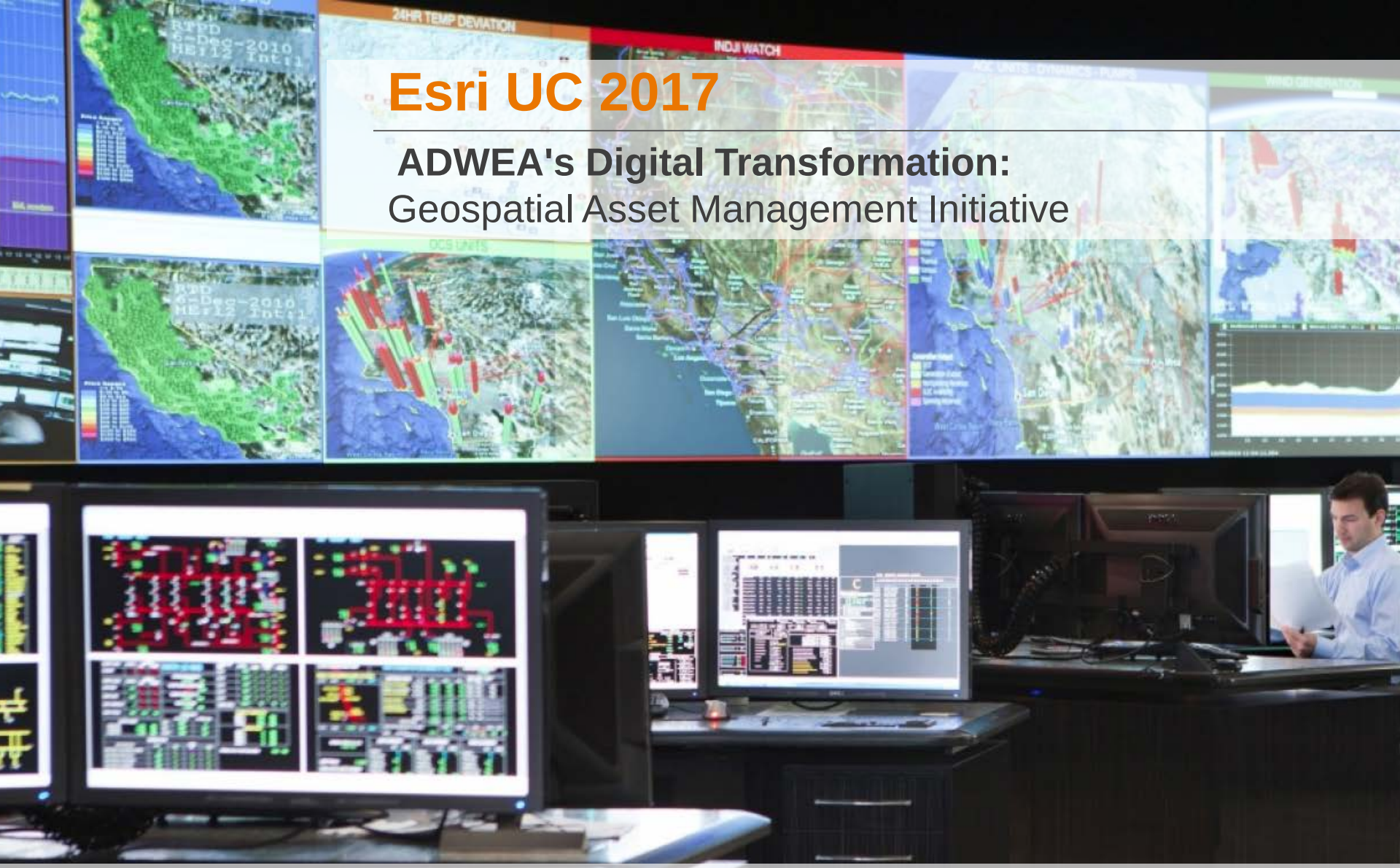
Esri UC 2017

ADWEA's Digital Transformation:
Geospatial Asset Management Initiative



KHATIB & ALAMI

Walid Abou Chacra | K&A

Agenda

- Introductions
- About ADWEA
- ADWEA's GIS Platform Evolution
- Geospatial Asset Management
  - ❑ Current GIS Landscape
  - ❑ Geospatially Enabled Solutions
  - ❑ Future Roadmap

Introductions

Walid Abou Chacra | K&A

- Manager, Electricity Segment
- Project Manager at ADWEA

40+
Projects

16+
Utilities

10+
Countries

Service Offerings Include:

- Geospatial Solutions & Services
- Smart Grid Solutions & Services including ADMS, AMI, CRM, Billing and MDM
- Enterprise Asset Management Solutions & Services
- Network Consultancy Services

About ADWEA

Abu Dhabi Water & Electricity Authority | ADWEA

- Electric & Water Utilities
- Transmission & Distribution Business
- 5 Subsidiaries:
  - Al Mirfa Power Company
  - Abu Dhabi Water & Electricity Company (ADWEC)
  - Abu Dhabi Transmission & Despatch (TRANSCO)
  - Abu Dhabi Distribution Company (ADDC)
  - Al Ain Distribution Company (AADC)

