



# One Quality with Agile

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- About Harris
- Harris PLM Overview
- The need for “One Quality”
- One Quality Overview
- Four Use Cases
- Summary, Q&A

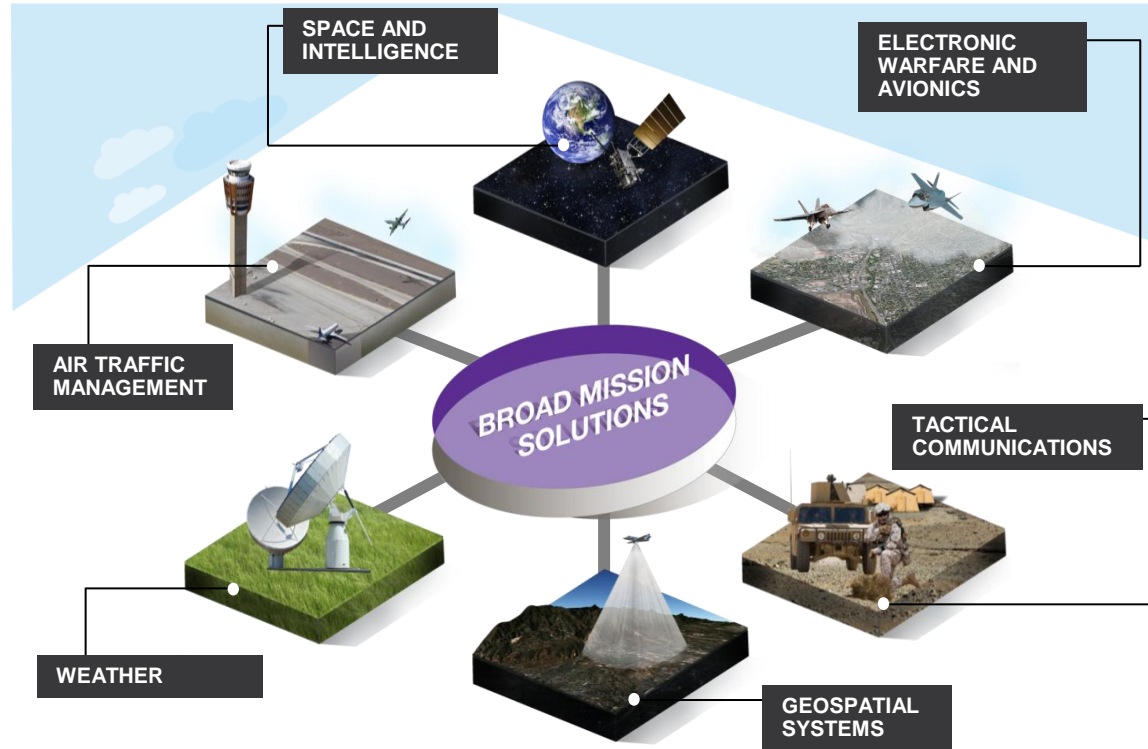
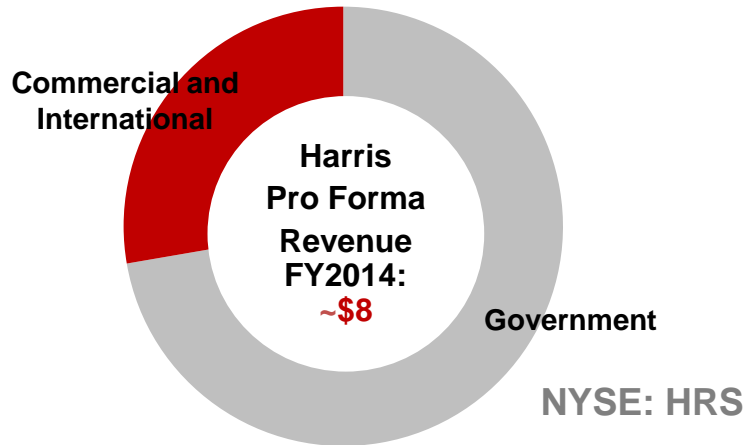


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# Harris: Company information



- Advanced, technology-based solutions for government and commercial customers
- 23,000 employees
- 9,000 scientists and engineers
- Customers in 125 countries



# Segment overview



## Communication Systems



Tactical and airborne radios, night vision technology, and defense and public safety networks

