



# Towards banking-as-a-service

CLOUD-BASED SERVICE MODELS AND THE TRANSFORMATION OF BANKING

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# MANAGEMENT SUMMARY

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Improving cost-income ratios by 15 percent or more is becoming a necessity for banks and wealth managers looking to win through in a new age of banking. Moving operations to a service-based model such as software-as-a-service (SaaS) and business-process-as-a-service (BPaaS) can help achieve this goal and free up the business to focus on its customers. These innovative models combine the advantages of outsourcing with

the power of automation, ubiquitous access and virtually unlimited scalability. Yet the answer lies not just with technology, but with business strategy. To achieve true simplification, we believe that banks must be prepared to critically rethink their business models and seek close alignment with the capabilities of these new platforms. Is now the right moment to move your business to the cloud?

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# CHALLENGING TIMES ARE HERE TO STAY

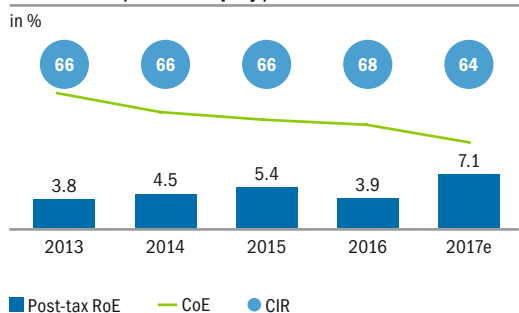
Almost a decade has passed since the financial crisis, yet banks are still struggling with the aftermath. Average profitability across the sector remains below investors' expectations. Where there has been progress, it has mainly been in the area of reducing risks: in-depth analysis reveals that growth in profits in recent years is

largely due to banks reducing the size of write-downs from loan loss provisions and extraordinary items. In the area of operating efficiency, as measured by the cost-income ratio (CIR) of the banking sector, banks do not show any improvement overall.

## Banks have boosted profits by reducing write-downs, not by improving operating efficiency

Key figures for the top 50 European banks.

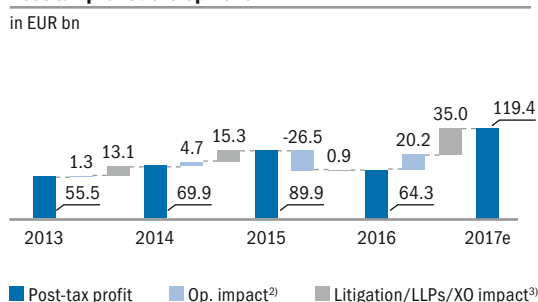
### Post-tax RoE / cost of equity / CIR<sup>1)</sup>



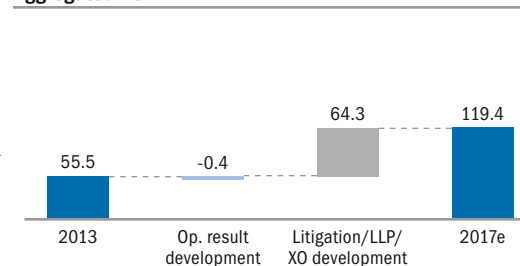
### Post-tax RoE 2017e in detail



### Post-tax profit development



### Aggregated view



1) Post-tax RoE (return on equity): post-tax profit to average total equity, cost of equity (CoE): 10-year moving average of European 10-year government bonds as risk-free rate plus risk premium of 5% multiplied by banks' individual beta; CIR (cost-income ratio): operating expenses to total earnings

Figure A: Profitability of European banks

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The challenge facing banks is significant. Institutions are tightly stretched in terms of equity, and they need to retain profits. Nor are things likely to start looking up in the short term – as we discuss in our 2017 European Banking Study. Unless banks take action now, their profitability will deteriorate further still in the coming years, even in optimistic scenarios. A number of factors underlie this decline:

- Low interest rates are hitting banks more and more as portfolios with higher margins mature
- Regulatory requirements (e.g., MiFID II, Basel IV) are expected to push up operating costs and at the same time reduce margins from income
- Credit risk costs are at a historic low and likely to start rising again, putting even more pressure on results
- The cost reductions made by banks have not been rigorous enough and in many cases will be offset by wage drift within a few years
- For private banks, the poor performance of asset management, especially after fees, has led to increased price sensitivity among clients

These developments come at a bad time for banks. Future challenges, primarily driven by technological innovation, are already looming on the horizon. It is safe to say that over the next decade, technology issues will dominate the top-management agendas of banks in much the same way as regulatory topics did in previous years. Technology innovation will not only shape customers expectations, it will fundamentally alter the way banking services are provided and who provides them. Challengers such as Starling Bank, Monzo and N26 are already demonstrating how technology-powered banking can deliver true innovation for customers. New concepts such as “open banking” are redefining the banking value chain by exposing banking services to “open for access” and aggregation by third parties via regulatory-compliant APIs.

