Mahindra Satyam

Agile methodologies and Web Application development

Dr. Prakash Goteti
Lead, Java Technologies

Agenda

- Software Development –Ingredients
- Models and processes
- Agile Manifesto and methodology
- Why Agile ?
- Agile Approach
- Agile perspective of Java Web Development

SE Models ..

Spiral

- combining elements of both design and prototyping-in-stages
- Big, upfront design
- Combines the features of prototyping and waterfall
- The spiral model promotes quality assurance through prototyping at each stage in systems development
- Iterative but differ in implementation and understanding what iteration is…

V-Model

- Extension of Waterfall
- Demonstrates the relationships between the each phase of development life cycle with its associated phase of testing

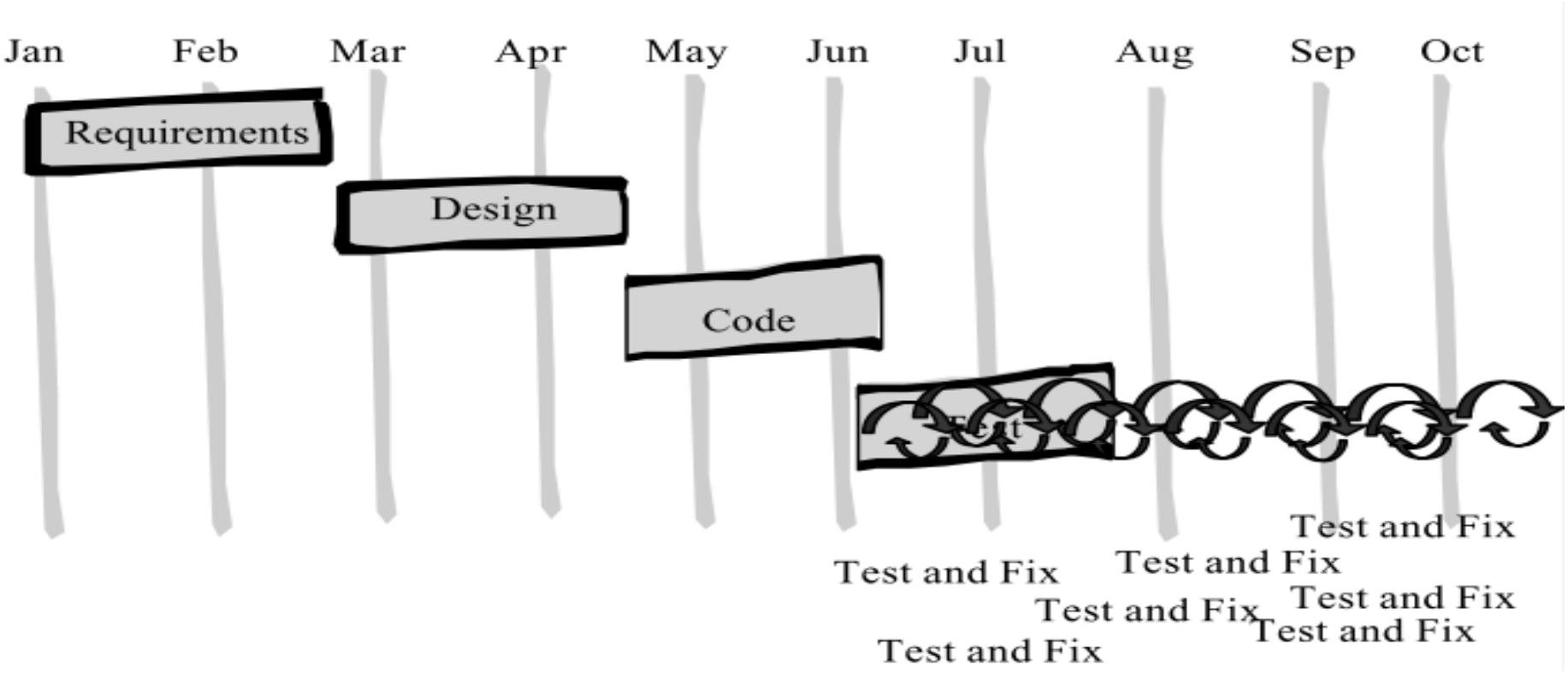
Adhoc Model

- Build & Fix Model

Unified Process

- Use case driven
- Architecture centric
- Agile refinements streamline RUP by simplifying workflows and reducing the number of expected artifacts

Waterfall model



- Infrequent client communication
- Delivery in Big Bang fashion!
- High cost of Change.
- Testing is done at the end and full justice to the job not done.

