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How can Enterprise Architecture support digital business transformation?

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1 Introduction

Although digital business transformation (e.g. IoT, Block chain) is top of mind for many IT professionals, many companies are facing legacy systems consuming operating budgets and have limited visibility of their enterprise architecture. It is increasingly difficult to meet the RFC's (Request for Change) deadlines and digital business transformation demands. Therefore a simple and easy to use enterprise architecture is important to implement an effective digital business transformation program.

However enterprise architecture and the frequently used methodology TOGAF (The Open Group Architecture Framework) have an image problem. Business and IT leaders are frequently bypassing the enterprise architect because they have the following issues;

1 The enterprise architecture & TOGAF is not practical, to complete and difficult to explain

2 The EA terminology is difficult to understand and not aligned with operational departments

3 The EA governance methodology and EA models are difficult to understand and to maintain

4 Too much focus of project delivery and IT architecture

Because of these issues the enterprise architect and business & IT leaders are not always aligned and do not fully cooperate to resolve the EA topics at hand. Most of the design decisions are made by business & IT leaders which are not always in line with the vision of the enterprise Architect. This has an impact on the quality of the EA architecture. In order to improve the cooperation, the enterprise architecture should be presented in a more practical and simple way.

The BAIM (Business – Applications – Information - Management) EA framework could be a solution, not to replace TOGAF, but to have an additional practical and presentable EA framework to resolve the EA issues and to get improved commitment from the business and IT leaders. The BAIM EA framework contains integrated EA best practices, EA models, EA standards and is managed by integrated EA governance processes.

Disruptive technology projects need to follow the same BAIM EA standards as all other projects. The BAIM EA framework can therefore also be used to manage the impact of disruptive technologies.

2 The BAIM EA framework

The 3 main domains where the business transformation and IT leaders are focusing on are;
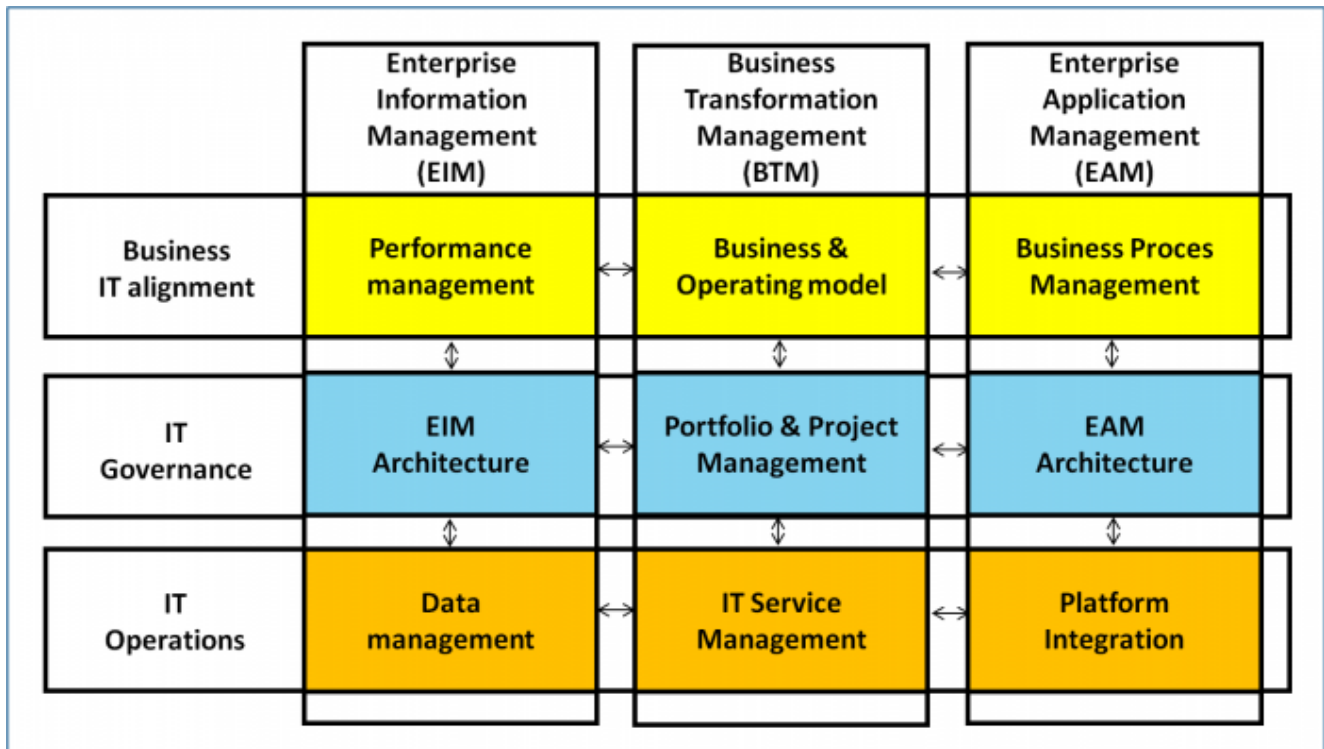
1. **Business transformation management**; How can we improve the business models and customer value propositions, what innovation projects do we need to extend our capabilities and how can we optimize the results of the projects

