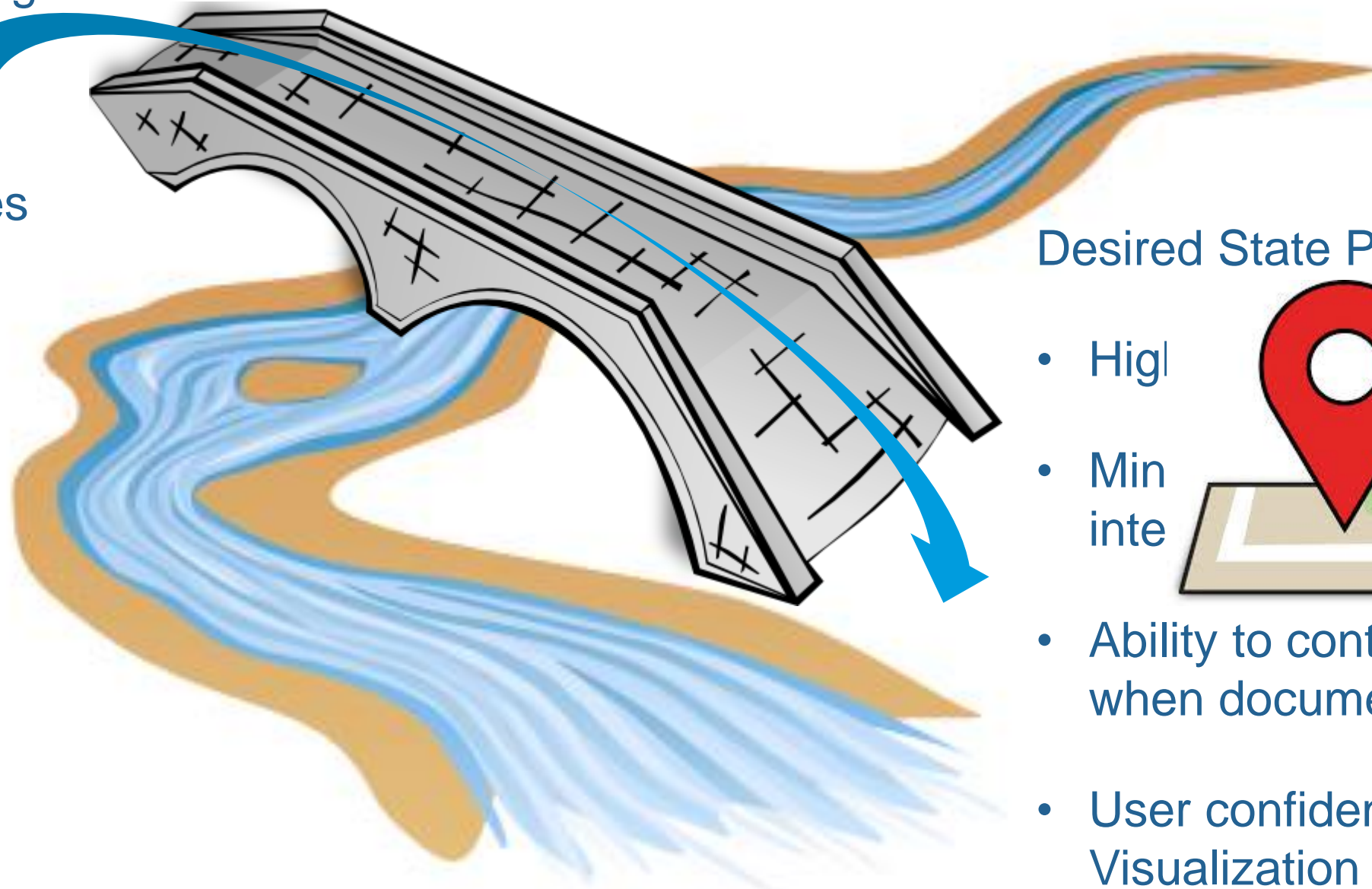




## Current State Publishing

- Low user confidence
- Poor user experience
- Difficult to scale in a complex working environment
- Inability to troubleshoot
- **Lack of user confidence in publishing**



## Desired State Publishing

- High user confidence
- Minimal user intervention
- Ability to control how and when documents publish
- User confidence and ROI on Visualization in PTC Windchill
- **It just works!**



## Phil Miller - Engineering Systems Analyst

15 years with Flowserve

8 Years in Engineering IT

3 Years Windchill Experience since 10.1 F000

Responsible for:

- Windchill, Engineering Infrastructure, Other Engineering Applications
- Workstations, Servers, Virtual infrastructure, Networking, Storage, Design Tools, Data Management, Engineering Applications

**Other Duties as Required....**



## Robert Morrison - Manager, Products & Innovation

8 years with I-Cubed / KPIT

8 Years in PLM Services Domain

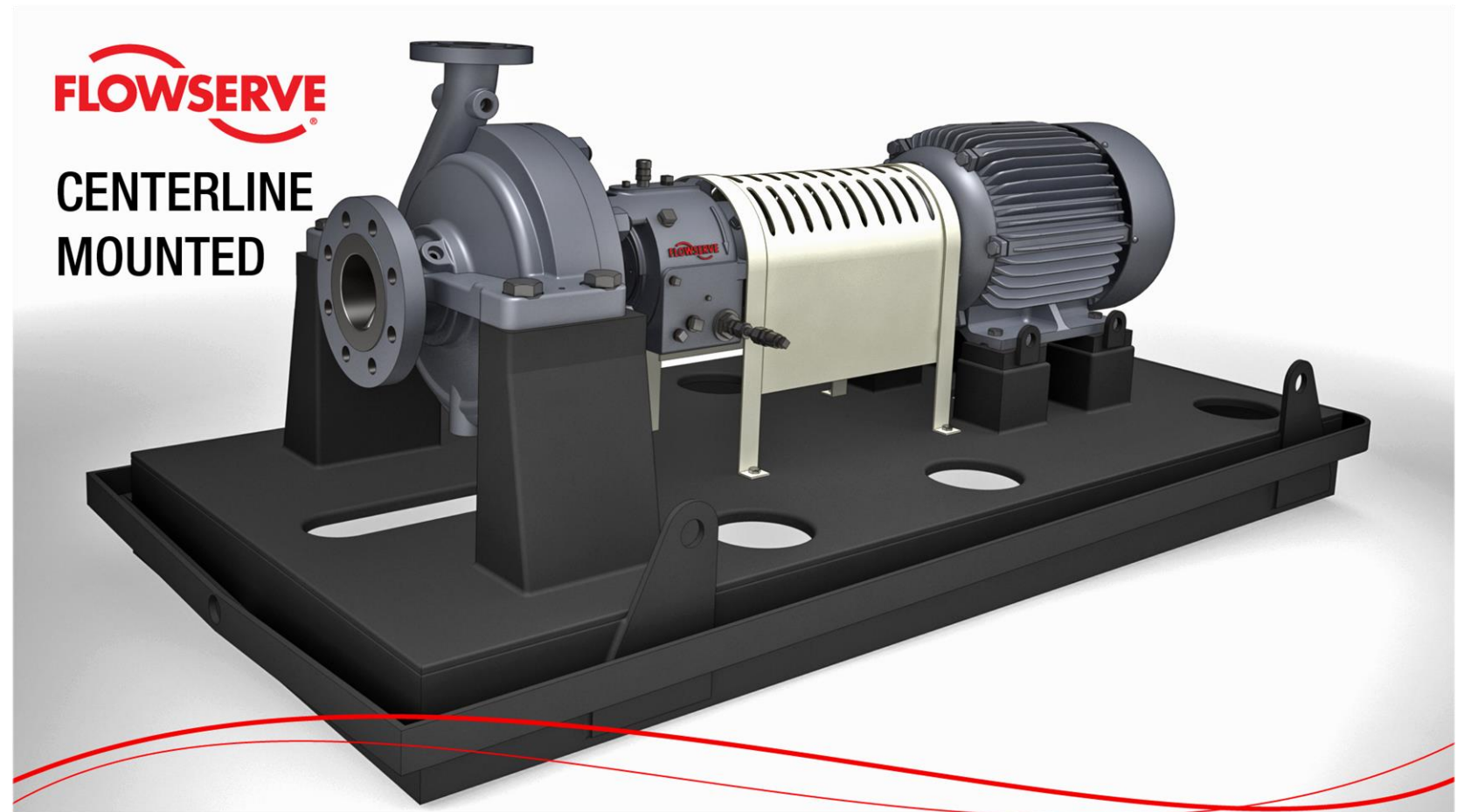
8 Years Windchill Experience since 8.0 M050

Responsible for:

- Product Development in ePLM SBU
- Solution Architect specializing in Visualization & CAD data management

## About Flowserve

- Pumps, Valves, Seals, and Services.
- Power Generation, Chemical Processing, Water Resources, Oil & Gas, and General Industry
- \$4.87 Billion Annual Revenue
- 250 Locations Globally
- 18,000 employees





## Design and Data Management

- Many engineering facilities
- PTC Creo, Inventor, Solidworks, AutoCAD
- Diverse design standards across locations and product lines
- Diverse historical data management strategies and applications
- Diverse requirements across locations, product lines, and engineering teams



## Beginning our down our path

Project start conditions – Desired Outcomes

## Publishing State at Flowserve

- Publishing Failure Rates – For August of 2014

6 Locations using PTC Windchill

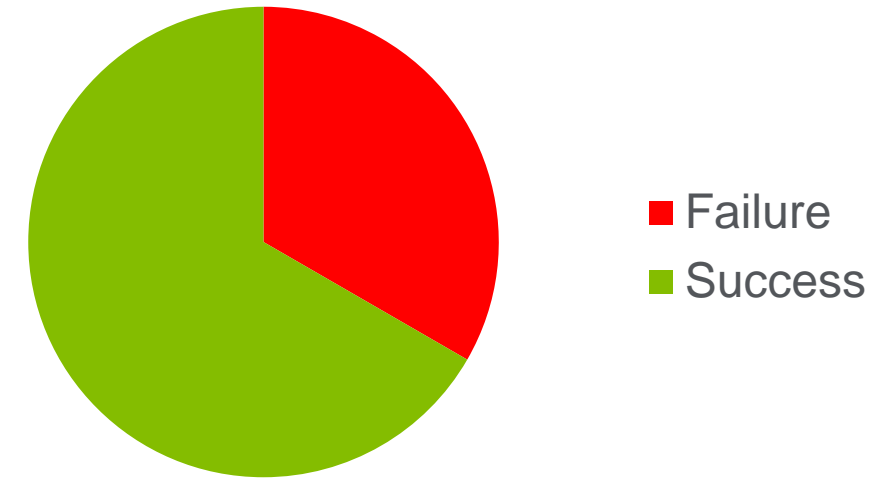
- PTC Creo 25%
- SolidWorks 25%
- Inventor 47%
- Office 1.68%\*
- Unknown File types 100%

\* This measurement does not reflect the usefulness of what was being published, or how long it took for it to publish.

