

ITEA Technology Review July 2011

# Using Agile Software Development to Create an Operational Testing Tool

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# APL

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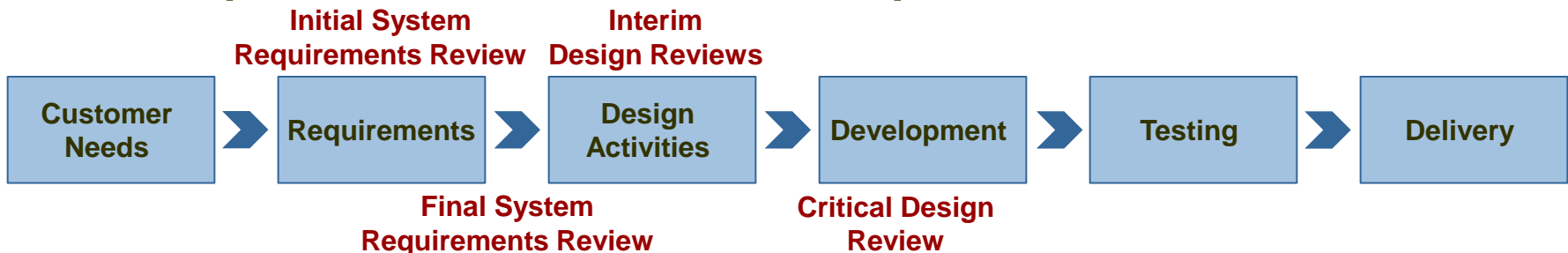
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# Motivation

- **Rapid product development – User needs definition to concept development to capability delivery within two years**
- **Classic Systems Engineering method did not seem appropriate for rapid product development**
  - Not enough time to complete the SE cycle
  - Not enough money to fund the work required
- **Blended classic Systems Engineering with an agile design and development approach**
  - Meet rapid design and development needs but
  - still deal with expectations of sponsor for traditional acquisition deliverables

# The Blended Approach

- Determined customer needs through multiple knowledge elicitation sessions
- Created total system requirements and top-level design upfront for sponsor approval
- Used agile methodology know as Scrum during system development
- Each sprint had a defined focus and product



# The System's Work Packages

Color by: Story Points | Lane headings: Count | (select property...)

Select tree: None | View as: List | Grid

Maximize view | Link to this page | Add / remove lanes

NEW (10)	REVIEW COMPLETE (4)	READY FOR DEVELOPMENT (5)	IN DEVELOPMENT (4)	READY FOR TESTING (4)	IN TESTING (0)	READY FOR DEMO (8)	DEMONSTRATED (23)
#222 Automatically Associate Data to MOS #301 Test Active Directory vs. Roles #441 Configure MOC Batch Collector #452 Export GPS Truth Data #455 Export SAS Data #203 Maintain User Account (Active Dir) #396 Create Test Analysis GUI Shell #442 Configure BWC Batch Collector #454 Export Chat Data #511 2971	#268 Create Data Folders #488 Data Archive Utility #303 Configure IP Data Source #509 Collector Status List	#193 Maintain Data Tolerances #486 Audio Playback and Transcript Utility #501 NSITE Database Mapping for CD-2 #299 Collection Status Utility #500 NSITE Database Mapping for JREAP-C	#395 Maintain Simple CD2 Triggers #502 TIAC csv Mapping for RRDL #485 NRT Processor Utility #510 Background Audio Transcriber	#432 Configure Notes Batch Collector #394 Maintain Simple RRDL Triggers #444 Configure Interview Batch Collector #393 Define MSEL Log File		#269 Selectable KPP Measures #169 Maintain Measure of Performance (MOP) #204 Maintain Test Role #296 Maintain Simple Chat Triggers #298 Maintain Simple JREAP-C Triggers #172 Associate a Measure to Measures of Performance #177 Maintain Test Event #487 Batch Collection Utility	#277 Maintain Simple Test Objectives #265 Associate Test Team Notes with an MOPIS #263 Associate Command Log files with an MOPIS #260 Associate IRC Chat Logs with an MOPIS #258 Associate FAA RADAR data with an MOPIS #256 Associate Interview Audio Clips with an MOPIS #223 Automatically Associate MOPIS to Test #221 Associate Microphone Audio Clips with an MOPIS #168 Maintain Test Measures #178 Maintain Test #176 Develop Test Measurement Taxonomy #391 Maintain Process Model Threads #266 Imported System Log Files with an MOPIS #264 Truth Data Log files with an MOPIS #261 Associate Screen Images with an MOPIS #259 Associate JREAP-C data files with an MOPIS #257 Associate SENTINEL RADAR data with an MOPIS #232 Test Mgmt Shell GUI #229 Set Measurement Flags #159 Maintain Data Element #170 Associate Data Element to Measure of Performance #175 Maintain Test Run #297 Maintain Simple Audio Triggers

# Contents of a Work Package

## Collection Status Utility

(v50 - Latest version, last modified 21 days ago)

(no tags set)

### Narrative

As a Configuration Manager, I can select a Collector Status utility, so that I can monitor the real-time collection process.

