

The background of the slide is a grayscale image of a circuit board. It features a complex network of black lines representing traces, with several circular pads and vias. The pattern is symmetrical and repeats across the top and bottom of the slide, framing the central text area.

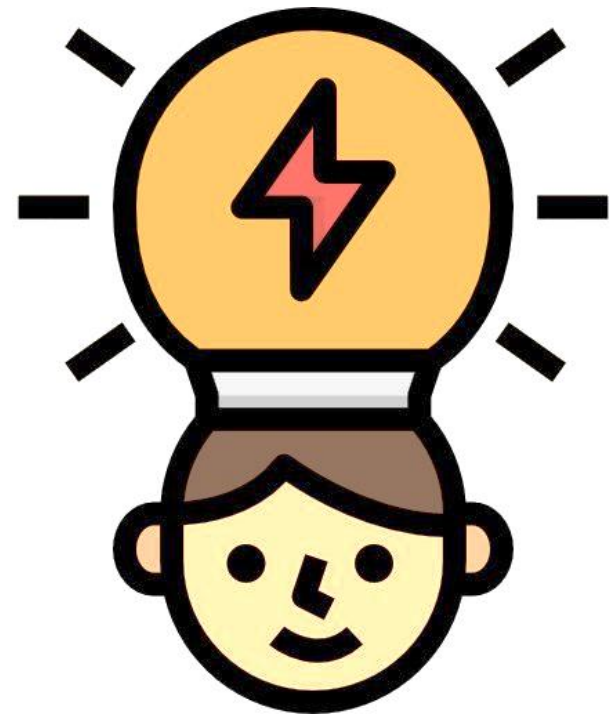
CST243-3 Rapid Application Development

Lesson 01: Introduction to RAD

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Lesson Learning Outcomes

- After successful completion of this lesson you will be able to,
 - Define **what is RAD**
 - Explain the **core elements** of the RAD environment
 - Explain the **RAD process**
 - List some **advantages and disadvantages of RAD**



Lesson Outline

- What is RAD?
- Why was it introduced?
- When to Use RAD?
- Core Elements of RAD
- RAD Process
- Advantages & Disadvantages of RAD



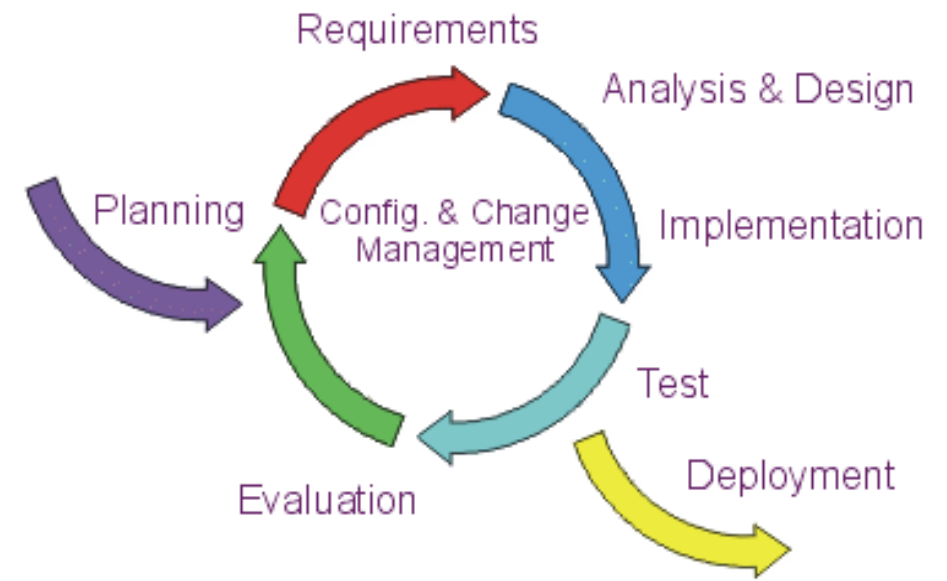
What is RAD?