Agile manifesto: Core values

Core value1: Individuals and interactions over processes and tools: Undocumented process with good interactions among the stake holders , than a documented process with less interactions

Core value 2: Working software over comprehensive documentation: –Running code is ruthlessly honest

Core value 3: Customer collaboration over contract negotiation: Customer is part of development process; it is collaboration in decision meeting, speed of communication and individual's connect

Core value 4: Respond to change over following a plan: Rather than focusing on outdated plan, deal with changing realities

Available at http://agilemanifesto.org/

Agile methodology..

Small releases –called sprint (30 day duration)

- Each sprint –requirement analysis, design, coding and testing
- Agile has all phases in each iteration.
- Continuous Client communication.
- Delivery in short business focussed releases.
- Develop in end to end functionality slices.
- Low cost of change

Why Agile

Need for Agile Adoption

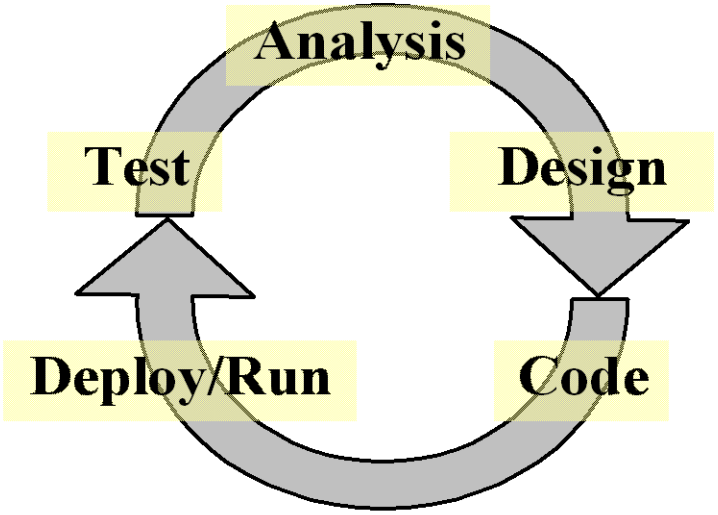
- Improving Productivity
- Enhanced Quality
- Acceleration To Market
- Managing Changing Priorities
- Alignment between IT & Business goals
- Improved Team Morale

Improvements Observed

- Reduced S/W Defects
- Reduced Cost
- Accelerated Time –To- Market
- Increased Productivity

Agile Approach

- A state of mind – not a 5-step process!
- Shrink waterfall cycle into small iterations and scope
- Ensure working application and feature progress
- Make it simpler to embrace change
- Improve communication between business and IT
- Deliver business value faster and continuously
- Make change an asset!