2. **Enterprise Application Management;** How can I improve the E2E (End to End) business processes, what applications do I need to support the required functionality and how can I integrate the applications with each other and the outside world (e.g. cloud)

3. **Enterprise Information Management;** How can I build of a solid foundation of trusted (master) data, which will be the basis for improved speed and quality of decisions making. This enables real-time performance analytics which can be input for the evaluation of the new business models

These 3 domains have 3 perspectives;

1. **Business and IT alignment**; What are the new business requirements for business processes, applications and reports and how can we optimize the use of the adjusted processes and reports within the day to day operational business reality

2. **IT governance**; What are the priorities of the business requirements and how can we integrate the functional designs within the current Enterprise Application & Enterprise Data Warehouse (EDW) landscape and project portfolio

3. **IT operations**; How can we implement and document the new functionality of the applications (e.g. ERP & data management), how can we operate, support, monitor and integrate the applications

These 2 dimensions results in the following BAIM EA framework with 9 topics;

	Enterprise Information Management (EIM)		Business Transformation Management (BTM)		Enterprise Application Management (EAM)	
Business IT alignment	Performance management	↔	Business & Operating model	↔	Business Proces Management	
IT Governance	EIM Architecture	↔	Portfolio & Project Management	↔	EAM Architecture	
IT Operations	Data management	↔	IT Service Management	↔	Platform Integration	

The 9 topics of the BAIM EA framework are the following;

1.   **Business Process Management**; The Business Process Overview is the basis for the process descriptions and end-user training. The end-user application help desk will create incidents and define / validate the deliverables of the RFC's

2.   **EAM architecture**; The application overview is the basis for IT application portfolio management. The EA standards and application development standards will support the project start architecture and project management methodologies

3.   **Platform integration**; The Interface overview is input for the integration platform standards (on premises and in the cloud), E2E workflows and E2E monitoring

4.   **Data management**; The data-cluster overview is input for E2E data management to align e.g. Master Data management (MDM), Enterprise Content Management (ECM), IoT data management and Digital Asset Management (DAM)

5.   **EIM architecture**; The EDW data flow overview is input for EDW data models. The EDW is implemented according to the BICC (BI Competence Center) standards

6.   **Performance management**; The report structure is input for the management dashboards. The reports are used to analyze and improve the E2E processes according to the LEAN standards

7.   **Business & operating model**; The business model is used to evaluate the innovations, which can result in adjustments in the operating models and the definition of new strategic business objectives

8.   **Portfolio & Project Management**; The project portfolio priorities are based ROI calculations and business requirements. The standard project charter defines project plan and allocates resources

9.   **IT service Management;** The validated project deliverables are documented and the platforms are monitored and maintained according to the ITIL standards

These 9 topics are the main topics for which the business transformation & IT leaders are creating their own strategy and trying to get the commitment and budgets from the stakeholders. Within many

organization every topic has a topic owners assigned, who is responsible for the day to day operation.

These 9 topics are also the main topics within the ERP, MDM, BI and ITSM (IT Service Management) vendors with their innovative application suites and the consulting firms / service providers with their innovative concepts to support their customers.

