THOUGHT LEADERSHIP

MODERNIZE TO MOBILIZE:

A CLEANER, CLEARER BANKING IT LANDSCAPE THROUGH CLOUD AND AI

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Abstract

This white paper examines the strategy for transforming old legacy and bespoke developments built on top of financial institutions' off-the-shelf systems (which have often been grown for 30 to 40 years), into modern, state of the art technology. Instead of a high-risk, big-bang approach, a smart setup will be explained through a step-by-step evolution that constantly delivers change long-term and protects the existing information technology (IT) assets. Every smart investment taken into the existing IT landscape will reduce the complexity and clean up the history while enabling the full potential of innovations like artificial intelligence (AI) and (public) cloud.

Of course, a business case is correlated to justify the modernization activities each time. Only through accurate and meaningful data can the capabilities of AI lead to results that generate business value. Furthermore, cloud transformation requires more than a lift-and-shift approach to save costs. The structured breaking up of silos into components is outlined, too, starting with application program interfaces (APIs) followed by a front-end refresh to improve the user experience (UX) **[See figure 1].**

Introduction

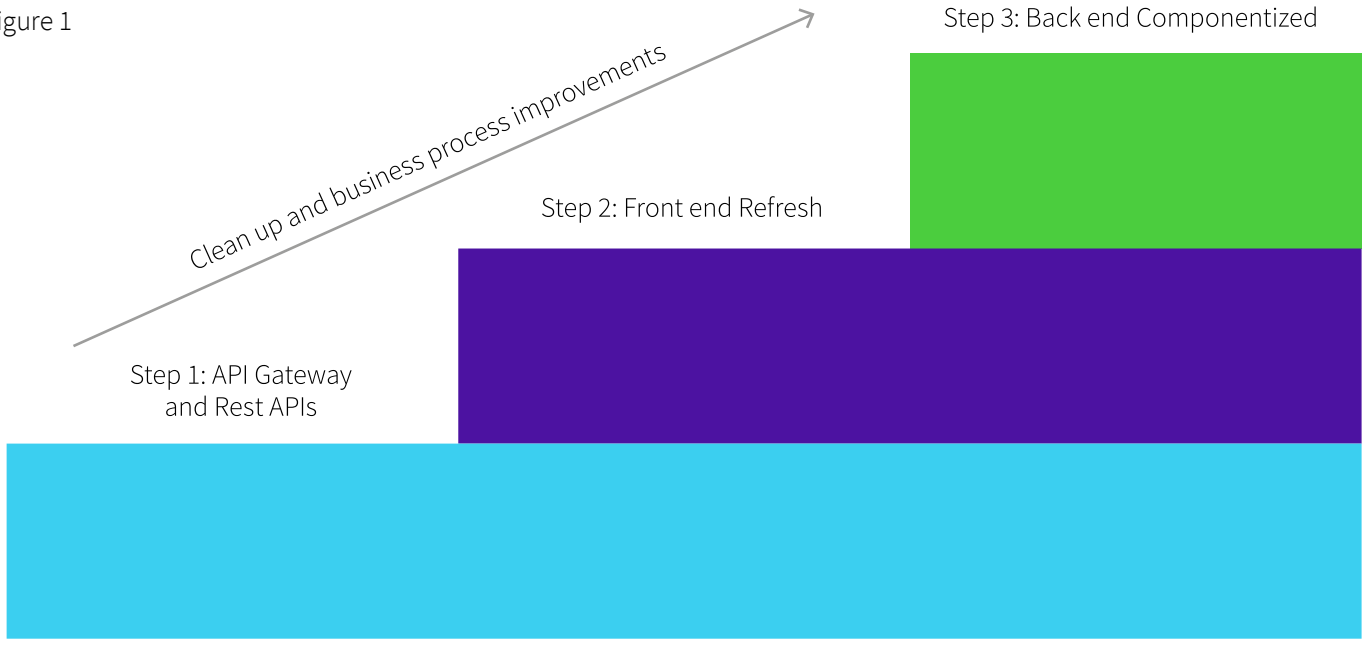
Historically, financial institutions have been building IT systems year over year with a focus on new applications, seldom replacing or sunsetting them. This results in high complexity and a challenge to maintain banks' IT landscape, not only in terms of costs but also knowledge. Pure migration projects tend to become more expensive than originally planned and are often delayed. Therefore, the risk appetite for one-to-one replacements has become lower in recent years and the pressure to modernize IT landscapes has increased beyond core banking. Furthermore, e-banking and mobile apps age quickly with advances in technology and change to the user experience and process efficiency.