## Critical Networks



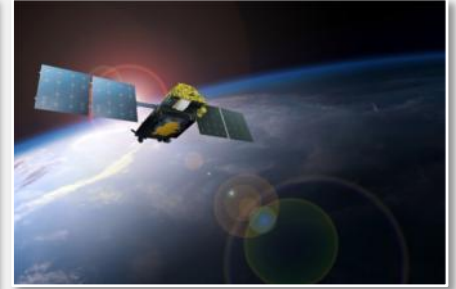
Managed services supporting air traffic management, energy and maritime communications, and ground network operation and sustainment, as well as high-value IT and engineering services

## Electronic Systems



Extensive portfolio of solutions in electronic warfare, avionics, wireless technology, C4I, undersea systems, and aerostructures

## Space and Intelligence Systems



Complete earth observation, weather, geospatial, space protection and intelligence solutions from advanced sensors and payloads, as well as ground processing and information analytics

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- Our PLM environment comprises:
  - Engineering (software/ hardware/ systems) tools
  - Agile (PDM) that manages & controls the design baseline (mostly hardware):
    - Change mgmt of BOMs, documents, as-builts
    - Mechanical & Digital CAD interfaces
    - Quality management
    - Initiates procurement BOMs
- Agile interfaces to a collection of ERP tools: MRP, MES, PeopleSoft, Asset Mgmt, etc.




“PLM” is Engineering tools plus Agile/PDM with custom interfaces to ERP.

## Data counts

-   • >1.4M Parts (& 450k Product Instances)
-  • >480k Documents (19 subclasses)
- >1M File attachments (>3.7 TB, ~3.4M  s)
- >20k active  s, >15k active  s, >550k  s

## Users & teams

-  • ~5000 accounts; ~3000 users access per month (Open)
- >1000 Programs; 300-400 “active”
  - teams with standard roles, security

## Harris-developed code

- ~450k SLOC
- 73 applications (30 Java PX, 25 script PX, 149 object wrappers, 7 interfaces, 7 web apps)



## Infrastructure

- “Open” Production Servers
  - 6 Solaris (5 app/ 1 file)
  - 1 Linux (DB)
  - 1 Windows (AutoVue)
- 2 Production Vaults



Harris has a 10+ year history with Agile and a mature environment.

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# Business Need for “One Quality”



Objective: improve **business excellence** ...through



1. *Process consistency*
2. *Process efficiency*: improved tools for Quality engineers and program teams
3. *Process transformation*: improved tools for Quality managers and business leaders
4. *Lower costs*: through system simplification, scalability and portability

Inhibitor: **Disparate, disconnected** quality systems



# Enterprise quality management



## NCRs (Non-Conformances) & Problems

Identify Enterprise Issues

GIDEP Pubs

Supplier Discrepancy Reports

Supplier Support Requests

Customer Complaints

(Field) Incidents

Non-Conformances

Direct NCRs

Process Problems

Audit Findings

Software Bugs/ Enhancements (PTRs)

## CAPAs

Manage Issues  
through Processes

Failure Analyses

Supplier Corrective Actions

Service Actions

Corrective Actions

Containment Actions

## Items & COs

Resolve Issues  
through Changes to  
HW/SW, Docs, & Process

COs

Deviations

A/B Config

Parts, BOMs, AML

Documents

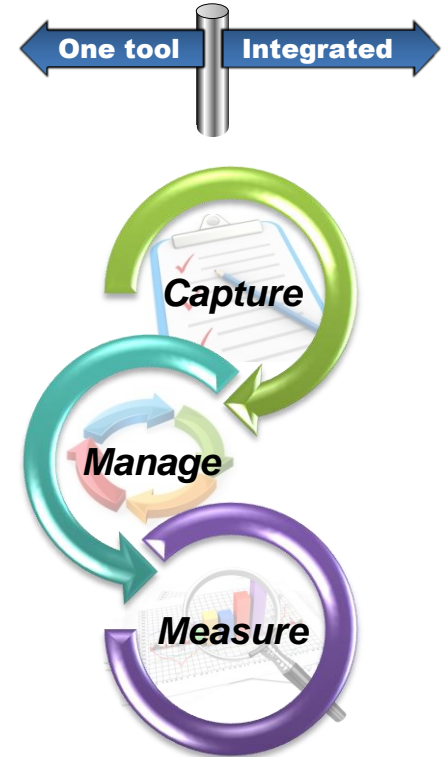
S/W Config



# One Quality: Scope, operational concept



- **Requirements:** users /programs wanted **a tool** to...
  - Capture *various kinds* of issues & manage them to closure
    - Engr/Development → Production
    - Hardware, Software, Systems
  - Be integrated with primary development/ operational tools: Software IDE, Agile/PDM, MES
  - Provide metrics/ analytics
- **Concept of Operations:**
  - Ability to capture & manage issues in native tools
  - A collection point (data mart) to analyze issues & trends
  - Future: some level of integration between (hw/sw) entry/ management tools



Multiple options to capture issues, one analytics back end.

