MASTERING THE CHALLENGE OF DIGITAL TRANSFORMATION

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Digital disruption is the number one obsession haunting today’s management teams worldwide. This is particularly true in traditional, established and physical asset-based companies.

On the other hand, unlimited digital opportunities are the number one driving force in today’s digital development hotspots, from Silicon Valley to Bangalore. “Make the world a better place”, or at least, “change the world” and build the next Unicorn (a digital company with a $1+ billion valuation) in a short period of time, are the mantras of new “digital-born” players.

1. New digital business models are written in software and connect the digital and physical worlds.
2. Every company must realize that their own software development will be their primary source of innovation and growth, so become a “think software first company”.
3. Digital companies have a platform-oriented architecture that leverages microservices & API Management.
4. CIO roles are extending into Chief Digital Officer functions, with a direct impact on business strategy and in full alignment with the management board.

Digital and physical:
Two disconnected worlds? Not at all. Established companies are building up software know-how and are acquiring software companies to accelerate their digital transformation by injecting software innovation capabilities into their core business areas.
Digital business models are written in software

**Why?** Because digital companies - digital disrupters - base their business models on software platforms which are able to manage large data streams in real time in order to draw intelligent conclusions faster than any traditional company is able to. Based on these software platforms, digital companies create enhanced or totally new business models which offer completely new digital customer experiences.

The new digital-born enterprises are typically free of any physical assets such as fleets, factories, machinery and other goods. This is the reason why they can move so fast, often resulting in exponential growth. “The winner takes it all” is a consequence, where traditional companies are reduced to pure asset providers, or device partners, thus losing direct customer contact.

The threat, being reduced to a device or physical asset provider, exists for every traditional company in any industry, and it is happening now. However, it is not a natural law that the digital challengers can hijack the customer relationships of traditional companies. If they fight back with the same weapons, a digitalized weapon powered by a true digital software platform, then they can fearlessly face the challenge.

To understand what makes today’s digital challengers attractive to customers and consumers, we have to take a look at their core competencies and differentiators based on their digital software-based technology.
Digital challengers separate companies from their customers

When digital challengers attack a market segment, they try to drive a wedge between the existing companies and their customers and provide a completely new way of customer interaction based on digital technology. Uber does it with taxi services. Airbnb does it with accommodation rentals. Alibaba does it with millions of manufacturing and retail businesses (see exhibit 1).

Exhibit 1 - Digital challengers separate the customers from established companies

This not only happens in the business-to-consumer (B2C) market but also in the business-to-business (B2B) world. The most advanced of the traditional large global companies also try to create a barrier between competitors and their customers by implementing a software layer between them to offer effective, in-house built digital services for their customers, based on data from their smart products and from their competitors.

Public organizations will follow as well, as a lot of state-owned monopolies will be severely impacted. The provision of digital signatures, trusted paper delivery, or any other form of physical stamp-based approvals, can be substituted by trusted Blockchain technologies, for example, which are already used as a trusted payment process. This has the potential to make banks obsolete.

Millions of customers, consumers and citizens enjoy, and now expect everywhere, real-time, personalized and around-the-clock services (24x7). The technology required, Big Data streaming analytics platforms, or digital platforms, is the same as for Industry 4.0 (I4.0).
Implementing digital capabilities for digital use cases

Digital capabilities
There are 5 key digital building blocks which contain the core digital capabilities that every enterprise needs (see exhibit 2). All digital capabilities are modular, API enabled and event-driven, which is ideal for creating a micro-services oriented architecture. Hybrid Integration and API Management is at the heart of any digital architecture since these architectures are built on heterogeneous and distributed IT landscapes.

Exhibit 2 - Digital capabilities. 5 building blocks of the digital business platform

The digital transformation journey for classic organizations requires a digital roadmap, describing the business strategy and milestones and clear goals defining the “when and how” to implement the digital capabilities that make digital-born companies such dangerous competitors.

So what should traditional or so-called classic organizations do?
The answer is simple: Become digital. To become a company with digital capabilities is a transformation journey. And the faster it happens, the better.
Digital use cases

Digital end-to-end customer experiences include real-time customer interaction, but also real-time operational performance transparency, for predictive maintenance, smart logistics or smart manufacturing, consumer location detection and personalized information feedback. These are currently the major topics and there are many more to come (see exhibit 3).

Exhibit 3a - Digital business services (use cases). Based on the digital business platform

Exhibit 3b - Digital business platform. Platform services for the internet of things

The Internet of Things (IoT) is the core driver of new digital business models. IoT services are the means to enable new data centric digital use cases.
Rebuild your software expertise

Building software skills and expertise is core to surviving in the digital world. Becoming a digital enterprise can be achieved by taking the following actions:

1. The first step: Make your products and services “smart” to deliver relevant data in real time.

2. The new center of innovation: Think software first when thinking about business innovation. Think of the layer of differentiation and innovation, as Gartner calls it, as a platform from which you develop your digital capabilities to counter digital challengers and gain a competitive advantage.