So how can a zoo of banking applications grown over decades modernize with a smart and risk-averse approach?

It is more than legacy or bespoke developments on top of off-the-shelf systems. Interfaces as point-to-point connections result in high costs of maintenance and a need to retain employees with expert knowledge.

Modern technology and use of cloud with AI is the right path. Nevertheless, it must be clear that putting AI on top of an existing IT landscape or moving the applications into the cloud does not necessarily deliver the expected results or save costs – it can perhaps add even more complexity. To leverage the capabilities of AI, the knowledge first must be set up to feed the engine. It is not just about cleaning up applications but also understanding the data consumed or generated by the IT landscape of banks.

Figure 1



The recommended strategy

This sounds like a huge transformation, and it is. Where to start? Is there a business case for the many tasks of modernization? Obviously, this is a multi-year journey that requires a structured and planned setup. Instead of the big-bang approach with high risk and the usual creeping scope, ongoing evolution is the suggested path to modernization. Switching to the cloud and enabling useful AI or other innovations like blockchain and distributed ledger technology (DLT) is recommended.

What next? Clearing and removing old, nonessential systems rather than carrying them over into the cloud is one strategy. The refresh of the user experience is quicker and easier than changing the core banking system, but you cannot ignore the back-end systems for a full transformation. This is even more complex.

Therefore, breaking the monolith into smaller components and switching component by component is the suggested approach. Modularization is the first, elementary step. But the componentization does not work without minding the application program interfaces (APIs) and underlying data. **[See figure 2]** Core agnostic components are tightly connected with the setup of an API gateway and a clean data universe, not by duplication of APIs and data but by streamlining. An API and meta-data catalog, together with modern rest APIs and data streaming technology, are the basis to truly become a real-time architecture.

Functional capabilities of applications and underlying data are combined in business/operational processes that require an analysis of whether they are efficient and up-to-date or require a cleanup (deletion), refresh or re-write. Here, business value is generated, and a purely IT transformation becomes suddenly business driven. This enables the buy-in for an IT transformation. Associated business cases speed up the IT change as underlying fundamentals, and an initial cost-focused approach becomes revenue-plus-margin driven as a result of the usual fear of huge IT migration projects. Ideally, every IT transformation step is enhanced with business improvements for more revenue and/or better margin.

Having the buy-in of all stakeholders is mission critical, which should include staff, not only IT but all internal users of IT as well. Of course, user experience is driven by end-user. Client-centricity is obviously key but can sometimes be forgotten due to an excessive internal view.

Now let's take a look at how this can be achieved as an evolution and not a revolution.

