Digital Transformation and Operational Intelligence in Utilities

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Agenda

- Market Observations and Trends
- Role of GIS
- Vision and Road Map for Smart Utilities
- Summary and next steps

Market Trends - Utilities

Multiple business drivers and technology innovations forcing Utilities to “transform”

- Increase of Distributed Energy supply (DR)
- Emergence of Retail market and increased customer engagement
- Grid “Edge” Automation (SG/IoT)
- The new “Prosumer”

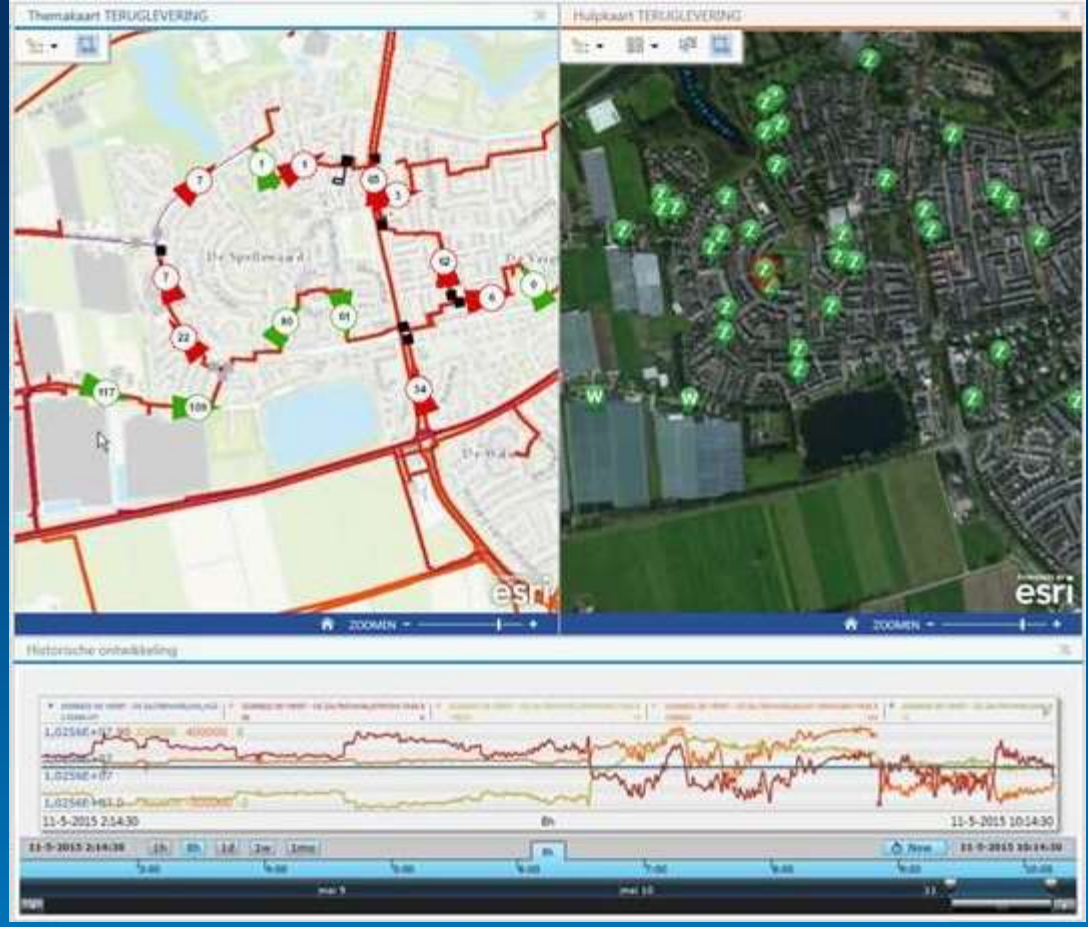
The business of Utilities will change more in the next 5 years than in the past 100.

April 2017, Gartner Report….

Impacts for Utilities

Need to answer questions not previously considered

- Do we have the information we need?
- Can we respond fast enough?
- How will we increase revenue and profits?
- Can we operate the grid in the era of DR?



Do we have the people, processes and technology needed for Digital Transformation…?

