, incident and problem management together with other ITIL processes across multiple provider organizations.

Increasing Complexity of Service Management

It is evident that the higher the number of different vendors that a company has to manage, the more complex and costly this task becomes.

In contrast to the level of standardization within vendor portfolios there is no standard for cross-vendor interfaces and processes: Every provider operates with its own tools and frameworks, with little motivation to adapt them for customer specific implementations, as this would have potentially significant cost implications.

At the lowest end of the flexibility scale are large-scale cloud service providers such as Amazon and Google, since they offer unified interfaces to all of their customers; customer specifics have to be addressed on the customer's side of the interface – the potential for such adaptions can be limited.

This is not an entirely unwanted side effect, since the objective to deliver customer agnostic IT is at the heart of a cloud provider's business model.

The ongoing trend towards selective sourcing is leading to an increase in the number of partners.
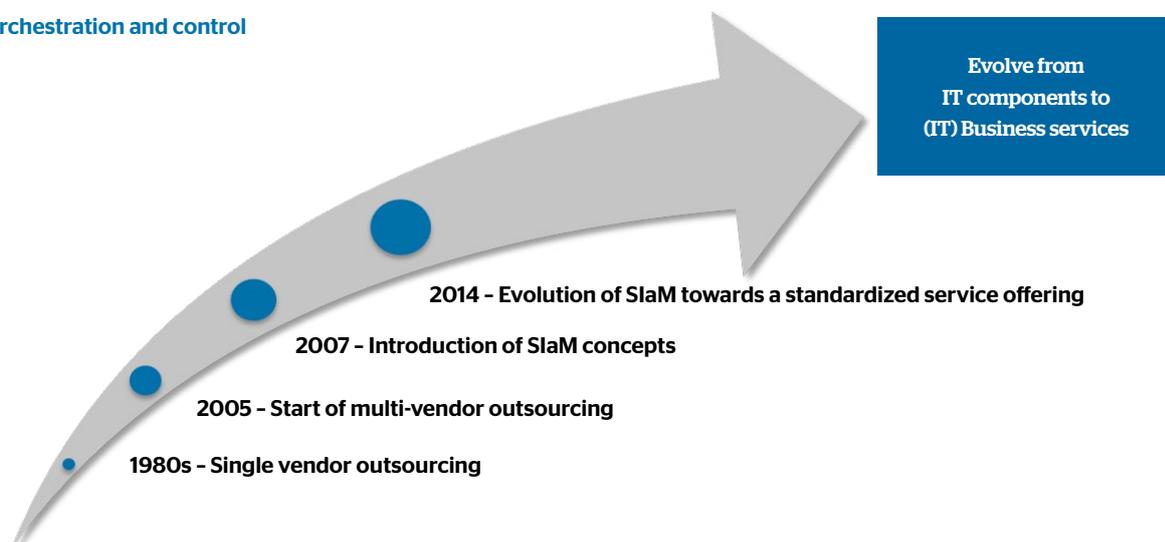
In addition, the (financial) lot size is fractioned by selective sourcing – sometimes to a degree that the critical mass is missing for a provider to invest in delivery related process and tool changes.

Outsourcing Service Integration

A rise in service management complexity and costs without a resulting value add in businesses' primary markets, is causing a re-think of the approach to service integration: We are seeing a new trend to outsource the Service Management function itself to specialists – ensuring scale effects are also achieved in the integration of services.

This white paper aims to help our customers understand the challenges and maturity of SIaM as well as SIaM outsourcing in more detail.

Figure 1: Orchestration and control

Evolve from IT components to (IT) Business services

2014 – Evolution of SIaM towards a standardized service offering

2007 – Introduction of SIaM concepts

2005 – Start of multi-vendor outsourcing

1980s – Single vendor outsourcing

Challenges

In this chapter we will outline several challenges that companies are facing on their path to an outsourced SlaM model.

We have identified the following types of challenges:

▶ The "x2" Challenge reflects traditional challenges in the context of a multi-vendor-sourcing environment, where they are intensified and accelerated "times 2" by a SlaM strategy that aims at switching providers quickly.

▶ The "Culture Gap" Challenge re-lates to the significant cultural differences that arise when Service Management and Service Integration impose issues on IT organizations that were used to service management in a stable environment.

▶ The "Outsourced Conductor Challenge" arises from the execution of the Service Integration function by an external partner rather than in-house.

The x2 Challenge

Missing Process and Interface Standards

In a nutshell: Cross-provider collaboration in the IT industry is not supported by standard processes and interfaces. One might argue that ITIL provides the necessary process related guidance and a set of common terms, but the methodology guidance provided by ITIL is clearly non-transactional across parties - The urgency and priority of an incident is defined by each party and each ITSM suite in different categories and requires data mapping between parties. In this respect, the IT services industry is far behind other industries such as the telecommunication business with their powerful standardization organizations such as ITU and TM forum.

As a consequence, in IT, cross-provider integration of processes and tools are implemented on a per deal basis. This can require substantial alignment and conceptual work, potentially leading to setup phases of 18-24 months.

From our perspective, it seems that ITSM tool vendors are not yet in a position to resolve this situation: Even if a good practice platform can be agreed on (e. g. Service Now), it comes without a suitable set of IT Service Management processes, tailored to a multi-party environment.