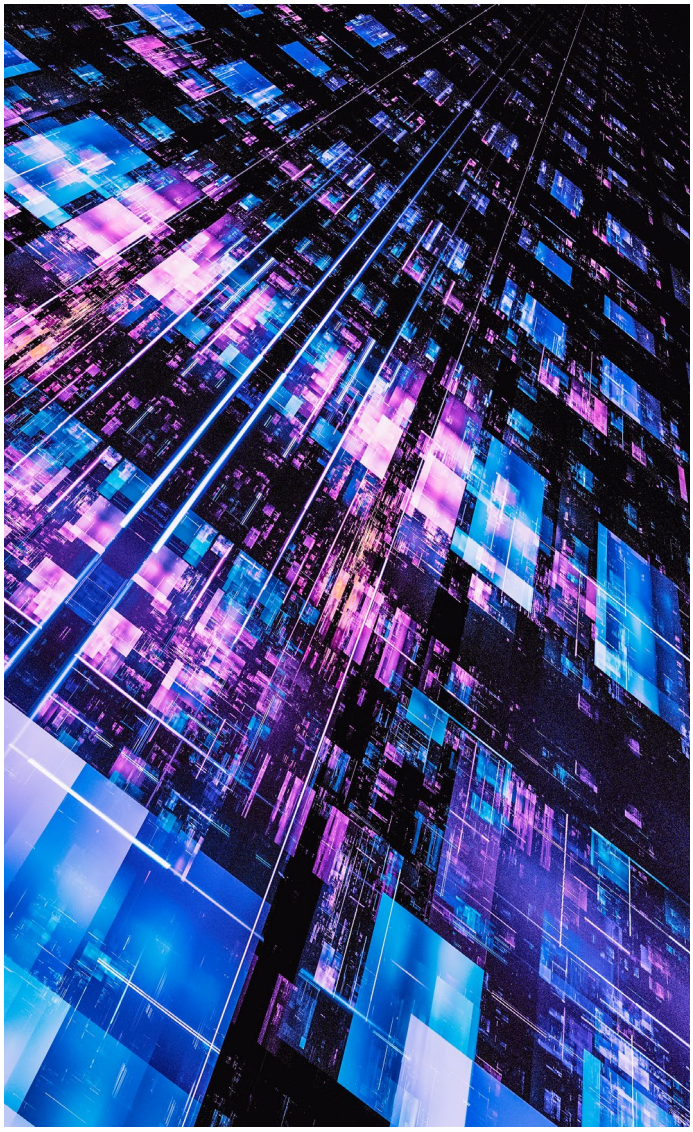
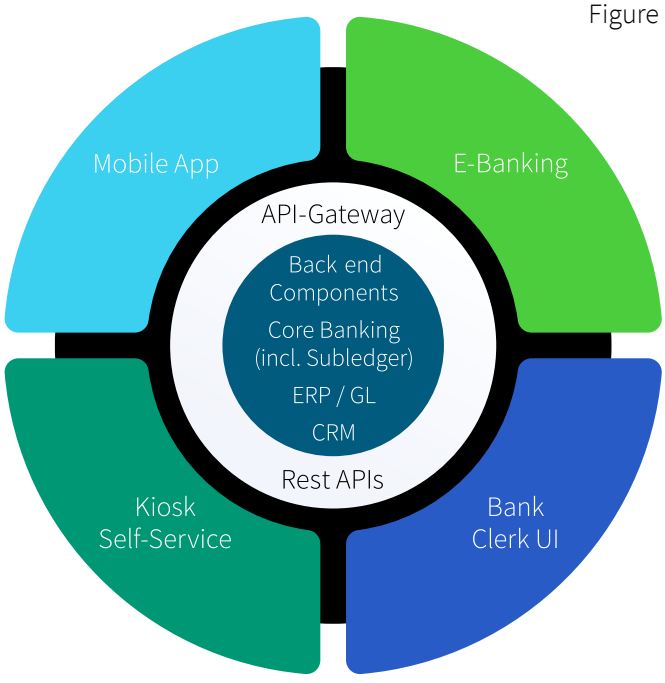


Figure 2



Step 1: The central role of the API gateway and new rest APIs

The first recommended action is to introduce an API gateway (e.g., WSO2) to decouple the systems and break up so many point-to-point connections. This enables the API-first architecture principle so that the communication is not by historic point-to-point connections but dedicated, defined (and documented) interfaces that can be orchestrated even to business APIs. The API gateway then becomes the central component for communication of the IT landscape and is the first step to componentize the monolithic systems.

