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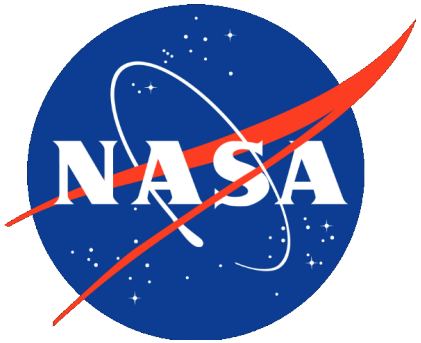
BUSINESS WITHOUT LIMITS

NASA LaRC Engineering Collaboration with Maximo

Facility Configuration Management System (FCMS)

Disclaimer



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Introductions

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Smart Infrastructure Technology Lead

NASA Langley Research Center

NASA LaRC FCMS Team

NASA LaRC Maintenance and Operations

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Managing Director

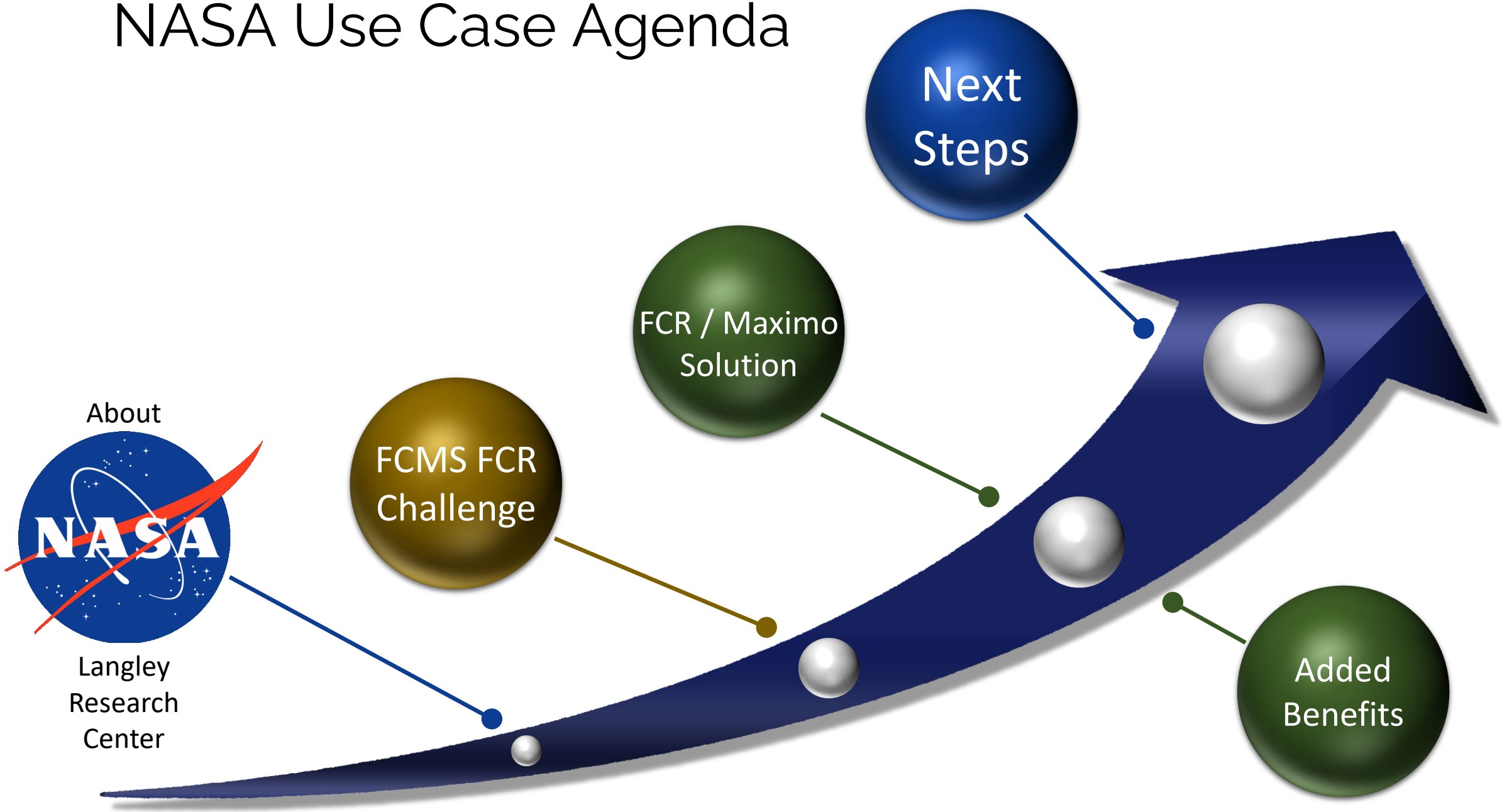
Qellus, LLC

Craig Valera

EIM Solutions Consultant

OpenText Corporation

NASA Use Case Agenda




NASA's LANGLEY
RESEARCH CENTER

About NASA Langley Research Center

About NASA Langley

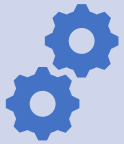
NASA's Langley Research Center is comprised of nearly 200 facilities on 764 acres in Hampton, Virginia, and employs about 3,400 civil servants and contractors. Langley works to make revolutionary improvements to aviation, expand understanding of Earth's atmosphere and develop technology for space exploration.

https://www.nasa.gov/langley/overview

NASA LaRC Facility Change Manage Program

Facility Configuration Management (FCM)

The FCM Program exists to manage Configuration Controlled Items (CCI).



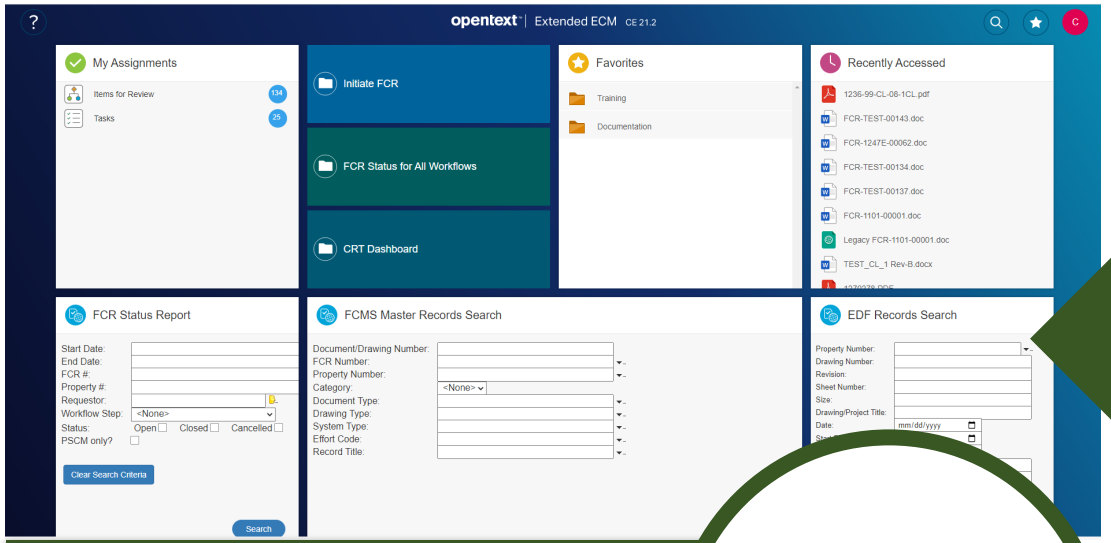
Configuration Controlled Items (CCI)

