



# Podstawy inżynierii oprogramowania

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# Podstawowe pojęcia i definicje

## Abstraction

1. A view of an object that focuses on the information relevant to a particular purpose and ignores the remainder of the data.
2. The process of formulating a view as in 1.

## Acceptance criteria

The criteria that a system or component must satisfy in order to be accepted by a user, customer, or other authorized entity.

## Acceptance testing

1. Formal testing conducted to determine whether or not a system satisfies its acceptance criteria and to enable the customer to determine whether or not to accept the system.
2. Formal testing conducted to enable a user, customer, or other authorized entity to determine whether to accept a system or component.

# Podstawowe pojęcia i definicje

## Acquirer

The stakeholder that acquires or procures a product or a service from a supplier.

## Acquisition

The process of obtaining a system, product or service.

## Activity

It is a major unit of work to be completed in achieving the objectives of a process. An activity has precise starting and ending dates, incorporates a set of tasks to be completed, consumes resources, and results in work products. An activity may have a precedence relationship with other activities.

# Podstawowe pojęcia i definicje

## Agile

- 1. Response ability state marked by high competence at both proactive and reactive change.*
- 2. Project execution methods can be described on a continuum from “adaptive” to “predictive.” Agile methods exist on the “adaptive” side of this continuum, which is not the same as saying that agile methods are “unplanned” or “undisciplined.”*

## Agreement

*Mutual acknowledgment of terms and conditions under which a working relationship is conducted.*

# Podstawowe pojęcia i definicje

## Audit

An independent examination of a work product or set of work products to assess compliance with specifications, standards, contractual agreements, or other criteria.

## Architecture

- 1. fundamental concepts or properties of a system in its environment embodied in its elements, relationships, and in the principles of its design and evolution*
- 2. The organizational structure of a system or component; the organizational structure of a system and its implementation guidelines.*
- 3. Fundamental concepts or properties of a system in its environment embodied in its elements, relationships, and in the principles of its design and evolution.*

# Podstawowe pojęcia i definicje

## Architecture Framework

*Conventions, principles and practices for the description of architectures established within a specific domain of application and/or community of stakeholders.*

## Baseline

1. A specification or product that has been formally reviewed and agreed upon, that thereafter serves as the basis for further development, and that can be changed only through formal change control procedures.
2. A document or a set of such documents formally designated and fixed at a specific time during the life cycle of a configuration item.
3. Any agreement or result designated and fixed at a given time, from which changes require justification and approval.

# Podstawowe pojęcia i definicje

## Behaviour

- 1. Systems behavior is a change which leads to events in itself or other systems. Thus, action, reaction or response may constitute behavior in some cases.*
- 2. The effect produced when an instance of a complex system or organism is used in its operational environment.*

## Black-Box System

*A device, system or object which can be viewed solely in terms of its input, output and transfer characteristics without any knowledge of its internal workings, that is, its implementation is "opaque" (black).*

## Business Process

*An inter-related set of cross-functional activities or events that result in the delivery of a specific product or service to a customer.*

# Podstawowe pojęcia i definicje

## Bottom-up

Pertaining to an activity that starts with the lowest-level components of a hierarchy and proceeds through progressively higher levels; for example, bottom-up design; bottom-up testing.

## Certification

1. A written guarantee that a system or component complies with its specified requirements and is acceptable for operational use. For example, a written authorization that a computer system is secure and is permitted to operate in a defined environment.
2. A formal demonstration that a system or component complies with its specified requirements and is acceptable for operational use.
3. The process of confirming that a system or component complies with its specified requirements and is acceptable for operational use.

# Podstawowe pojęcia i definicje

## Component

One of the parts that make up a system. A component may be hardware or software and may be subdivided into other components.

## Configuration

- 1.The arrangement of a computer system or component as defined by the number, nature, and interconnections of its constituent parts.
- 2.In configuration management, the functional and physical characteristics of hardware or software as set forth in technical documentation or achieved in a product.

## Configuration management

*A discipline applying technical and administrative direction and surveillance to: identify and document the functional and physical characteristics of a configuration item, control changes to those characteristics, record and report change processing and implementation status, and verify compliance with specified requirements.*

# Podstawowe pojęcia i definicje

## Constraint

1. A restriction, limit, or regulation imposed on a product, project, or process.
2. A type of requirement or design feature that cannot be traded off.

## Cost

In the context of systems engineering, a cost is an amount expressed in a given currency related to the value of a system element, a physical interface, a physical architecture.

## Customer

The organization or person that receives a product or service.

# Podstawowe pojęcia i definicje

## DFD (Data Flow Diagram)

A diagram that depicts data sources, data sinks, data storage, and processes performed on data as nodes, and logical flow of data as links between the nodes.

## Data structure

A physical or logical relationship among data elements, designed to support specific data manipulation functions.

## Design

1. A document that describes the design of a system or component. Typical contents include system or component architecture, control logic, data structures, input/output formats, interface descriptions, and algorithms.
2. (System) design includes activities to create concepts and models, and/or to conceive something (a system / a solution that answers an intended purpose) based on or using principles and concepts; the outcome of design activities is a coherent and purposeful set of models or representations using defined constructs and patterns (that implement principles and concepts).

# Podstawowe pojęcia i definicje

## Developer

1. Organization that performs development tasks (including requirements analysis, design, testing through acceptance) during a life cycle process.
2. Person who applies a methodology for some specific job, usually an endeavor.

## E-services

A collection of network-resident software services accessible via standardized protocols, whose functionality can be automatically discovered and integrated into applications or composed to form more complex services.

## Efficiency

The degree to which a system or component performs its designated functions with minimum consumption of resources.