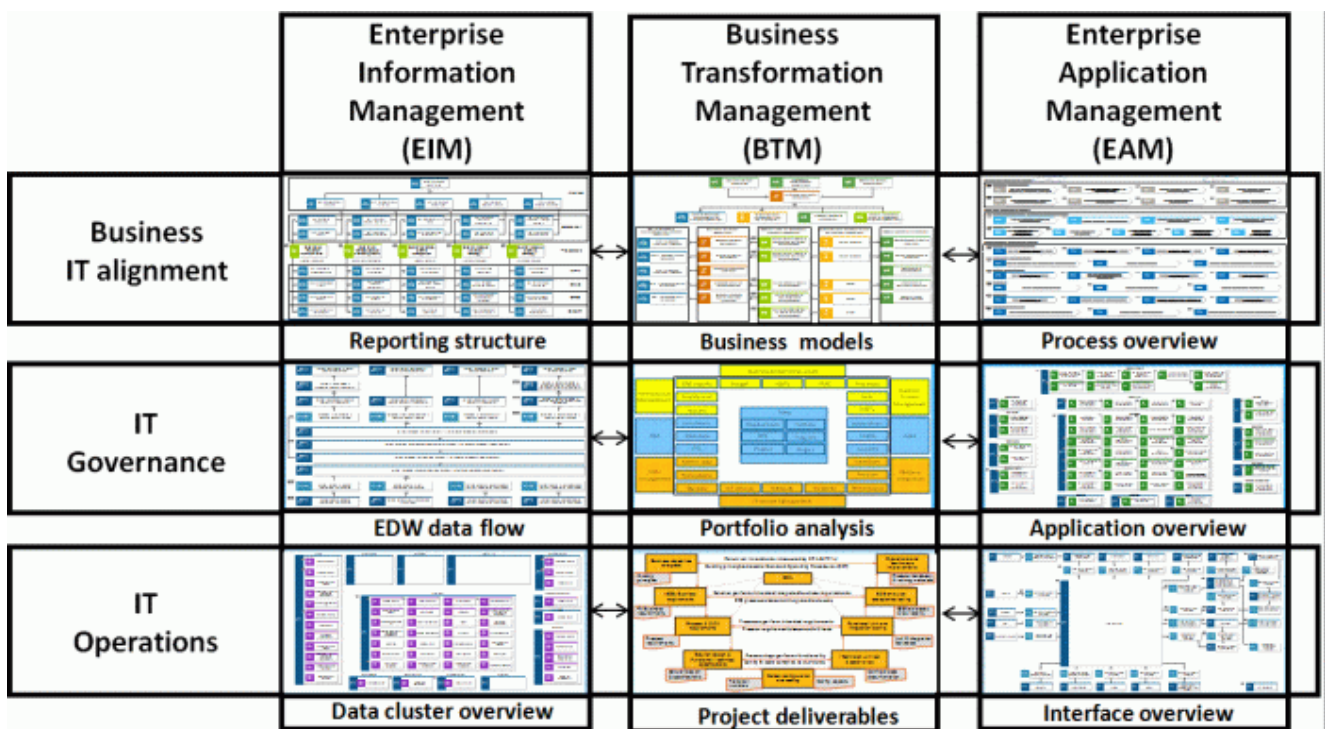Each of the 9 topics of the BAIM EA framework should be supported by;

1. EA models to align with the enterprise architecture and IT portfolio management

2. EA best practices to define the EA concepts and build the integrated tool chain.

3. EA standards & principles to support the project implementations.

4. EA governance processes to define the roles & responsibilities across the 9 topics

For each of the 9 topics the enterprise architect and the 9 topic owners should create useful and usable company specific EA models. EA best practices and EA standards which are owned by the 9 topic owners.

The enterprise architect should align and integrate the 9 topics and create synergy between the 9 topics owners, The following chapters give some examples;

2.1 BAIM integrated EA models

For each of the 9 topics an easy to use EA overview model should be defined. The following picture gives an overview of the different EA models which could be used for each topic;