9 Power Generation & Desalination Plants

19,000km OH Lines
58,000km UG Cables

20,000km Water Pipelines

234 Grid Stations
17,374 Distribution Substations

18 Pumping Stations
1,000 Storage Tanks

2.7M People Served
1,500+ GIS Users

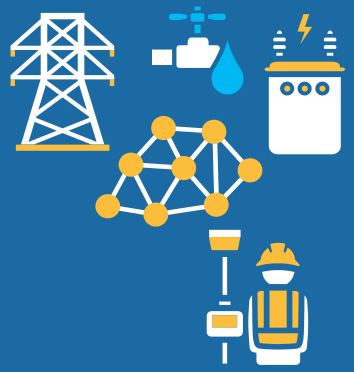
ADWEA's GIS Platform Evolution

The Strategic Shift Towards a Digital Enterprise to Align with Vision 2030

2001

Enterprise Foundation Implementation

2004



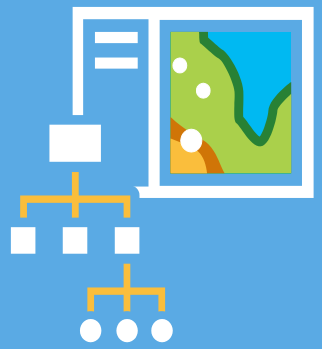
Advanced Operational Stage – GIS in the core of the business with data and application reinforcement & training

2007

Maturity & Business Realization – System implementation across wide user community with growing user expectations, leading to advanced digital business environment & further fine tuning of applications, tools, and infrastructure data

2010

Innovation & Adaptive Management (Phase 1) – System upgrade to be fully business process driven & new technology implementations (3D Modeling, Web GIS, eNOI)



2013

Innovation & Adaptive Management (Phase 2) – Enterprise-wide Service Oriented Architecture (SOA), systems integration, utility network transformation & alignment to Municipal Landbase

2015 - 2018

GIS as a System of Engagement – Leverage complete GIS Platform across systems, users, and devices to geo-enable the business and deliver insights

2016 - 2030

Smart Grid Realization – GIS as an integral part of the Smart Grid vision & implementation strategy

Smart Grid

\+

Internet of Things

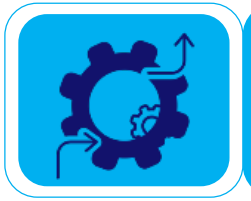
=

Digital Grid

Geospatially Enabled Enterprise

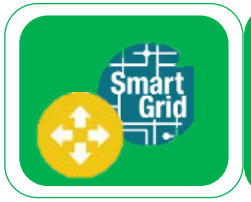
Business Drivers

UPGRADE
GIS Platform Upgrade into latest Mature and Reliable ArcGIS/ArcFM Technology



TRANSFORM & ALIGN
Utility Network Transformation & Alignment based on standard Emirate-wise Municipal Landbase

GEO-ENABLE
Geospatial enablement of Mission Critical Systems: DMS, Oracle Customer Care & Billing, IBM Maximo, Network Planning SW



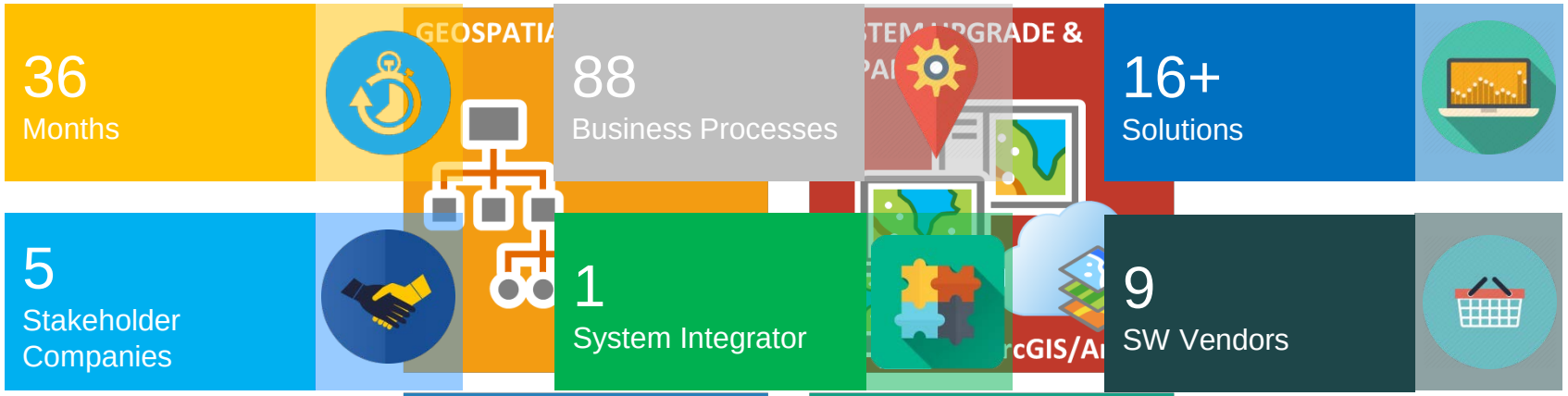
EXPAND
GIS Expansion & Smart Grid Readiness Solutions (Mobile, Web and Communication Network)

