Carnegie Mellon University
Dietrich College
Information Systems

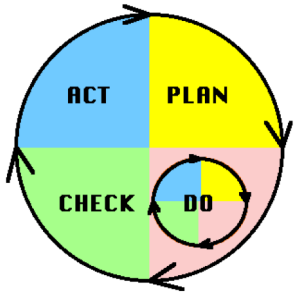
Systems Development Life Cycle (SDLC) Approaches II

September 23, 2019

Today's Agenda:

- Review
- Lecture: The SDLC and structured versus agile methods
- Discussion: CA Child Welfare Services case
- Lecture: PM in an agile method
- Next class

Activity Take-aways

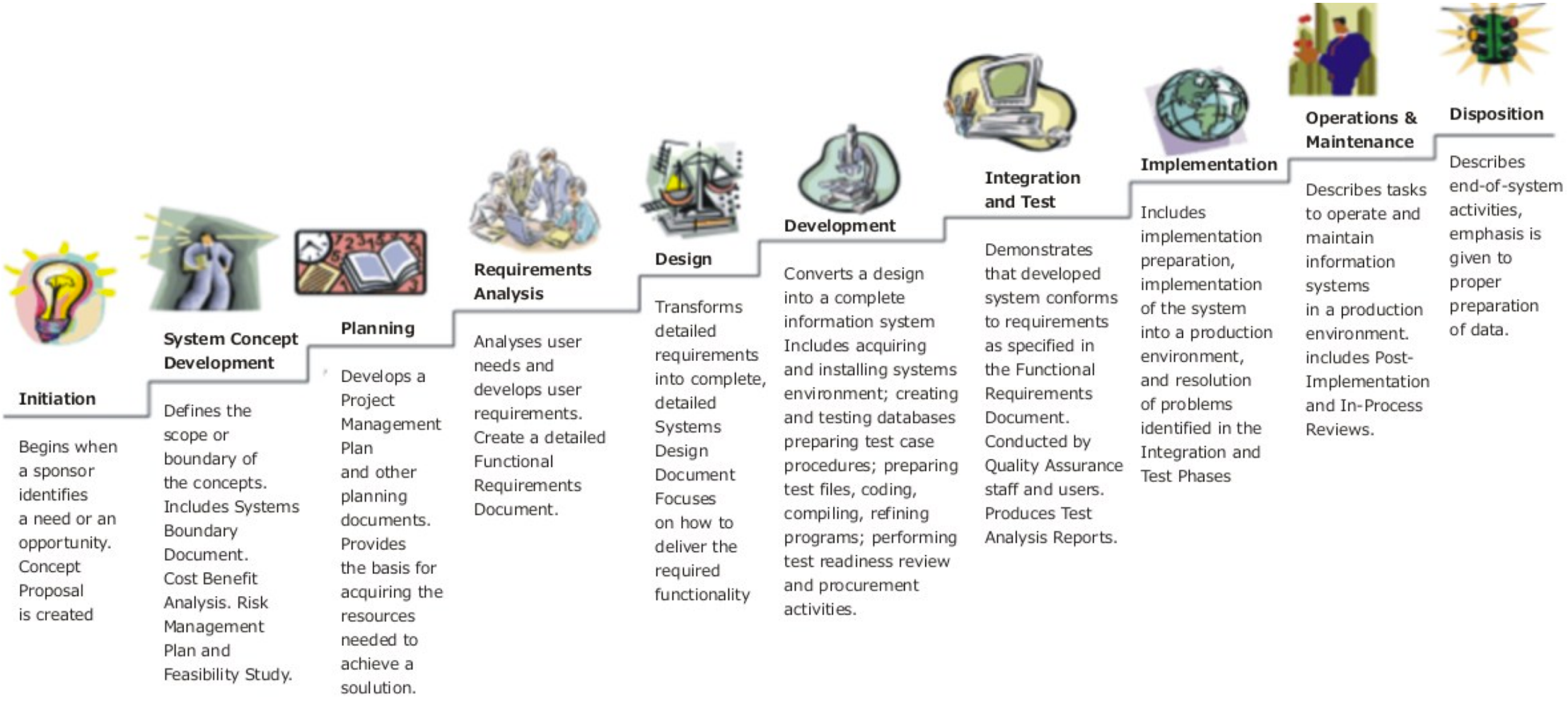


- Shared goal and common purpose
- Teaches the value of teams autonomy to self organize and the advantage of iterative delivery process over waterfall approach
- Iterations / sprint approach - Deming Cycle or the plan-do-check-act (PDCA)
- Inspect and adapt in agile – power of retrospective and ‘fail fast’
- Important to understand business requirements – how product adds value
- By adding some modifications (sudden shift in business requirements) can showcase the strength of the lean approach in responding to change
- As system has a natural velocity
- Pull systems maximizes flow
- Scrumflow - The challenge is doable if people are not disturbed during iteration and the work has a meaning