# Agenda



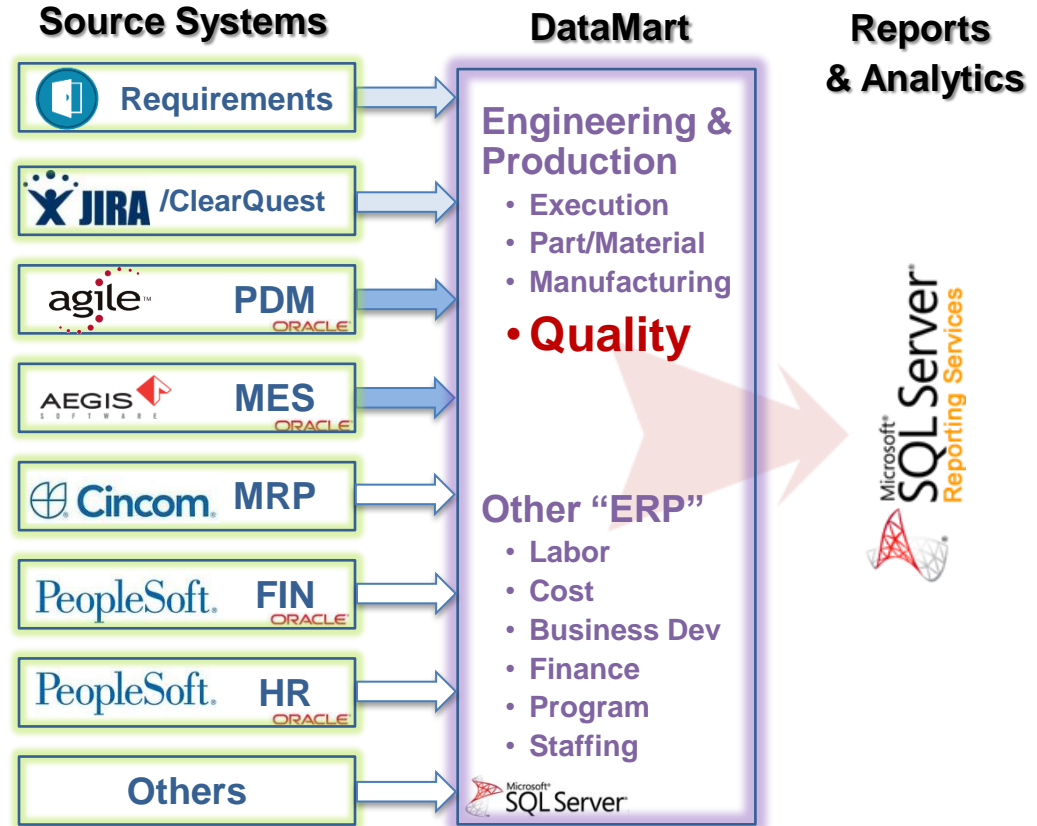
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# Quality data collection & analysis













- Broad view of quality:
  - Production/ supplier
  - Engineering:
    - S/W issues/PTRs
    - Hardware ECOs
    - Requirements volatility
- Analytics via data mart
  - ‘Source system’ agnostic
  - Join quality data with other enterprise data
- You can only measure what you collect