# SIMPLE IS BEAUTIFUL – PREPARING FOR TRANSFORMATION

Most banks are ill-prepared for the transformation ahead. Their bespoke structures, having developed gradually over time, are dogged by complexity. Bloated product portfolios, error-prone manual processes and antiquated IT architecture not only drive up the cost of operations, they severely limit maneuverability. Consequently, implementing complex regulatory requirements such as BCBS 239 or GDPR, building fully automated, end-to-end digital processes and integrating the latest products offered by FinTechs is both cumbersome and costly. The effort required ties up banks' capacities and prevents their top management from focusing on truly value-generating business issues.





Doing away with this complexity that has developed over decades is not easy through a process of gradual evolution. More often, banks need to make a clean start. They need to critically reappraise their business and operating models, focusing on the parts that truly matter and radically simplifying the rest – streamlining product portfolios and outsourcing or standardizing processes and IT systems.

This radical step involves a significant revamping of existing process and IT structures. Here, we find that banks increasingly rely on the ready-made, standardized software and process solutions offered by external providers. Banks see these solutions as a fast-track to cutting complexity in terms of reduced resource consumption and shorter implementation times. They hope to benefit from reduced costs due to economies of scale in development and operations. Often, they also see these external solutions as a gateway to standards and market innovation.

Banks have several options open to them for integrating external solutions into their operating models. In the simplified picture below, we present four distinct approaches. In practice, however, banks often apply a mixture of approaches in different parts of their process and IT landscape.

## From a new core banking platform to cloud-based service models

Options for reducing complexity

Value chain coverage	Option 1 Replace core banking platform	Option 2 Full-service IT provider	Option 3 "Traditional" BPO	Option 4 Cloud-based service models (SaaS/BPaaS)
 Business processing	Internal	Internal	Outsourced	Internal=SaaS External=BPaaS
 Application-management	Internal	Outsourced	Outsourced*	Outsourced
 Software development	Outsourced	Outsourced	Outsourced*	Outsourced
 Infrastructure operations	Internal / Outsourced	Outsourced	Outsourced*	Outsourced

\*) can also be run in conjunction with bank's own IT systems

Figure B: Options for reducing complexity

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The first option is for banks to **replace their core banking platform (CBP)**. Replacing the CBP typically means implementing an external standard software package or packages – a core banking system along with complementary satellite systems – on site. Although the original motivation for replacing the CBP is the need to modernize legacy IT infrastructures, it often also serves as a catalyst for streamlining product portfolios and processes. Implementation “on-site” implies that the management and operations part mainly take place internally rather than involving an external provider.

Option 2 for banks is to **migrate to a full-service IT provider**. This goes a step further than option 1, in that the core banking platform is not operated on premises but insourced from a third-party IT provider. This full-service IT provider is not only responsible for developing, maintaining and operating the software platform, but also operates the technology infrastructure – IT systems as well as other facilities (ATMs, output management, and so on). Typically, the IT provider in question serves several banks, creating considerable economies of scale.

Option 3 is **traditional business process outsourcing (BPO)**, in which banks not only outsource technology provision but also use the dedicated personnel capacities of an outsourcing provider to operate their core or non-core activities. Typically, the activities outsourced are routine: classic examples include securities processing and payment operations. Providers of such outsourcing services may employ their own technology, integrated into their clients’ IT landscape.

The fourth and final option in our simplified scheme is to adopt **cloud-based service models** such as “software-as-a-service” (**SaaS**) and “business-process-as-a-service” (**BPaaS**). This option has become popular thanks to a wave of technological innovations collectively known as “cloud computing”. But it is also the notion of “service” – in the sense of a highly automated bundle of software programs and/or process functionalities – which makes this concept particularly interesting for banks striving for simplification.

