


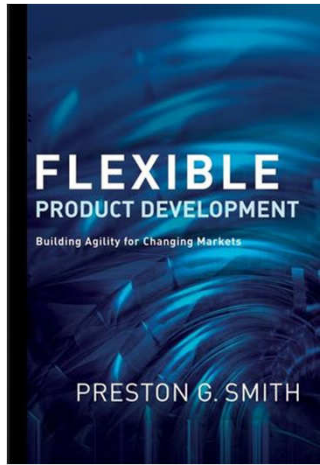

# Flexible Project Management

## Extending Agile Techniques beyond Software Projects

Jeff Oltmann, [jeff@spspro.com](mailto:jeff@spspro.com)



# Thanks to Preston G. Smith



# Manifesto for Agile Software Development

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

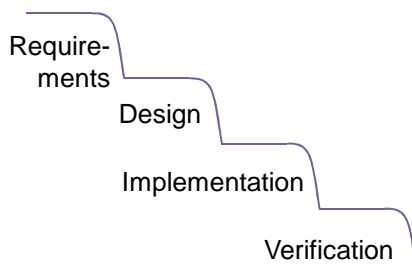
- Individuals and interactions** over processes and tools
- Working software** over comprehensive documentation
- Customer collaboration** over contract negotiation
- Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

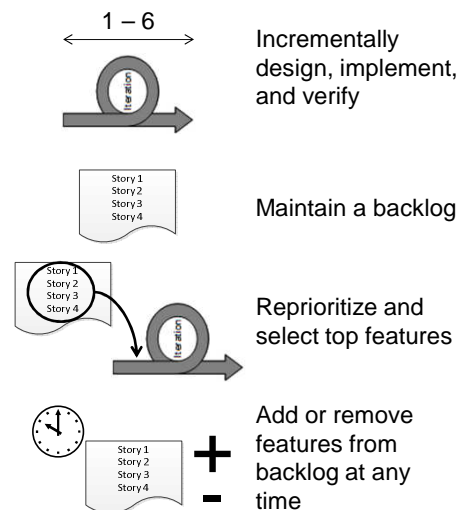
© 2001 by Kent Beck, Mike Beedle, Arie van Bennekum, Alistair Cockburn, Ward Cunningham, Martin Fowler, James Grenning, Jim Highsmith, Andrew Hunt, Ron Jeffries, Jon Kern, Brian Marick, Robert C. Martin, Steve Mellor, Ken Schwaber, Jeff Sutherland, and Dave Thomas  
 Source: [www.agilemanifesto.org](http://www.agilemanifesto.org)

## Some Differences

### Highly Predictive



### Highly Adaptive



# Something is Going On Here (with caveats...)

## Standish, 2012-13

- Triple constraint success measure
- "All projects" data shows huge impact, but is biased
- Ten year sample size

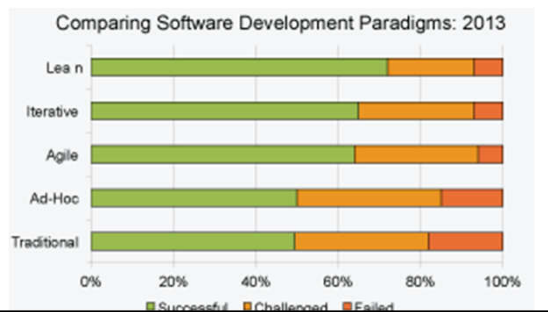
From The CHAOS Manifesto 2012 and 2013, ©,The Standish Group International

	Small (<\$1M labor) [2013]		All [2012]	
	Waterfall	Agile	Waterfall	Agile
Successful	46%	49%	14%	42%
Failed	6%	8%	29%	9%
Challenged	48%	43%	57%	49%