Increasing need to understand the business…. geospatially

GIS and Mapping Are Essential

A Fundamental Language
for Understanding and
Managing Utilities

Providing Content
and Context

About Everything

GIS Connects IT and OT Technologies

Connecting People, Processes, Things and Data About Them

Improving Efficiency, Collaboration and Communication

System of Engagement

Helping Utilities Understand . . .

System of Record

System of Insight

Web GIS

Supports Multiple Types of Systems

. . . And Be Aware, Alert, and Responsive

GIS Connects People

Delivering collaboration, decisions and results

Supporting Real-Time Awareness and Collaboration

Stake Holders

Utilities

Consumers

GIS Provides a Common Language for Communication

Road Map

Logical and Proven next steps

Business Solutions
solutions.arcgis.com

Best Practices for Utility of Tomorrow

Systems of Engagement
Portal

2D & 3D Assets
Real-Time Event
Big-Data

Systems of Record
AM/FM

Rapid Adaptation to Business and Technical Environments

. . . Focused on Business Value, and Innovation

GIS Systems of Engagement

Delivering value always needed but historically difficult to achieve

- Proven results and case studies
- Meets or exceeds expectations
- Significant reduction in time to value
- Gives users a “consumer experience” with Enterprise GIS and data
- Enables Executives to make informed decisions, through Geography (common language)
- Aligns with corporate security approaches (LDAP, Active Directory)
- Significantly increases ROI of GIS investments

Common Next Step

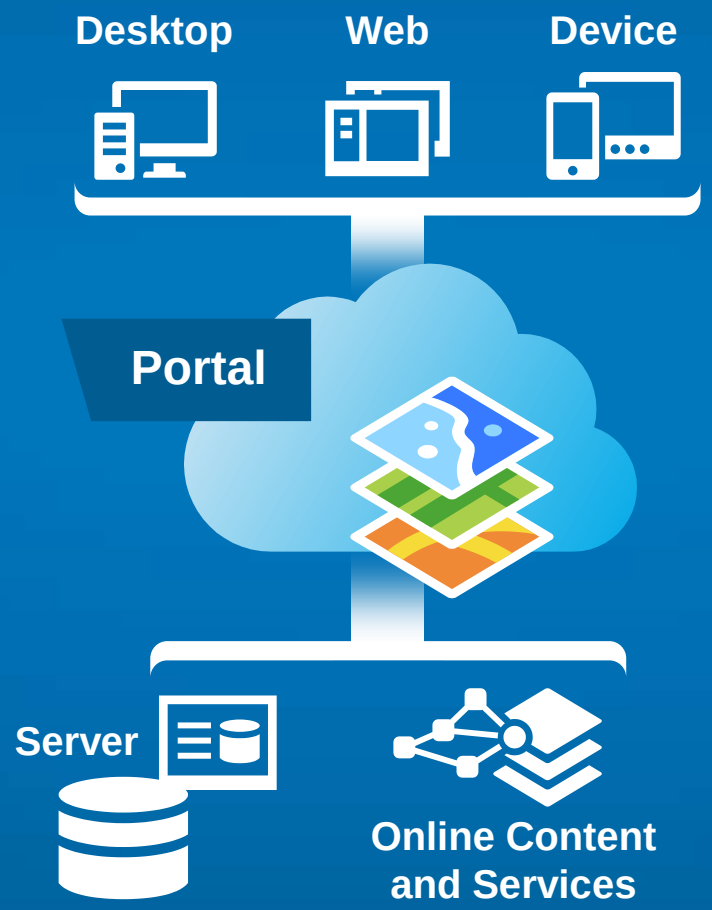
Initial Operating Capability – Electric Utility Example

Enable People to make better decisions

Simple tools for all employees and contractors to get information based on Role in company

Secure Destination for corporate collaboration

Company Asset Data
Esri, GE, Intergraph, CAD, etc.



