

# CS 4320 / 7320

# Software

# Engineering

Bringing it All Together

# Agile Methods in Historical Context

# Agile Methods in Historical Context

1990's

From a desire to reduce overhead associated with plan-based methods ("waterfall") \*\*readings

Agile founders were concerned with values and principles rather than rigid, codified methodologies \*\*readings

\*\* Also Historical and comparative readings

# Agile Methods

Typical characteristics of agile methodologies:

- Short, iterative development cycles

- Working product each iteration

- Self-organizing teams

- Refactoring

- Test-driven development

- Close customer involvement

# Agile Methods: Rapid Application Development (RAD)

# Agile Methods: eXtreme Programming (XP)

# Agile Methods: Scrum

# Agile Methods: Feature-Driven Development

# Start with a List

Design Document

1. “To Do” list
2. Decomposition, Design and Construction

# Agile Goals

- ↗ Throughput
- ↗ Transparency
- ↗ Accurate Planning
- ↗ Sustainable

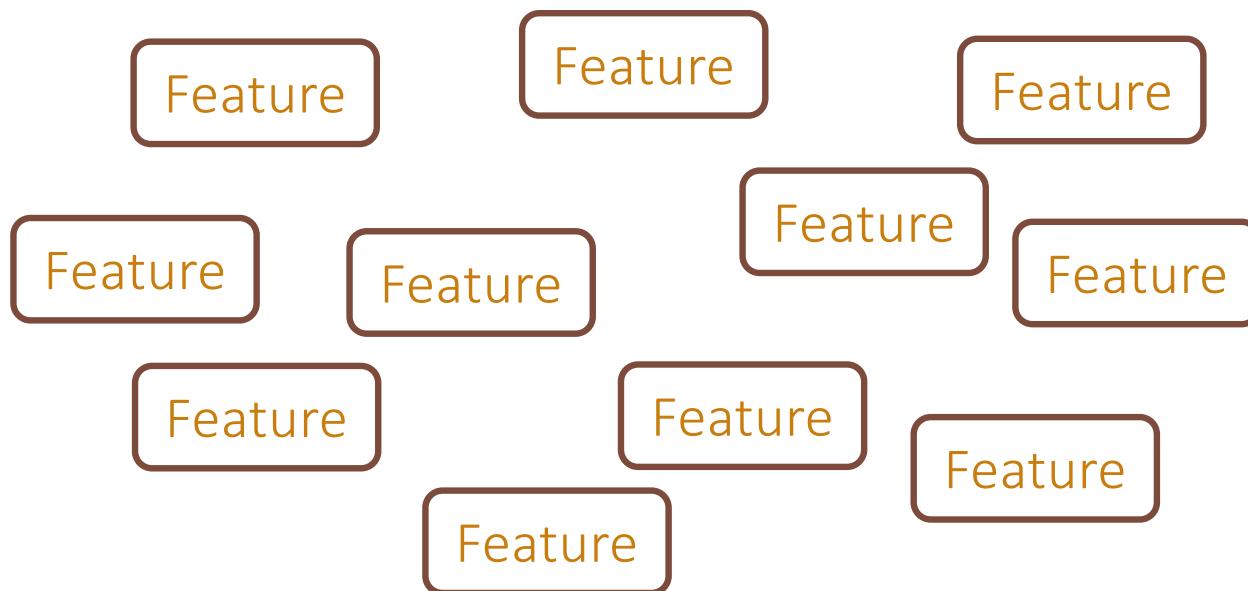


Improving Productivity ==

Developer Happiness

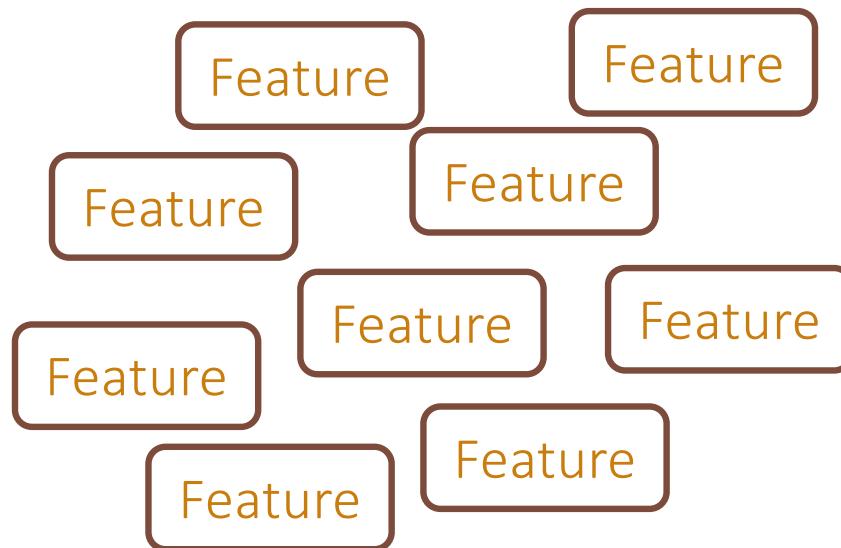
Problem:

## Lack of Focus



## Solution: Focused Iterations

Backlog



Now



Solution:

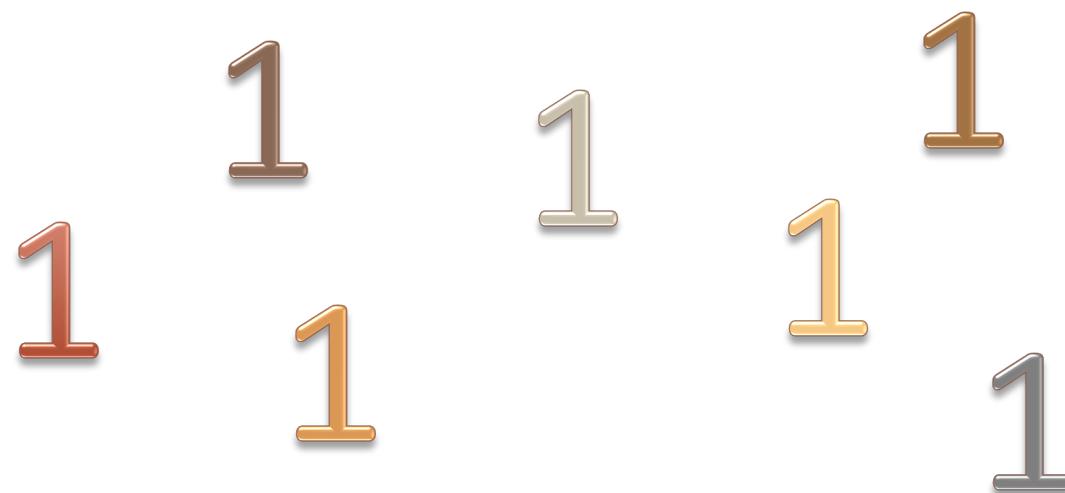
## SMART Goals

- Specific
- Measurable
- Achievable
- Realistic
- Timely

# Agile Task Board

Backlog	On Deck	In Progress	Done

## Problem: Competing Priorities



Solution:

## Iteration Planning

1  
Backlog

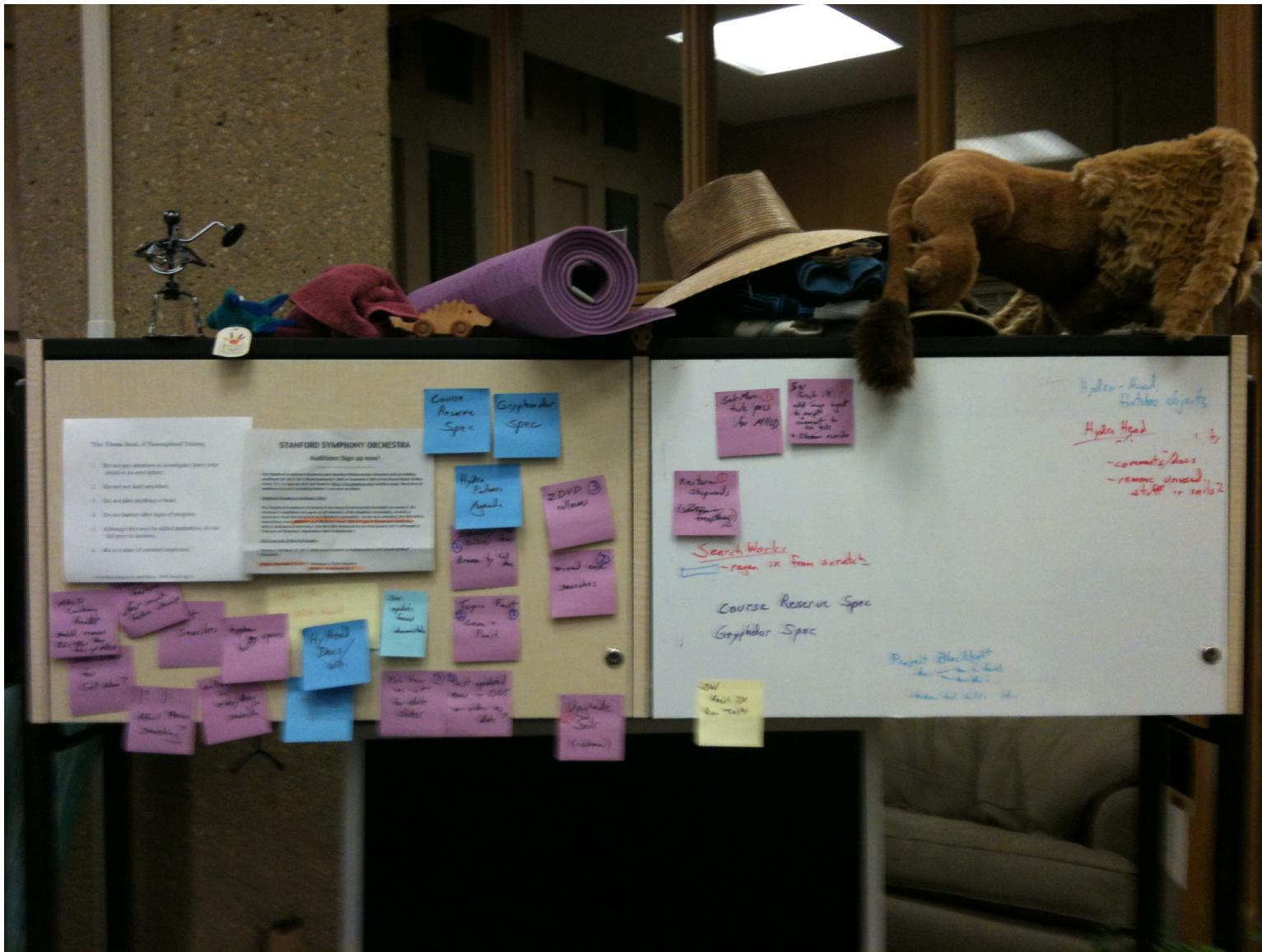
1  
1  
1

1  
1

Now

## You Might Try ...

- Extreme Display:
  - All “Active” Projects
  - Priorities
  - Currently In Progress
- Refuse More Than Two Simultaneous Projects