# Podstawowe pojęcia i definicje

## Embedded software

Software that is part of a larger system and performs some of the requirements of that system; for example, software used in an aircraft or rapid transit system.

## Enabling system

A system that complements a system-of-interest during its life cycle stages, but does not necessarily contribute directly to its function during its operation stage.

## Encapsulation

A software development technique that consists of isolating a system function or a set of data and operations on those data within a module and providing precise specifications for the module.

# Podstawowe pojęcia i definicje

## Engineering

- 1.The application of scientific knowledge to practical problems, or the creation of useful things. The traditional fields of mechanical engineering, electrical engineering, etc. are included in this definition.*
- 2.To (cleverly) arrange for something to happen.*

## Enterprise

- 1.one or more organizations sharing a definite mission, goals, and objectives to offer an output such as a product or service.*
- 2.An organization (or cross-organizational entity) supporting a defined business scope and mission that includes interdependent resources (people, organizations, and technologies) that must coordinate their functions and share information in support of a common mission (or set of related missions).*
- 3.the term enterprise can be defined in one of two ways. The first is when the entity being considered is tightly bounded and directed by a single executive function. The second is when organizational boundaries are less well defined and where there may be multiple owners in terms of the direction of the resources being employed. The common factor is that both entities exist to achieve specified outcomes.*
- 4.A complex, (adaptive) socio-technical system that comprises interdependent resources of people, processes, information, and technology that must interact with each other and their environment in support of a common mission.*

# Podstawowe pojęcia i definicje

## Environment

1. Anything affecting a subject system or affected by a subject system through interactions with it, or anything sharing an interpretation of interactions with a subject system.
2. The surroundings (natural or man-made) in which the system-of-interest is utilized and supported; or in which the system is being developed, produced or retired.

## Evaluation

The primary purpose of software evaluation is to provide quantitative results concerning the qualities of a software product that are comprehensible, acceptable, and trustable by any interested party. Therefore the evaluation procedure proposed complies with requirements stated in international standards

# Podstawowe pojęcia i definicje

## Failure

The inability of a system or component to perform its required functions within specified performance requirements.

## Feasibility study

Analysis of the known or anticipated need for a product, system, or component to assess the degree to which the requirements, designs, or plans can be implemented.

## Firmware

The combination of a hardware device; e.g., an IC; and computer instructions and data that reside as read only software on that device. Such software cannot be modified by the computer during processing.

# Podstawowe pojęcia i definicje

## Framework

*Architectural Framework: Conventions, principles and practices for the description of architectures established within a specific domain of application and/or community of stakeholders.*

## Function

1. A system outcomes which contribute to goals or objectives. To have a function, a system must be able to provide the outcome through two or more different combinations of elemental behavior.
2. An action, a task, or an activity performed to achieve a desired outcome.
3. A function is defined by the transformation of input flows to output flows, with defined performance.
4. A broad work area encompassing multiple related disciplines (e.g., Engineering, Finance, Human Resources, etc.).

# Podstawowe pojęcia i definicje

## Implementation

- 1.The process of translating a design into hardware components, software components, or both.
- 2.The phase in the software life-cycle where the actual software is implemented. The result of this phase consists of source code, together with documentation to make the code more readable.

## Implementation Model

The implementation model consists of the code files and the used work structure. It includes the application software description as well as the support software description. While the design model is a more abstract view, the implementation model contains the full information necessary to build the system.

## Implementer (developer)

organization that performs implementation tasks.

# Podstawowe pojęcia i definicje

## Inspection

A static analysis technique that relies on visual examination of development products to detect errors, violations of development standards, and other problems. Types include code inspection; design inspection.

## installation and checkout phase

The period of time in the software life cycle during which a software product is integrated into its operational environment and tested in this environment to ensure that it performs as required.

## Integration

A process that combines system elements to form complete or partial system configurations in order to create a product specified in the system requirements.

# Podstawowe pojęcia i definicje

## Leader

*A leader is one or more people who selects, equips, trains, and influences one or more follower(s) who have diverse gifts, abilities, and skills and focuses the follower(s) to the organization's mission and objectives causing the follower(s) to willingly and enthusiastically expend spiritual, emotional, and physical energy in a concerted coordinated effort to achieve the organizational mission and objectives.*

## Lean Systems Engineering (LSE)

- 1.The application of lean principles, practices, and tools to SE to enhance the delivery of value to the system's stakeholders.*
- 2.Lean Systems Engineering (LSE) is the area of synergy between lean thinking and SE, with the goal to deliver the best life-cycle value for technically complex systems with minimal waste; under the lean SE philosophy, mission assurance is non-negotiable, and any task that is legitimately required for success must be included, but it should be well-planned and executed with minimal waste.*

# Podstawowe pojęcia i definicje

## Life Cycle

- 1.The organized collection of activities, relationships and contracts which apply to a system-of-interest during its life.*
- 2.The evolution of a system, product, service, project or other human-made entity from conception through retirement.*
- 3.Development (life) cycles start with user needs and end with system decommissioning and disposal. Project cycles contain three aspects: business, budget, and technical.*

## Life Cycle Management

*The end-to-end management of the life cycle.*

## Life Cycle Model

*A framework of processes and activities concerned with the life cycle that may be organized into stages, which also acts as a common reference for communication and understanding*

# Podstawowe pojęcia i definicje

## Logical Architecture

The logical architecture of a system is composed of a set of related technical concepts and principles that support the logical operation of the system. It includes a functional architecture, a behavioral architecture, and a temporal architecture.

## Maintainer

individual or organization that performs maintenance activities.

## Maintenance

The process of modifying a system or component after delivery to correct faults, improve performance or other attributes, or adapt to a changed environment.

**WHAT IF I TOLD YOU**

**ITS NOT OVER YET**