Using restful APIs is also a more efficient and easier way to connect systems not only for development but also operations. But keep in mind, if you introduce something new, do not forget to shut down old APIs and old integration technology. Cleaning up is an essential exercise in the modernization of the IT landscape. Restful APIs are the underlying basis for the journey into the public cloud. The API gateway is the registry and therefore catalog of interfaces for the whole IT landscape. By this, necessary documentation is created with minimal effort.

The API gateway is not only a means of communication, but also the central component to manage all APIs for developers and operations. This sounds easier than it is, however. A lot of discipline and patience is required.

Then the IT systems become the focus.

Step 2: Front end refresh for better user experience

What is next after the decoupling of the systems to componentize the architecture to then introduce modern rest APIs? Well, front end or back end? This is the pivotal question when it comes to prioritization of activities.

The suggested principle is the onion-peeling method: from outside to inside. But why? Isn't there more pressure to modernize the back end systems that are harder to maintain and more expensive?

Improving the user experience by a refreshed front end adds value and focus to the client journey. End-user centricity is key. An improved e-banking or mobile app not only improves the user experience, it helps to introduce more efficient business processes reducing operational costs.

This second step of the modernization journey is the easiest one to calculate a business case. By first introducing the API gateway, the old e-banking and aging mobile apps are already decoupled, and using a new app or e-banking application or refreshing the user experience will be faster than any back-end modernization.

Step 3: Componentization of the back-end systems

The most challenging and most expensive – yet most long-lasting – step is the improvement of the core banking, securities processing, enterprise resource planning (ERP), customer relationship management (CRM), risk management or treasury systems. Doing this in one project sounds almost impossible, but creeping scope is the usual threat. Therefore, breaking up the IT landscape into different components with APIs is key to working on smaller projects.

Again, similar to the front-end refresh, either functionality can be exchanged by new systems as auxiliary components or the monoliths can be divided into well-defined micro-services using the APIs as an access layer orchestrated with the help of the API gateway and a workflow engine. Cleaning up the IT landscape is part of the modernization path. Not only is encapsulating and replacing the capabilities of the silos required, but enhancement with slim features and meaningful data is also needed. Most of the data stored in the back-end systems is used by the processes orchestrated by the front-end systems. Therefore, the order of which the architecture is divided into components is a critical success factor to keep in mind.

Enterprise architects have the experience to recommend the step-by-step approach, which will be explained later in detail. This will help to define smaller projects and will also include a business case for each component. Business requirements for renewing or enhancing banking processes turn a pure IT migration exercise with high costs into a meaningful system that proves the value IT systems add for the never-ending journey of digitization. Modernization means digitization.

Changing processes and cleaning up

The principle of the onion, working from outside to inside by breaking into smaller components, reduces the risks of failure and even creates a business case by the order of activities. As pointed out, the changing of processes and cleaning of the data is part of the modernization journey. And it is not just an exercise for the IT department.

Process mining helps in understanding which processes work and which require a change or should be stopped altogether, not to mention the so called “zombie processes” that remain alive without any purpose or value. Cleaning up really means removing outdated or unnecessary processes, data, interfaces and systems to enable a slim or light refresh. Of course, sometimes data must be archived and not simply deleted, a step that should always be included when moving processes to the cloud.

Starting the boost for innovation

Restful APIs, modern user experience and decoupled agnostic components are the basis for the public cloud as native technology, and the classified and cleaned data is the basis for AI. Each small step helps to create a foundation for successful, proven innovation.