Organized and Configured Results

4 Foundational Solutions
Network Viewer, Map Notes, Service Territory, Circuit Viewer

10 Standard Business Groups
Operations, Planning, Customer Care, Supply Chain, Land Use, Vegetation, Corporate Services

5 Common Additional Maps
Population Density, Median Household Income, Weather Conditions, Land Use, World Traffic Service

Esri Basemaps
Imagery, Topographic, OpenStreetMap, Light Gray

Pepco Holdings Inc (PHI)

Pepco Holdings, Inc. – Quick Facts

- Incorporated in 2002
- Service Territory: 8,340 square miles
- PHI Subsidiaries:
  - Atlantic City Electric
  - Delmarva Power
  - Pepco
- Customers Served:
  - 1.8 million Electric
  - 125,000 Natural Gas

PHI Portal Initial Operating Capability (IOC)

-Rapid support of business needs

-Reduce complexity, cost of ownership of apps

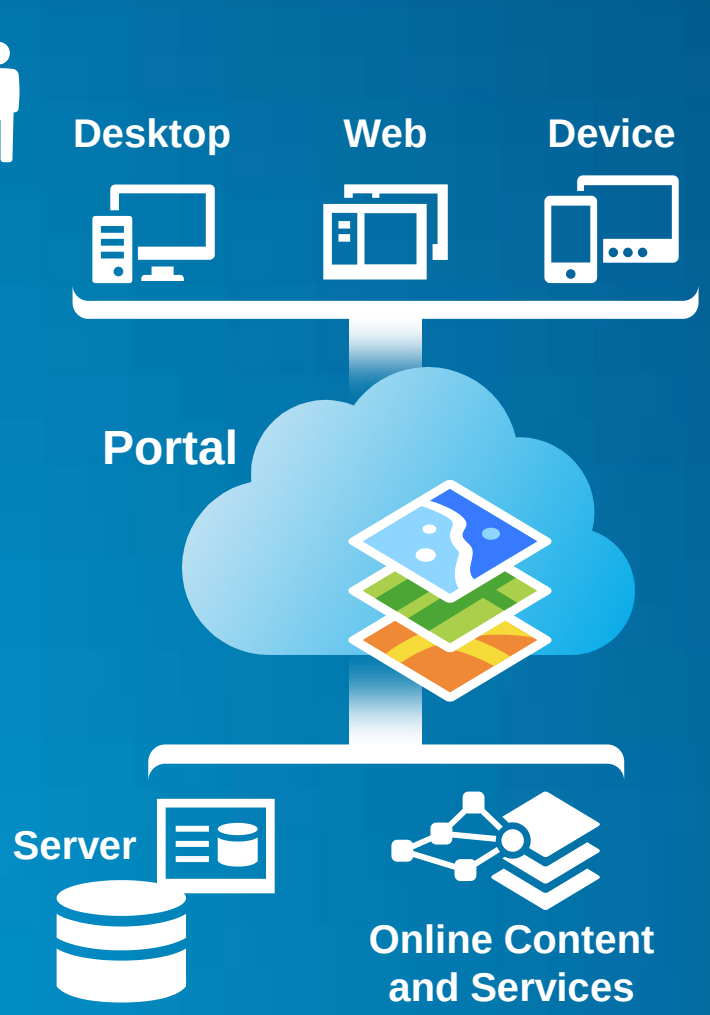
-Improved Collaboration with external stakeholders

Enable People to make better decisions

Simple tools for all employees and contractors to get information based on Role in company

Secure Destination for corporate collaboration

Authoritative ArcGIS Sources
ArcFM/Designer
Electric Geodatabase



Organized and Configured Results

Information Products
Transmission Viewer, Distribution Viewer, Vegetation Management, Outage Viewer

Standard Business Groups
Operations, Construction, Engineering, Planning, Land

Additional Maps
District of Columbia Tree Inventory

Esri Basemaps
Streets, Imagery, Topo, Gray

PHI Portal Today

Production GIS Viewer

Transmission
- Web Viewer

Manhole Inspections

Vegetation Management

Reports
- Streetlight Billing
- Customer Analysis
- Tax Districts
- Etc.

