Extending MBI Model using ITIL and COBIT Processes

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Abstract: Most organizations today operate in a highly complex and competitive business environment and need to be able to react to rapidly changing market conditions. IT management frameworks are widely used to provide effective support for business objectives through aligning IT with business and optimizing the use of IT resources. In this paper we analyze three IT management frameworks (ITIL, COBIT and MBI) with the objective to identify the relationships between these frameworks, and mapping ITIL and COBIT processes to MBI tasks. As a result of this analysis we propose extensions to the MBI model to incorporate IT Performance Management and a Capability Maturity Model.

Key words: ITIL 2011, COBIT, MBI, IT Governance, IT Performance Management, Capability Maturity Model

1. Introduction

Today, organizations operate in a highly complex and competitive business environment and need to react quickly and with flexibility to rapidly changing market conditions. To maintain a competitive market position, organizations need to implement methods that enable rapid changes to business processes and at the same time, ensure the achievement of business goals and objectives. Organizational business processes are supported by Information Technology (IT), which has become an integral part of business. Clearly defined governance and management practices help organizations to align IT with business and to balance IT cost and benefits (Jäntti, et al., 2015). IT governance is a subset of corporate governance that focuses mainly on performance and risk management (Knap, 2013). IT governance helps to ensure that IT delivers the anticipated business value while minimizing related costs and risks (Orozco, et al., 2015). Due to increasing dependence of business on IT and increasing volumes of information required to support business processes, the implementation of IT governance and management framework is essential for effective functioning of an organization.

This paper discusses three frameworks for the management of enterprise IT: Management of Business Informatics (MBI), Information Technology Infrastructure Library 2011 (ITIL) and Control Objectives for Information and Related Technology 5 (COBIT), with the objective to identify the relationships between these frameworks and to propose extensions for the MBI model. We analyze the objectives of ITIL, COBIT and MBI focusing on the evaluation of IT goals. We analyze ITIL and COBIT processes including processes that assess maturity and map MBI tasks to ITIL and COBIT processes. Furthermore, we focus on performance management of enterprise IT and capability maturity, and analyze MBI, ITIL and COBIT processes related to performance management (The Cabinet Office, 2011).

In the following section (section 2) we briefly review related literature focusing on MBI, ITIL and COBIT frameworks. In section 3 we discuss the application of ITIL and COBIT principles to MBI and perform mapping between MBI tasks and ITIL and COBIT processes. In section 4 we propose extensions of the MBI model to incorporate IT Performance Management and Capability Maturity Model. In section 5 we present our conclusions.

2. Related work

Over the last decade a number of IT governance and management frameworks, including Control Objectives for Information and Related Technology 5 (COBIT), Information Technology Infrastructure Library 2011 (ITIL), ISO 38500 for Corporate governance of information technology have been developed and used in organizations (Jäntti, et al., 2015). These frameworks differ in their complexity and focus. In 2012, Czech Society for Systems Integration (CSSI) conducted a survey showing that
many enterprises are struggling with IT governance and management and only a small proportion of all respondents (12%) have implemented, documented and operate processes of IT governance and management (Pour, 2012). Furthermore, only 6% of all respondents have defined and used a system of metrics for managing enterprise IT (Pour, 2012). Due to excessive complexity and high cost associated with implementation and operation of IT Management frameworks (i.e. COBIT, ITIL, etc.), these frameworks are not suitable for small and medium-sized enterprises. While 53% of Czech enterprises are using ITIL, only 6% have fully implemented this framework (Voříšek, et al., 2015). COBIT is used by 47% of Czech enterprises, but 12% of all surveyed enterprises use COBIT only for strategic management of IT (Voříšek, et al., 2015). To address these issues the Department of Information Technology at the University of Economics Prague in collaboration with the Department of Software Engineering at the Czech Technical University have developed the Management of Business Informatics (MBI) framework (Dohnal, et al., 2013).