### Acceptance Criteria

- Verify that, the Video File Configurator allows the Configuration Manager to:
  - set up (name) a destination directory for video files.
  - tag (via file re-naming convention?) files from the video logger w/ Test Event & Test Run.
  - assign a (position/audio source) name to each (of four) audio logger channels.
  - modify current configuration (display naming structure)
  - clear current configuration
- Verify that, the Audio File Configurator allows the Configuration Manager to:
  - set up (name) a destination directory for audio files.
  - tag (via file re-naming convention?) files from the audio logger w/ Test Event & Test Run.
  - assign a (position/audio source) name to each (of 16) audio logger channels.
  - select (filter) un-wanted channels from being stored in the OC2iS file system – OC2iS ignores these channels.
  - modify current configuration
  - clear current configuration
- Verify that the User is able to see the amount of storage space used (in GB) vs. capacity in the drives the RT collectors are writing to.
  - up to three (TH) or four (DBJ) storage drive locations on the OC2iS system should be able to be monitored.
  - this status (scrolling bar graph?) should change colors
    - at 50% unused capacity (YELLOW)
    - at 25% unused capacity (RED)
- Verify that there is a Network Time Protocol (NTP) Server area that allows the Configuration Manager to:
  - see the current NTP Server time being broadcast to all machines,
  - allows the Configuration Manager to call the NTP server configuration window (via http: script?),
  - see the status of NTP polling of all machines on the OTS network.
- Verify that the NTP Server polls all machines on the OTS network every 10 seconds and checks to see that:
  - time is accurate to the second for the last 5 poll cycles – GREEN
  - there is a time error > 1sec for up to two of the last 5 polling cycles – YELLOW
  - there is a time error > 2sec or an error >1sec for 3 or more of the last 5 polling cycles.

## Mockup

When this application is first opened the configuration manager must select a test event/run and then everything that happens until the application is closed reports on or impacts that test event/run.

OC2iS Server <Test> <Test Event/Run> <Test Dates> <Current Date> <Current Time>

File Help

OC2iS Collector Status

Source Name	Description	Data Type	Status	Alerts and Comments
<input checked="" type="checkbox"/> Data Source 1	Description	CD2 Radar	Running normally	Settings and Log
<input checked="" type="checkbox"/> Data Source 3	Description	RRDL	Low activity	Put up alert window when status goes to red, user must close alert manually (probably should log them somewhere as well).
<input checked="" type="checkbox"/> Data Source 4	Description	Link-16	Packet error	Do we need trending information on the packet errors?
<input type="checkbox"/> Data Source 2	Description	CD2 Radar		I think it would be better to have red for no activity, orange for packet errors, yellow for low activity and green for normal. As it will be blank if it isn't selected, and that could cause some confusion.

OC2iS Collector Status

Configure IP Data Source

Batch Collectors

NRT Processors

Audio Playback & Transcription

Data Archiving

Storage Usage Disc A

Storage Usage Disc B

Storage Usage

100%

50%

0%

Could have line change color when passes threshold.

NTP Status

Not sure what we need to show here.

Settings and Log <Data Source Name>

Low packet interval to alert on: 5 sec

Alert Log

Time	Alert content

Comment Log

Time	Alert content

Comment

Comment on this collector's status

Add

Clear

Storage Details will provide more detail on each of the storage devices and NTP could provide details on the times of the various systems connected to it.

Disable clicking on a row will bring up a detailed data collector status that shows what is being collected and stored. Basically, the collector interface, which you will also be able to get to through the batch collectors button on the left.

This would be a good place to use Chris's nifty table sorting feature.

Settings and Log button brings up the window shown below.

# Successes

- **Satisfied sponsor need for requirement and configuration item documentation in early stages**
- **Established a collaborative development lab to maintain contact with customer/sponsor/remote team members during project execution**
  - Telecon lines, web-based collaboration tools
- **Self-synchronization of the team – shift roles and activities to meet current needs**
  - Example: Hardware architect also tests code
- **Product owner, developers and tester in same lab during same hours to facilitate communication beyond daily update meetings**
  - All but one of the team members are part-time – work afternoon together in lab.
- **Adaptable to new customer needs and suggestions during development**