Critical Facilities Map

Aerial Transmission Inspections

Meter Status Monitoring

Emergency Preparedness

Integrations

Historic Inspections DB
Work Management
Financials
CIS
Engineering Analysis
AMI

ArcGIS Location Platform*

Published and Registered
Web Services *

Electric GIS

Online Content & Services

Organized and Configured Results

Information Products
As-Builts, Designs, Outage Viewer, Xmsn Viewer, Veg. Mgmt Status, Critical Facilities, Transformer Outages, AMI Meter Status, One Line Diagrams, Inspections, Customer Analysis Data, Structures, Adhoc Mapping, Tax Districts, Fiber, Geocoding**

Standard Business Groups
Distribution Engineering, Xmsn Engineering, Veg Mgmt, Forestry, Customer Service, System Operations, Field Operations, Emerg. Prep., Biz Transformation, DPL Gas, Tax Dept, Telecom

**Geocoding standard for WMS, SAP, GIS, OMS

PHI Portal Next

Production GIS Viewer

Transmission
- Web Viewer

Manhole Inspections

Aerial Transmission Inspections

Reports
- Streetlight Billing
- Customer Analysis
- Tax Districts
- Etc.

Critical Facilities Map

Vegetation Management

Meter Status Monitoring

Emergency Preparedness

IT

Historic Inspections
Work Management
Financial
CIS
Engineering Analysis

ArcGIS Location Platform

OT

ADMS
AVL
Workforce Management/Dispatch
AMI

Published and Registered Web Services

Electric GIS

Online Content & Services

PHI Portal “After Next” – Exelon

IT / OT

- Historic Inspections
- Work Management
- Financial
- CIS
- Engineering Analysis
- ADMS
- AVL
- Dispatch
- AMI

Future Business Solutions

- Outage Operations
- Crew Locations
- Gas Inspections
- Regulatory Reporting
- Leak Survey
- Gas Odor Tracking
- Customer Service Dashboard

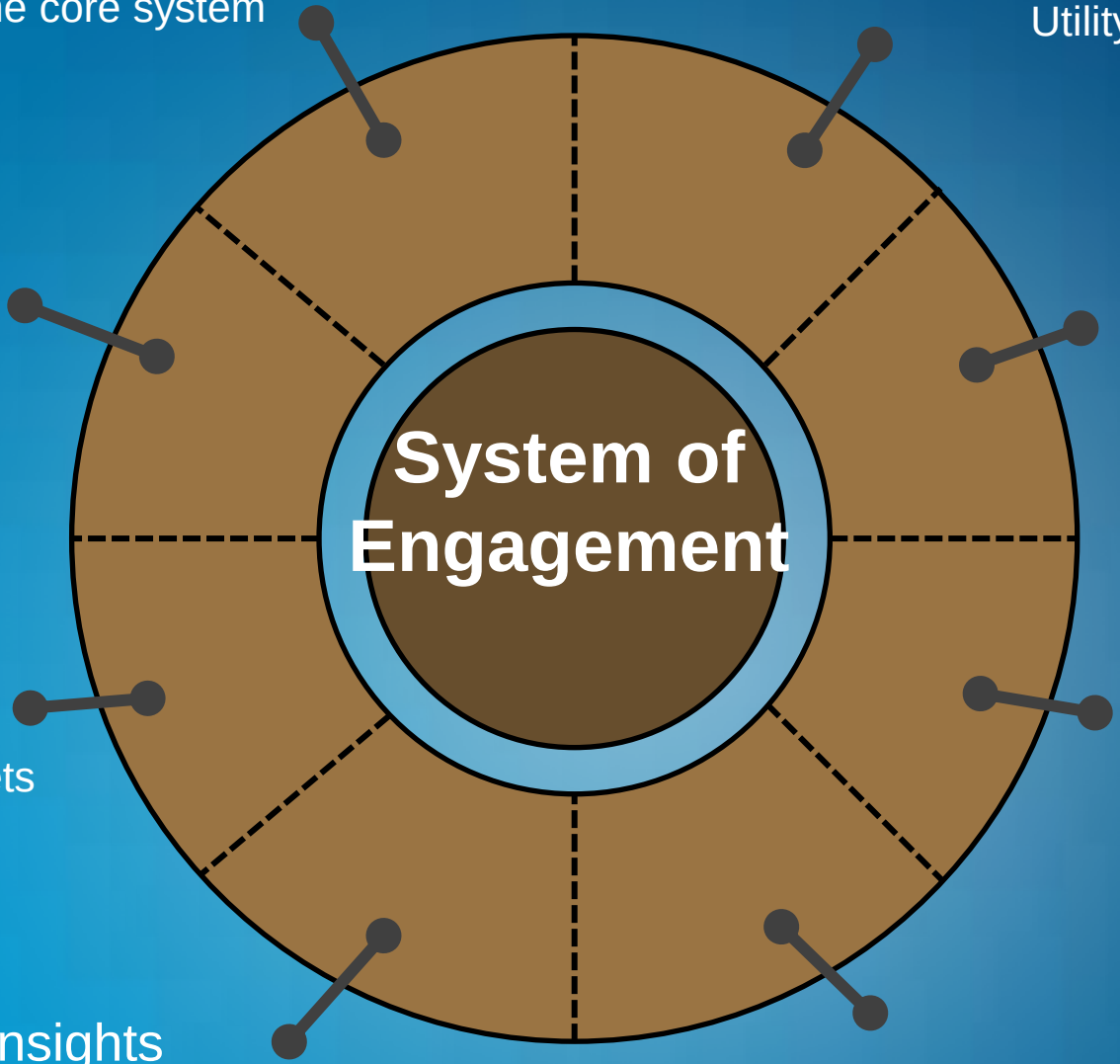
Electric GIS | Electric Gas GIS | Electric Gas GIS | Electric GIS | Electric Gas GIS