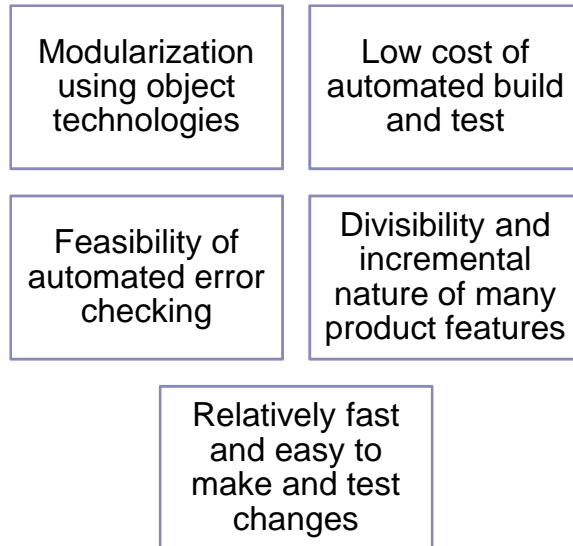
## Ambler, 2013

- Reporter-defined success measure
- Small sample size, 2013
- Various project sizes

From 2013 IT Project Success Rates Survey, © 2014 Scott W. Ambler + Associates




# Software Roots of Agile

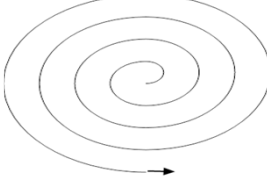


© 2015 Synergy Professional Services, LLC Flex-003 150814


## Transferability of Four Aspects



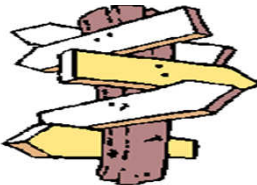
Individuals and Interactions



Incremental Results through Rapid Iteration



Flexible Environment



Embrace Change

© 2010 Preston G. Smith and Synergy Professional Services, LLC Flex-004 150814

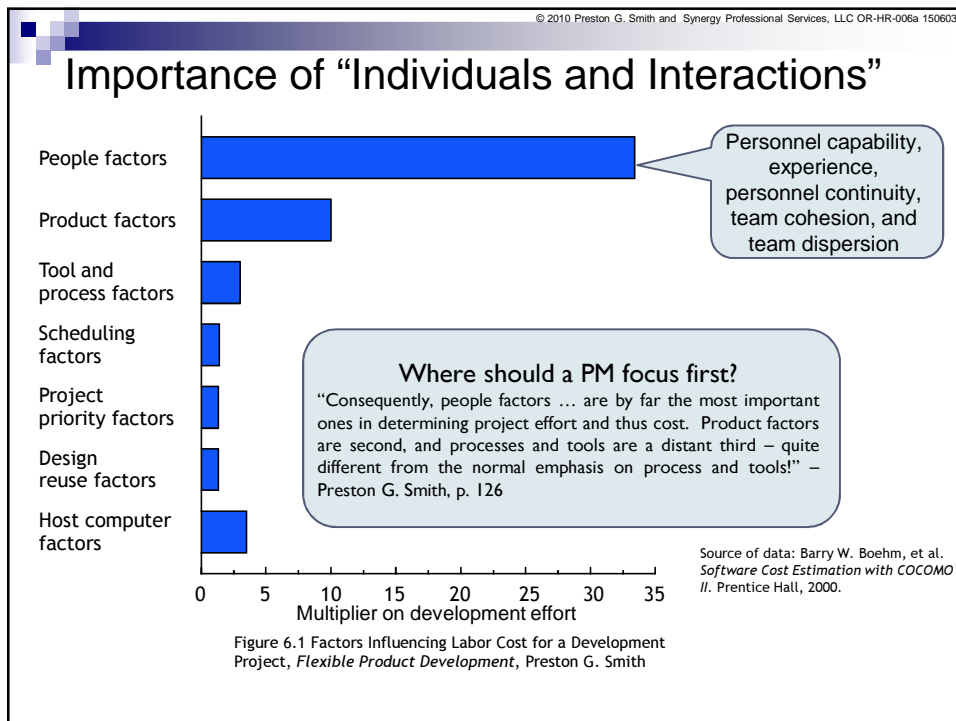
## Select Project for Exercises

1. With your neighbor, select a non-software project or sub-project that one of you will be starting soon.
2. Assume you will be the project managers of this project.
3. Brainstorm what aspects of it might benefit most from an agile emphasis.
  - a. Individuals and interactions
  - b. Incremental results
  - c. Flexible environment
  - d. Embracing change