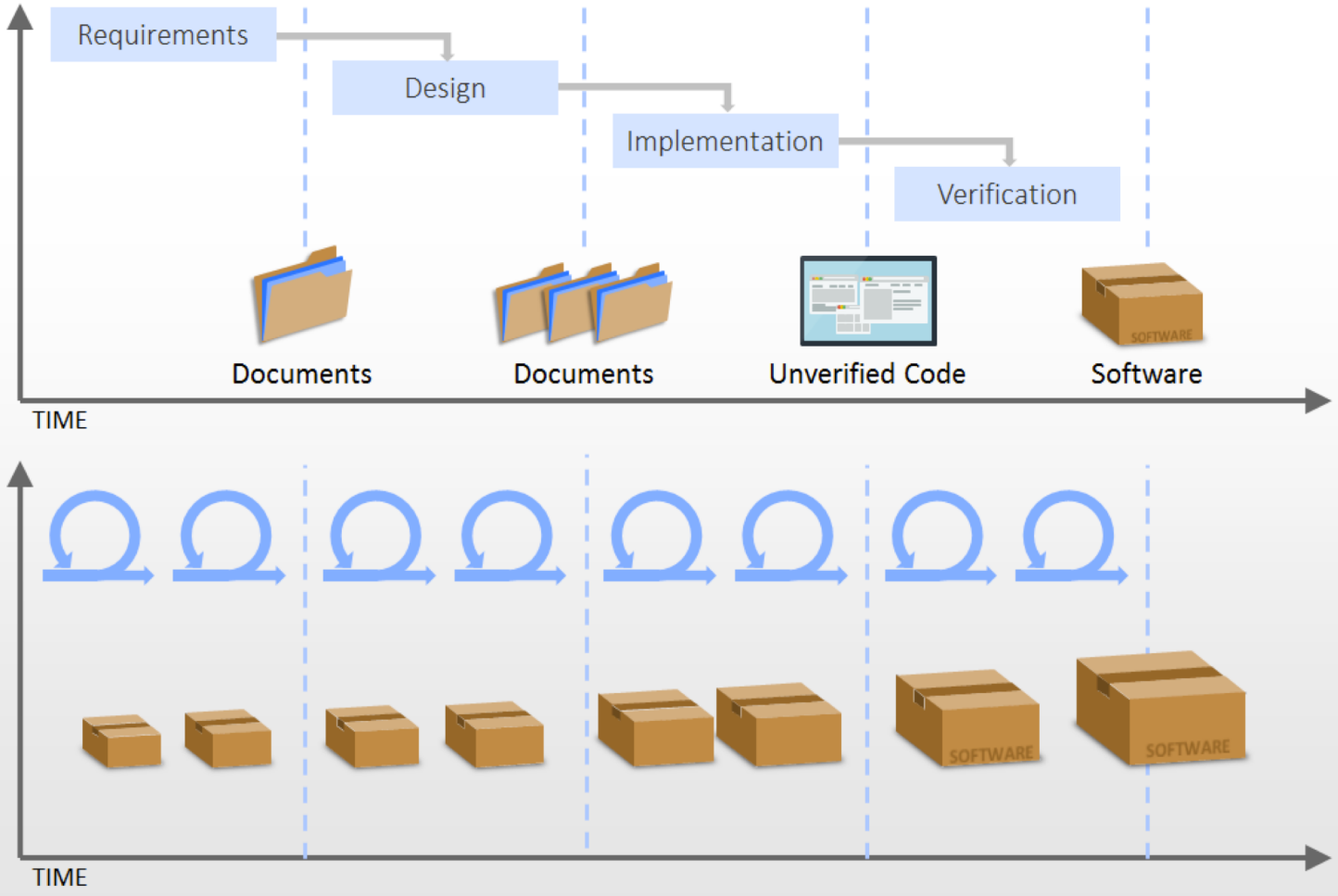
The SDLC and structured versus agile methods

Systems Development Lifecycle

A framework that describes the activities performed at each stage of a software development project.



Structured versus agile methods



WATERFALL

Development of the software flows sequentially from start point to end point.

AGILE

Agile method proposes incremental and iterative approach to software design.

Key Agile Principles

- **Focus on Customer Value** – Align project, product and team visions to deliver better product quality – faster and cheaper.
- **Small Batches** – Create a flow of value to customers by "chunking" feature delivery into small increments.
- **Small, Integrated Teams** – Intense collaboration via face-to-face communication, collocation, etc; diversified roles on integrated, self-organizing, self-disciplined teams.
- **Small, Continuous Improvements** – Teams reflect, learn and adapt to change; work informs the plan.

Delivering Customer Value with Agile Project Management

The right product, at the right time, for the right price.

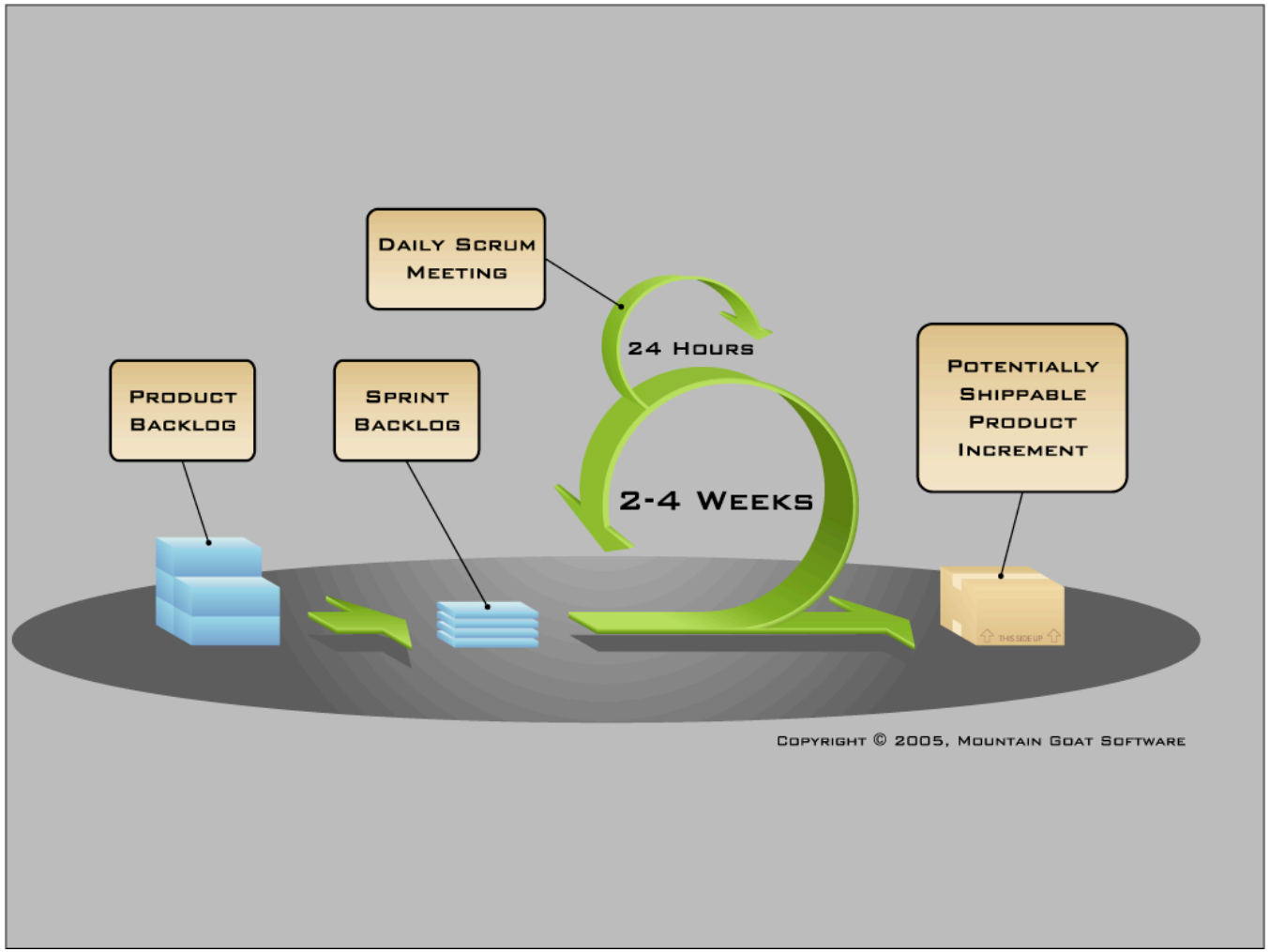
- **Higher Quality:** "Designed-to-fit" product with flexibility to change.
- **Increased Throughput:** Iterative and incremental project and product "chunks" with earlier value delivery.
- **Reduced Waste:** Lean, efficient processes with lower costs and higher productivity.

