# **Overview**

Object-Oriented Systems Analysis and Design (OOSAD) is a dynamic methodology that uses an iterative development approach to guide project evolution. This approach involves dividing the system into vertical slices, allowing for gradual construction over multiple iterations. This approach enables project managers to showcase progress to users and mitigates project risks. OOSAD also emphasizes problem-solving, addressing complex issues in the early stages of development. This proactive approach mitigates project risks and provides a strong foundation for subsequent components. The approach encourages a flexible mindset, with detailed planning discouraged throughout the project duration. Instead, project managers refine plans, schedules, and resource allocations based on insights gained from each iteration. This process, encompassing all phases of the systems development life cycle, fosters continuous learning and refinement, enhancing project managers' ability to make accurate predictions and plans. Thus, OOSAD is a dynamic methodology that promotes adaptability, proactive problem-solving, and continuous improvement in project management practices.

# **Key concepts**

**Iterative Development Process:**

OOSAD projects employ an iterative approach, with each iteration phase constructing a portion of the final system, which evolves incrementally over the project duration.

**Define the System as a Set of Components:**

Project managers must create vertical slices, which are key features of the system that can be demonstrated to users.

**Project Management and Planning:**

The project manager avoids detailed planning for the entire project duration due to the evolving nature of OOSAD projects, instead focusing on creating detailed plans for subsequent iterations and refining them as needed.

**Number and Duration of Iterations:**

OOSAD projects typically have six to nine iterations with a fixed duration, typically two to eight weeks, with fewer components being preferred over fewer iterations with many components.

**Focus Changes Over the Project Life:**

The project life-cycle activities shift from analysis to design, implementation to construction, and transition to operationalization, with the primary focus shifting from inception to ensuring the system's functionality.

**Addressing Hard Problems Early:**

OOSAD projects address complex problems early, reducing project risks by making difficult architectural decisions in the initial iterations, which serves as the foundation for subsequent components.

# **Analysis of the Iterative Development Process:**

Object-Oriented Systems Analysis and Design (OOSAD) is an iterative development process that embraces change as an inherent aspect of the development lifecycle. It differs from traditional structured methodologies, which require a comprehensive definition of the entire system. OOSAD uses "vertical slices" to ensure each iteration delivers tangible, user-visible functionality. These slices represent cohesive components of the system that can be independently developed and demonstrated, providing stakeholders with early glimpses of the evolving product. This approach fosters transparency, continuous feedback, and validation, creating a collaborative development environment where user input and insights can be incorporated iteratively. OOSAD's iterative development process is known for its ability to navigate uncertainties, respond to evolving requirements, and foster dynamic collaboration between developers and end-users. It aligns with the agile philosophy, promoting adaptability, customer satisfaction, and incremental value throughout the development lifecycle.

# **Addressing Hard Problems Early:**

One of the most important strategies in Object-Oriented Systems Analysis and Design (OOSAD) projects is to address challenging problems early on. This means that important decisions about the architecture of the systems must be made early on, rather than waiting until later in the project. The essay contends that this strategy is necessary for reducing project risks even if it may be troublesome given the substantial influence these choices may have on the project's success. Through early resolution of the more challenging issues related to the system's design, the project team prepares the infrastructure for the creation of later components. This approach makes sense because a lot of additional elements frequently build upon these fundamental architectural features. While some projects may have components that depend on simpler ones, the focus should be on addressing the hard problems promptly. This proactive problem-solving approach ensures that fundamental architectural decisions, such as those related to the database or networking infrastructure, are made early in the project's life cycle. This strategy is considered beneficial as it allows the project team to examine difficult problems before substantial resources are expended, contributing to a more informed and risk-mitigated project progression.

# **Project Management and Planning**

The case study highlights the unique characteristics of managing projects in an iterative design approach, particularly in the context of Object-Oriented Systems Analysis and Design (OOSAD). The iterative development process involves constructing portions of the final system during each iteration phase, leading to incremental evolution until the entire system is completed. Key aspects of project management and planning in OOSAD include defining the system as a set of components, addressing hard problems early, managing through iterations, and maintaining a dynamic and responsive planning approach throughout the project life cycle.

Moreover, the article advocates against planning too much upfront, focusing on adjusting and refining project plans iteratively based on learning acquired during each phase. Detailed planning is recommended for current and subsequent iterations, as detailed plans for later stages may be inaccurate due to evolving project understanding. OOSAD projects typically use six to nine iterations, with experienced managers adjusting the timeline accordingly. Effective project management involves adapting to the iterative development process, addressing critical architectural decisions early, and maintaining a dynamic planning approach throughout the project life cycle. Early resolution of system architecture issues, such as database or networking infrastructure, mitigates risks and establishes the foundation for subsequent component development. This proactive management strategy allows for continuous learning, refinement of plans, and incremental system evolution.

# **Number and Duration of Iterations:**

The case study discusses the number and duration of iterations in Object-Oriented Systems Analysis and Design (OOSAD) projects, which are typically six to nine weeks in duration. It emphasizes the importance of not packing too many components into a single iteration, as having more iterations with fewer components is more effective. The project structure includes phases such as inception, elaboration, construction, and transition, with each completed iteration integrating all components into a comprehensive system. The dynamic nature of OOSAD project management is also discussed, emphasizing the iterative development process, where learning occurs during each iteration. This continuous learning process supports a responsive and adaptive planning approach, discouraging highly detailed plans for all project iterations upfront, as they are likely to be inaccurate. Instead, detailed plans for current and subsequent iterations are made based on the evolving understanding of the project over time.

# **Focus Changes Over the Project Life:**

The evolution of focus across the project life is reflected in the shifting emphasis on various activities. During the inception phase, the primary focus is on analysis, where the project's requirements are thoroughly examined. In the elaboration phase, the focus shifts to design, planning how the system will be structured and function. The construction phase emphasizes implementation, translating the planned design into a functional system. Finally, during the transition phase, the primary focus is on making the system operational and ready for use. The project manager actively engages in every stage of the project during each iteration. This inclusive strategy enables continual improvement based on learnings from the iterative development process and adaptation to changing requirements. The dynamic nature of project management in Object-Oriented Systems Analysis and Design (OOSAD) ensures that the project stays responsive to evolving needs and challenges, contributing to the successful development of a comprehensive and well-functioning system.

# **Conclusion**

In conclusion, mastering the iterative dance of Object-Oriented Systems Analysis and Design (OOSAD) fosters adaptable project management, ensuring continuous learning and successful project outcomes.