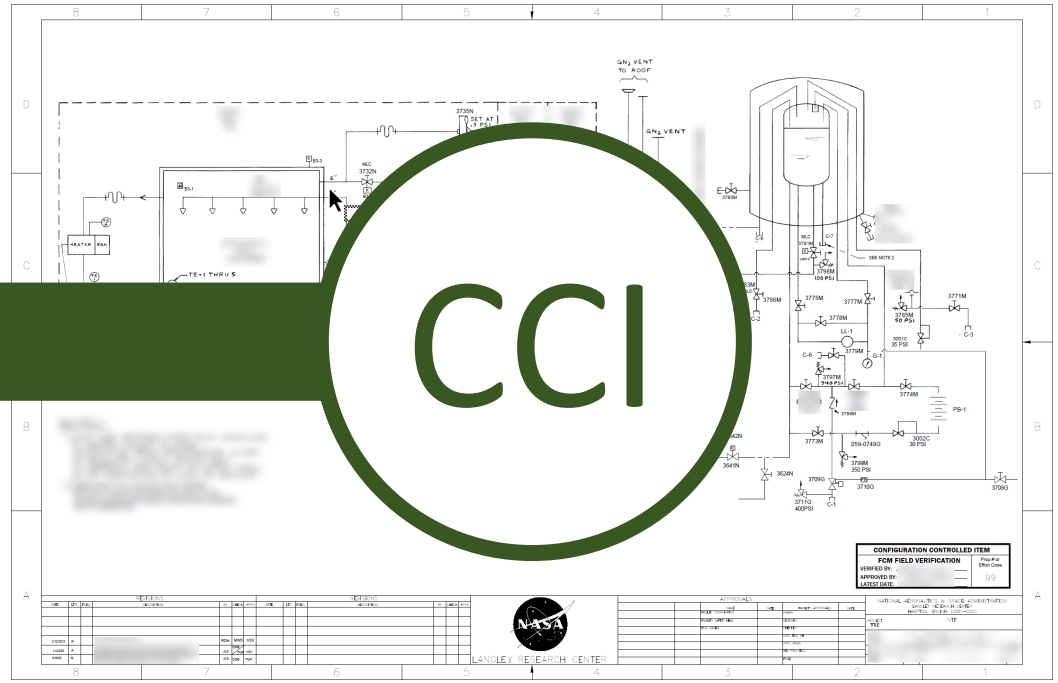
CCI includes drawings, documents, and Building Information Models (BIM), that have been designated to ensure the successful development, maintenance, sustainability, and support of complex systems, equipment, and facilities.

Facility Change Manage System (FCMS)

FCMS was developed to manage CCI related to the design, construction, operations, maintenance, repair, upgrade, and demolition of LaRC facilities.

Facility Configuration Management System





CCI

Facility Configuration Management System

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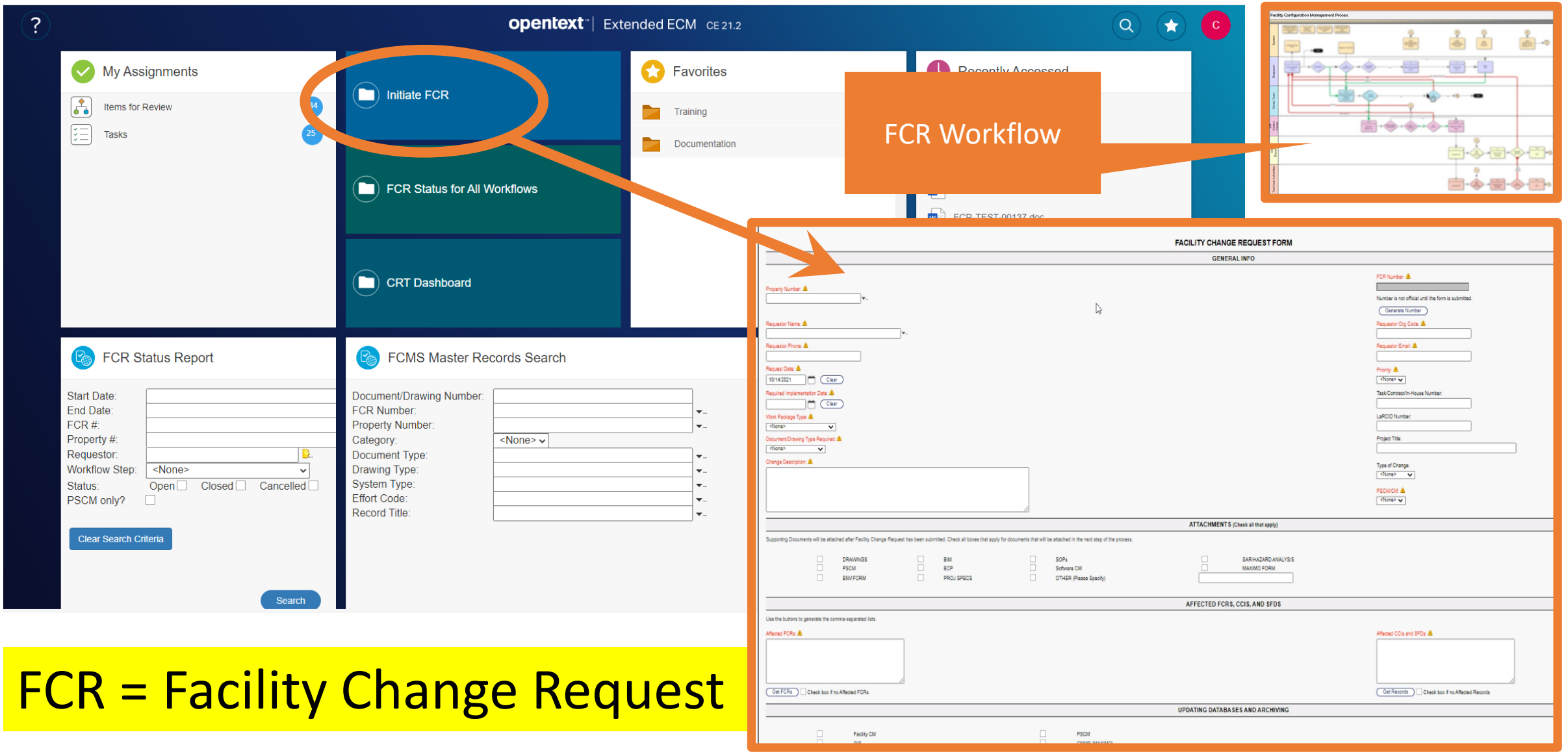
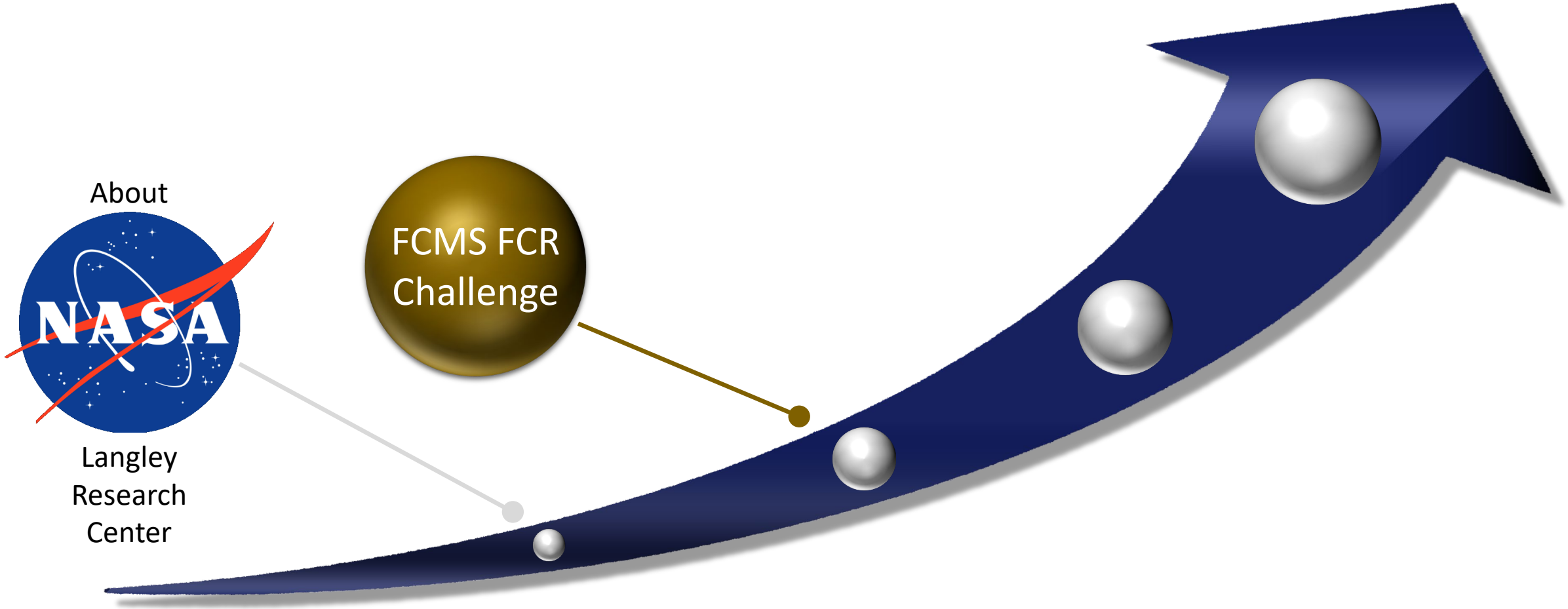
Changes to CCI are Processed with an FCR