Key Agile Practices: A SCRUM Example

- Release planning
- Sprint planning
- Daily scrum/standup
- Fixed-length sprints
- Sprint review
- Sprint retrospective

Identify top-priority items and deliver them rapidly using:

- Small batches
- Small integrated teams
- Small, continuous improvements



Cracking the Monolith: California's Child Welfare Services Disrupts Technology Procurement


About the Child Welfare Policy and Development Bureau

The Child Welfare Policy and Program Development Bureau is res
development and implementation of statewide policies and proce
strategies related to child protection and early intervention.The b
investigation of Child Abuse and Neglect, assessment of the chil
attention of child welfare services (CWS), and includes intervent
Response (ER) and Family Maintenance (FM) services provided
probation departments, and Indian Tribes.

The bureau's three units, the Pre-Placement Policy Unit, the Child Safety Unit and the Child Trafficking Response Unit, coordinate policy and program development with county child welfare agencies, tribes

FUNCTIONALITY

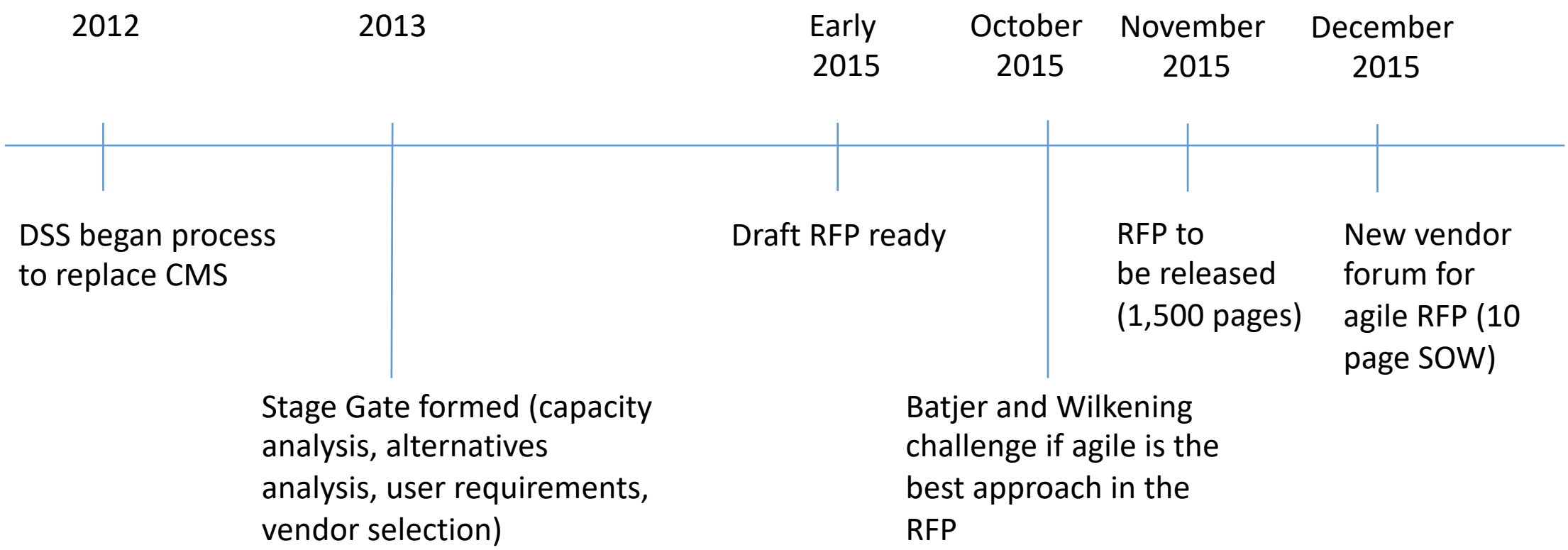
The CWS/CMS has eleven functional components designed to reflect the processes employed by child welfare workers in investigating, servicing and managing a child welfare case. Combined, these eleven components automate the many phases and programmatic functions of CWS. The eleven components and their functions are as follows:

- Intake -- referral screening, investigation and cross reporting.
- Client Information -- recording and accessing information on clients;
- Service Delivery -- recording of services delivered to clients;
- Case Management -- development of case plans, monitoring service delivery, progress assessment;
- Placement -- placement management and matching of children to placement alternatives;
- Court Processing -- hearing preparation, filing of petitions, generating subpoenas, citations, notices, recording court actions;
- Caseload -- assignment and transfer of cases;
- Resource Management -- information on resources available for CWS (services providers, county staff resources, etc.)
- Program Management -- caseload, county, program-level information for program management purposes;
- Adoptions -- recording of information for reporting purposes; and
- Licensing -- information on licensees used in placement decisions.

Each functional component captures information and provides automated tools for case management, service provision, and program management or documenting case history.

Adoptions
Foster Care

CWS/CMS Project



Q1: Should Child Welfare Services have gone agile? – Argue YES

Q1: Should Child Welfare Services have gone agile? – Argue NO

Q1: Should Child Welfare Services have gone agile?

YES	NO
Many failed tech projects so far	State has never tried agile before
Waterfall likely to not satisfy anyone	State does not know if it has the capacity to do agile; waterfall is the known devil
Stakes are not so high; 500 million for this project – will be a good pilot – which will be reduced significantly for each module	The stakes are too high; lives of vulnerable children affected in agile fails
Users will be at the center of the development process – something that has not happened before and should	Can't they bring an agile approach to waterfall? Why such a large-scale change so suddenly; Can the state handle the risk?

Q2: What are the institutional risks of the approach?

Identify risks of an agile approach

Q2: What are the institutional risks of the approach?