2.1 MBI Framework

MBI is a consistent and flexible methodological framework for IT management designed specifically to suit SMEs (Small and Medium size Enterprises) that typically lack the necessary resources and skills for effective operation and support of IT (Voříšek, et al., 2012). The objective of MBI is to achieve increased business efficiency through the application of best practice methods for IT management. The MBI metamodel describes the structure of objects that are stored in the MBI database and defines the relationships between these objects. The core MBI object is a task that describes practices for different areas of IT operations. MBI divides tasks into three main levels (strategic, tactical and operational) and six domains (strategic management, IT service management, IT resource management, business informatics economic management, business informatics development management and IT operation management) (Voříšek, et al., 2015). Other MBI objects include:

- **Document/Data** - documents can serve as inputs or outputs of each task or provide instructions for solving problems related to the operation of enterprise IT. Properties of objects are described by a set of data records
- **Roles** - roles express assignment of responsibilities to individual work positions in relation to tasks and their outputs based on the qualification requirements using RACI (Responsibility Assignment) matrix
- **Applications** - applications represent the functionality of the software used by a given task
- **Metrics** - metrics express key performance indicators for tasks, i.e. key performance indicators (KPI) and key goal indicators (KGI)
- **Methods** - methods represent best practices for managing specific tasks
- **Scenarios** - scenarios describe examples of potential situations associated with the operation of enterprise IT
- **Factors** - factors influencing the methods used to solve specific tasks

2.2 ITIL

ITIL is a standardized methodology based on the best practices for IT service management. ITIL consists of non-binding recommendations that a company may choose to implement. ITIL enables the implementation of IT Service Management (ITSM) for the service lifecycle (The Cabinet Office, 2011). The aim of the ITSM is to achieve continuous improvements of the quality of IT services and the realization of benefits from the use of IT services. The latest version of ITIL, published in 2011, consists of five publications that reflect the various stages of the service lifecycle and include key principles, processes and activities, roles, technology and associated challenges and risks. These publications are Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement (The Cabinet Office, 2011).

2.3 COBIT

COBIT is a framework for IT governance and management based on a set of best practices (ISACA, 2012). COBIT helps organizations to create value from IT by maximizing the benefits and minimizing the risks associated with IT, ensuring that IT meets the legislative and regulatory requirements, and achieves alignment of IT strategy with business goals (Youssi, et al., 2014). The current version of COBIT 5 published in 2012 integrates frameworks created by International Association of Information
Systems Audit and Control Association (ISACA) as Val IT 2.0, Risk IT, the IT Assurance Framework (ITAF) and the Business Model for Information Security (BMIS) with a version of COBIT 4.1 (ISACA, 2012). COBIT 5 is developed with reference to the widely accepted standards and frameworks for IT Governance such as ITIL, PRINCE2, Capability Maturity Model Integration (CMMI) and The Open Group Architecture Framework (TOGAF) (ISACA, 2012). These frameworks overlap in many areas, but there are also significant differences in their approaches. Each framework provides guidance about tools for IT Governance but brings different value to organizations. COBIT 5 is composed of the business framework for governance and management of enterprise IT and other complementary publications, giving guidance about practical implementation of governance and management of enterprise IT. COBIT defines the Process Reference Model and Information Model, and gives instructions about the application of COBIT in the area of information security, audit and risk management, and helps to evaluate governance processes in the enterprise IT (ISACA, 2015). COBIT is applicable to businesses of all sizes and industry sectors, because it is independent of a specific enterprise IT architecture (ISACA, 2014). COB helps to:

- ensure information quality needed to support business decisions
- achieve strategic objectives and efficient and innovative use of IT
- achieve operational excellence deploying reliable and efficient technologies
- manage IT risk at an acceptable level
- optimize costs of IT services and technologies
- achieve compliance with legislation, agreements and policies

Individual companies have stakeholders whose needs have to be transformed into specific, customizable and achievable business goals. Business goals are subsequently mapped to IT goals that conversely support business goals and stakeholder needs. Essential governance objectives are creating value corresponding to the requirements of stakeholders, risk minimization and resources optimization. COBIT integrates IT governance into enterprise governance and covers the functions, processes and services across the enterprise, both internal and external. COBIT supports the functioning of the whole enterprise, and this necessitates identification of roles and responsibilities. COBIT through integration with other ISACA standards creates a single, integrated framework for governance and management of enterprise IT.