Size Matters

Larger outsourcing contracts can bear higher initial transformation costs. The substantial initial effort of process harmonization across several parties is more easily funded within the context of the IT budget of a large scale customer.

Unfortunately, size goes hand in hand with process sophistication: Large corporations have tightly woven IT into their business processes and they tend to have high levels of end user expectation too. We see the following effects:

▶ Selective sourcing with shorter deal durations impose difficult business cases for a vendor investing into specific 'customer facing' processes (Budget Issue).

▶ Newcomers in the eco-system require more time to integrate into a tailored set of 'customer facing' processes (Timing Issue).

▶ The re-use of SlaM concepts depends to a large extend on the standardization of cross-vendor ITSM processes and associated transformation concepts and approaches. In other words: How efficient can the outsourcing of SlaM ever be when there are limited scale advantages on the side of the SlaM provider, since most large SlaM customers are major corporations with tailored IT processes in their own right? (Efficiency Issue)

In the past these challenges have been tackled by leveraging longer deal runtimes. But this runs counter to the SlaM objective of providing higher flexibility in changing service providers. We therefore see SlaM increasing the outsourcing business case challenge.

A future solution could be Service Brokerage or Service Hub concepts that provide a better level of process and interface standardization that helps keep deal-specific integration work to a minimum.

The Cultural Gap

Most of our corporate customers have significant in-house service management expertise. However today's typical service management organization has a culture of managing stability: Contract and Service Delivery Managers are running the show and we believe it is fair to say that ITIL assumes a relatively stable environment of providers and does not provide substantial help for phase-in / phase-out activities nor interfacing of and to providers.

Service Integration is a different art form: It is about managing permanent change. And not just at a technical level: Contractual and personal relationships, processes across parties with a frequent change of players and a different corporate culture with every new eco-system member, requires a different type of personality than "Mr. Stability". And last but not least: Integrators work in a business model based on change while operators are motivated to deliver for fixed and stable costs.

The Outsourced Conductor Challenge

Missing KPI / Benchmarking Framework

As a simple starting point: There are not many commonly acknowledged key performance indicators for service integration. The lack of norms is the extreme opposite to core IT Services themselves where an industry of outsourcing and benchmarking advisors, market researchers and services quality and cost comparisons has led to almost full market transparency of services.

Management Consultant expertise with regards to the sizing of an IT organization tends to relate to Service Management and bears little relevance to the Service Integration challenge.

The issue goes way beyond the sourcing question: There is little guidance as to how to measure the efficiency of a service integration organization including how to keep the costs of service integration itself under control.

What Expertise remains internal?

In SIaM environments, the role of the retained in-house IT team moves towards a governance, procurement and contract management function. This is particularly true when functions such as Demand Management and Solution Architecture are executed by the Service Integrator. This can potentially lead to several issues:

▶ Employee acceptance can suffer, as many IT employees have a technology background leading to a desire to stay attached to technology. Within the retained organization there is literally no room for them as the number of technology related roles shrinks significantly.

▶ The perceived role of an IT department from a business unit perspective diminishes, as the remaining functions do not suggest that IT fulfills a consulting role with regards to technology trends and solutions. In many corporate environments this effect accelerates the rise of a CTO function that covers the 'competitive IT' support for Go-To-Market topics (core processes, products and service offerings), whereas the IT department becomes an asset management function for commodity IT.

Chinese Whispers

Each people have their own language which reflects their own past and present culture. It is no different for companies with their corporate culture and language. Bearing that in mind, it becomes clear that having a communication chain with messages hopping from party to party is not a recipe for efficient communication; we all remember the children's game of Chinese Whispers: Errors typically accumulate in the retelling and the message at the chain's origin usually differs amusingly from the message heard at its end. The amusement factor disappears fast if the communication chain relates to IT requirements of your company and a set of providers implementing them "as well as they can" based on the last actor's message.

Prior to the strong multi-sourcing trend, the scene setup was quite different:

▶ A reduced number of parties would naturally limit the accumulated degree of misunderstanding along the chain.

▶ Long term relationships would have a built-in error correction: Through cultural alignment, by learning and understanding the core business, the culture and the language of a customer for many years, suppliers would know how to treat missing information and what to interpret simply as a communication error.

The game has changed: Not only has the number of parties in the message chain increased, but SIaM itself is meant to facilitate shorter deal runtimes and a faster change of partners. The chance to truly lineup is significantly reduced.

An IT eco-system typically responds to the challenge by additional feedback loops between its members – with a devastating effect on agility.

A company aiming for a SIaM model has to address the communication chain issue to be effective.

Best Practices

This chapter suggests several best practices as an input for any institution considering a SIaM approach. By using these, companies will find it considerably easier to avoid pitfalls and work their way through some of the challenges listed in the previous chapter.

A Functional Framework

UK Governmental Blueprint

A functional framework is a useful instrument to define roles and responsibilities from an organizational perspective. A draft version of such a function framework has been worked out by British governmental institutions and can serve as a solid starting point (see Figure 2: UK SIaM Framework).

It distinguishes between functions executed by the Retained IT Organization (blue), functions where responsibility is with the retained IT Organization but execution is supported by external Managed Services (beige), core SIaM services (white) and (IT) services themselves (red).

Discussion of the Model

A minor extension of the functional model relates to the area of Service Knowledge Management: We see this area clearly evolving to a broader Collaboration approach, supported by what is commonly known as a (Cross) Enterprise Social Network.

