

System

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Discussion

A System is a set of interacting elements organized to achieve one or more stated purposes. A System is identified as a whole relative to a particular purpose, context, and [Viewpoint](#).

A System may include:

- Hardware
- Software
- [Data](#)
- People
- Organizations
- Facilities
- Services
- Procedures
- Policies
- Natural elements
- Other Systems

The elements of a System interact through relationships, [Interfaces](#), exchanges, actions, and flows. These interactions contribute to the behavior and capabilities of the System as a whole.

A System has a boundary that distinguishes the System from its environment for a defined purpose. The boundary depends on the selected context and Viewpoint. An element treated as external in one analysis may be treated as part of the System in another.

Systems may be decomposed recursively. A constituent element may itself be treated as a System when examined as a whole. Conversely, a System may participate as an element of a broader System or federation.

In [Systems Modeling Language Version 2 \(SysML v2\)](#), a System is modeled as a composite Part. Its constituent Parts may represent logical or physical components, including hardware, software, facilities, organizations, and users. A SysML v2 model may describe a System's attributes, Ports, connections, Interfaces, actions, States, Constraints, Requirements, and other characteristics.

A [Model](#) of a System is not the System itself. The Model represents selected aspects of the System for a defined purpose, such as specification, analysis, design, verification, operation, or Governance.

In the SIP-RA context, a System may be independently implemented and governed while participating in a [Federation](#). Participation does not require the System to surrender control over its internal implementation, [Resources](#), Policies, or [Authority](#).

Definition

a set of interacting elements organized to achieve one or more stated purposes within a defined environment and boundary

Source

Aligned with ISO/IEC/IEEE 15288 systems-engineering terminology and the [OMG Systems Modeling Language Version 2.0 Language Specification](#), which models a System as a composite Part whose constituent Parts may represent logical or physical components.

Note

A System is defined relative to a purpose and Viewpoint. The System boundary should therefore be stated rather than assumed.

A System may be technical, organizational, human, natural, or sociotechnical. It is not limited to software or computing equipment.

A collection of elements does not constitute a System merely because the elements are colocated or connected. The elements must interact or relate as an organized whole for one or more stated purposes.

Example

A distributed logistics System includes personnel, organizations, applications, databases, communication services, facilities, policies, and operational procedures. These elements interact to request, allocate, transport, track, and report supplies across organizational and jurisdictional boundaries.

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