3. Application of ITIL and COBIT principles to MBI

ITIL V3 2011, and COBIT 5 differentiate between IT governance and IT management. COBIT defines a clear distinction between the company management (governance) and the executive management (management). Both governance and management serve different purposes and are implemented by different types of activities conducted by different people with different responsibilities. Governance ensures continual assessment and evaluation of the business environment and stakeholder needs. Given business objectives the framework provides guidance on how to achieve these objectives, and monitors performance and achievement of the planned business objectives (ISACA, 2012). The role of management is to plan, implement and monitor activities in compliance with governance regulations in order to achieve business objectives (ISACA, 2012). ITIL does not emphasize the need for the separation of IT governance and IT management, but has separate publications that cover governance and management. Publications Service Strategy and Service Design relate primarily to IT governance. Publications Service Transition, Service Operation and Continual Service Improvement are primarily intended for IT management.

All three frameworks (i.e. ITIL V3 2011, COBIT 5 and MBI) have similar objectives that include maximizing Return on Investment (ROI), value creation, and IT investment optimization, leading to achievement of competitive advantage by using advanced IT technologies.

ITIL is primarily focused on design and implementation of efficient processes and procedures for IT service management, and COBIT focuses on the content of processes and procedures of IT service management (Martin, 2013). MBI enables documentation, implementation and monitoring of IT management processes using accepted best practices and recommendations to solve specific IT management problems (Voříšek, et al., 2012).

Companies that implement ITIL use ITSM principles for managing IT, while companies that implement COBIT use the goal cascade method that maps stakeholder needs into business and IT goals, and these goals are subsequently mapped into corresponding goal of enablers (ISACA, 2012). Business
and IT goals are divided into four dimensions: financial, customers, internal and learning and growth that correspond to the dimensions specified in the Balanced Scorecard system of business performance indicators (ISACA, 2012). COBIT defines seventeen generic goals for business and IT goals that are grouped into the dimensions specified by the Balanced Scorecard, and their relationship with the three main governance objectives: creating value corresponding to the stakeholder needs, and risk and resource optimization. Business objectives defined for the various dimensions include:

- **Financial dimension** – stakeholder value of business investments, portfolio of competitive products and services, managed business risk, compliance with external laws and regulations, financial transparency
- **Customer dimension** – customer-oriented service culture, business service continuity and availability, agile responses to a changing business environment, information-based strategic decision making, optimization of service delivery costs,
- **Internal dimension** – optimization of business process functionality, optimization of business process costs, managed business change programs, operational and staff productivity, compliance with internal policies
- **Learning and growth dimension** – skilled and motivated people, product and business innovation culture

IT goals are related to a specific processes, and are associated with a set of recommended metrics:

- **Financial dimension** – alignment of IT and business strategy, IT compliance and support for business compliance with external laws and regulations, commitment of executive management for making IT-related decisions, managed IT-related business risk, realized benefits from IT enabled investments and services portfolio, transparency of IT costs, benefits and risk
- **Customer dimension** – delivery of IT services in line with business requirements, adequate use of applications, information and technology solutions
- **Internal dimension** – IT agility, security of information, processing infrastructure and applications, optimization of IT assets, resources and capabilities, enablement and support of business processes by integrating applications and technology into business processes, delivery of programs delivering benefits, on time, on budget, and meeting requirements and quality standards, availability of reliable and useful information for decision making, IT compliance with internal policies
- **Learning and growth dimension** – competent and motivated business and IT personnel, knowledge, expertise and initiatives for business innovation

### 3.1 Mapping of ITIL and COBIT processes

ITIL in its process description emphasizes the need to implement structured, consistent and holistic approach to the design activities. ITIL processes for managing the service lifecycle include the following information:

- purpose and process objectives
- process scope
- process value to business
- policies, principles and basic concepts
- process activities, methods and techniques
- process triggers, inputs, outputs and interfaces with other cooperating processes
- information management
- critical success factors and key performance indicators
- description of related challenges and risks

COBIT defines a process reference model that is divided into five governance processes and thirty-two management processes. The governance processes are concerned with the Evaluation, Direction and Monitoring (EDM) and the management processes are divided into four areas for planning, development, operation and monitoring:

- APO - Align, Plan, Organise
- BAI - Build, Acquire, Implement
- DSS - Deliver, Service, Support
• MEA - Monitor, Evaluate, Assess

Description of each COBIT process contains the following components:
• process description and purpose statement
• IT goals and related metrics
• process goals and related metrics
• RACI chart
• governance or management practices, inputs/outputs and activities
• links to related frameworks or standards

Figure 1 illustrates the relationship between COBIT processes and ITIL 2011 processes, and shows that COBIT 5 has references to all processes defined in ITIL, but that there are some COBIT processes with no corresponding ITIL processes. This is the case in particular for the EDM (Evaluate, Direct, Monitor) governance processes that are not defined as separate processes in ITIL. ITIL takes a different approach to COBIT and covers governance activities as a part of ITIL service lifecycle management. There is no consensus about which activities in IT service management are separate processes and which activities are part of a global approach to IT management.

Figure 1: Mapping COBIT and ITIL processes, source: (ISACA, 2012), (Samiotakis, 2013), author
3.2 Mapping of ITIL and COBIT processes to MBI tasks

The MBI framework defines objects that describe processes for the management of enterprise IT. In order to analyze the relationship between MBI and ITIL and COBIT, we map MBI tasks to ITIL and COBIT processes, as shown in Table 1. In the following section (section 4) we propose extensions to the MBI model to cover IT Performance Management (section 4.1) and introduce a Process Capability Model (section 4.2).