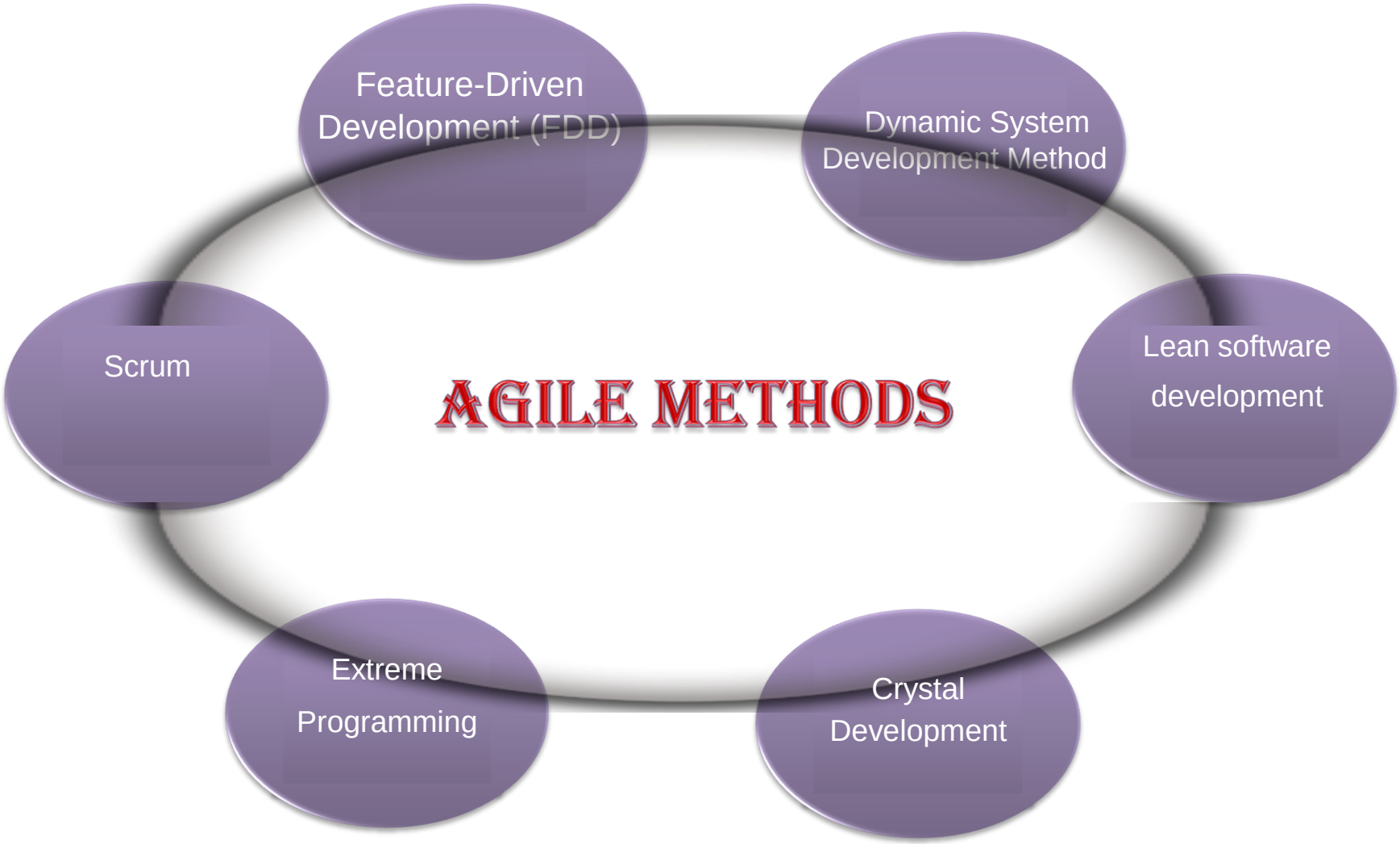


Comparision Agile Vs Non -Agile

Mahindra Satyam

	Non- Agile	Agile
Requirement Specifications	SRS, large effort to get it all specified up front	Just-Enough, Just-In-Time
Release Cycle	Typically 6-18 Months	2-3 months release, 1- 4 wks Iterations
Product	An often bloated product that is still missing features (i.e. rejected change requests or features de-scoped to meet deadlines)	The best product according to customers own prioritization, incorporating learning from actual use.
Schedule	Deadlines are often missed and it is highly unusual for a project to deliver early.	Very high probability of meeting fixed date commitments. Can often deliver early, having delivered the highest value, thereby allowing funding to be diverted to other more profitable projects.

Agile Methods



- *SCRUM - Ken Schwaber*
  - Mostly a project mgt technique, uses 30-day “Sprints” to develop software features (form the “Sprint Backlog”)
  - Daily Scrum (stand-up mtg), uncover obstacles, talk about what you did and will do
  - Not much is said about development itself, relies on people

- *eXtreme Programming - Kent Beck*
  - *XP is a disciplined approach to delivering high-quality software quickly and continuously*
    1. Planning Game
    2. Small Releases
    3. Customer Acceptance Tests
    4. Simple Design
    5. Pair Programming
    6. Test-Driven Development
    7. Refactoring
    8. Continuous Integration
    9. Collective Code Ownership
    10. Coding Standards
    11. Metaphor
    12. Sustainable Pace

Back

- *DSDM (Dynamic Systems Development Method)*
  - Grew from RAD practices, relies heavily on facilitated workshops with active user participation
  - Iterative and incremental frequent delivery of business value
  - Testing is integrated, and ease of feature rollback is a must

