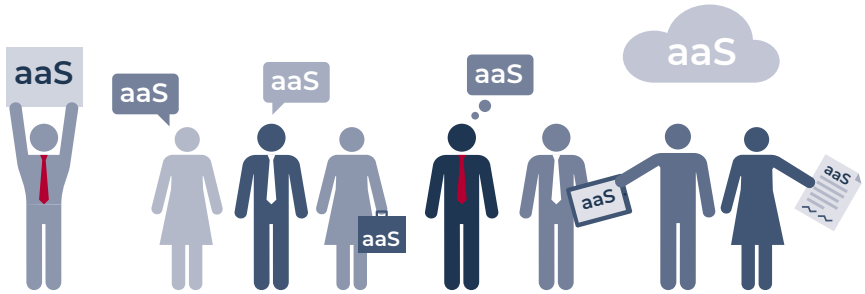
A Guide to Fair Contracts for ‘As a Service’



IACCM Research Forum

Full report, May 2019

IACCM
International Association for Contract & Commercial Management

Contents

Introduction

Recent decades have seen rapid growth in the availability and volume of services. This has impacted all markets and has added enormously to the expansion of world trade by allowing delivery of services across both geographic and political boundaries.

In the business-to-business and business-to-government sectors, such developments have included large-scale outsourcing of production and processes, as well as an explosion in areas such as financial and legal services.

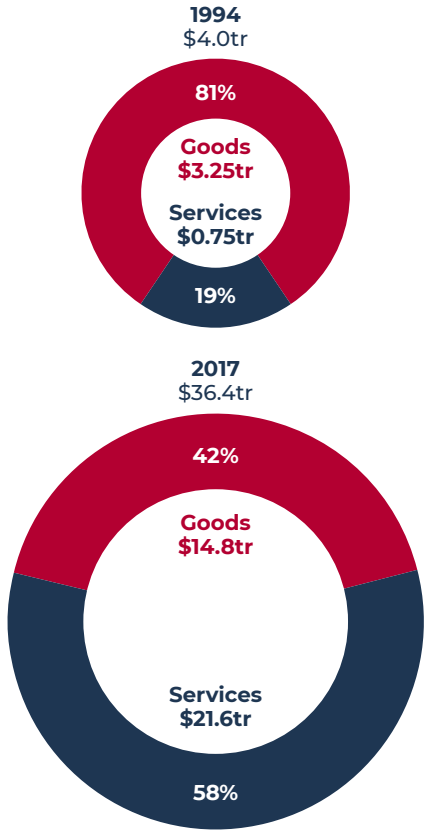
For customers, services may have the benefit of reducing or even eliminating capital expenditure while allowing flexibility in terms of cost related to consumption (use) and performance. For suppliers, providing services is attractive since they are often less easy to commoditize and therefore offer higher or more sustainable margins.

Despite these mutual benefits, the intangible nature of a service results in a variety of commercial considerations and risks that often prove difficult to resolve, especially when that service is critical to business operations. Obvious examples include the reliability of the service provider and associated performance levels; issues such as withdrawal or termination rights; and the question of on-going price including various fixed and variable fees, potentially linked to consumption.

It is in this context that this Report has been commissioned, to better understand the impacts of as a Service (or aaS) offerings in the market, specifically as it relates to commercial relationships including terms and conditions, and to develop proposals that would raise the efficiency of transactions. One difficulty is that the term 'as a Service' varies significantly by marketplace, and there is therefore inconsistency in the view of what it covers. For this reason, the Report necessarily includes a definition of the term so that there is clarity about its scope in this context. However, it should be noted that this is a definition that has been developed for the purpose of this Report, and cannot therefore be assumed to have universal acceptance.

The Report has three primary purposes, described in detail on page 5. These are to promote a set of fair and balanced contracting principles; to identify variations in contracting practices across industries; and to provide guidance for those considering As a Service contracts.

Figure 1. The growth of business-to-business trade and the shift from goods to services



Spending on services grew 5x faster than goods between 1994 and 2017

1. Project Charter, Approach and Purpose of the Report

This Report describes the status of as a Service contracting and proposes a set of term and condition principles designed to streamline the acquisition and negotiation of such services.

The Report is an initiative sponsored by corporate members of the IACCM Research Forum, based both on empirical research and their collective buy and sell side experience when engaging in aaS transactions.

a) Approach

In preparing the Report, the authors gathered input by a variety of methods and also used modern technology to assist their analysis.

Report input methods

Stakeholder Engagement
Gathered data from Research Forum members to confirm nature of the problem

External Comparisons
Conducted extensive interviews to validate stakeholder views and to explore use and experience related to other aaS offerings

Contract and Terms Data Analysis
Used Artificial Intelligence and Natural Language Processing to analyze market norms

Research
Conducted desk research and large scale on-line surveys to validate market experience regarding benefits and issues associated with 'as a Service'

In terms of volume, over 400 stakeholders contributed to the research work: through on-line surveys, by providing standard and contract examples as well as by attending more detailed interviews with the authors.

Based on all input and contributions, this Report provides general information only, which should not be considered as professional advice or services of any nature, and is not intended as a substitute for any such advice or services.

b) Background to the Charter

While aaS offerings have existed for almost 50 years in sectors like the Defence and Aerospace industry, their introduction within the IT industry is more recent. Their growth has been meteoric, affecting both software and hardware products reflecting the rapid growth of fixed and mobile internet access.

The effect of this development is that many aaS offerings in the IT industry operate essentially as if they were utilities, providing charging models typically based around consumption (use) and availability. This large-scale commoditization of offerings has been accompanied by a high degree of standardization. Essentially, if customers wish to gain the cost and convenience benefits of 'as a Service', they must accept that they lose influence and flexibility in the surrounding terms and conditions.

This consequence has proven difficult for many customers to accept. Larger customers are accustomed to negotiating the terms of their IT contracts, and most have developed their own standards and templates for such acquisitions.

This is the also the case among buyers of services in the public sector. The interesting guide published in 2014 by e.Republic in the US under the title *Best Practice Guide For Cloud And As-A-Service Procurements*[1] provides contract models specifically developed for state and local governments in the US in order to secure the successful procurement of Cloud-based services models.

The tensions created by customers wanting to use their own terms for the purchase of standardized offerings provide the backdrop for this Report, which is focused on the business-to-business environment. The aim is to establish a platform that both suppliers and customers can accept as reasonable when transacting for aaS offerings, especially when commoditized and standardized such as in the IT industry.

In developing these guidelines, it is recognized that customers are so dependent on IT for their business operations that they are reluctant to accept supplier contracts that do not address their perceived risks, including those risks related to critical issues such as cybersecurity.

As a result, even though the move to 'as a Service' is a strategic priority within many organizations, it is common for major suppliers and their customers to find themselves engaged in prolonged debate and negotiation over whose contract should form the basis for agreement and then over many of the individual terms and conditions related to rights and responsibilities.

1. www.govtech.com/library/papers/Best-Practice-Guide-for-Cloud-and-As-A-Service-Procurements.html

Finally, there is an interest in this Report in exploring potential variations between emerging aaS offerings (IT sector) and those increasingly present in other sectors.

Contracting in this area is complex. There are unique issues that need to be considered.

The supplier view: "There is tension between Commoditized and Customized Services – clients want to 'have their cake and eat it too'. Clients pay for standard packages and pricing and demand / expect customized solutions at the same cost."

The customer view: "Providers must align their pricing to the service that is being delivered. Cost variables such as the percentage of uptime, number of clicks or amount of storage must be calculated and formulated in SaaS pricing models."

Shared views: There is a need to satisfy customers, align costs to services and control the adoption of services. There are challenges around establishing reasonable warranties, for example for uptime. There is also a need for effective change management – for example, how to handle software and hardware upgrades and changes to equipment at the end of their lifecycle.

Observations from executive workshop held at IACCM Americas Conference, October 2018

c) Purpose of the Report

Against the background described previously, the purpose of this research output is threefold:

Purpose 1: Educate and Promote a Set of As a Service Contracting Principles for the IT Industry

The first and main purpose is providing and subsequently promoting a set of term and condition principles to guide those who are drafting or negotiating relevant contracts in the IT industry where aaS offerings are highly standardized (the 'As a Service Principles' or 'aaS Principles').

The intent is not to eliminate the need for legitimate commercial discussions, or to take a partisan approach in favour of either customers or suppliers. The aim is rather to surface and promote fair and balanced guiding principles, with the following benefits:

- Enable negotiation teams to focus quickly on what really matters,
- Establish an industry benchmark for contracting aaS models,
- Promote consensus within the industry, based on empirical evidence,
- Eliminate unnecessary time and effort in addressing irrelevant or ill suited provisions,
- Reduce friction between parties and go-to-market timescales.