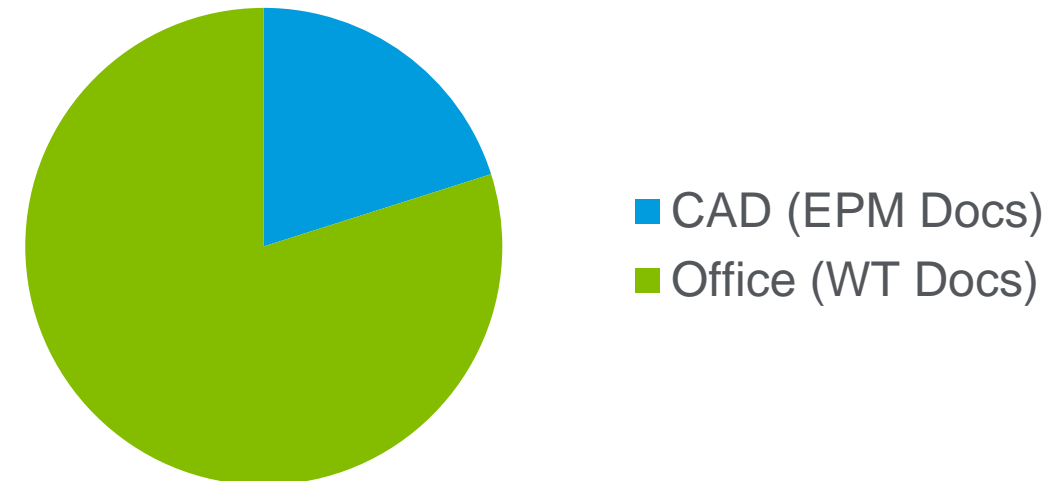
- Inexperience Etc..



### EPM Documents



### Document types





Sales Order View

P...	Item Type					F...	F...	Cust ...	Pump Type	Q...	Description	Flowserve DRT Title	Customer Document Title	State
		Temporary Coversheet from TEMPLATE												
▼	617029-002-31400-02									0	12	3.1 CASING	CASING - MATERIAL INSPECTION CERTIFICA...	Com
	617029-002-31400-02													
	FPN026-MaterialCert													
		Temporary Coversheet from TEMPLATE												
▼	617029-002-31400-03									0	12	3.1 CASING	CASING - MATERIAL INSPECTION CERTIFICA...	Com
	617029-002-31400-03													
	FPN026-MaterialCert													
		Temporary Coversheet from TEMPLATE												
▶	617029-002-31410-01									0	8	3.1 COVER  STUFFING BOX	COVER STUFFING BOX - MATERIAL INSPECTI...	In W
▶	617029-002-31410-02									0	8	3.1 COVER  STUFFING BOX	COVER STUFFING BOX - MATERIAL INSPECTI...	In W
▶	617029-002-31430-01									0	8	3.1 IMPELLER	IMPELLER - MATERIAL INSPECTION CERTIFIC...	In W
▶	617029-002-31430-02									0	8	3.1 IMPELLER	IMPELLER - MATERIAL INSPECTION CERTIFIC...	In W
▶	617029-002-31710-01									0	8	3.1 CASING DRAIN	CASING DRAIN - MATERIAL INSPECTION CER...	In W
▶	617029-002-31710-02									0	8	3.1 CASING DRAIN	CASING DRAIN - MATERIAL INSPECTION CER...	In W
▶	617029-002-31710-03									0	8	3.1 CASING DRAIN	CASING DRAIN - MATERIAL INSPECTION CER...	In W
▶	617029-002-11110-01									0	1	CE PLEUGER NON-CAVERN DECLARATION OF ...	CE PLEUGER NON-CAVERN DECLARATION OF ...	In W
▶	617029-002-50330-01									0	1	PUMP CERTIFIED STANDARD CURVE	PUMP CERTIFIED STANDARD CURVE	In W
▶	617029-002-30980-01									0	12	MATERIAL CERTIFICATES PACKAGE	MATERIAL CERTIFICATES PACKAGE	In W
▶	617029-002-69010-01									0	1	COUPLING ENGLISH LANGUAGE IOM	COUPLING ENGLISH LANGUAGE IOM	Wai
▶	617029-002-69150-01									0	1	COUPLING DECLARATION OF CONFORMITY	COUPLING DECLARATION OF CONFORMITY	Wai
▶	617029-002-60010-01									0	1	MOTOR GENERAL ARRANGEMENT DRAWING	MOTOR GENERAL ARRANGEMENT DRAWING	Wai
▶	617029-002-66000-01									0	1	SEAL SECTIONAL DRAWING & PART LIST	SEAL SECTIONAL DRAWING & PART LIST	Wai
▶	617029-002-69000-01									0	1	COUPLING DRAWING	COUPLING DRAWING	Wai
▶	617029-002-60030-01									0	1	MOTOR DECLARATION OF CONFORMITY	MOTOR DECLARATION OF CONFORMITY	Wai
▶	617029-002-60120-01									0	1	ENGLISH LANGUAGE MOTOR IOM	MOTOR ENGLISH LANGUAGE IOM	Wai
▶	617029-002-66020-01									0	1	SEAL IOM - ENGLISH LANGUAGE	SEAL IOM - ENGLISH LANGUAGE	Wai

Information

Attributes Team History Packages

Internal Quality DRT Live Item Sales Order Quality

All In Use Non-empty

Dates, Dates, Dates

Task Target Completion Date:  
17-May-2013  
Plan Point Type:

Coversheet Info

Coversheet to use:  
Customer  
Content in Data book:

Imaging Fields

Imaging Project:  
Border Size:

Other Key Fields

DRTID:  
31400  
Customer Document Description:

Miscellaneous

Dirty:  
false  
Task Instructions:

## Goal of Project

- **Targets Identified**
  - Poor Configuration
  - Inexperience
- **Outlined Goals**
  - > 98% Success Rate
  - Correct existing WVS configuration
  - Develop a filter to support a diverse design environment
  - Admin Training
  - Custom DWG to PDF conversion
  - Improve WVS performance
  - Develop a strategy for scaling WVS to support new deployments

# Walking down our path

Making publishing work for you

## Obstacles in our path

- Configuration & deployment
- Education around publishing
- Enhancements developed
- Defects addressed



# Choosing the right path

Configuration & Deployment

## Best Practices Settings & Explanation – MCAD Configuration

- AutoldleStop

AutoldleStop (sec):

- AutoBusyStop

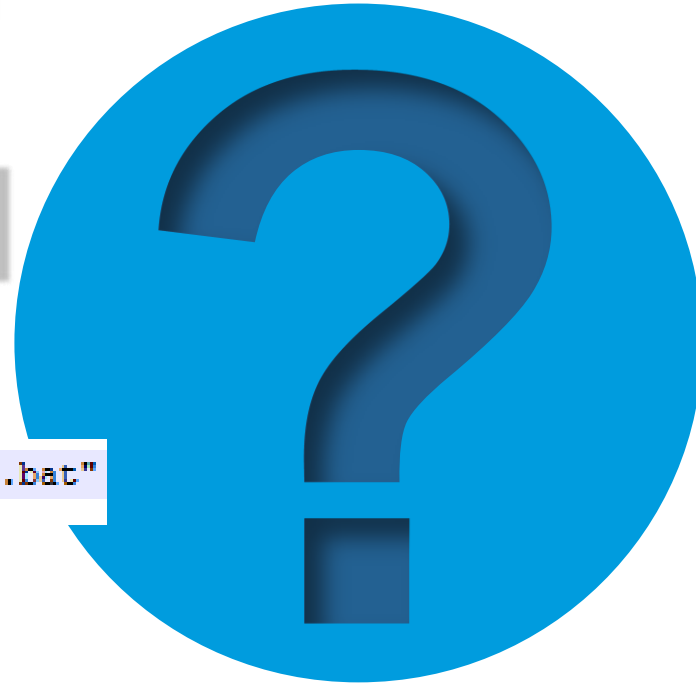
AutoBusyStop (sec):

- Worker Restart Scripts

```
-su "c:\ptc\creo_view_adapters\bin\swstartup.bat"
```

- Restart Worker Interval

Exit Adapter After   Conversions



## Best Practices Settings & Explanation – LiveCycle Configuration

- **Disk Usage**

- Felix HPROF dumps
  - AEM System Console (<http://host:port/system/console>)
  - Stop Bundle:  
org.apache.felix.webconsole.plugins.memorusage
- Disk Usage Clean up as part of JBOSS startup
  - %APPDATA%\Local\Temp
  - <LC Install>\jboss\log
  - <LC Install>\jboss\tmp