However, the Service Management Model depicted in Figure 2 does not reflect the true Service Integration challenge in a sense that an ever-changing eco-system is managed.

Within the UK Governmental SIaM framework, an additional meta-layer has been added, called SIaM Transformation Design & Change Consultancy. It consists of the following two aspects of transformational design:

1. SIaM/Tower Strategy – which supports customers in designing, planning and implementing the transformational change required to adopt and apply a SIaM model.
2. SIaM Organizational Change – provides cultural change management support to cover the people and culture aspects of the required change (see also The Cultural Gap on page 7).

In several cases of commercial SIaM implementations, parts of Service / Solution Assurance and parts of Demand Management have been shifted to the SIaM provider.

We believe that further work is also needed to consistently incorporate the concept of Service Brokerage into this functional model.
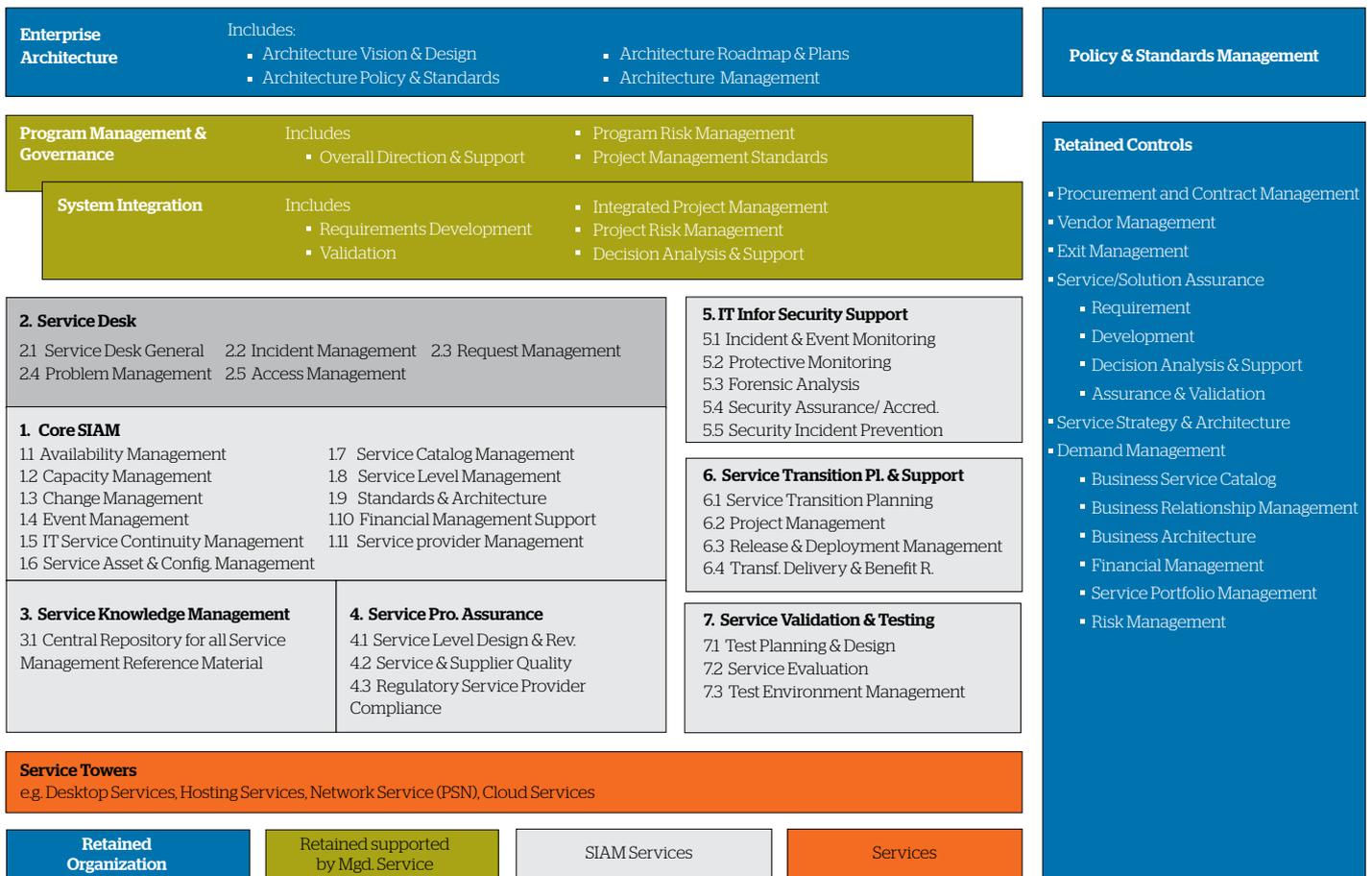
| Enterprise Architecture | Includes:
 ▪ Architecture Vision & Design
 ▪ Architecture Policy & Standards | ▪ Architecture Roadmap & Plans
 ▪ Architecture Management | Policy & Standards Management |

| Program Management & Governance | Includes
 ▪ Overall Direction & Support | ▪ Program Risk Management
 ▪ Project Management Standards |

| System Integration | Includes
 ▪ Requirements Development
 ▪ Validation | ▪ Integrated Project Management
 ▪ Project Risk Management
 ▪ Decision Analysis & Support |