Modern technology like AI or blockchain and DLT can only be used on top, as underlying systems fuel these innovations. Correct data without duplication is generated by efficient processes gathered, entered through the front end(s) and stored in the back-end systems. AI depends on the meaningful data part of a data-lake. Flow of data streams and integration of systems with APIs are created by the end-user processes. Gathering the results of each small step builds the renewed IT landscape and enables innovation on top. **[See figure 3]**

Key role for transformation: The enterprise architect

Integrating all the components in the most effective order is key to long-term success. Who drives this change, moving each piece of the puzzle? The IT or business departments that depend on modernized IT landscapes? Both? The CIO, COO or CDO – even the CEO?

Obviously, this is a joint exercise and requires the close collaboration of business and IT. As with any typical IT project, many departments are involved. Naturally, there is a program manager who oversees the project managers. Also, finance contributes to help calculate the business cases that IT investments justify as part of the usual finance corporate processes.

But where does the input come from?

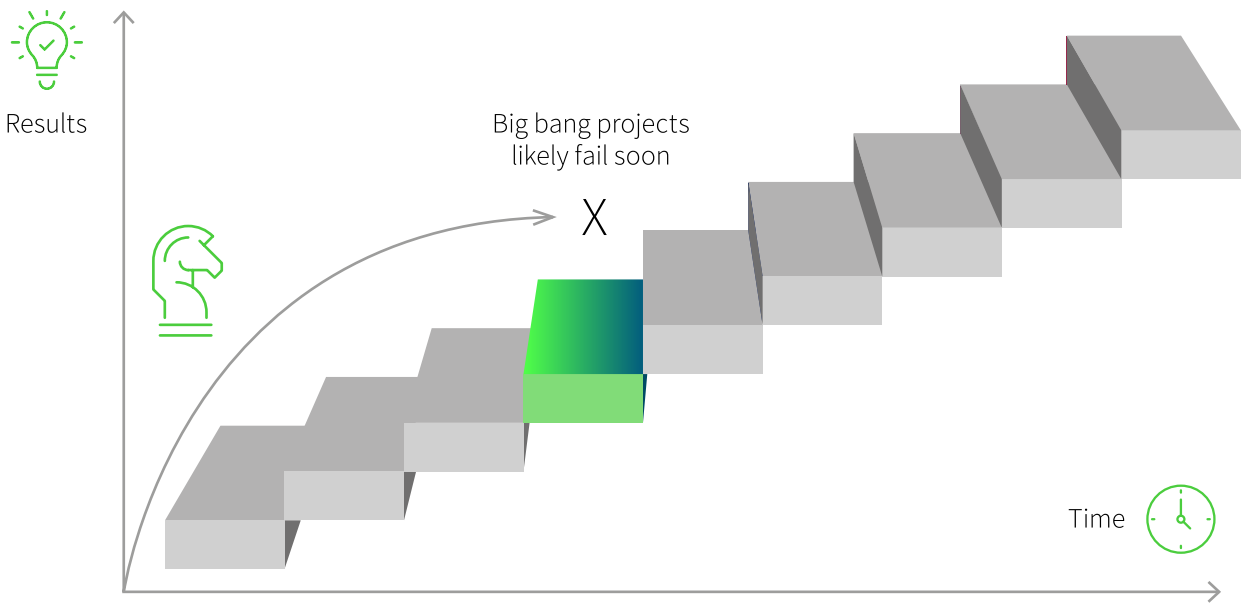
The enterprise architect (EA) is the key role of this transformation. The EA has the combined knowledge of business and IT along with structured approach that defines the deliverables for each step. The project managers rely on this input. The program manager is the reporting line to C-management and enables management buy-in for the whole transformation journey, but it is the EA who is the bridge across multiple projects. The EA understands the dependencies and defines the order of modernization as well as the organization.

Not everything at once – setting priorities and defining order

What has been built over several decades cannot be changed overnight. Transformation requires thinking in a cycle of seven to 10 years, which should conclude that all activities unite in a sustainable path toward future success. Investments must be justified as pointed out, and small steps keep the pace for achieving the long-term goals by each project outcome.