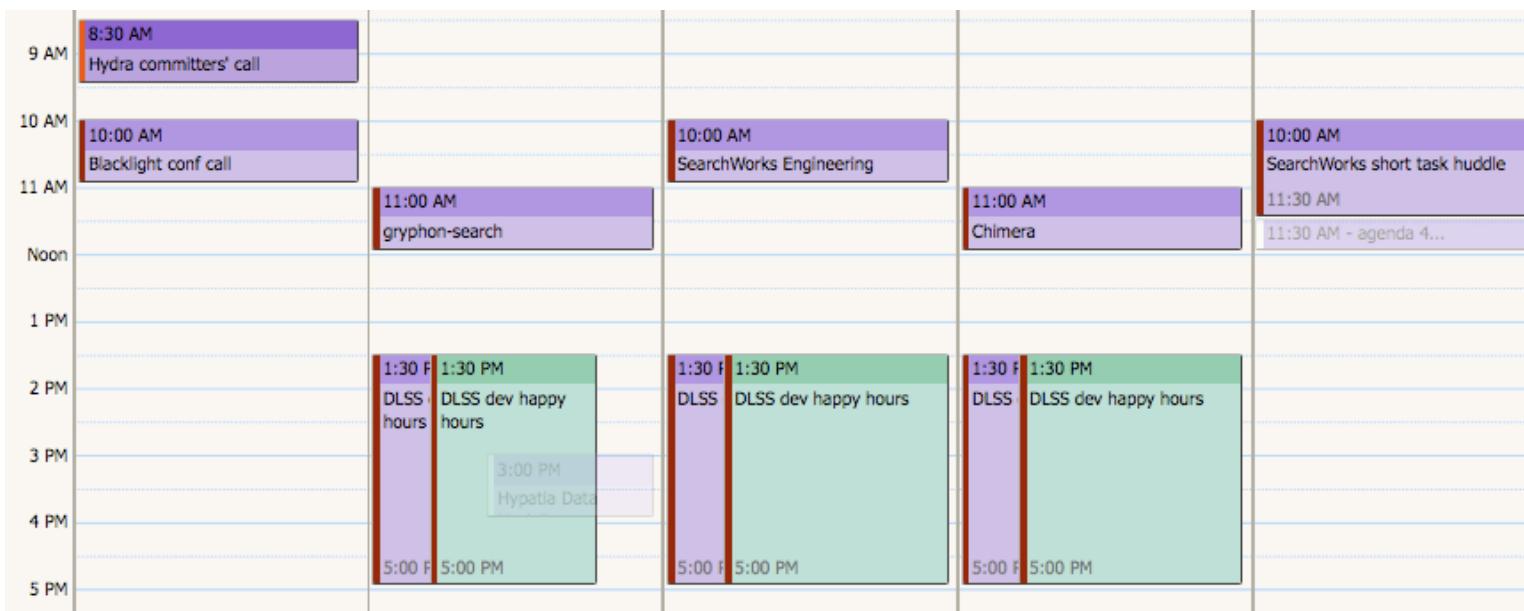
## You Might Try ...

- Task Board
- “Public” View of Your Recent Work

# Problem: Too Many Meetings

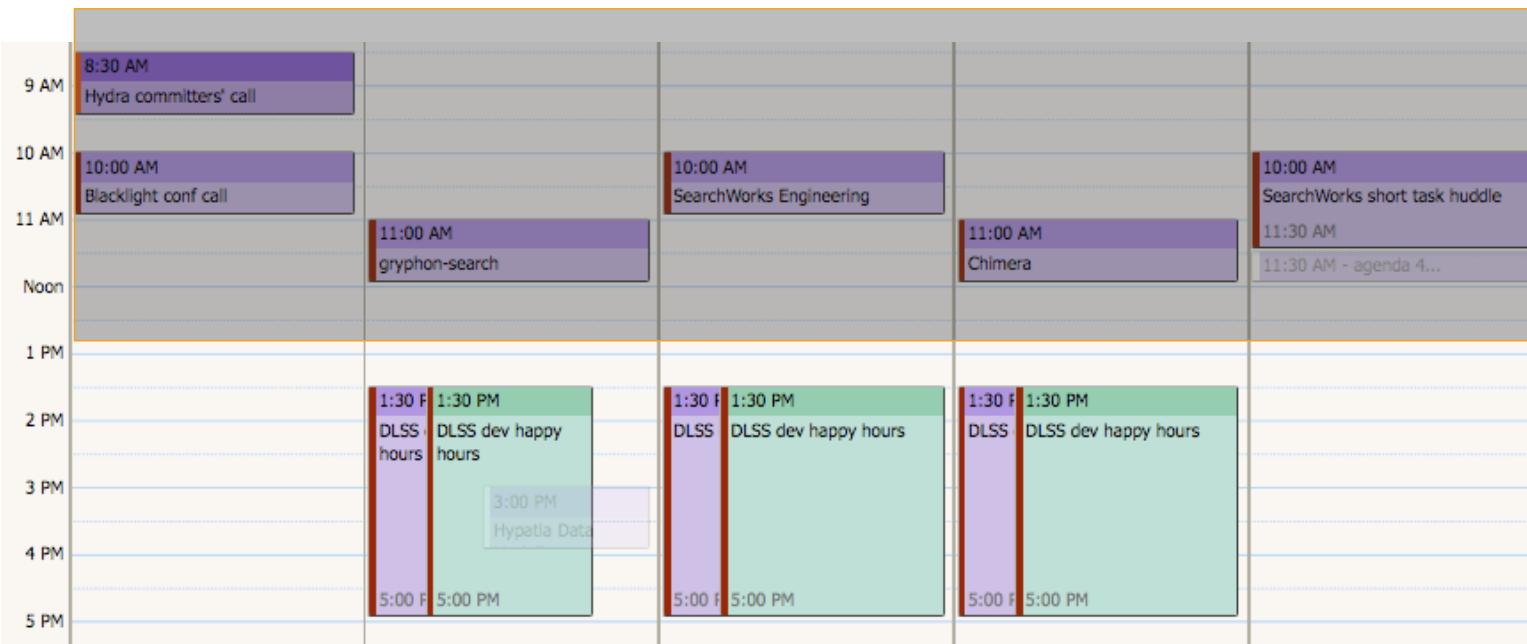
8 AM		8:00 AM IIIF All Hands Call			
9 AM	8:30 AM Hydra committers' call				8:30 AM Hydra Partners Skype
10 AM	10:00 AM Blacklight Sys Team	9:30 AM Hypatia Call	9:00 AM - 10:00 AM - Weekly C... Month: 9:30 AM - Hydra PM...	9:00 AM SDR Preservation Core weekly	10:00 AM SearchWorks short task huddle
11 AM	11:00 AM Weekend: Tom:Bess	10:30 AM Asilomar SSRC gryphon-search - code4lib	10:00 AM SearchWorks Engineering	10:00 AM Lyberstructure projects	11:00 AM Chimera manual & AMD roadm...
Noon		12:00 PM Network Operations Roble	11:00 AM GIS Infrastructure	12:00 PM bike sale	12:00 PM Network Operations Roble
1 PM	1:00 PM web archiving		12:00 PM DLSS hours	1:00 PM REQU	1:00 PM Lynn K
2 PM	2:00 PM Bassi-Veratti RFP/Contract	1:30 PM DLSS happy	1:30 PM DLSS hours	2:00 PM Bassi-Veratti	1:30 PM DLSS dev happy hours
3 PM		1:30 PM DLSS happy	2:00 PM Searchworks	3:00 PM Riverwalk Jazz	
4 PM	4:00 PM Follow up: Preparing DMPs for	1:30 PM Hypatia	3:00 PM Tom:Richard	4:00 PM Stu:Tom	
5 PM		4:00 PM Project	5:00 PM	5:00 PM	5:00 PM