Each of the EA overview models gives an overview of the most important deliverables (artifacts) and is owned by a topics owner. Additional information, template documentation and detailed EA models can be linked to the EA overview models when required. Based on these EA overview models, every project can create their own project EA model as part of the project charter. The project EA model can then be integrated into the enterprise architecture. The up-to-date enterprise architecture should be aligned with the IT portfolio management catalog, the ITSM platform and Portfolio & Project Management.
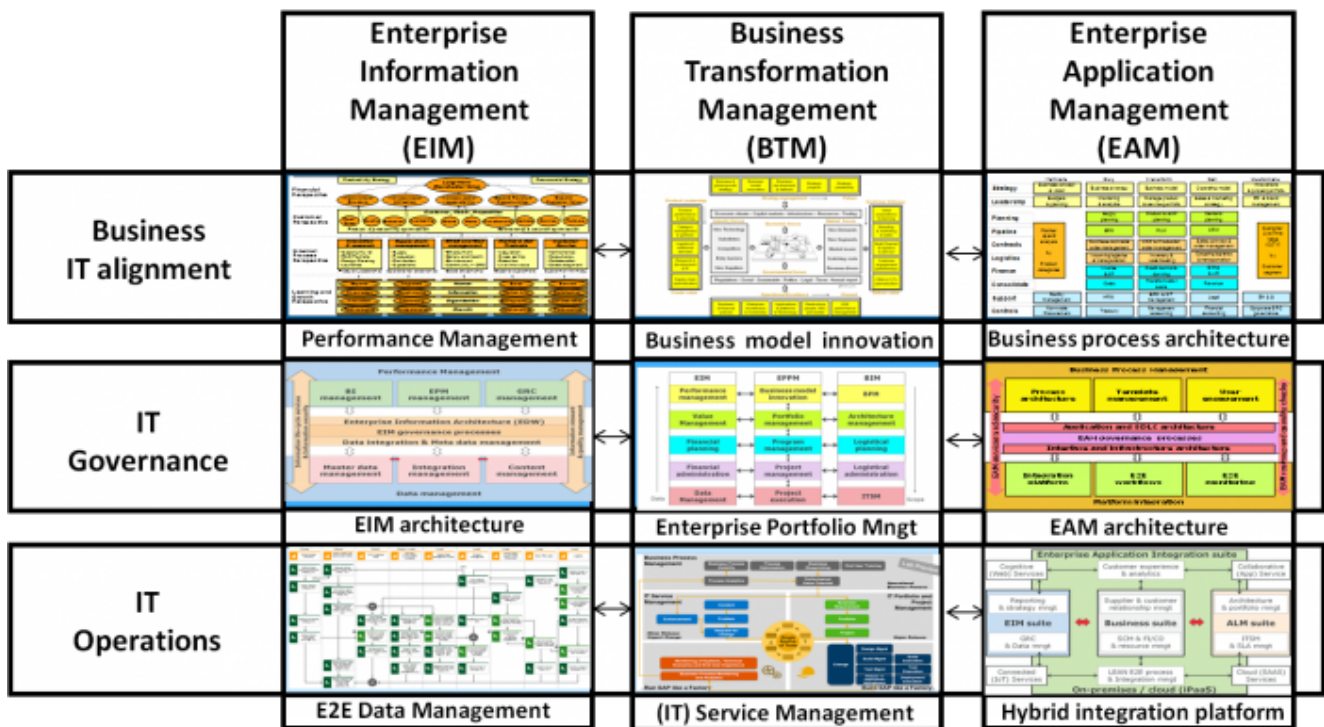
Many companies document their projects, standards and best practices in independent documents and spreadsheets and can only be found and understood by the project members and content owners. The enterprise architecture should ensure the consolidated project documentation and give continuous transparency to all employees and projects.

To build a consistent and multi level EA modeling architecture an EA modeling tool (e.g. Bizzdesign, ARIS, SAP Powerdesigner) could be useful (the EA modeling examples are made with ARIS). All the EA models should be available to all employees via an enterprise architecture portal to maintain quality and owners ship.

2.2 The BAIM EA best practices

The company specific EA best practices should be easy available to all employees, this will ensure the understanding of each topic. The EA best practices and tooling should support the project managers with the definition of their benefits case, project charter and project execution planning.

The EA framework should support the business transformation and IT leaders with a complete overview of the project charters, an accurate overview of the project portfolio and the expected impact on the business. The following picture gives an overview of the EA best practices examples;

In my previous blogs (and books) about the ADM workshops of the VNSG ADM expert group, we have defined the architectural concepts for each topic and translated that into the required ERP, SAP, MDM, BI, Cloud, ITSM, PPM (Portfolio & Project Management) applications and EA tool requirements. You can find the links to my previous blogs at the end of this blog.

Each topic will require alignment with the EA tools of the others 9 topics and therefore the cooperation of the 9 topic owners is required for the integration of the tool chain and best practices. The integrated tool chain will be continuously adjusted because of release changes in the (cloud) applications, EA tools and new insights of the 9 topic owners.

The capabilities of the business applications and EA tools will influence the EA standards and documentation templates. The 9 topics owners and enterprise architect should make sure that the tool chain and the EA models are aligned. With the increasing complexity of the tool-chain with multiple

vendors and a hybrid application portfolio across the cloud and on-premises, an integrated enterprise architecture is required to maintain the overview and determine the impact of architectural changes.

The 9 topic owners should be aware that a culture of cooperation is essential and the re-usability and integration of the deliverables of the 9 topics is required, which sometimes means that the topic owners has to do additional effort so that deliverables can be shared.

The BAIM EA framework should be aligned with the TOGAF EA framework to make use of the EA best practices. Each of the 9 topics can also be supported by popular methodologies like e.g. design thinking and Business Model Innovation. The selection of the useful methodologies is up to the 9 topic owners and the enterprise architect.

The EA best practices are a pre-requisite for the consistent implementation of the "One template" program. The enterprise architect should align the "One template" objectives of the 9 topic owners with the IT and business leaders.

