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- Overview
 - Lean Software Development
- The 7 Lean Principles
 - Eliminate Waste
 - Improve the system
 - Build Quality In
 - Defer Commitment
 - Deliver Fast
 - Respect People
 - Create Knowledge







Overview - LEAN

- LEAN, at its core, is a management approach for streamlining production systems by
 - Streamlining the value chain (even across companies)
 - Eliminating waste from the flow
 - Being disciplined about "when" decisions are made
 - Leveraging people as the most flexible resource in the system,
- LEAN offers a set of tools to challenge our beliefs and find better way to deliver product
- Mary and Tom Poppendieck have transferred principles and practices from the manufacturing environment to the software development
- Mary said: "There is nothing directly relating the LEAN and AGILE concepts, yet they fit together nicely in a software organization."





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The Seven Wastes

The Seven Wastes of Manufacturing - Shigeo Shingo

- 1. Inventory
- 2. Overproduction
- 3. Extra Processing
- 4. Motion
- 5. Transportation
- 6. Waiting
- 7. Defects

The 7 Wastes of software Development

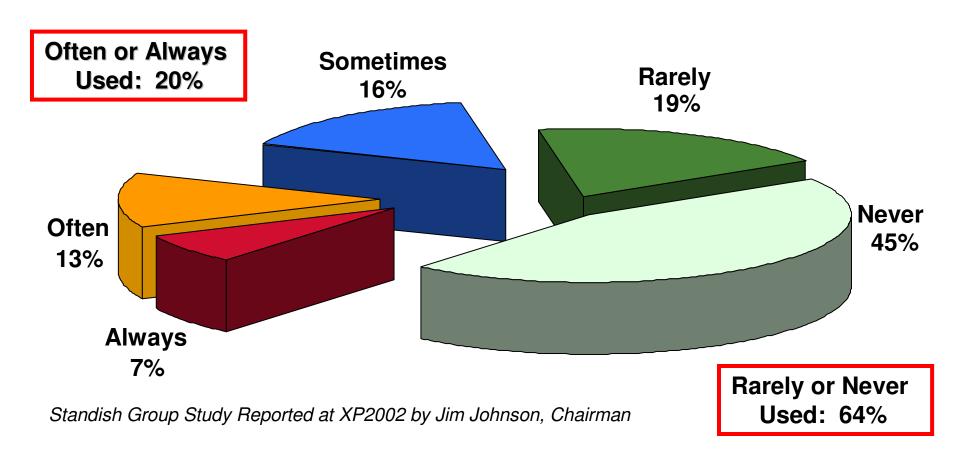
- 1. Partially Done Work
- 2. Extra Features
- 3. Extra Processes
- 4. Task Switching
- 5. Handoffs
- 6. Delays
- 7. Defects





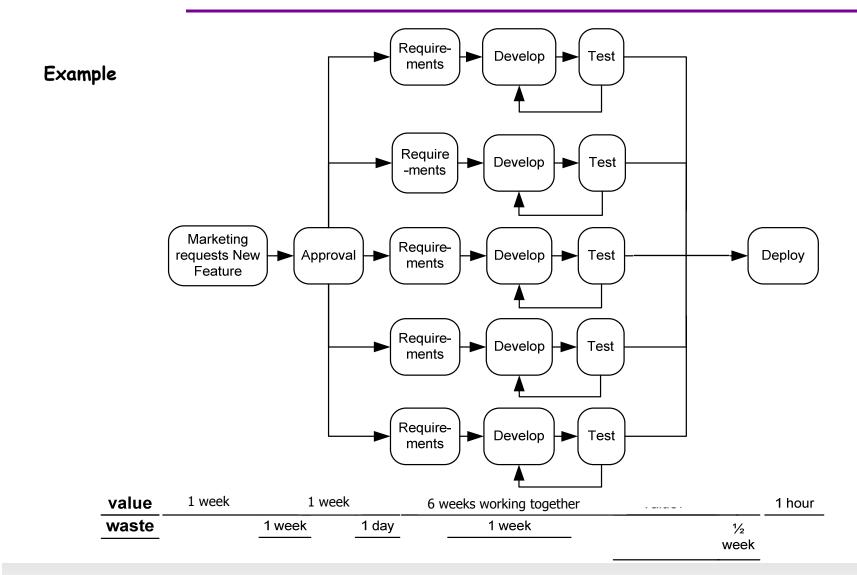
Extra Features

Features and Functions Used in a Typical System





Value Stream Mapping







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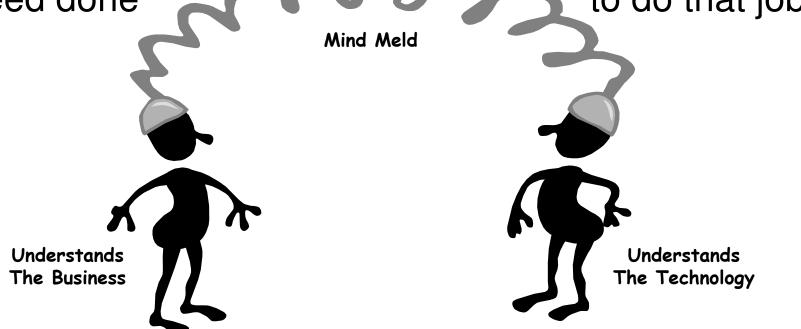