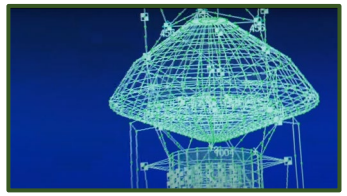
FCR = Facility Change Request

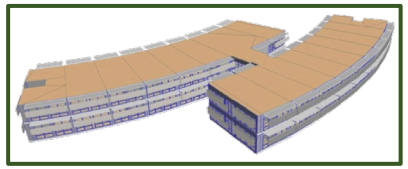
NASA Use Case Agenda

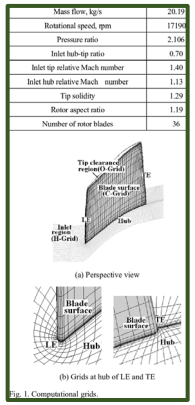


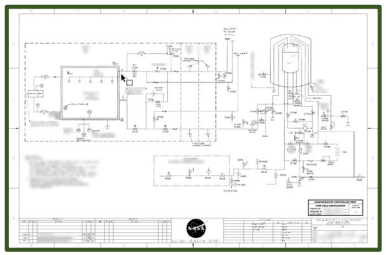
Lack of Integration Between FCMS and CMMS

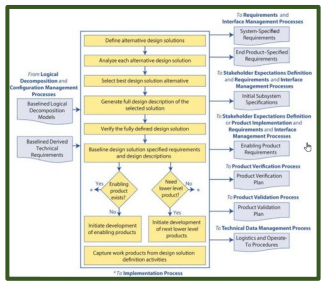
FCRs need to be coordinated with operation and maintenance to avoid conflicts. FCR planners did not have access to the scheduled work in Maximo making it cumbersome to plan FCR implementations.

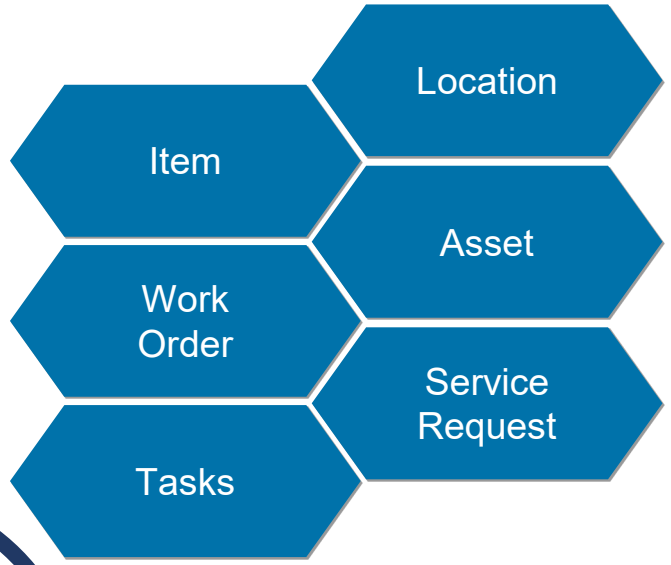












Facility Configuration Management System

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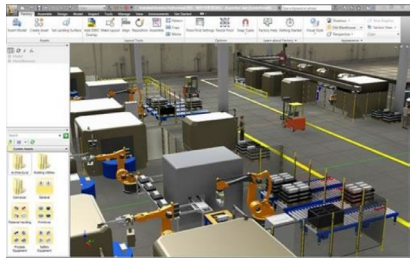
IBM maximo®

Facility and Asset Management System

Increased Manual Effort & Potential for Mistakes

Facility Engineer

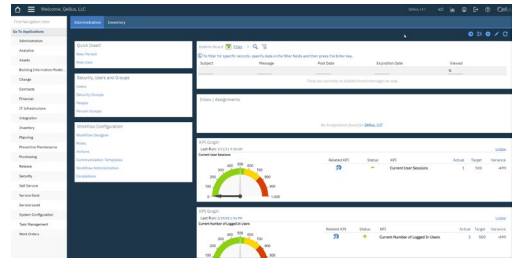


Engineering

Manual Coordination

Operations Planner

Maintenance Technician



Operations

Maintenance

Facility Configuration Management System

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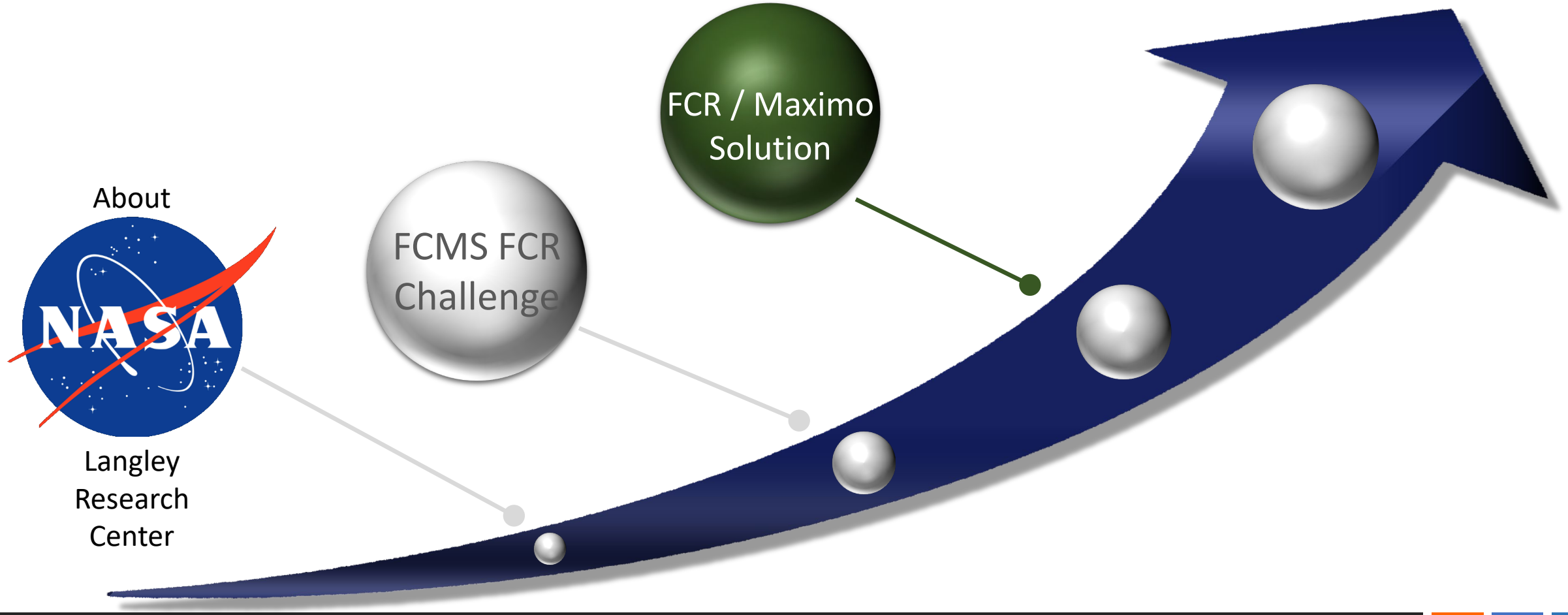
Facility and Asset Management System

NASA Use Case Agenda



Integrated FCMS and CMMS with Extended ECM

Facility Engineer

Operations Planner

Maintenance Technician

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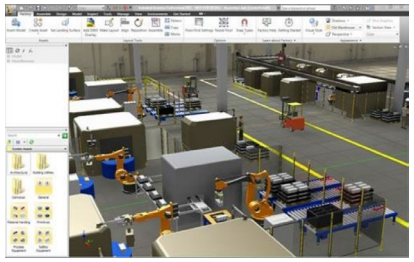
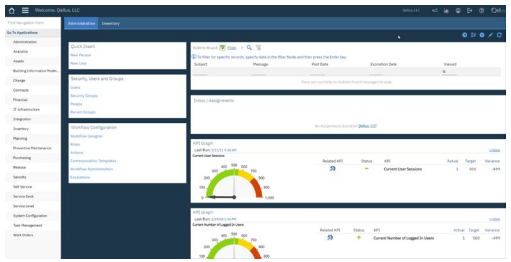
Extended ECM