While Options 1, 2 and 3 have been successfully practiced by banks for years or even decades, Option 4 is only now beginning to gain traction in the banking sector. Yet we believe that this option is of overriding importance for the future of banking. Below, we take a closer look at the concepts that lie behind cloud-based service models and their value for banks as a strategy for reducing complexity.

# CLOUD-BASED SERVICE MODELS — THE NEW KID ON THE BLOCK

Cloud-based service models are about providing access to resources such as infrastructure, software applications and business tasks, packaged as services. These services are said to reside “in the cloud” — in other words, they are available for shared use in private environments (in the case of a “private cloud”) or via public networks (the “public cloud”) or some combination of the two (a “hybrid cloud”). Given that they will potentially be used by large numbers of users, it is essential that services are scalable and the process of onboarding and integrating new customers is automated.

The table below shows the three main types of cloud-based models available. The best known — software-as-a-service (SaaS) — became popular about two decades ago thanks to a new breed of software vendors such as Salesforce.com. Today it is an established form of software distribution. “Infrastructure-as-a-service” (IaaS) is also well established, having been popularized by tech giants such as Amazon, Google, IBM, Microsoft and Oracle in recent years.

Business-process-as-a-service (BPaaS) extends the notion of “services” beyond pure software to the interplay of software and human agents in the context of specific business tasks, such as securities settlement or payment processing. This concept is particularly promising for complexity-riddled banks. Essentially, it implies that any banking function or service, such as processing a payment, booking a transaction or performing a mark-to-market-valuation, does not have to be done internally but can be done externally by some provider residing “in the cloud”. In other words, we have entered the world of “banking-as-a-service”.

Within this bright new world, it is up to banks to decide which services to conduct internally and which to farm out to external providers. The providers of such services, for their part, have a strong incentive not only to take care of business process execution for banks but also to continuously improve their own efficiency through automation, in close alignment with the underlying technology.

## Three types of cloud-based service models

Service model	Description
IaaS – Infrastructure-as-a-service	Provision of infrastructure (e.g. processing capacity, communication networks, storage) either as dedicated hardware or in the form of “virtualized” resources
SaaS – Software-as-a-service	Provision of software applications via electronic networks (including application management and maintenance)
BPaaS – Business-process-as-a-service	Provision of standardized and/or automated business process building blocks, continuously optimized by the service provider



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## **FROM SOFTWARE-LEVERAGED PROCESSES TO PROCESS-LEVERAGED SOFTWARE**

How does the notion of “banking-as-a-service” compare to traditional forms of outsourcing? The key distinction is the degree of standardization and automation. Typical traditional outsourcing arrangements are highly customized to the needs of the client. Moreover, they are usually characterized by transfers of staff and technology infrastructure from the client to the provider, who may provide their services from a low-wage country, while the existing processes and technology structures are often retained.

By contrast, service-based models are built from the outset with standardization and automation in mind. They are characterized by modular building blocks containing standardized pieces of business logic, for the most part executed by software with only limited human intervention. The result is straight-through processing (STP) rates of 90 percent or more for processes that are amenable to standardization.

In the past, this type of standardization would typically lead to unacceptable limitations with respect to business requirements for all but the simplest scenarios. But modern software architectures increasingly allow for “long-tail” customization – producing an additional variant of a banking product, service or business process at virtually no extra cost. What used to be an exception, handled by a human agent, can simply be implemented as yet another process variation, handled autonomously by the software. In the world of banking-as-a-service, software no longer merely supports the business processes executed by humans: it becomes the process itself. We are witnessing the gradual transformation from software-leveraged processes to process-leveraged software.