- **Memory & Garbage Collection Settings**

- <LC\_Install>\jboss\bin\run.conf.bat

```
set "JAVA_HEAP_ARGS=-Xms8192m -Xmx8192m -XX:PermSize=512m -XX:MaxPermSize=512m"
```

```
set "JAVA_OPTS=%JAVA_OPTS% -server -XX:NewRatio=1 -XX:MaxTenuringThreshold=100 -XX:+UseParallelGC -XX:+UseParallelOldGC -XX:ParallelGCThreads=4"
```

## Best Practices Settings & Explanation – LiveCycle Configuration

### DDX Gotchas

- Parsing Errors

- `<PDF source="directions.pdf" required="false"/>`

- Page Numbering

- `<NoPageLabels/>`

```
... 104 more  
Caused by: com.adobe.internal.pdf toolkit.core.exceptions.PDFParseException: Expected Hex Digit - instead got 3  
at com.adobe.internal.pdf toolkit.core.util.ByteOps.getHex(ByteOps.java:770)  
at com.adobe.internal.pdf toolkit.core.util.ParseOps.readHexDigit(ParseOps.java:242)  
at com.adobe.internal.pdf toolkit.core.util.ParseOps.readName(ParseOps.java:268)  
at com.adobe.internal.pdf toolkit.pdf.content.Tokenizer.skipNextToken(Tokenizer.java:235)  
at com.adobe.internal.pdf toolkit.pdf.content.Tokenizer.nextTokenWithSkipping(Tokenizer.java:182)  
at com.adobe.internal.pdf toolkit.pdf.content.Tokenizer.nextToken(Tokenizer.java:79)  
at com.adobe.internal.pdf toolkit.pdf.content.ContentParser.nextInstruction(ContentParser.java:153)  
at com.adobe.internal.pdf toolkit.pdf.content.ContentReader.hasNext(ContentReader.java:109)  
... 104 more
```





## Upgrade & Deployment Procedures

- **Custom Schedule Job**
  - Takes in triplet & submits list for publishing
    - Number, Revision, Iteration
  - Enables consistent testing
  - Ability to republish specified components
- **Standardization of Worker Configuration**
  - Documentation of worker configuration
  - Removes questions inconsistency in worker behavior

**Schedule Job for Site**

Name:

Description:   Only create

Job Type: Publish Job ▼

Job: PublishFlowServeCustomScheduleJobs ▼

Start job: PublishAllEPMDocuments  
RepublishAllDefaultRepresentations  
PublishAllPartsNoRepresentation  
PublishAllLatestEPMDocumentsNoRepresentation  
PublishAllEPMDocumentsNoRepresentation  
PublishFlowServeCustomScheduleJobs  
PublishAllLatestWTDocuments  
PublishAllWTDocuments  
PublishAllLatestWTDocumentsNoRepresentation  
PublishAllWTDocumentsNoRepresentation  
RepublishAllOutOfDateRepresentations

Job frequency:  15 ▼  
Year

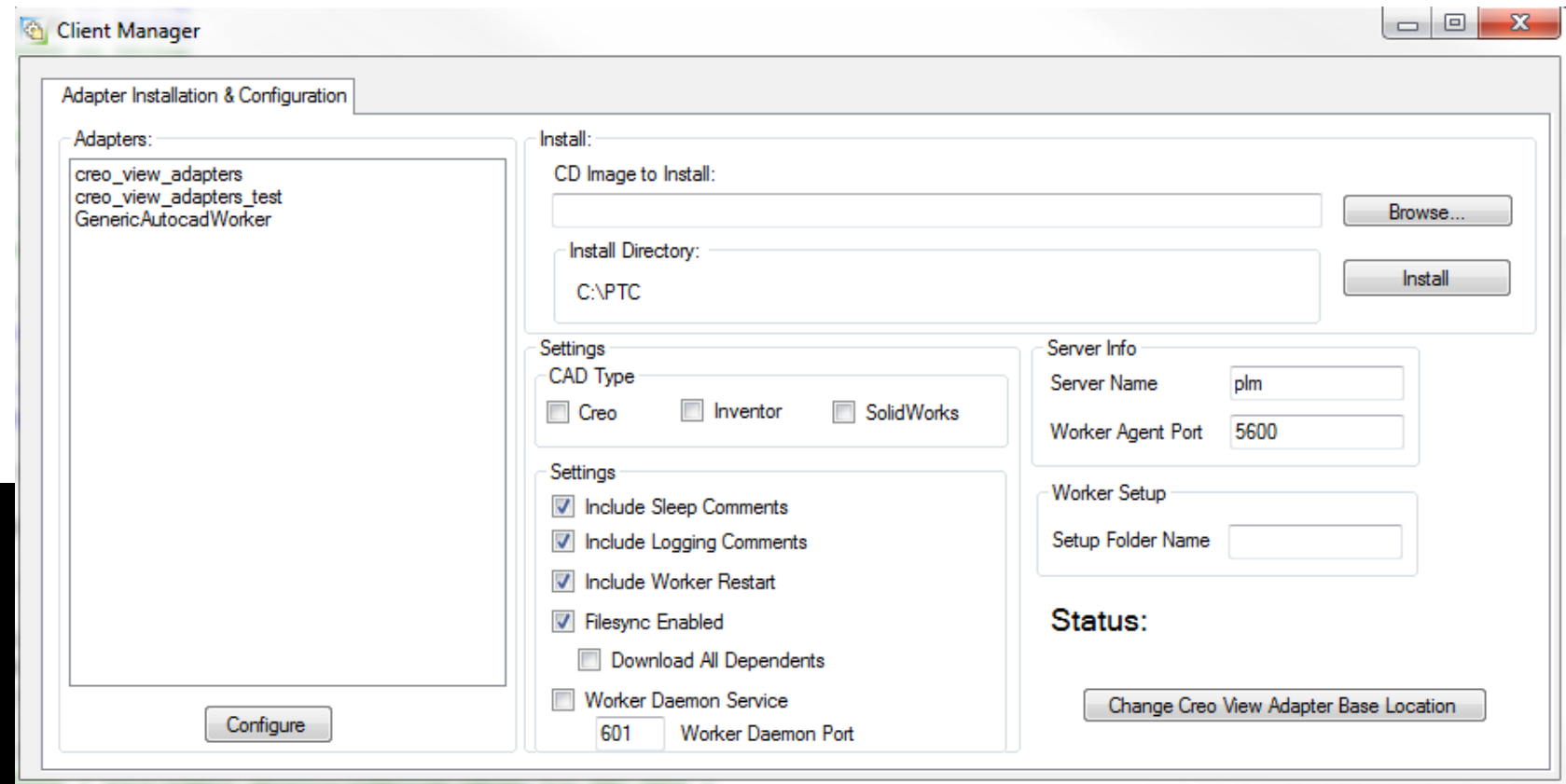
## Configuration Automation

- Configuration Tool created
  - Consistent testing
  - Ability to republish specified components
- Command line availability of configuration

```
c:\ptc\creo_view_adapters\bin>sw2pv.exe -h
sw2pv - Version : Creo 3.0 - M020 (13.2.20.23) x86e_win64
Copyright (C) 2000-2014 PTC Inc. All Rights Reserved.

Convert Solidworks files to Creo View file formats
Files in: *.sldasm *.sldprt *.slddrw *.asm *.prt *.drw
Command Line : sw2pv [options] <files>

where options can be:-
@<file>      : Read options from the response file <file>
-?, -h       : For basic help page
-d<depth>    : Set the conversion file depth
-H           : For extended help page
-epdconnect  : Enable EPD.Connect orientated conversion
-mockup      : Enable MockUp orientated conversion
-o<name>     : Set output file basename
-p<name>     : Set output base path
-j<name>     : Get job from <name>
-r<name>     : Set recipe file to <name>
-attrxml<name> : Add extra attributes to components from <name>
-vc         : Disable all console print-out
-vc1        : Redirect all console print-out to stdout
-vc2        : Redirect all console print-out to stderr (default)
-ve[n]      : Increment or set (if [n] is given) the error reporting level,
              -ve0 disables all error reporting, default 1
-vL<file>   : Append all printed output to <file>
-vl<file>   : Direct all printed output to <file>
-vn<file>   : Direct all printed output to new log file <file>_#.log
-vp<n>      : Set the process verbosity flag
-vt         : Give the current date/time stamp with all print outs
-vw[n]      : Increment or set the warning reporting level, see -ve
```

