

Discussion-4 The Different Architectural Views

Discussion Topic:

Please choose one of the following questions to discuss in your initial post:

- What are the different types of architectural views, and what are the benefits of using each type?
- How can architectural views be used to communicate the design of a software system to different stakeholders?
- What are some of the challenges of creating and maintaining architectural views?

My Post:

Hello class,

For this discussion, I chose the “What are the different types of architectural views, and what are the benefits of using each type?” topic.

First, let's define what an architectural view is. An architectural view, in the context of software design, “is a representation of one or more structural aspects of an architecture that illustrates how the architecture addresses one or more concerns held by one or more of its stakeholders” (Rozanski & Woods, 2011). Architectural views are used to illustrate the entire architecture of a software system (CSU Global, 2025). These views are made to address the concern of stakeholders, including everyone from end users to developers to project managers.

The 4+1 architectural view model is the standard framework used in software development. The 4+1 model architecture includes the logical view, development (or implementation) view, process view, physical (or deployment) view, and scenarios (+1 view).

- The local view is used to describe the functionality of the system, using UML diagrams such as class diagrams, communication diagrams, or sequence diagrams. In other words, the view shows the classes/objects and how they relate to one another. This helps stakeholders like software owners and business analysts understand what the system is without getting bogged down in implementation details.
- The development view is used to show the organization of the software from a programmer's perspective. The view shows a static perspective of the system by using, for example, UML component diagrams, which describe how the system is broken down into modules, packages, and layers. The view helps developers to guide/plan the code structure, team tasks, and system configuration by separating the implementation tasks from the system functionality details.
- Process view is used to describe the dynamic aspects of the system, such as runtime aspects of the system. Using UML activity diagrams, which describe the system's processes, how they communicate, and how they handle things like concurrency. The view helps developers to integrate the different components of a system and performance engineers to plan non-functional requirements like performance, scalability, and fault tolerance.
- Physical view is used to describe the system from a system engineer's point of view, that is, by describing how different software components are integrated within/use physical hardware.

This is done by using UML deployment diagrams illustrating the physical nodes (like servers and devices) and the communication paths between them. The view helps system engineers to plan the deployment of the system by planning for the need for physical resource availability, reliability, and performance.

- The Scenarios (+1 View) view is a bit different; it uses use cases (or stories) to describe the sequence of interactions between objects and between processes that are defined in the other four views. Often using UML use case diagrams. The view provides an overview of all other views, of the system itself, as scenarios act as the glue that holds the other views together. This is useful for the validation and discovery of system use cases, which are needed to meet the system requirements.

-Alex

References:

CSU Global. (2025). Module 4: Project System/Research and Design – Design Information [Interactive Lecture]. Canvas. https://csuglobal.instructure.com/courses/110425/pages/module-4-overview?module_item_id=5733272

Rozanski, N, & Woods, E. (2011, October 25). Software Systems Architecture: Working With Stakeholders Using Viewpoints and Perspectives, 2nd Edition. *Addison-Wesley Professional*. ISBN-13: 978-0321718334