Identify risks of a waterfall approach

Q2: What are the institutional risks of the approach?

AGILE	WATERFALL
Does not have technical capacity to implement agile	Possibly cost more than $500 million
State culture, systems not built for agile development	More than 5 years before the project sees the light of day
No precedent so hard to know if something is going wrong	Users not involved
Traditional vendors are a challenge	Possibly end in litigation with vendor

Q3: What gaps does the state have in its ability to implement agile?

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- Lack of technical knowledge of the development process
- Rely heavily on vendor to provide technical knowledge, including scrum master, user research, etc.
- Culturally state not empowered end-user to take central role in development process
- How will the state evaluate outcomes, process and who has decision making?

Child Welfare Digital Services

Legacy Website
CWS/CMS Website

Follow Our Progress | Events | About CWDS | For Stakeholders | Careers | Support | Login

Who we are

CWDS is a collaboration of state and local government agencies dedicated to building a new child welfare information system that responds to users' needs while maintaining the best standards for security and data integrity. Our Child Welfare Services - California Automated Response and Engagement System (CWS-CARES) will allow child welfare workers to better ensure safety, well-being, and permanency of children at risk of abuse, neglect, or exploitation.

We are developing the CWS-CARES incrementally, using Agile software development methods and free and open source software. Our goal is to provide a system with a more intuitive user experience and new capabilities not provided by the CWS/CMS, LIS, and FAS legacy systems.

https://cwds.ca.gov/

Child Welfare Digital Services

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CWDS Awards Contracts for Case Management Digital Service

July 10, 2017

Cambria Solutions and Accenture Start July 2017

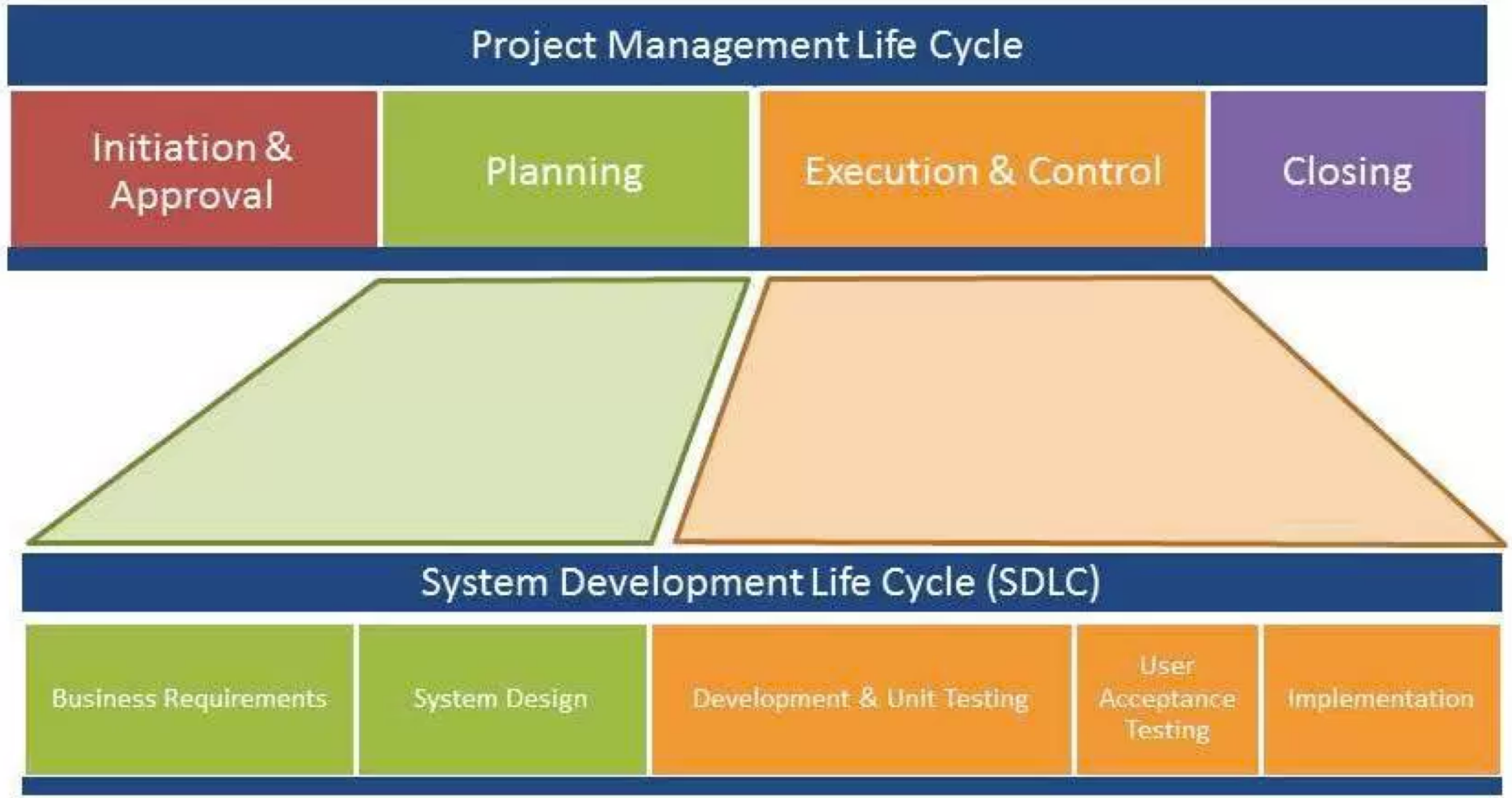
Child Welfare Digital Services (CWDS) has selected Cambria Solutions and Accenture from the state's Agile Development Pre-Qualified (ADPQ) vendor pool to work on the Case Management digital service. Case Management is the largest of eight services under development to create the system that will replace the existing Child Welfare Services / Case Management System (CWS/CMS) used by county case workers across California.

The Case Management digital service will provide county child welfare agencies a comprehensive, automated case management system that fully supports effective child welfare practices, and incorporates the functional requirements mandated by federal regulations. It will provide state and county caseworkers, supervisors, staff and managers with a simple and efficient tool for maintaining a case record in a variety of situations, including: family needs assessments, court supervised or voluntary in-home services, foster care placement, family reunification services, and permanency planning services.