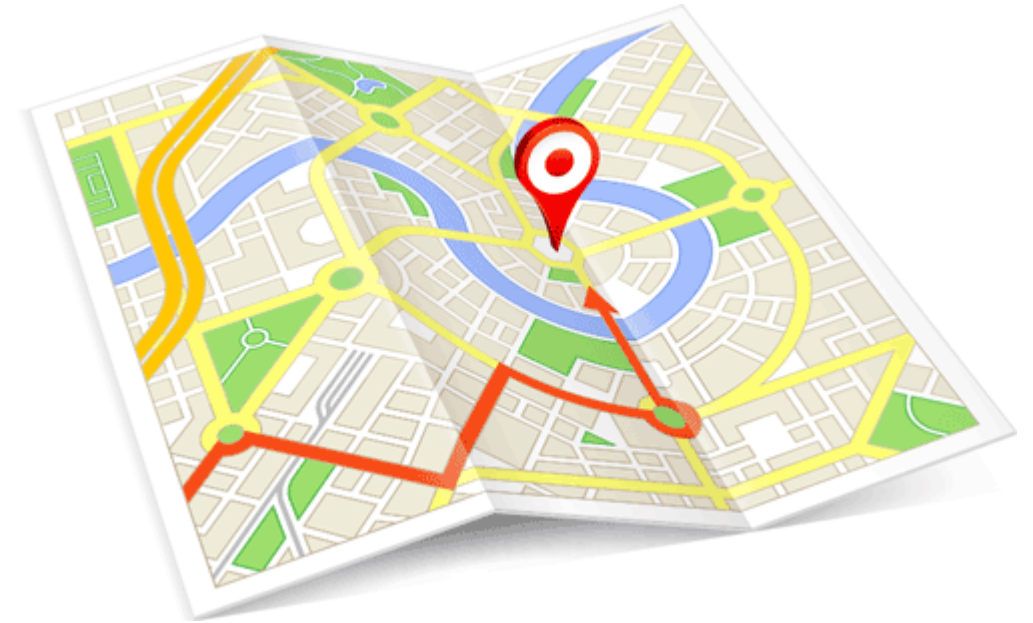


# Providing a map

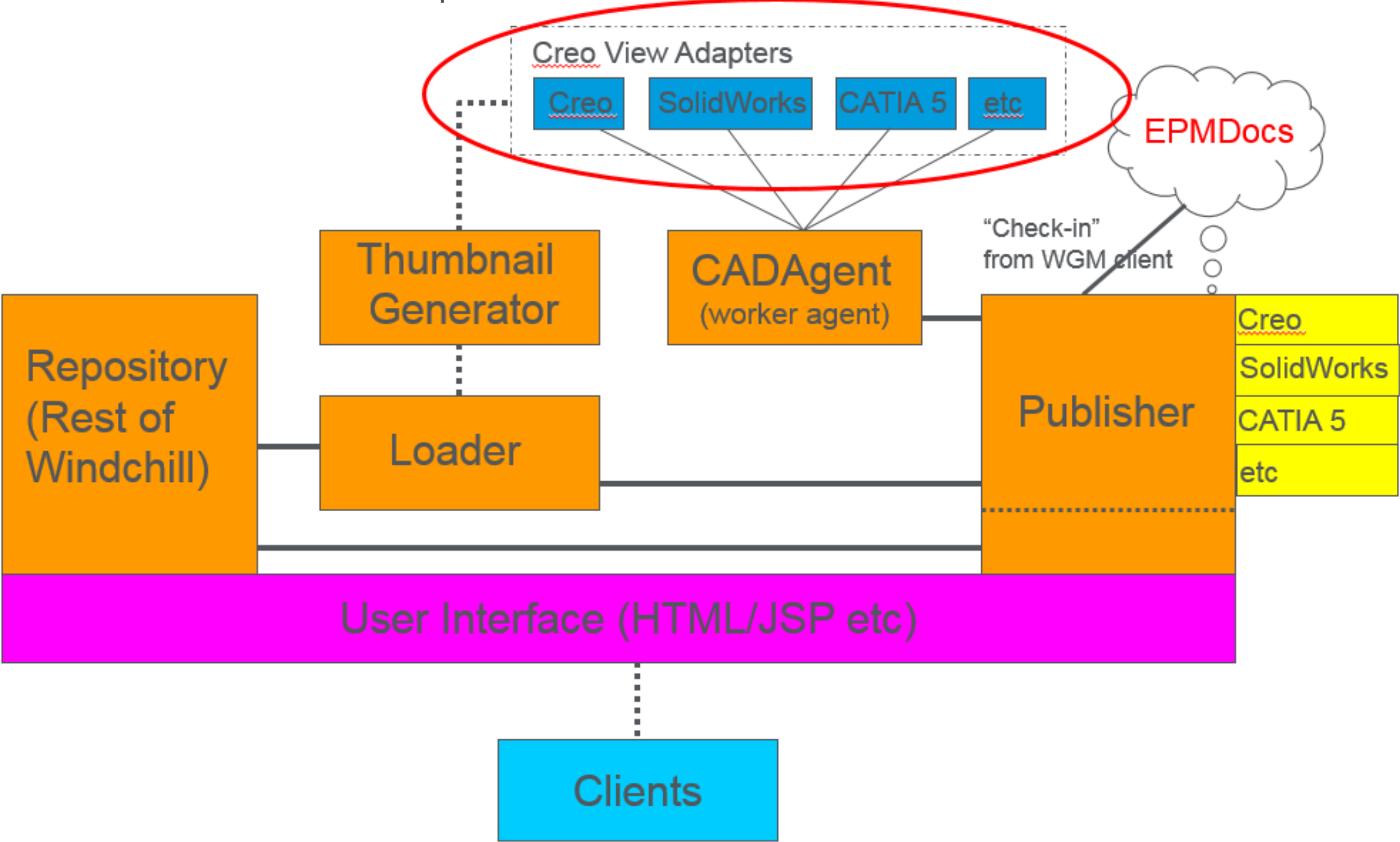
Education

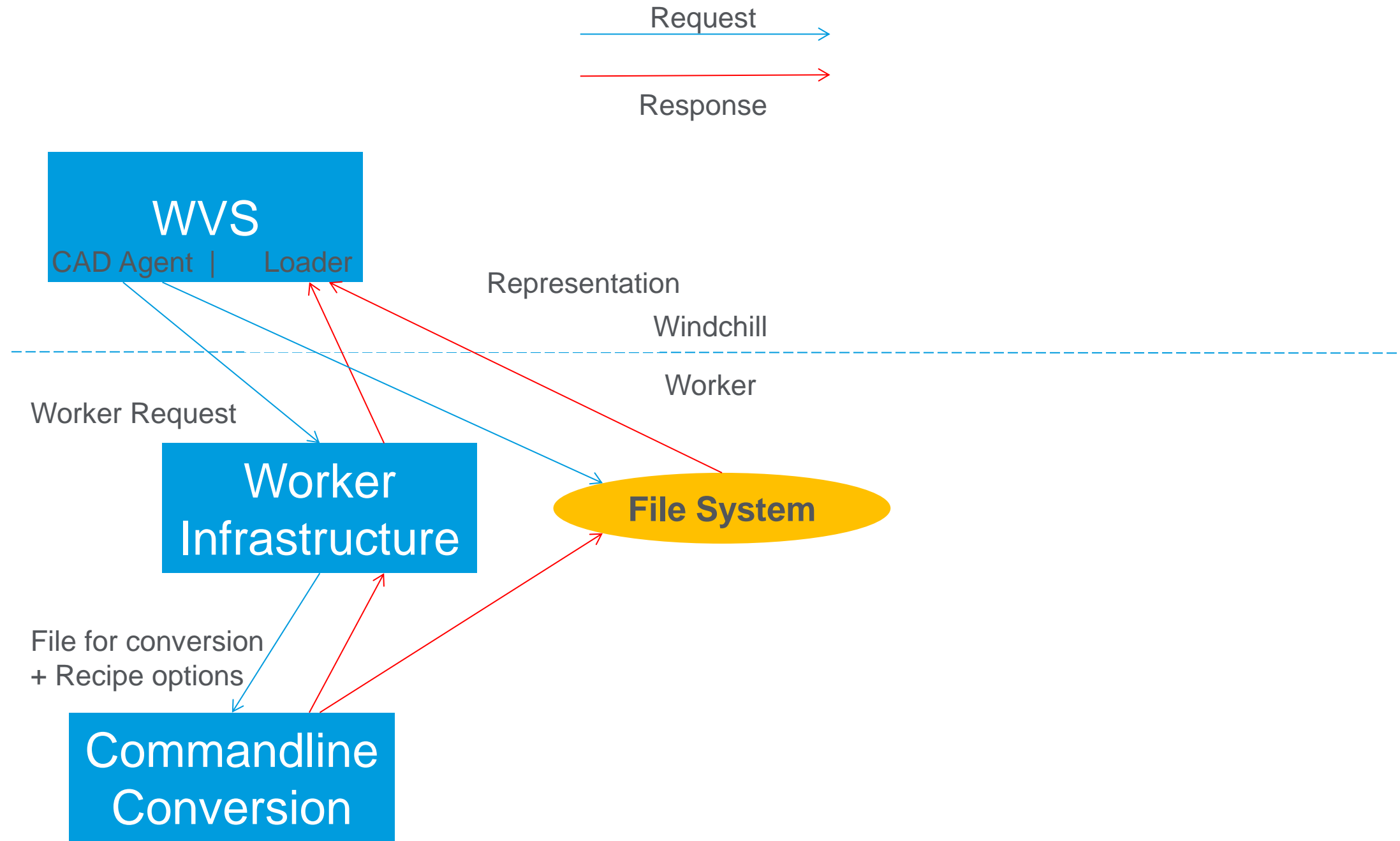
## Areas of Education

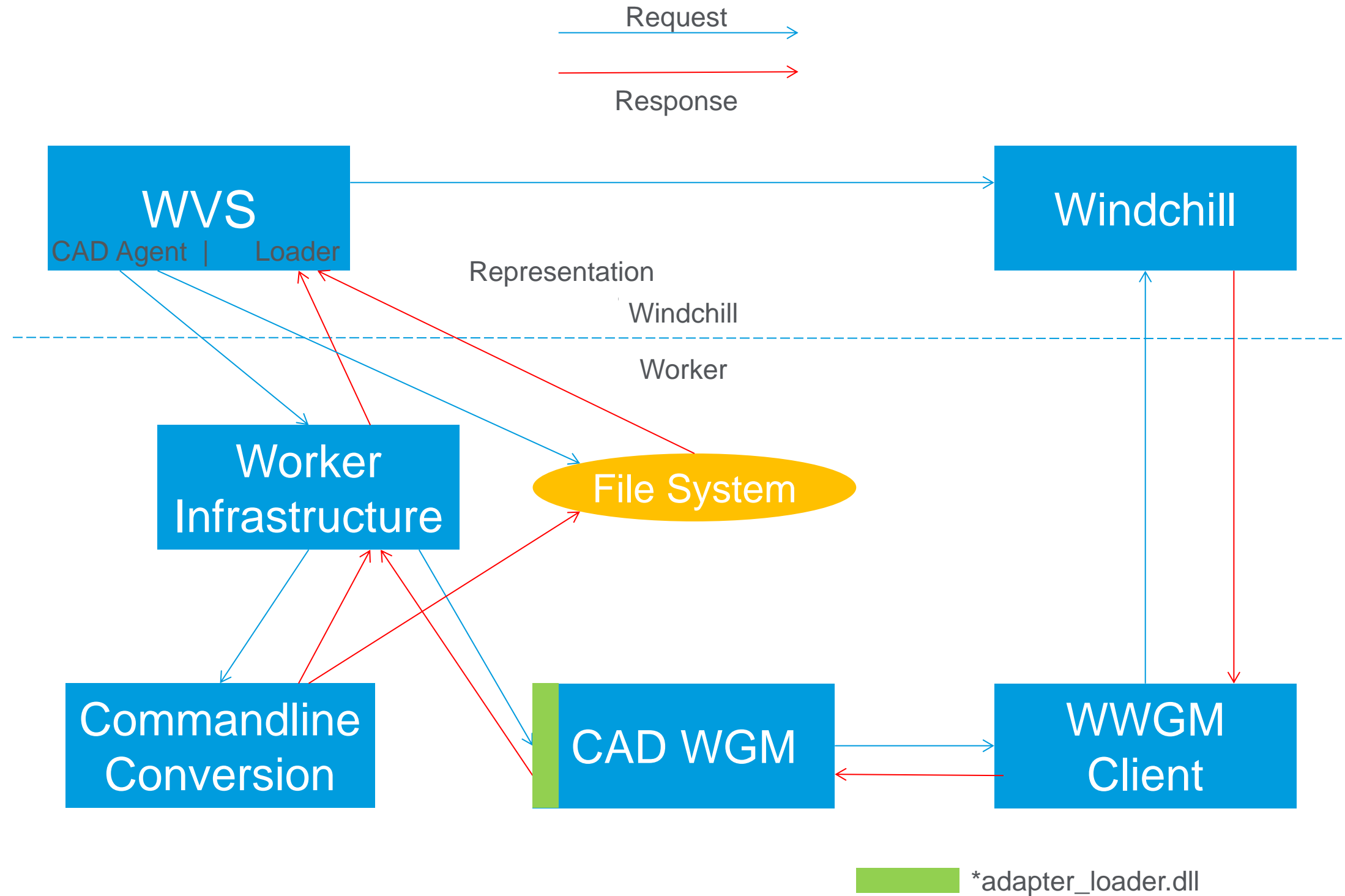
- Understanding Worker Communication & Components
- How Queues Work
- How to troubleshoot issues



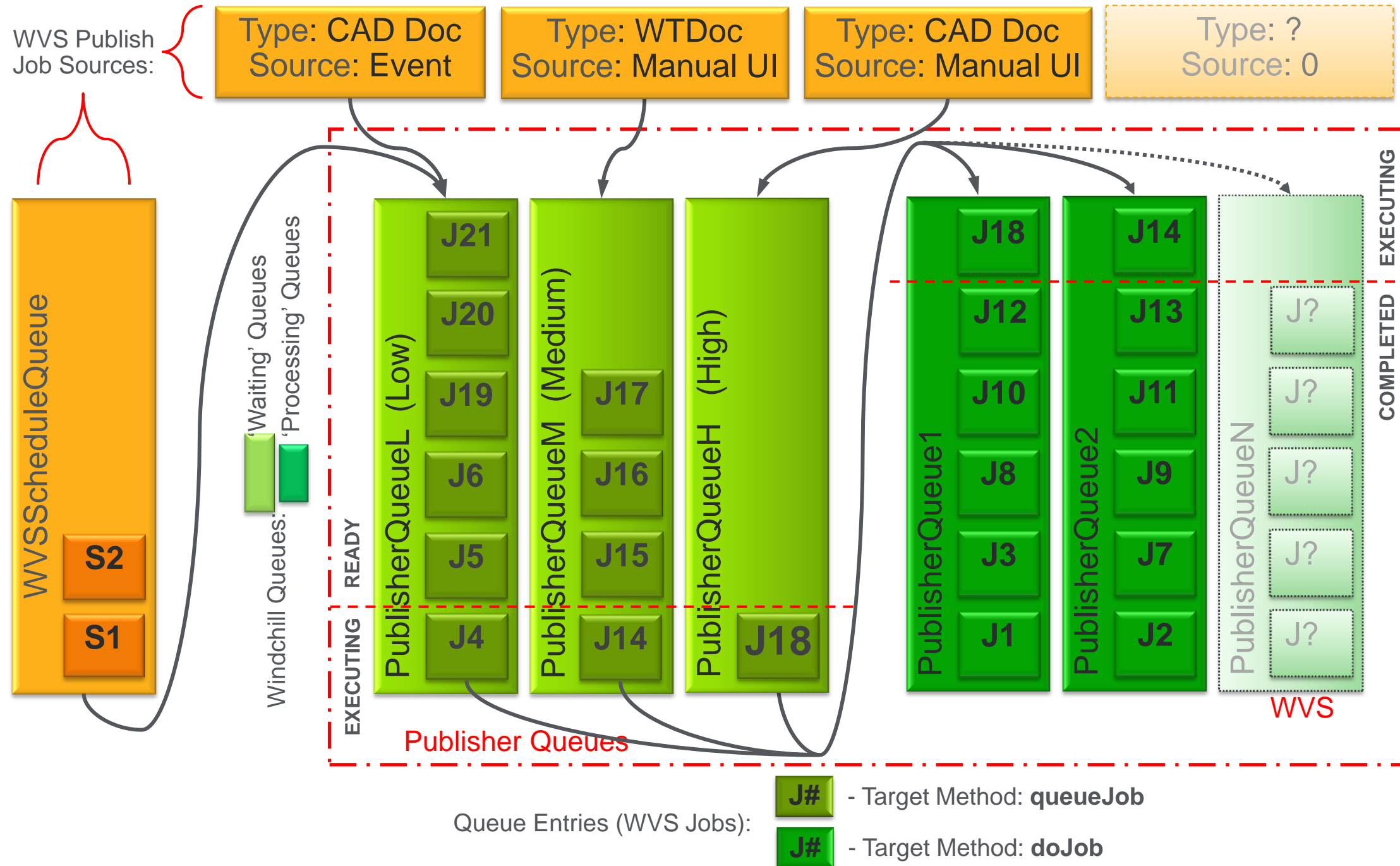
Understanding Worker Communication & Components







## Introduction to Queues





## Starting Points for Troubleshooting

- Troubleshooting aids provided in handouts
- Starting point for understanding Visualization
  - [Getting Started with PTC Creo View and PTC Windchill Visualization Guide](#)

- Troubleshooting Articles

- Troubleshooting PTC Windchill Visualization Services publishing failures
    - <https://support.ptc.com/appserver/cs/view/solution.jsp?n=CS38216>
  - How to enable verbose PTC Windchill 10.0 Visualization Services (WVS) Method Server messages?
    - <https://support.ptc.com/appserver/cs/view/solution.jsp?n=CS33514>
  - Creo View Adapters: Adobe LiveCycle Enterprise Server (ES) Troubleshooting Resources
    - <https://support.ptc.com/appserver/cs/view/solution.jsp?n=CS118332>
- Advanced Topics:
    - High level steps performed by a WVS File Synchronization enabled PTC Windchill CAD Worker
      - <https://support.ptc.com/appserver/cs/view/solution.jsp?n=CS191328>
    - PTC Windchill PDMLink: How PTC Windchill Visualization Services uses PTC Windchill Queues for processing WVS Jobs
      - <https://support.ptc.com/appserver/cs/view/solution.jsp?n=CS149619>

# Building a better path

Enhancements

## Queueset Customization - Problem

- Diverse Design environments require matching publishing configurations.
- Complex or slow running jobs require additional resources and need to be moved out of the way of simpler faster running jobs.
- OE Portal Users expect instant publishing of WT Docs
- One average day of publishing →

Worker Agent Administration [ [Configure](#) ]

Start all
 Stop all
 Reload
  Start verbose workers
 Refresh list
  Automatic refresh