## THE CASE FOR BANKING-AS-A-SERVICE

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As mentioned above, models such as SaaS and BPaaS offer a high degree of standardization and automation. But they also provide a whole range of other advantages over alternative approaches. Chiefly, these advantages are as follows:

- **Accessibility:** Cloud-based service models offer constant accessibility; the services are always available when you need them. As a result, many new solutions and applications are only available in a service-based format. This is already the case for resource-intensive Big Data and “killer apps” based on artificial intelligence. Indeed, many commentators argue that it is precisely this fact that will ultimately lead to cloud-based solutions winning out over on-site software
- **Flexibility:** Cloud-based service models are typically geared toward rapid adjustment and can be provisioned and released much faster than traditional on-site solutions. As cloud infrastructures are operated centrally, their time-to-market is far superior; the effort for installing, configuring, upgrading and distributing software solutions is markedly reduced
- **Scalability:** Cloud infrastructures are built for growth and scalability, not just in technical but also in economic terms – users are usually charged on a pay-per-use basis, relieving banks from the need to tie up human or capital resources. Moreover, expenditure related to business operations and IT can “breathe” in line with the overall volume of business
- **Risk reduction:** Cloud-based service models allow for easy replication. That means they effectively mitigate the traditional operating risks that result from a lack of capacity or insufficient failover mechanisms. The dynamic nature of cloud-based architecture is also well suited to increasing resilience in the event of security attacks or technology accidents
- **Efficiency:** Cost reduction is one of the strongest arguments for cloud-based service models. As we discuss below, for banks this not only reduces the cost of operations but also means that changes, such as implementing new regulations or developing new digital innovations, are less expensive and less draining on resources

## COMPARING OPTIONS – THE BOTTOM LINE

How do cloud-based service models stack up against traditional options for renewing banking architecture, specifically in terms of cost savings? We can illustrate the cost implications of the four options using a simple model. We consider a typical small- to medium-sized bank running on a legacy platform and struggling with complexity issues (as outlined further above). This complexity translates into low efficiency, modeled as a rather unfavorable – yet not untypical – cost-income ratio of 75.

The cost structure of our model bank is assumed to be dominated by sales/branch network costs, operations, the corporate center and IT, each assumed to contribute around one-third of the costs. Furthermore, we differentiate between material and personnel costs, and assume certain relationships between the costs of “change the bank” and “run the bank” (30:70).

The illustration below provides an overview of the major costs for the four options. We assume that each cost driver has a specific impact on the personnel and material costs of specific areas of the bank (sales, operations, corporate model, IT).

### How do the different options reduce costs?

Major cost drivers (illustrative)

	Option 1 <b>Replace core banking platform</b>	Option 2 <b>Full-service IT provider</b>	Option 3 <b>“Traditional” BPO</b>	Option 4 <b>Cloud-based service models (SaaS/BPAAS)</b>
<b>COST DRIVERS</b>	Net change* in license costs, hardware costs for legacy applications and personnel costs due to simplified architecture	As Option 1	As Option 1	As Option 1
	Net reduction** in “change” costs due to offloading development onto provider and cost-sharing effects			
		Net cost reduction due to cost-sharing for infrastructure and application management	As Option 2	As Option 2
			Net cost reduction due to cost-sharing and lower labor costs for business processes	As Option 3
				Net cost reduction due to increased degree of automation across infrastructure, application and business processes

\* Assuming overall reduction after considering offsetting effects such as licensing, hardware and personnel expenses for the new solution

\*\* Excluding migration project

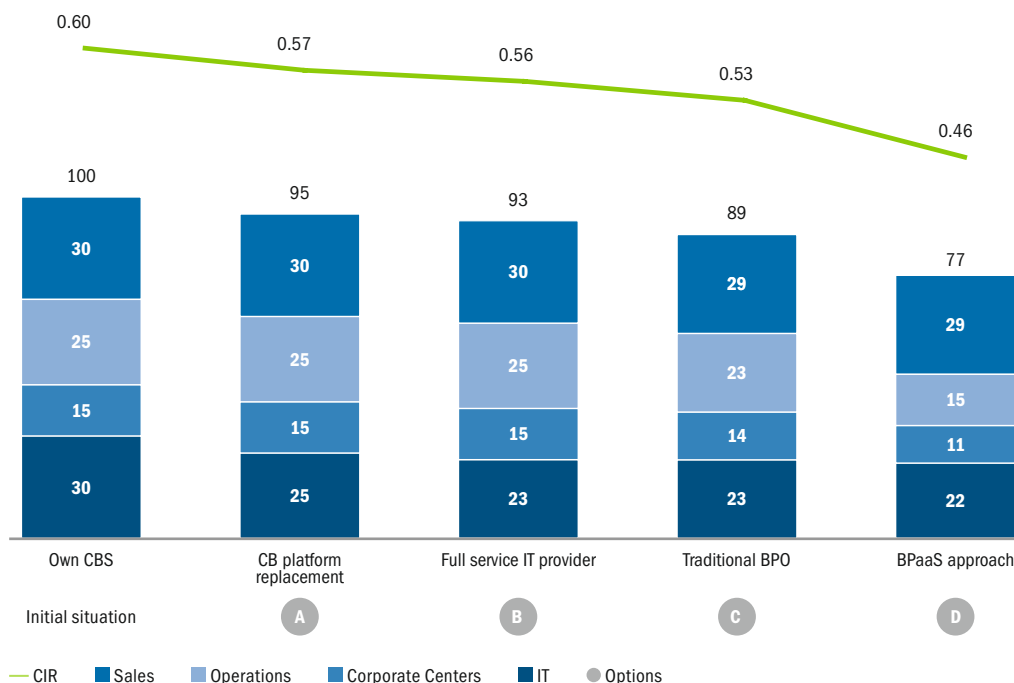
Figure C: How do the different options reduce costs