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Extended ECM for IBM Maximo

Engineering → Operations → Maintenance

Facility Configuration Management System

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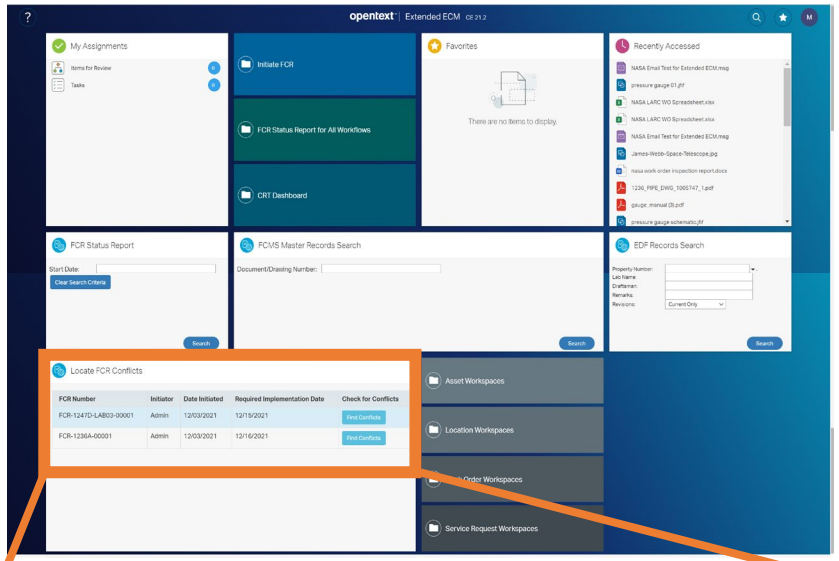
Facility and Asset Management System

Integrated FCR Implementation Conflict Check

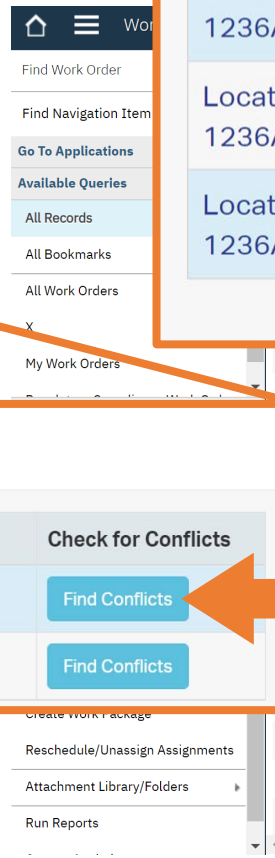


Locate FCR Conflicts

FCR Number	Initiator	Date Initiated	Required Implementation Date	Check for Conflicts
FCR-1247D-LAB03-00001	Admin	12/03/2021	12/15/2021	Find Conflicts
FCR-1236A-00001	Admin	12/03/2021	12/16/2021	Find Conflicts

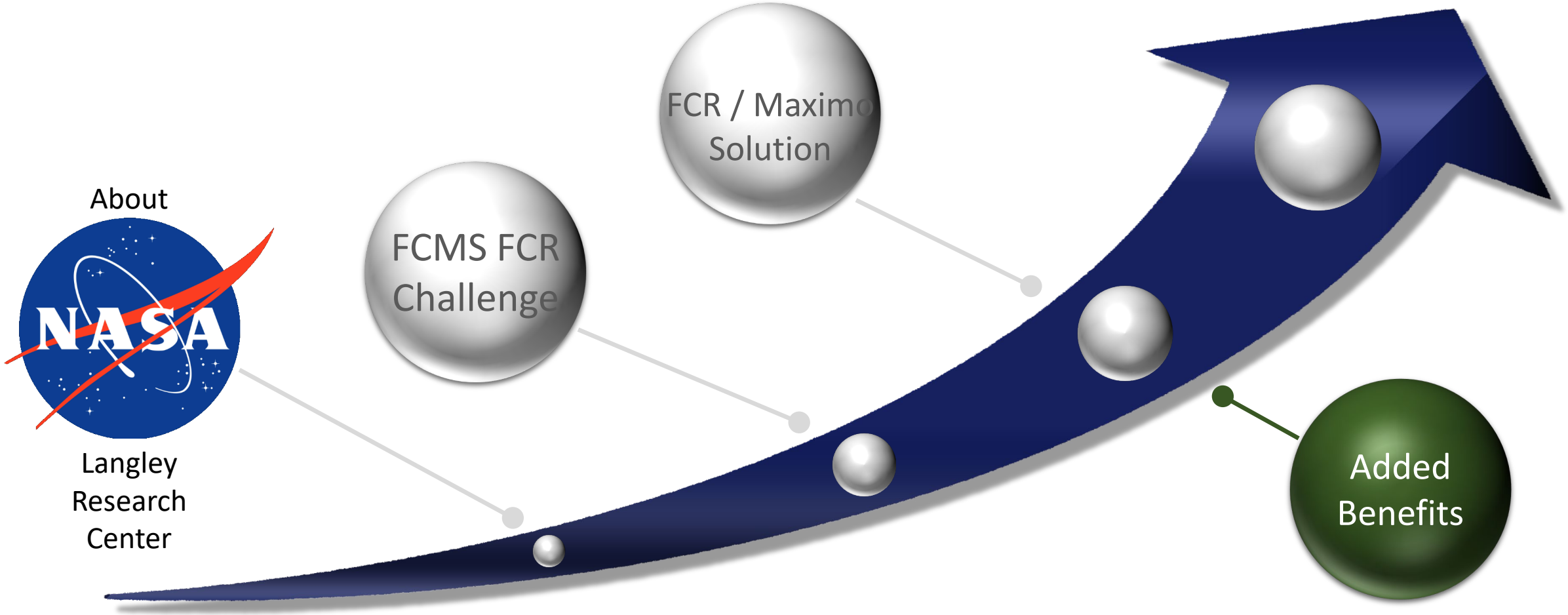
Locate FCR Conflicts

1236A-100 (GAG) MRP		12/30/2021	1118
Location - 059-3987S - 1236A-100 (GAG)	Work Order 4297267 - QLS Test	12/08/2021 - 12/22/2021	059-3987S
Location - 059-3987S - 1236A-100 (GAG)	Work Order 4297269 - QLS Test	12/13/2021 - 12/31/2021	059-3987S
Location - 059-3987S - 1236A-100 (GAG)	Work Order 1007 - NASA WO Test for FCR Conflicts - same property	12/01/2021 - 01/28/2022	059-3987S
Location - 059-1118 - 1236A-100 (GAG) MRP	Work Order 1005 - NASA LARC Add Work Order Test 01	12/06/2021 - 01/28/2022	059-1118



1001-70	conveyor to ensure that unit runs quietly.	SHIPPING	12600	INPRG			NO
1001-80	oil in gear reducer. Examine drained oil.	SHIPPING	12600	INPRG			NO
3038	Leaking Pump	BR430	11430	CLOSE	7/4/00 7:27 AM	2	NO
1000	ate Guard Rails Around Compressor	BR300	11300	WAPPR	3/30/16 3:00 PM	2	NO
5009	ator in Boiler Room Making Noise - Check-out	BOILER		WAPPR		5	NO
1254	Stopped	BR400	11400	CLOSE	1/7/01 7:51 PM	1	NO
	r Jammed	BPM3100	13110	WAPPR		5	NO
2000	Window Broken in Shipping Dept.	SHIPPING		WAPPR		2	NO
5002	Stop Guard on Shipping Dock	SHIPPING		WAPPR		1	NO
6008	Fire Door Cable Broken	BOILER		WAPPR		1	NO
6259	Check Low Flow on Condensate Return Pump	BR430	11430	CLOSE	8/11/01 8:04 AM	3	NO
6007	Air Filter - Check-out	BOILER		WAPPR		2	NO
5006	Check-out Alignment of Steel Support Bracket	BPM3100	13143	WAPPR		2	NO

NASA Use Case Agenda



Trusted Engineering and Asset Document Management for Operations and Maintenance

Assets

Max Demo

IBM

Find Asset

Service Address | Map | Business Workspace

60FT HD

Safety Documents

Centrifugal Pump Safety.pdf

Engineering & Maintena…

Centrifugal Pump Manual.pdf

T-21 Flow Tags.dwg

1 /1

SAFETY FIRST!

