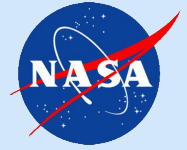


Ground System Architectures Workshop GMSEC SERVICES SUITE (GSS) An Agile Development Story

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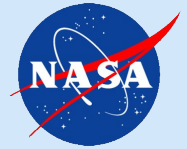
Session 11E:
Adopting Agile Ground
Software Development
March 15th 2017
Los Angeles, California

Agenda

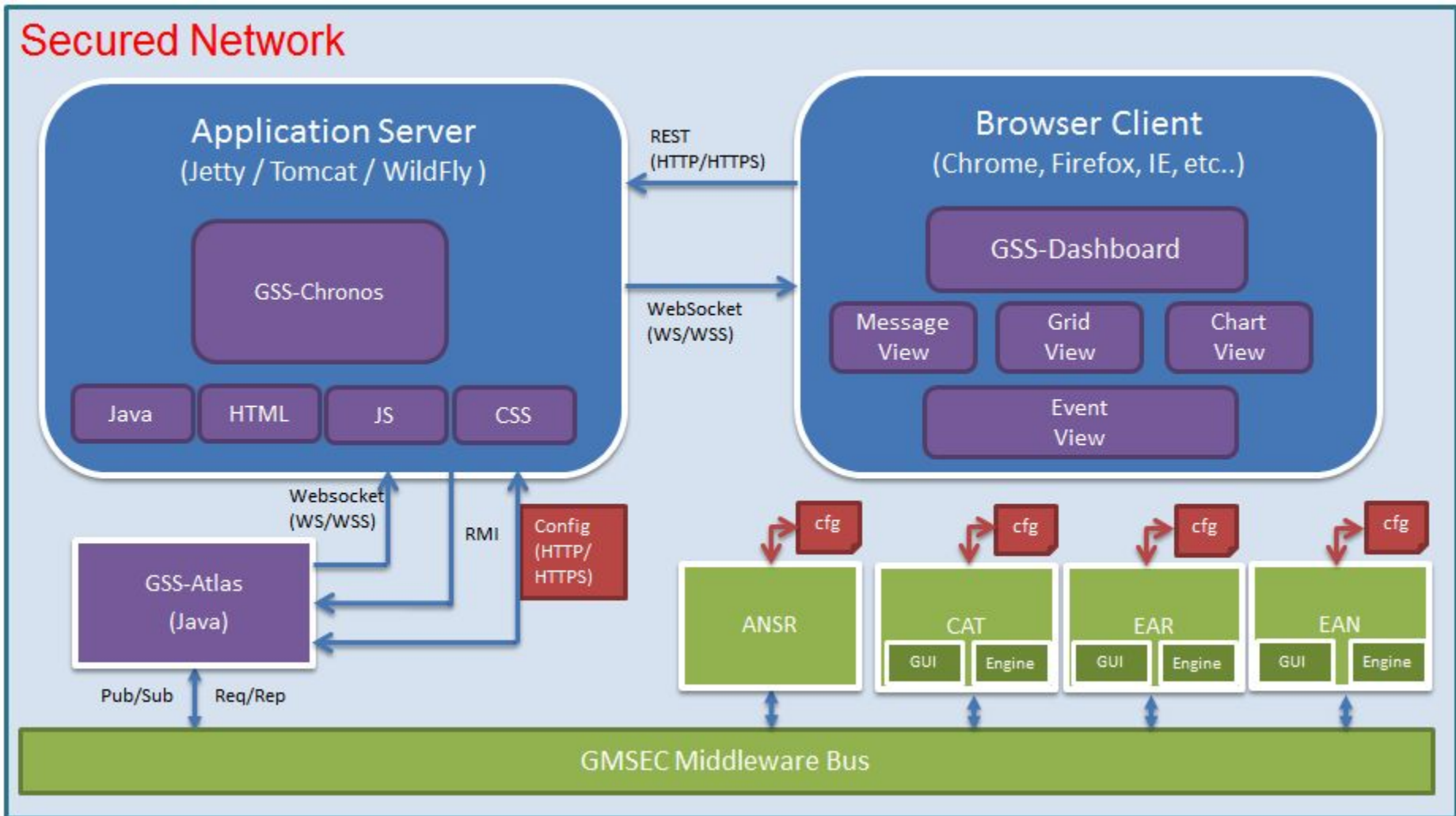


- GSS Background
- Brief Intro to Agile
- Why Agile and GSS Challenges
- Takeaways

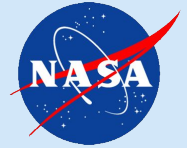
GMSEC Services Suite (GSS)