We can model the impact of the cost drivers on the basis of expert estimates from real-life projects. To do so, we need to make a number of assumptions. For example, we assume that increased automation leads to less personnel, modeled as an inverse linear relationship between assumed improvement in the STP rate and reduction in personnel costs. Furthermore, we assume that offloading some project activities to an external software provider leads to a decrease in change budgets of at least 20 percent (conservative estimate) as the costs are shared out among the community of users. We also assume that the efficiency and scale effects from outsourcing processes are largely offset by VAT, so the resulting cost reduction is limited (although, of course, outsourcing may be motivated by reasons other than efficiency alone).

Applying these and other effects to the assumed cost structure of our model bank allows us to compare the overall cost impact of the four different options. The figure below shows the impact for each area of the bank relative to the initial situation (normalized to 100 percent) and the corresponding development of the cost-income ratio. Although the model rests on several simplifying assumptions, it illustrates the interplay of the drivers and allows us to derive realistic expectations with regard to the possible cost reduction.

### How much can banks save?

The business case for the four different options. In %



Remarks:

- Cost split by functions and between run the bank expenses and change budgets based on average of sample
- Quantitative drivers differentiated by impact on staff and material expenses
- All effects (particularly from increased provider fees) considered including VAT
- Quantification of different changes inherent in each option based on zeb project experience
- Possible impact on revenues excluded, assumed to remain steady

Figure D: How much can banks save

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With **Option 1 (replacing the core banking platform)**, cost reduction is driven by the fact that integrated core banking platforms typically require less personnel than the complex legacy architectures that they replace. Moreover, implementing a standard software package significantly reduces the amount of effort required to make changes in-house, since these come as part of the package. However, the overall cost impact remains rather low unless leveraged by corresponding process or product optimization initiatives.

**Option 2 (migrating to a full-service IT provider)** extends the scope of cost sharing into the domain of infrastructure operations and application management. The “infrastructure” part of the IT (for example, management of hardware, system software and databases, networks and output management) accounts for a significant portion of the overall IT costs. The provider’s ability to share those expenses among a community of clients leads to IT cost savings of an estimated five to ten percent post-VAT.

**Option 3 (traditional BPO)** rarely delivers significant cost benefits, unless accompanied by a significant overhaul of processes or sourcing from low-wage countries. True, there are economies of scale, but these are largely offset by the increase in VAT. In our model we assume moderate cost savings of ten percent across sales, operations and the corporate center by combining factors such as functional specialization and lower wage costs from nearshoring.

**Option 4 (cloud-based service models such as SaaS and/or BPaaS)** builds on the effects of the first three options, adding the benefits of automation. We model these benefits as considerably higher STP rates driven by the industrial mode of operation, particularly affecting operations and the corporate center. Automation is an extremely powerful cost lever: increasing the share of automated tasks from 30 to 80 percent more than halves the required personnel (this effect is partially offset by the need to hire qualified experts to deal with exception management and configuration of the system).

Overall, our model shows that banks can achieve significant cumulative cost reductions by choosing Option 4 – cloud-based service models such as SaaS and/or BPaaS. The impact can be **a 10 to 20 percentage point improvement in CIR**, driven by ability to offload “change” and “run” to an external provider, the resulting cost-sharing advantages and the greater degree of automation.