Online Content & Services

Evolving Utility GIS

Supporting a Smarter Utility through Digital Transformation

Once IOC is in place, where to focus efforts



Developers
Integrate, customize, and extend the core system

System of Record
Next generation ArcGIS Utility and Telecom Framework

Constituent Engagement
Open Data, Initiatives and HUBs

Field Mobility
Supporting the planning, optimization and operations of a mobile workforce

Real-time GeoDisplay
Capture and analyze device readings and track moving assets

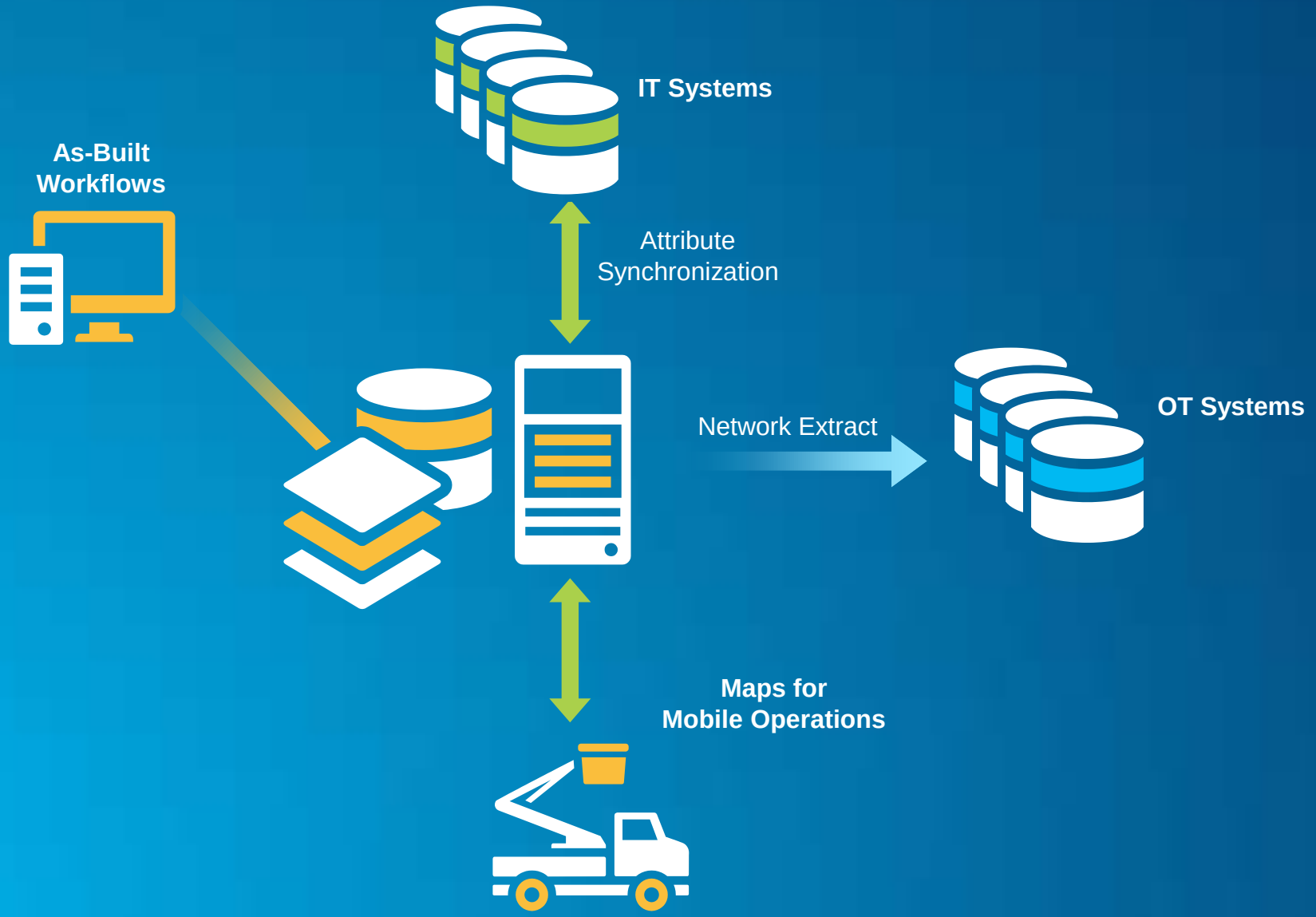
Imagery Management
Capture, storage and analysis of Drone, LiDAR, Ortho, etc.