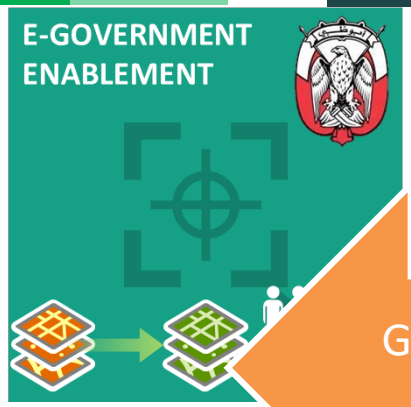
AUTOMATE
Business Process Automation, Executive Dashboards & Reporting

KHATIB & ALAMI

Geospatially Enabled Enterprise

Enterprise GIS Upgrade Project





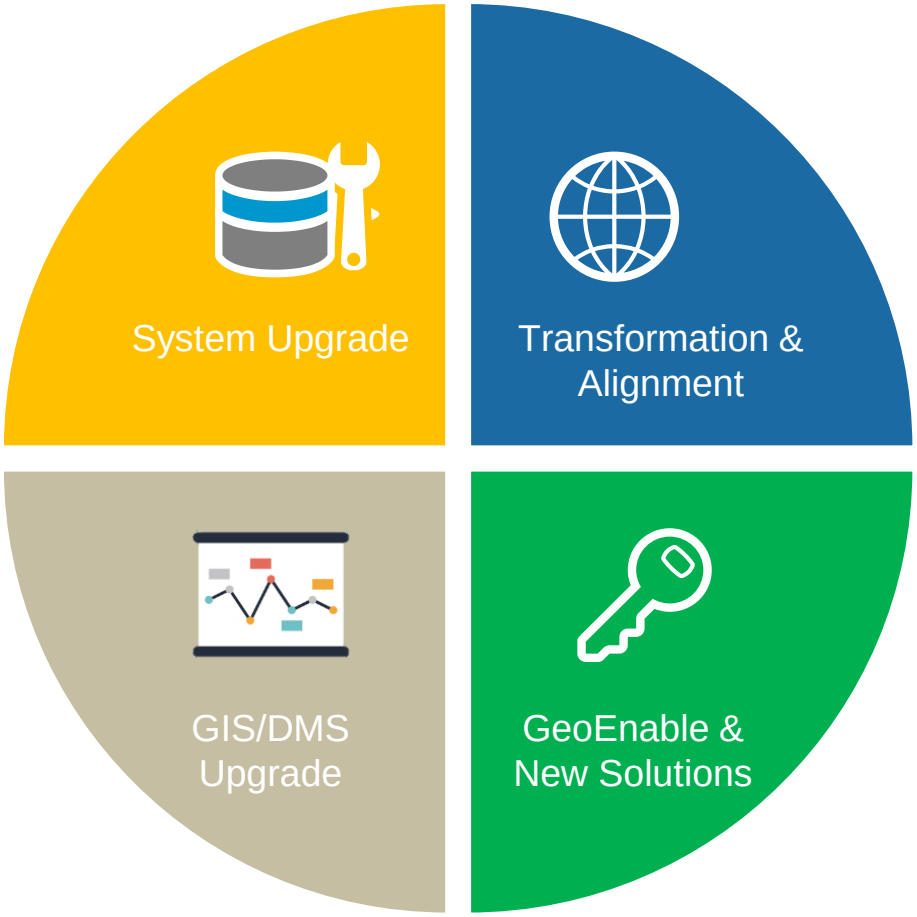
Business Processes & Network Operations

Geospatial Solutions & Systems Integration

KHATIB & ALAMI

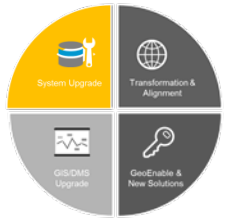
Geospatially Enabled Enterprise

Main Project Pillars



Geospatially Enabled Enterprise

Main Project Pillars



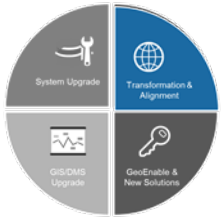
System Upgrade:

- Upgrade to ArcGIS/ArcFM 10.2.1/10.2.1a Release
- Ensure Business-driven System Updates
- Support Service Oriented Architecture
- Improve Data Automation and QA/QC Routines by Leveraging ArcFM's AutoUpdater Framework
- Configure and Apply Business-Specific Rules throughout the Enterprise and on both Power and Water Networks
- Benefit from Enhanced Performance of New SW Releases
- Migrate Existing User Favorites & Stored Displays to New Environment