# Solution: Developer Happiness Hours



Solution:

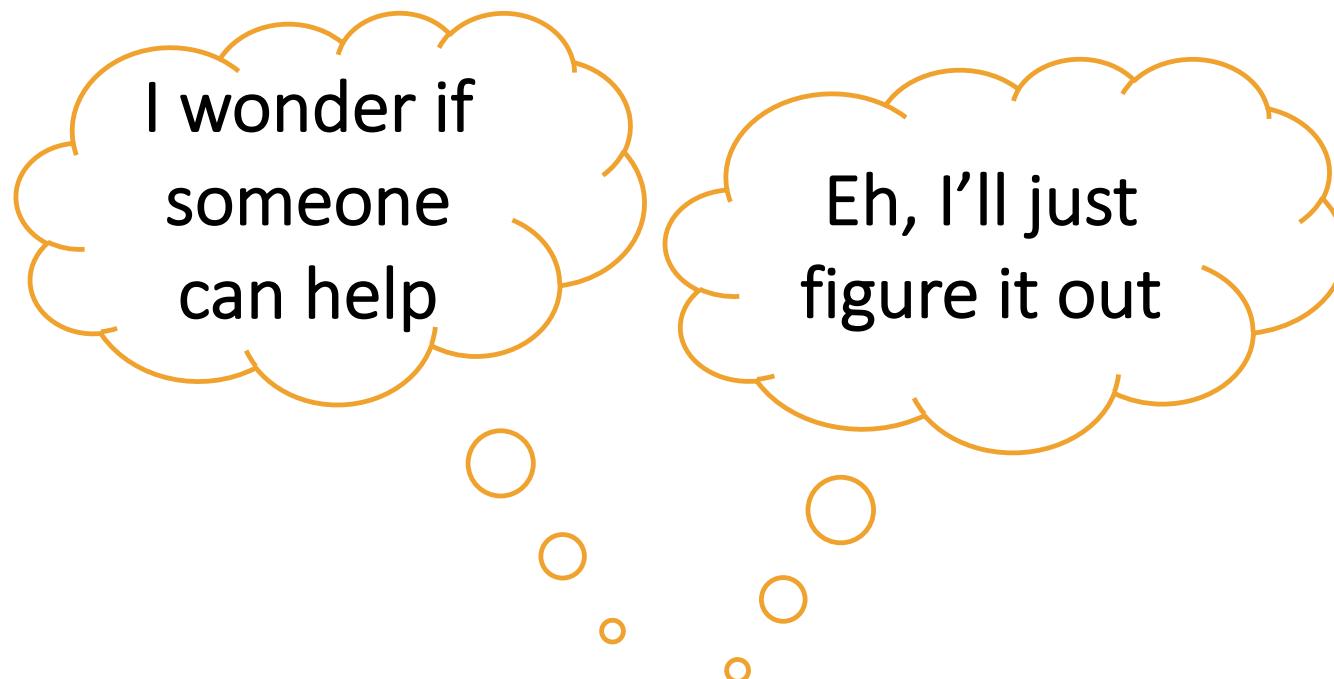
# Dead Week



## You Might Try ...

- Block Out Times In Your Calendar
  - Multi-Hour “Meetings” With Colleagues
  - Suggest to Management
    - They Have Non-Meeting Work Too!

## Problem: Sharing Knowledge Locally



# Workspaces

Co-location

Open Sight Lines

More People Per Room

Less Wall Space for Whiteboards, Task Boards ...