System of Insights
Interactive exploration and analysis of spatial, tabular, and unstructured data

Big Data GeoAnalytics
Analyze your historic spatial and non-spatial data

Typical System of Record – Solution Overview

Current ArcGIS Utility and Telco Framework, de-facto standard in Electric, Gas and Water… Telco is growing.

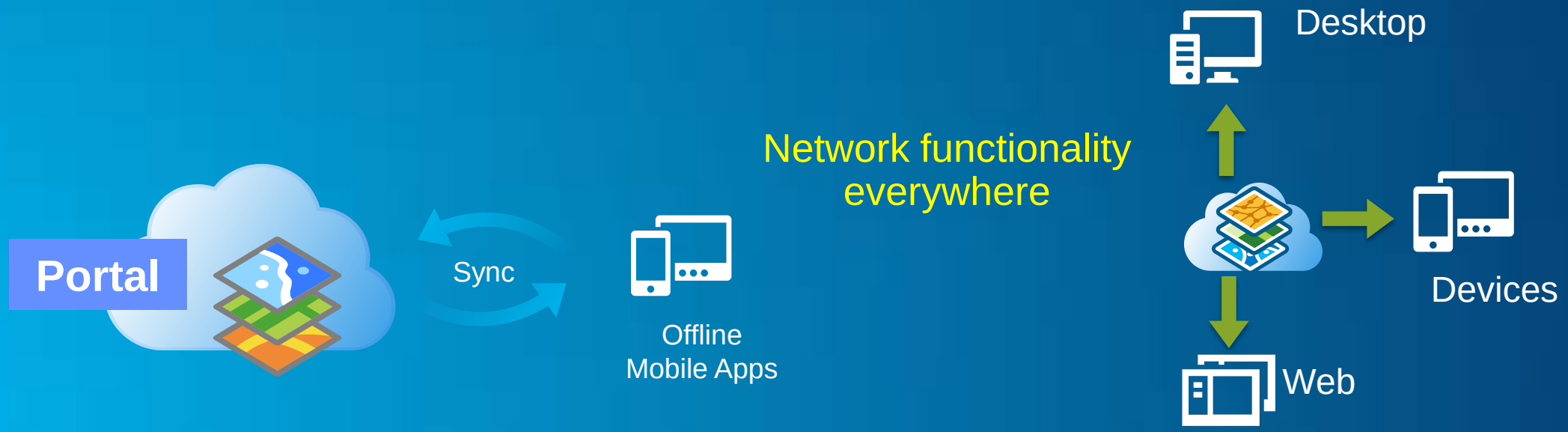


Evolution of “System of Record”