Table 1: Mapping MBI tasks to ITIL 2011 and COBIT 5 processes

<table>
<thead>
<tr>
<th>Task Code</th>
<th>Task</th>
<th>Corresponding ITIL 2011/COBIT 5 processes</th>
</tr>
</thead>
</table>
| U003A     | Manage cooperation of IT with business on business strategy | **ITIL 2011:**  
Strategy management for IT services, Business relationship management  
**COBIT 5:**  
(EDM01) Ensure Governance Framework Setting and Maintenance  
(EDM02) Ensure Benefits Delivery  
(EDM03) Ensure Risk Optimisation  
(EDM04) Ensure Resource Optimisation  
(EDM05) Ensure Stakeholder Transparency  
(APO01) Manage the IT Management Framework  
(APO02) Manage Strategy  
(APO08) Manage Relationships |
| U004A     | Revision of IT strategy according to business requirements | **ITIL 2011:**  
Strategy management for IT services, Business relationship management  
**COBIT 5:**  
(EDM01) Ensure Governance Framework Setting and Maintenance  
(APO01) Manage the IT Management Framework  
(APO02) Manage Strategy  
(APO05) Manage Portfolio  
(APO08) Manage Relationships |
| U005A     | Management of communication of IT managers with business   | **ITIL 2011:**  
Strategy management for IT services, Business relationship management  
**COBIT 5:**  
(EDM01) Ensure Governance Framework Setting and Maintenance  
(EDM05) Ensure Stakeholder Transparency  
(APO08) Manage Relationships |
| U005B     | Collaboration of business managers with IT - CIO and CMO    | **ITIL 2011:**  
Strategy management for IT services, Business relationship management  
**COBIT 5:**  
(EDM01) Ensure Governance Framework Setting and Maintenance |
| U006A  | IT cooperation in the creation of the business model | **ITIL 2011**: Strategy management for IT services, Business relationship management  
**COBIT 5**:  
(APO01) Manage the IT Management Framework  
(APO02) Manage Strategy |
| U007A  | Business operating model | **ITIL 2011**: Strategy management for IT services, Business relationship management  
**COBIT 5**:  
(APO02) Manage Strategy |
| U010A  | Managing IT costs within cost of business | **ITIL 2011**: Financial management for IT services  
**COBIT 5**:  
(APO06) Manage Budget and Costs |
| U020A  | Evaluating critical factors of achieving business goals | **ITIL 2011**: Strategy management for IT services  
**COBIT 5**:  
(EDM01) Ensure Governance Framework Setting and Maintenance  
(EDM02) Ensure Benefits Delivery  
(EDM03) Ensure Risk Optimisation |
| U021A  | Analysis and evaluation of trends and supply personnel capacities in the IT market | **ITIL 2011**: Strategy management for IT services |
| U022A  | Competitor analysis from the perspective of IT | **ITIL 2011**: Strategy management for IT services |
| U023A  | Analysis of the IT business partners | **ITIL 2011**: Strategy management for IT services |
| U024A  | Analysis of the legislation requirements on IT | **ITIL 2011**: Strategy management for IT services  
**COBIT 5**:  
(APO01) Manage the IT Management Framework  
(APO12) Manage Risk  
(APO13) Manage Security  
(BAI10) Manage Configuration  
(DSS05) Manage Security Services  
(MEA02) Monitor, Evaluate and Assess the System of Internal Control |
| U026A | Analysis of corporate culture, maturity of business processes and knowledge and skills of employees | **COBIT 5:**  
(APO01) Manage the IT Management Framework  
(APO04) Manage Innovation  
(APO07) Manage Human Resources  
(BAI05) Manage Organisational Change Enablement  
(BAI08) Manage Knowledge |
| U033A | IT service architecture design | **ITIL 2011:**  
Service portfolio management, Service catalogue management  
**COBIT 5:**  
(APO03) Manage Enterprise Architecture |
| U034A | Reflecting IT service architecture in other IT architectures | **COBIT 5:**  
(APO03) Manage Enterprise Architecture |
| U035A | IT sourcing | **COBIT 5:**  
(APO05) Manage Portfolio  
(APO06) Manage Budget and Costs |
| U037A | Development of IT management | **COBIT 5:**  
(APO04) Manage Innovation |
| U041A | Definition of projects and their priorities | **COBIT 5:**  
(BAI01) Manage Programmes and Projects |
| U042A | Economic analysis and budget of information strategy | **ITIL 2011:**  
Financial management for IT services  
**COBIT 5:**  
(EDM02) Ensure Benefits Delivery  
(APO05) Manage Portfolio, APO06 Manage Budget and Costs  
(BAI01) Manage Programmes and Projects |
| U051A | IT Governance | **COBIT 5:**  
(EDM01) Ensure Governance Framework Setting and Maintenance  
(EDM02) Ensure Benefits Delivery  
(EDM03) Ensure Risk Optimisation  
(EDM04) Ensure Resource Optimisation  
(EDM05) Ensure Stakeholder Transparency |
| U101A | The creation and development of IT services catalogue | **ITIL 2011:**  
Service catalogue management  
**COBIT 5:**  
(APO05) Manage Portfolio  
(APO09) Manage Service Agreements |
| U102A | IT service design | **ITIL 2011:**  
Strategy management for IT services, Service portfolio management, Financial management for IT services, Demand management |
<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
<th>ITIL 2011</th>
<th>COBIT 5</th>
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</thead>
<tbody>
<tr>
<td>U103A</td>
<td>Creation of IT service</td>
<td>-</td>
<td>(APO02) Manage strategy, (APO05) Manage portfolio, (APO06) Manage Budget and Cost, (APO08) Manage relationships, (APO09) Manage service agreements</td>
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<tr>
<td>U104A</td>
<td>Testing of IT service</td>
<td>-</td>
<td>(APO05) Manage portfolio, (APO06) Manage Budget and Cost, (APO08) Manage relationships, (APO09) Manage service agreements</td>
</tr>
<tr>
<td>U105A</td>
<td>Preparation and conclusion of SLA</td>
<td>-</td>
<td>(APO05) Manage portfolio, (APO06) Manage Budget and Cost, (APO08) Manage relationships, (APO09) Manage service agreements</td>
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<tr>
<td>U106A</td>
<td>Implementation / activation of IT services</td>
<td>-</td>
<td>(APO05) Manage portfolio, (APO06) Manage Budget and Cost, (APO08) Manage relationships, (APO09) Manage service agreements</td>
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<tr>
<td>U107A</td>
<td>Termination / deactivation of IT services</td>
<td>-</td>
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<tr>
<td>U121A</td>
<td>Definition of IT project requirements</td>
<td>-</td>
<td>(BAI01) Manage Programmes and Projects</td>
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<tr>
<td>U122A</td>
<td>Planning and scheduling of projects for realization</td>
<td>-</td>
<td>(BAI01) Manage Programmes and Projects</td>
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<tr>
<td>U123A</td>
<td>Management and coordination of project implementation</td>
<td>-</td>
<td>(BAI01) Manage Programmes and Projects</td>
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<tr>
<td>U124A</td>
<td>Termination (removal project, evaluation)</td>
<td>-</td>
<td>(BAI01) Manage Programmes and Projects</td>
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<tr>
<td>U125A</td>
<td>Implementation of portfolio management processes and continuous improvement (PDCA)</td>
<td>-</td>
<td>(BAI01) Manage Programmes and Projects</td>
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</tbody>
</table>