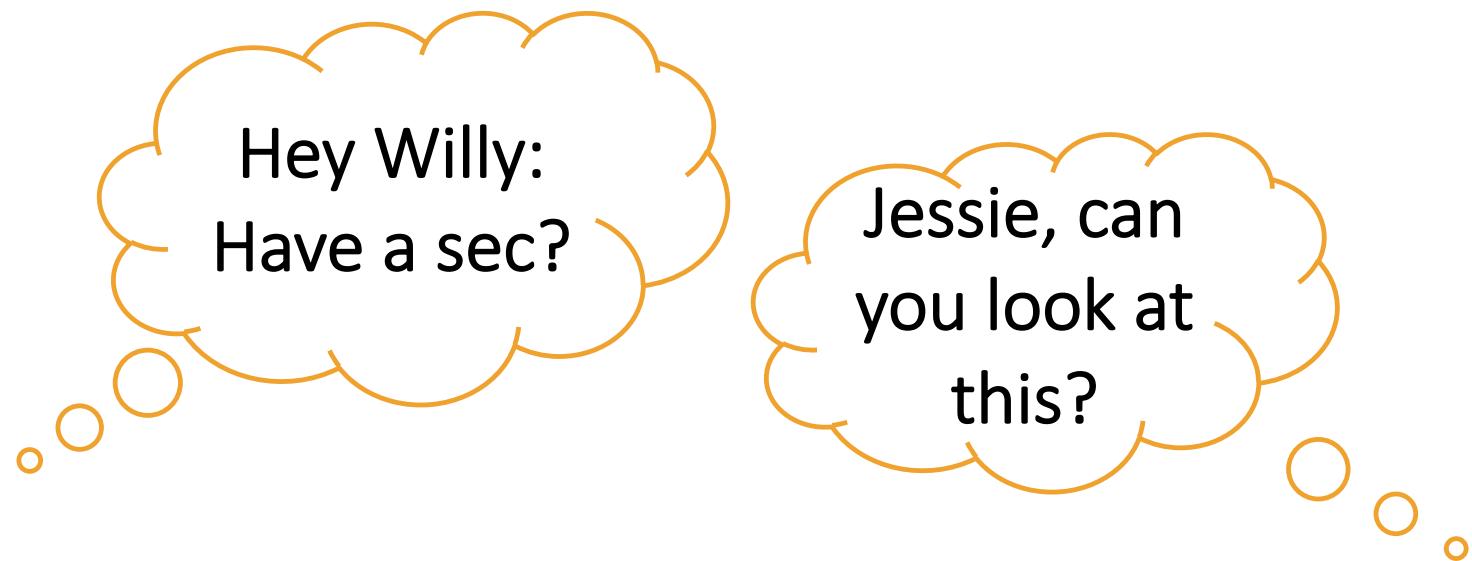
Easy Reconfiguration





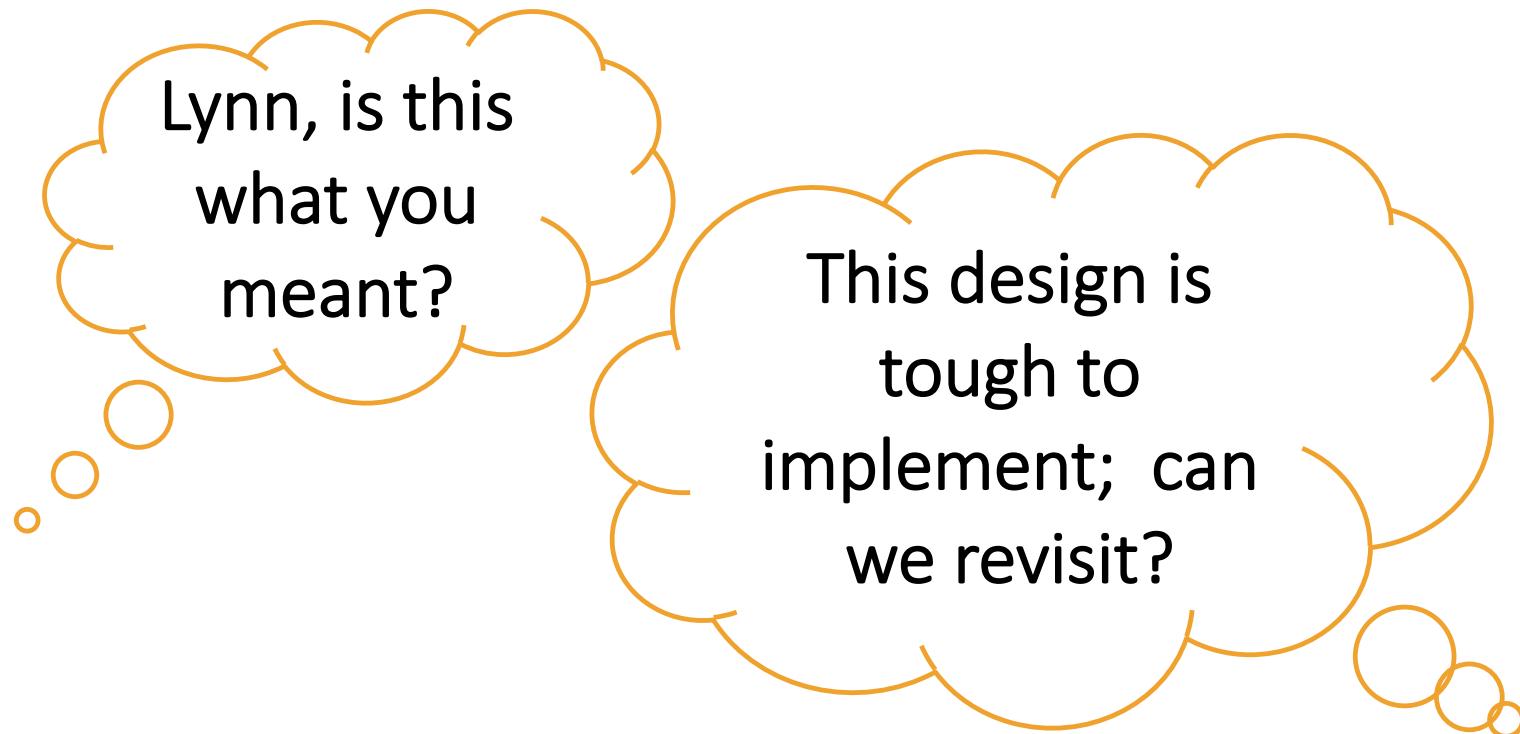
Solution:

## Open Sight Lines



Solution:

## Non-Developers, too



## You Might Try ...

Demolish Cube Walls

Temporary Co-Location

Large shared office

Conference Room

Study Room

Coffee Shop

Lunch with Coworkers, Product Owners ...