Purpose 2: Identify Varying Contracting Practices for Commonly Used As a Service Forms in Other Industries

The second purpose is to identify some varying contracting practices for aaS forms commonly used in industries other than IT such as the Aerospace industry, where offerings tend to be more custom and less standard than the IT offerings.

Purpose 3: Provide Guidance for Organizations when Considering As a Service Contracts

The third purpose is to provide, for the different forms of 'as a Service', operational and organizational guidance on whether an aaS approach is suitable.

Report purposes

Purpose 1
Promote
As a Service Contracting Principles for the IT Industry

Purpose 2
Identify
Varying Contracting Practices for As a Service Forms in Other Industries

Purpose 3
Provide Guidance
on the Suitability of an As a Service Approach

2. What is 'As a Service'?

Before defining the concept of 'as a Service' for the purpose of this Report, it is appropriate to provide some visibility on the multiple examples and the increasing contexts in which the concept is used in the marketplace today.

a) Scope and Range of 'As a Service' in the Market Today

While the concept has existed for many years in other marketplaces such as the Defence and Aerospace sector, recent years have seen a growing number of businesses that were able to at least partly shift their business models from selling a product to selling a service, for which customers pay as they need it. The expression 'Anything as a Service', which is also known as 'Everything as a Service' or 'X as a Service' (XaaS) is more and more frequently used, and not only in the IT industry or merely related to Cloud computing and remote access.

Examples of 'As a Service' in the IT Industry

IT is widely acknowledged as a major driver of business model innovation. The aaS concept has rapidly grown thanks to Cloud computing technologies, with which suppliers offer companies or consumers different kinds of services over the web or similar networks.

After years of internal technological build-up and accrued complexity, businesses are increasingly finding that their internal IT systems are unable, even with significant investment, to adapt to the fast-paced and disruptive change of recent years. In order to survive and thrive, businesses need to be able to access and leverage the powerful forces of analytics, social media, and new technology with much shorter lead-times and improved agility. They also need continued flexibility to move quickly between products, as the market and their needs evolve. In this context, the value proposition of aaS offerings based on Cloud computing technologies is clear, especially in contrast to traditional in-house IT approaches.

Until recently, all hardware and software components were installed and maintained on the customer's infrastructure, typically called 'on premises'. As the technology became more and more interconnected, some or all the components are 'hosted' by the suppliers according to different deployment models – on a private Cloud (exclusive for one customer), on a public Cloud (available to the public via the internet) or on a hybrid Cloud (which uses a combination of both private and public Clouds).

Figure 2: The as a Service framework for each service layer on the Cloud

On-premise	**Infrastructure** (as a Service)	**Platform** (as a Service)	**Software** (as a Service)
Data-(protection)	Data	Data	Data
Application (access control)	Application	Application	**Application**
Operating System (user rights management)	Operating System	**Operating System**	**Operating System**
Network (transmission)	**Network**	**Network**	**Network**
Servers (storage)	**Servers**	**Servers**	**Servers**
Facility (physical plant)	**Facility**	**Facility**	**Facility**

Cloud Service **Customer** – Data privacy and data protection **in** the Cloud

Cloud Service **Provider** – Data privacy and data protection **of** the Cloud

The National Institute of Standards and Technology (NIST) in the United States[2] defines each service layer as follows:

Infrastructure as a Service (IaaS) provides access network infrastructure comprising physical computing resources, location, data partitioning, scaling, security, backup etc. The customer does not manage or control the underlying Cloud infrastructure but has control over operating systems, storage, and deployed applications, and possibly limited control of select networking components (e.g., host firewalls).

Platform as a Service (PaaS) provides hardware and software resources required for application development. The customer does not manage or control the underlying Cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.

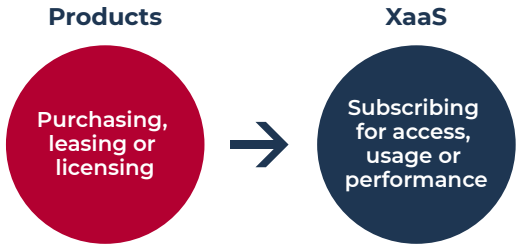
Software as a Service (SaaS) provides access to application software and databases. In this model, Cloud aaS suppliers install and operate application software in the Cloud and users access the software from Cloud clients. The user does not manage or control the underlying Cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

Examples of 'As a Service' in Other Industries

Beyond the context of Cloud computing and IT, aaS offerings have proliferated in other industries serving both consumers and businesses, as shown by the list of examples provided in Appendix 1 to this Report.

The main driver behind the rise of the aaS economy in many sectors is the customer preference for subscription or sharing models, not only for consumers, especially millennials, but also among business customers. But, why are subscription or sharing models so attractive?

Firstly, for both consumers and business customers investing in equipment or products upfront is hard to justify. With XaaS offerings, instead of purchasing or leasing the underlying equipment or products, individual or professional subscribers have access to the service (as opposed to ownership or control) against the payment of a fee for the usage of the equipment or products and / or the value provided by such equipment or products. In all sectors, the trend and the demands continue to grow geometrically.



Secondly, the digital revolution allows dynamic flows of data and information through which suppliers can achieve a much clearer understanding of individual customer needs and monitoring of usage and results. This has led suppliers to provide a growing array of services, not only related to equipment or products but also to consumables. Increasingly customers also expect commitment to the overall outcome that supports end-user needs. This outcome-based approach gives suppliers flexibility to deliver economies of scale by pooling equipment or products, making them available to multiple customers.

Thirdly, subscription or sharing models are often perceived by consumers or professional customers as attractive contributions to the so-called 'functional economy', which optimizes the use (or function) of equipment or products and thus the management of existing wealth. The economic objective of the functional economy is to create the highest possible use value for the longest possible time while consuming as few material resources and energy as possible. This functional economy behind the aaS offerings seems considerably more sustainable than the present economy.

2. www.nist.gov/news-events/news/2018/02/nist-releases-evaluation-cloud-computing-services-based-nist-sp-800-145

b) Definition of 'As a Service' for the Purpose of this Report: Distinguish 'Standard' and 'Custom'

The primary focus of this Report is on aaS models in a business-to-business environment.

In this context, and for the purpose of this Report, 'as a Service' defines those businesses that no longer simply pursue the single sale of a product (goods / equipment or software) or a solution (complex mix of goods / equipment, software and services), but rather, the development of a trading relationship that requires the customer to pay on an on-going basis for a certain service. This switch may be absolute, or it may be offered as an alternative.

The fact that aaS suppliers are escaping transactional sales or licensing, and seeking to develop this relationship instead, is what fundamentally differentiates 'as a Service' from traditional outsourcing services, managed services and business process services.

Having said that, within the spectrum of outsourcing, 'as a Service' can be envisaged as a sort of continuum. For companies looking to take the complexity out of managing their infrastructure and reduce associated costs, outsourcing has long been a popular option, allowing them to hand over the problem to a specialist provider or services company, which very often is precisely the manufacturer of some or all of any affected equipment.

In aaS businesses, because the customer is now using the product or solution 'as a Service', and not buying it (via transfer of property) and / or licensing it, the supplier is not the simple product or solution provider anymore, but is rather the party responsible for ensuring that the customer can use the product or solution and derive value from it. This means that the supplier must not only make the product or solution available to the customer, but also maintain it, upgrade it and service it.

To assist in understanding the full spectrum of aaS models for businesses, we can use a matrix based on two separate attributes:

1. the amount of 'Supplier Investment', and
2. the 'Customer Base' of the service.

Based on this matrix, it is possible to characterize four different types of 'as a Service', see Figure 3 below.

Figure 3: Four different types of as a Service models

Supplier Investment: High / Low

Customer Base: Low / High

Custom High Value Offering

Strategic business critical functions requiring very high levels of performance and consistency

Strategic customer numbers	*Low*
Supplier set-up and operating costs	*Very High*
Price to customer	*Very High*
Exit costs	*High*
Ability for customer to change	*Significant*
Payment	*Subscription and consumption-based*

Strategic Standard Offering

Strategic business critical functions requiring very high levels of performance and consistency

Strategic customer numbers	*High*
Supplier set-up and operating costs	*High*
Price to customer	*High*
Exit costs	*High*
Ability for customer to change	*Limited*
Payment	*Subscription and consumption-based*

Custom Low Value Offering

Simple **transactional business functions**

General customer numbers	*Low*
Supplier set-up costs	*High*
Operating costs	*Low*
Price to customer and exit costs	*Medium*
Ability for customer to change	*Significant*
Payment	*Subscription and consumption-based*

Commodity Standard Offering

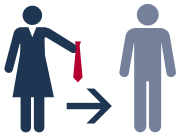
Simple **transactional business functions** that are easily replicated and replaced

General customer numbers	*High*
Supplier set-up and operating costs	*Low*
Price to customer	*Low*
Exit costs	*Low*
Ability for customer to change	*None*
Payment	*Consumption-based*

As highlighted in the matrix on page 8, the aaS models that are more bespoke are the following two types:

1. Custom High Value Offering represents those services that deliver strategic business critical functions requiring very high levels of performance (e.g. availability) and consistency (e.g. reliability). However, given the lower numbers of strategic customers, it leads to very high supplier set-up and operating costs, resulting in very high price and exit costs to the customer. This additional price for both customer and supplier provides an opportunity for both of them to define and tailor all aspects of the arrangement. Payment for the services is based on a combination of subscription (time based) and consumption (use). In the spectrum of aaS offerings, this is the variant to which 'Power aaS' (or 'Power by the Hour') deployed in the Aerospace industry corresponds (see Appendix 1 on page 23, XaaS Examples in Industries Other than IT).