Retained Controls

- Procurement and Contract Management
- Vendor Management
- Exit Management
- Service/Solution Assurance
  - Requirement
  - Development
  - Decision Analysis & Support
  - Assurance & Validation
- Service Strategy & Architecture
- Demand Management
  - Business Service Catalog
  - Business Relationship Management
  - Business Architecture
  - Financial Management
  - Service Portfolio Management
  - Risk Management

2. Service Desk
2.1 Service Desk General   2.2 Incident Management   2.3 Request Management
2.4 Problem Management   2.5 Access Management

1. Core SIAM
1.1 Availability Management   1.7 Service Catalog Management
1.2 Capacity Management   1.8 Service Level Management
1.3 Change Management   1.9 Standards & Architecture
1.4 Event Management   1.10 Financial Management Support
1.5 IT Service Continuity Management   1.11 Service provider Management
1.6 Service Asset & Config. Management

3. Service Knowledge Management
3.1 Central Repository for all Service Management Reference Material

4. Service Pro. Assurance
4.1 Service Level Design & Rev.
4.2 Service & Supplier Quality
4.3 Regulatory Service Provider Compliance

5. IT Infor Security Support
5.1 Incident & Event Monitoring
5.2 Protective Monitoring
5.3 Forensic Analysis
5.4 Security Assurance/ Accred.
5.5 Security Incident Prevention

6. Service Transition Pl. & Support
6.1 Service Transition Planning
6.2 Project Management
6.3 Release & Deployment Management
6.4 Transf. Delivery & Benefit R.

7. Service Validation & Testing
7.1 Test Planning & Design
7.2 Service Evaluation
7.3 Test Environment Management

Service Towers
e.g. Desktop Services, Hosting Services, Network Service (PSN), Cloud Services

| Retained Organization | Retained supported by Mgd. Service | SIAM Services | Services |

SIaM Tooling

Let us take the Service Management Model depicted in Figure 2 as a starting point and translate the many different functions (not just the Core SIaM ones) into a tooling framework. It will conceptually look similar to the one in Figure 3.

The following aspects are key to a successful SIaM project and at the same time are significant drivers of the initial effort:

Discussion of the Model

▸ Several different software products from different tool categories are required to cover the required functionality – starting with a ticketing system via Enterprise Project and Program Management, to the less obvious such as GRC Management tools.

▸ Each of these tools uses a different data model, so substantial work is required to work out, a SIaM Information Model, which suits as a canonical data model for integration (see the section about The SIaM Information Model).

▸ An advanced SIaM tooling framework contains on-boarding functions to facilitate the fast-track integration of new parties into a SIaM ecosystem.

The x2 Challenge described on page 6 has already described the magnitude of effort for process and interface integrations across parties and tools. Service Hubs such as CISCO ServiceGrid™ promise a way out: A market place concept joins many suppliers and customers on one bigger platform where commercial relationships to several parties become a matter of contract configuration after a one-time integration effort to the market place.

From our perspective, these platforms foster a commodity brokerage approach and stay there.

SIaM as a discipline however aims for a vertical integration, starting ideally at a process level and integrating consistently down to the base infrastructure.

For that reason, we have seen many customers bearing the initial effort to have a SIaM tooling framework tailored to the nature of their IT. The role of the SIaM tooling framework becomes actually a business alignment tool in a sense that any service and service provider gets framed into business process support.

The SIaM Information Model

There are many questions that will arise during the implementation of a SIaM environment.

What are the applications in the IT portfolio? How is an IT Service defined? Which distinct types of change request are processed in the SIaM ecosystem? Are these System Change Requests only, or are there project change requests too? Is there a clear definition of the types of application environments that are required, such as dev., test and QA? Or is it left to chance whether an environment is called QA or Stage? What does this mean for the integrated SIaM CMDB and related reporting?

Such questions are crucial with respect to two dimensions of integration:

▸ Integration across parties, e.g. different service providers, all having their own language and modes of operation.

▸ Integration across different SIaM tools (ITSM suite, Enterprise Architecture Repository, Enter-prise Project and Program Management etc.).

It becomes obvious, that tool-specific semantics will never fully serve the integration purpose. Instead 2 "meta views" are required to bring a commonality of language and understanding:

▶ The Service Catalogue is a fundamental instrument to align the eco-system to the service structures that are requested, provided and controlled.

▶ The SIaM Information Model is the meta-model for the Service Catalogue but also for many additional aspects such as core data structures of configuration management, project management, change and incident management and so forth.