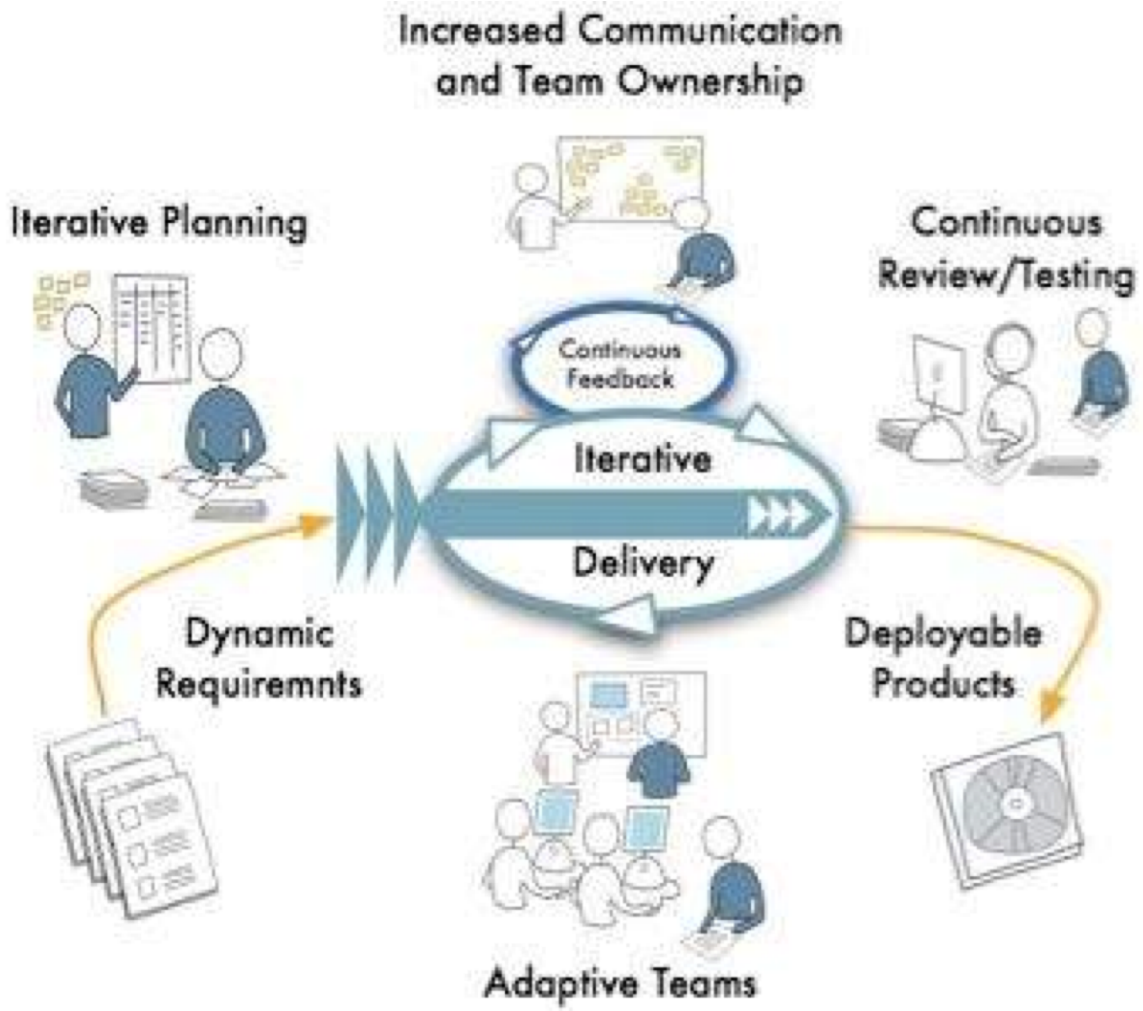
More at:
https://cwds.ca.gov/posts/cwds-awards-contracts-for-case-management-digital-service
https://cwds.ca.gov/CWDS_Project_Management_Plan

Project Management in Waterfall versus Agile

Project management in structured methods



Project management with agile methods



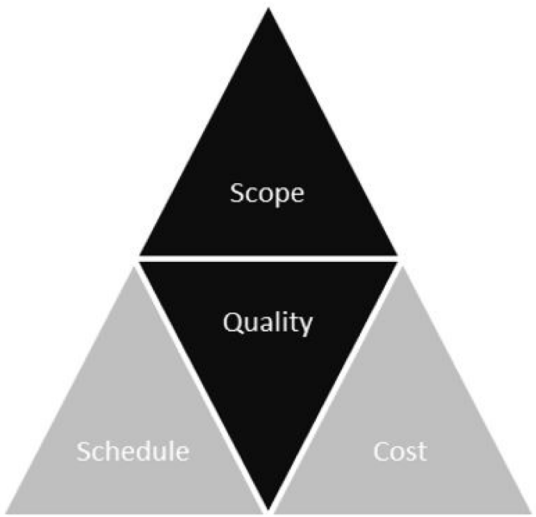
Leading project teams in creating and responding to change through:

- Small batches
- Small, integrated teams
- Small, continuous improvements

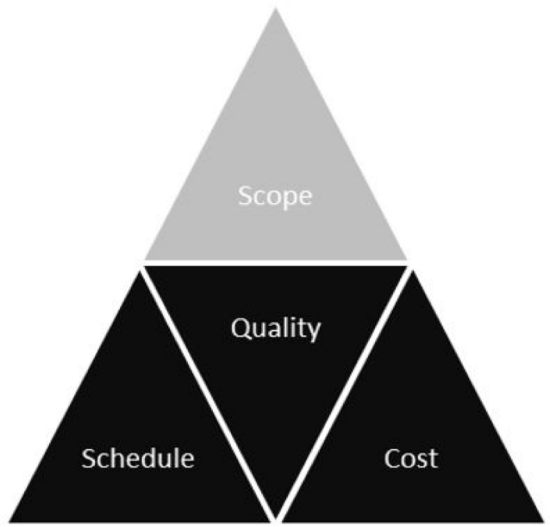
Light touch leadership

The work of energizing, empowering and enabling project teams to rapidly and reliably deliver customer value:

- By engaging customers, and
- Continuously learning and adapting to their changing needs and environments