2. Custom Low Value Offering represents those services that deliver simple transactional business functions. While similar to the Custom High Value Offering, given the transactional nature of the business functions, the supplier set-up and operating costs and the customer's price and exit costs will be proportionally lower. There is still an opportunity for both the customer and the supplier to define and tailor all aspects of the arrangement, but this will inevitably change the nature of the commitment and related costs. Payment for the services is based on a combination of subscription (time based) and consumption (use).



Bespoke As a Service Models

- Custom High Value Offering
- Custom Low Value Offering

One-to-many As a Service Models

- Strategic Standard Offering
- Commodity Standard Offering

The one-to-many aaS models are the remaining two types:

1. Strategic Standard Offering represents those services that deliver strategic business critical functions requiring very high levels of performance (e.g. availability) and consistency (e.g. reliability). While there is a limited ability for customers to change the arrangement, there may be opportunity to 'pay to be different' in terms of the performance levels of the service (e.g. pay for a quicker response time without changing the overall commercial arrangement). Payment for the services is based on a combination of subscription (time based) and consumption (use). In the spectrum of aaS offerings, this is the variant which may apply to the aaS offerings of the IT industry deployed on private Cloud (see Examples of 'As a Service' in the IT Industry, page 6).

2. Commodity Standard Offering represents those services that deliver simple transactional business functions that are easily replicated and replaced. The large number of customers (users) combined with very limited ability to change the services leads to low supplier set-up and operating costs at a transactional level, resulting in a correspondingly low price to customer and (as competition grows) low exit costs. Payment for the services is generally based on consumption (use). This is the model most think of when considering 'as a Service' and is the variant which will generally correspond to the high-volume aaS offerings of the IT industry deployed on public Cloud.

Within the IT industry, offerings provide, to a growing extent, plug-in, scalable services that deliver the business outcomes that every customer demands. From the perspective of IT suppliers, standard aaS offerings have the following characteristics:

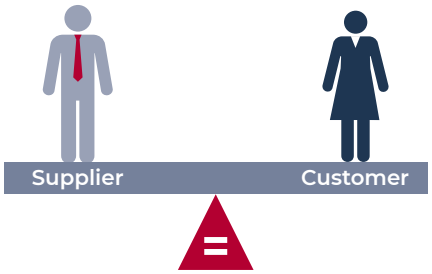
- **Multi-tenant** One-to-many aaS offerings deploy a common technology set which is provided 'as is' by aaS suppliers to multiple customers, or tenants, and customization opportunities or variation to respond to customer preferences are typically very limited;
- **Standardized approach to operational matters** This is the case, for example, for service levels, security and data processing that tend to be the same across all customers;
- **Preservation of operational freedom** The aaS suppliers maintain, update and change the service without seeking prior approval or consent from individual customers. This is primarily for the overall benefit of customers (for example, additional features or updated security);
- **Repeatability** The aaS suppliers grant to the customer rights of access only. There is no acquisition of intellectual property rights by customers as suppliers must be able to freely develop the aaS offerings (their basic business idea) based on input from their customers to make it a competitive technology, without being limited by any customer individual rights;
- **Standardization of business risks** The aaS suppliers offer the same warranties, remedies, indemnities and liabilities across the customer base, reflecting the one-to-many model; and
- **Charging model** It may be based on one or more per user (or 'seat') charge, a transaction charge that will generally have a base level fee, with volume bands (at decreasing per unit cost) above the base level, or a simple subscription model.

In contrast to plug-in IT offerings, aaS models in other industries are still, to a greater extent, customized, and therefore more process-oriented and relational. While standardization may limit the ability for customers and suppliers to collaborate, co-creation is one of the foundational premises of service-dominant logic in industries other than IT. Value tends to be generated in co-creation between the supplier and the customer who has to integrate resources (e.g. skills, knowledge, physical resources as well as decisions) into the value creation process to receive the desired value of a service. For the customer to realize the benefits of an aaS solution it must be built around real customer needs, and more closely aligned to solve customer problems. Customer and supplier need to work together to understand how services will be provided and this has to be properly documented in their agreement. As such, customized aaS models in industries other than IT, when contracted, tend to present all key characteristics of outcome-based contracts.

c) Benefits and Challenges for Suppliers and Customers to move to 'As a Service' (both in Standardized and Customized contexts)

Moving to aaS offerings provides specific benefits while balancing challenges for both suppliers and business customers, whether it is in standardized or customized contexts. A summary of these benefits and challenges is contained in Appendix 2, page 25.

Even if based on anecdotal evidence, it is interesting to highlight those benefits and challenges. It can often be helpful in setting up these arrangements, either during contract negotiations or the delivery phase, to recall the benefits of the aaS model for both the supplier and the customer in the contract's preamble as a clear context setter. The associated challenges will also need to be addressed through appropriate terms and conditions capable of securing the value for both parties, and to mitigate the associated individual and shared risks. This is covered in the following section of this Report, from page 11.



As a Service offerings provide benefits while balancing challenges for suppliers and customers.

3. As a Service Contracting Principles

This section covers both the aaS Principles for model terms in the IT industry where aaS offerings are highly standardized (see subsection a) below on this page), as well as commentaries on specific varying practices for industries other than IT, where aaS offerings tend to be more customized and less standard, with special focus on the Aerospace industry (see subsection b) on page 17).

This section will also clarify how the aaS Principles correspond to the generic IACCM Contracting Principles published under the following link: www.contractstandards.com/iaccm-principles/clauses/principles

a) The 'As a Service Principles' for Standardized As a Service Models in the IT Industry – Guidance and Rationale for Model Terms

Most of the aaS offerings in the IT industry are hosted in the Cloud – e.g. Software aaS (SaaS), and Platform aaS (PaaS) – which may be provided by the relevant aaS supplier (a private Cloud), or by a so-called public Cloud provider. For more details, we refer to the Examples of 'As a Service' in the IT Industry described in section 2. a) of this Report on page 6.

Analyzing the various aaS terms present in these offerings across the market, it is easy to observe that the major suppliers' terms have somewhat harmonized. While there will always be differences, it is possible to discern a similarity of contracting approaches, creating a market standard.

Looking at the spectrum of aaS models, the public Cloud is actually the most standard offering type – a Commodity Standard Offering, as defined in section 2. b) of this Report on page 8 – that comes with attached terms and conditions. It is also important to be aware that the underlying public Cloud infrastructure can significantly impact the freedom of the ultimate aaS supplier to negotiate terms. Often public Cloud suppliers place positive obligations to flow down their terms to the ultimate Cloud supplier and the aaS supplier in its contracts with the customers. Accordingly, this will likely have significant influence on the negotiability of the contract.

Public Cloud suppliers compete on their ability to continually reduce costs and offer better value from a consistently reliable service, which is also an influencing factor for the extremely limited negotiability of their contracts: they seek to minimize risks and operational costs in accordance with the commodity status of their services. Built into the price points and business model for 'as a Service' is the concept of the correct and fair allocation of risks i.e. when it is appropriate for suppliers to accept risk and when it should be borne by customers.

Though the aaS value proposition is clear to most customers – see section 2. c) of this Report on page 10 – many of them struggle with accepting the terms that suppliers present to them.

The objective with the aaS Principles defined in this section is to provide a reference point for contract terms in the IT-based aaS marketplace deployed through the Cloud.

They take into account not only the dominant practices across the market, but also the need to introduce some balance into the equation from both a supplier and a customer perspective. For the detailed purpose of this research, we refer to section 1 of this Report – Project Charter, Approach and Purpose of this Report – starting on page 4.

As a Service offerings deployed on the public Cloud are commoditized one-to-many.

By nature, the aaS Principles are covering those terms that are:

a) relevant to all IT-based aaS offerings delivered through the Cloud, and

b) often a cause of friction between suppliers and customers, and as such tend to delay negotiations and go-to-market timescales.