We recommend that the definition of both the Service Catalogue and the SIaM Information Model starts very early in an engagement with top-down contractual level definitions expressed in a frame contract between all parties. The SIaM Information Model will be refined during the course of the SIaM Tooling Framework design – down to the level of a canonical data model that drives the consistent implementation of interfaces between different SIaM tools.
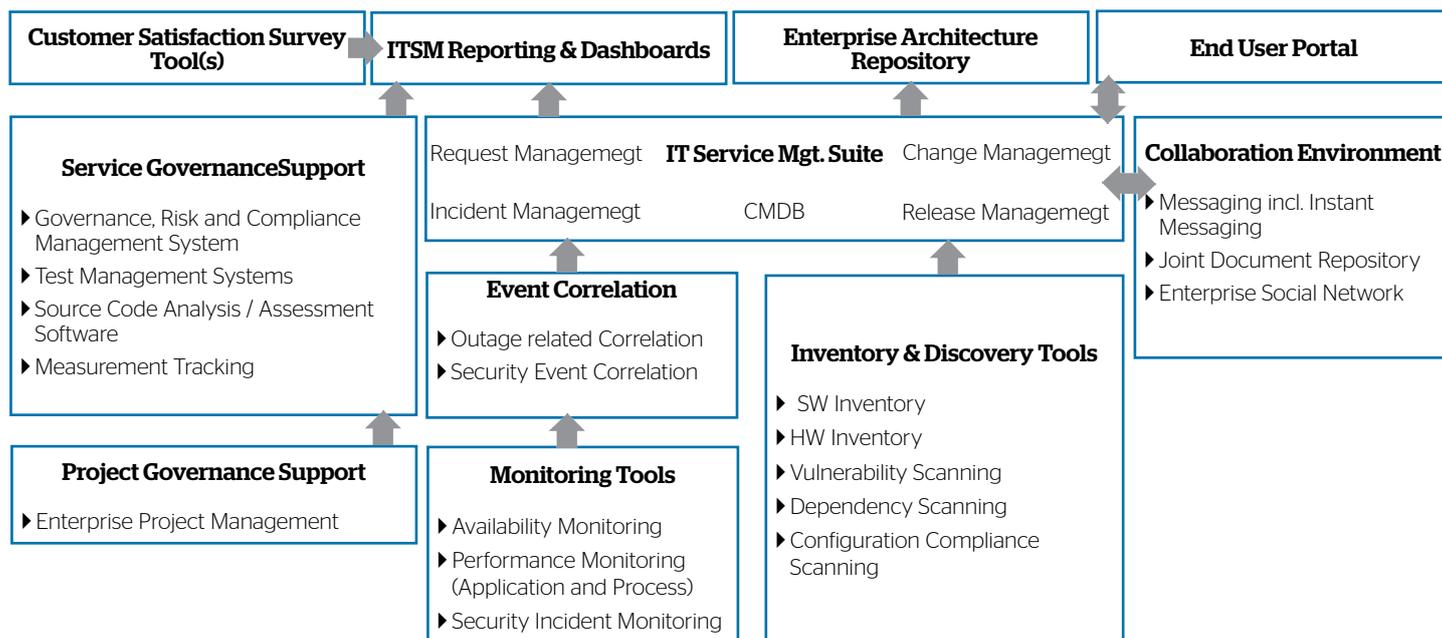
<table>
<tr><td>Customer Satisfaction Survey Tool(s)</td><td>ITSM Reporting & Dashboards</td><td>Enterprise Architecture Repository</td><td>End User Portal</td></tr>
</table>

Service Governance Support

▶ Governance, Risk and Compliance Management System
▶ Test Management Systems
▶ Source Code Analysis / Assessment Software
▶ Measurement Tracking

IT Service Mgt. Suite

Request Managemegt   Change Managemegt

Incident Managemegt   CMDB   Release Managemegt

Collaboration Environment

▶ Messaging incl. Instant Messaging
▶ Joint Document Repository
▶ Enterprise Social Network

Event Correlation

▶ Outage related Correlation
▶ Security Event Correlation

Inventory & Discovery Tools

▶ SW Inventory
▶ HW Inventory
▶ Vulnerability Scanning
▶ Dependency Scanning
▶ Configuration Compliance Scanning

Project Governance Support

▶ Enterprise Project Management

Monitoring Tools

▶ Availability Monitoring
▶ Performance Monitoring (Application and Process)
▶ Security Incident Monitoring

Figure 3: Conceptual SIaM Tooling Framework

Requirements Engineering

The Chinese Whisper effect depicted on page 7 increases with the number of parties and shorter time for cultural assimilation.

Efforts to counteract its negative impact (e.g. corrective feedback loops) generally impacts agility in an undesired way.

A possible way out of this dilemma is the art form of professional requirements engineering – in other words an advanced way of expressing requirements formally such as the Unified Modeling Language.

The Software engineering expertise that seems to be common in industries where IT is largely bespoke (e.g. financial services, telecommunication), is rarely found in IT departments with a preference for commercial off-the-shelf solutions.

Furthermore the Cultural Gap challenge (see page 7) takes its toll again: A Service Management culture with a focus on Operate is less used to the tools and processes of system and service integration – such as requirements modeling.
As a principle effect of the use of formal methods, requirement specifications become:

1. more complete;
2. more consistent; and
3. less dependent on interpretation.