Brilliant Products

Breaking the Customer / Supplier model

The job that customers
 The right technology
 to do that job

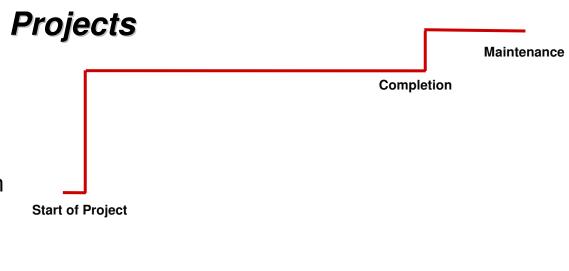


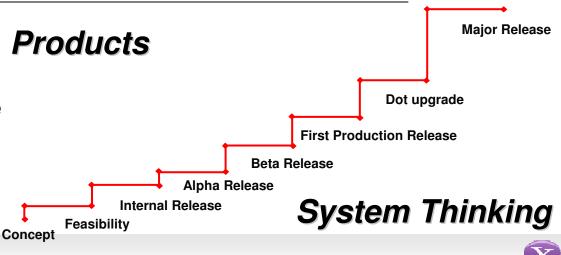




Think Products, not Projects

- Up-front funding
- Scope fixed at onset
- Success = cost/schedule/scope
- Team disbands at completion
- Documentation tossed over-the-wall to maintenance
- Incremental funding
- Scope expected to evolve
- Success = profit/market share
- Team stays with product
- Team uses its own documentation







Architecture

- The Role of Systems Design (Architecture):
 - Provide a foundation for growth
 - Create a common infrastructure
 - Enable incremental development
 - Minimize dependencies
 - Modularize potential change
 - Create space for teams to innovate
 - Design, code and test are different aspects of the same job and must be done concurrently
 - Leave room for the future
 - Evolve the architecture over time





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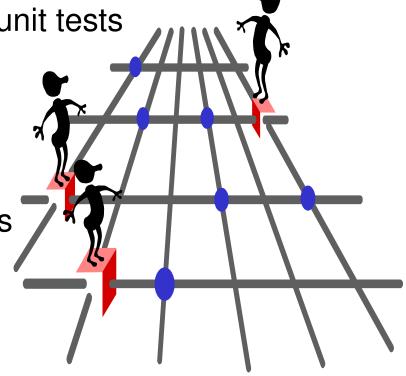






Continuous Integration

- Every few minutes
 - Check in code, build and run unit tests
- Every day
 - Run acceptance tests
- Every week
 - Run more complete test suites
- Every iteration
 - Deployment-ready code
- Every Release
 - Deploy and run in production







Technical Debt

Anything that makes code difficult to change increases the Technical Debt

Complexity

The cost of complexity is exponential.

Regression Deficit

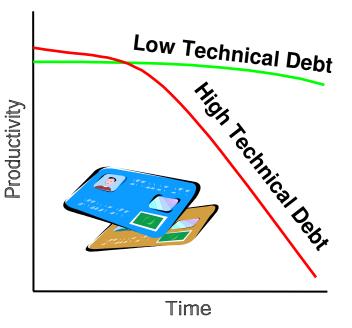
Every time you add new features the regression test grows longer!

Unsynchronized Code Branches

The longer two code branches remain apart, the more difficult merging will be.

You can pay full price for code when you build it or you can incur technical debt.

But interests rates are very high.



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Testing contribution to quality

Two Kinds of Inspection

- Inspection to Find Defects is WASTE
- Inspection to Prevent Defects is Essential





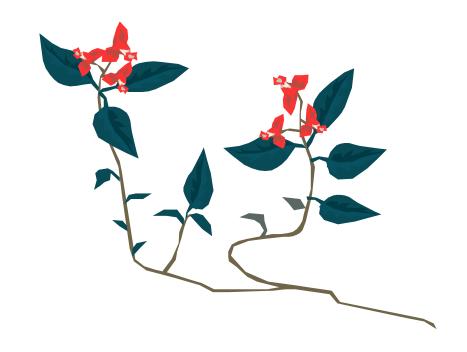
The Role of Testing

- The job of Testing is not to <u>find</u> defects
- The job of Testing is to <u>prevent</u> defects.
- A quality process builds quality into the code
 If you routinely find defects during verification
 - → Your process is defective.