Importance of People over Tools and Process  
Impact of Co-location

# INDIVIDUALS AND INTERACTIONS



© 2012 Synergy Professional Services, LLC OR-Comm-013 120823

## Co-location Matters!

- Recent research by Reinertsen, Smith, and Olson & Olson
- Co-located (within 30'-60') project teams twice as productive

```

graph TD
    A[Co-located project team] --> B[Includes all primary members of team]
    A --> C[Within 30 feet of each other]
    A --> D[Preferably within visual contact while sitting]
    
```

“Our study of six teams that experienced radical collocation showed that in this setting they produced remarkable productivity improvements ... One of the main drivers of success was the fact that the team members were at hand, ready to have a spontaneous meeting, advise on a problem, teach/learn something new, etc. We know from earlier work that the gains from being at hand drop off significantly when people are first out of sight, and then most severely when they are more than 30 meters apart.” – Gary Olson and Judy Olson, University of Michigan

Sources: Preston G. Smith, *Flexible Product Development*, p. 141 -144; Gary Olson and Judith Olson, “Distance Matters”; Teasley, Covi, Krishnan, and Olson, “How Does Radical Collocation Help a Team Succeed?”

© 2012 Synergy Professional Services, LLC OR-Comm-014 150812


## How to Co-locate a Distributed Team

1. Expect initial resistance
2. Co-locate key sub-teams and sub-projects
  - a. Who are in the same metro area
  - b. Who will have heaviest communication links (use directed graphs to detect links)
3. Adjust product architecture
  - a. Co-locate sub-teams and sub-projects working on the same architectural modules
  - b. Minimize long-distance communication interfaces
4. If you can co-locate for only part of the project, do it initially

“It [co-location] can be unpleasant. If your neighbor did not take a bath, you will be aware of it. ... [Researchers found] that participants are reluctant to try co-location at first, but after experiencing it, they readily see its advantages.” – Preston G. Smith, *Flexible Product Development*

“I am happy to spend 70 percent of a project’s travel budget up front to get people working face to face early in the project; it pays dividends later.” – Mike Griffiths, Quadrus Development (quoted by Smith)