What seems to be 'just beneficial' in a stable and settled long-term relationship between a customer and a set number of IT providers, becomes a matter of survival in an environment where communi-cation is chained and cultural assimilation has its limitations.
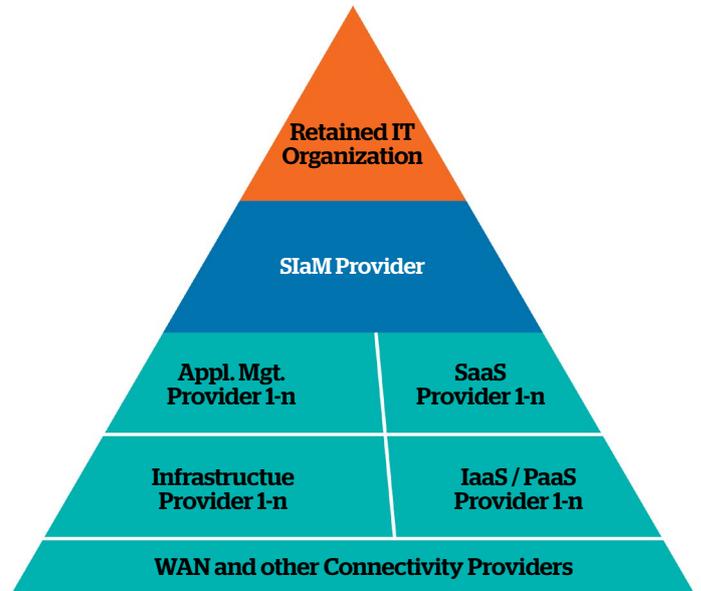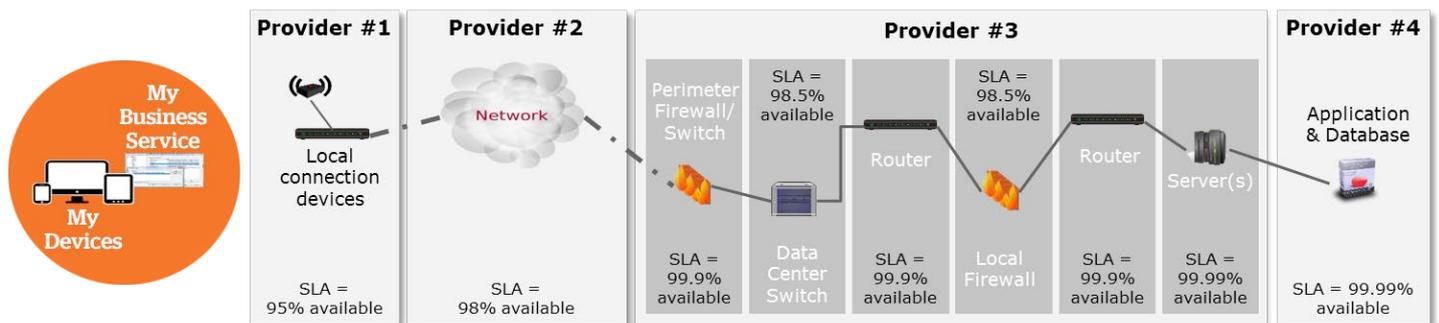

Figure 4: Structural SIaM Setup

Figure 5: e2e Service Models are a prerequisite to monitor and constantly improve IT Services on a Business Service level.

An Organizational Framework

Structural SIaM Setup

The structure of a SIaM environ-ment is best depicted in a pyramid shape as shown in Figure 4 with the Customer's Retained IT Organization on top; the SIaM provider as a right hand of Retained IT; and a set of service providers in the IT value add stack beneath.

It is noteworthy that different levels of membership in a SIaM ecosystem exist according to their Commitment of Adoption:

Gold Members (for lack of a better name) are willing to adjust their processes and organization in two dimensions: They align themselves to become focused on customer processes and priorities in general and are willing to adjust what is necessary to integrate themselves into the SIaM ecosystem.

Silver Members are commodity and cloud providers where adoption to a customer specific set of business or IT (SIaM) processes is unlikely to happen as it would contradict their fundamental standardized business model. Their duties are not a matter of tough contractual negotiations, instead the SIaM Provider must go the extra mile to establish a means for their integration (see also Cloud Orchestration on page 13).

It is not only the contractual SIaM framework that should reflect these different qualities of collaboration, but commercial incentives should also be given to those partners willing to bear the effort of adjustment, e.g. by first call/last call options.

SIaM Provider Setup

A SIaM Provider setup must, of course reflect the many Core SIaM functions as listed in the UK GOV SIaM framework in Figure 2.

To drive the primary SIaM duty – the alignment of anything IT to process and business performance – we suggest Capability Cluster teams or Process Cluster teams. With these in place, KPI, budget and procurement discussions, as well as portfolio and program decisions become business-centric almost by default.

This setup helps get around the Chinese Whisper issue described in the Outsourced Conductor Challenge section on page 7.

Our experience also shows that a Service Model Factory is a crucial unit in a SIaM environment. The Service Model Factory is actually a team of Configuration and Master Data Management experts with many-fold duties:

▶ They own the design of an integrated multi-vendor CMDB and know the SIaM Information Model (see page 9) by heart.

▶ They align with "Gold Providers" of the eco-system to deliver Configuration Item (CI) data.

▶ They interface with "Silver Providers" such as Cloud Platforms to obtain CI data by "pull" means (e.g. using APIs) where the provider will not "push" such information.

▶ They interlink the contractually defined IT Portfolio (aka Service Catalogue) and the technical CIs across the full IT stack. The resulting Service Models are an important instrument for Plan & Build activities (e.g. technology road mapping, archi-tecture planning) as well as for Operate (e.g. impact analysis in change management or root cause analysis in incident management). An example of the use of a cross provider service model is depicted in Figure 5 and demonstrates that such models are a pre-requisite to optimizing IT end-to-end.

▶ Finally, the Service Model Factory establishes and evolves the distribution of master and CI data to allow the different SIaM tooling framework components (see page 10) to execute their functions consistently.