KHATIB & ALAMI

Geospatially Enabled Enterprise

Main Project Pillars

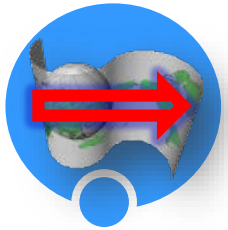


Utility Network Data Transformation & Alignment:

- Align with Abu Dhabi Government Initiatives
- Enable Data Exchange with Other Entities
- Reduce Redundant Landbase Updates

SCOPE & CONSTRAINTS

ADOPT
Adopt recent Landbase developed by DMA in WGS84



TRANSFORM
Transformation of ADWEA Assets from Nahrawan67 to WGS84

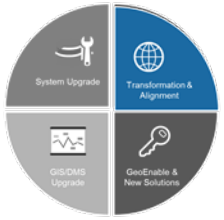
ALIGN
Align ADWEA Utility Networks based on new Landbase

- Maintain High Accuracy
- Consider Effects on GIS-Dependent Systems (DMS, CC&B, Maximo)
- Do Not Disturb Daily GIS Ops
- Ensure Optimal Transition Time

KHATIB & ALAMI

Geospatially Enabled Enterprise

Main Project Pillars



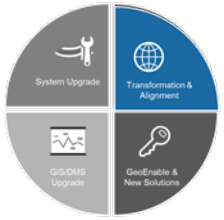
Utility Network Data Transformation & Alignment:

- Align with Abu Dhabi Government Initiatives
- Enable Data Exchange with Other Entities
- Reduce Redundant Landbase Updates

PROCESS

Geospatially Enabled Enterprise

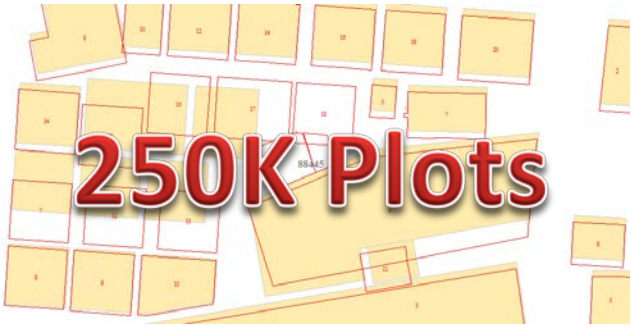
Main Project Pillars

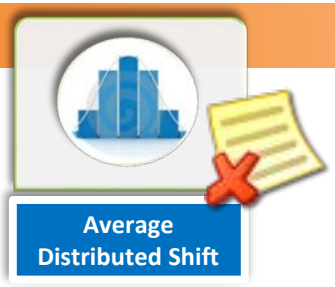


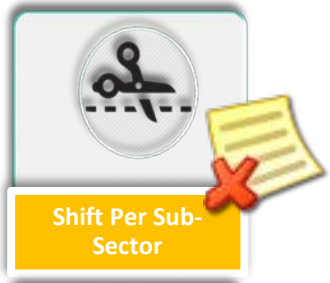
Utility Network Data Transformation & Alignment:

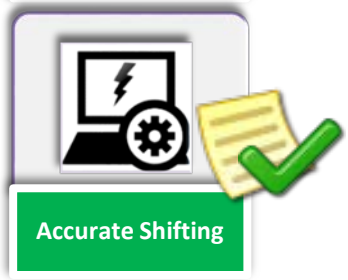
- Align with Abu Dhabi Government Initiatives
- Enable Data Exchange with Other Entities
- Reduce Redundant Landbase Updates