Please Read This Before Installing Or Operating Pump. This information is provided for **SAFETY** and to **PREVENT EQUIPMENT PROBLEMS.** To help recognize this information, observe the following symbols:

IMPORTANT! Warns about hazards that can result in personal injury or Indicates factors concerned with assembly, installation, operation, or ma could result in damage to the machine ignored.

CAUTION! Warns about hazards that **can or w** personal injury or property damage if ignored. Us below.

WARNING! Warns about hazards that can or wil personal injury, death, or major property damage with symbols below.

Hazardous fluids can cause fire or explo-

Extremely

WARNING ! Do not wear loose clothing that may become entangled in moving parts.

WARNING ! Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.

1 /10

INSTALLATION AND OPERATION MANUAL

Centrifugal Pu

D-Size Layout /1

Move/Modify Assets

Swap Assets

8 items

More Actions

Asset Details

Report Downtime

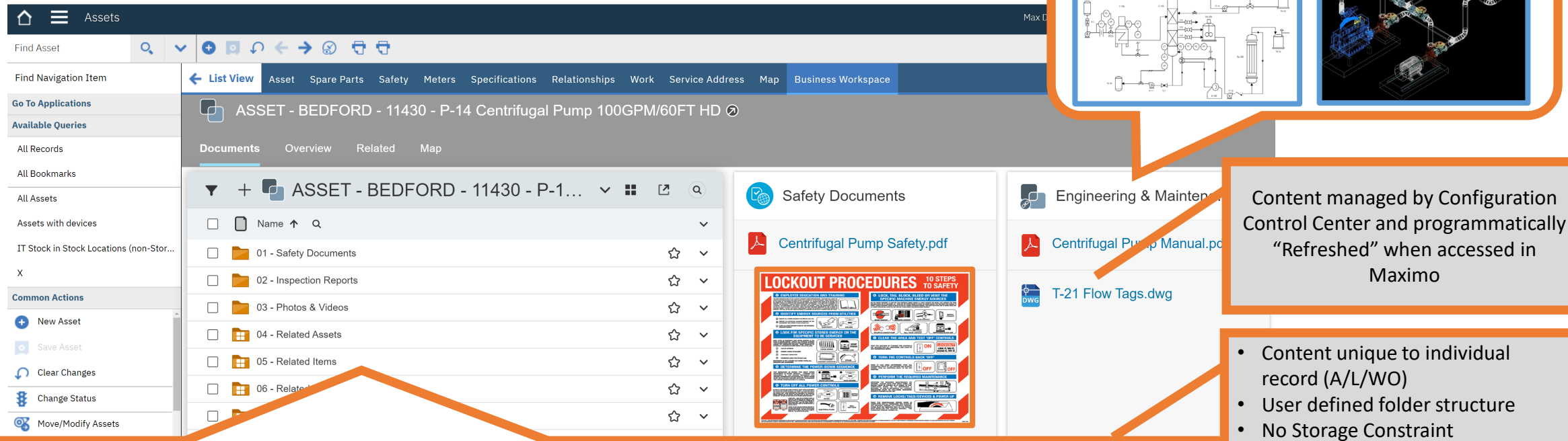
Manage Downtime History

Create

Open Drilldown

Apply Item Assembly Structure

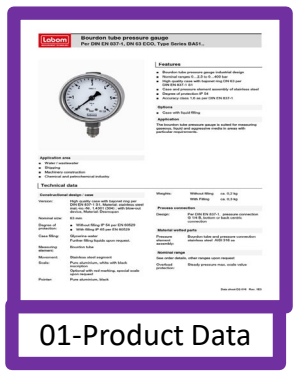
Asset Lifecycle Document Management



Content managed by Configuration Control Center and programmatically "Refreshed" when accessed in Maximo

- Content unique to individual record (A/L/WO)
- User defined folder structure
- No Storage Constraint
- Visual Content increasingly prevalent.