Traditional Waterfall

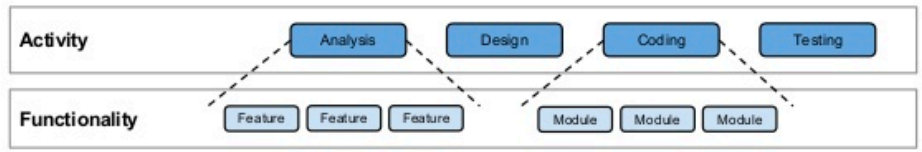


Agile

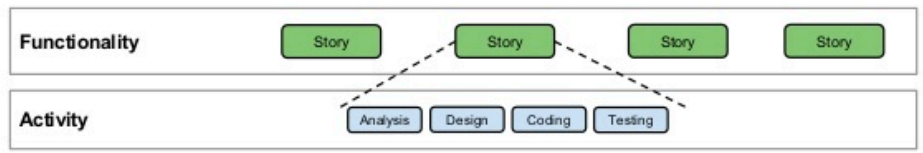
▲ = Fixed ▲ = Variable

Alternative to Work Breakdown Structure (WBS)

WBS or traditional projects



Feature Breakdown Structure



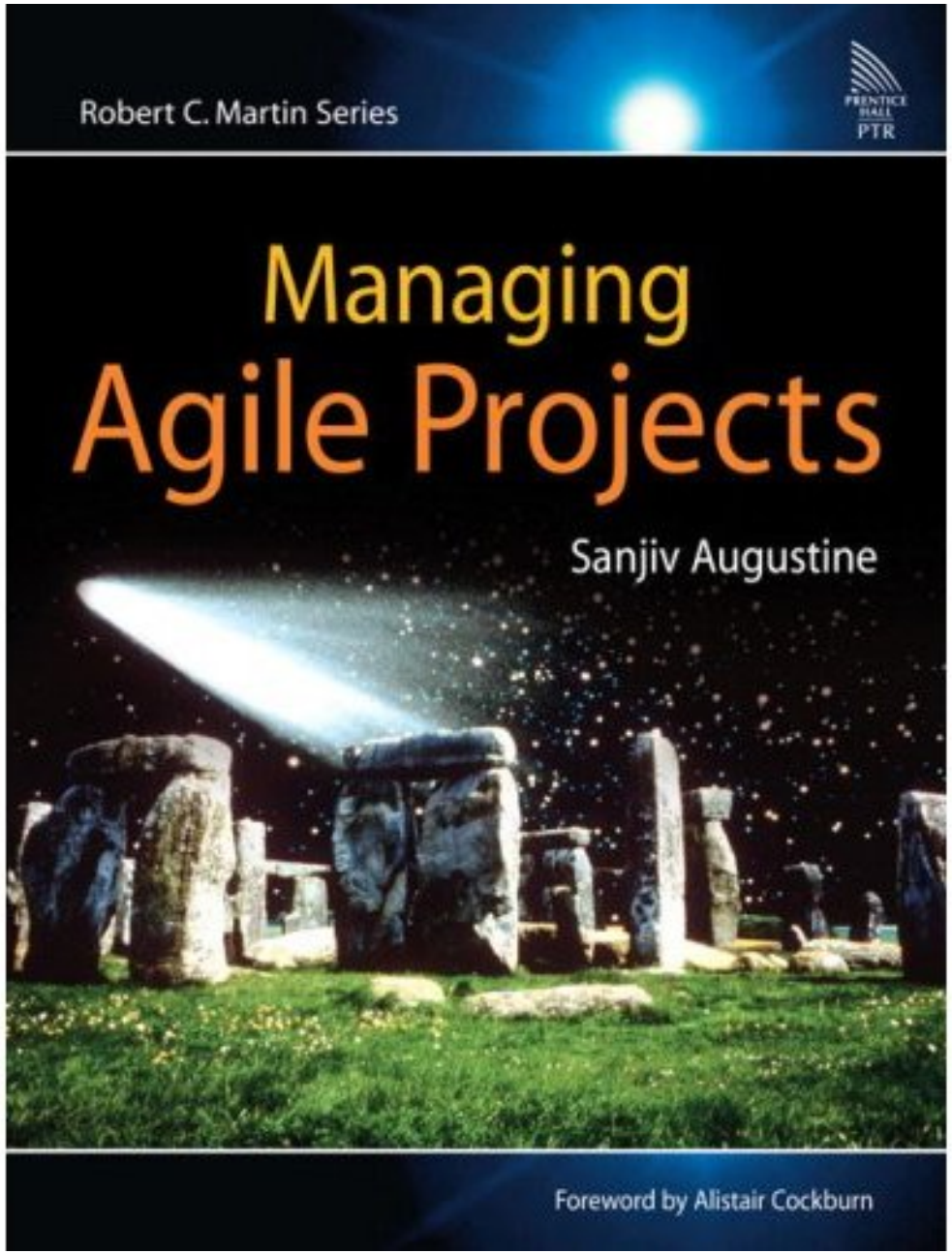
Define the project plan in terms of what will be delivered rather than what work steps will be performed.

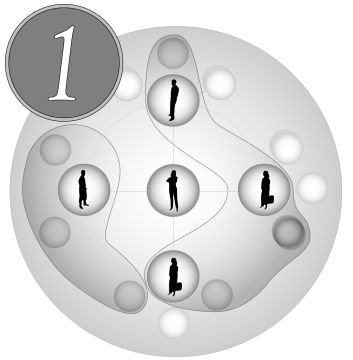
TORAK

www.torak.com

Agile Project Manager Role

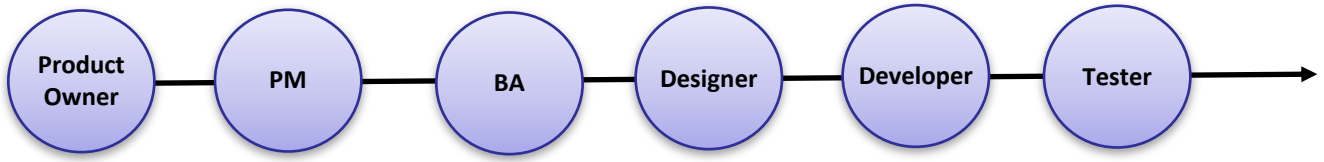
1. Managing the team
2. Guiding vision
3. Implement simple rules
4. Open information
5. Management style