# Flex Room



Pai



## Problem: Lack of Visible Progress



© Ron Leishman \* [www.ClipartOf.com/1060054](http://www.ClipartOf.com/1060054)

Solution:

## Short Iterations

1 week or

Short is:

2 weeks or

1 month or ...

## Solution: Good Communication

- Regular Meetings
- Email List
- Wikis
- Tracking System (e.g. JIRA)

# Solution: Planned Work is Public

DURASPACE™

Bess Sadler | Quick Search

Dashboards ▾ Projects ▾ Issues ▾ Agile ▾ Administration ▾

+ Create Issue

hydra Hydra

Create: Story Bug Other ▾

**Road Map**

A list of upcoming versions. Click on the row to display issues for that version.

**View personal road map**

**Future Work**  
Release Notes

Progress:  44 of 138 issues have been resolved

**weekly sprint for May 31**  
Release Date: 31/May/11 Release Notes

Progress:  7 of 7 issues have been resolved

**weekly sprint for June 7**  
Release Date: 07/Jun/11 Release Notes

Progress:  5 of 11 issues have been resolved

**weekly sprint for June 14**  
Release Notes

Progress:  1 of 4 issues have been resolved

Summary  
Issues  
**Road Map**  
Agile  
Change Log  
Popular Issues  
Git Commits  
Subversion Commits  
Labels  
Versions  
Components  
Builds

# Solution:

# Progress is Public

DURASPACE™

Naomi Dushay | Administration Quick Search

Create: Story Documentation Other

## Hydra Hypatia

[Summary](#) [Issues](#) [Road Map](#) [Agile](#) [Change Log](#) [Popular Issues](#) [Subversion Commits](#) [Git Commits](#) [Versions](#) [Labels](#) [Builds](#)

### Summary

**Description**  
Hydra Platform for Access to Information in Archives: A Hydra head that enables processing, arrangement, description and access for born digital archival materials. Built in association with the Mellon AIMS Grant (with UVa, Hull, Stanford & Yale as partners).

**Lead:** Michael Olson  
**Key:** HYPAT

#### Issues: Due

Issue	Due Date
HYPAT-31 Functional requirements for discovery and delivery of item or document level objects	31/Mar/11
HYPAT-81 Create a Stanford Special Collections APO object fixture	05/Jul/11
HYPAT-139 ruby FTK library creates Fedora objects	24/Aug/11

#### Issues: 30 Day Summary

Issues: 5 created and 0 resolved

#### Issues: Updated recently

Issue	Last Update
HYPAT-167 Create links throwing error	13/Oct/11
HYPAT-166	12/Oct/11

Versions: Due

- future
- hot plate
- weekly sprint for September 27

Release Date: 27/Sep/11

### Activity Stream

October 13 Jessie Keck created HYPAT-167 - Create links throwing error When clicking on any of the add asset links you get a "Undefined namespace prefix: /moda:mods" error.

October 12 Jessie Keck created HYPAT-166 - File Assets need to loop through all file assets and not be hard coded to one. The show partials for file assets don't appear to loop through all file asset objects and are just hard coded to 1 or 2 assets. This means added assets in the edit view won't be displayed.

October 11 Michael Olson updated 4 fields of HYPAT-165 - Update Hull Collection FoxML

- Changed the Due Date to "12/Oct/11"
- Updated the Description
- Changed the Assigned to "Peter Chan"
- Changed the Summary to "Update Hull Collection FoxML"

October 11 Michael Olson created HYPAT-165 - Update Hull Collection Fox

October 03 Naomi Dushay created HYPAT-164 - update edit forms to include all relevant fields Naomi is almost finished with the revised views to show all fields in the objects. The edit forms now need to use all these fields. (collection, set, disk image, file objects)

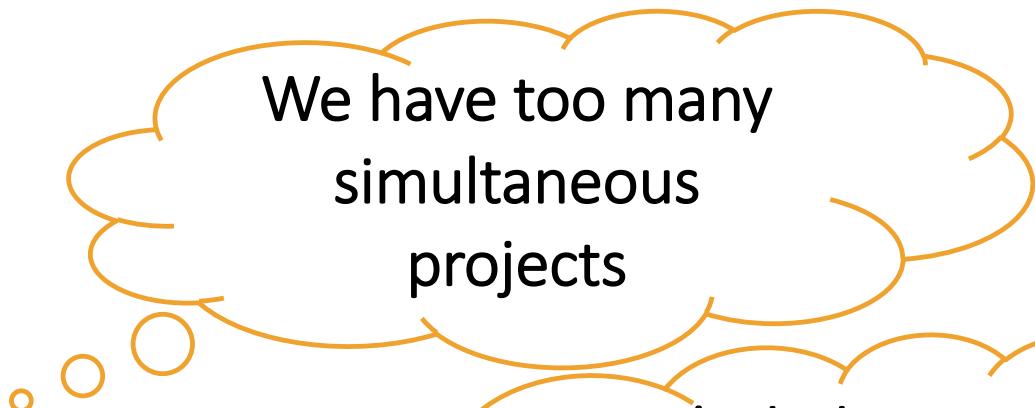
October 03 Naomi Dushay created HYPAT-163 - better error message for URL to show fedora object that doesn't exist