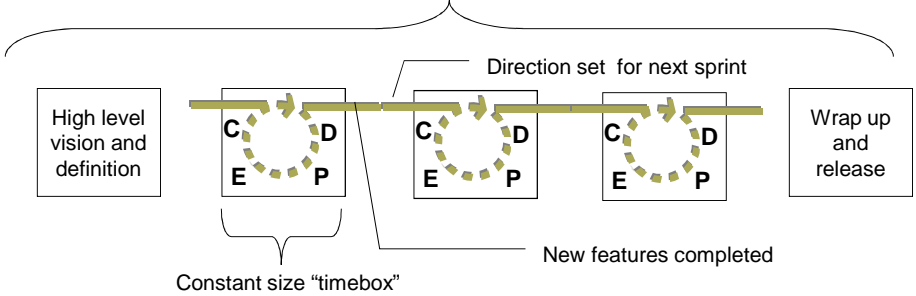


# INCREMENTAL RESULTS

© 2008 Synergy Professional Services, LLC Flex-DefPin-003

## Timeboxed Iterations Build Incremental Results

Single project with multiple iterations



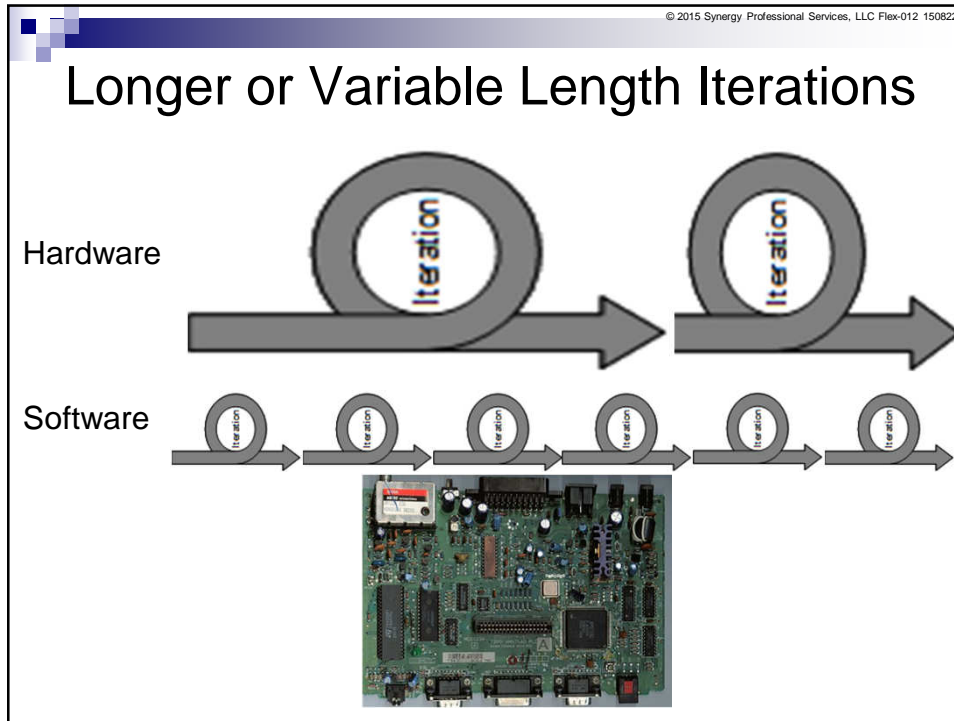
**Project**

- Project contains multiple sprints (iterations)
- Each sprint fits in a timebox of fixed size
- Can add or remove sprints

**Sprint**

- Produces incremental features or capabilities
  - Tested
  - Valuable to user or customer
- Varies deliverables (features), not time
- Feature list set at start of sprint, not before
- Defines, plans, executes, and closes





© 2010 Synergy Professional Services, LLC Flex-005 150814

## Mockups, Prototypes and Simulation

“Use rapid prototyping to get fast customer feedback.”  
Bill, Program Manager

This section features a collage of images demonstrating various prototyping and simulation techniques. On the left, there are three images: a blue and black plastic rapid prototype, a white 3D printer, and a black 3D printer. Below these is the caption: 'Plastic rapid prototypes (L & C) created by Dimension 3D printer (R)'. In the center, there is a 3D CAD model of a sonar array with red and blue vertical bars, and a photograph of a person interacting with a large 3D CAD model of a mechanical part. Below these is the caption: 'Simulation model of sonar array piezoelectric behavior' and 'Interacting with 3D CAD model at the Simulation Based Design Center.' On the right, there is a screenshot of a software interface showing a virtual simulation of a Siemens subway car in a virtual environment. Below this is the caption: 'A Siemens subway car is virtually modeled during the conceptual design phase.'





© 2010 Preston G. Smith and Synergy Professional Services, LLC Flex-006 150814

## People, Teams, and Iteration Exercise

- Group A – Identify the key people and skills for your project team. How will you get them onto your team and in the right roles?
- Group B – Identify two ways that you can build iteration into your project.
- Group C – How can you get your team members co-located, or if that is not possible, handle the dispersion as best as possible?

**CREATE A FLEXIBLE  
PROJECT ENVIRONMENT**



## Buy Options



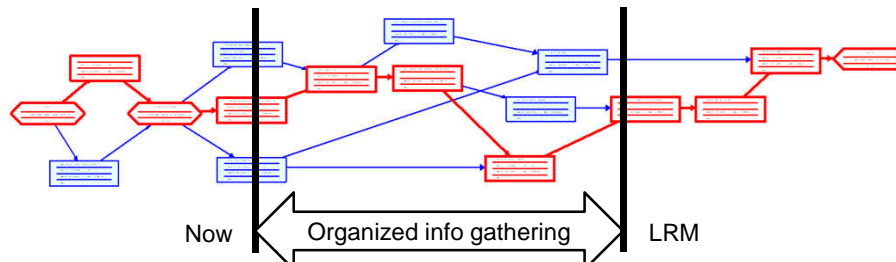
1. Slip schedule
2. Guess the winner
3. Design more expensive multi-camera interface

© 2010 Preston G. Smith and Synergy Professional Services, LLC Flex-007 150814

## Delay Critical Decisions to LRM

Last *Responsible* Moment is the point at which:


1. An important decision option expires
2. Important sources of information or assistance become unavailable
3. Decision goes onto the critical path
4. Risk increases substantially if decision delayed
5. Expense of carrying decision increases greatly



