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Best Practices

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Why?

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Topics

- Procedures
- Tags
- Alarms
- Pages & Navigation
- Performance
- System Monitoring
- Servers
- Security
- Hardware

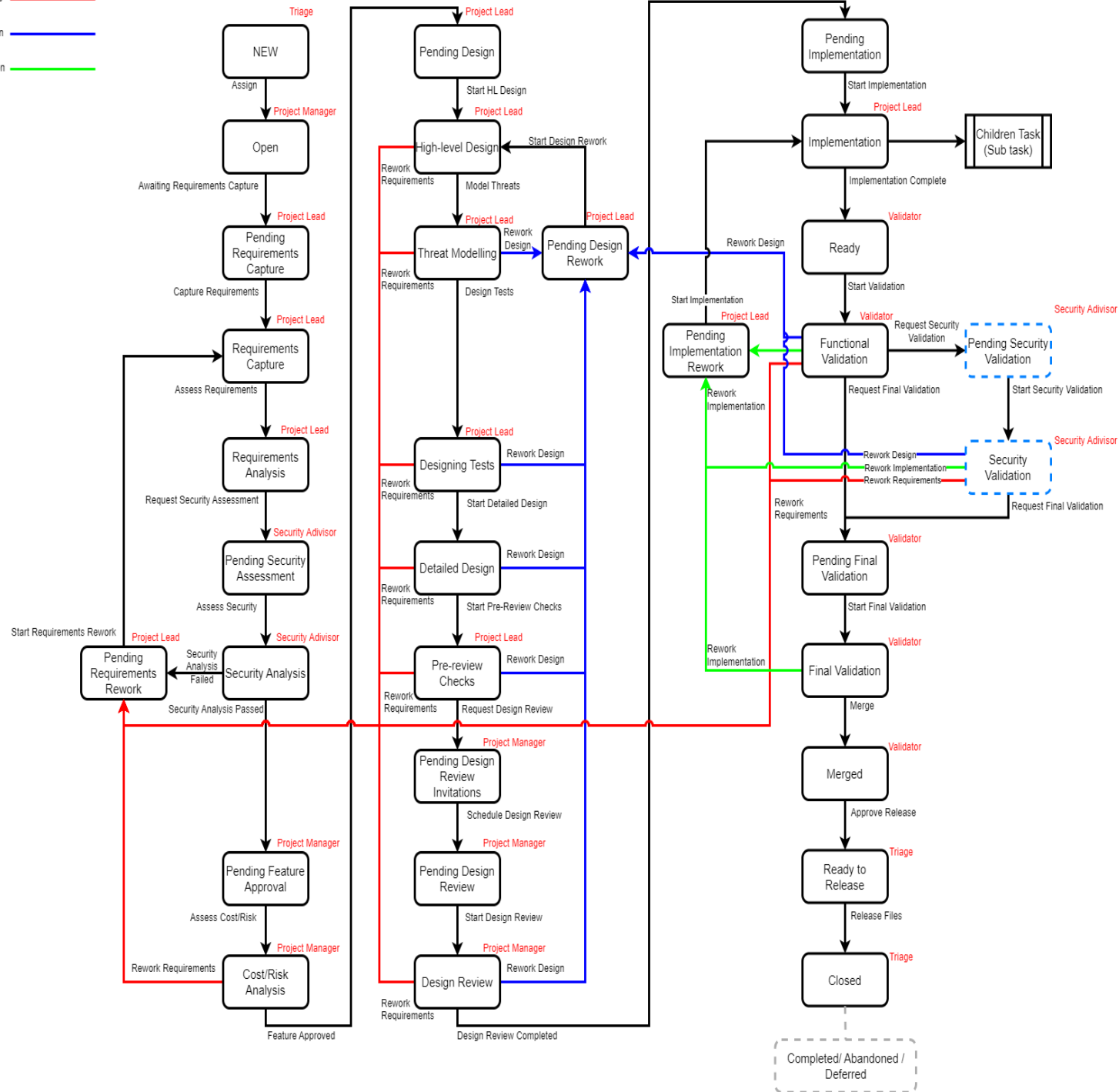




Procedures

It's About Getting it Right

Rework Requirements ——— (Red line)
 Rework Design ——— (Blue line)
 Rework Implementation ——— (Green line)

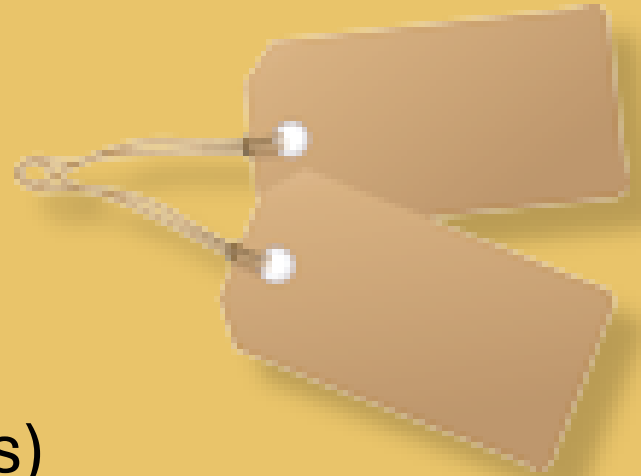




Tags

Avoid Technical Debt

- Create a Naming Standard
- **Use New Sibling Tag Feature**
- Take Advantage of **Equipment Type**
- Organize by Operational Area (Context Tags)
- Names & Structure Can be Changed
- Consider Using Start Tag Conditions
- Use Tag Type Templates
- Create a Separate Context for Templates.