# One Quality process capabilities









Workflow(s)	Description/ Interfaces	Metrics (Open)
 NCR	Part/PI non-conformances <b>Interfaces:</b> ←MES, ←RIDS, →Vaults, →DWH	>1000 NCRs/ month
 SSR	Supplier support (info, discrepancy, FAI) requests <b>Interfaces:</b> ←eXpo, →DWH	6800 total SSRs
 CAPA	Dispositions, Corrective Actions (incl SCARs) <b>Interfaces:</b> →←eXpo, →Vaults, →DWH	>1300 DISPs & RCCAs/ month
 RTRN	Customer Returns (one business area)	>750 total RTRNs
 GIDEP	GIDEP alerts (Part alerts, advisories)	>680 total GIDEPs
 INSP	Inspection Instructions ( <i>related to Part; no AI</i> )	>20000 total INSPs
 SPW	Supplier Performance Waiver ( <i>related to Part; no AI</i> )	~580 total SPWs
 Process Problem	Systemic process issues worked to resolution	>900 total PRPRs
 Audit Finding	Findings from Audits worked to closure	>1300 total AFs
 Audits	Audits	2400 total Audits
EFP	Effectivity Plan; ensures closed loop change process	(new November 2015)

*1000s of users interact with >10K PQM (& related) objects each month*

# Other process capabilities



Workflow(s)	Description/ Interfaces	Metrics (Open)
 ECO, NR, RBP	Change mgmt of Parts/BOMs, Vendor parts <b>Interfaces:</b> ←Digital, ←Mech, →MRP, →MES, →Vaults, →DWH	~1300 ECOs/ month ~1400 NRs/ month
 BCO, RCO	Release & change mgmt of Product Instances <b>Interfaces:</b> ←MES	~3600 BCOs/ month ~650 RCOs/ month
 EMR	Procurement request (demand generation) <b>Interfaces:</b> →MRP, →DWH	~500 EMRs/ month
 Mat'l Request	Can drive generation of EMR/demand; BIN process <b>Interfaces:</b> ←BIN	~400 total MRs
 Traveler	Work instructions ( <i>related</i> to Part; <i>no</i> AI)	>10000 total Travelers
<i>Under Development</i>		
 Digital WO	ECAD Library work order (~3 related CRs) <b>Interfaces:</b> →←Digital	(new January 2016)

*Quality assurance doesn't end with quality records.*

# Agenda

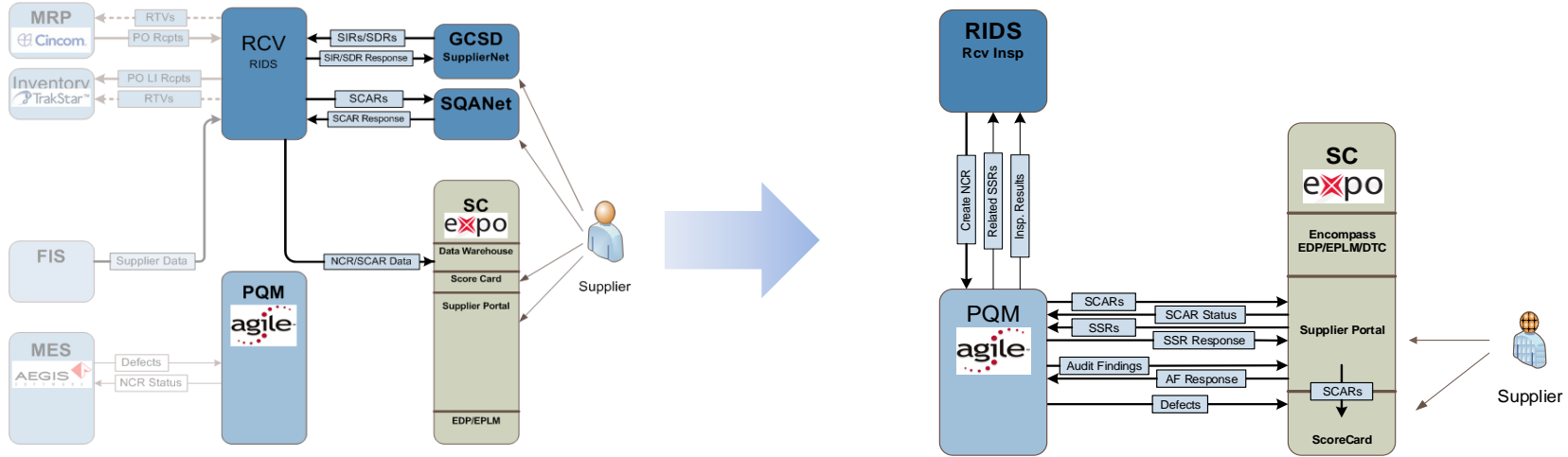


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# 1. Supplier Quality



## • Benefits: system simplification

- Efficiency/ access for: SQEs, QEs, Inspectors, Buyers, Engineers... (& Suppliers)
- O&M costs: eliminated tools (RIDS, SupplierNet, SQANet) & interfaces
- Extensibility: adding record types (AF, FAI, Supplier CN); sending to dataMart