Next generation ArcGIS Utility and Telco Framework

Vision:

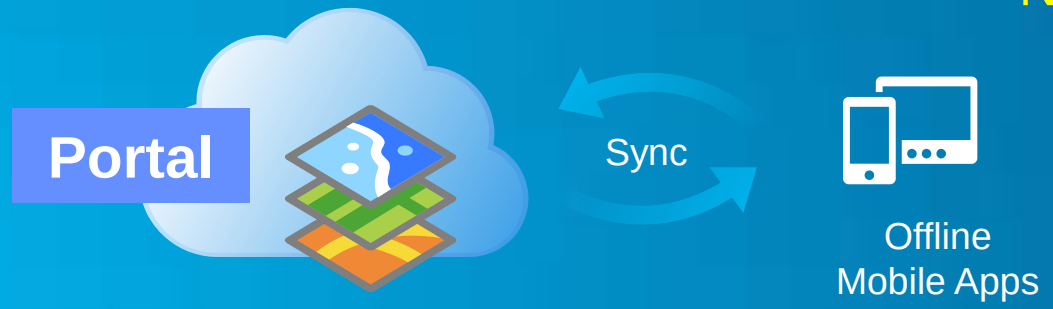
- Provide utility partners and customers with the ability to model, edit, and analyze complex networks of facility infrastructure using all Esri platform clients.
- Enable key modeling concepts to better support a true representation of what is on the ground, while fostering an easy exchange of network information with other mission critical systems.
- Support highly responsive editing and analysis capabilities.



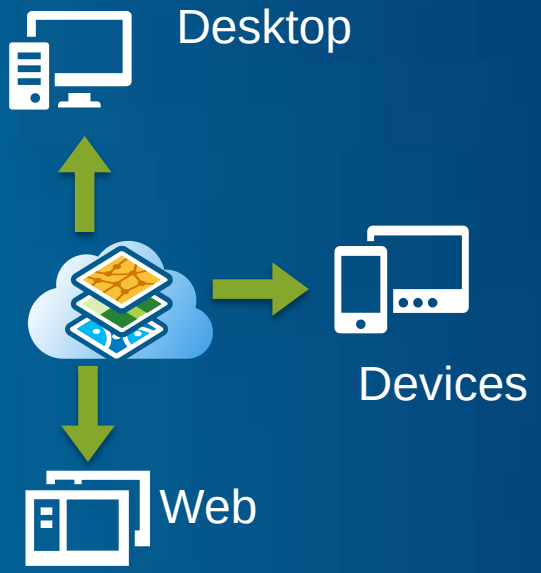
Evolution of “System of Record”

Next generation ArcGIS Utility and Telco Framework

- New model to support utilities and telecos for the next 10-15 years
  - Electric, gas, water, wastewater, sewer, and telco
- Goals of the project:
  - Ensure Utilities can support Digital Transformation
  - Improve overall performance and scalability
  - Improve ArcGIS platform interoperability (CIM)
  - Reduce cost of ownership
  - Improve efficiency and productivity
  - Improve data quality



Network functionality everywhere



Summary

- Market Trends will impact us all
  - The global business of Utilities will change, significantly
- People are challenged with specific, logical and deliberate plans to respond
  - Much discussion but limited specific actions
- GIS is being pulled into the center of the discussion for Digital Transformation
  - One of many systems to enable change
- System of Engagement
  - Can be implemented today, on any version of any System of Record
  - Is proven to help “pivot” GIS and Location to enable new approach to value (groups, people, sharing)
- ArcGIS Utility and Telecom Framework will serve as catalyst for better network
  - CIM integration to any OT will enable “single source of the truth” for network
- GeoSpatial Analysis and visualization combined with Real-Time analysis and visualization
  - Open new perspectives to solutions

Thank You!

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