© 2015 Synergy Professional Services, LLC Flex-010 150822

## Bicycle Development Dilemma











Option A: Update of tried and true bicycle hub



Option B: Hub with superior performance and cost characteristics

© 2010 Preston G. Smith and Synergy Professional Services, LLC Flex-011 150822

## Flexibility Isn't Free

Research	 Marketing Prevails! Develop Option A	 Market Test	◇	3 months \$100,000
Research	 Engineers Prevail! Develop Option B	 Market Test	 Scrap B and Develop A	◇ 5 months \$170,000
Research	Prototype Option A  Prototype Option B	 Alpha Test Complete Option A	◇	3.5 months \$120,000





## EMBRACE THE INEVITABILITY OF CHANGE

© 2008 Synergy Professional Services, LLC APM-Scope-005 150822

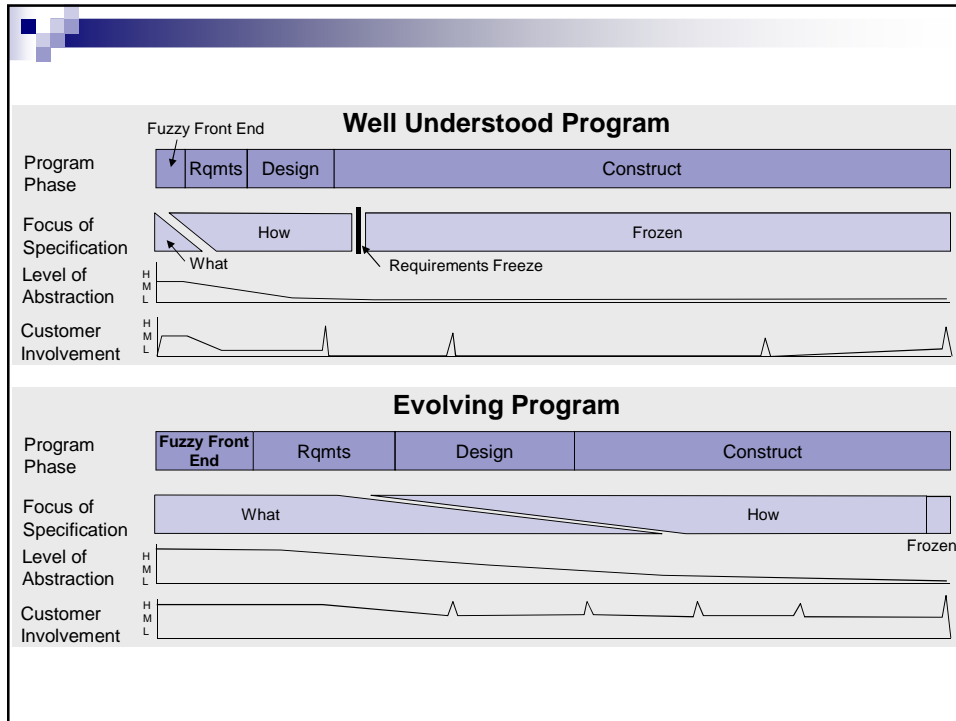
## Specify Differently

Agile techniques: product vision, personas, epics, user stories

1. *What* rather than *how*
2. Stay at higher level longer




Original 1988 HP DeskJet




© 2008 Synergy Professional Services, LLC Flex-DefPin-002

## Exploit Modularity

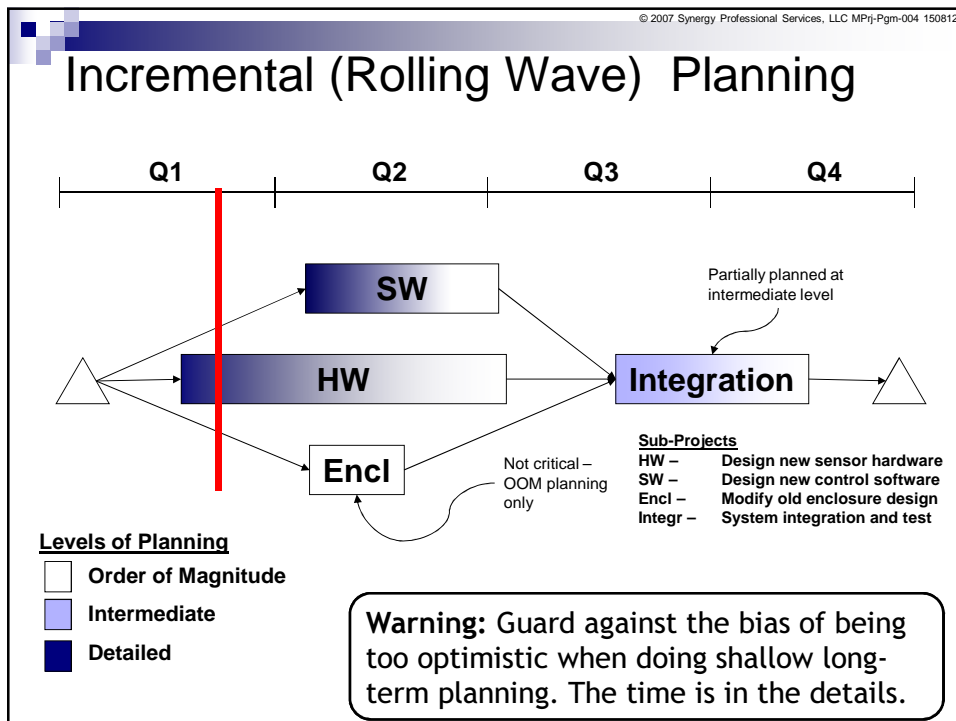
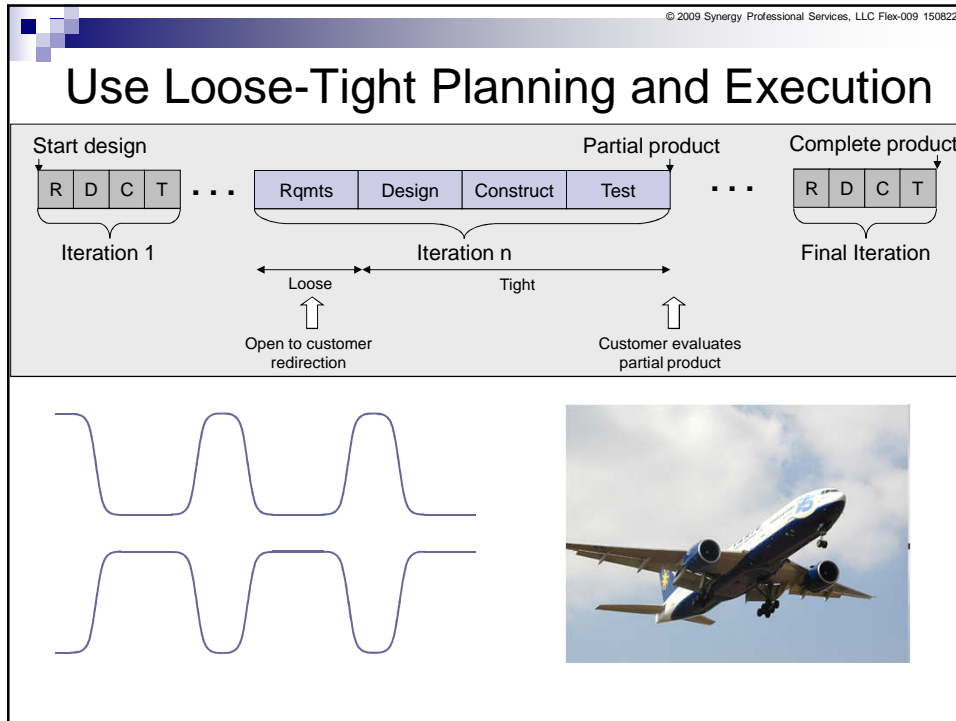