Actions	Worker	On-Line	Status	Job	Number
	FLSWC035.flowserve.net-OFFICE:1 [PDF]	<input checked="" type="checkbox"/>	Busy	CMB Customer Coversheet.xlsx	4788
	FLSWC036.flowserve.net-OFFICE:1 [PDF]	<input checked="" type="checkbox"/>	On	Available	2943
	FLSWC035_1.flowserve.net-OFFICE:1 [PDF]	<input checked="" type="checkbox"/>	On	Available	2165
	FLSWC036_1.flowserve.net-OFFICE:1 [PDF]	<input checked="" type="checkbox"/>	On	Available	1419
	FLSWC035_2.flowserve.net-OFFICE:1 [PDF]	<input checked="" type="checkbox"/>	On	Available	894
	FLSWC036_2.flowserve.net-OFFICE:1 [PDF]	<input checked="" type="checkbox"/>	On	Available	640
	FLSWC035_3.flowserve.net-OFFICE:1 [PDF]	<input checked="" type="checkbox"/>	Off		490
	FLSWC036_3.flowserve.net-OFFICE:1 [PDF]	<input checked="" type="checkbox"/>	Off		398
	gilap128.flowserve.net-SOLIDWORKS:1 [SW DEFAULT]	<input checked="" type="checkbox"/>	Off		361
	gilap129.flowserve.net-SOLIDWORKS:1 [SW DEFAULT]	<input checked="" type="checkbox"/>	Off		364
	gilap221.flowserve.net-SOLIDWORKS:1 [SWSUPER SW DEFAULT]	<input checked="" type="checkbox"/>	Off		194
	FLSWC018.flowserve.net-SOLIDWORKS:1 [SWSUPER SW DEFAULT]	<input checked="" type="checkbox"/>	Busy	1521811_001_SEC.SLDDRW	25
	gilap219.flowserve.net-INVENTOR:1 [INV DEFAULT]	<input checked="" type="checkbox"/>	On	Available	79
	gilap220.flowserve.net-INVENTOR:1 [INVSUPER INV DEFAULT]	<input checked="" type="checkbox"/>	On	Available	95
	FLSWC022.flowserve.net-INVENTOR:1 [INV DEFAULT]	<input checked="" type="checkbox"/>	Off		2
	gilap225.flowserve.net-PROE:1 [PROE DEFAULT]	<input checked="" type="checkbox"/>	Off		429
	gilap226.flowserve.net-PROE:1 [PROE DEFAULT]	<input checked="" type="checkbox"/>	Off		309
	FLSWC021.flowserve.net-PROE:1 [PROESUPER PROE DEFAULT]	<input checked="" type="checkbox"/>	Off		210
	GILAP121-IMAGE:1	<input checked="" type="checkbox"/>	Off		69

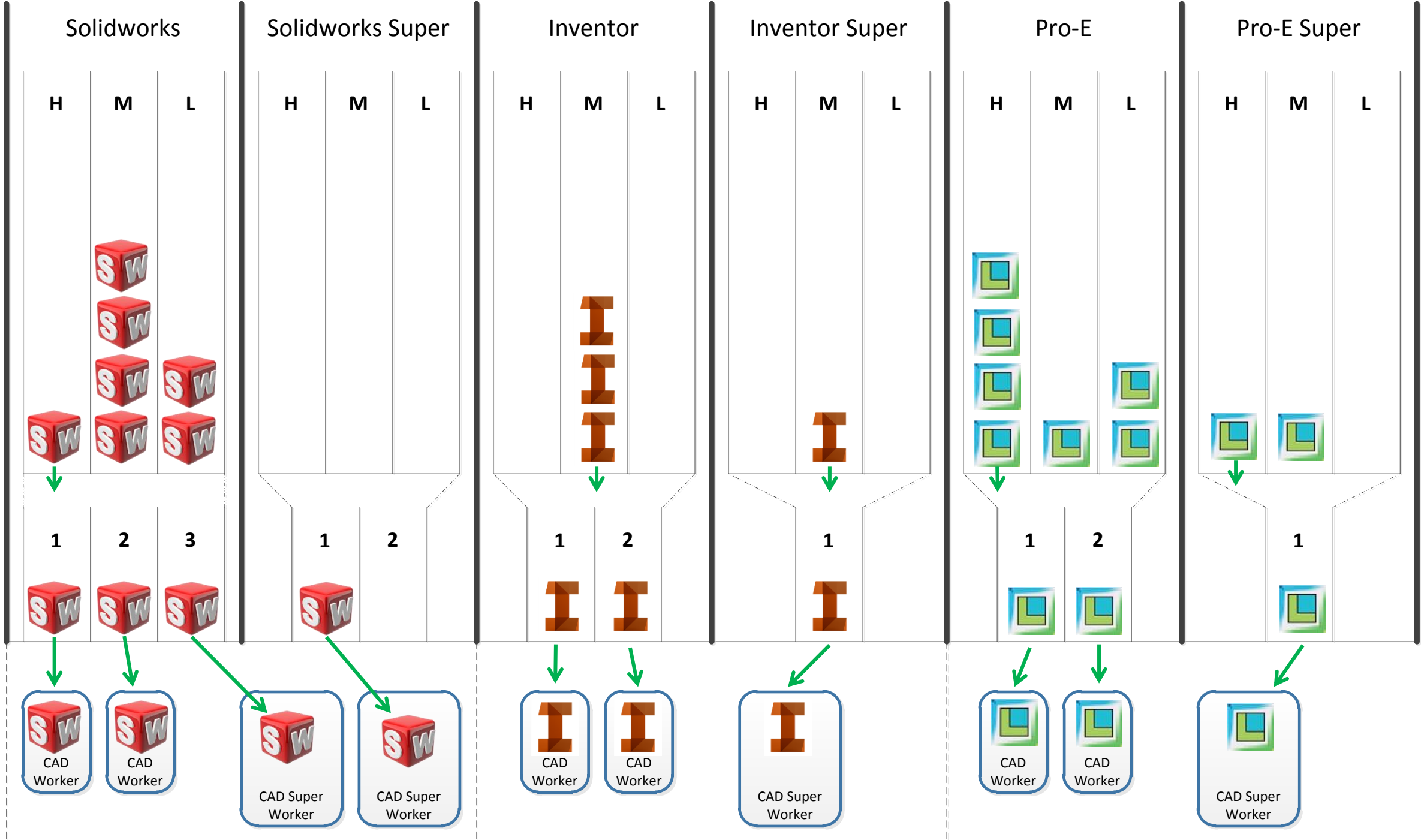
## Queueset Customization - Solution

- One Filter to Rule them All!
- Filtering by:
  - Context
  - IBA
  - Authoring Application
  - Complexity of Documents
- Allows for combinations of filtering criteria



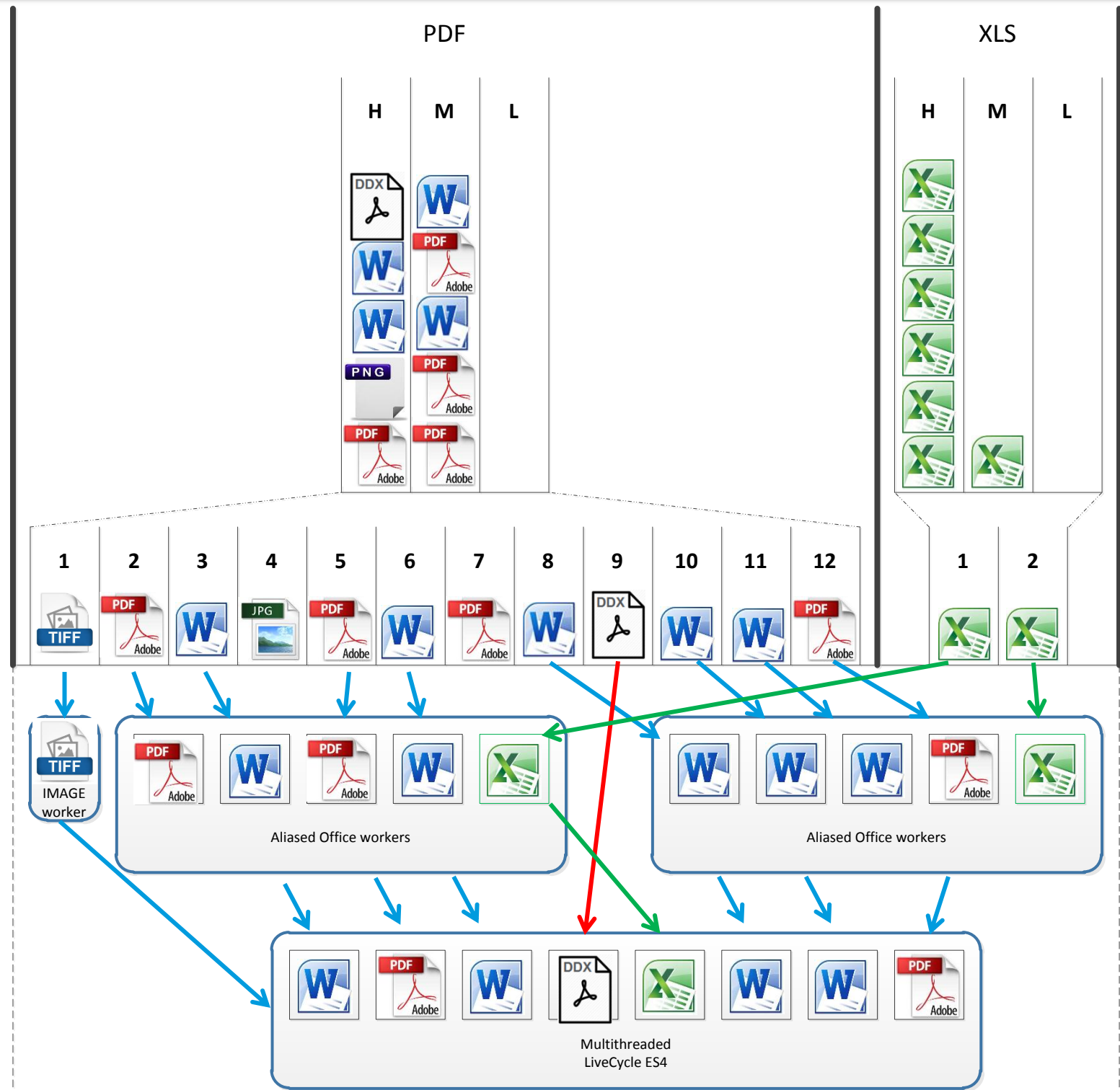
## EPM Docs

- **Super Queueset**
  - James Kerkstra
  - Steelcase
  - PTC Live 2013
- **Filter Criteria**
  - Design Tool
  - Container
  - File Size
  - # of References
  - Attribute