Many of these relate to specific risks, both regulatory and operational, and these are highlighted below and represent the proposed aaS terms for establishing 'aaS Principles' in the one-to-many environment of the IT sector.

There are further topics not on this list – such as service scope, performance and price. These are areas where elements of variability are inevitable, and therefore they are not included as defined aaS Principles.

While the aaS Principles are applicable as a reasonable start-point for IT offerings deployed on a private Cloud, they represent a reasonable end point for any IT commoditized offering deployed on a public Cloud. They are therefore fully applicable to public Cloud offerings, and where a private Cloud is being provided, there may be more flexibility to negotiate contract terms and thus room to agree upon certain variations to the aaS Principles, as defined in this section.

It must be noted that the aaS Principles are subject to sector-specific variations that result from the applicable regulatory requirements (e.g. in the financial services, insurance or pharmaceutical industries as well as in the public sector). Some of these sector specifics are expressly mentioned in the aaS Principles, but this should not be considered as an exhaustive approach.

Service Level Agreements (SLA) and Remedies

1. Due to the one-to many nature of the service, aaS suppliers typically offer the same service level (SLA) commitment to all customers for a particular offering. SLAs may vary between offerings.

2. Each offering's SLA will usually be publicly available and typically offer an uptime commitment of between 99.0% and 99.5%. While most suppliers will give an indicative incident response time, the pricing points for 'as a Service' will generally not cater for the ability of the aaS supplier to commit to resolution times, as it would place a high burden on the supplier in the event of breach.

3. Typically, the sole remedy for any failure to meet uptime commitment is explicitly limited to service credits. Service credits may take the form of:

a) a credit towards the next invoice,

b) a discount on the applicable price, or sometimes

c) an extension of the aaS agreement term by a certain number of days.

In the first two forms, service credits are usually capped at a percentage of the overall transaction price. Although customers often react negatively to service credits as sole remedy for uptime failure, an advantage to service credits is that they represent an immediate remedy for the customer in the event of an SLA breach, without having to prove loss or damage.

4. Providers may consider offering additional comfort to customers where business critical systems are at stake. In such circumstances, suppliers often use solution architecture where simultaneous instances are hosted across different zones to increase service availability probability. Beyond these operational models, in the event of persistent or severe service failure, aaS suppliers may consider allowing customers to terminate the service if a committed minimum term has been agreed. Risk to the aaS supplier of offering a termination remedy should be low, assuming that the supplier has confidence in its offering. Another angle where business critical systems are involved could be to increase the overall service credit cap to a meaningful level i.e. if the aaS supplier is persistently missing uptime targets, it will hurt.

5. As a Service customers will typically want good visibility, tracking and governance around service levels, which should be provided as part of the service.

The service credits cap could be increased where business critical systems are at stake.

Hosting Location and Data Sovereignty

1. Most aaS suppliers offer full transparency to customers for the locations of their data centres. They also typically allow customers to choose a region or geography within which to host their solutions and data. The aaS suppliers will often agree not to transfer data out of that region / geography, unless they are compelled by law to do so, for example owing to a binding court order. Global aaS suppliers may, however, require customers to agree to temporary access from outside the geography for the purposes of providing support. Any such access would typically be subject to prior consent from the customer.

2. The data protection framework in Europe requires transparency to customers about the location of their data. Most suppliers offer a specific permission only process if they wish to / need to access data from outside the European Economic Area. As a Service suppliers may offer other mechanisms to get around specific permission based access such as binding corporate rules, adhering to the Privacy Shield, signing up to model clauses etc. Yet suppliers need to pay close attention to these mechanisms to ensure that they are effective and comply with data privacy legislation. Many countries / regions are reviewing and adopting data protection legislation similar to the European Economic Area. Understanding what is applicable for customer business is critical.

Leaving as a Service providers free to change services ultimately benefits customers.

Data Processing and Security Policies

1. The standardized nature of aaS operations means that suppliers will generally apply the same data processing policies and the same security mechanisms (e.g. for access controls and data integrity) across their offering for all customers. The business model will not support deviating from a standard operational set-up. That said, some aaS suppliers may, for a corresponding fee, offer a fully segregated service for individual customers. Additionally, a SaaS (Software as a Service) supplier, which by definition controls most of the technology stack, will tend to take more and broader responsibility for protecting data than an IaaS (Infrastructure as a Service) supplier, which is essentially making the infrastructure available to the customer, requiring the customer to take more responsibility for its own data protection.

2. Most larger aaS suppliers will provide a data processing policy or agreement that is designed to meet the requirements of the European Union GDPR (General Data Protection Regulation), and this will cover how data breach / security incidents are dealt with including customer notification processes and timescales. As a Service suppliers often, publish minimum security standards that they adhere to for all offerings. Greater transparency around GDPR compliance should be addressed by smaller aaS suppliers.

3. As a Service suppliers typically also publish relevant security certifications and accreditations and will generally agree to keep these current. These standards are good news for customers and give a greater level of comfort when buying aaS offerings.

Changes to Services

1. As a Service suppliers do not contractually commit to making improvements to their services. The commercial reality, however, is that aaS suppliers have a clear interest in continuing to improve their services to stay relevant in the highly competitive and fast changing marketplace.

2. Contractually aaS suppliers generally reserve the right to make changes to their services. Although unilateral change provisions can often be a sticking point for customers, the commercial reality is that they are necessary for aaS offerings to evolve. Agility and innovation in the marketplace will ultimately benefit customers.

3. Often, to ensure the absence of operational impact for customers, aaS suppliers accept some limitations to this right of change i.e. they commit that the changes will not be materially detrimental to the customer's use of the relevant service and that the offering functionality or security features will not be degraded.

4. Some aaS suppliers also require the flexibility to withdraw a service or part of a service, particularly if the overall contractual commitment is long term. In such cases, customers will need a notice period that gives them sufficient time to either swap the service out for an alternative service offered by the supplier or to find an alternative aaS supplier. Typical withdrawal of service notice periods are 12 months.

5. Additionally, aaS suppliers should offer assistance services for moving to an alternative technology. These services will typically be chargeable.

Termination of Service and Termination Assistance

1. Most aaS supplier terms include provisions for termination for material breach, where the supplier materially defaults on the provision of the service.

2. Customers should have the option to call on aaS suppliers in the event of termination to provide support for the return of data. As Cloud-driven service models proliferate, it is important for customers to be prepared for smooth disengagement and reengagement between suppliers, and customers must be sure they receive their data in a format that enables them to move the data to another supplier. Generally the return of data 'as is' will not be a chargeable service.

3. Customers should be able to require aaS suppliers to securely dispose of data after data is transferred to a new supplier to prevent any further use or misuse of the information. Suppliers should provide customers with appropriate certifications to document the disposal.

At termination, as a Service providers should return customers' data.

Suspension Rights

1. As a Service suppliers generally reserve the right to suspend aaS services in situations where the customer puts the supplier, its platform or services at risk of:

a) a technical or security threat;

b) third party claims due to infringing or illegal content or data; or

c) exposing the supplier to some other liability or risk.

2. Any right of suspension should be balanced especially when aaS services are mission critical to customers, as they require certainty of service provision. Providers can give some comfort by using suspension as the remedy of last resort i.e.:

a) suppliers should allow customers a reasonable time period (unless immediate suspension is critical to avoid harm or they are compelled by law to suspend the service) to fix / eliminate or mitigate the relevant issue before suspension occurs, and

b) suppliers should only undertake suspension under circumstances that are not reasonably capable of other mitigations or remedies.

3. Some aaS suppliers may also agree to only suspend the directly affected service, provided that such partial suspension is technically feasible and otherwise reasonable.

4. As a Service suppliers should have the obligation to restore the suspended service(s) as soon as possible after the cause of the suspension has been corrected or eliminated.

5. Most aaS suppliers will continue to charge during any such period of suspension.

Intellectual Property Rights (IPR)

1. IPR are sometimes not part of the terms included in aaS agreements in the IT sector, as customers receive a service (and not a license to use of software, for example), which is based on a one-to-many offering.

2. Where addressed, aaS suppliers will insist that they own all IPR vested in the systems, software etc. over which the relevant aaS services are being provided whether existing, enhanced or new IPR, i.e. this applies to any modifications and add-ons as well. This secures not only the aaS supplier's basic business ideas but also a more competitive technology for the services and more competitive price levels for the customers. Some aaS suppliers, however, will allow customers to own the insights gained from using the relevant service. This can often be important for customers in selecting a service as these insights can provide a competitive advantage.

Warranties

1. Public aaS suppliers tend to provide very tight warranties, which rarely go beyond the following:

a) the service will comply with the relevant service description;

b) the service will be provided in a professional manner consistent with industry standards; and/or

c) the supplier does not guarantee that the service will be error-free, virus-free or uninterrupted.

