Digital Oilfields and Decision Support Applications at Chevron SJV

Presented by

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CHEVRON

Summary

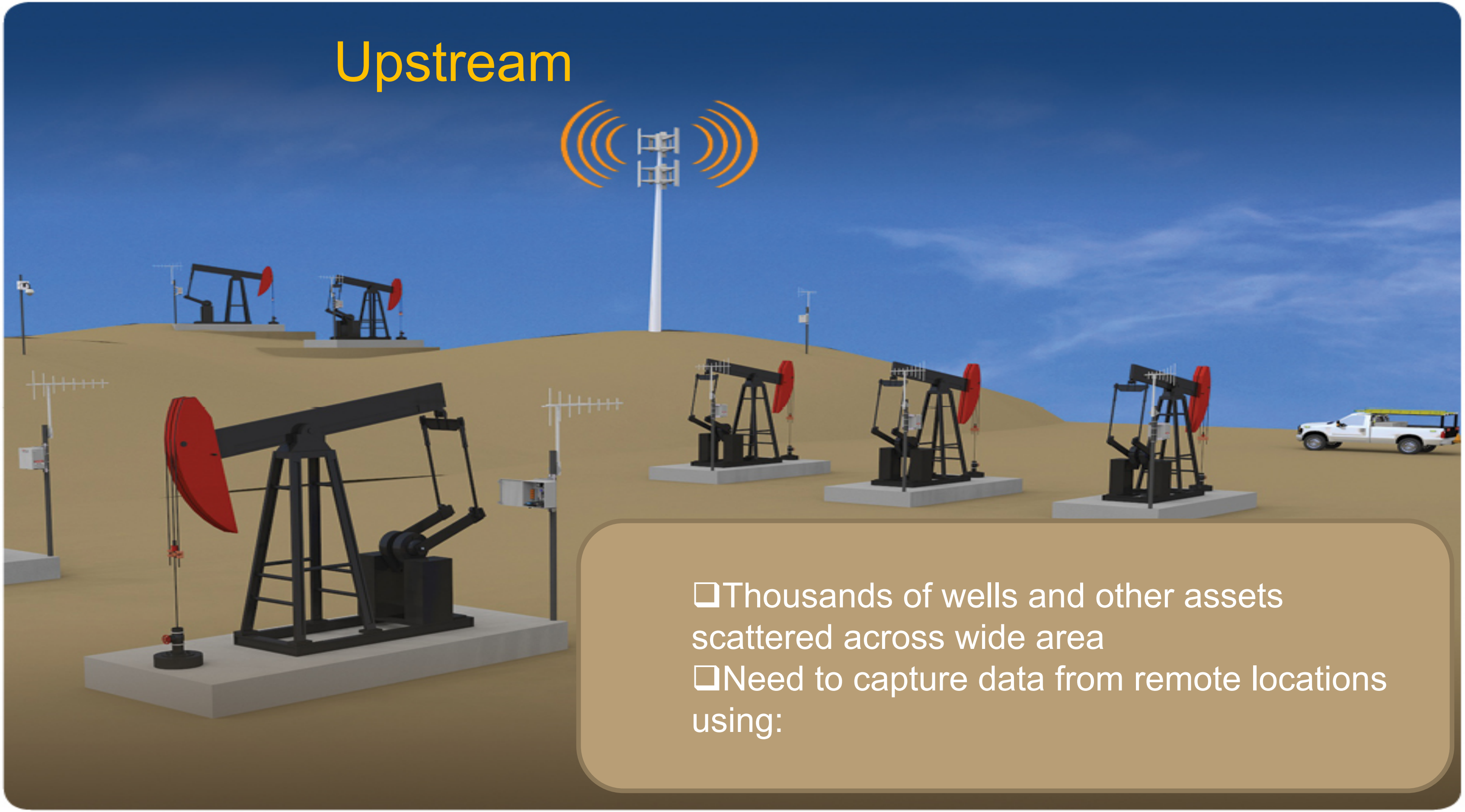
- Chevron’s UWT Mobility is providing real-time dashboards embedded into their business processes and workflows.
- Human workflow is exposed for SMEs to provide real-time analysis and share recommendations with Decision Makers.
- Using OSIsoft’ s PI System and Microsoft technology, this analysis is converted into Engineering Algorithms and fed into the Applications BI process.
- SharePoint is leveraged to provide real-time insight to decision makers.
- Real-time information is also provided to mobile operators using handhelds via dashboards, and trends.
- This innovative approach keeps feeding intelligence back into the system for ever-improving value.
- M2M enables wireless based real-time sync-up of the data

UWT Mobility

- Addresses Upstream Field Data Capture Needs for
  - Reliability
  - Asset Integrity
  - Health and Equipment Safety

- Following are the Priorities:
  - Elimination of Paper based data capture and redundancy
  - Promote Condition based Data Capture and Automation
  - Attain Real-time Data Monitoring at Decision Support Centers
  - Provide Real-time Data Accessibility in Fields for Performance tuning
  - Promote M2M Communication

Upstream



❑Thousands of wells and other assets scattered across wide area

❑Need to capture data from remote locations using:

Challenge

Upstream asset surveillance and remote field data gathering needs

- ☐ Thousands of wells and other assets scattered across wide area
- ☐ Need to capture data from remote locations using:

❖Paper based routes
  - Cumbersome
  - Not Real-time
  - Hard to track information

❖Home Grown Excel and Access based Apps
  - Data Redundancy
  - Hard to find Required Information
  - Hard to maintain across the team
  - Hard to maintain Security Features

