

Methods of Analyzing an Enterprise Architecture

Quantitative Analysis

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This analysis requires accurate and reliable input data, while clearly defining what exactly is to be measured. There are three (3) areas of interest in quantitative analysis, namely: reliability, performance, and cost. This analysis also focuses on determining any of the three (3) general performance measures, namely, the workload for each node, processing and response time, and the utilization for each resource.

Performance Analysis

It is a process of studying and evaluating the current performance of a particular system, application, project, design, scenario, or an employee in comparison with the objectives or goals that were set to properly address and resolve problems and deficiencies (MBASchool, n.d.).

In enterprise architecture, this analysis requires detailed models of each enterprise architecture layer as input (Lankhorst, 2017).

- **Business Layer Performance Analysis** – This focuses on the evaluation of management processes within a business. Different modeling tools provide support and offer possible solutions for this analysis through event simulations.
- **Application Layer Performance Analysis** – This focuses on the performance engineering evaluation of software applications.
- **Technology Layer Performance Analysis** – This focuses on the performance evaluation of computer systems and communication systems, including the technical infrastructure domains.

Views and their Corresponding Performance Measures

View	Viewpoint	Performance Measure
User view	Customer, application user	Response Time – the time between issuing a request and receiving the result
Process view	Process owner, operations manager	Completion Time – the time required to complete one (1) instance of a process
Product view	Product manager, operations manager	Processing Time – the amount of time wherein actual work is performed to produce a specific product or result.
System view	System owner, system manager	Throughput – the number of transactions or requests that a system completes per unit of time

Resource
view

Resource manager,
capacity planner

Utilization –the percentage of the operational time that a resource is in use

Functional Analysis

Functional Analysis

It is performed to gain insight into the functional aspect of an enterprise architecture. It is used to understand how a system conforms to an architecture in order to find the impact of a change on an architecture or validate the correctness of an architecture.

- **Static (Structural) Analysis**

- This analysis utilizes *description logics*, which are knowledge representation languages tailored to express concepts and hierarchies on an enterprise architecture. Description logics can also be applied in conceptual modeling, information integration, software management systems, natural language understanding, etc.
- This focuses on the symbolic representations of the structural elements of an architecture and their relationships, abstraction, pragmatics, and visualization.

- **Dynamic (Behavioral) Analysis**

- This analysis is based on *formal methods* such as process algebras and data flow networks. Functional behavior analysis based on formal methods can primarily be considered as qualitative analysis, which can detect logical errors, lead to better consistency, and/or improve the logic of models.

Risk Analysis

Risk Analysis

It is a process that helps architects identify and manage potential problems that could arise in a project. In risk analysis, identifying possible threats and estimating the likelihood that these threats materialize are necessary (Mind Tools, n.d.). It also encompasses a complex process involving different information such as project plans, security protocols, financial data, and other relevant information that can be linked to the identified threat.

Possible Criteria in Risk Analysis (TOGAF 9.1 Site, n.d.):

- **Catastrophic** infers critical financial loss that could result in the bankruptcy of the organization.

- **Critical** infers severe financial loss in more than one (1) line of business leading to a loss in productivity and no return on investment on the IT investment.
- **Marginal** infers a minor financial loss in a line of business and a reduced return on investment on the IT investment.
- **Negligible** infers a minimal impact on a line of business' ability to deliver services and/or products.

Levels of Risk Impact (TOGAF 9.1 Site, n.d.)

- **Extremely High Risk:** the transformation effort will most likely fail with severe consequences
- **High Risk:** significant failure of parts of the transformation effort resulting in certain goals not being achieved
- **Moderate Risk:** noticeable failure of parts of the transformation effort threatening the success of certain goals
- **Low Risk:** certain goals will not be wholly successful

References:

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