3. Regain IT know-how: Take back the full responsibility and insight of your IT architecture, from wherever it is today. If software is at the heart of today’s innovations, then you must have the power to shape your IT architecture yourself.

4. Expand the IT scope beyond applications and IT operations management. Appoint a Chief Digital Officer, reporting directly to the Board to assist the business units in operationalizing their data-centric new digital business models. Implement Chief Digital Officer equivalent in each of your relevant business units.
Rebuild your IT architecture competencies

Digital companies have a microservices-oriented, scalable IT architecture. To exploit the potential of digital capabilities and digital use cases, the IT architecture has to be agile and flexible (see exhibit 4). According to Gartner Group, this can be best achieved through an integration-centric, modular digital services architecture, enabling real-time data insights.

Exhibit 4 - IT architecture transformation: Foundation for “digital” scalability

Looking back over more than three decades in IT, we are now in the third IT infrastructure evolution phase (see exhibit 5):

Exhibit 5 - New digital business models are written in software
The 1st phase, decades ago, was built based on application silos connected through point solutions; this was the packaged application era.

The 2nd phase, years ago, was building an application infrastructure and middleware layer to compensate for the phase 1 “silo deficiencies”, this was the middleware and application infrastructure era.

The 3rd phase now is being centered around a real-time, event-driven platform, such as an Internet of Things (IoT) platform providing streaming data analytics required for almost any digital use case in B2B (Industry 4.0) or consumer area (B2C) (see exhibit 6).

All three IT layers will continue to exist in parallel and need holistic integration.

In comparison, the current application silo-based architecture is inflexible, expensive, is lacking agility, and is slowing down the speed of change in becoming digital.

As a result, the digital business transformation is based on an IT architecture transformation with a roadmap for digital capability implementation.
CIO function has to expand to a Chief Digital Officer function and cascade into the business units

Despite some 50 years since the birth of the CIO role, its relevance in many companies has suffered over time and declined to a pure technology enablement role—outside the business and, over time, outside the boardroom. Most CIOs had been downgraded to IT operations management with no real impact on business innovation and transformation, after IT had been outsourced and packaged applications had been implemented.

However, the data centers and the administrative packaged application systems have to scale on an enterprise level; the same applies for the heart of digital IT—the Big Data streaming analytics data layer, the IoT platform.

The roles are therefore clearly defined for classic companies to become digital enterprises:

1. Smart products and services are the responsibility of the business units and the CDO.
2. The data collection, monitoring and analysis to take action are a joint responsibility of the CIO and the CDO’s business units.
3. The data analysis experts are in the business units. They have to analyze the data collected from the smart products, detect patterns and develop predictive models and algorithms to draw conclusions and fuel event-driven actions to respond in real time for the creation of new business models.
4. The CIO organization has to provide the enterprise-class, Big Data processing platform (IoT platform) to operationalize the analysis of large streams of data from smart products, from smart machines in the field, or from smart manufacturing plants. This accelerates the development of new, software-based business models much more efficiently than ever before.
A lot of traditional enterprises lost the core IT capabilities they had in the past:

- Outsourcing of their IT infrastructure resulted in the loss of architecture know-how.

- Through implementation of packaged applications, thus avoiding software development projects, enterprises lost software-based innovation competencies.

- CIOs contributed to standardization and simplicity, meaning risk avoidance, but not to IT-driven innovation and differentiation of the business model (see Gartner’s report “Pace Layering”). As a consequence their relevance in business affairs declined.

- The weaker a CIO position became, the more he or she focused on a single-supplier strategy.

In the digital world, software innovation capability can neither be outsourced nor bought as a standard product. As software becomes a business differentiator, IT becomes a core part of the business. Enterprises have to regain their software-based innovation power.
Conclusion

Transforming a traditional enterprise into a digital company is possible. Five major steps should be taken immediately:

1. CEOs have to put software innovation first in order to maintain customer ownership and to create new digital business opportunities and new revenue streams.

2. Business units have to learn to analyze the data from their smart products and, using machine-learning capabilities, to develop predictive models and algorithms to create new data-centric business models and service innovations in order to maintain customer ownership in the digital world.

3. Extend the existing IT landscape/architecture into a digital platform-based architecture to enable digital business capabilities, fast.

4. Implement an enterprise-level IoT platform to enable IoT and Industry 4.0 use cases for the business units.

5. Transform the CIO organization through a Chief Digital Officer function with impact on the core business by cascading CDO functions into the business units. Consolidate the enterprise IoT/I4.0 platform operations in the CDO organization.

Winning in the digital world is possible for traditional or classic companies. It requires openness to rebuild software know-how and courage to start now. IoT, Industry 4.0 or Industrial Internet are all synonymous for the digital paradigm change. The journey is defined, the milestones are known, now it is all about execution.