2.3 The BAIM EA standards overview

Each of the 9 topic owners together with the enterprise architect should define their own company specific EA principles and EA standards. The EA standards should be made general available for every project via the EA portal. The EA standards should be based on industry standards (e.g. TOGAF, COBIT) and the capabilities provided by the selected software vendors. The EA standards should also be integrated into the project methodologies. The project closure / review procedures will check the projects on the compliance to these EA standards. The 9 topic owners should take ownership of these project / EA standards and keep them up to date.

2.4 The BAIM EA governance processes

The EA governance processes are required to manage the deployment of the EA framework within the organization. The EA governance processes will help to maintain and utilize the EA principles, EA best practices, EA Models and the EA standards. Based on the EA governance processes the necessary EA governance enablement tools (e.g. ARIS, ITSM) should be provided. The EA governance organizations and EA governance boards are required to manage the EA governance processes.

The 3 most important critical success factors that will contribute to the success of the roll-out of the BAIM EA framework and governance processes within the enterprise are;

1. A cross-organizational EA governance board with the backing of top management to oversee the implementation of the EA governance strategy.

2. The enterprise architects should have an understanding of the actual business strategy and is updated on the current business issues.

3. The enterprise architect should be involved in the investment and product selection decisions arising from the implementation of the Enterprise Architecture

The EA framework and EA governance processes will enable template management by the standardization, integration and quality assurance of the project deliverables.

3 Digital business transformation

With the increasing complexity of the hybrid on-premises and cloud landscape and integration of innovative and disruptive applications (like IoT, 3D printing), the EA framework will become more

important. Each additional application suite will mean an additional data model which is added to the (invisible) canonical data model and enterprise architecture of the company.

Therefore a consistent EA framework is essential to improve the agility of the digital transformation projects. The 9 topics of the BAIM EA framework can be used to determine the potential impact of the new disruptive technologies. The following table gives an overview of 10 cross industry disruptive technologies and their impact (e.g. volume, complexity) on the 9 topics of the BAIM EA framework;

10 Disruptive technologies	BOM	PPM	ITSM	BPM	EAM	PI	DM	EIM	PM
Smart devices take over the Internet (IoT & data science)	H	M	H	H	M	H	H	M	M
Smart factories decide on their own (Industry 4.0, robotics & 3D printing)	M	H	H	H	M	M	H	H	H
Machines plan their own maintenance (Predictive maintenance & digital twin)	L	H	M	H	L	H	H	M	M
Block chain make their own value (Block chain & business networks)	L	M	L	H	H	H	M	M	M
Computers learn on their own (Machine learning & AI)	M	L	L	H	L	H	H	H	H
From virtual and augmented reality to operational & commercial reality (Virtual & augmented reality)	H	M	M	H	M	H	H	H	H
Robots become Co-workers ((Chat) Bots & virtual assistant & Voice recognition)	L	M	M	H	M	H	H	H	H
Vehicles drive on their own (Drones & self driving vehicles)	L	L	M	H	H	M	M	M	M
AI replaces smart people (Business & cognitive analytics)	H	M	L	H	H	M	H	H	H
Computers are managed in the Cloud (IAAS. SAAS. PAAS)	L	H	H	H	H	H	L	M	H

Previous disruptive technologies or methodologies like mobile applications or bi-modal ICT units have sometimes resulted in an increased Total Cost of Ownership (TCO) and workload because of the increased maintenance costs of the mobile applications and the misalignment between the bi-modal & ICT departments.

Most of the 10 disruptive technology cause a shift in workload from people to machines, this has a major impact on the E2E business processes and all other topics of the BAIM EA framework.

The 10 disruptive technologies projects need to follow the same EA framework standards as all other projects independent whether the projects are implemented via an agile or waterfall project approach. The Enterprise architect should make sure that the EA framework is extended when required.

4 How can Enterprise Architecture support digital business transformation?

The Chief Information Officer (CIO) is managerial responsible for the Enterprise Architecture and digital business transformation program. He is supported by an EIM manager (Chief Data officer?), EAM manager (Director of applications?), Business transformation manager (Chief Digital Innovation Officer?), IT Service Manager (IT operations) and Enterprise Architect (Chief Integration Officer?).

The Enterprise Architect should be able to support and integrate all 9 topics and therefore requires skills in all 9 topics and disruptive technologies. The Enterprise architect should have the authority to be able to influence the IT application portfolio, project closures and IT operational efficiency. There

the close cooperation with the business and IT leadership and their support to maintain the practical BAIM EA framework is required to successful support the digital transformation program.

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