- Software development **methodology**
- Focuses on building applications in **a very short amount of time**
 - **Designed and developed** within **60-90 days**

A process of development that involves application
prototyping and **iterative development**

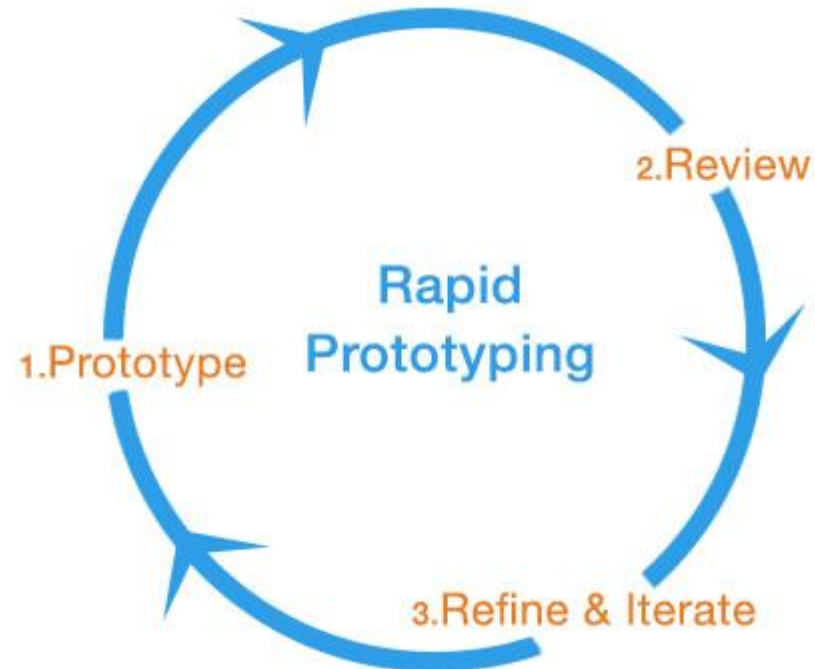
What is RAD?

- Prototyping:
 - A **feature light version** of the finished product, which **build in a short amount of time**
- Iterative Development:
 - A way of **breaking down the software development** of a large application **into smaller chunks**



What is RAD?

- Start development as **early as possible**
 - Clients can review a working prototype and offer additional direction



The Problem

The development of applications that **did not meet client needs**



Applications took **so long to build** and **requirements had changed** before the system was complete

complete, but unusable systems



When to use RAD?

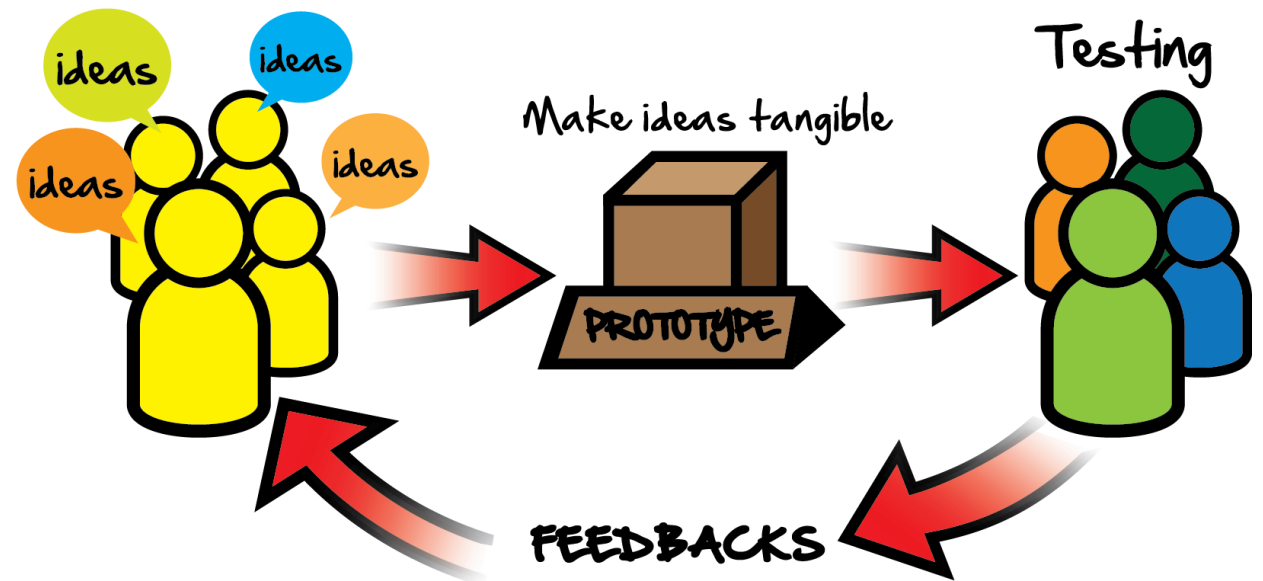
- **Not** appropriate **for all projects**
- Works best for projects when,
 - **Scope is small** or **work can be broken down**
 - Teams are **small** (2-6)
 - **Experience team** with all relevant technologies
 - Well **defined business goals**
 - **No broad or poorly** defined **scope**
 - Few client decision makers, **one is better**