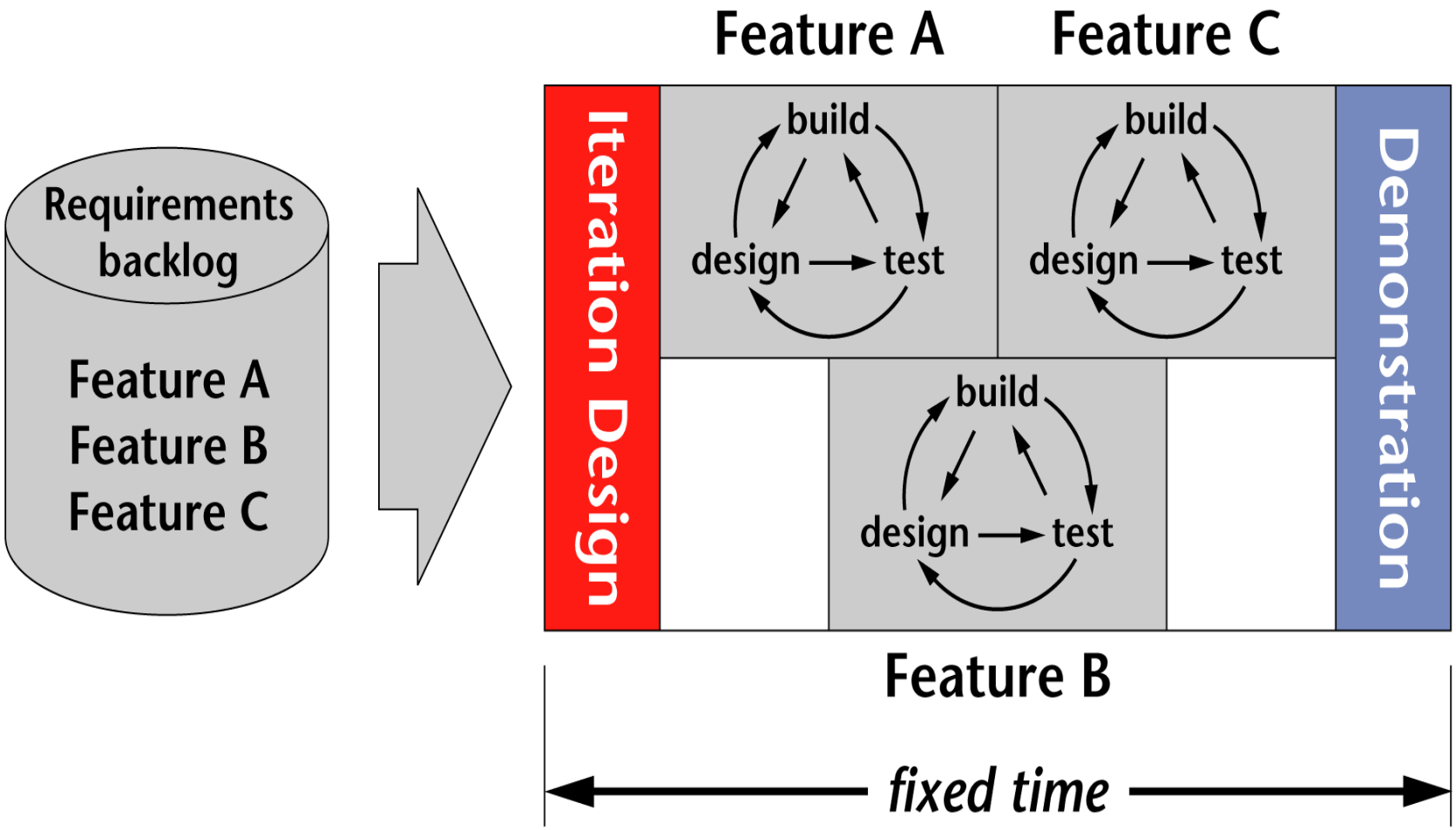
- *FDD – Feature-Driven Development*
  - Develop an overall model
  - Build a features list
  - Plan by feature
  - Iteratively, in groups per iteration
    - Design by feature
    - Build by feature

- *Others*
  - Crystal Methods, Lean Development, Adaptive Software Development

Back

Elements of Agile

- Story points and Estimation
- Product Backlog
- Sprint Backlog
- Deliverables of Sprint
- Burn Down Chart
- Agile perspective of Java Web Development



Agile Perspective of Java Web Development

- Story points -Boundary, Controller and Entity object perspective
- Component based Approach
- Accommodate Change Request

User Stories

A user story is a very high-level definition of a requirement
Just enough information for developers and testers to produce a reasonable estimate of the effort to implement/test it.
Small and can be implemented quickly
Often written on a paper medium (index cards, post-its, etc.)