❖Other Point Solutions
  - Need for 3rd party access privileges
  - Maintain Role Based Security Features
  - Role Based Security
  - Hard to meet Report Requirements
  - Real-time Dashboards and Data Integration for the same
  - No single source to capture the BI

Solution (MDSA Framework)

Chevron MDSA framework using SharePoint Application with OSIsoft PI System

LEGACY

Paper based routes

- Cumbersome
- Not Real-time
- Hard to track information

Excel and Access based Apps

- Data Redundancy
- Hard to find Required Information
- Hard to share across the team
- Hard to maintain Security Features

Other Point Solutions

- Need for 3rd party access and enabling such security access privileges
- Hard to Maintain Role Based Security Features
- Hard to meet Report Requirements
- Real-time Dashboards and Data Integration for the same
- No single solution to capture BI

CURRENT

SharePoint Forms

- Condition Based (InfoPath)
- Real-time Data Capture stored in MS SQL
- Track Online using WebParts

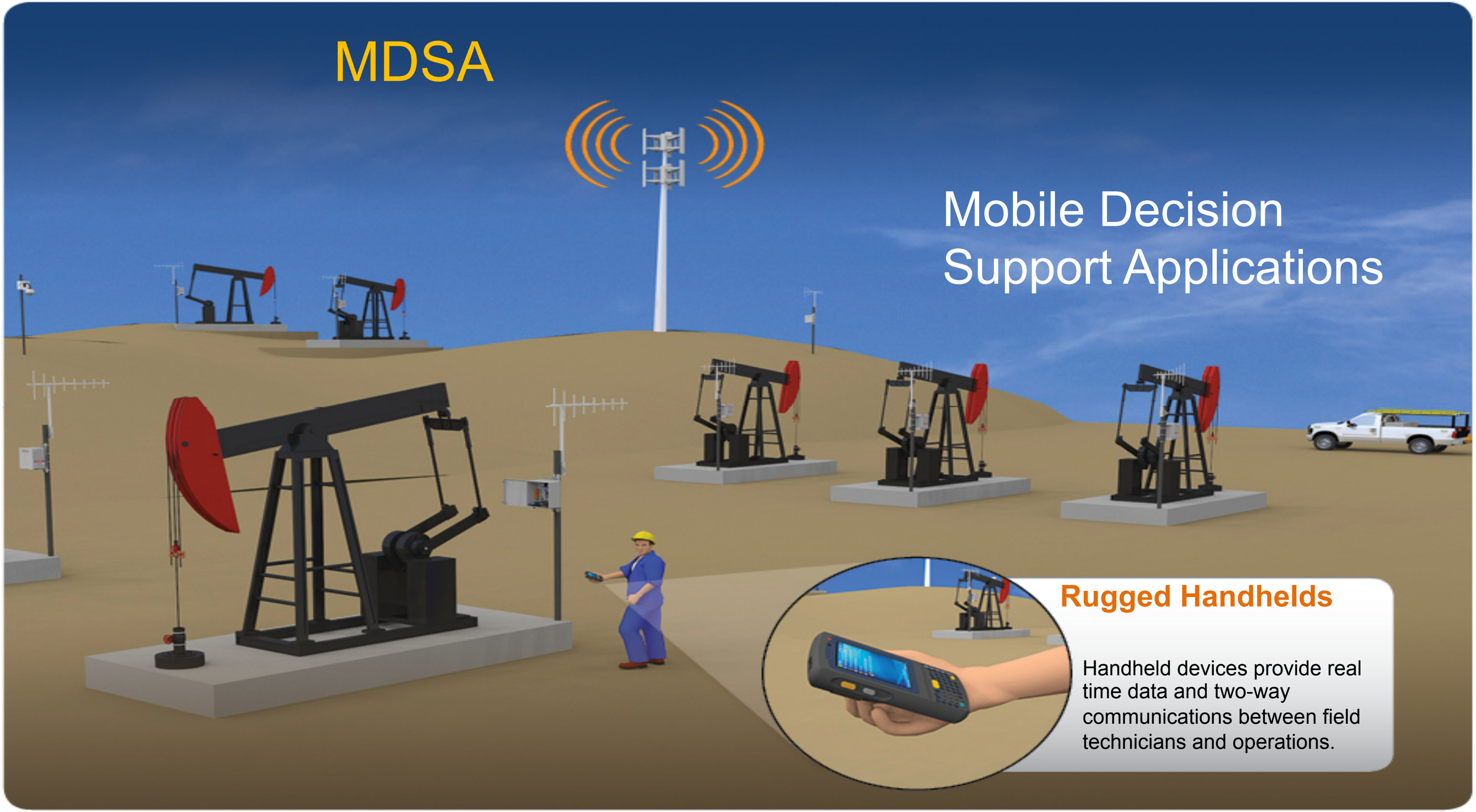
SharePoint Excel and Access Services & SQL

- 360 Degree view of Data
- One Search feature of SharePoint
- SharePoint C&C
- Role Based Security and Federation

SharePoint Custom Applications

- Federation using Claims based Authentication
- Role Based Security Features using SharePoint Groups and AD
- Performance Point and SSRS
- OSIsoft PI WebParts, Microsoft SQL SSAS and SSRS
- Microsoft SharePoint and OSIsoft PI System tools like PI AF and PI ACE