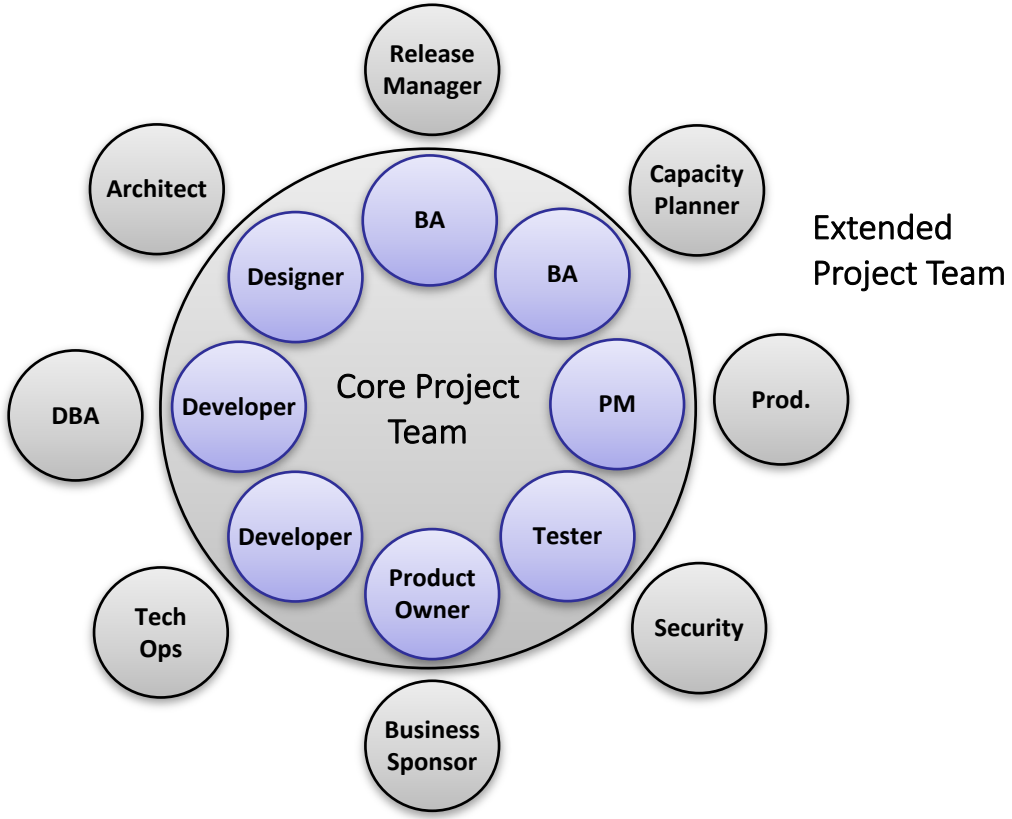
1. Managing the team

Traditional Silos



Integrated Agile Team

The core project team ideally consists of **5-9 (7 plus or minus 2)** members.



Extended Project Team

2 – Guiding vision

Objective:

Create a shared vision or mental model for driving behavior on agile projects. The *Guiding Vision* is an aggregate of three component visions: *team vision*, *project vision* and *product vision*

Key Implications:

- Evolve team vision to drive team behavior
- Create project vision to drive project behavior
- Facilitate product vision to drive project evolution

Product Vision Box

3 – Implement simple rules

How-To Rules: Key features of the process

- Feasibility, project discovery
- Release and iteration planning
- Product and iteration backlogs
- Tracking via burndown charts
- Team collocated in team rooms
- Core team dedicated to project

Boundary Rules: To define allowable action

- Estimation done only by performers
- Prioritization done only by product owners

Priority Rules: To rank work opportunities

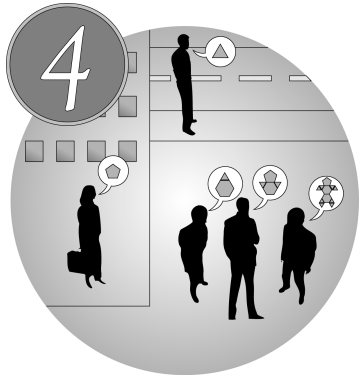
- Priorities always decided in sprint planning meetings

Timing Rules: To define and synchronize delivery pace

- 2-Week Sprints?

Exit Rules: To minimize sunk costs

- Sprint reset allowable in extreme circumstances

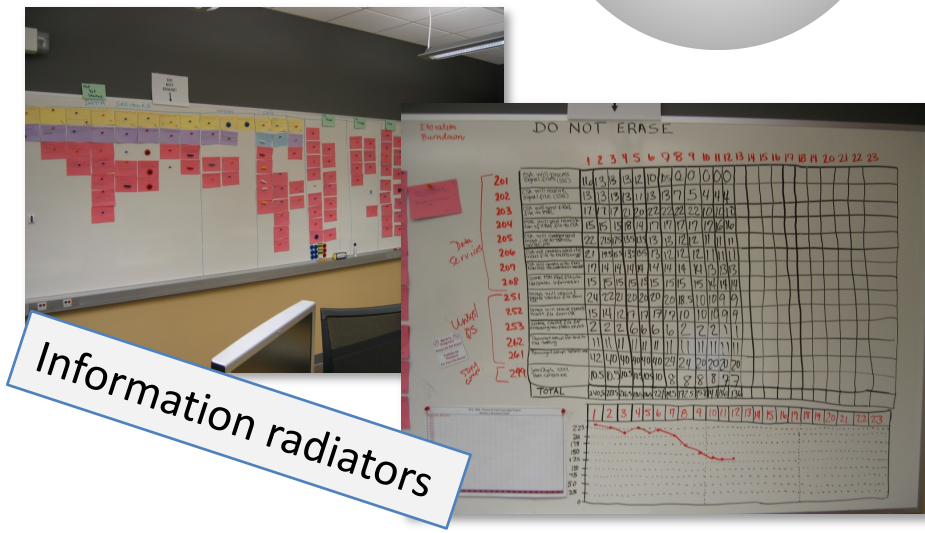


4 – Open information

Objective: Create an open flow and exchange of information among project team members, and among other associated external groups

Key Implications:

- Reorganize team facilities and seating to institute agile information sharing practices
- Analyze the time taken to exchange information with external groups to identify and reduce the information cycle time
- Structure conversations on the project team so as to generate transforming exchanges of information among project team members