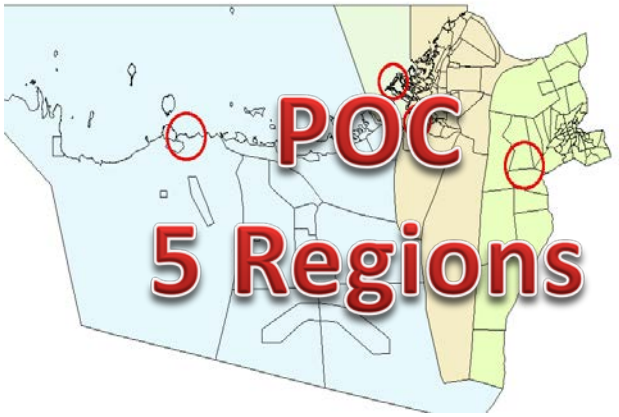
ADOPTED METHODOLOGY











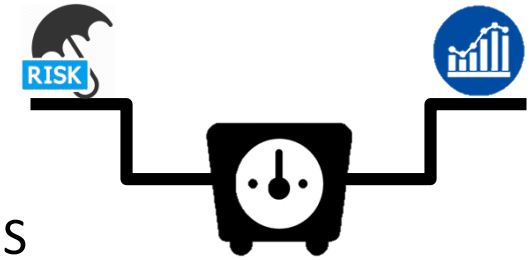
KHATIB & ALAMI

Geospatially Enabled Enterprise

Main Project Pillars

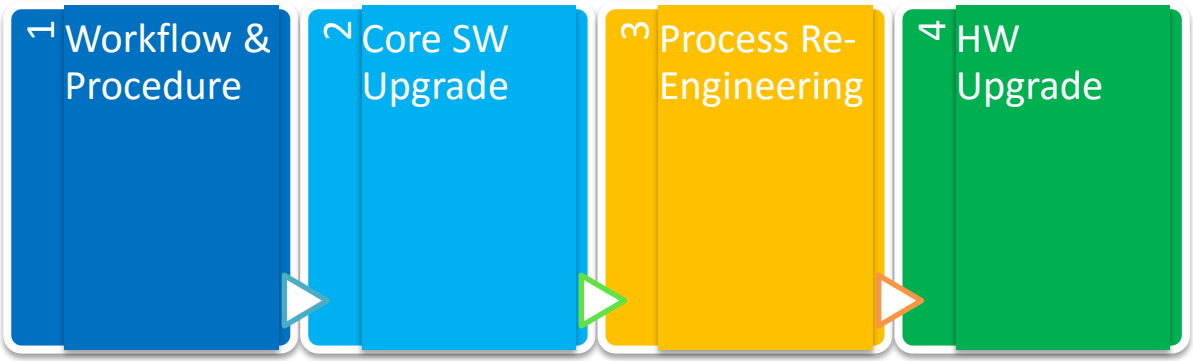
GIS / DMS Interface Upgrade:

- Segregate GIS from DMS to Minimize Dependencies
- Optimize GIS / DMS Interface by:
  - Reducing Overall Processing Time
  - Attaining Daily Synchronization
  - Re-Engineering GIS / DMS Interface



- Rectify Landbase Alignment Effect on DMS
- Ensure No Time Interruptions on the GIS and DMS Operations
- Test CIM-XML Feeder Import/Export with Network Adapter

IDENTIFIED AREAS OF IMPROVEMENT



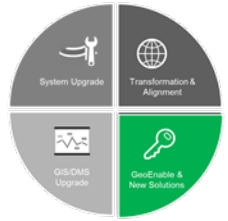
~70%

Overall Improvement in Processing Time

KHATIB & ALAMI

Geospatially Enabled Enterprise

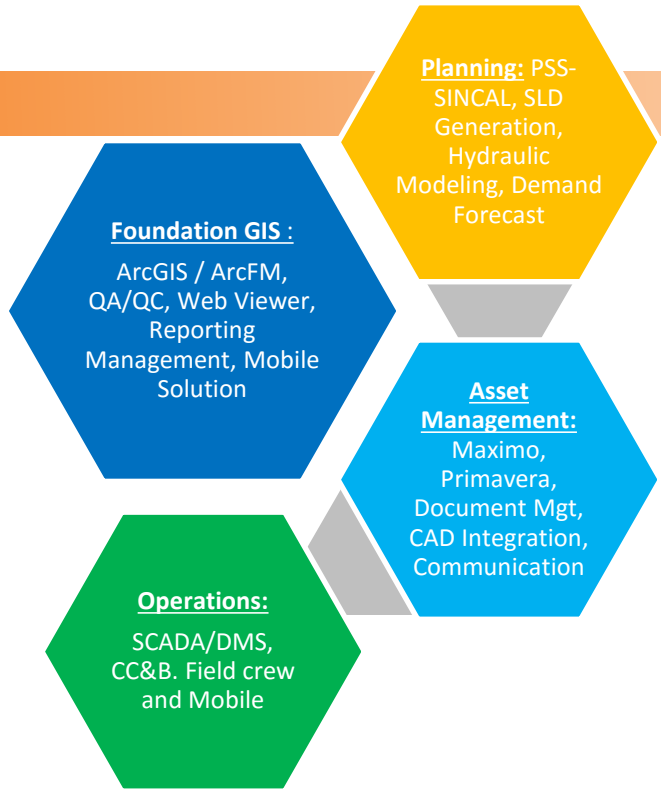
Geospatially Enabled Solutions



- Implement Business Process Driven Geospatial Solutions
- Upgrade Mission Critical Applications
- Integrate Silo Systems Using Service Oriented Architecture
- Expand Solution Offering to Meet Smart Grid Readiness Targets
- Meet e-Government Initiatives and Enable Data Exchange with Other Government Bodies

SOLUTIONS DEVELOPMENT STRATEGY

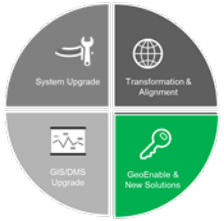
- COTS Solutions & Products
- Web Platform Technology (where applicable)
- Configuration vs. Customization
- Iterative Deployment & Testing