MDSA

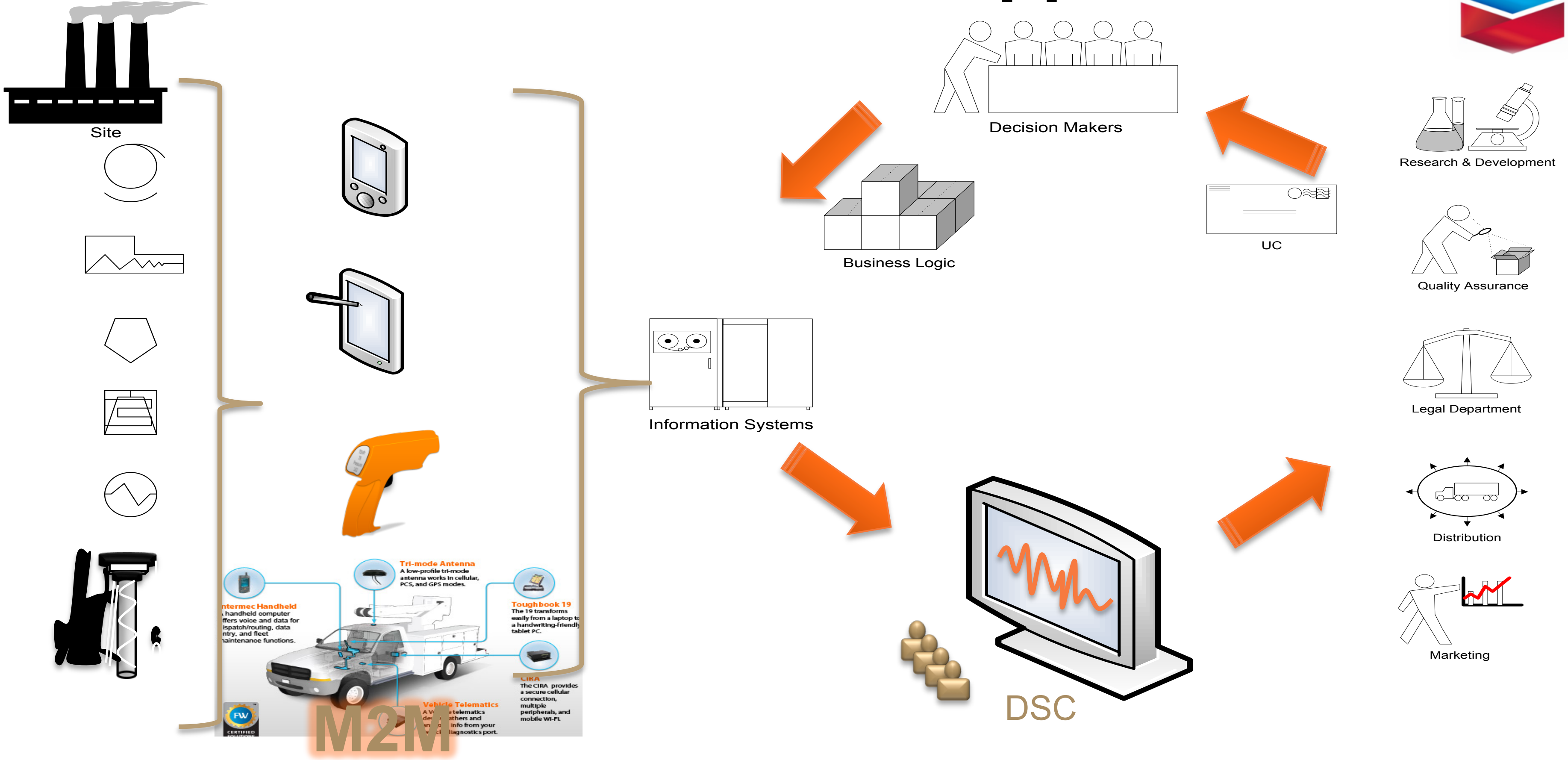


Mobile Decision Support Applications

Rugged Handhelds

Handheld devices provide real time data and two-way communications between field technicians and operations.

MDSA Framework Approach


Site
Decision Makers
Business Logic
UC
Research & Development
Quality Assurance
Information Systems
Legal Department
Distribution
Marketing
DSC
M2M
Tri-mode Antenna
ntermec Handheld
Toughbook 19
CIRA
Vehicle Telematics
FW
CERTIFIED

A low-profile tri-mode antenna works in cellular, PCS, and GPS modes.

handheld computer ffers voice and data for ispatch/routing, data ntry, and fleet naintenance functions.