# ON THE ROAD TO MATURITY

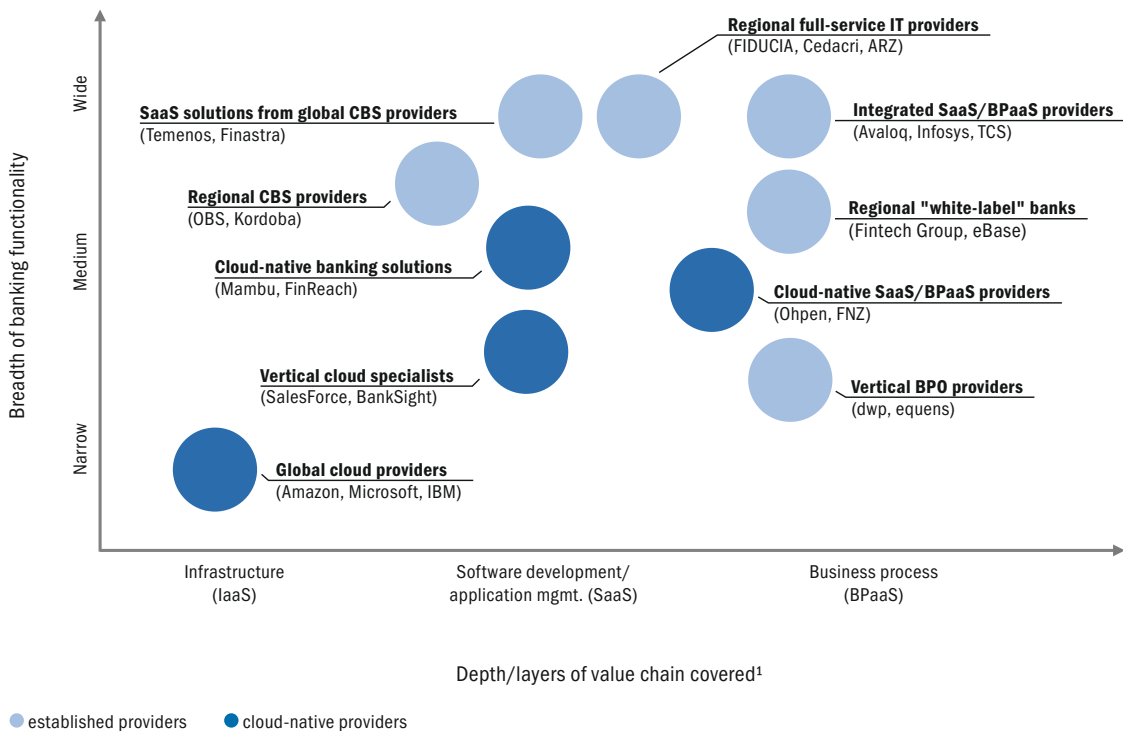
Given the strength of the arguments above, embracing service models such as SaaS and BPaaS would seem to be a no-brainer. Why, then, are some banks still hesitant to actively pursue this strategy?

First, let us look at the supply side. Service-based cloud solutions are currently provided by two types of players: established vendors in the processes of transitioning their offering to a service-based mode of delivery, and new incumbents who are native to the cloud. These two types of players coexist in the space for outsourcing solutions alongside traditional, mostly regional providers of infrastructure, software and process services.

In the area of infrastructure services, IaaS offerings by global cloud providers such as Amazon, IBM and Microsoft are quickly becoming part of the mainstream, even for banks. Their ubiquity, in turn, fuels the emergence of new entrants into the banking software space whose offerings are purely cloud-based – companies such as Mambu and FinReach. These players compete against established global providers of banking software – companies such as Avaloq, Finastra and Temenos – who already actively market their SaaS offerings either using third-party or proprietary cloud infrastructures.

## The supply side

Cloud-based service models: The vendor landscape



<sup>1</sup> Vendors can cover multiple modes of operation

Source: zeb

Focus: European offerings for small and medium-sized banks; companies named are examples only

Figure E: The supply side

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Similarly, in the area of business process outsourcing, most established providers are embracing a BPaaS approach, transforming their offering into highly standardized, automated “process factories”. Here, we find differences with regard to the degree of integration between “software” and “process”. Proponents of the “best-of-breed”-approach stress the flexibility of combining “the stack” of software and process fragments involving specialized partners who appear to be the best fit for the task, wherever required. Advocates of an “integrated” approach, by contrast, stress the benefits of closer integration between “processes” and “software” as a fast-track to process automation.