KHATIB & ALAMI

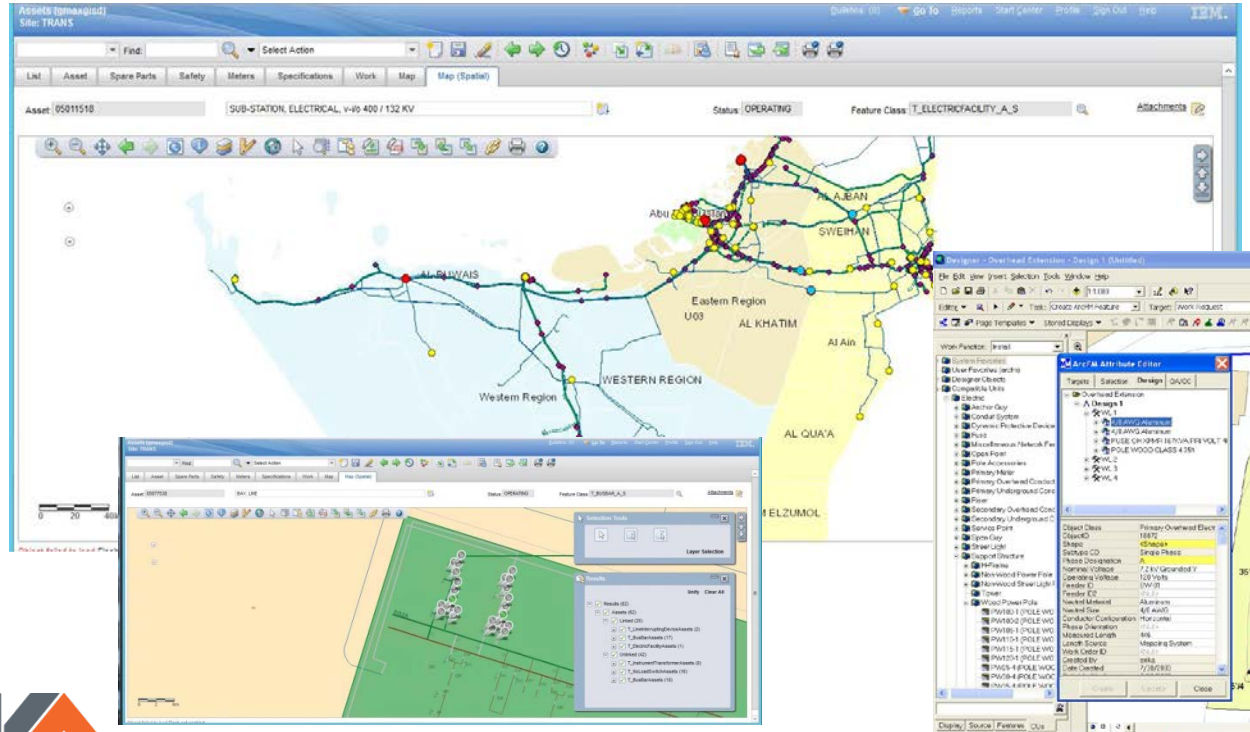
Geospatially Enabled Enterprise

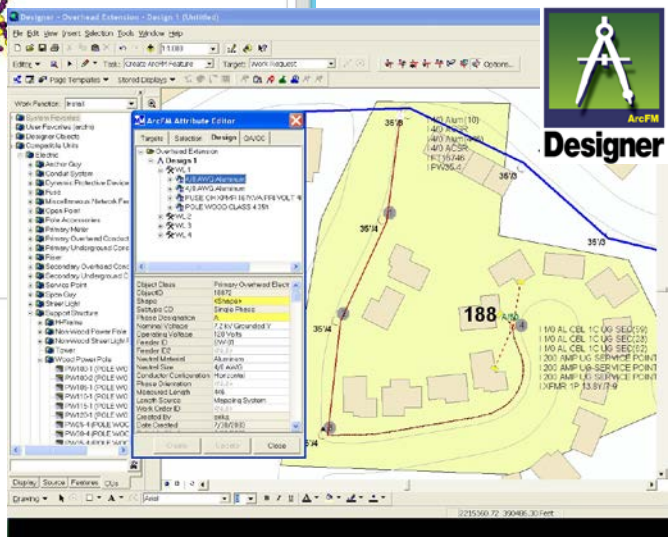
Geospatially Enabled Solutions



Geo-Enabled Asset Management:

- Maximo Spatial Configuration
- Two-way Asset Synchronization
- Streamlined Work Management Process from Design, Estimating, Construction, to Commissioning through SE's Designer