User Story Examples

Customers can book flights online.
Air fare can be paid online via credit cards.
Customers can print boarding pass online.
Ticket agent can update customers reservation via terminal.
Gate agent can modify customers seat assignment via terminal.

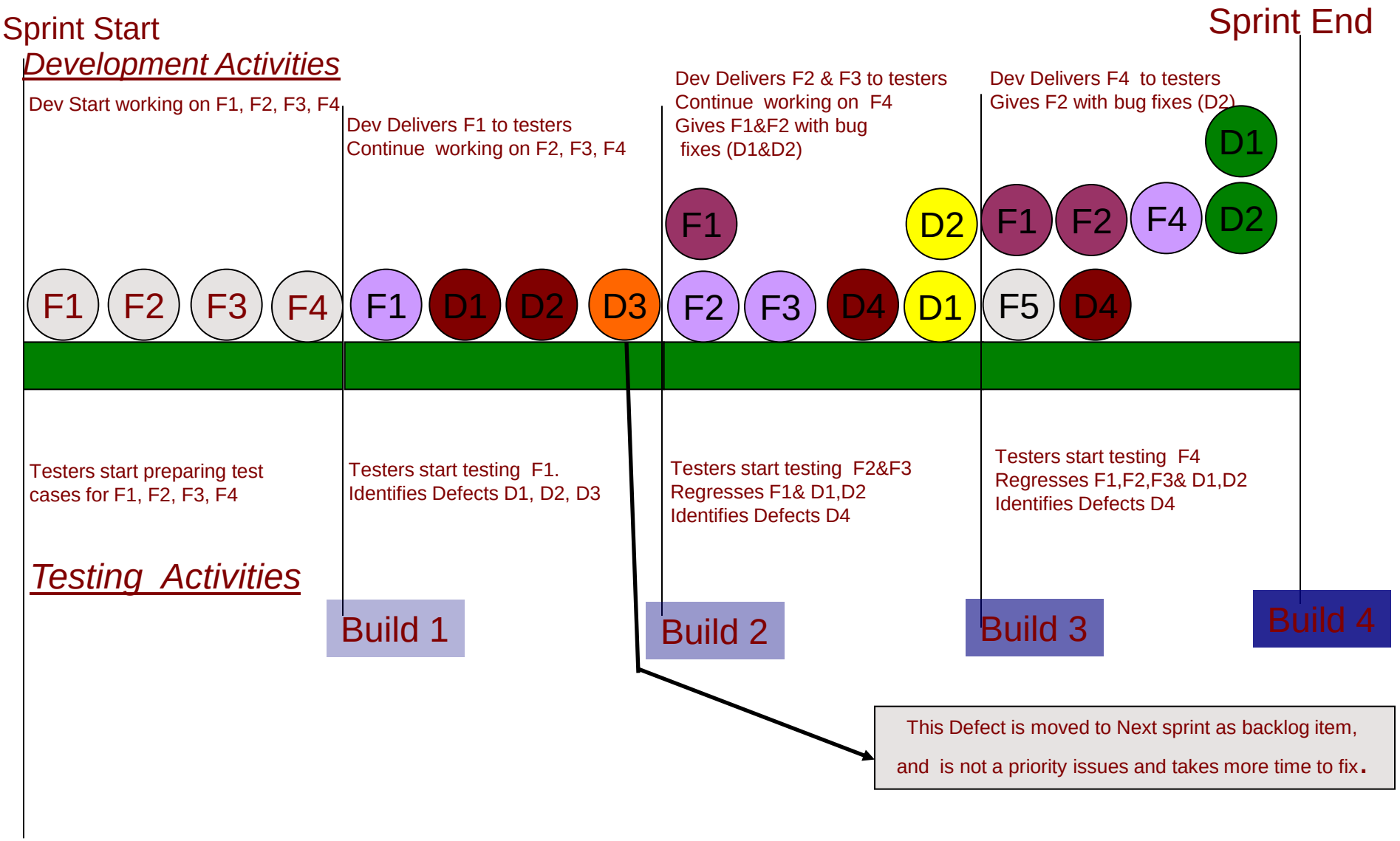
Scrum…..