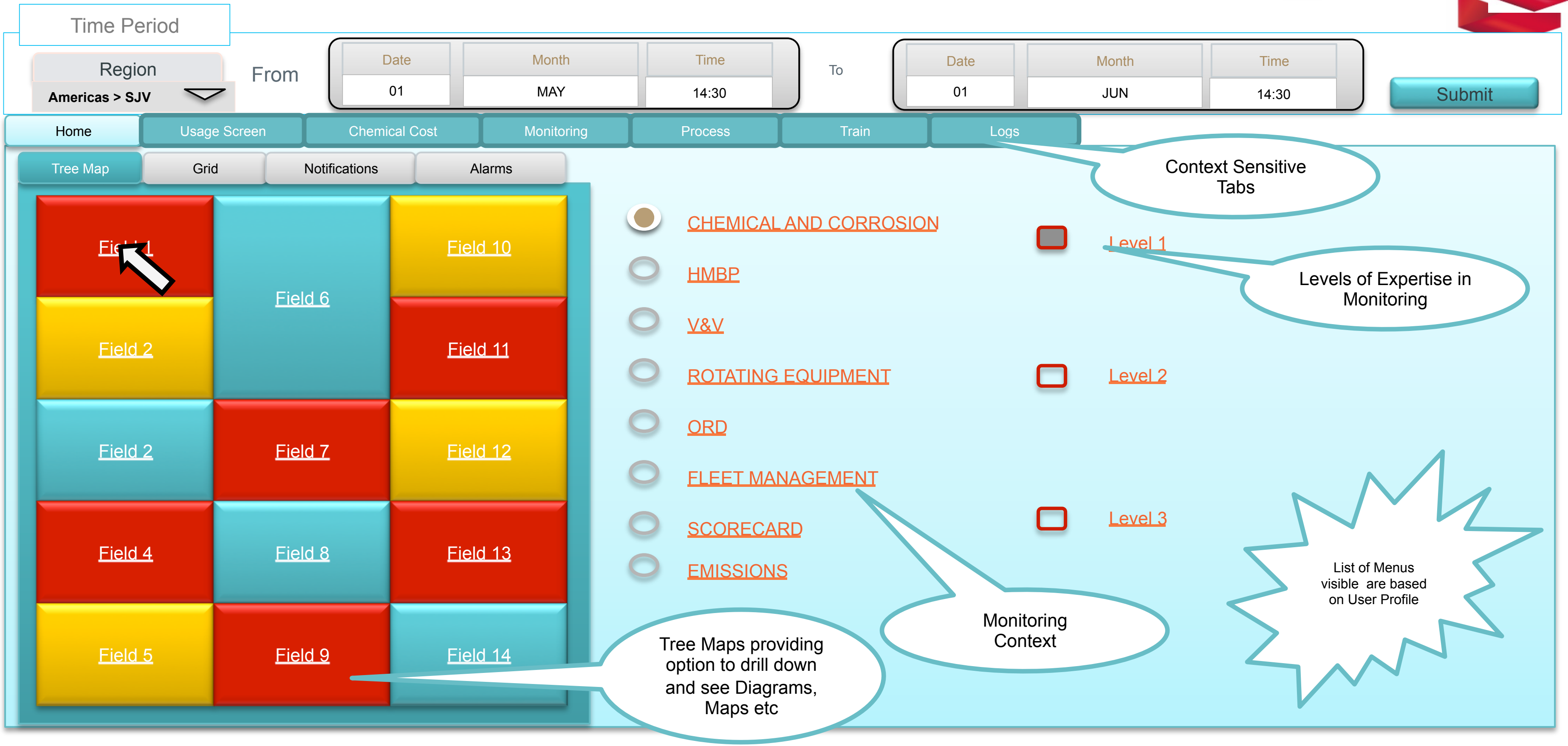
The 19 transforms easily from a laptop to a handwriting-friendly tablet PC.

The CIRA provides a secure cellular connection, multiple peripherals, and mobile WI-FI.

A Ve e telematics dev athers and an info from your ve cl diagnostics port.

MDSA User Interface

Joe Doe


Time Period
Submit
Home
Usage Screen
Chemical Cost
Monitoring
Process
Train
Logs
Tree Map
Grid
Notifications
Alarms
Field 1
Field 6
Field 10
Field 2
Field 11
Field 2
Field 7
Field 12
Field 4
Field 8
Field 13
Field 5
Field 9
Field 14

Region: Americas > SJV

From: Date 01, Month MAY, Time 14:30

To: Date 01, Month JUN, Time 14:30

- ● CHEMICAL AND CORROSION
- ○ HMBP
- ○ V&V
- ○ ROTATING EQUIPMENT
- ○ ORD
- ○ FLEET MANAGEMENT
- ○ SCORECARD
- ○ EMISSIONS