Business Workspace Structured Content – Asset Related Content

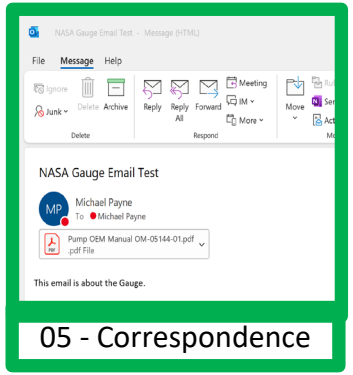


01-Product Data

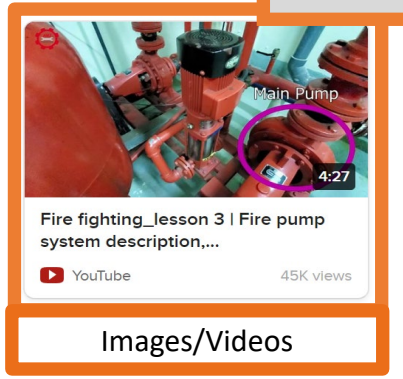
02- Asset Health

03-Warranty

04-Images/Videos

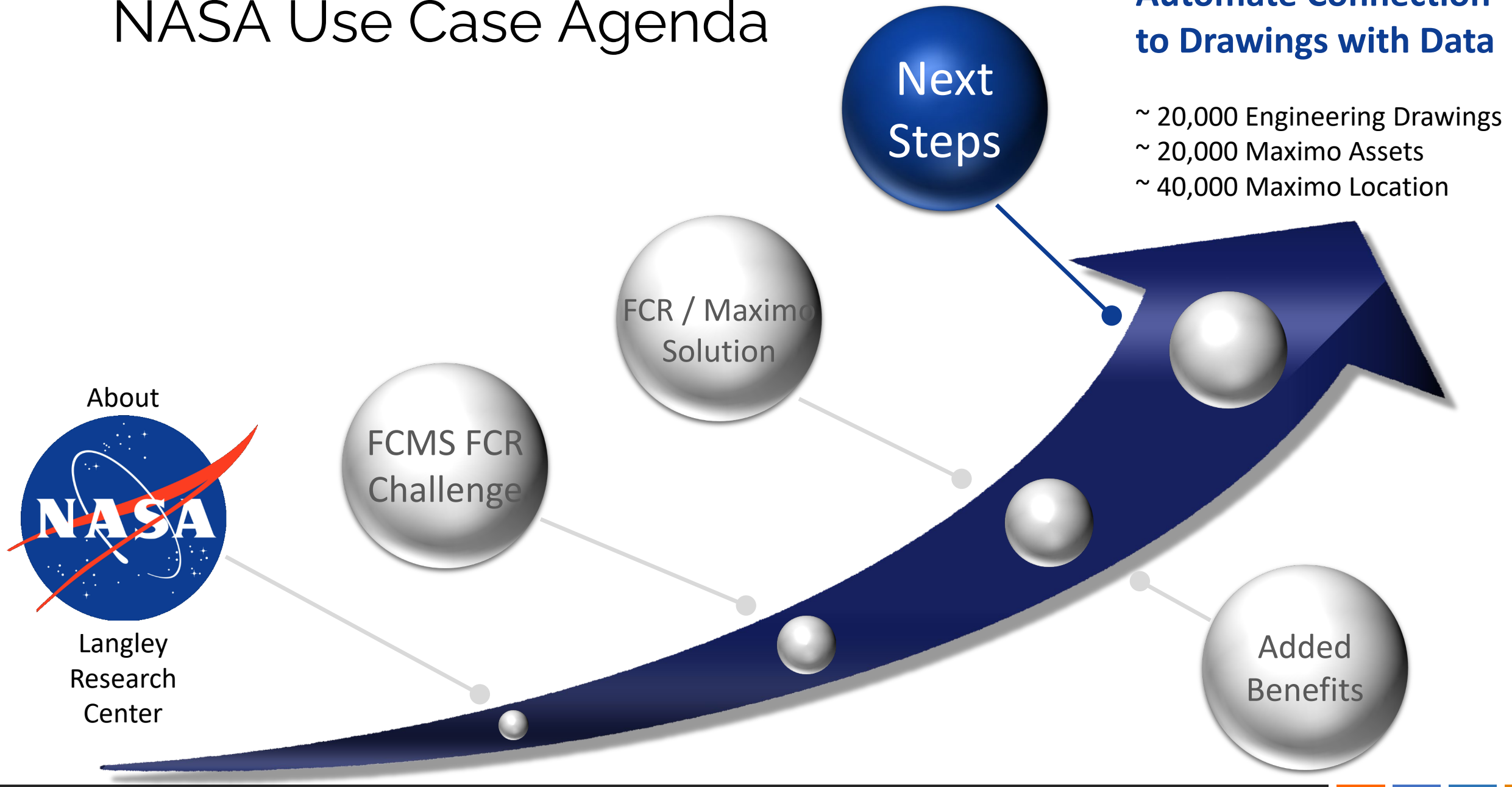


05 - Correspondence



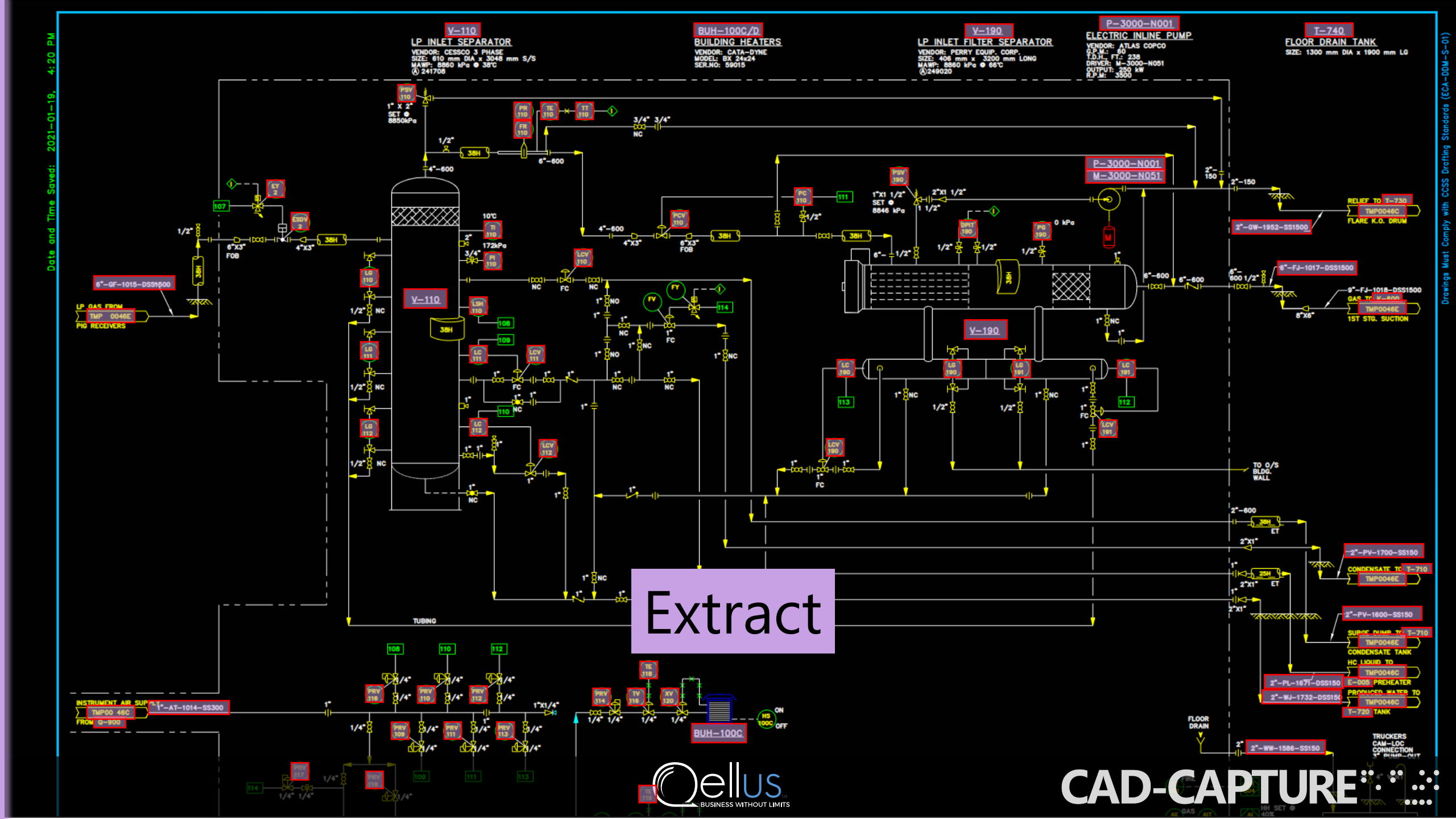
Images/Videos

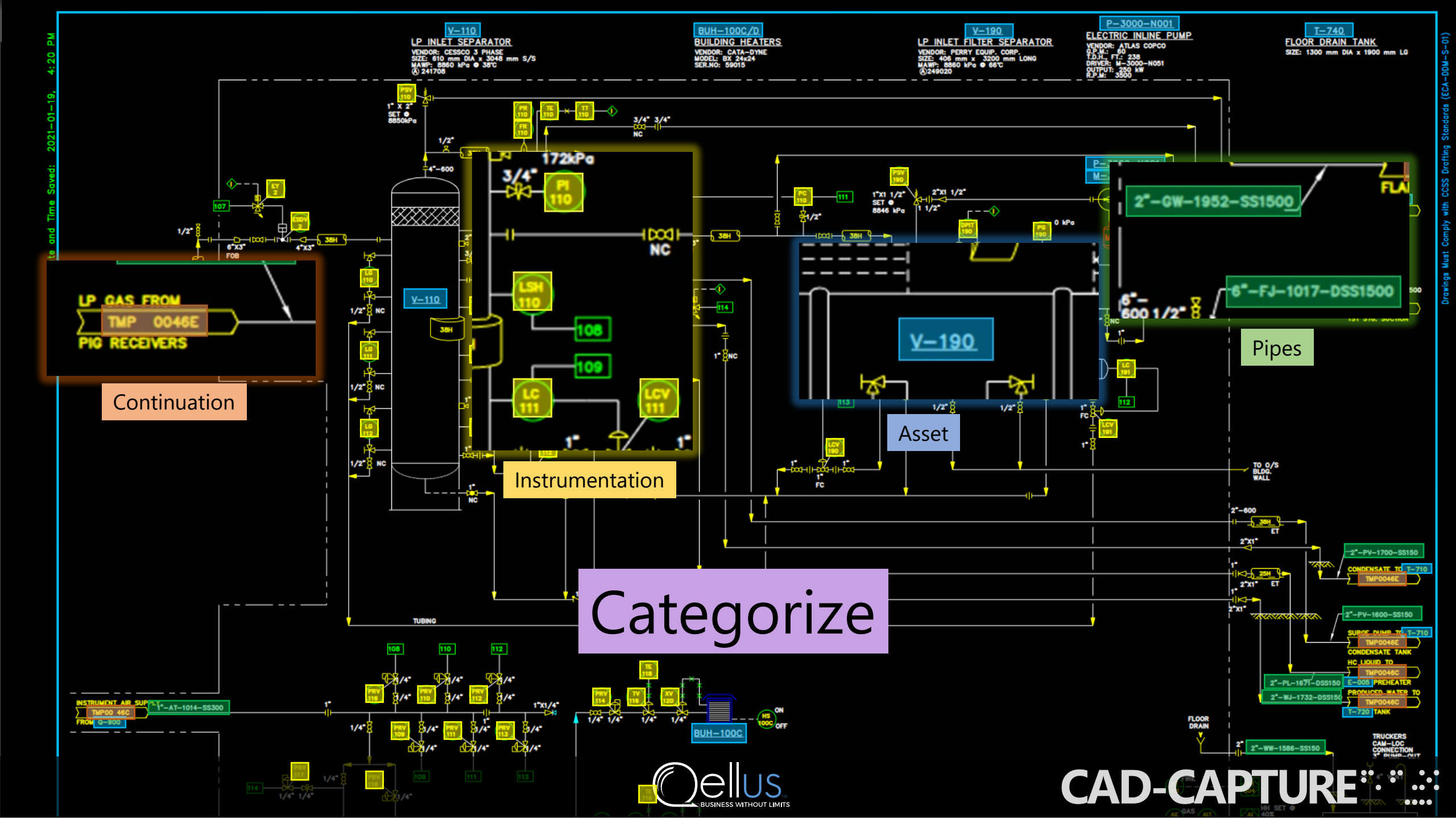
NASA Use Case Agenda



Automate Connection to Drawings with Data

~ 20,000 Engineering Drawings
~ 20,000 Maximo Assets
~ 40,000 Maximo Location


V-110
LP INLET SEPARATOR
VENDOR: CESSCO 3 PHASE
SIZE: 610 mm DIA x 3048 mm S/S
MAWP: 8860 kPa @ 38°C
BUH-100C/D
BUILDING HEATERS
VENDOR: CATA-DYNE
MODEL: BX 24x24
SER.NO: 59015
V-190
LP INLET FILTER SEPARATOR
VENDOR: PERRY EQUIP. CORP.
SIZE: 406 mm x 3200 mm LONG
MAWP: 8860 kPa @ 66°C
P-3000-N001
ELECTRIC INLINE PUMP
VENDOR: ATLAS COPCO
T-740
FLOOR DRAIN TANK
SIZE: 1300 mm DIA x 1900 mm LG
Date and Time Saved: 2021-01-19, 4:20 PM
Drawings Must Comply with CCSS Drafting Standards (ECA-DDM-S-01)
P-3000-N001
M-3000-N051
V-110
V-190
LP GAS FROM PIG RECEIVERS
TUBING
TO O/S BLDG. WALL
RELIEF TO FLARE K.O. DRUM
1ST STG. SUCTION
CONDENSATE TANK
HC LIQUID TO
PREHEATER
FLOOR DRAIN
TRUCKERS CAM-LOC CONNECTION
BUH-100C
Extract
Qellus
BUSINESS WITHOUT LIMITS
CAD-CAPTURE