Core Elements of RAD

- Prototyping
- Iterative Development
- Time Boxing
- Team Members
- Management Approach
- RAD Tools

Core Elements of RAD: Prototyping

- Build a **feature light version of the finished product** in **short amount of time**
- Serves as,
 - **Proof of concept** for the client
 - **Talking point** and **tool** for refining requirements
- Mainly **two**
 - **Evolutionary** Prototyping
 - **Throw-away** Prototyping



Core Elements of RAD: Iterative Development

- Creating **increasingly functional versions of a system** in short development cycles
- Each **version is reviewed** with the client
- **Process is repeated** until all functionality has been developed
- **Ideal length** of iterations is between **one and three weeks**
- Each cycle provides the user an opportunity to provide **feedback**, **refine requirements**, and **view progress**

Core Elements of RAD

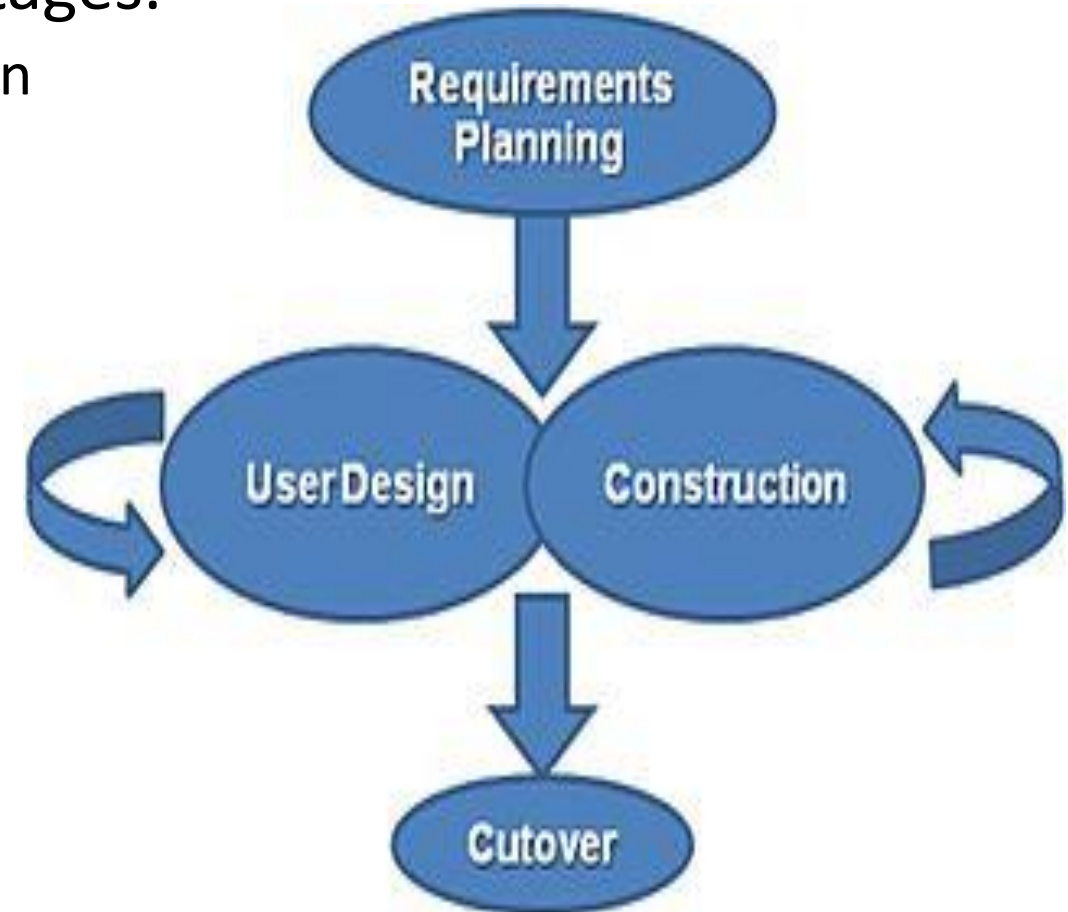
- Time Boxing
 - Setting **specific time limits**, or "boxes," **for completing various stages** of the development process
- Team Members
 - Recommends the use of **small teams** that consist of **experienced**, **versatile**, and **motivated** members that are **able to perform multiple roles**