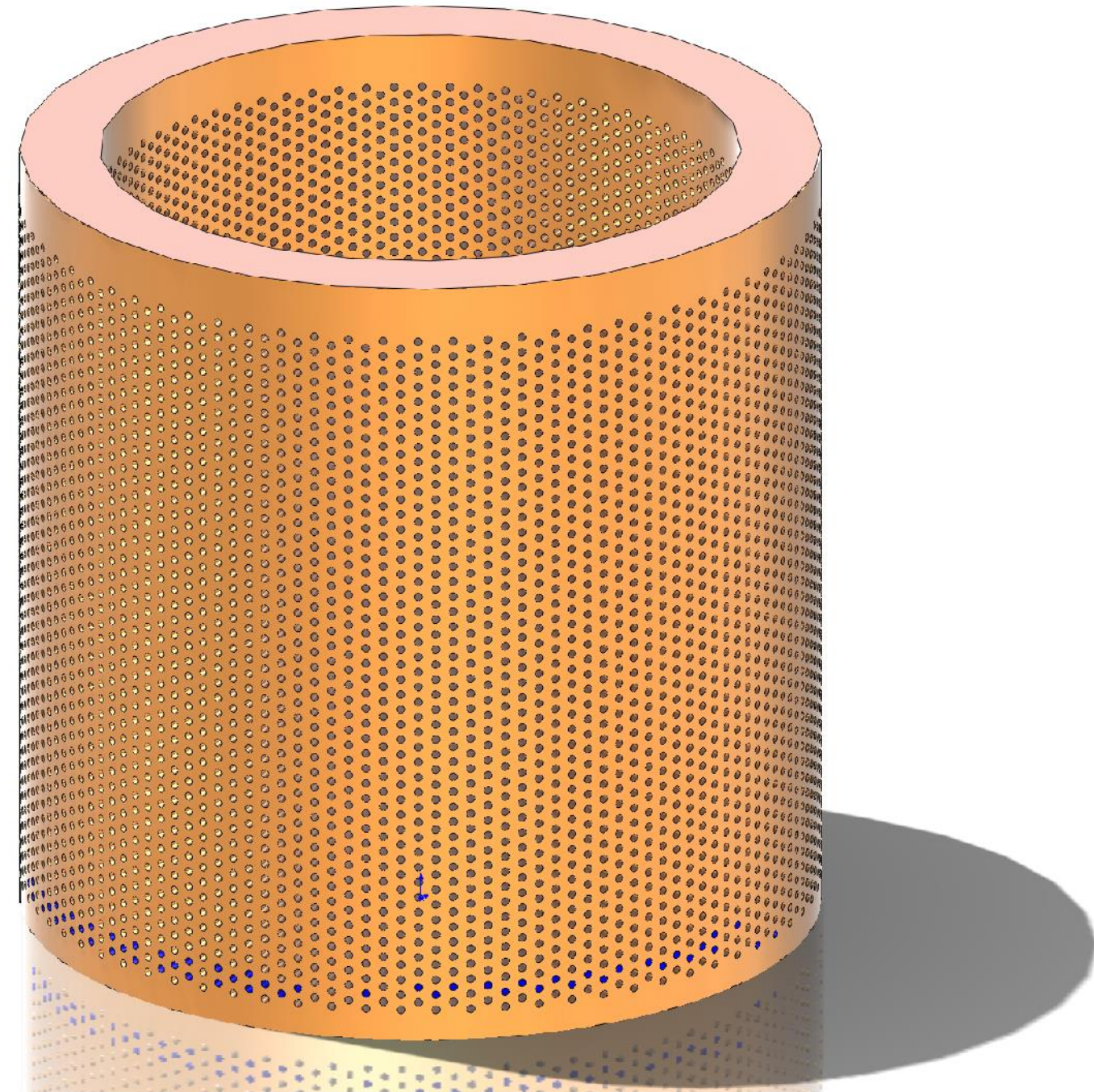
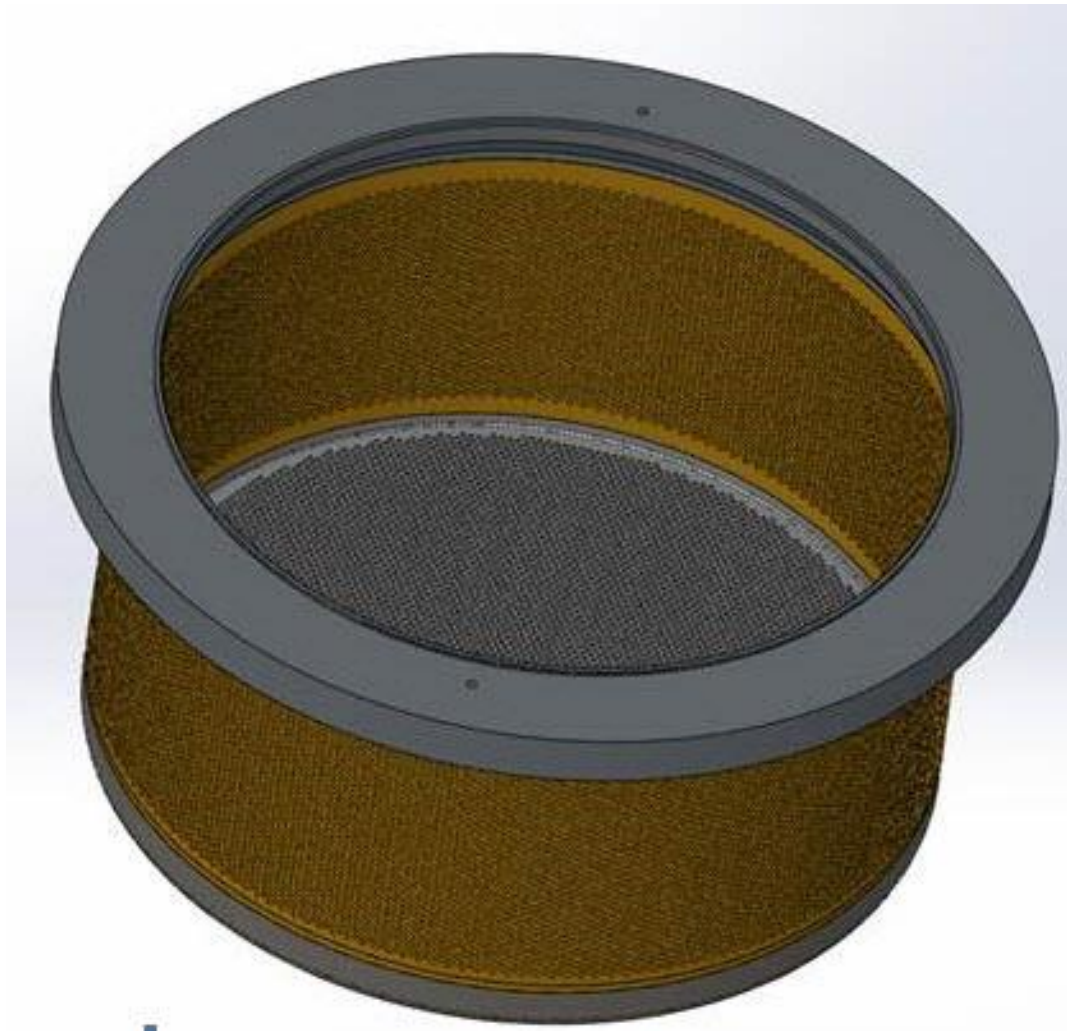
## WT Docs

- Filter Criteria
  - File Type
- 1.5 to 1 Queue to Worker ratio
- No worker required for delegate jobs (DDX)
- VMWare VMs with multiple aliased workers
- Single threaded excel processing
  - 400 jobs in 10 minutes = too slow ☹️
- Multiple User IDs for LC publishing



Solidworks parts with 12,000 features take 45 minutes to open.

They are used to control flashing (liquid going to gas) and cavitation (gas collapsing/condensing to a liquid) both of which tend to damage valves otherwise.