# Supplier portal, including scorecard



- The Harris SC portal is a single point of access for our suppliers

## 1. Quality information:

- SCARs
- SSRs (discrepancies, information, ECRs...)
- Audit Findings

## 2. Procurement information:

- POs, Q-Clauses

## 3. Scorecard visibility →

- Includes deliveries, quality

Supplier Name

(52690 - GCSD)

Address:

7 Last Payment Terms: NET 30

City: Unknown

Business Classification:

State: Pennsylvania

Country: United States

Monthly Summary

Quarterly Summary

Charts

Time vs. Delivery  
%, Quality %, PPM,  
SCAR count

Metric	Prev FY	Goal	Weight	FYTD	2015Q1	2015Q2	2016Q3	2016Q4
Invoice Amount (\$K)								
Spend (\$K)								
Delivery Percent - Lots Method								
Quality Percent								
Corrective Actions All								
Corrective Actions Late								
Scar Penalty								
SPI - Lots Method								
Cost of Nonconformance (\$K)								

expo

## 2. Inspection Instruction Records



- 42K legacy Receiving Inspection records; cleaned to 27K migrated
- Simple workflow
- Benefits:
  - Accessibility (QEs, Inspectors, etc.)
  - Extensible (included other inspection types)
  - Enforced standards, data integrity
  - Auditable (history)
  - Low maintenance costs

The screenshot displays a web-based interface for an inspection instruction record. The record ID is INSP00020877, titled 'Inspection Instructions • PA ALL Receiving Insp Instructions'. It includes a navigation bar with 'Comment', 'Navigator', and 'Actions' buttons. Below the navigation bar, there are tabs for 'Cover Page', 'Affected Items', 'Workflow', 'Relationships', and 'Attachments'. The main content area shows the following details:

- Number: INSP00020877
- Change Type: Inspection Instructions
- Description of Change: PA ALL Receiving Insp Instructions
- Reason For Change: Workflow: Inspection Instructions
- Date Originated: 01/08/2015 05:48:29 PM EST
- Date Released: 10/12/2015 07:56:11 AM EDT
- Final Complete Date: 10/12/2015 07:56:11 AM EDT
- Functional Team(s):
- Program: CAP-STT-H-LRIP
- Project Authorization: ALL
- Notes:
- Inspection Instructions
- Inspection Area(s): Receiving Inspection
- Final Risk Level:
- Source Inspection Plan:
- Receiving Inspection Plan: INSPECT PER SIMPLIFIED DRAWING, NO CMM REQUIRED. Note:
  - 1) Etch mark depth from Note 12 Sheet 1Zone B6 of drawing not required to be measured. Purpose of etch mark is for mfg. aid of align inspect etch is present and is not breaking through other side of cover.
  - 2) Painted Countersinks (Note 5 Zone D6) with small exposed portion of metal at bottom of countersink from masking is acceptable. Pic
- Manufacturing Inspection Plan:
- Supplier Quality Inspection Plan:
- Supplier:

Callouts from the image:

- Approved**: A blue label above the 'Attachments' tab.
- Related to part(s). Can be many-many**: A green box pointing to the 'Attachments' tab.
- Detailed instructions, photos**: A green box pointing to the 'Attachments' tab.
- Auto-generated**: A green box pointing to the 'Reason For Change' field.
- Multi-list. Workflow rules ensure plans are not left blank**: A green box pointing to the 'Inspection Instructions' section.