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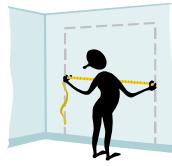






Change Tolerant Software

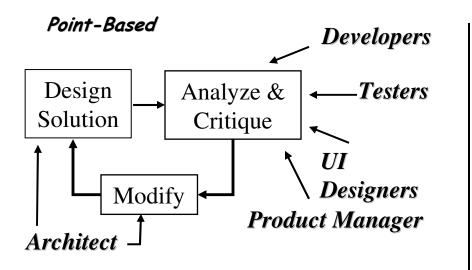
 60-80% of all software is developed after first release to production.

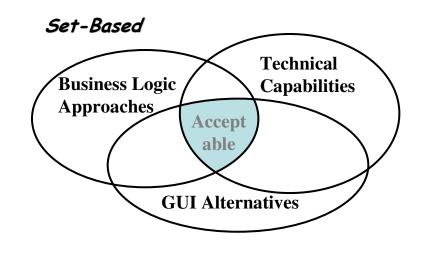


- A development process that anticipates change will result in software that tolerates change.
- System architecture should support the addition of any feature at any time
- Make decisions reversible whenever possible.
- Make irreversible decisions as late as possible.
 - Ex: When do you really need the user interface designed?



Set-Based Engineering





- Multiple options are prepared for the decision.
- There is always an option that will work.
- Paradox:

This is *not* waste!





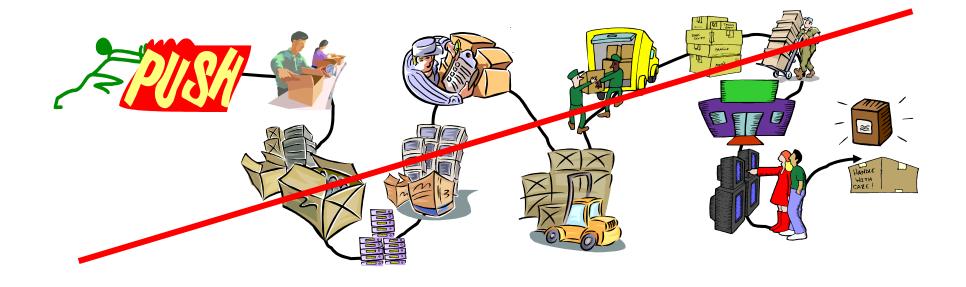
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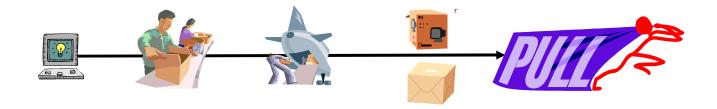






Push vs Pull



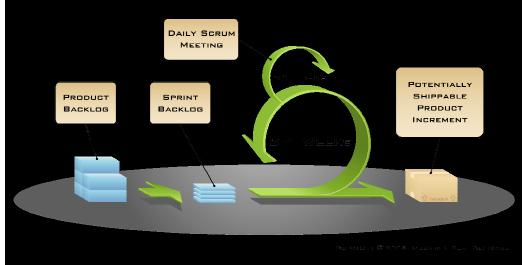


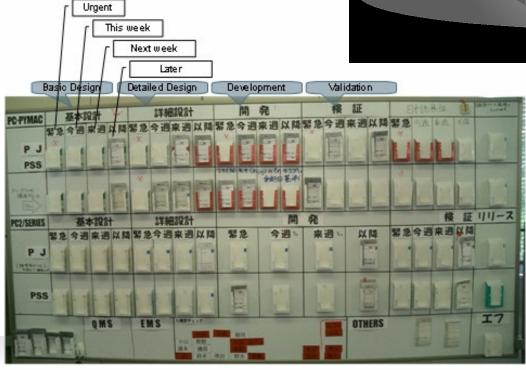




Iterative Development

SCRUM





KANBAN





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Environment

A TEAM







Provide Effective Leadership

Marketing Leader

- Business Responsibility
- Customer Understanding
- Roadmap Planning
- Tradeoffs

Technical Leader

- System Architecture
 - At a high level
 - Work daily with those developing the details
- Technical Guidance
 - Integration
 - Tradeoffs