## AutoCAD Worker

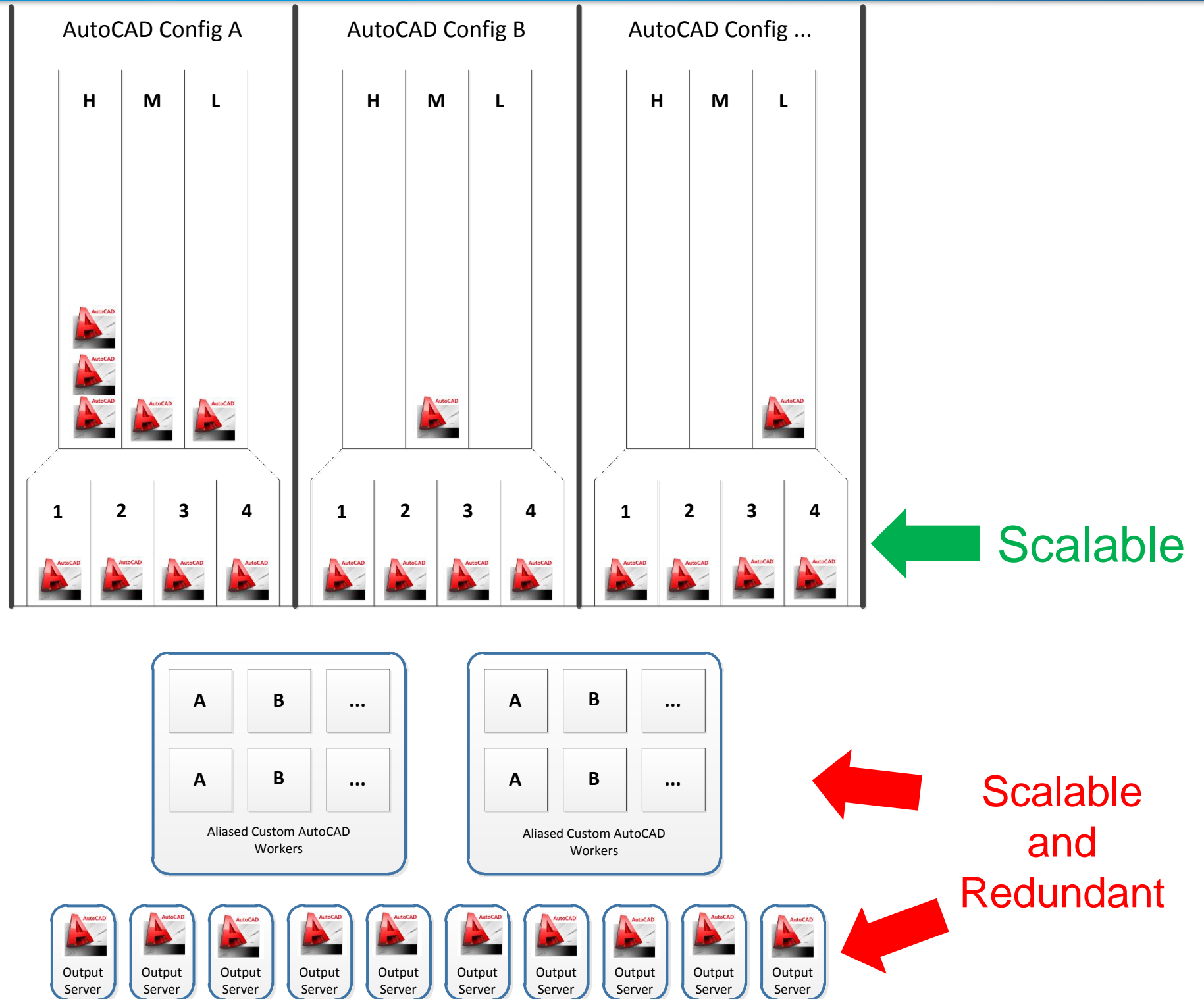
- **PDF as document of record**
  - One thing Flowserve locations agree on is that they like PDFs as their documents of record.
  - Security, portability, traceability, compatibility, happy Users.
  - Manufacturing
  - Document markup.
- **Output Server**
  - No OOTB AutoCAD Worker!
  - **Why re-invent the wheel?**
  - In House AutoCAD Conversion application.
  - Already supported FLS specific AutoCAD customization, line weights, and borders for more than 66% of the company.
  - Maintained by the same staff that supports Windchill.





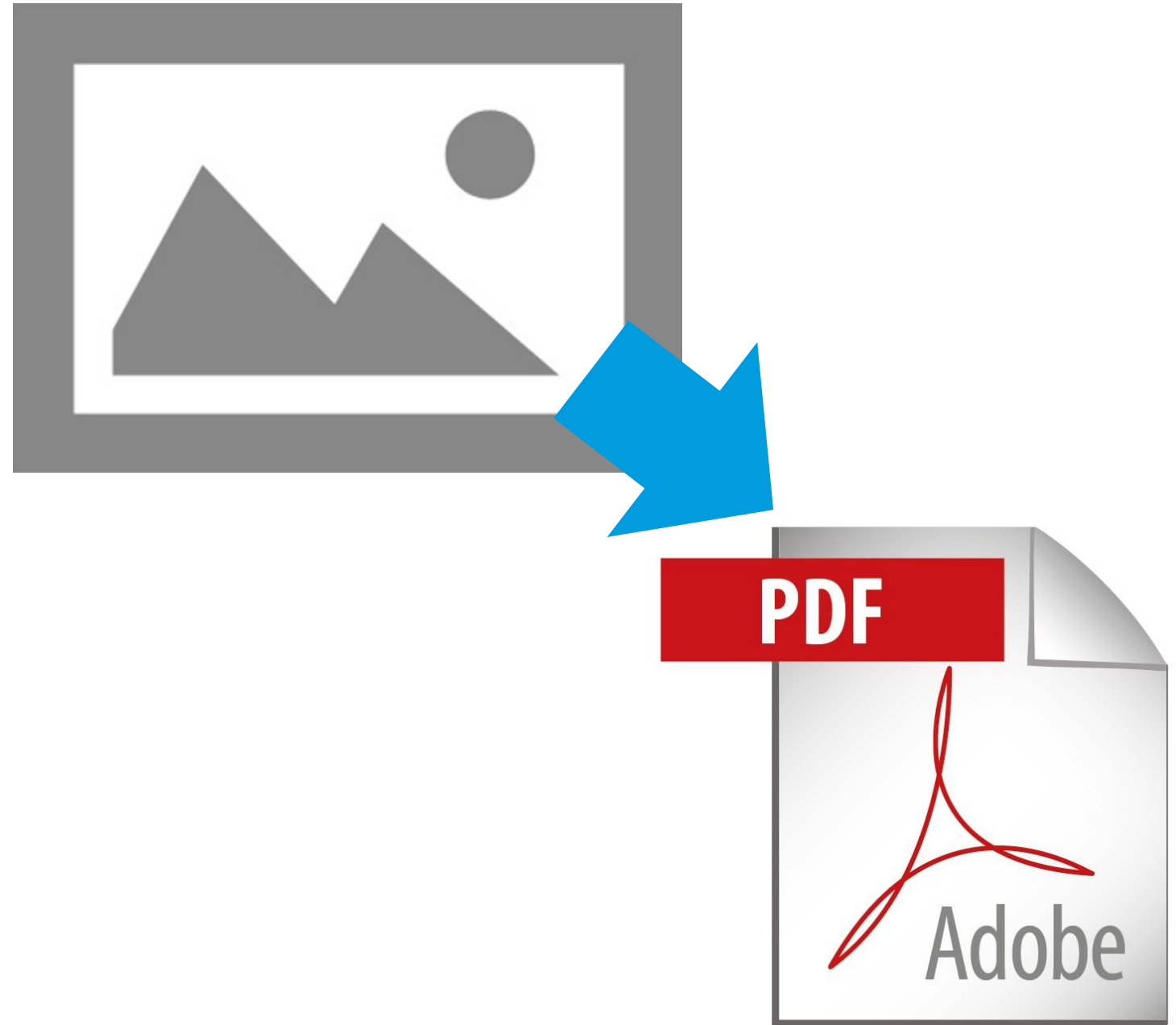
## AutoCAD Workers / Output Servers

- Over 100 publishing configurations
- Each config requires a Queueset
- Filter Criteria
  - Design Tool
  - Container
  - Attribute
- One output server can service many queuesets
- Custom worker passes content and a text file to the Output Server



## Image Worker

- Support for Collective Document publishing stopped with PTC Creo View 3.0
- Net Effect: No publishing Image files to PDF
- Solution:
  - Based on Generic Worker
  - Utilizes Adobe LiveCycle PDF Generator
  - Wraps resulting PDF in PVS file



# Potholes

Defects Addressed

Upgrades to deliver fixes



10.1 M010 -> 10.1 M050



**ADOBE®**  
**LIFECYCLE® ES**

ES3 -> ES4 SP1



2.0 M040 -> 3.0 M020

## Windchill 10.1 M050

### WWGM

- Inventor publish jobs failing with error "Failed allocate dvfFile" in PTC Windchill PDMLink
  - SPR 2169165 / CS 155210
- Solidworks needs to collect all dependencies while running in worker mode
  - SPR 2116556
- Inventor publishing fails with filesync using PTC Creo View 3.0 M020 adapters unless recipe option "adapters/outputSource=1" is used
  - C12222637

### WVS

- Publish.publishqueue.priorities.filtermethod does work when performing a manual resubmit in PTC Windchill 10.1
  - CS157889 / SPR 2208694

## Creo View 3.0 M020

- **Inventor Components Failure**
  - Several Historical Inventor files at Flowserve failed to publish with PTC Creo View 2.0 formats
- **PTC Creo View 2.0 format parsing**
  - TBD
- **Worker Restart Scripts Enhancements**
  - CS 162756
- **Publishing Pivot Tables in Excel crashes PTC Creo View adapters**
  - TBD

## Adobe LiveCycle ES4 SP1

- **Thread lock on assembler service with parsing error**
  - Largest Issue identified during publishing project
  - C12339785
  - Lock addressed with ES4 SP1 now results in error
- **Still working on resolution to parsing error!**
  - Potentially fixed in AEM?

# End of the road

Results of our efforts



## Patches and Updates

- PTC Platinum support
- TSAM – Tracy Sheehan
- Onsite Days – Matthew Banik
- Adobe LiveCycle - Tony Schmitz
- How many patches related to WVS in some way
  - 5 Patches for Windchill and Creo View Adapters
  - 2 Patches WGM
  - 1 Patch for M050

## Comparison against goals

- **Outlined Goals**

- > 98% Success Rate ✓
  - 95% Success rate of MCAD document achieved
- Correct existing WVS configuration ✓
  - Documented and implemented best strategies around visualization configuration
- Develop a filter to support a diverse design environment ✓
  - Filter successfully developed and deployed
- Admin Training ✓
  - Training around core WVS publishing competencies delivered to the Flowserve Support team
- Custom DWG to PDF conversion ✓
  - Custom AutoCAD worker developed using existing Output Server Backbone
- Improve WVS performance ✓
  - Publishing strategy was reviewed and tweaked to optimize performance. Looking for final details but need help fro PTC!
- Develop a strategy for scaling WVS to support new deployments ✓
  - Strategy determined around Filter optimization for site on-boarding

Where do we go from here?

- LiveCycle merge issues
- LiveCycle Scalability and Redundancy
- Multi-Threaded Excel processing
- Ensure publishing resources by dividing queuesets up into publishing groups

- Your feedback is valuable
- Don't miss out on the chance to provide your feedback
- Gain a chance to win an instant prize!
- Complete your session evaluation now

# PTC<sup>®</sup> Live Global