**COBIT 5:**
- (APO02) Manage strategy
- (APO05) Manage portfolio
- (APO06) Manage Budget and Cost
- (APO08) Manage relationships
- (APO09) Manage service agreements

**ITIL 2011:**
- Design coordination, Service catalogue management, Service level management, Availability management, Capacity management, IT service continuity management, Information security management, Supplier management
- Service validation and testing
- Service level management
- Service portfolio management

**COBIT 5:**
- (BAI02) Manage requirements definition
- (BAI03) Manage solutions identification and build
- (BAI07) Manage change acceptance and transitioning
- (BAI01) Manage Programmes and Projects
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<tr>
<th>Code</th>
<th>Description</th>
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<td></td>
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<td>Supplier management</td>
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<tr>
<td>U132A</td>
<td>IT supplier relationship management</td>
<td>Supplier management</td>
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<td></td>
<td></td>
<td>COBIT 5:</td>
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<tr>
<td></td>
<td></td>
<td>(APO10) Manage Suppliers</td>
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<tr>
<td>U133A</td>
<td>IT service purchasing management</td>
<td>COBIT 5:</td>
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<tr>
<td></td>
<td></td>
<td>BAI03 Manage Solutions Identification and Build</td>
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<td>U134A</td>
<td>A tender for suppliers of IT products and services</td>
<td>ITIL 2011:</td>
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<td></td>
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<td>Supplier management</td>
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<td>COBIT 5:</td>
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<td></td>
<td></td>
<td>(APO10) Manage Suppliers</td>
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<td>U151A</td>
<td>IT service availability and continuity management</td>
<td>ITIL 2011:</td>
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<tr>
<td></td>
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<td>Availability management, IT service continuity management</td>
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<td>COBIT 5:</td>
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<td></td>
<td></td>
<td>(DSS01) Manage operations</td>
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<td></td>
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<td>(DSS04) Manage continuity</td>
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<td>U152A</td>
<td>Ensuring operational performance and scalability of IT services</td>
<td>COBIT 5:</td>
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<td></td>
<td></td>
<td>(MEA01) Monitor, evaluate and assess performance and conformance</td>
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<td>U154A</td>
<td>Evaluation of provided IT services and SLA</td>
<td>ITIL 2011:</td>
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<td>Service portfolio management, Demand management, Service catalogue management, Service level management</td>
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<td>COBIT 5:</td>
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<td>(APO09) Manage Service Agreements</td>
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<td></td>
<td>(APO11) Manage Quality, BAI04 Manage Availability and Capacity</td>
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<td>(DSS01) Manage Operations</td>
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<td>U161A</td>
<td>Formulation of security policies</td>
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<td>Information security management</td>
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<td>(APO13) Manage Security</td>
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<td>(DSS05) Manage Security Services</td>
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<td>U162A</td>
<td>IT operation security management and development of IT services</td>
<td>ITIL 2011:</td>
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<td>Information security management, Access management</td>
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<td>(APO04) Manage innovation</td>
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<td>(DSS05) Manage Security Services</td>
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<td>U163A</td>
<td>Processing of security audit</td>
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<td>(MEA02) Monitor, Evaluate and Assess the System of Internal Control</td>
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<td>U221A</td>
<td>Analysis of the state of human resources and their qualifications</td>
<td>COBIT 5:</td>
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<td>(APO07) Manage Human Resources</td>
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<td>U222A</td>
<td>Planning human resources in IT</td>
<td>ITIL 2011:</td>
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<tr>
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<td>U231A</td>
<td>Managing of IT expertise</td>
<td>Capacity management</td>
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<td>U244A</td>
<td>Configuration Management</td>
<td>Service asset and configuration management</td>
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<td>U245A</td>
<td>Planning and managing development of technological infrastructure</td>
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<td>U301A</td>
<td>Billing of IT services</td>
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<td>U302A</td>
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4. Extending the MBI model

