



# Connecting Space and Time

Presented by **Francisco Urbina**









NOT  
A  
THRU  
ROAD

YOUR GPS  
IS WRONG!  
DEAD END

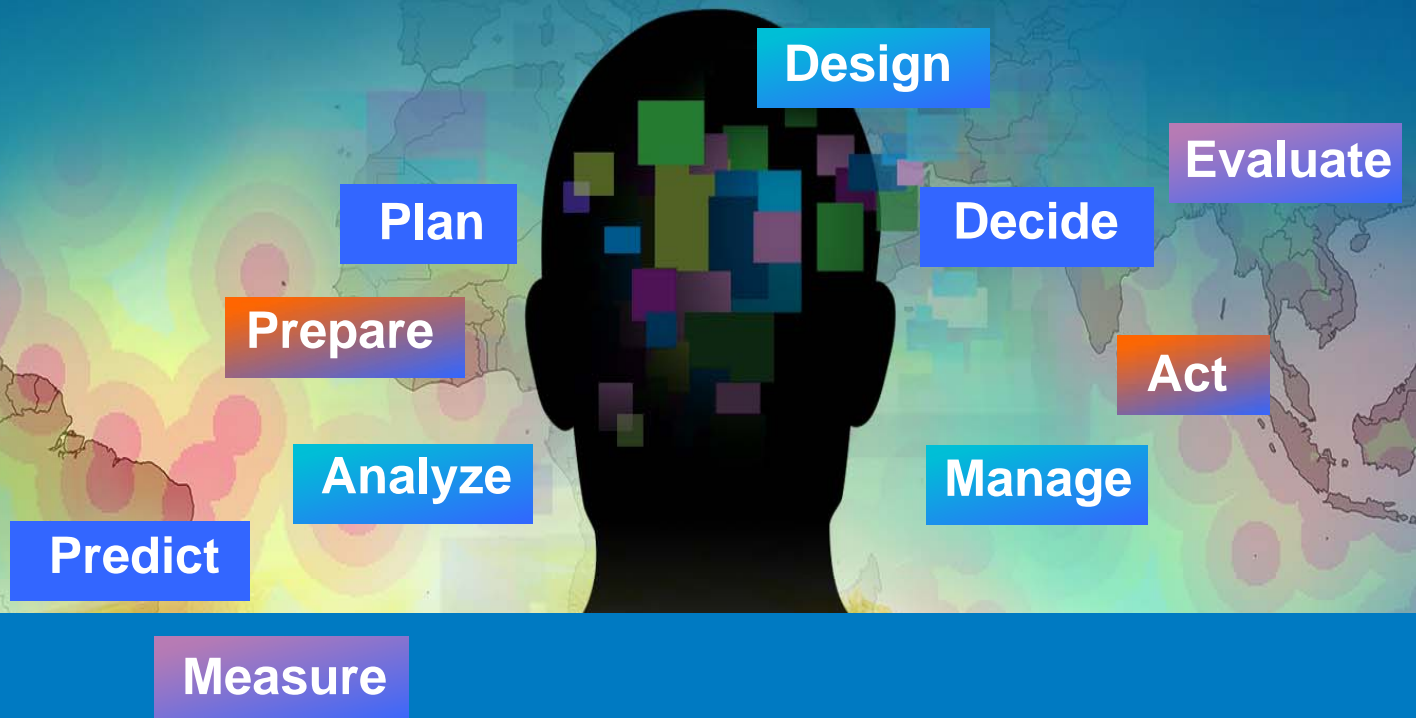




## From Backroom to a Explosion of Uses, Users and Data Sources



# GIS Is Being Transformed Into a Location Platform



*Making it Pervasive  
... Involving Everyone*



big data collections

sensor networks

social media

business systems

images / video

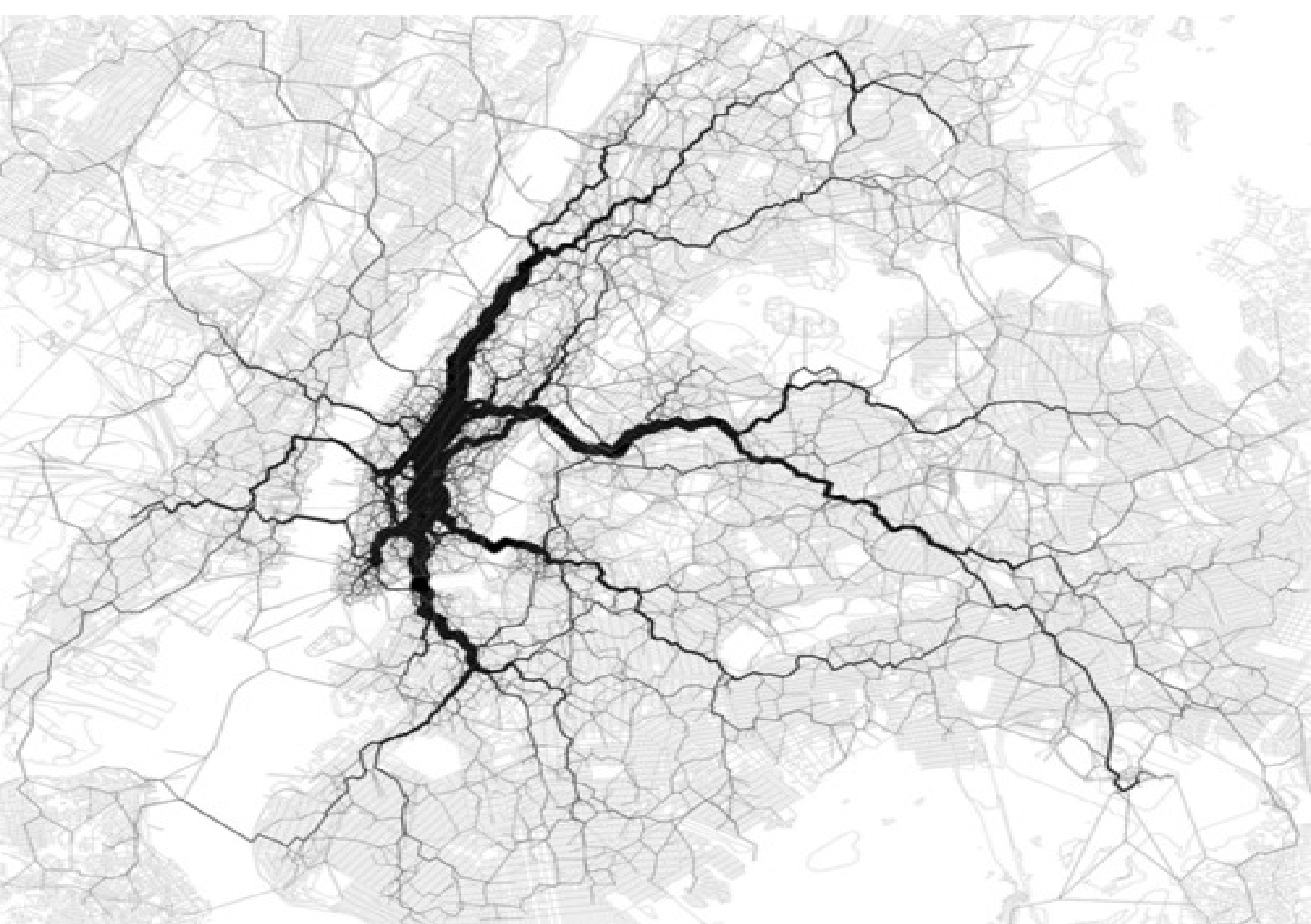