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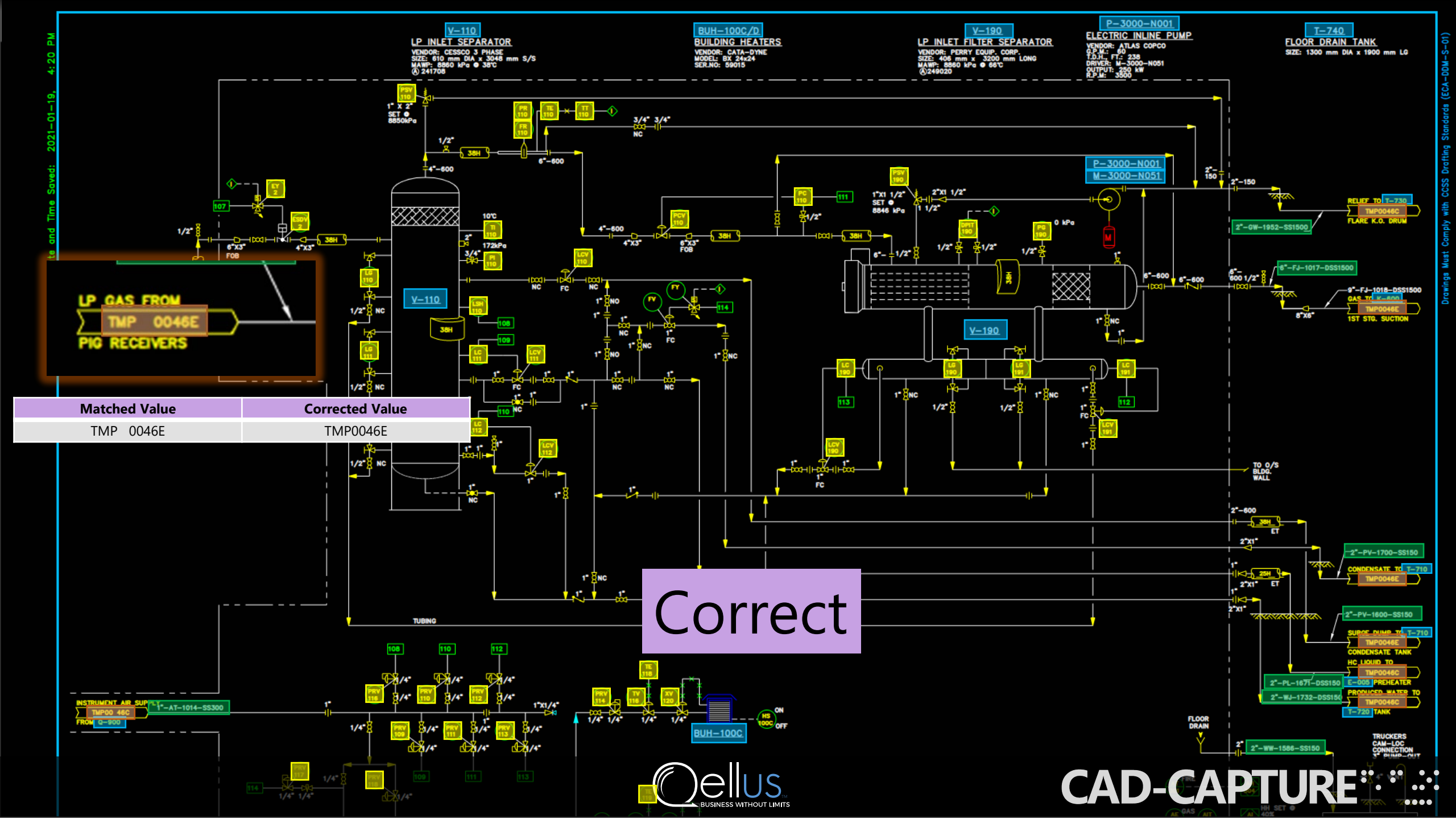
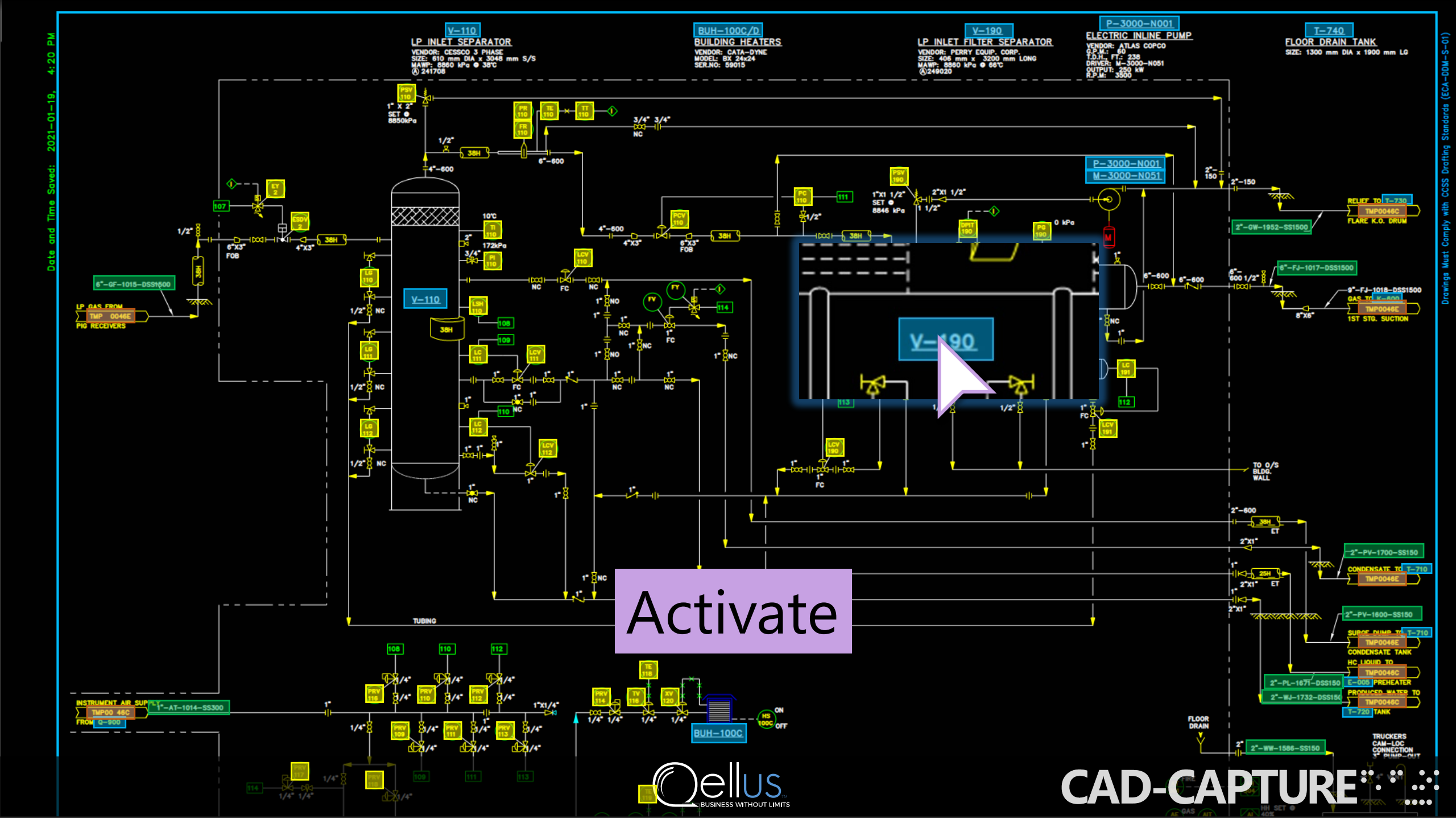
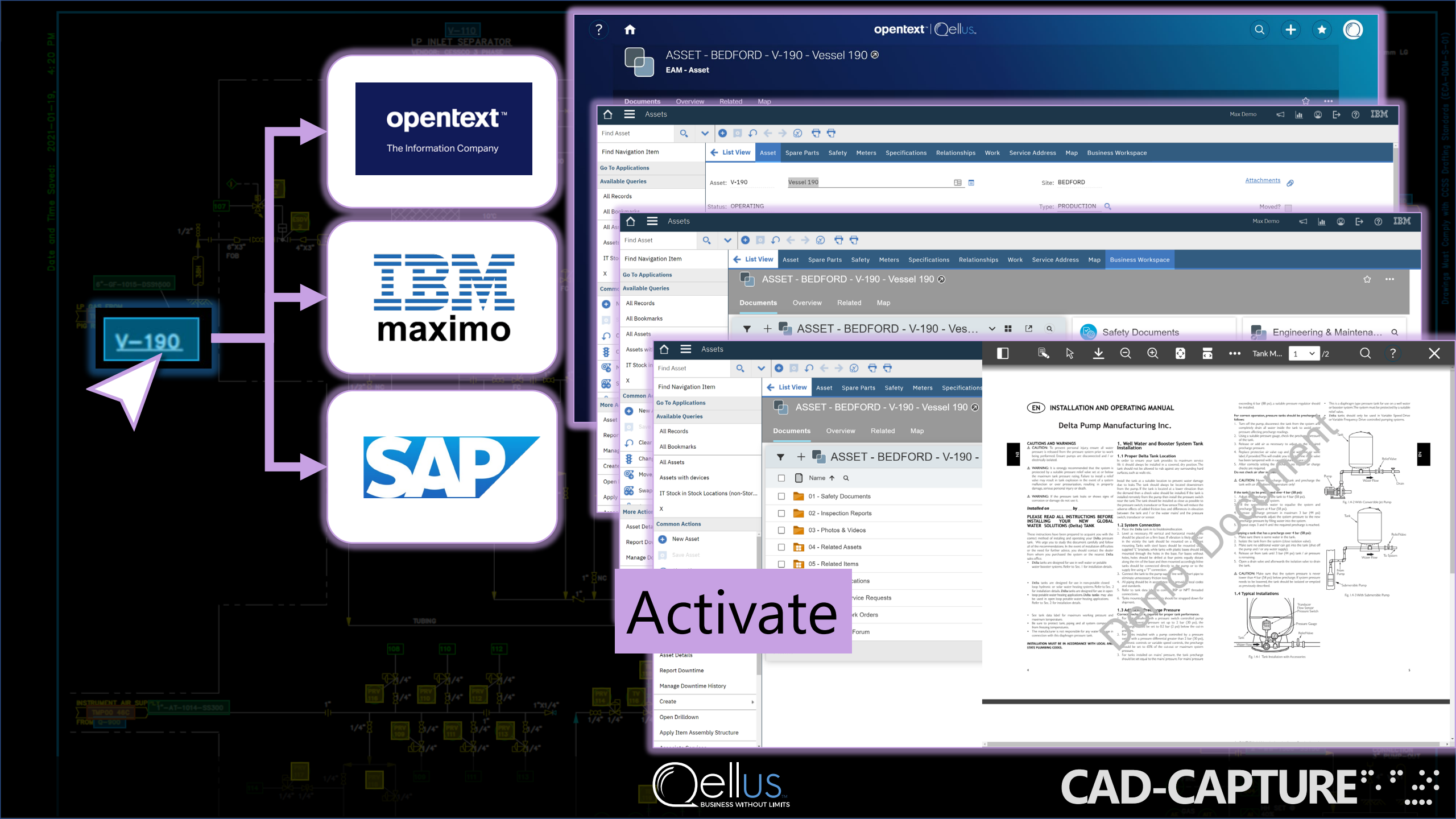
CAD-CAPTURE