# You May Need (JIRA) Foo

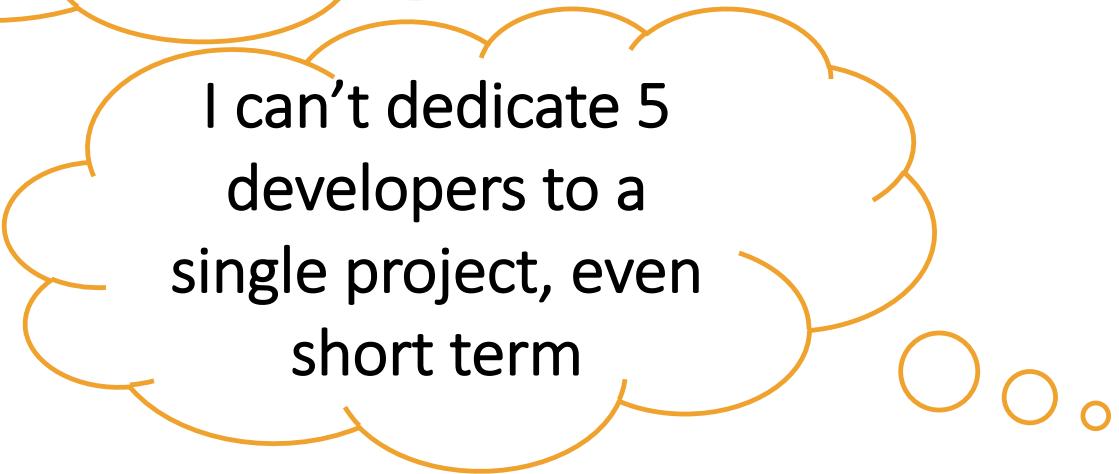
Versioning  
Components  
Workflow

Problem:

## Scrum Unrealistic



We have too many simultaneous projects



I can't dedicate 5 developers to a single project, even short term

## Solution: Take Pieces of Agile

- Short Iterations of Narrow Focus
- Communication Across Roles
- Co-Location
- Pair Programming
- Transparency
- ...

# Experiment!

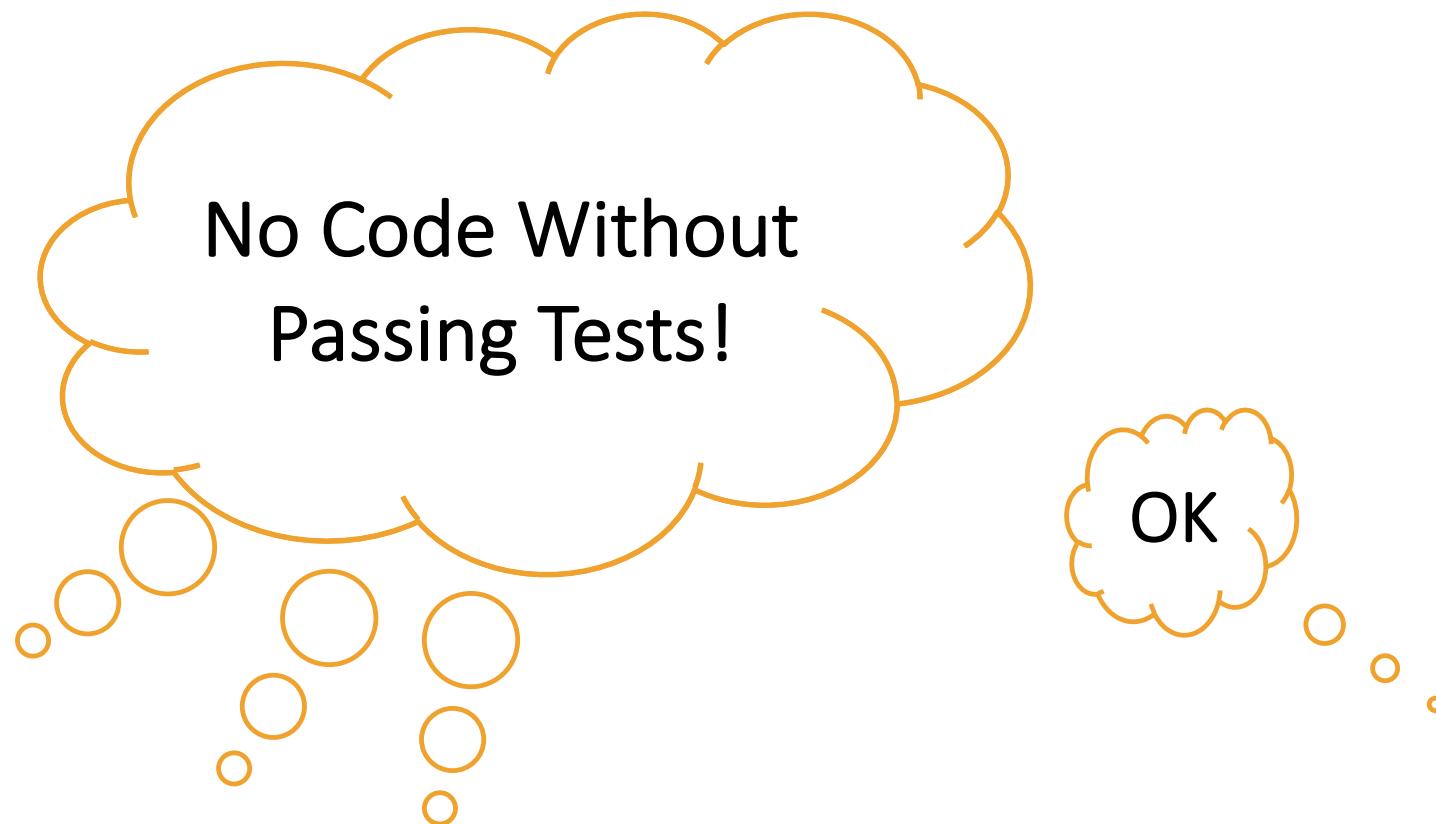
- Scrum
  - Short, Focused Iteration
  - (2?) – 7 People
  - Temporary Co-Location
  - Task Board
  - Pair Programming
  - Daily Stand Ups

Problem:

## No Local TDD



Solution: Requirement of OSS



# Open Source Software

True Group Ownership

Good Communication

Rotating Roles

*Bigger (release manager for pieces)*

*Smaller (meeting moderator, notetaker)*

# Problem: Distributed Developers



(Eddie Shin)



## Solution: Realtime Contact

Weekly Check-Ins



As Needed



Face to Face!