- ■ Level 1
- ☐ Level 2
- ☐ Level 3

Context Sensitive Tabs

Levels of Expertise in Monitoring

List of Menus visible are based on User Profile

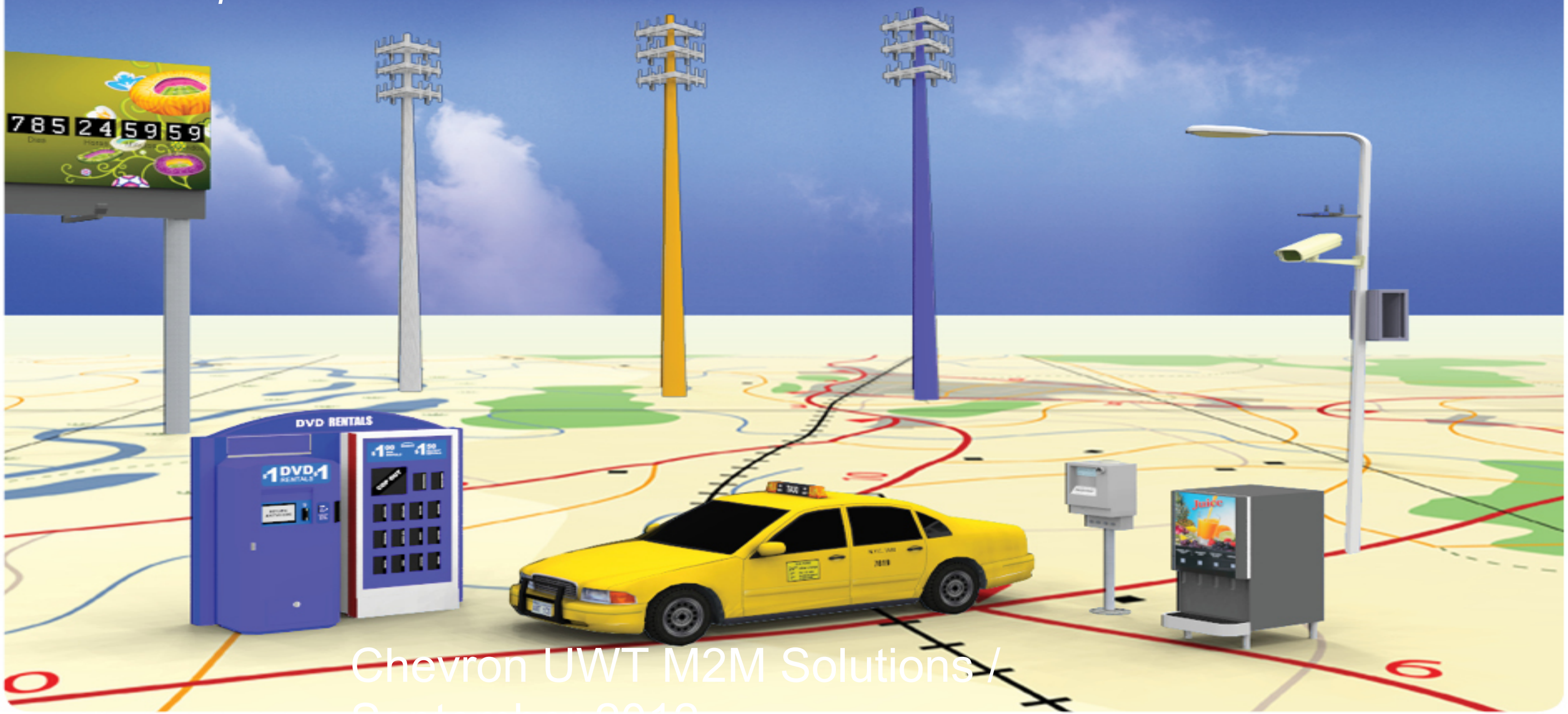
Monitoring Context

Tree Maps providing option to drill down and see Diagrams, Maps etc

DEMO

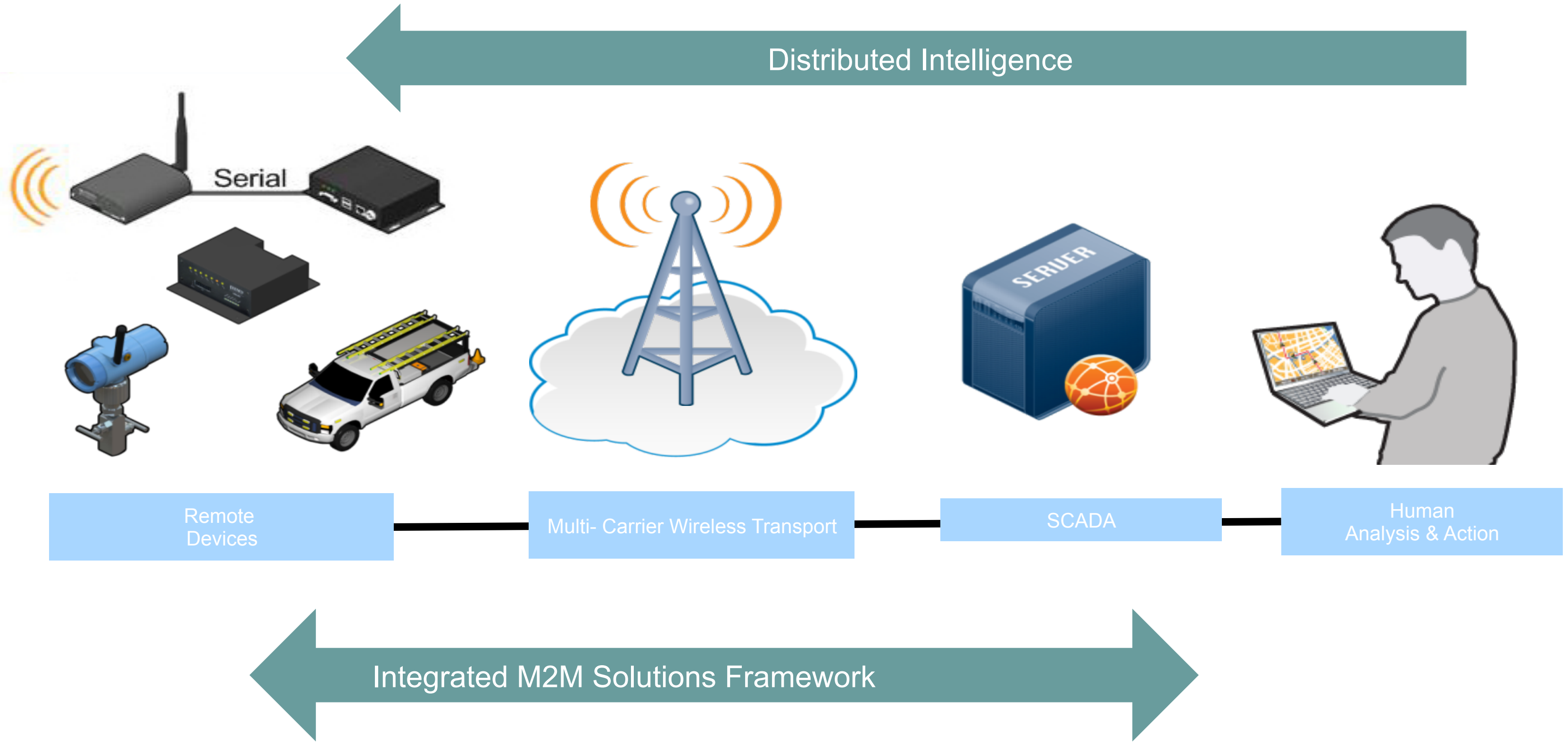
What is M2M?