2. Such tight warranties are linked directly to one-to-many pricing models and are largely non negotiable.

Indemnification for Infringement of Intellectual Property Rights (IPR)

1. As a Service suppliers tend to offer a 'defend and pay' type of indemnity to protect customers against any third party IPR infringement claims.

2. Recoverable damages tend to be limited to amounts awarded by a final court against the customer or settlement amounts preapproved by the aaS supplier. They generally do not include service replacement costs.

3. When considering the appropriate allocation of risk, customers should be mindful of the price points for aaS models. Uncapped damages, to include all possible customer costs, will not generally achieve the appropriate balance. In practice, rights owners are more likely to pursue the suppliers themselves for infringement claims.

4. Some aaS suppliers require inbound indemnities from customers, often related to third party claims relating to customer content. Such inbound indemnities are not popular with customers and are often subject to limited renegotiation.

Limitation of Liability

1. Typically, the liability of either party in an aaS agreement will be excluded for consequential, punitive and other indirect damages that do not flow proximately from the breach. Damages such as lost profits, loss of business revenues, loss of anticipated savings, and loss of goodwill are also generally excluded.

2. The aaS marketplace standard starting point for liability caps tend to be the preceding 12 months service fees.

3. The landing point for liability caps will depend on a number of factors, including the size and length of the service commitment and the relative strength of negotiating positions. The more commoditized the service, the less likely that an aaS supplier will deem it reasonable to agree a non-standard liability cap. A consideration for customers on agreeing a cap will be the nature of the service itself and whether it is business critical.

Standard liability caps are based on the amount of service fees paid in the preceding months.

Liability for Loss of Data

1. As a Service suppliers often accept limited liability for loss, destruction or corruption of data, where it is linked to a breach of the supplier's data security obligations. Suppliers accept that this is a concern for customers using standard aaS models and in many incidences will agree a separate liability cap in relation to such breaches.

2. Often customers will seek to keep breach of confidentiality separate and some demand uncapped liability for that. There is clearly a tension between what the customer is seeking and what the aaS supplier may be prepared to agree in a one-to-many environment. Customers are often concerned about their end-user data. A sensible compromise can be a separate cap for data security breaches, applying the principles referred to in 3. below.

3. Suppliers often seek to link liability associated with data security breaches to a demonstrable assessment of probable direct losses associated with the breach. Reputational risk will be a factor in any such assessment.

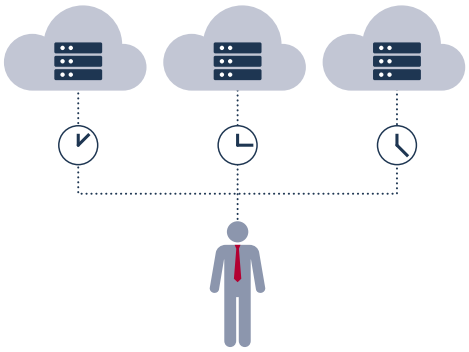
4. For pure loss or corruption of data concerns, aaS customers should ensure that they have provisioned regular data back-ups.

Compliance with Laws

Many aaS suppliers explicitly state that it is the responsibility of the customer to ensure that the way they intend to use the service will comply with any laws, particularly with any industry specific laws that their business may be subject to. The aaS supplier will generally agree to state that its services comply with any laws that are directly applicable to such aaS supplier in the provision of the services.

Audit Rights

1. As a Service solutions are often provided on a multi-tenanted platform, which means that it could compromise security and performance for such platforms or services to be subjected to numerous physical audits by varying third parties, consuming the aaS supplier's internal resources and potentially compromising the integrity of the aaS supplier's platform.



For data loss or corruption concerns customers should make regular back-ups.

2. Instead, aaS suppliers normally have independent third-party auditors that carry out annual security audits, and capture their findings in a Report (SOC1, SOC2 etc.), which most aaS suppliers then will share with the customers.

3. Some aaS suppliers have customers from regulated industries (e.g. from financial services or pharmaceutical sectors). Such customers often require contractual rights of audit for themselves and their regulators. These requirements have become prolific in the marketplace since the introduction of the *European Banking Authority Recommendations on Outsourcing to Cloud Service Providers* ('Recommendations'). The general interpretation is that the Recommendations apply to aaS offerings. These, together with the statutory backstop right of audit provided in the European Union GDPR, make it more difficult for aaS suppliers to side step offering rights of audit to customers. Physical audits, however, should generally be the remedy of last resort if other methods, such as Reports, prove inadequate. The Recommendations have now been subsumed into the European Banking Authority (EBA) revised guidelines on outsourcing arrangements. The revised guidelines will come into force on 30th September 2019.

4. When physical audits are envisaged, the contract should be specific about the type of audit that will be performed (e.g. contract compliance, financial or security), the frequency of the audit and the customer's access to the audit.

b) Commentary on Varying Practices for Other Commonly Used Forms

In looking at the spectrum of aaS models, industries other than IT are more likely to offer custom variants when operating in the business-to-business sector.

Appendix 1 of this Report – XaaS Examples in Industries Other than IT on page 23 – gives a high-level description of 'Power aaS' (or 'Power by the Hour'), the most well known aaS concept offered by manufacturers of jet engines and complete aircraft systems to commercial aircraft operators. Scope of services and contract terms are highly tailored to each customer's needs (e.g. fleet size, support and maintenance requirements, etc.).

What can we learn from this extended experience in the Aerospace industry and increasingly in other sectors?

'Power by the Hour' is the best known as a Service concept offered by manufacturers to aircraft operators.

Based on the input gathered from Aerospace suppliers, it is easy to identify variations to the aaS Principles defined in this Report in relation to standard models of the IT industry.

At its core, a custom aaS arrangement is, when contracted, a type of outcome-based or performance-based contract, such as other service arrangements in the field of outsourcing, managed services or business processes services: it incentivizes suppliers to deliver business critical outcomes that require high levels of performance and consistency, by tying a range of monetary and non-monetary consequences based on the suppliers' accomplishment of measurable and achievable service level requirements.

Custom aaS arrangements clearly present all key characteristics of outcome-based contracts, as typically represented in the Service Level Agreement (SLA):

a) requirements are focused on the contractual outcome(s) and not how the work is performed;

b) there is a set of indicators or performance measures tied to the outcome;

c) achievable performance standards, or performance levels are defined for each indicator;

d) a process is defined to collect, analyze and report data for the selected indicator;

e) there is a range of consequences, either rewards or remedies based on performance.

Outcome-based contracting is not a new concept, but it is in most cases a far more complicated model than most alternative contracting models. Similar to outcome-based contracts, custom aaS arrangements, if incorrectly designed, can result in unintended, and even perverse outcomes. By focusing on the following lessons learned from the decades of operation in the Aerospace industry potential aaS risks can be minimized:

Clearly Define the Contractual Outcome

1. Provide a clearly defined contractual outcome including expressly defined assumptions and potential exclusions. Price levels will reflect the clarity of the defined outcome (see also on page 18 – Clearly Define Price Levels Based on the Targeted Outcome as well as a Minimum or On-Going Price).

2. Carefully consider the role and responsibility of the aaS supplier in the definition of the contractual outcome. Customers may require the supplier to deliver an outcome that they are not solely responsible for. For example, in many cases the customer, or a third party, may be a necessary part of the outcome: this is the case when the achievement of the outcome requires internet access, which will most of the time depend on a third party, the telecom operator. It is important that these factors be considered when calculating the agreed indicators and either excluded (by business rules in the SLA) or included (via reducing the performance standard by including allowance for this additional 'interference').

Clearly Define the Agreed Indicators

1. Develop performance indicators and their supporting measurement process to ensure progress is on track, and targeted outcomes are being met.

2. Select the right set of agreed indicators that are both manageable (there are not too many and the data is easy to gather) and appropriate (the selected indicators drive the right performance).

3. Ensure all aspects of the measurement is included in the definition. This includes whether the measure is continuous measurement (e.g. 24 hours a day) or whether at specified times (e.g. 9am each morning). Whether there are separate measures or performance standards for peak times (e.g. business hours) and off-peak times (e.g. weekends). Whether the indicator is averaged over time periods (e.g. day, week, month, etc.) or over different sites (e.g. London vs. New York), etc. Whether the indicator is self-assessed using the supplier's system or whether the customer can adjust the performance.

4. Design an efficient and effective method for data capture and reconciliation, both at inception and as a way to monitor changing needs over the time.

Balancing the Commercial Consequences

1. Consider both 'service credits', which are a form of rebate from supplier to customer for underperformance, as well as 'service bonus', which are a form of reward for supplier's overperformance versus the defined standards.

2. Consider identifying and separating Key Indicators / Measures without monetary consequence, from Critical Indicators / Measures with monetary consequences.