Commonly Shared KPIs

To join different partners that usually have cooperative and competitive relationships in a SIaM environment, a system of Commonly Shared Key Performance Indicators (KPIs) can be used. Examples for such Commonly Shared KPIs are:

▶ IT Expense per Revenue
▶ Change vs. Run Cost Ratio
▶ Service Satisfaction
▶ Service Performance

To make these KPIs manageable and maintain focus on customer priorities, the suggested Capability Cluster structure can be used as an aggregation level – possibly extended with a reduced set of horizontal KPI measures to tie IT infrastructure providers to an incentive structure.

Service Performance is ideally measured end-to-end:

At an application level this could be anything between application uptime (can a user reach the application and log in?) to application responsiveness (does the application respond in time to a user transaction?). Naturally, base-lining is required for the determination of acceptable response times as a threshold between good enough and not acceptable.

On a process level, performance can be measured as throughput in a given time, so the underlying IT gets transactionally monitored. As an example: Atos uses a monitoring system called the Bridge to measure the number of SIM card activations per time period for one of our telecommunication customers.

An Outlook

Service Brokerage

There are tool and integration platform vendors that are aware of the integration challenge and so it is not surprising that service hub platforms are starting to appear in the market space. ServiceFlow™ (a Finnish company with a SaaS approach to an integration platform) states that with a self-defined approach to a SIaM platform, 70% of effort goes into the technical inte-gration leaving 30% remaining for work on process level. When using their integration platform this relation changes, so 70% of energy can go into efficient process integration[1].

CISCO's ServiceGrid™ is an IT market place that promises a single primary connection to a hub that enables interaction with multiple IT providers[2]. This is an interesting approach, especially for small and medium sized enterprises. The common denominators among the participating parties are Incident and Service Request Management with a simplified approach to harmonized SLA management.

The approach is appealing for managing commodities efficiently. But SIaM is really about vertically integrating many different commodity services to provide application-level or even process-aware services.
In a nutshell: Service Hub Platforms with their natural affinity to commodity service brokerage are an extension of a SIaM environment but do not replace the transformational character of SIaM that drives the vertical perspective into an ecosystem.

Cloud Orchestration

There is an increasing number of commercial Cloud Orchestration platforms such as HP's Eucalyptus platform or Canopy's Digital Enter-prise Platform. Cloud Orchestration platforms offer data center specific implementations of the functions needed for Service Brokerage. These include: Monitoring, SLA reporting, workload fail-over concepts, automated provisioning of workflows and cloud resource cost discovery.

Important differences between different commercial Cloud Orchestration platforms are exposed when we consider quality dimensions such as:

▶ Can the advertised Cloud Orchestration functions cover IaaS, PaaS and SaaS level resources or are they bound to one category?
▶ How does the Cloud Orche-stration Platform expose itself to the application layer so that applications (or even processes) can interact with the resource layer beneath?
▶ What open standards (e.g. TOSCA[3]) are supported for IaaS resource provisioning and application blueprinting?
▶ Is the Cloud Orchestration platform itself already an integration entry point for a network of cloud providers?

We see Cloud Orchestration becoming a natural element of a SIaM approach emphasizing again that the more that commodity brokerage is performed, the higher the true effort of a SIaM provider will be in managing commodities across different application agnostic cloud resource providers, to establish a joint service entity for the end customer.

Cloud Messaging

Cloud Messaging is a required technical capability for the integration of cloud services. Imagine that your applications will be hosted across several different clouds, with some remaining in a traditional corporate datacenter. Managing the message flows between your applications in these different environments requires an ESB 2.0, which is a reliable and "cloud-aware" platform for communication between applications, that is able to cope with the fact that cloud apps might be causing fail-over instances to activated and the unpredictability of bandwidth when communication flows over the internet etc.

The Atos Scientific Community, showed how Cloud Messaging can act as a next generation Enterprise Service Bus for messaging across clouds, mobility, social collabo-ration, legacy applications and the Internet of Everything (IoE)[4].
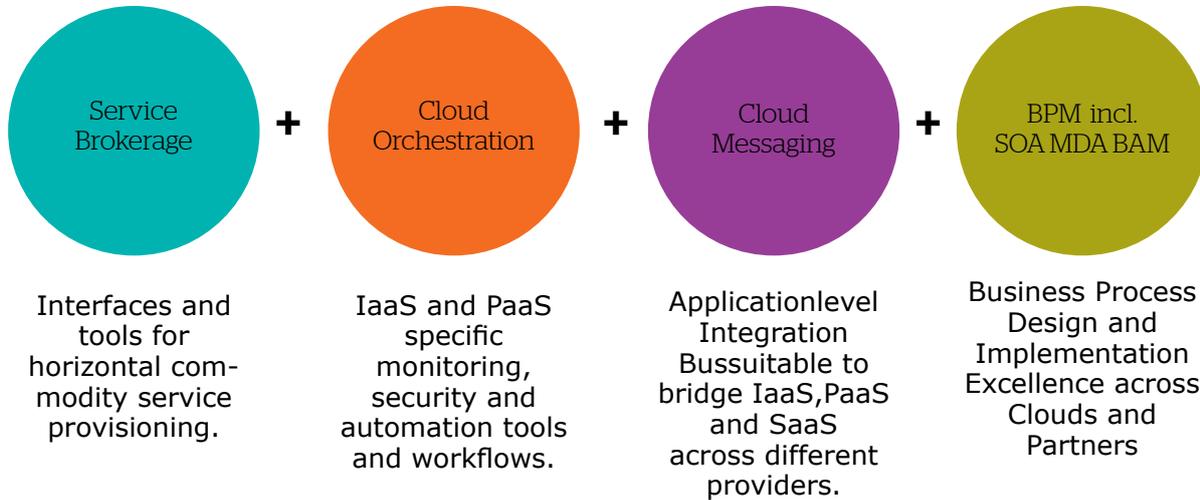
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[1] www.service-flow.com
[2] CISCO ServiceGrid
[3] Topology and Orchestration Specification for Cloud Applications, see OASIS.
[4] See Ascent Whitepaper Cloud Messaging

SIaM – Organization, tools and processes for vertical integration.