Secured Network



Intro to Agile



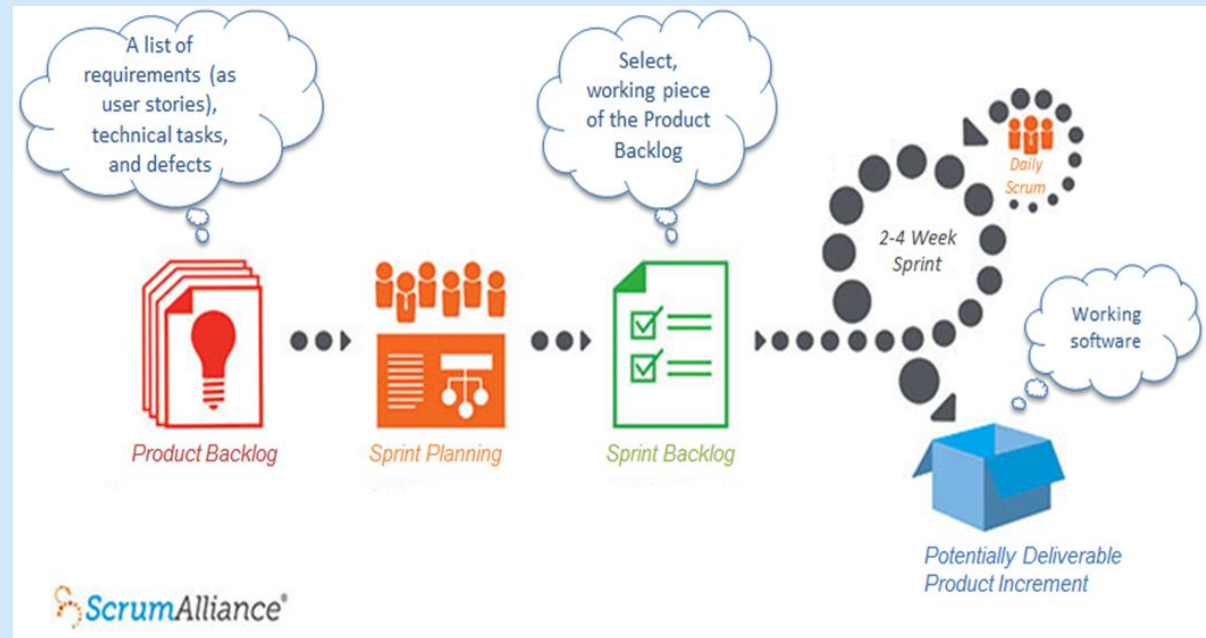
- What is Agile Software Development?

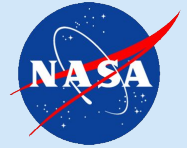
“Describes a set of principles for software development under which requirements and solutions evolve through the collaborative effort of self-organizing cross-functional teams. It advocates adaptive planning, evolutionary development, early delivery, and continuous improvement, and it encourages rapid and flexible response to change.”

Source: https://en.wikipedia.org/wiki/Agile_software_development

- Methodologies

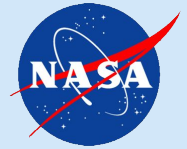
- Scrum
- Kanban
- Feature Driven Dev.
- Adaptive System Dev.
- Dynamic Systems Dev.
- Lean Software Dev.
- Crystal Clear





- Manage work items with IBM Rational Team Concert. Specifically the Change Management module leveraging Scrum Agile project template within RTC (Youtube - Rational Team Concert v4.0.2 ALM)
- Team roles:
 - Product Owner
 - Scrum Master
 - Team Member
 - Stakeholder
- Sprint cycle:
 - 4 weeks
 - Starts at the beginning of the month
- M-W-F stand-up meetings (15 mins)
- Story points:
 - On the order of minutes (XS)
 - Up to one day (S)
 - Couple of days (M)
 - Up to one week (L)
 - Up to two weeks (XL)
- Sprint Review - typically at the end of the month or the beginning of the next month
- Post Sprint Review, Sprint Retrospective are combined into one at the end of each Sprint
- Sprint Planning at the beginning of each Sprint
- Align our major releases with GMSEC releases (two times a year)

Why Agile?



- Engage with the stakeholders early and throughout the development process to make sure that the end product meets their expectations

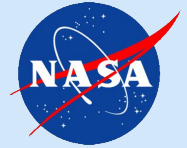
The screenshot displays a web portal interface with two side-by-side message viewer widgets. Each widget has a 'LIVE' indicator and a table of messages. The left widget demonstrates row highlighting, where entire rows are colored based on severity. The right widget demonstrates cell highlighting, where individual cells in the 'SEVERITY' column are colored based on their value.