3. In considering 'service credits', the decision of how much to place at risk needs to balance:

a) having too little at risk to ensure that any under-performance will drive the appropriate response in the aaS supplier (e.g. if the financial impact of underperformance on the supplier is irrelevant compared to the overall basis of payment, it is unlikely to drive behavior and for the customer to finally receive the specified service commitment); and

b) having too much at risk for performance, which may result in risk adverse behaviors from the aaS supplier including increasing fees to ensure that any underperformance will not overly affect the supplier's financial outcome including more aggressive negotiation and stricter adherence of the contract to ensure only non-performance by the supplier (as opposed to underperformance by the customer, third party, etc.) is considered.

This delicate balance is sometimes known as the 'Goldilocks principle' in setting the perfect amount at risk for performance reflecting the need for it to be 'just right'.

Too little supplier risk can lead to poor response

Too much supplier risk can lead to increased fees

4. In considering 'service bonus', there is a need to configure them as a way to incentivize the supplier to invest in the delivery of superior performance and positive collaborative behaviors as a mechanism for rewarding the continuous improvement of performance standards and potential efficiencies.

Clearly Define Price Levels Based on the Targeted Outcome as well as a Minimum or On-Going Price

1. Price levels should be based on the targeted outcome. In the Aerospace industry, the average number of operating hours of the aircraft engine, i.e. its targeted utilization, can be estimated. In order to secure the business model for the aaS supplier, these services charges are often combined with the definition of minimum charges (for example, charges for a minimum amount of operating hours) or a time-based (i.e. on-going) subscription fee.

2. In defining the price levels, the aaS supplier often looks for mechanisms of adaptation over the time, in order to reassess the price levels according to the effective utilization measured over certain periods of time. If, for example, the aircraft engines or systems are underutilized or overutilized versus the targeted utilization, the aaS supplier and the customer can agree upon the application of a mechanism of price adjustment.

3. As more suppliers move into the aaS market, prices may drop and customers may look for their current supplier to accept benchmarking and match the market price.

Choosing a Balanced Payment (Charging) Model

1. Determine whether the 'as a Service' is to be paid on a time-basis (e.g. availability), on consumption (use) or combination of both.

2. Determine whether the 'as a Service' will include a base fee (retainer) regardless of time or consumption (use), including whether this base fee is protected from the application of service credits.

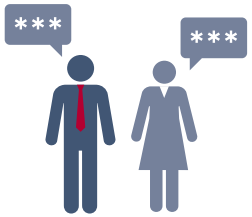
3. Determine how any consumption-based payment scales vary with increased (or decreased) use. For example, if consumption doubles, is a discount applied?

4. When considering a 'service bonus', determine whether there are any eligibility criteria prior to payment of the 'service bonus'.

Secure Sound Relationship through Proper Governance

1. Successful custom aaS arrangements require a more careful and holistic review of trading partner culture, behavior and capabilities to ensure each party is equipped to operate with these models.

2. Governance becomes more important and needs to be more specific, including by securing executive involvement. In custom aaS contexts, there is the need for continually improving the enforceability of commitments and increasingly tracking the level of compliance with obligations. Proper governance allows, among other things, more accurate charging, and less need for validation and discussion resulting in payment delay. As a result, the aaS supplier and the customer are able to constructively undertake difficult conversations, which promotes a better relationship and the achievement of the targeted outcome and committed performance.



Proper governance allows the as a Service supplier and customer to undertake difficult conversations constructively, and promote a better relationship.

Define a Minimum Term and Secure Business Continuity

1. Custom aaS arrangements require suppliers to commit for a defined period of time during which they have no freedom to withdraw from the service. This minimum lifetime is critical for achieving the expected economic business objectives.

2. Termination assistance should be more comprehensive than in standard aaS offerings in order to secure business continuity for the customer: a reasonable time coverage under the service levels and at pricing valid at the time of termination, with supplier's obligations in terms of knowledge transfer, run books, etc.

c) Review of Applicability of the Existing IACCM Contracting Principles

The aaS Principles defined in this Report sit alongside the generic IACCM Contracting Principles – see www.contractstandards.com/iaccm-principles/clauses/principles

Like the IACCM Contracting Principles, the purpose of the aaS Principles is to reduce or eliminate the need for contentious negotiations between suppliers and customers. There is some overlap between both sets of Principles. In case of any inconsistency when dealing with standard aaS offerings, the aaS Principles should prevail.

4. Key Considerations for Customers

If customers wish to gain the cost and convenience benefits of 'as a Service' as outlined in this Report (see Section 2. c) on page 10), what are the implications with regard to customer expectations?

Larger customers are accustomed to negotiating the terms of their contracts and most are reluctant to accept supplier contracts that do not address their perceived risks. Evidence suggests that the contracting vehicle often proposed by customers to their aaS suppliers, as a basis for agreement, is a Master Service Agreement (MSA).

What conflicts does this typically create with supplier's aaS engagement?

These are the key commercial factors to consider for customers when shifting to 'as a Service', distinguishing where appropriate between custom and standard variants:

Is your business ready for the service?

Sometimes, changes in business processes need to happen before an organisation can take full advantage of a third party service. As a prerequisite, customer business processes must be identified and sufficiently standardized for the aaS solution to generate the expected value.

In custom contexts more than in standard ones, it is highly critical that customers are sufficiently aware of their real needs and risks, in order to select the most suitable aaS supplier in terms of capabilities, behaviour and culture. It is also essential that customer processes are, as much as possible, connected for the selected aaS supplier to measure and control the services, their close alignment to solve customer problems, their performance and their relevance versus the targeted outcome in a reliable manner and without depending upon customer staff.

This does not mean that customers can fully give up all skills, knowledge and physical resources in the field assigned to the aaS supplier. On the contrary, the customer needs to retain key resources to be integrated into the value creation and monitoring process together with the aaS supplier in order to finally receive the desired value of service. It is critical that they remain a 'Smart Buyer of as a Service'.

What type of charging model will work best for your organisation (assuming the aaS supplier offers different options)?

When shifting to 'as a Service', it is relevant to compare the total cost of usage versus the cost of owning the underlying assets or resources.

Especially in custom contexts, customers have to consider how and when they receive the greater value as a result of the aaS supplier being focused on outcomes and performance. It may be for example possible to define different phases over the contract term at different usage, performance and price levels (e.g. transition phase, transformation phase etc.).

What is the proper length of contract commitment?

Generally longer and higher volume commitments will drive better pricing. This is true in all aaS contexts, whether custom or standard.

In customized contexts, the aaS supplier's efforts in understanding the customer's specific needs as well as higher investment in individual assets and configuration automatically result in the customer being 'locked in' for longer periods of time as well as higher exit costs. In this particular context, aaS supplier's responsibility to help the customer transition out of the services, extend the services, or define and implement business continuity plans is critical while the supplier discontinues the service.

In standard aaS contexts, the exit costs are relatively low. Sometimes a tension can be created when customers insist on longer contract commitments from the aaS supplier while the customers' priority by moving to aaS (and not purchasing assets or in-house resources) is actually to achieve greater operational flexibility and agility, including by switching from one aaS supplier to the other according to their evolving needs and expectations.

How much configuration is required and what level of support is provided?

It can be difficult to determine the most appropriate aaS model and a customer must consider a number of internal factors in order to make the best choice.

IT aaS providers offer value and benefits to the public due to scale and a standard business model. Consequently, unique requirements are counter to the model and should be discouraged where possible. Yet, there is a typical tension between customer expectations for standard services and price and customer demands for individual configuration, outcomes or performance levels.

If a standard aaS solution is sufficient to significantly satisfy the customer's needs and the customer expects a commodity price, they must also accept that they lose influence in the surrounding of the aaS solution and the applicable terms and conditions.

Customization opportunities are typically very limited when aaS suppliers want to retain full operational freedom to update and change their services to secure their competitiveness, full ownership of IPR to freely develop their product (their basic business idea) and improve their technology, and control on the reliability and quality of service, which are to be secured for their full customer basis. Such standardization is responding to the necessity to deliver at the commodity price levels customers are often seeking.

In custom aaS contexts on the contrary, the lower number of customers leads to very high supplier set-up and operating costs resulting in a very high price. This additional price for both customer and supplier provides an opportunity for both of them to define all aspects of the arrangement.

What is the aaS supplier's product roadmap and declared commitment to investment?

Having visibility on the aaS supplier's product roadmap and investment is fundamental when selecting both a standard and a custom aaS offering. The superior investment by the aaS supplier, particularly in a competitive market, reduces for the customers the need to invest in state-of-art infrastructure, technology and security that many major aaS suppliers can deploy, as well as the risk of obsolescence that are endemic to industries that generate constant innovation.