Matched Value	Corrected Value
TMP 0046E	TMP0046E

Correct


V-110
LP INLET SEPARATOR
VENDOR: CESSCO 3 PHASE
SIZE: 610 mm DIA x 3048 mm S/S
MAWP: 8860 kPa @ 38°C
A 241708
BUH-100C/D
BUILDING HEATERS
VENDOR: CATA-DYNE
MODEL: BX 24x24
SER.NO: 59015
V-190
LP INLET FILTER SEPARATOR
VENDOR: PERRY EQUIP. CORP.
SIZE: 406 mm x 3200 mm LONG
MAWP: 8860 kPa @ 66°C
A 249020
P-3000-N001
ELECTRIC INLINE PUMP
VENDOR: ATLAS COPCO
G.P.M.: 60
T.D.H.: FT: 238
DRIVER: M-3000-N051
OUTPUT: 250 kW
R.P.M.: 3500
T-740
FLOOR DRAIN TANK
SIZE: 1300 mm DIA x 1900 mm LG
Date and Time Saved: 2021-01-19, 4:20 PM
Drawings Must Comply with CCSS Drafting Standards (ECA-DDM-S-01)
P-3000-N001
M-3000-N051
V-110
V-190
6"-GF-1015-DSS1500
LP GAS FROM TMP 0046E PIG RECEIVERS
TUBING
TO O/S BLDG. WALL
RELIEF TO T-730 TMP0046C FLARE K.O. DRUM
2"-GW-1952-SS1500
6"-FJ-1017-DSS1500
9"-FJ-1018-DSS1500
GAS TO K-600 TMP0046E
1ST STG. SUCTION
2"-PV-1700-SS150
CONDENSATE TO T-710 TMP0046E
2"-PV-1600-SS150
SUPGE PUMP TO T-710 TMP0046E
CONDENSATE TANK
HC LIQUID TO TMP0046C
2"-PL-1671-DSS150
E-005 PREHEATER
PRODUCED WATER TO TMP0046C
2"-WJ-1732-DSS150
T-720 TANK
FLOOR DRAIN
2"-WW-1586-SS150
TRUCKERS CAM-LOC CONNECTION
INSTRUMENT AIR SUP TMP00 46C
1"-AT-1014-SS300
FROM G-900
BUH-100C
Activate
Qellus
BUSINESS WITHOUT LIMITS
CAD-CAPTURE


opentext
The Information Company
IBM
maximo
SAP
V-190
opentext | Qellus
ASSET - BEDFORD - V-190 - Vessel 190
EAM - Asset
Documents
Overview
Related
Map
Assets
Find Asset
Find Navigation Item
Go To Applications
Available Queries
All Records
All Bookmarks
All Assets
Assets with devices
IT Stock in Stock Locations (non-Stor...
Common Actions
New Asset
Save Asset
Report Downtime
Manage Downtime History
Create
Open Drilldown
Apply Item Assembly Structure
List View
Asset
Spare Parts
Safety
Meters
Specifications
Relationships
Work
Service Address
Map
Business Workspace
Asset: V-190
Vessel 190
Site: BEDFORD
Status: OPERATING
Type: PRODUCTION
Attachments
Moved?
Max Demo
IBM
ASSET - BEDFORD - V-190 - Ves...
Safety Documents
Engineering & Maintena...
Name
01 - Safety Documents
02 - Inspection Reports
03 - Photos & Videos
04 - Related Assets
05 - Related Items
Activate
EN INSTALLATION AND OPERATING MANUAL
Delta Pump Manufacturing Inc.
CAUTIONS AND WARNINGS
1. Well Water and Booster System Tank Installation
1.1 Proper Delta Tank Location
1.2 System Connection
1.3 Adjusting Precharge Pressure
1.4 Typical Installations
PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLING YOUR NEW GLOBAL WATER SOLUTIONS (Delta) TANK
Demo Document
Qellus
BUSINESS WITHOUT LIMITS
CAD-CAPTURE

“

Questions & Answers

”

Image Credit: https://www.nasa.gov/press-release/nasa-television-to-air-space-station-cargo-ship-launch-docking-1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REDEFINE WHAT'S
POSSIBLE