Leveraging Cellular Network Topologies


Sprint
Private Carrier
Verizon
785 24 59 59
DVD RENTALS
DVD
TAXI
Juice

Chevron UWT M2M Solutions /

M2M Systems Approach



Distributed Intelligence

Remote Devices

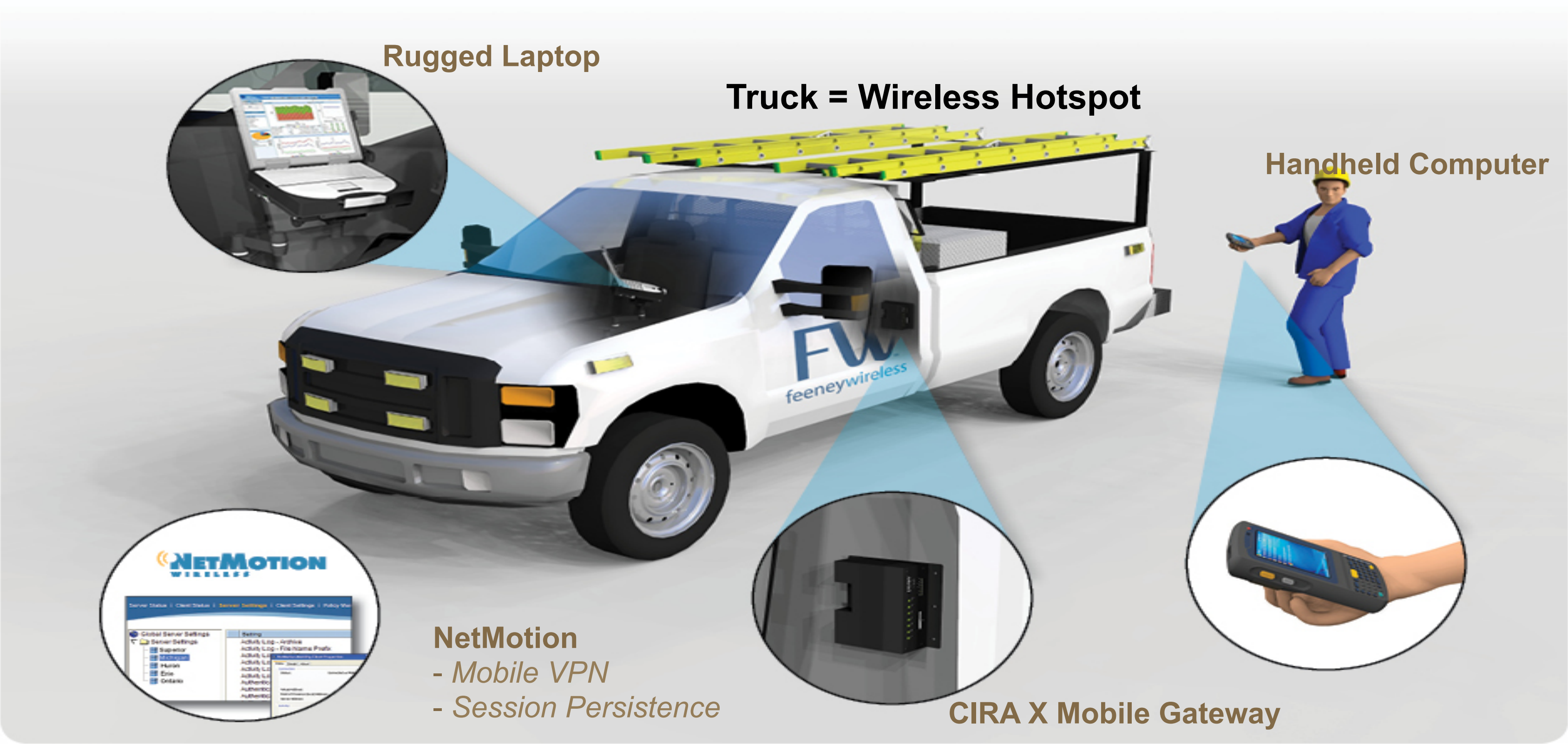
Multi- Carrier Wireless Transport

SCADA

Human Analysis & Action

Integrated M2M Solutions Framework

Connected Worker



Truck = Wireless Hotspot