PUBLISH-...	MESSAGE...	MESSAGE...	COMPON...	SUBJECT	FACILITY	SEVERITY
2017-038-...	MSG	C2CX	GSS-ECHO	GMSEC.T...	TEST-FACI...	
2017-038-...	MSG	MVAL	RoomAlert...	GMSEC.S...	MOC	
2017-038-...	MSG	LOG	ITOS	GMSEC.O...	MOC	1
2017-038-...	MSG	MVAL	RoomAlert...	GMSEC.S...	MOC	
2017-038-...	MSG	LOG	ITOS	GMSEC.O...	MOC	1
2017-038-...	MSG	C2CX	GSS-ATLAS	GMSEC.T...	TEST-FACI...	
2017-038-...	MSG	LOG	ITOS	GMSEC.A...	MOC	3
2017-038-...	MSG	C2CX	GSS-ECHO	GMSEC.T...	TEST-FACI...	
2017-038-...	MSG	LOG	ITOS	GMSEC.O...	MOC	3
2017-038-...	MSG	MVAL	RoomAlert...	GMSEC.S...	MOC	
2017-038-...	MSG	MVAL	RoomAlert...	GMSEC.S...	MOC	
2017-038-...	MSG	MVAL	RoomAlert...	GMSEC.S...	MOC	
2017-038-...	MSG	C2CX	GSS-ATLAS	GMSEC.T...	TEST-FACI...	
2017-038-...	MSG	LOG	ITOS	GMSEC.A...	MOC	4
2017-038-...	MSG	C2CX	GSS-ECHO	GMSEC.T...	TEST-FACI...	

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Row Highlighting vs Cell Highlighting

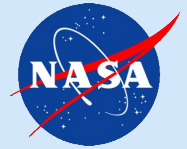
Why Agile?



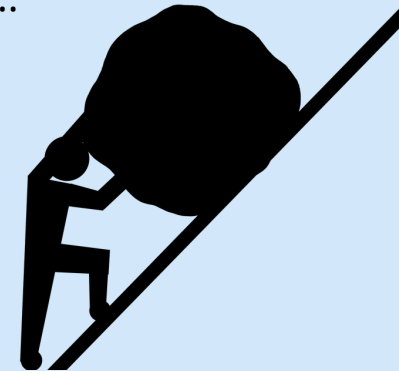
The screenshot shows a web portal titled "Portal v1.1.0" with a "dev" badge in the top left. The navigation bar includes "Home", "Dashboard", "Support", and "User". Below the navigation bar, there is a "Widget" dropdown and a share icon. The main content area features a window titled "note-widget-1486434784665" containing a "Note" form. The form has a yellow header with the word "Note" and a share icon. The text area contains "GPM GPM Nominal" and "Successful power on with 120V supply set to 120.5 Volts. Surge current reached 1.7 Amps". Below the text area is a checkbox labeled "'Enter' to Submit" and a blue "Submit" button. A "Hide Settings" section is expanded, showing fields for "Severity" (Nominal), "Time" (2017-038-02:43:07), "Mission" (GPM), and "Satellite" (GPM). At the bottom of the page, there is a "Display a menu" link and a copyright notice: "© 2015-2016 NASA/GMSEC gmsec-support@lists.nasa.gov".

Enter to Submit or Click to Submit

Challenges



- If one of your stakeholders had a bad pre-conceived notion of Agile...
 - Then the team needs to prove the value of the process
- Some common misunderstandings
 - Agile is anti-planning and undisciplined
 - Where's your 18 month plan?
 - Agile teams don't do documentation
 - Where are your formal requirements, design document, test plans, test procedures?



Change and Configuration Management (ccm) | GSS (Change Management) | My Stuff | Ly, Vuong T 243254463

Project Dashboards | Work Items | Plans | Source Control | Builds | Reports

Plans > All Plans >

Product Backlog

157 items total, 44 loaded items: 34 open, 10 closed | Ends in: --

Plan Details [Edit]

Planned Items [?] | Links | Snapshots | Dashboard | Notes | Product Vision

View As: Work Breakdown | Exclude (10 items excluded) | Type to Filter

Summary	Story	Effect	Priority	Rank	Planned	Owned By
Project Administration	--	--	Unass	1	Back	GSFC-580-GI
Security	--	--	Unass	-	Back	GSFC-580-GI
Documentation	--	--	Unass	-	Back	GSFC-580-GI
Portal	--	--	Unass	-	Back	GSFC-580-GI
Testing / Validation / Performance	--	--	Unass	-	Back	GSFC-580-GI
Services	--	--	Unass	-	Back	GSFC-580-GI