- Scrum is an agile process for developing software.
- Scrum is an iterative, incremental framework.
- With Scrum, projects progress via a series of iterations (sprints)
- Sprints or Iterations are typically 1-4 weeks in length.
- The Sprints are of fixed duration – they end on a specific date whether the work has been completed or not, and are never extended.
- At the end of the Sprint, the team demonstrates what they have accomplished.

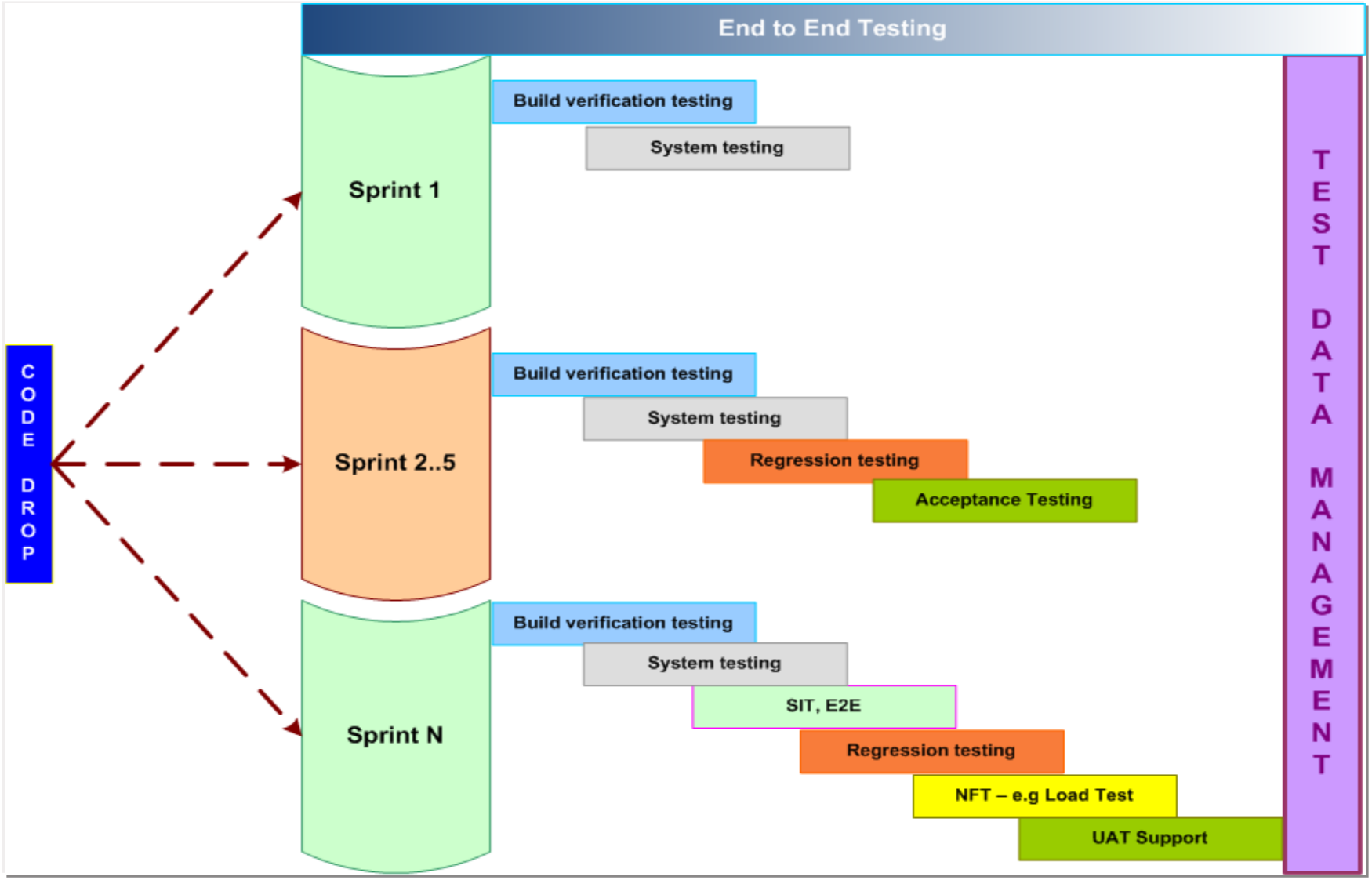
** Sprints are fixed duration work cycles.*

Sprint Level Activities…..