# 3. QE Execution Dashboards



## QE Dashboard

- Emailed daily: shows past due, soon due
  - Eliminates non-value added labor
  - Eliminates delay/risk: reduced aged/ overdue

	"Manual" Process	Admin Support Process	Dashboard Process
Cost			\$18K
Annual Savings		\$70K	\$140K
Risk Level	Daily Status	Weekly/ Monthly Status	Daily Status

Home

Employee Execution Scorecard

SSR

Aged 5+	Aged <5	Hold	

NCR-R

Aged 5+	Aged <5	Pending >1day	Hold

NCR

Critical 20+	Adverse 40+	Low 60+	Hold

PRPR

Overdue	Due <2 Wks	Pending
1	2	

Audit

Overdue	Due < 1 Month	Due < 2 Month

Audit Finding

Overdue	Due < 2 Wks

LIEN NCR

Aged 30+	Aged 10 - 30

RCCA

Pending >1 day	RCCA Verify

SPW

Aged 10+	Aged 5+

OOT NCR

Aged 10+	Aged 5+

Missing Asset

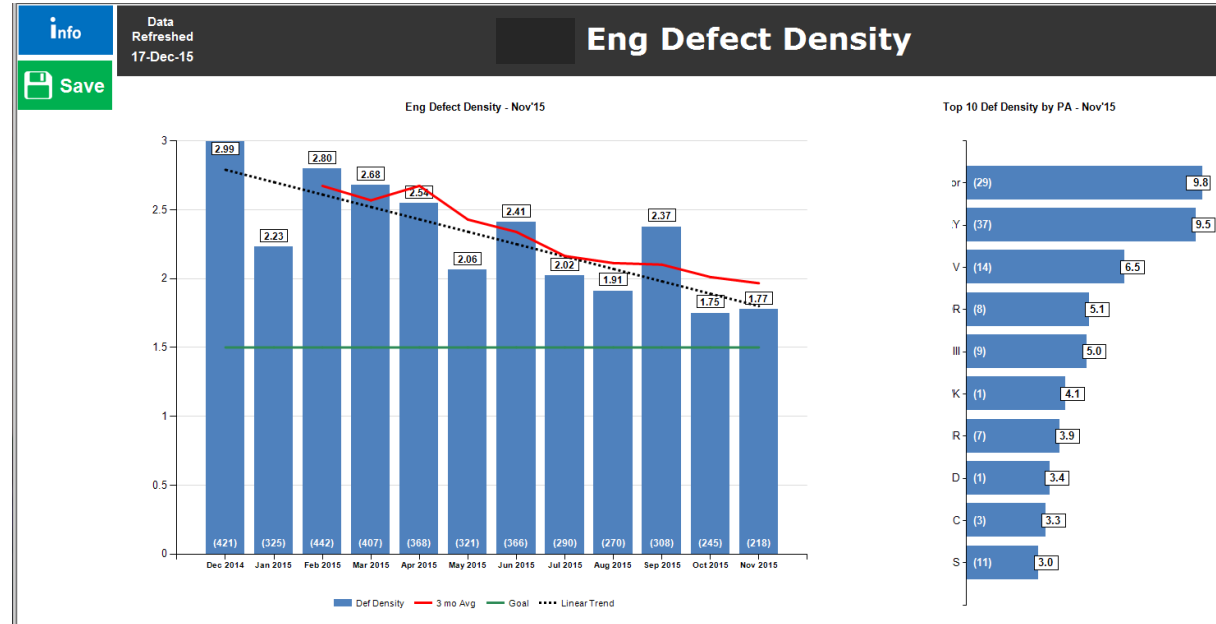
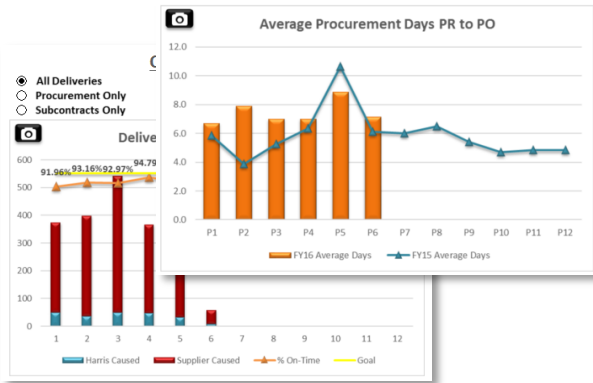
Overdue 60+	Overdue

Click table to review records

# 4. Program/Functional Dashboards



- Combining PLM & Quality data with labor & financial data allow us to track performance metrics such as...
  - Engineering defect density
  - Cost of poor quality
  - CAPA effectiveness
  - SC performance



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- Agile is the primary platform for One Quality at Harris
- One Quality enables business excellence through process consistency, efficiency, and transformation
  - Many disparate quality data collection systems were **eliminated**
  - **Connected data** enables real-time analysis and faster, more informed decisions
  - Data **analytics** allow us to spot trends and focus process improvement efforts