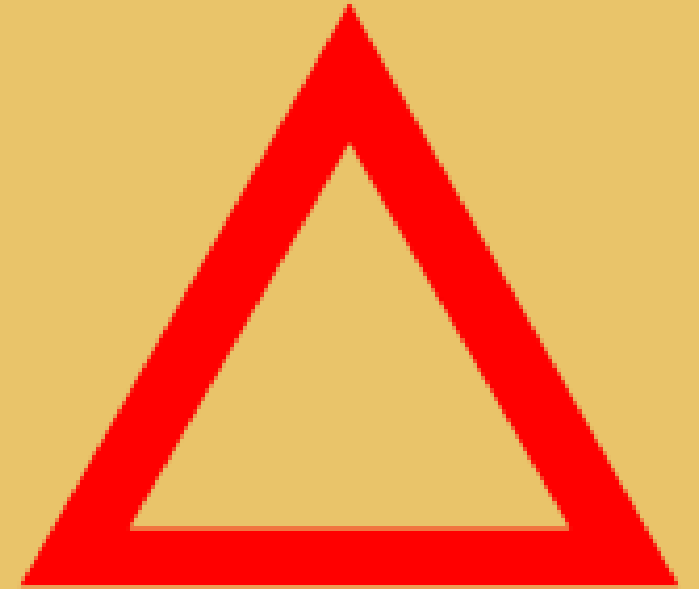




Alarms

What It's Really All About

- Make Descriptions Meaningful
- Operators Can Only Handle ~200 per Day
- Set Priorities Appropriately Based Upon
 - Severity of Consequence
 - Time Before Consequence
- Suppression
- Shelving
- Identify and Fix “Bad Actors”.





Performance

Big Systems are Demanding

- Keep I/O in Consecutive Registers
- Reduce Polling Rate to Slowest Acceptable
- Use IO and Historian Deadbanding
- Minimize Use of Expressions for Tag Parameters
- Avoid Unchecking “Optimize” on Tag Expressions
- Consider Adding Servers to Share the Load.





System Monitoring

Don't Let Problems Sneak Up on You

- Trend Key PC Parameters with Workstation Status Driver
 - Free Disk Space
 - CPU (VTScada & System)
 - Memory Used (PrivateBytes)
- Driver Quality
- Services Page
- Historian Status Widget
- Modem Status Widget.

The screenshot shows the VTScada interface with the 'Services' page active. The table below lists various services and their status on the workstation.

Service	Server List	Current Server	This Workstation	Sticky
AlarmNotification	Default	WADDENGB	★ Current Server	No
AlarmStartupSync	Default	WADDENGB	★ Current Server	No
Configuration	Default	WADDENGB	★ Current Server	No
DriverDiscovery	Default	WADDENGB	★ Current Server	No
ModemManager	Default	WADDENGB	★ Current Server	No
NetworkValues	Default	WADDENGB	★ Current Server	No
PageParms	Default	WADDENGB	★ Current Server	No
ServiceCtrl	Default	WADDENGB	★ Current Server	No
SlippyMapService	Default	WADDENGB	★ Current Server	No
SMSManager	Default	WADDENGB	★ Current Server	No
SystemAlarmHistorian	Default	WADDENGB	★ Current Server	No
SystemHistorian	Default	WADDENGB	★ Current Server	No
TimeSyncManager	Default	WADDENGB	★ Current Server	No
ValueSyncService	Default	WADDENGB	★ Current Server	Yes



Servers

Load Sharing and Robustness

- Have at Least Two Servers
- Use Named Server Lists when you have Multiple Drivers
- When More than One Port, Split Drivers Between Servers
- On Large Systems, Dedicate Two Historian Servers
- Use “Client-of-Client” when Connecting Remotes on Slower Link.

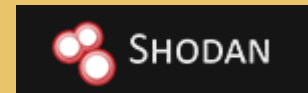




Security

Industrial Control Systems (ICS) are Targets

- Ransomware & Cyber Warfare
- Refer to Security Guidelines Manual
- No shared User Names
- Delete Users Immediately Upon Leaving
- Two Factor Authentication
- Make Use of Roles
- Use Active Directory Integration
- Run-Only VIC Server in DMZ
- Use SSL/TLS access via VPN
- Restrict Internet Access from ICS
- Control USB Keys
- Have Physical Access Secured.



TOP PORTS	
443	218
80	131
8085	25
8080	15
81	7



Hardware

When Size Matters

- Engineering Workstations vs Servers
- High Clock Speed vs More Cores
- 12th - 15th Generation i7/i9 Processors
- 16Gb RAM Minimum
- SSD
- RAID Not Necessary
- Separate Graphics Card vs Motherboard.





Thank you for attending this session!

- Fill out the 2-question feedback survey via the App! *Ukova*
- Especially if you need a Continuing Education Credit or Professional Development Hours certificate.
- Don't have the app, fill out the paper form included in your conference kit and hand into Natashaia.

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