In this section we consider extensions for the MBI model based on the analysis in section 3. We focus on two areas: IT performance Management (section 4.1) and Process Maturity (section 4.2).

4.1 IT performance management

Lack of effective methods for IT performance management can lead to excessive IT costs, poor reliability, and consequently management dissatisfaction with IT services. IT performance management aims to continuously detect the causes of performance problems, and minimize their impact throughout IT service lifecycle, ensuring conformance to SLA metrics, and minimization of demand on IT resources.

In this section we show how the MBI model can be extended by adapting existing ITIL and COBIT processes. The MBI model includes a role U152A – “Ensuring operational performance and scaling of IT services”, but it does not fully cover IT performance management. We propose a new task and two additional roles with the following properties:

- Level of management: Tactical
- Domain: DO100 IT Service Management
- Group of tasks: TG105 Service Quality Management
- Task: new task U155A - Performance Management
- Group of roles: Executive Management of Business Informatics
- Role: new role R112 - Performance Management Manager
- Group of roles: Analysts, Systems Analysts
- Role: new role R305 - Performance Analyst

Task U155A - Performance Management

Objective: Continuous detection of performance issues and their source, analysis of root causes, and elimination or minimization of the impact of performance problems.
Description, definition of content: The task involves continuous monitoring of potential sources of performance problems, their early identification, analysis of the causes and proposals for rectification of the underlying problems.

Activities: Monitoring of potential sources of performance problems, analyzing performance problems, the definition of the causes of performance problems, develop proposals to eliminate performance problems, evaluate the effects after the implementation of the proposals.

Role R112 - Performance Management Manager

Description, content definition: Performance Management Manager ensures the implementation of performance management processes.

Activities: definition of performance management processes, methodologies and activities implemented by performance management processes, definitions of used tools, monitoring and evaluating outcomes of the process of performance management, team management of performance management, communication with IT managers and business.

Required skills: methodology, methods and tools for performance management, technological knowledge in the areas of infrastructure, platforms and applications, and IT governance skills.

Role competences:

- Technical competencies: Detailed technical knowledge of operating technologies and applications with respect to possible sources of performance problems, the ability to apply tools for monitoring and detecting sources of performance problems, a detailed knowledge of the methods resolution of performance problems, knowledge of programming languages
- Competence for business support: Knowledge of the business processes implemented in the enterprise, understanding the impact of the performance of IT processes on business.
- Social skills: communication skills and the ability to explain IT services performance issues, management of a team, promoting and explaining the effects of implementing solutions to performance problems.