Display a menu

Change and Configuration Management (ccm) | GSS (Change Management) | My Stuff | Ly, Vuong T 243254463

Project Dashboards | Work Items | Plans | Source Control | Builds | Reports

Plans >

Plans

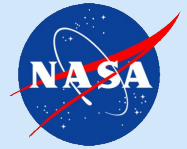
My Current Plans | Current Plans | All Plans

Search... | All Team Areas

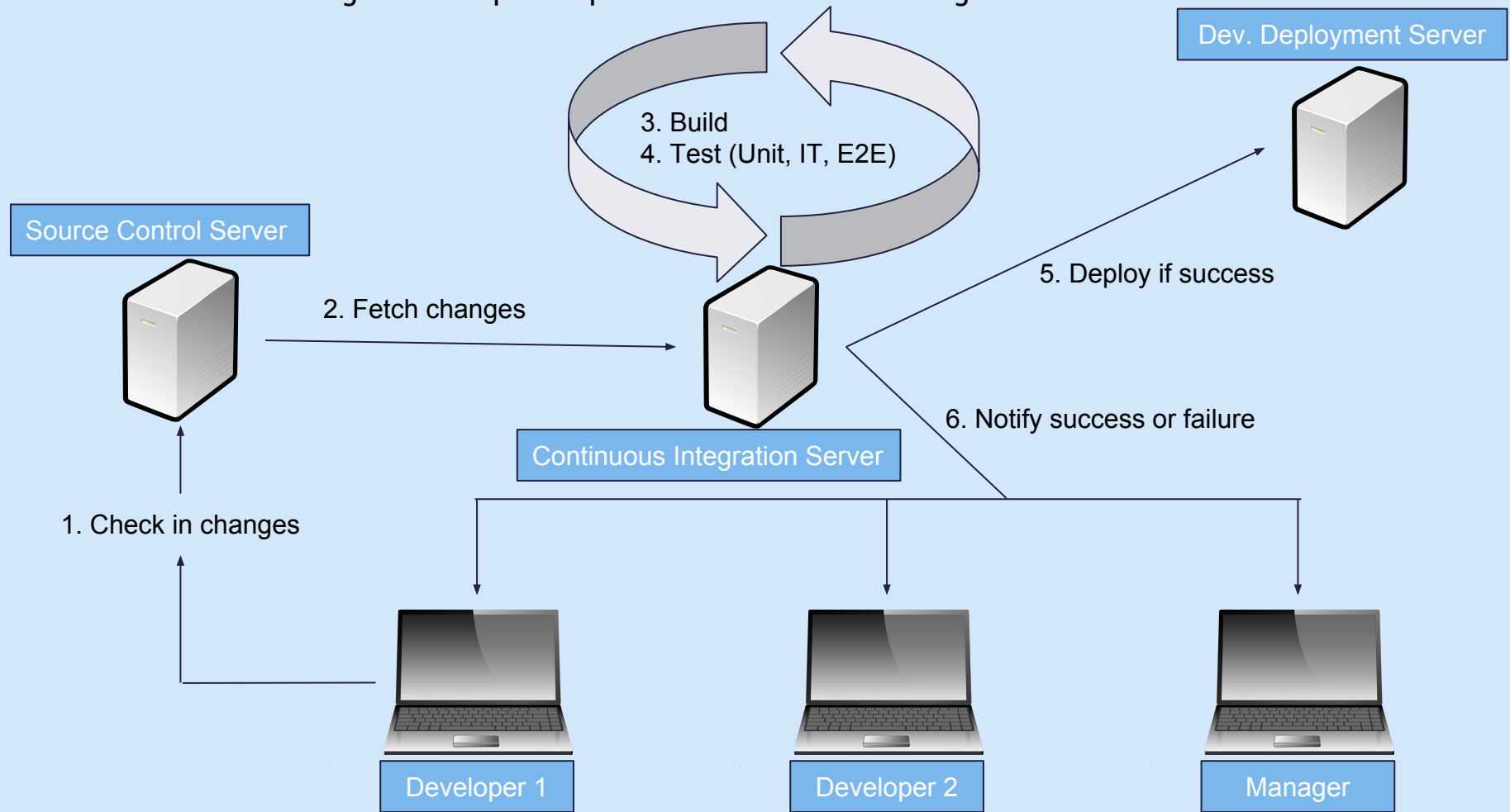
Name	Owner	Actions	Progress
Product Backlog	GSS (Change Manag)		30/152pts 0/157hrs 74%
Sprint 6 (1.1.0) Apr 1, 2017 - Apr 30, 2017			
(1.1) Sprint 6 Backlog	GSS (Change Manag)		-- No Work --
Sprint 5 (1.1.0) Mar 1, 2017 - Mar 31, 2017			
(1.1) Sprint 5 Backlog	GSS (Change Manag)		-- No Work --
Sprint 4 (1.1.0) Feb 1, 2017 - Feb 28, 2017			
(1.1) Sprint 4 Backlog	GSS (Change Manag)		-- 100%
Sprint 3 (1.1.0) Jan 2, 2017 - Jan 31, 2017			
(1.1) Sprint 3 Backlog	GSS (Change Manag)		--
Sprint 2 (1.1.0) Dec 1, 2016 - Dec 31, 2016			
(1.1) Sprint 2 Backlog	GSS (Change Manag)		--
Sprint 1 (1.1.0) Nov 1, 2016 - Nov 30, 2016			
(1.1) Sprint 1 Backlog	GSS (Change Manag)		--
Sprint 7 (1.0.0) Oct 1, 2016 - Oct 31, 2016			
(1.0) Sprint 7 Backlog	GSS (Change Manag)		--