Problem:

## Developer Distrust

Their stuff is  
always buggy

I hate his  
code

I could do  
this faster  
myself ...

... if I  
had time

## Solution: Good Development Practices

- ↗ Automated tests
- ↗ Continuous Integration
  - ↗ Automatic Notifications
- ↗ Code Coverage Data
- ↗ Transparency
- ↗ Documentation Coverage Data

Solution: No Code Without Tests

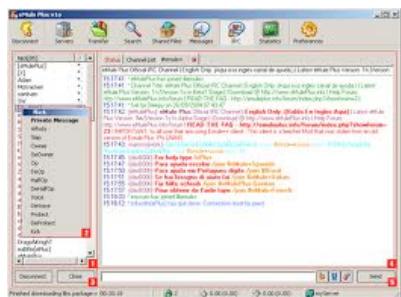
# Solution: Test Coverage Transparency

```
125      @response, @document = get_solr_response_for_doc_id(pid)
126      if reader?
127          @downloadable = true
128          break
129      end
130  end
131
132  if @downloadable
133      if @file_asset.datastreams_in_memory.include?("DS1")
134          send_datastream @file_asset.datastreams_in_memory["DS1"]
135      end
136  else
137      flash[:notice]= "You do not have sufficient access privileges to download this document, which has been marked private."
138      redirect_to(:action => 'index', :q => nil , :f => nil)
139  end
140 end
141 end
142
143 end
```

Solution: Automated Test Runs

# Solution: Test Result Transparency

```
jcmeloni [89369b87@gateway/web/freenode/lp.137.54.155.135] entered the room. (11:38:17 AM)
11:47:19 AM hydra_hudson_bot: Project om build #7: STILL FAILING in 44 sec: http://hudson.projecthydra.org/job/om/7/
11:47:20 AM hydra_hudson_bot: Matt Zumwalt: starting nokogiri sanity check spec for hudson
anarchivist left the room (quit: Remote host closed the connection). (12:00:17 PM)
anarchivist [-anarchivi@unaffiliated/anarchivist] entered the room. (12:03:15 PM)
jcmeloni left the room (quit: Page closed). (12:07:24 PM)
You have disconnected (12:09:43 PM)
You have connected (12:23:54 PM)
12:29:15 PM hydra_hudson_bot: Project active_fedora_fail build #3: STILL FAILING in 9 min 43 sec: http://hudson.projecthydra.org/job/active\_fedora\_fail/3/
12:29:16 PM hydra_hudson_bot: Matt Zumwalt: debugging hudson
12:32:43 PM hydra_hudson_bot: Project om build #8: STILL FAILING in 43 sec: http://hudson.projecthydra.org/job/om/8/
12:32:43 PM hydra_hudson_bot: Matt Zumwalt: trying to pin down hudson nokogiri misbehavior
12:46:44 PM hydra_hudson_bot: Project om build #9: STILL FAILING in 15 sec: http://hudson.projecthydra.org/job/om/9/
12:46:45 PM hydra_hudson_bot: Matt Zumwalt: debugging hudson
12:48:29 PM hydra_hudson_bot: Project om build #10: STILL FAILING in 16 sec: http://hudson.projecthydra.org/job/om/10/
12:49:31 PM hydra_hudson_bot: Project om build #11: STILL FAILING in 29 sec: http://hudson.projecthydra.org/job/om/11/
12:51:18 PM hydra_hudson_bot: Yippie, build fixed!
12:51:18 PM hydra_hudson_bot: Project om build #12: FIXED in 42 sec: http://hudson.projecthydra.org/job/om/12/
12:51:19 PM hydra_hudson_bot: Matt Zumwalt: debugging hudson
```



# XML Tools



Last stable: 19 days (47 sec)

[CFB](#)

[Catalog Service](#)

[Copyright Renewals](#)

[DMS Index](#)

[DOR Workflow Service](#)

[DOR-Services Gem](#)

[DatabasesAZ Indexer](#)

[GATT Digital Library](#)

[Google GRIN Download](#)

[Hydra Eems](#)

[Hypatia](#)

[Image Gallery](#)

# Solution: Auto Change Notification

```
You have connected (3:02:32 PM)
solrizer-git [~solrizer-@sh1-ext.rs.github.com] entered the room. (3:18:38 PM)
3:18:38 PM solrizer-git: solrizer: master      * f707fa8 (1 files in 1 dirs): Moving doc rake task out of the solrizer namespace. - http://bit.ly/lBBoHP
solrizer-git left the room. (3:18:38 PM)
eddies left the room (quit: Quit: Leaving.). (4:06:28 PM)
darthmolly left the room (quit: Quit: darthmolly). (4:07:32 PM)
```

---

Commit: 936049f5144f6f3d76c0f926fb5bb85f96f894f9

<https://github.com/sul-dlss/hydra-hydrus/commit/936049f5144f6f3d76c0f926fb5bb85f96f894f9>

Author: Matt Zumwalt <[matt.zumwalt@yourmediashelf.com](mailto:matt.zumwalt@yourmediashelf.com)>

Date: 2011-04-30 (Sat, 30 Apr 2011)

Changed paths:

- A README
- A Rakefile
- A app/controllers/application\_controller.rb
- A app/helpers/application\_helper.rb
- A config/boot.rb
- A config/database.yml
- A config/environment.rb
- A config/environments/development.rb

Solution: Change Transparency

Solution: Public, Shared Code