How to achieve the most efficient relationship governance?

It is first important for customers to pick the right 'dance partner', a partner that is appropriate to their business needs, as this is critical to successful results: financial viability, maturity, agility, innovation, dependability and a proven track record of working with similar customers are all factors to consider.

It's important for customers to pick the right 'dance partner' for their business needs.

The need for efficient and close relationship governance between the aaS supplier and its customer is particularly relevant in the context of business criticality or where a high degree of individual configuration is needed. Custom aaS variants tend to shift relationship dynamics and encourage (and potentially reward) customer / supplier collaboration.

On the other side, the large-scale commoditization of aaS offerings in the IT industry has been accompanied by a high degree of standardization, which in turn reduces the need for individual governance in this area of the aaS spectrum. However, the customer should always monitor aaS performance.

What are the data processing requirements in relation to the aaS solution?

As a Service customers must understand the appropriate security classification of their data and consider the supplier's commitment to secure and protect the data based on the service model. If the service model is not right, customers should not use it.

Customers should at all times be aware of what types of data are involved in implementing the aaS solution. For example, whether it is personal or highly sensitive data, the treatment of this type of data is subject to the data protection framework in Europe.

Customers should also have sufficient visibility of the data security level offered by the aaS supplier and what accreditations might be in place to certify it, and in some cases, the geographic location of data centres.

5. Further Research

As part of the research conducted in delivering this Report a number of areas for potential further research were identified.

a) Explore Future Trends
Possible innovative as a Service principles, which are not dominant practice as of today

b) Explore Lessons-Learned
Key points to consider from those who have introduced 'as a Service'

c) Conduct a Review
of performance measures and associated levels, including assumptions and exclusions, to define a standard KPI and performance level for different aaS models

d) Conduct a Quantitative Review
of service credits and service bonuses to determine a benchmark range of these factors.

Appendix 1 – XaaS Examples in Industries Other than IT

'As a Service' for Consumers

An increasing number of industries are proposing 'XaaS' offerings to consumers with great success.

Some examples include:

'Mobility aaS' in the transportation industry

This concept describes a shift away from personally-owned modes of transportation and towards mobility solutions that are consumed 'as a Service'. It is already challenging traditional business models in the car industry. Consumers do not need to finance or save to buy a car. Instead, they buy what they need and pay a subscription and / or usage fee when they use the service. (e.g. FlexDrive)[3],

Innovative aaS models in the tourism industry

These models include for example on-demand car access for tourists, who can use a car 'as a Service' for as few hours as they need it, and not have to pay for a physical car, or well-known home sharing sites with which tourists do not need the physical product of an hotel anymore to organize accommodation.

Diverse on-demand, consumption based or timeshare models

Increasingly novel possibilities are popping up:

- paying for a drill based on hours of usage or even the number of holes drilled,
- paying monthly packages for fitness equipment regularly upgraded to the latest model, as well as the instructors and the training software (e.g. One Peloton)[4],
- paying a monthly subscription for toothbrushes and toothpaste (e.g. Getquip)[5],
- paying a monthly subscription to borrow vintage and designer clothes across multiple destinations, so consumers can travel with less luggage (e.g. Lena Library)[6],
- paying a monthly subscription for dogs when people want canine company for their walks,
- paying a monthly fee for movies and music 'as a Service', etc.

Increasingly novel models include paying for a drill based on time or even holes drilled.

'As a Service' for Businesses

The aaS models replace or augment traditional sales models to businesses for equipment, systems, components and hardware. The **Defence and Aerospace industry** is one of the pioneer sectors for aaS models. For almost 50 years, manufacturers of jet engines and complete aircraft systems have offered 'Power aaS' (also called 'Power by the Hour') with an increasing popularity. Jet engines and aircraft systems are highly complex and aircraft operators have seen clear benefits in the manufacturers' aaS offerings by only paying when the engine or system is both working and being consumed (e.g. flying). The most comprehensive variant of this model charges users per flight hour not only for overhaul, pooled spares (which are still owned by the manufacturers) and operations monitoring, but also for making engines and systems available.
The user experience is what the aircraft operator buys, and not the physical engine or system, while the manufacturer and service provider maintains the infrastructure, looking after the resources that deliver the experience the customer needs.

3. www.flexdrive.com/terms-of-use/
4. www.onepeloton.com/company/contact
5. www.getquip.com/terms
6. www.lena-library.com

The examples in industries other than Aerospace and Defence are rapidly multiplying:

- **'Bits & bytes'** industries, such as the telecom equipment industry, are offering equipment and systems 'as a Service', the customers paying for the performance of the services delivered by such equipment or systems.
- **Diverse industries** offer 'Equipment / Hardware aaS' following multiple variants:
  - Hilti, which manufactures products for construction, maintenance, and mining industries, to professional end-users, has disrupted the market by shifting from a purchase to a transaction based business model. Hilti is handling the management and maintenance of the tools and their customers can handle spikes in demand without needing to buy equipment that goes unused most of the time.[7]
  - Almost 30 years ago, SKF shifted from the sale of bearings (where it was struggling to compete with low-cost suppliers) to instead selling 'trouble-free operations', where predictive services sought to guarantee machine availability.
  - Michelin, rather than charging professional customers for tires, is now offering the option to manage their tires and charge them this service based on kilometres driven, number of landings for airlines, tonnes transported by mining sector customers etc, depending on their industry. Services cover tires selection, mounting, maintenance, assistance, regrooving, end-of-life recycling. Results are achieved for customers by using embedded pressure monitoring systems to optimize preventive maintenance and reduce downtime.[8]
  - 'Robots aaS' is another similar model available for businesses, which are provided robots for onsite use through a subscription to the shared software model. This is a popular model as it offers cost affordability, accessibility and feasibility.
  - The security and surveillance industry offers 'Security aaS' for corporate infrastructure on a subscription basis.
  - The logistics industry offers various aaS models including supply of shipping containers (e.g. 'Container aaS').

Rather than charging for tires, Michelin is offering to manage tires and charge based on distance driven.

As a Service models are also replacing traditional sales models to businesses for consumables and utilities. There are numerous examples, such as:

- **The lighting industry** offers 'Light aaS'. As an example, Philips has entered into a partnership with Schiphol Airport in Amsterdam, where Schiphol pays for the light it uses, while Philips remains the owner of all fixtures and installations. The parties are seeking relevant reduction in electricity consumption over conventional lighting systems.
- **The battery industry** offers 'Energy Storage aaS'. The system can combine an advanced battery storage system, an energy management system, and a service contract, which can deliver value to a business by providing reliable power more economically.
- **The chemical industry** offers chemical management services according to which chemical companies take over most activities around the use of chemicals for some customers at their premises, from application development according to customer requirements, to logistics, process development, chemical application, and waste management.
- **The industrial gases industry** offer models such as 'Utilities aaS'. etc.

7. www.hilti.com/content/hilti/W1/US/en/services/tool-services/fleet-management.html

8. www.michelin.com/en/activities/related-services/services-and-solutions/

Appendix 2 – Summary of Benefits and Challenges of 'As a Service'

Benefits of As a Service Models

Modern businesses have become highly dependent on their infrastructure, equipment, systems, solutions etc. These represent significant investments, yet often they have not delivered expected benefits. Suppliers rarely commit to results or outcomes, leaving customers often disappointed with their actual return on investment. These underlying frustrations are then exacerbated by the speed of change – new products, new software, new technology-driven concepts – that quickly render past investments outdated or obsolete.

Against this backdrop, the value proposition of aaS offerings for business customers is clear, in contrast to the more traditional purchasing or licensing models:

Limited upfront investment Customers can take assets out of their balance sheet and manage costs as an operating expense;

Scalability and volume flexibility Legacy systems lack the scalability that aaS solutions can offer by allowing customers to grow and expand (or reduce) the level of services needed as time goes on. With aaS offerings, customers tend also to get out of the trap of over purchasing features that they never use;

'As a Service' offers scalability allowing customers to grow and expand the level of services over time.

Increased flexibility and agility 'As a service' can address issues that legacy systems are simply not flexible and agile enough to adapt fast enough to, both from a technical and from a business perspective;

Value and performance aligned to actual needs While more clearly evident in customized aaS offerings, 'as a Service' drives performance and value by linking supplier payment to comparison between actual and required supplier performance and value;

Predictable cost This is driven by a highly scaled approach as well as predefined subscription fees;

Access to continuous renewal and innovation By providing assets 'as a Service', it is up to the service provider to upgrade, update, and replace equipment, hardware or software rather than the customer. Few companies can justify the same level of investment in state-of-the-art infrastructure, technology and security that many major aaS suppliers can deploy, making the latest and greatest quickly available to their customers. The superior investment in product roadmap and evolution by the suppliers, particularly in a competitive market, reduces for the customers the risk of obsolescence that are endemic in industries that generate constant innovation;

Zero hassle with the equipment / product / system purchased Installation, maintenance and upgrade are part of the services offered to the customers;

Risks transfer to the supplier As a Service offerings work as a sort of 'insurance' for customers. They will opt to transfer risks, which following traditional purchasing models of in-house infrastructure / equipment / system were solely borne by them, to the supplier. The supplier can become responsible not only for the availability, performance and outcome of the infrastructure / equipment / system, but also for its reliability and security as well as for its compliance with Law and regulatory requirements.