Core Elements of RAD

- Management Approach
 - Active and involved management is vital to **mitigate the risks of lengthened development cycles, client misunderstandings, and missed deadlines**
- RAD Tools
 - One of the primary objectives of the RAD methodology was to **take advantage of the latest technology** available to speed development

RAD Process

- RAD process consists of four life-cycle stages.
 - Requirements Planning - Concept Definition
 - User Design - Functional Design
 - Construction
 - Implementation - Deployment



RAD Process: Requirements Planning

- Consists of **meetings** between a **requirement planning team** and **key client users**
- **Focus on initial requirements** and the **project scope**
- **Identifies primary business functions** and breaks them into business entities

RAD Process: User Design

- Analyze the requirements in **more detail**
 - **Core requirements** for the initial prototype
 - **Secondary requirements** for future development
- Develops the entities into a **data model** (i.e: ERD)
- Formalizes business rules
- Develops **test plans** and creates **screen flows** and **layouts** for essential parts of the system

RAD Process: Construction

- Develops the **application iteratively** until the application is complete
- **Convert the Data Model** into a functional database
- **Tests** the initial prototype using test scripts
- The team and customer **reviews the application**
- Determine the **requirements for the next iteration**

RAD Process: Implementation

- **Integrating** the new system into the business
- Helps the users **transfer from their old procedures to new ones** that involve the new system
- **Trouble shoots** after the deployment
- **Identifies and tracks** potential **enhancements**

RAD Advantages

- Increased Speed
 - **Increased development speed** and **decreased time to delivery**
 - Use of **CASE tools** to converting requirements to **code as quickly** as possible
 - **Time Boxing to push out secondary features** to future releases in order to complete a feature light version quickly
- Increased Quality
 - Quality is defined as
 - **Meets the needs of users**
 - **Low maintenance costs**
 - Deliver on quality through the **heavy involving of users in the analysis** and particularly the **design stages**

RAD Advantages

- **Increases reusability** of components
- **Quick initial reviews** are possible
- Encourages **customer feedback**
- **Flexible and adaptable** to changes
- **Iteration time can be short** with use of powerful RAD tools

RAD Disadvantages

- Reduced Scalability
 - Focuses on **development of a prototype that is iteratively developed** into a full system
 - Delivered solution may **lack the scalability** of a solution that was designed as a full application from the start
- Reduced Features
 - RAD may produce applications that are **less full featured** than traditionally developed applications
- Depends on **strong team** and **individual performances** for identifying business requirements
- Required **highly skilled developers/designers**

Factors Influence RAD

- Several factors contribute to the **success of rapid development** process by improving both the **quality of the delivered system** and the **speed of delivery**
 - Use of **prototyping**
 - Helps users visualize and make adjustments to the system
 - **User involvement** in the Construction stage
 - Allowing the details to be adjusted if necessary

Things We Covered

- What is RAD?
- Why was it introduced?
- When to Use RAD?
- Core Elements of RAD
- RAD Process
- Advantages and Disadvantages of It
- Factors Influence RAD