Rugged Laptop

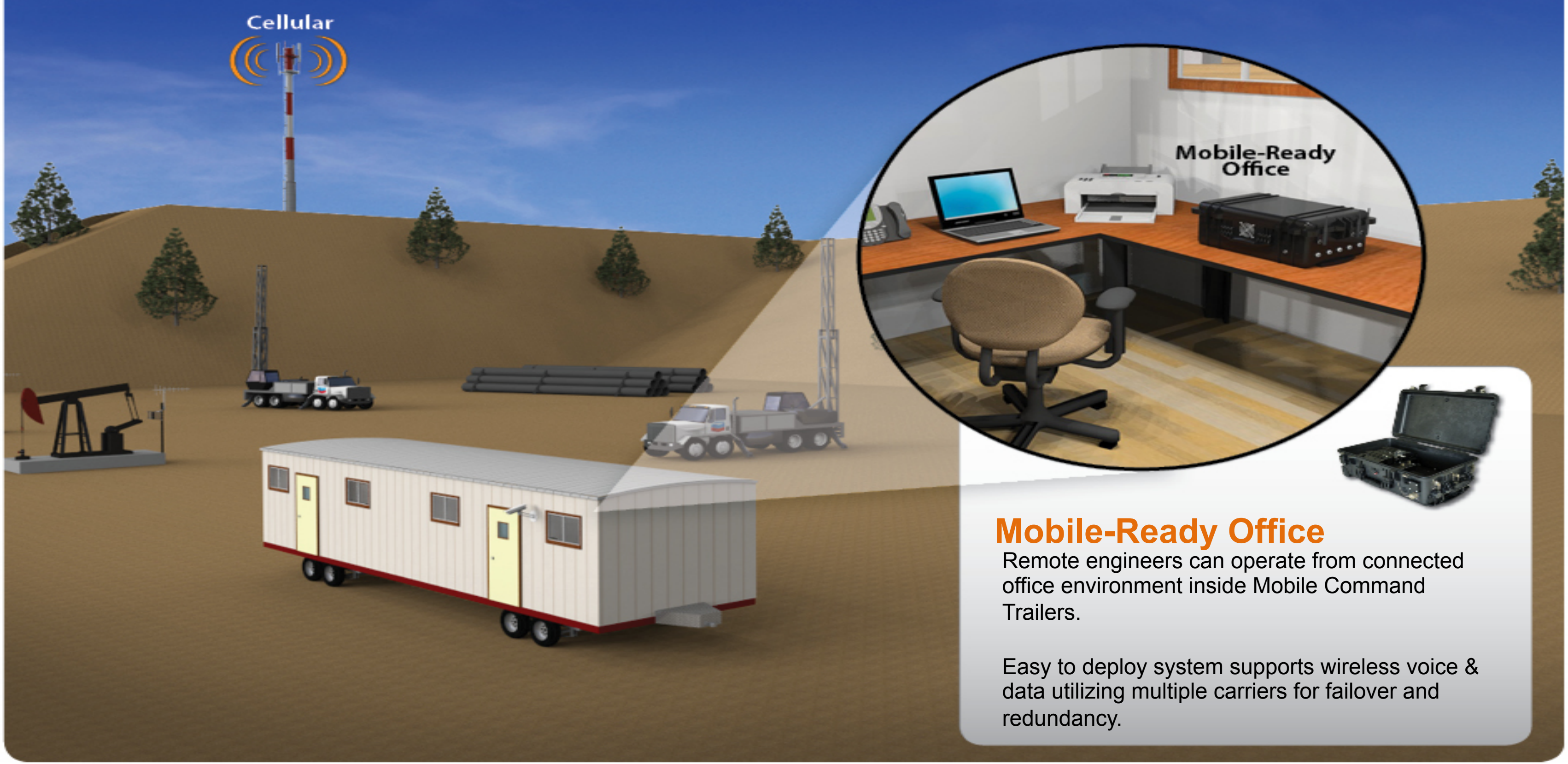
Handheld Computer

NetMotion
- *Mobile VPN*
- *Session Persistence*

CIRA X Mobile Gateway

NETMOTION
WIRELESS
FW
feeneywireless

Mobile-Ready Office

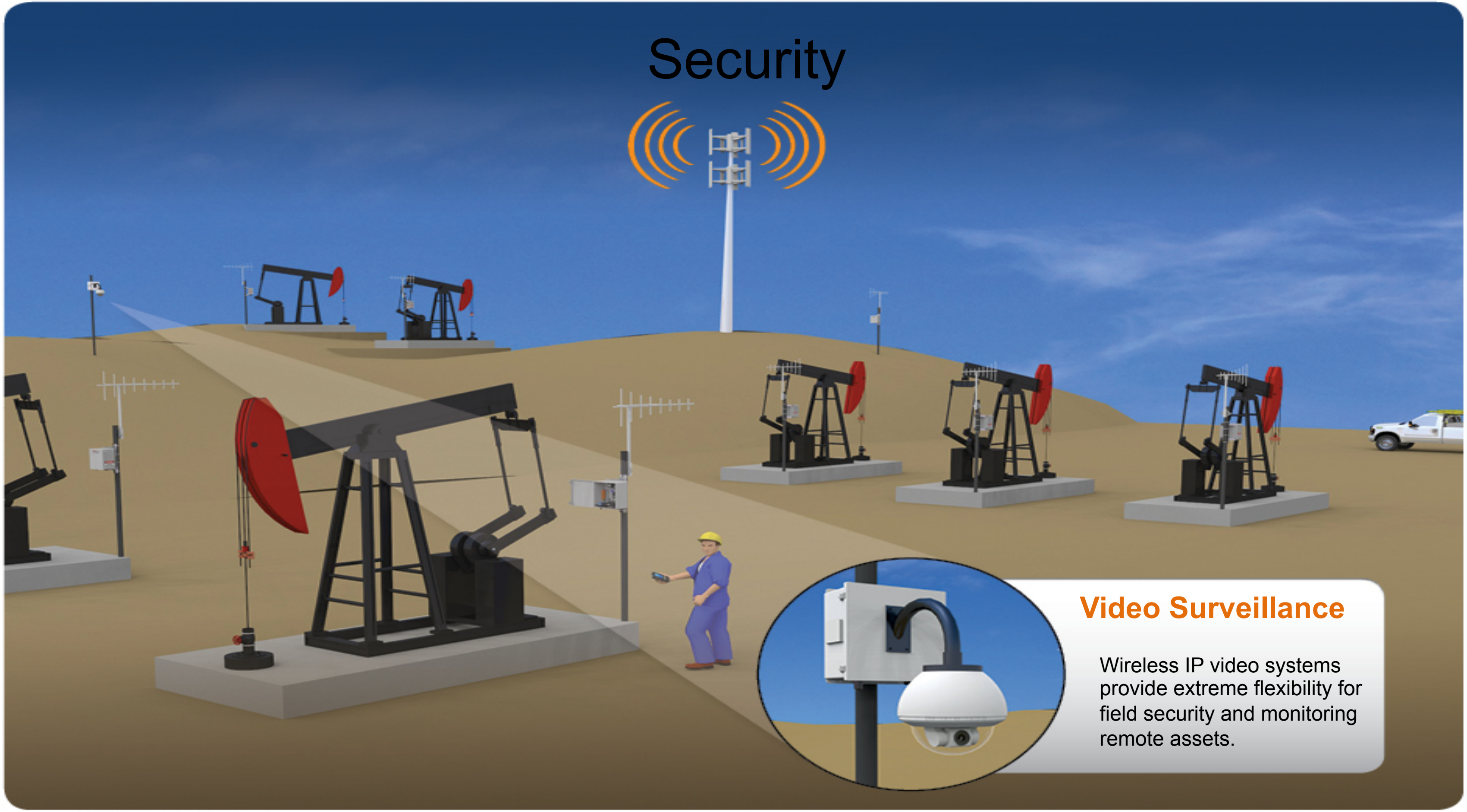


Mobile-Ready Office

Remote engineers can operate from connected office environment inside Mobile Command Trailers.