The large-scale commoditization of aaS offerings brings one other benefit to customers, which is:

Lower operational costs and (relative) ease of change of supplier This is essentially driven by aaS offerings which operate as if they were providing utilities, such as is the case in the IT industry with public Cloud offerings.

For suppliers, aaS models are a direct response to competitive pressures and product commoditization. While initially designed to differentiate, they are increasingly an attempt to maintain customer loyalty and preserve cash flow.

Challenges of As a Service Models

The switch to 'as a Service' represents challenges, which vary depending on whether the supplier has an established customer base, or is newly coming to market. Among key factors to consider are:

Complexity of defining a committed outcome
In aaS offerings that commit an outcome or specific result, the difficulty for both the supplier and the customer is to know and adequately control the customer's needs and processes. Customers often struggle to define precisely what outcome they want. The key challenges are the following:

- **Change management** Shifting needs, new capabilities, innovative methods frequently create the need for dynamic change capabilities. This can be complicated to embed in the terms of the contract and may require regular renegotiation of the contract, even potentially its termination.

Dynamic change can be complicated to embed in a contract requiring renegotiation or even potentially its termination.

- **Whether suppliers have the capabilities to oversee and manage a committed outcome** One example of capability is whether there are reliable monitoring or measurement systems to generate timely, accurate and mutually agreed data about the results achieved.
- **Skills and competencies** An outcome-based commitment demands different levels of governance and performance management than traditional forms of sales and must be not only addressed but also actioned on a regular basis.
- **Alignment of culture** Outcome delivery typically requires a greater level of collaboration, a readiness to share information and work on joint problem solving. These challenges alter the nature of customer relationships by creating the need for regular interactions and feedback loops over time to continuously improve service offerings.

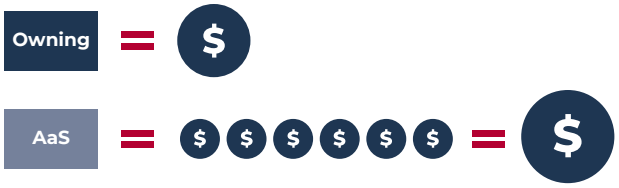
Greater balance sheet and cash flow burden
In aaS models, the core costs of equipment / hardware / system – e.g. the 'bill of materials' or factory costs – move to the supplier's balance sheet once a sale is made and stay there as an asset. An asset is an acquisition that provides a long-term economic benefit to the business. These costs do not move through the income statement until the equipment / hardware / system is depreciated or decommissioned. Suppliers have therefore to consider the following question: For every aaS sale made, can we support cash flow as equipment / hardware / system stays on our balance sheet?

Need for a longer customer retention / 'lock-in'
In customized contexts, as a consequence of the high set-up and operating costs described above, suppliers focus on customer retention over customer acquisition by offering multiple services to the same customer and 'locking-in' the customer for longer periods of time;

Need to compensate for reduced margins
'As a Service' models can improve margins when the underlying equipment / hardware / system is managed and monitored from afar, and upgrades, updates and patches are deployed through internet protocols. Suppliers can also achieve higher margins through additional selling of value-added services in the service package (e.g. insurance or maintenance).

Customers also face relevant challenges when moving to aaS models, whether it is in a customized or in a standardized context. In a customized context, the challenges of aaS for customers are essentially as follows:

Greater total lifetime cost If customers can afford the cash burden to purchase equipment / hardware / system upfront, the option to use the underlying equipment / hardware / system 'as a Service' may be less attractive. The total cost of usage may be considerably increased in comparison to the cost of owning. Customers have therefore to consider the following question: do we have greater lifetime value as the result of an ongoing continuous relationship with the aaS supplier who is focused on outcomes and performance?



For customers who can afford to purchase equipment upfront, the initial cost of owning may be lower than the cumulative cost of 'as a Service'.

Losing control on physical items and how costs are incurred If the equipment / hardware / system is essential to customers' operations, where reliability and control are critical, customers will likely opt for classical models and the status quo. Customers need to accept this change in control, trust suppliers will deliver and recognize a shift in suppliers' commitments in order to embrace aaS with all its benefits in terms of costs, use and performance;

Difficulty to change supplier As a Service customers are 'locked-in' to longer-term services contracts. Since selecting a supplier requires effort and time, customers stay as long as the service continues to meet their requirements. This tends to increase customer 'stickiness', as it makes it more difficult for them to churn away. The lack of supplier's responsibility to help customers transition out of the services, extend the services, or define and implement business continuity plans becomes a risk for customers while the supplier discontinues the service.

In standardized aaS models of the IT industry, customers also face challenges:

Data security and privacy protection Using 'as a Service', customers lose control on where their data is, or who has access to it. It is therefore relevant for the suppliers to ensure security, accessibility and integrity of data, to give comfort on compliance through vulnerability scans and other testing, to have internal contingency plans, to go through frequent assessments of risk from Information Security personnel, performance levels and additional third party security / audit services. Customers must, on their side, assess their suppliers as well as their respective data security protections following a best-of-breed approach, which focuses on the best feature sets from an array of solutions and ensure high levels of security. Customers may also have to pay for add-on features to the offerings of their suppliers: e.g. additional encryption at various levels or additional security measures such as back up, end point protection, next-generation firewalls etc.;

Unilateral changes of services by the supplier The supplier may change the service without the customers' knowledge or consent, causing a potential detrimental impact to them.

Appendix 3 – Putting 'As a Service' to Work: a Guide to Use and Implementation

The decision to use an aaS model needs to be undertaken in a careful and considered manner to ensure both customer and supplier realize the full benefit of this type of commercial relationship. To assist in this decision the following text provides some operational and organizational guidance on whether an aaS approach is suitable.

Step 1: Should I use 'As a Service'? (Assess Net Benefits)

Step 1 simply poses the threshold question of whether an aaS model will deliver net benefits to the customer; that is, the benefits will outweigh the costs. Areas that should be considered in Step 1 are:

- Extent of supplier's freedom to deliver the contract outcome including the application of novel or innovative solutions;
- Known accountability of the customer, supplier and any third parties in delivery of the overall outcome;
- Impact of performance on supplier's overall outcome;
- Cost of collecting, cleaning (inc. adjudication based on specific business rules), calculating, analyzing, reporting and storing performance data;
- Access to accurate and meaningful data to measure performance; and
- Future variation in performance through maturity of the item being supported.

The Step 1 result is a list of potential benefits and costs of using an aaS model for this customer need.

Step 2: Could I use 'As a Service'? (Assess Key Enablers)

If Step 1 identifies positive net benefits that could be realised (i.e. it is worthwhile doing), we then need to decide whether we have, or could put it place, all the enablers to support the successful application of an aaS model including cultural aspects. Areas that should be considered in this step are:

- Stakeholder support of an aaS approach including executive, users, contract managers, procurement and contracting, legal, etc.;
- A governance structure that supports the regular reporting and discussion of aaS performance;
- A contracting architecture that can use an aaS model; and
- Potential suppliers are, or will be, accepting an 'as a Service'.

The Step 2 result is a list of the enablers (and detractors) that will need to be addressed if an 'as a Service' is to be successfully used.

Step 3: How to do an 'As a Service' (Select the As a Service Model)

If Step 2 confirms the enablers are in place, or strategies are agreed to develop / source them, to deliver a highly successful aaS model we then need to decide which specific aaS approach to use based on the four types of aaS models – see section 2. b) of this Report on page 8 (Definition of 'As a Service').

It is encouraged that when following this approach the decisions, including the considerations and evidence, be collected and recorded as part of the procurement strategy documentation.

Report written by:

Tim Cummins *President, IACCM*

Paula Doyle *Vice President, Legal Sector at Globality, Inc.*

Christine Pauleau *General Counsel and Company Secretary, Information, Communication and Technology Industry*

Andrew Jacopino *Senior Adviser, Ngamuru Advisory and former Assistant Secretary, Supplier Analysis and Engagement, Australian Department of Defence*

For more information contact:

Tim Cummins *President IACCM*
tcummins@iaccm.com

Sally Guyer *Global CEO IACCM*
shughes@iaccm.com

www.iaccm.com

IACCM
International Association for Contract & Commercial Management