We must conclude that the availability of adequate solutions does not seem to be a limiting factor in the adoption of service-based models such as SaaS and BPaaS in banking. Moreover, we will undoubtedly see further improvements with regard to the availability and maturity of vendor offerings in the medium term.

What is it, then, that prevents the wide-scale adoption of cloud-based service models? The answer lies in the perceived security risk. Potential breaches of data security and privacy are by far the most widely cited concern in the context of cloud computing – and not just in banking. True, experts in banks and elsewhere are calling for a critical reassessment of the security risks, arguing that in many ways providers of cloud solutions are better equipped to effectively protect data than the banks themselves. But there is a consensus that from the point of view of security, the cloud is still a new game and banks must understand how responsibility for risk control is managed in this novel environment.

These fears are exacerbated by the current lack of clarity over regulatory requirements. Cloud architectures introduce a whole set of questions for which the current state of regulation often offers no adequate guidance. For example, the common practice of on-site visits to establish compliance by outsourcing providers is of limited value in cloud environments, which are characterized by dynamically configured value chains spanning multiple jurisdictions. For issues such as these, the expectations of the regulator are unclear and the corresponding policies and instruments for controlling risk have yet to be developed.

Banking regulatory bodies are aware of this problem and have committed themselves to clarifying the requirements and harmonizing them across jurisdictions. Initiatives are already underway providing guidance on several aspects of cloud computing, such as provisions for auditing providers, measures ensuring the security of data and systems, and recommendations for contingency plans and exit strategies. Issues relating to the cloud are high on regulators’ agendas, and it is safe to expect substantial improvement here in the short to medium term.

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<sup>1</sup> See Cloud Security Study, IDG Research, 2016.

<sup>2</sup> See, for example, European Banking Authority, “Recommendations on Outsourcing to Cloud Providers”, 2017.

## ADOPTING BANKING-AS-A-SERVICE SOLUTIONS

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Reaping the full benefits of service models such as SaaS and BPaaS is a question of smart alignment to the capabilities and standards of the underlying platforms. Banks will inevitably discover some downsides to banking-as-a-service after they make the shift – some limitations and “gaps” compared to traditional models. But the key questions are: are those limitations relevant from the point of view of customers? And are they significant in terms of their impact on the bottom line or regulatory compliance?

These questions transform the topic of banking-as-a-service from a purely technological issue to a strategic issue. At the end of the day, it comes down to business strategy: which products and services contribute to the bottom line? Which processes promote the overall excellence of the organization? Do customers really value hand-tailored offerings? And are they willing to pay the required premium?

Understanding which aspects of your business are truly differentiating and which can be standardized is a good foundation for throwing excessive luggage overboard before engaging in a large-scale transformation exercise. Ideally, the examination of technological options should already be part of the strategic discussion taking place at CEO level. Its consequences will likely require some far-reaching decisions.

A transformation of this magnitude requires careful preparation. We recommend a three-step process, allowing for early exit if required. The duration of each step depends on the scope of the transformation and size of the bank; the indications given in the roadmap below reflect our experience at zeb working with small- to medium-sized banks. With each step, the circle of people involved grows, as does the level of engagement on the part of third parties – including the external provider. The roadmap forms part of an overarching transformation initiative, governed by a set of activities collectively termed “Transformation & Change Management”, whose purpose is to maintain transparency, manage internal and external stakeholders and, crucially, secure the buy-in of the organization.

The first step is to establish the case for transformation and secure the necessary commitment from relevant stakeholders. To this end, the bank must develop a target picture of the core business requirements and assess the strategic fit of alternative approaches to simplification – including the costs and risks of implementation.

The second step is to match the bank’s requirements against the capabilities of one or more selected external providers of service-based solutions. It is at this stage that the first difficult decisions must be made to relinquish certain business features in order to allow the new system to be implemented. This second step typically ends with the signing of contracts. The third and final step is the actual execution of the transformation, concluding with the go-live of the new system.