Easy to deploy system supports wireless voice & data utilizing multiple carriers for failover and redundancy.

Security



Video Surveillance

Wireless IP video systems provide extreme flexibility for field security and monitoring remote assets.

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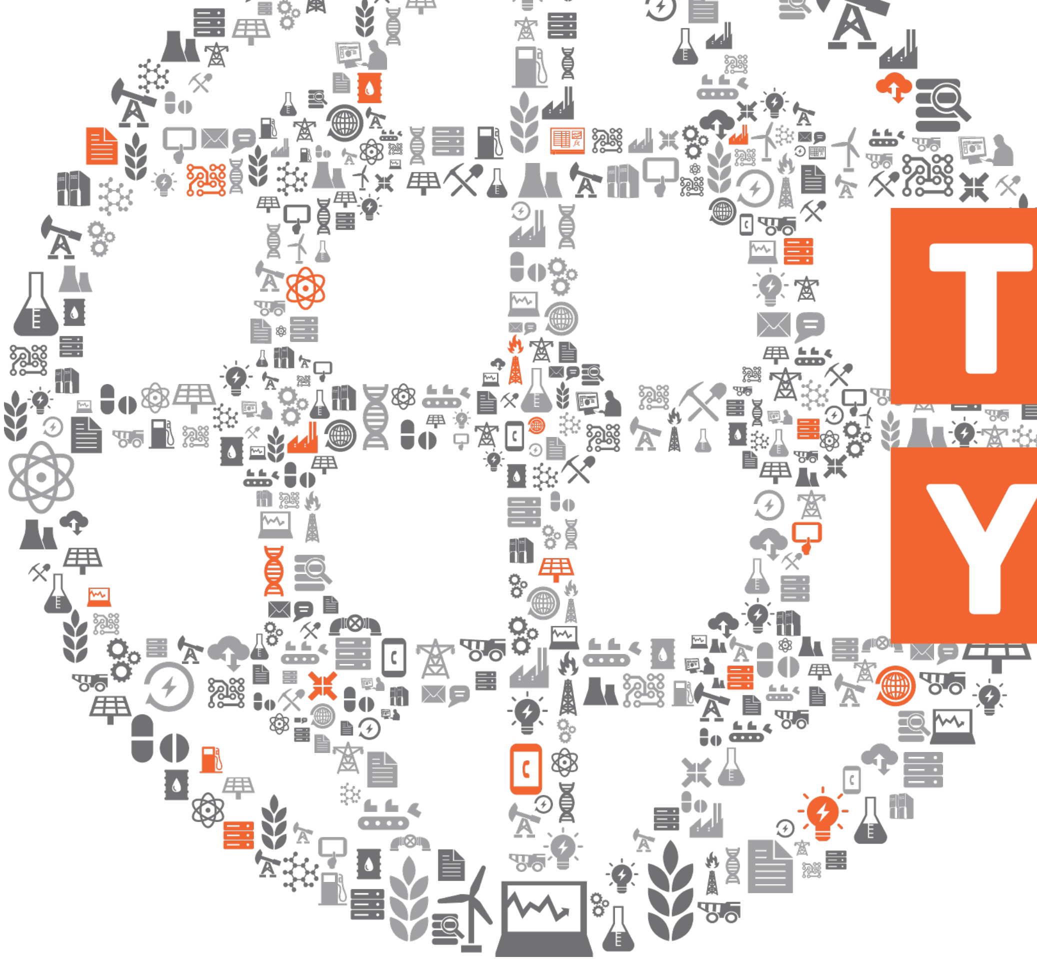

Chevron

THANK YOU

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