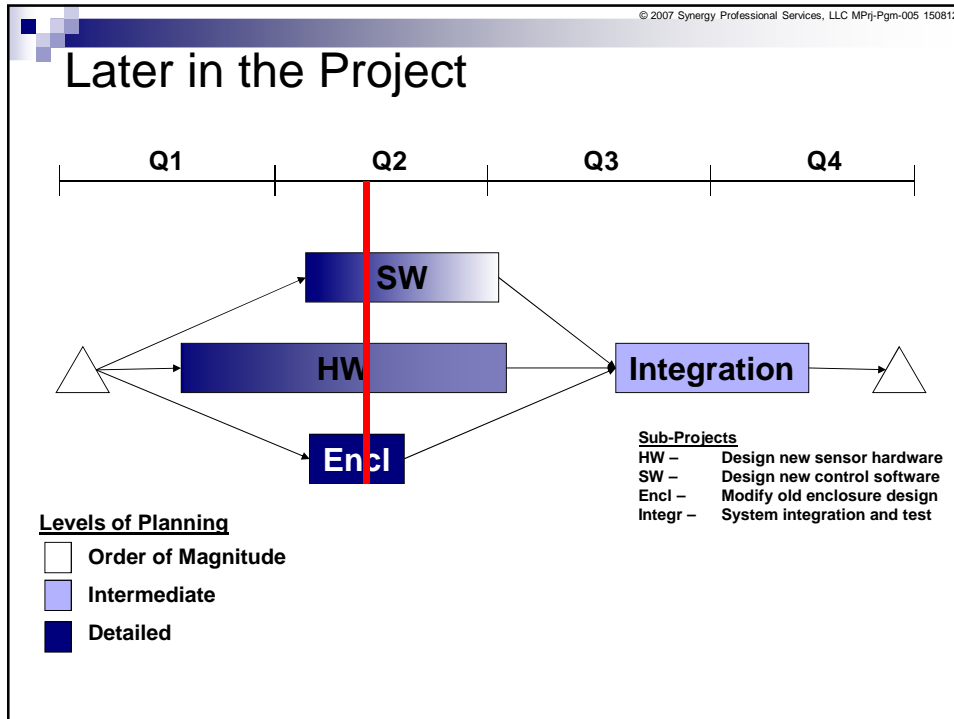
Partly completed mansion



Small simple house designed for later additions







© 2010 Preston G. Smith and Synergy Professional Services, LLC Flex-010 150814

## Flexible Techniques Exercise

- Group A – How do you plan to deal with the inevitable changing requirements on your project?
- Group B – How can you apply rolling wave planning to your project? What obstacles do you anticipate?
- Group C – Identify aspects of your project that would benefit from a loose-tight approach.





© 2010 Preston G. Smith and Synergy Professional Services, LLC Flex-011 150814

## Seven Transferable Techniques

1. Put people and the team first
2. Apply flexibility selectively
3. Plan to iterate
4. Keep your options open
5. Expect product requirements to change
6. Plan the project expecting change
7. Manage project risk continually



Jeff Oltmann  
 Synergy Professional Services, LLC  
 jeff@spspro.com

### Photo Credits

- Ambler data: retrieved 8/24/15 from <http://scottambler.com/comparing-software-development-paradigms.html> See also: <http://www.drdobbs.com/architecture-and-design/the-non-existent-software-crisis-debunk/240165910>
- "Golden pearl necklace" by Flickr.com user "tanakawho" - <http://www.flickr.com/photos/28481088@N00/160781389/>. Licensed under CC BY 2.0 via Wikimedia Commons - [https://commons.wikimedia.org/wiki/File:Golden\\_pearl\\_necklace.jpg#/media/File:Golden\\_pearl\\_necklace.jpg](https://commons.wikimedia.org/wiki/File:Golden_pearl_necklace.jpg#/media/File:Golden_pearl_necklace.jpg)
- "Amstrad-gx4000-pcb" by Incog88 - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons - <https://commons.wikimedia.org/wiki/File:Amstrad-gx4000-pcb.jpg#/media/File:Amstrad-gx4000-pcb.jpg>
- "Mountainbike-zeichnung" by Ralf Roletschek - Own work. Licensed under GFDL 1.2 via Wikimedia Commons - <https://commons.wikimedia.org/wiki/File:Mountainbike-zeichnung.png#/media/File:Mountainbike-zeichnung.png>
- "Speedhub-rot" Licensed under CC BY-SA 3.0 via Wikimedia Commons - <https://commons.wikimedia.org/wiki/File:Speedhub-rot.jpg#/media/File:Speedhub-rot.jpg>
- "Sturme Archer AW r". Licensed under Public Domain via Wikimedia Commons - [https://commons.wikimedia.org/wiki/File:Sturmey\\_Archer\\_AW\\_r.jpg#/media/File:Sturmey\\_Archer\\_AW\\_r.jpg](https://commons.wikimedia.org/wiki/File:Sturmey_Archer_AW_r.jpg#/media/File:Sturmey_Archer_AW_r.jpg)