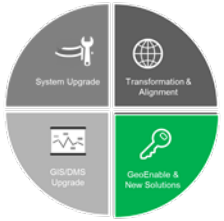




KHATIB & ALAMI

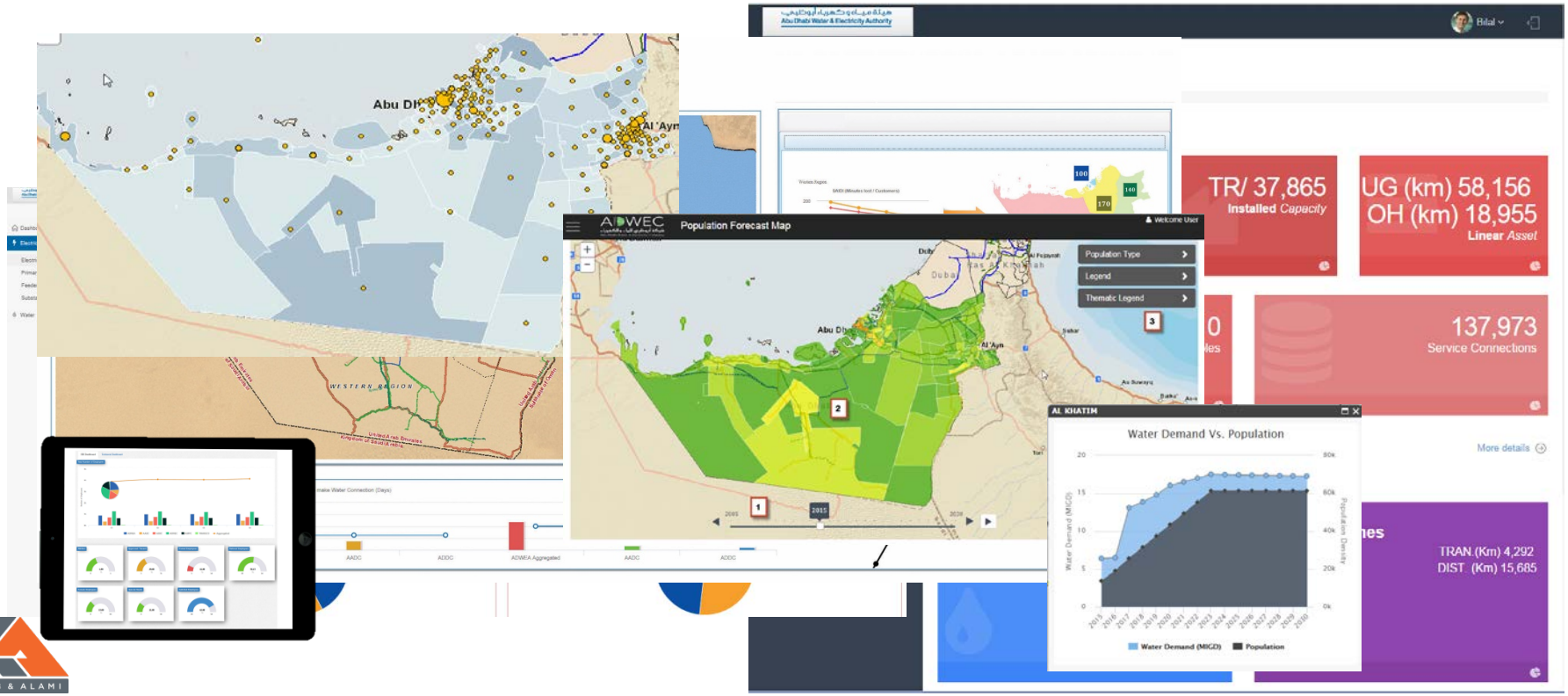
Geospatially Enabled Enterprise

Geospatially Enabled Solutions



Geo-Enabled Executive Dashboard, KPI & Demand Forecast:

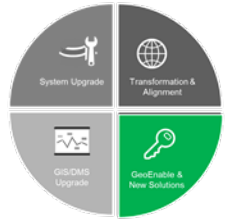
- Executive Dashboard and Reporting Engine
- Performance Management and KPI Dashboard
- Geo-enabled Electric & Water Demand Forecasts