Role R305 - Performance Analyst

Description, content definition: Performance Analyst evaluates outputs of tools for detecting and identifying sources of performance problems, analyzes the causes of performance problems, proposes methods for their solution, communicates with employees of other teams, evaluates the effects of the implementation of proposals.

Required skills: methodology, methods and tools of performance management, technological knowledge in the areas of infrastructure, platforms and applications with emphasis on the possible source of performance problems, knowledge of methods and tools for solving performance problems.

Competence role:

- Technical competencies: Detailed technical knowledge of operating technologies and applications for possible sources of performance problems, the ability to evaluate the outcomes of tools for monitoring and detecting sources of performance problems, a detailed knowledge of the methods for resolution of performance issues, knowledge of programming languages.
- Competence for business support: Knowledge of the business processes implemented in the company.
- Social skills: ability to communicate about performance issues, ability to defend proposals to solve performance problems.

1.1 Process Capability Model

In this section we consider extension of the MBI model by referencing an existing maturity standard. COBIT focuses primarily on what should be the content of processes and procedures. This orientation provides a suitable basis for a definition of a process maturity model. COBIT defines its own Process Capability Model based on ISO/IEC 15504 Information technology - Process assessment. Process Capability Model is intended to enable measurement of performance and maturity of each implemented process and provides objective data about process condition and level of its
implementation, and how and which processes can be improved. Process Capability Model has six levels of capability (ISACA, 2012):

- **Level 0 Incomplete process.** The process is either not implemented at all, or fail to achieve its goals.
- **Level 1: Performed process.** The process operates in accordance with the expected purpose. This level has one performance attribute PA 1.1. Process performance.
- **Level 2: Managed process.** The process is planned, monitored and adjusted and its outputs are established, managed and maintained. This level has two performance attributes PA 2.1 Performance management and PA 2.2. Work product management.
- **Level 3: Established process.** The process is implemented using a defined process that is capable to achieve the expected outcomes. Level 3 has two performance attributes PA 3.1 Process definition and PA 3.2 Process deployment.
- **Level 4: Predictable process.** The process operates within defined limits and achieves the expected outcomes. Level 4 has two performance attributes PA 4.1 Process measurement and PA 4.2 Process control.
- **Level 5: Optimizing process.** The predictable process is continuously improved in order to meet business objectives. This level has two attributes PA 5.1 Process innovation and PA 5.2 Process optimization.

ITIL does not include its own process maturity model and uses an external methodology to assess the maturity of the entire ITIL framework implementation. Similarly, MBI model does not define its own process maturity model, but refers to Capability Maturity Model (CMM) (Voříšek, et al., 2012).

2 Conclusion

A key element of IT governance is the alignment of business and IT in order to achieve the desired business outcomes. To achieve this alignment requires the implementation of a suitable governance framework for IT management. Such frameworks typically provide best practice recommendations and individual organizations choose to implement recommendations that best suit their needs. Our analysis indicates that the three frameworks under consideration in this paper (i.e. ITIL, COBIT and MBI) share key principles and overlap in many important respects. However, there are some areas of MBI that can benefit from extensions based on ITIL or COBIT; for example, the area of risk management. Our analysis further shows that ITIL, COBIT and MBI are all based on similar methods for achieving objectives, but that the focus of these frameworks differs. ITIL focuses on how to plan, design and implement efficient processes for IT service management, COBIT focuses on the content of the processes and procedures for IT service management, and MBI aims to provide support for SMEs for design and implementation of IT management.

We conclude that the intrinsic principles and practices of ITIL and COBIT can be incorporated into the MBI framework. MBI covers the areas of IT governance and IT management and therefore allows the mapping of ITIL or COBIT processes to MBI tasks (as shown in section 3 - Table 1). We use the example of IT Performance Management to illustrate how the MBI model can be extended by incorporation of adapted ITIL and COBIT processes (section 4.1). Another approach to extending the MBI frameworks is by reference to an existing standard as illustrated in section 4.2 for the maturity model.

3 References

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**JEL Classification: M15**