Understandably, not everything can happen in parallel and all at once. Patience is key as is having a smart

Figure 3



transformation plan in place. The order of steps defined by the EA is critical, and all stakeholders need to agree on priorities, which requires a full understanding of the whole enterprise and business model. So, while seven to 10 years may sound like a long time, many core banking or Enterprise Resource Planning (ERP) systems have a history of 30 to 40 years and there are some e-banking front ends that are now entering 10 or even 15 years of continuous use.

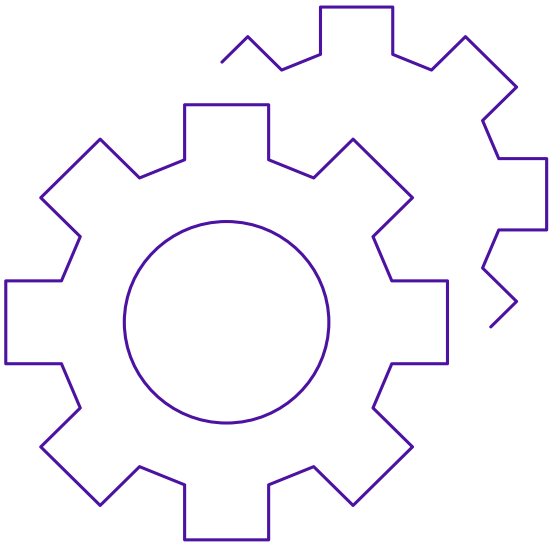
Remember, a step-by-step approach in the right order consistently delivers outcomes and valuable results.

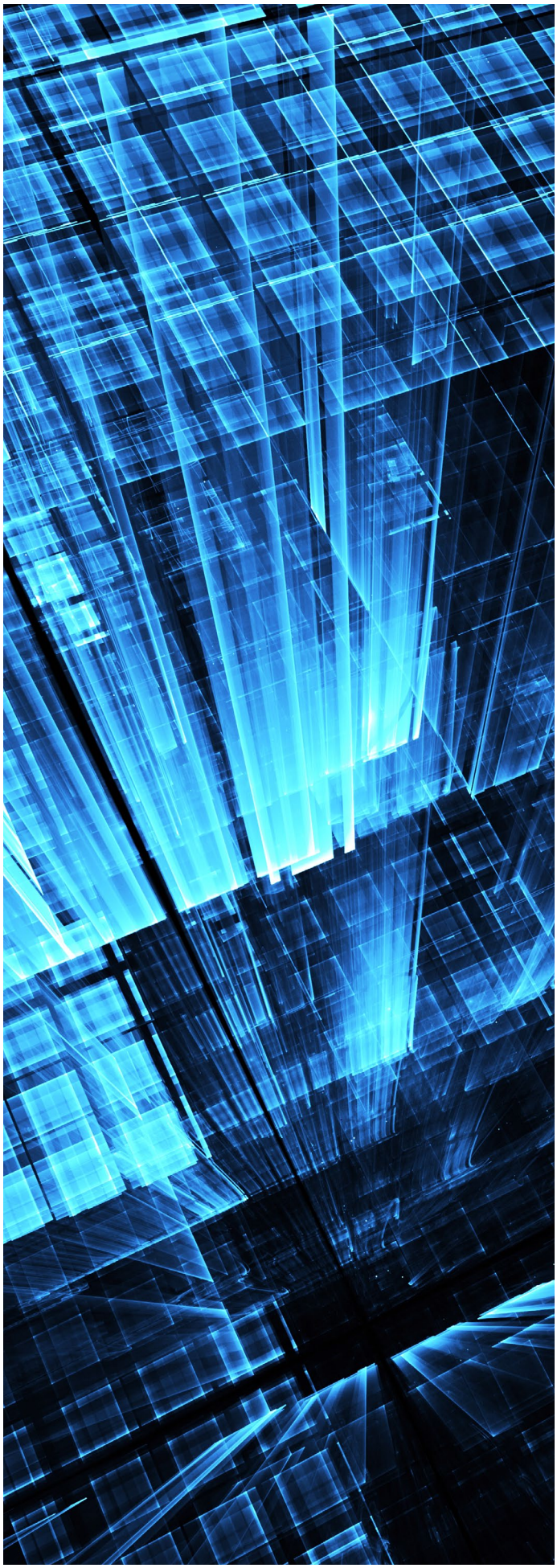
Keeping pace, measuring success with continuous development