Collaborative and 'cave' spaces
Daily standups

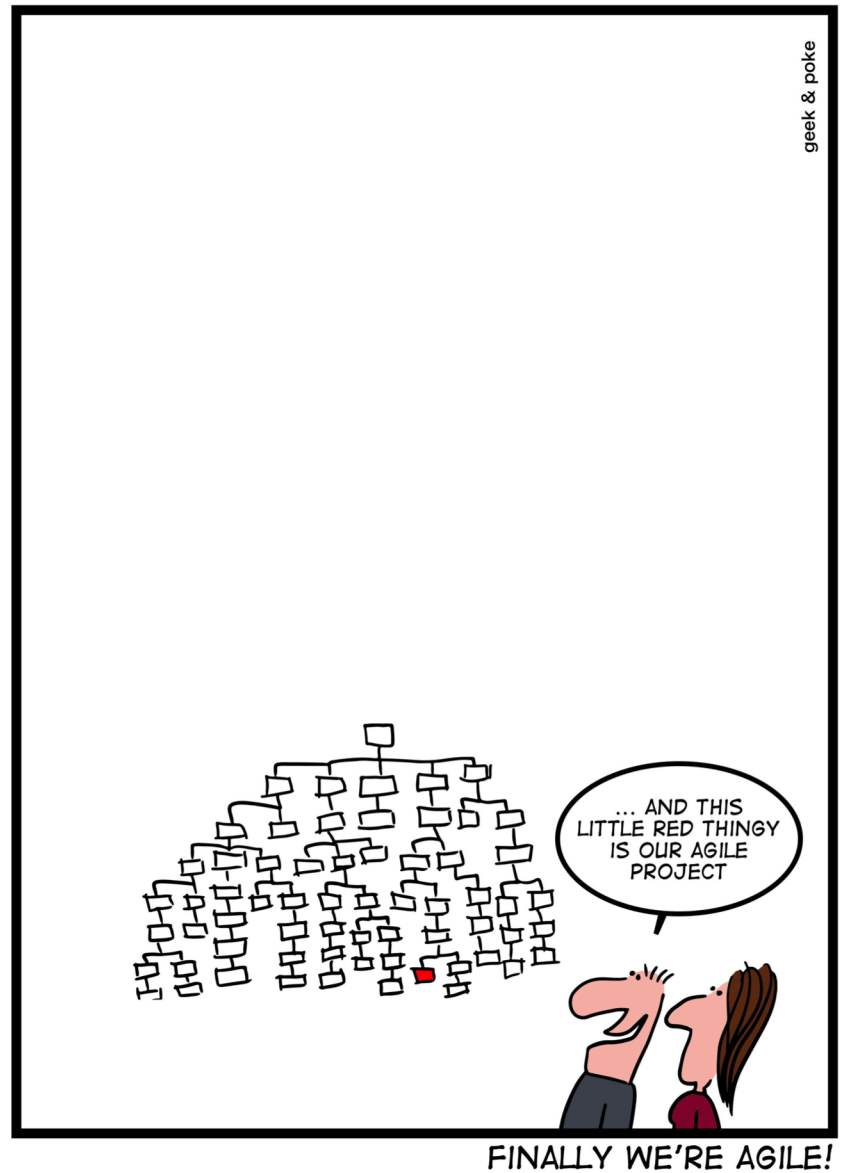
5 – Management style

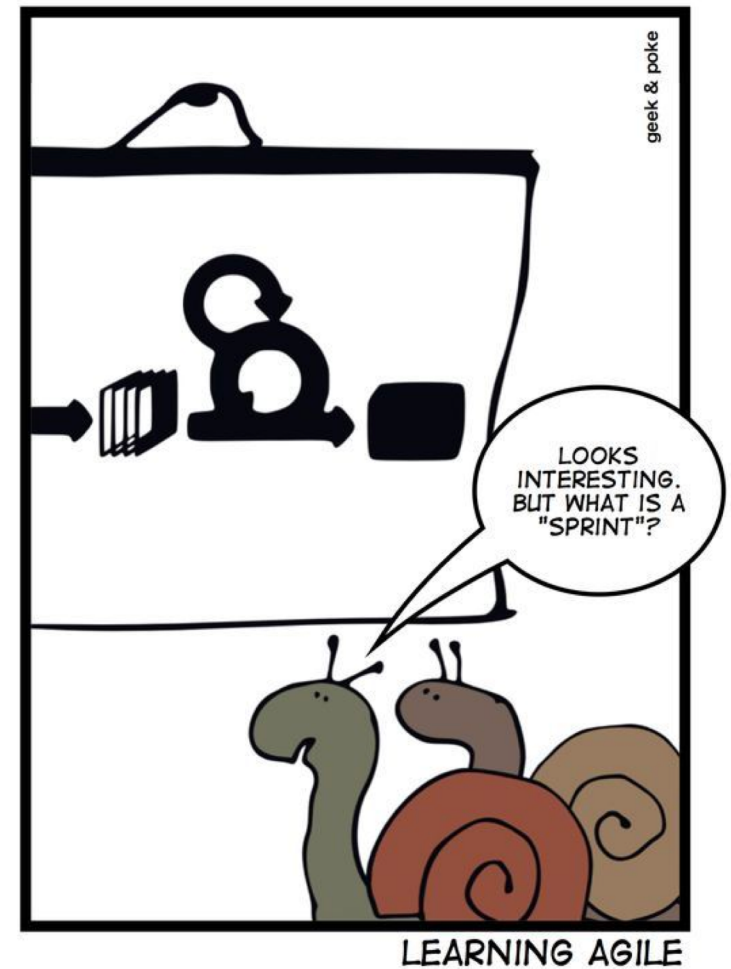
Objective:

- Light touch - Manage agile teams with a style that allows team autonomy and flexibility, and a customer value focus without sacrificing control
- Build on personal strengths - Each person is unique and has unique strengths and weaknesses – whole persons
- Be adaptive - Track and monitor the project for timely and relevant feedback. Institute systemic procedures for learning and adaptation. Help the Agile Manager maintain a leadership presence that animates the team
- Give team daily feedback – record and share feedback on a daily basis

Plus Delta Feedback	
+	Δ
Automated unit testing	6am Daily Standup
Customers highly satisfied	Testing team availability
Retrospectives have improved process	Build cycle time
Estimates are stabilizing	Product Owner availability


I have a feeling Larry did not understand what I meant when I said: "Our team could use an Agile class."
J. KING
Modern Analyst


geek & poke
... AND THIS LITTLE RED THINGY IS OUR AGILE PROJECT
FINALLY WE'RE AGILE!


geek & poke
LOOKS INTERESTING. BUT WHAT IS A "SPRINT"?
LEARNING AGILE

Next class – Wednesday, September 25th

Topic: Project Risk and Lessons Learned

Read before class:

- Who Killed the Virtual Case File – expect a quiz

Reminder: Global Project 1 Due

Wednesday, 9th October at 6:00 AM GMT