KHATIB & ALAMI

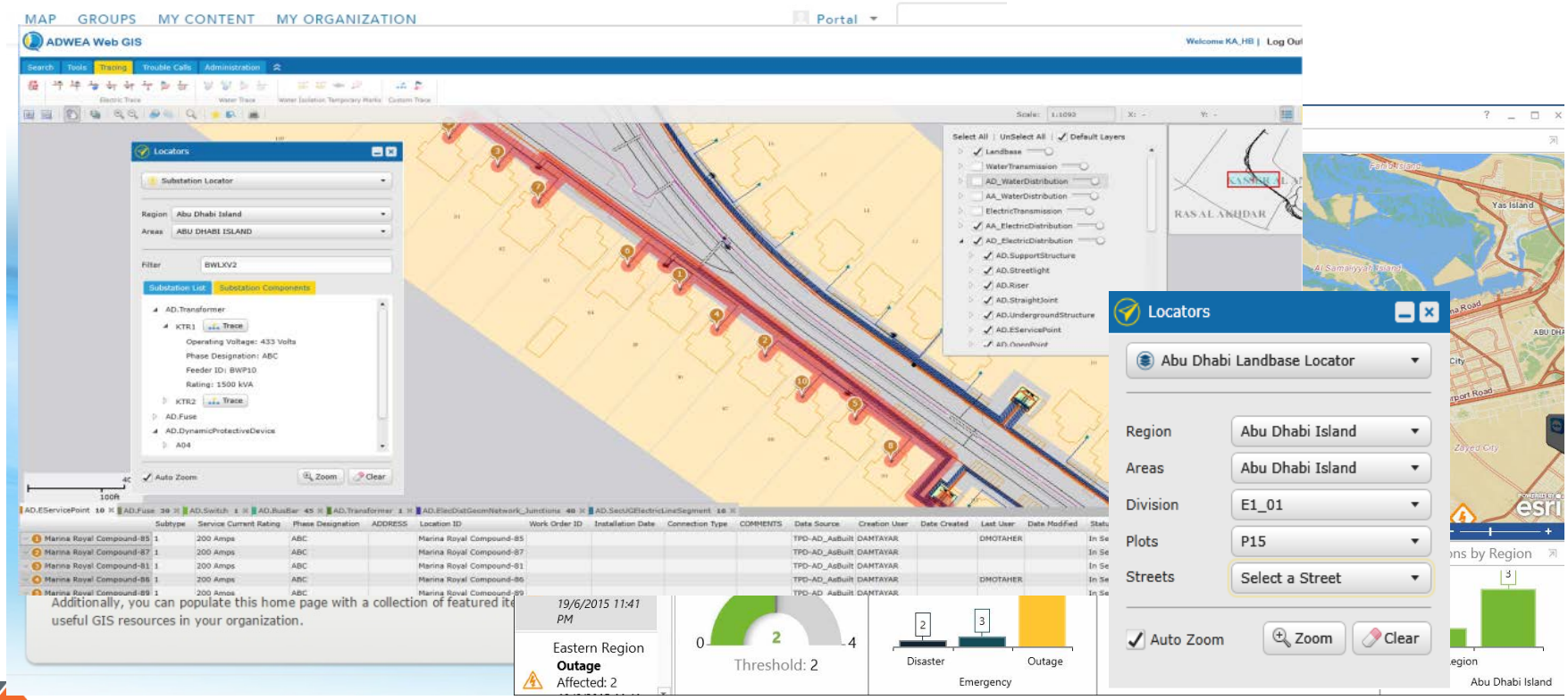
Geospatially Enabled Enterprise

Geospatially Enabled Solutions



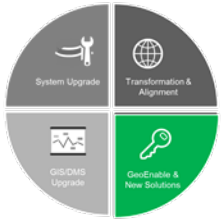
Web Solutions:

- ADWEA's Portal for ArcGIS
- Operations Dashboard Application
- ADWEA Web Viewer based on ArcFM Server & ArcFM Silverlight Viewer



Geospatially Enabled Enterprise

Geospatially Enabled Solutions



Mobile Solutions:

- Extend Geospatial Data to Field Users
- Support Multiple Platforms (Windows, iOS & Android)
- Task Oriented Functions & Business Process Dependent
- Receive Work Orders, Inspect Assets on Site, Perform Field Verification
- Solutions Include: ArcFM Mobile, ArcGIS for Windows Mobile, Collector for ArcGIS, Portal for ArcGIS, ADWEA Web Viewer, Augmented Reality Field Solution

Geospatially Enabled Enterprise

Future Roadmap

ADWEA's GIS Vision for 2030 Targets:

- Developing Integrated Information Systems that support an Integrated and Smart Network (SCADA/DMS, eAM and AMI) with Smart Generation (Renewables) and Smart Consumption (Demand Response, Electric Vehicles, DSM & Storage)
- Meeting Government Regulation & Supervision criteria and KPIs (by reducing time for Electricity & Water connections, initiatives for sustainable Water and Electricity consumption, reducing total losses, visualizing performance measures (SAIDI, SAIFI…),...)
- Geospatially enabling business processes to increase transparency and effectiveness
- Implementing workforce management through mobile GIS solutions and improving workplace health, safety & welfare
- Enabling Data Transfer and e-Government Integration to respond to government electronic initiatives and plans

Geospatially Enabled Enterprise

Alignment with Abu Dhabi Vision 2030

ADWEA's GIS Vision is Well-Aligned with Abu Dhabi's Economic Vision for 2030

Economic Development

Becoming business-focused to respond to economic diversification and investments in new projects

Social & Human Resources Development

Enhancing workforce management through mobile GIS solutions and measuring performance

Infrastructure Development & Environmental Sustainability

Shifting from regulated commodity energy firm to low-carbon network operator through integrated and digital networks

Optimization of Government Operations

Aligning with government initiatives, such as Unified Municipal Landbase and integrating systems to improve efficiency

KHATIB & ALAMI

Questions?

Thank You!

KHATIB & ALAMI