Service Brokerage	+	Cloud Orchestration	+	Cloud Messaging	+	BPM incl. SOA MDA BAM
Interfaces and tools for horizontal commodity service provisioning.		IaaS and PaaS specific monitoring, security and automation tools and workflows.		Applicationlevel Integration Bussuitable to bridge IaaS,PaaS and SaaS across different providers.		Business Process Design and Implementation Excellence across Clouds and Partners

Figure 6:
[Cloud]² Service Integration combines technical and organizational capabilities for the benefits of perceived and performed IT Agility.

Business Process Management Excellence

The arrival of SaaS as a ready-made, immediately available set of state-of-the-art functionality has a potentially devastating effect on the perception of internal IT departments. Where business stakeholders expect immediate availability of what is offered on the cloud market, very few internal IT departments are suitably equipped to efficiently integrate best-in-class cloud offerings into a corporate application and process structure. A deepening chasm between Business and IT is an almost inevitable consequence.

Business Process Management complemented by a Service Oriented Architecture approach in design and build, as well as the formal methods of requirements engineering associated with Model Driven SW Engineering approaches, are essential skills for succeeding in the integration race. The starting point to obtain these capabilities differs a lot between industries: A tradition of SW Engineering of bespoke software in banking and telecom has an advantage over industries such as manufacturing where standard ERP software did not require SW engineering principles to be adopted for internal IT.

As it takes years to develop a BPM, SOA, MDA culture, there are distinct advantages in using a Service Integrator who is able and willing to provide the required skills, methodology and toolsets.

[Cloud]² Service Integration

As depicted in Figure 6, we define [Cloud]² Service Integration as a combination of the following capabilities:

▸ Service Brokerage as a means of using an established set of common interfaces for horizontally sourced commodity services, particularly to establish Incident and Service Request Management.

▸ Cloud Orchestration adds specific security, monitoring and provisioning capabilities for Infrastructure, Platform and Software as a Service commodity sourcing.

▸ Cloud Messaging provides a cross tower, cross cloud, cross application messaging and communication backbone that respects the specifics of integrations outside your own datacenter.

▸ BPM, SOA and MDA as a combined set of technologies, architectures and methodologies enables business analysts, architects and developers to execute integration projects faster than in any other environment.

▸ All of these capabilities are ideally embedded into a SIaM environment with the organization, tools and processes to convert "horizontal" IT component perspectives into vertical Business Service perspectives and facilitate the interaction between business and IT on that level.

We suggest naming this holistic capability driven approach [Cloud] Service Integration as it spans legacy and cloud environments as well as different cloud environments too.

When these capabilities themselves are provided on a IaaS / PaaS and SaaS basis e.g. by having the Cloud Messaging Bus and a BPM engine as a PaaS component, we suggest calling the approach [Cloud]² Service Integration

While we see many implementation activities in the market for one or the other of the pillars of [Cloud]² Service Integration, we believe that only the combination of all elements will lead to truly Liquid IT, bringing the highest level of IT Agility as laid out in previous work of the Scientific Community[5].

Outsourcing service integration to a respective SIaM provider has without doubt many challenges. But it offers a unique opportunity to leapfrog to a higher level of agility in a much shorter timeframe when the outsourcing exercise is governed by the strive for [Cloud]² Service Integration.

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[5] See Ascent Whitepaper on Liquid IT

Conclusion

SIaM is here to stay as a required discipline in multi-vendor environments.

Outsourcing SIaM is a recent phenomenon and needs to mature further, e.g. SIaM benchmarking still lacks substance.

The magnitude of organizational, cultural and technical change to introduce SIaM is often underestimated. The initial effort to set it up properly does not provide short term IT cost savings.

Enterprises bold enough to introduce SIaM systematically will find the effort rewarding: Proper SIaM serves as a catalyst to transform horizontal sourcing views to a vertical IT business perspective – it leads to an eco-system that works on a common level with business.

SIaM can also serve as a foundation to help businesses realize process agility when paired with several other disciplines.

Against this background, we believe SIaM has to be on every CIO's agenda as a main part of the transformational journey into the Digital World.

Abbreviations

API	Application Programmable Interface	ITU	International Telecommunication Union
BAM	Business Activity Monitoring	IaaS	(IT) Infrastructure as a Service
BPM	Business Process Management	KPI	Key Performance Indicator
CI	Configuration Item	MDA	Model Driven Architecture
CMDB	Configuration Management Database	PaaS	Platform as a Service
CTO	Chief Technology Officer	QA	Quality Assurance
e2e	End to End	SaaS	Software as a Service
ERP	Enterprise Resource Planning	SLA	Service Level Agreement
GRC	Governance, Risk, Compliance	SOA	Service Oriented Architecture
ITSM	IT Service Management	SW	Software
ITIL	IT Infrastructure Library		

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