Maintaining motivation for such a time scale can be a challenge. Aside from having the right approach, well-defined roles, engaged stakeholders and refreshed IT systems, don't forget employees are a vital success factor.

To keep a seven to 10-year modernization journey up and running, it is essential to understand that every single activity is part of the big picture. This should be known and easy to comprehend. Each activity and its outcome must be transparent including its role in the order of steps of the journey.

A Key Performance Indicator (KPI) cockpit and Objectives and Key Results (OKRs) are tools to help measure success. Usually, program and project managers use them for a status light or high-level, but they also aggregate distributed information in a single point of reporting. This overview helps to understand who contributes to what steps of the journey and when. They also highlight how dependencies are managed, allowing progress to be easily recognized.





Start now, but start small, simple and quick

Long-term activities tend to stall out over time or never start at all. Patience is important, but step-by-step thinking and mindful engagement is critical to the process. That's why small projects and encapsulated pieces are required to demonstrate progress and prove success by every increment. KPIs and OKRs help to visualize the activities in an aggregated way.

In general, communication is key to what has been achieved, what the next steps are and how all activities contribute to the big picture. Experienced program and project managers understand that the marketing of a program or project is not optional but a must to keep the team and all stakeholders motivated to contribute continuously.

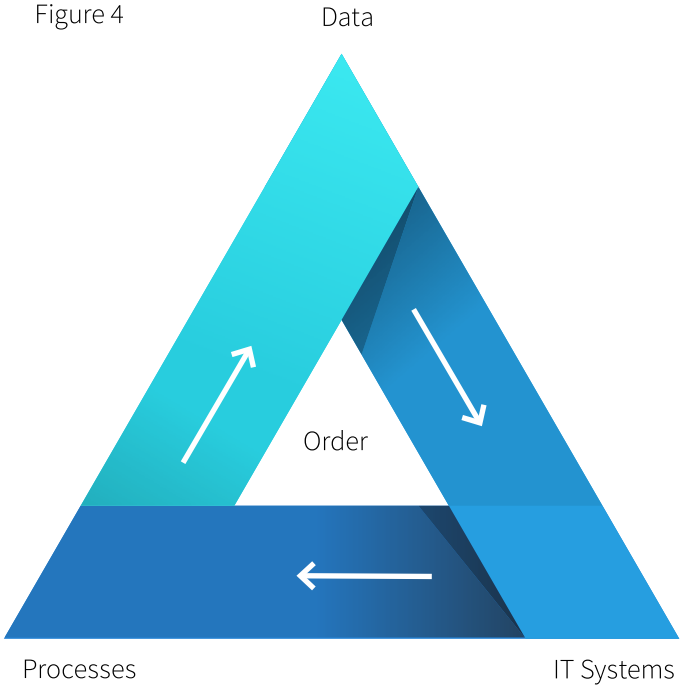
This is an endurance run – not a series of sprints.

This is an evolution, not a revolution

Do not set up your transformation as hefty, ambitious migration projects but as constant improvements, performing action items that generate value and have a business case as encapsulated steps. Their order is key to achieving the goals of the big picture, always contributing to a business case at each step. **[See figure 4]** This is a proven approach that has materialized year by year, modernizing a core banking system from mainframe, then to Solaris and Linux, and now operating on the cloud today.

Indeed, small steps upon small steps will continue to renovate and reimagine – and renovate again – core banking systems far into the future.

Figure 4



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