Display a menu (1.0.0) Sep 1, 2016 - Sep 30, 2016

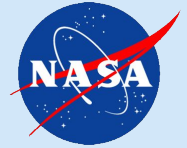
Continuous Integration



- At the heart of our Agile development practice is Continuous Integration



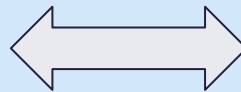
Why Agile?



- Allow for change
 - Opportunity to update/reprioritize plans based on customer inputs
 - Personnel flexibility for non-full time team members
- Cross functional teams
 - Encourage team members to take on different roles
 - Minimize the “single expert” problem
- Predictable costs and schedule
 - Understand your team productivity and level of effort to complete tasks
- Immediate feedback - bidirectional

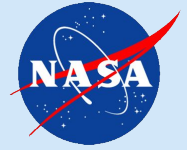


Customer



Team

Why Agile?



- Focus on users and providing them business value
 - Stakeholders! Stakeholders! Stakeholders!

The screenshot displays a software interface with two main components: a chart and a data table.

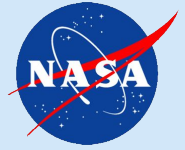
Chart Widget (chart-widget-1486398036688): A line chart titled "Chart" showing "EU-Value" on the y-axis (0 to 100) against time on the x-axis (16:23:40 to 16:24:05). The chart features a black line with circular markers representing data points. Horizontal lines indicate limits: YH (yellow), RH (red), YL (yellow), and RL (red).

Grid Widget (grid-widget-1486398038715): A table with the following data:

PARAM...	VALUE	EU-VAL...	RAW-VA...	TEXT-VA...	LIMIT	UNITS	TIME-ST...
INT_TEMP	71.06	71.06	7106			Deg F	2013-199...
EXT_TEMP	72.15	72.15	7215			Deg F	2013-199...
DOOR	CLOSED		1	CLOSED			2013-199...
HUMIDITY	34.7	34.7	3470			%	2013-199...

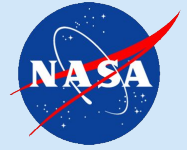
Message Viewer Widget (message-viewer-widget-1486398030455): A table displaying a list of messages with columns: PUBLISH-..., MESSAGE-..., MESSAGE-..., COMPON-..., SUBJECT, FACILITY, and SEVERITY. The table includes a "LIVE" indicator and a "Clear Screen" button. Several rows are highlighted in orange and red, indicating specific message types or severities.

Is that what you called a Demo?



Challenges

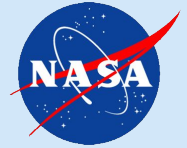
- Maintaining up-to-date documentation
- Maintaining up-to-date automated testing environment
- Ensuring stakeholders consistent involvement
- Helping management to understand the benefits of the Agile methodology



Takeaways

- Early and frequently stakeholders involvement and buy-in is essential
- Use agile techniques to build in quality and automate processes
- Happy development teams produce better software
- Agile is not the wild-west: it requires a lot of leadership, communication, and discipline to be successful

Acronyms



ANSR	Alert Notification System Router
CAT	Criteria Action Table
E2E	End-to-End
GEDAT	GMSEC Environment Diagnostic Analysis Tool
GOTS	Government Off-The-Shelf
GPD	GMSEC Parameter Display
GRASP	GMSEC Remote Data Access Tool
GREAT	GMSEC Reusable Event Analysis Toolkit
IT	Integration Test
RAA	Room Alert Adapter
SA	System Agent