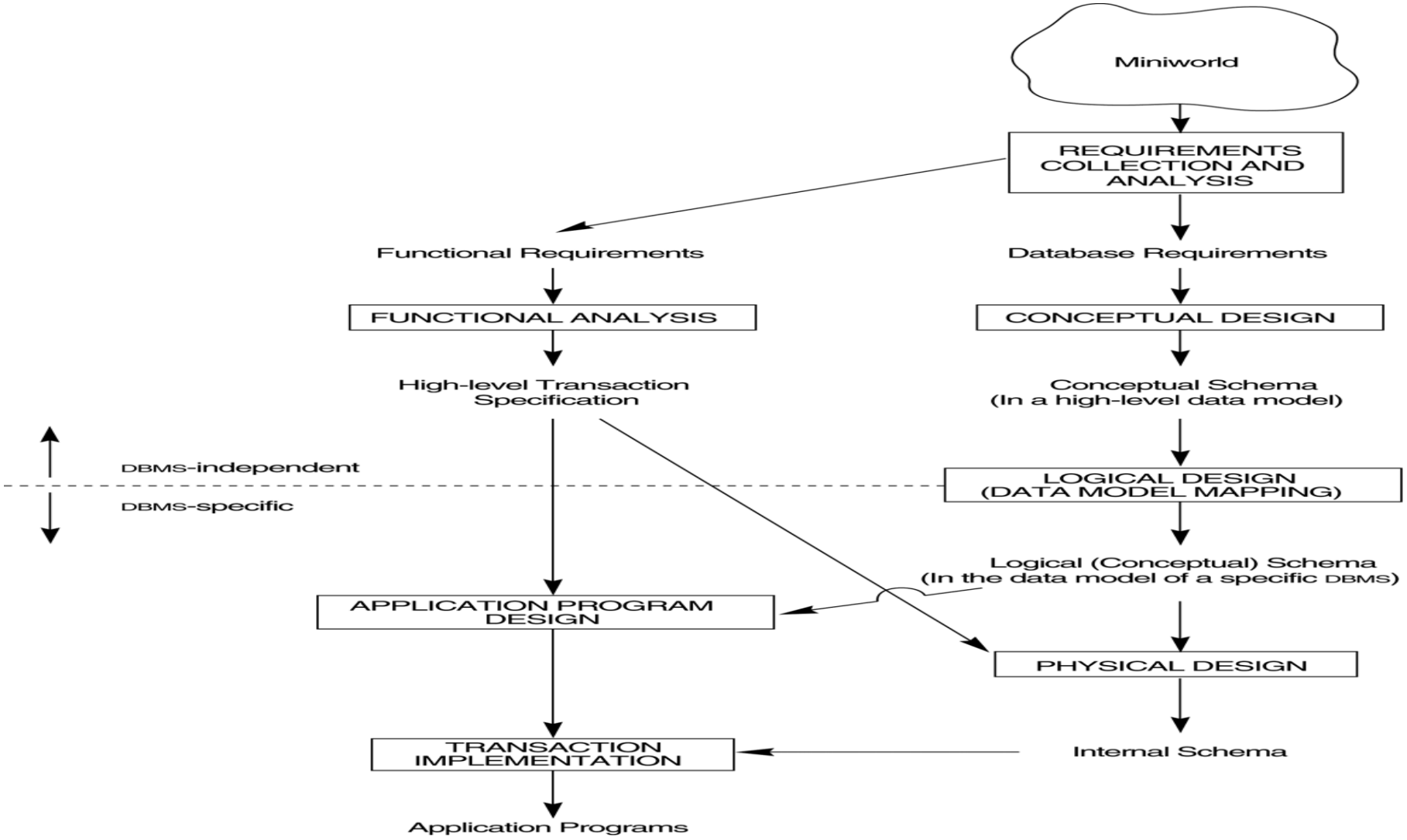
Mahindra Satyam



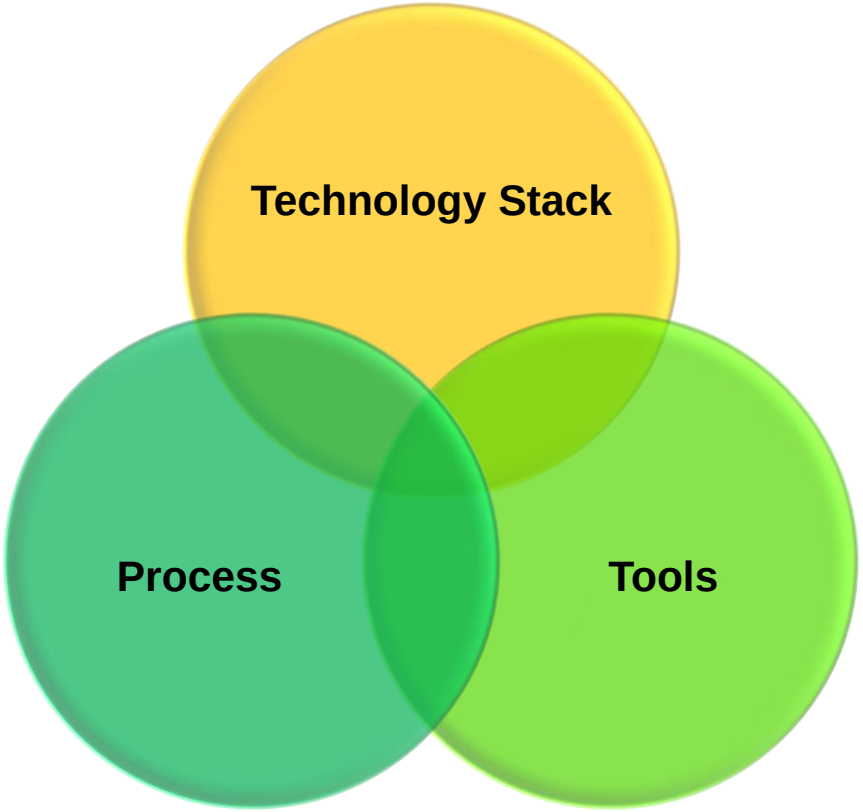
Types of Testing In Agile



Segregation of Requirements



Software Development –Developer Perspective



Technology and frameworks

Java- J2EE, Struts, ORM,
Spring, JPA, JSF,
Web Services, Design Patterns

Process:

Processes and Methodologies
Usecase modeling
Data Modeling
Object modeling
Agile
TDD

Tools:

Performance
Core refactoring
Bug fixing
UI testing
Unit Testing
Mock Testing

How it works?

- Identify flow types from story points
  - Form submission
    - (eg. Input form →layers …→DB →Outputform}
  - Links
    - Display another form {eg. Register link in login form}
    - Display Info {dynamic page}
- Utils –DBUtil.java { getConnection( ); closeCon( );}
- DAO interfaces and implementations [table to interface mapping]
  - Write db code once
- DAO Factory
  - [Leverage on the fact DAO implementations does not posses state –behavior is reusable –method and DAO impln mapping]

Recent Publications

- Manoj Boyeena., Prakash Goteti , IEEE TechSym 2010. **Best Paper Award in IEEE TechSym 2010 conducted at IIT Kharagpur.**
- Sunitha Vignan, Girija S., Natraj Marthi and Prakash Goteti, IEEE TechSym2011, IIT Kharagpur
- Manoj Boyeena., Prakash Goteti, IEEE TechSym2011, IIT Kharagpur
- Prakash Goteti and Sunitha Vignan, International conference on education and new learning technologies –EDULERN 2011, July 4-6th Barcelona, Spain.
- Prakash Goteti and Sunitha Vignan, ISEC 2012 ACM conference, IIT Kanpur (communicated)

Discussion

Thank you

mahindrasatyam.com

Safe Harbor

This document contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. The forward-looking statements contained herein are subject to certain risks and uncertainties that could cause actual results to differ materially from those reflected in the forward-looking statements. Mahindra Satyam undertakes no duty to update any forward-looking statements.