## Reach for the cloud

A roadmap for implementation

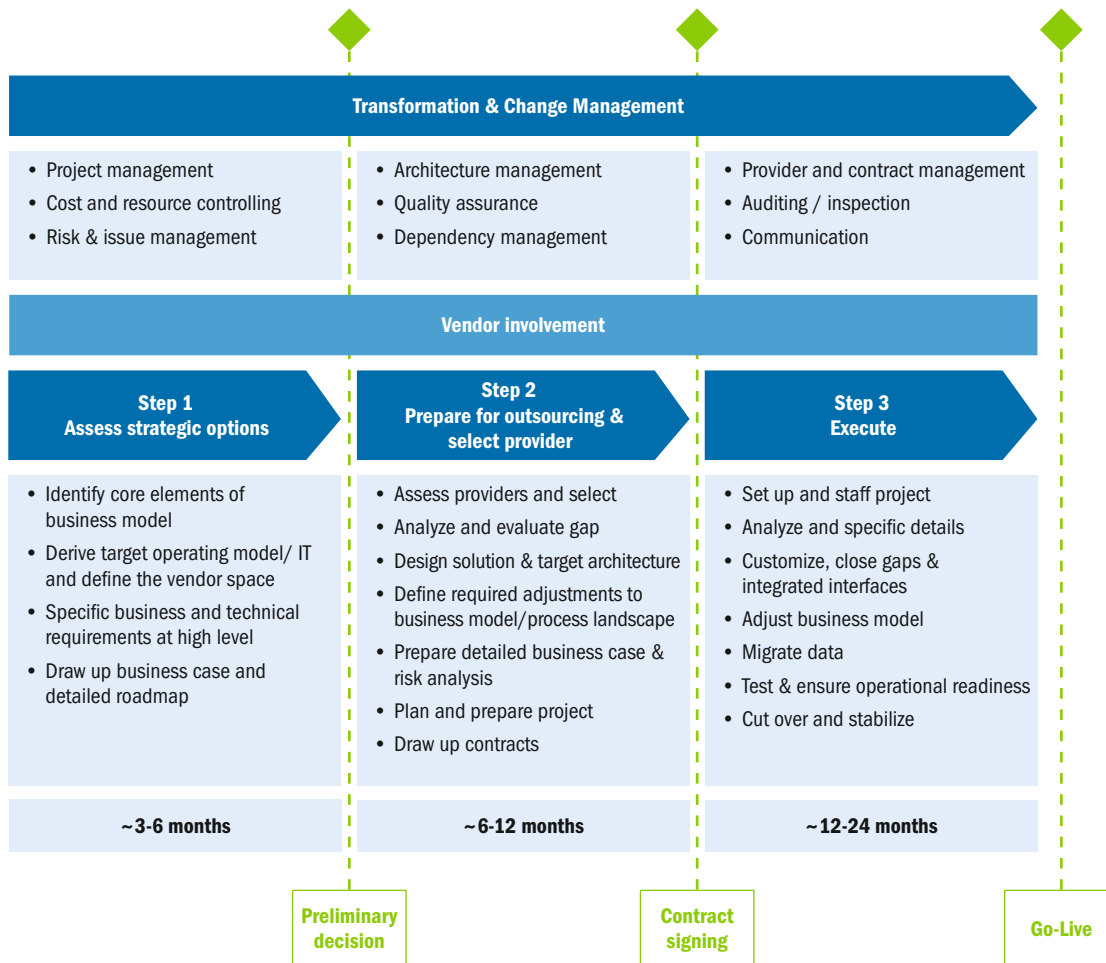


Figure F: Reach for the cloud

## CONCLUSION

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In many ways, the adoption of cloud-based service models is nothing but the next logical step in what has been taking place ever since banks first started using IT to enhance their processes. First, banks want to increase the automation of their banking functions – which comes as no surprise, given that they are essentially “information processors”. Second, they have been transferring an increasing share of their value chain to external providers, particularly with regards to developing and operating IT solutions. Banking-as-a-service

pushes both of these buttons: banking functions are provided digitally, by external providers residing in the cloud. For banks, shifting all or part of their business to the cloud could therefore be the key to reducing the complexity of their process and IT landscapes and addressing the challenges of the digital age – in one fell swoop.

## CONTACT

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