Process Leader

- Build Block Disciplines
- Iterative Development
- Visible Workspace

Project Leader

- Funding
- (Scheduling)
- Tracking

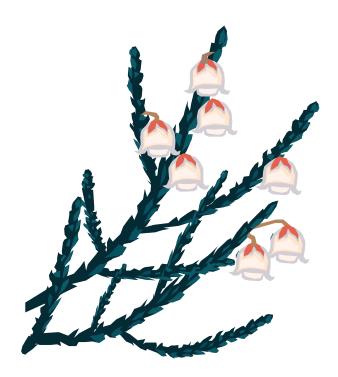
Functional Leader

- Staffing
- Teaching
- Standards





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Predictable performance is driven by feedback

Set Up the feedback Loop

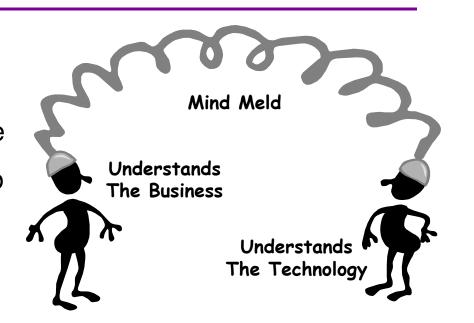
- The job that customers need done
- The right technology to do that job
- Do it often and regularly

Stop asking for

 More documentation, more details in requirements, more plans, more commitments ...

Deliver!

- Prototype, Minimum Features set, Draft document ...
- Then ask for Feedback





Capturing Knowledge

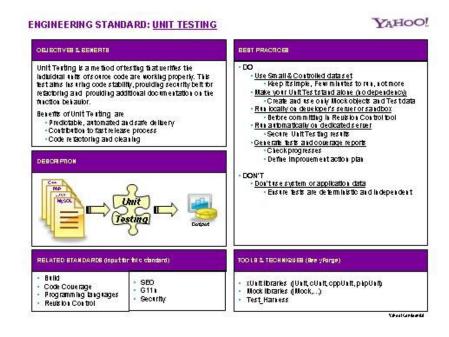
The A3 Report

Two sheets of letter paper

Standardization of the terminology to use across international regions Buideline 7: Product Stakeholder Guideline 8: Stakeholders Involvement All stakeholders have to be involved at the A single representative from the Product teams called the Product Manager, should be defiged arly definition of the product All stakeholders have to be involved at the beginning of each development cycle (spligt) or stage) Umbrella for team's detailed vocesses and of contact for all Engineering teams ave to be formally inderstand the process 100 dentified and tracked and how to apply it EPM has to agree the scope of the project Product Manager has to provide regular and working on it EPM has to organized a post project review to analyse what worked well and what can b EPM has to identify and prepare early the localization activities oduct and Engineering feam haw e EDP is applicable to all projects olving any Intl engineering teams Guideline 15: TEST Role the technical standards for software archited ARCH has to organize the Architecture checkpoint (list of reviewers, schedule, Suideline 3: Products Requirements TEST has to implement automated tests and oduct and Engineering team have to agree to: communicate defects to the development team as fast as possible TEST has to organize bugs reviews to agree on bugs priority and to track bug fixes progress and start TEST has to produce and communicate tests expectations...) Requirements production (document type, content, details, format, or Requirements modification (cycle, time, reviews ...) Documents Sign-off (if required by the process used) SDE has to provide a description of the of deline 4: Architecture Checkpoint (Approvers ARCH + SDE) escriptions and execution reports System Architecture and commission (with Architecture) supports to implement automated build and rus & Teglians (in (eccommended clash) SDE has to implement automated unit feeting TED is recommended) and run it regularly (recommended hourly) TEST has to evaluate the test coverage of the product fain points to check Guideline 16: SPM Role 118n compliancy preparation SPM has to evaluate the Capacity Plan SPM has to agree the BCP with the Product SDE has to define coding standards SDE has to implement a Configuration Buideline 5: Release Checkpoint (Approvers PM + EPM + SDE + SPM) SPM has to ensure live servers are available Management tool for versioning all source and configured and running nit test files SPM has to implement automated Jain points to check exployment and prepare SPM has to launch the release and perform rollback if needed SPM has to provide run books and other documentation requested Service Engineering Acceptance + Security compliancy (Paranoid/Uffly) Remaining Issues and Bugs (if any) + If 8n compliancy preparation by the run/support team uideline 6: Deviation and Risks the project has to be clearly established by 🎝 Any deviation to the oxiginal process has to be agreed by the management and decision tracked, (mail, twiki, weekly report, document, tool...). Guideline 18: PMO Role PPC has to measure the project compliancy to PMO has to be notified at the initiation of all The risks and potential issues associated to this deviation the process and evaluate process efficiency orojects Reporting plan with the PMO PPC has to promote experimentation of pro improvements and communicate it have to be regularly evaluated and mitigated

Standards

1 A4 page







Thank You!