spreadsheets

analytics

web services

# Estimate Stickers









# Consumerisation driving Expectations

# How important is location in business?



Source: Ventana Research Location Analytics Benchmark Research 2013



# More than Location







**Value of Understanding Place**  
Tobler's 1<sup>st</sup> Law of Geography





# Strategy

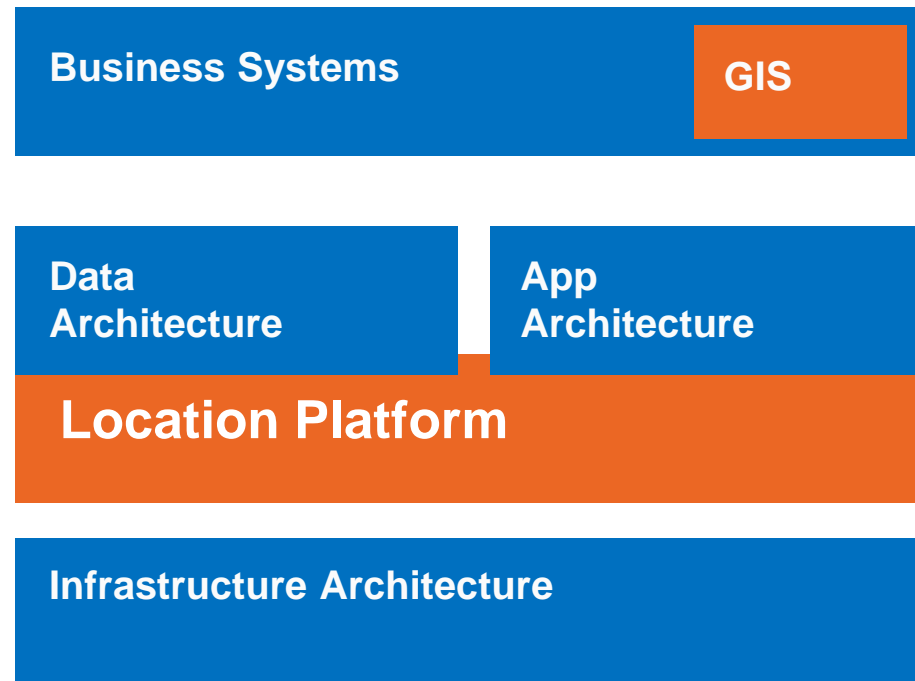
Build, Sell, and Support Common Platform For Three Communities



Web GIS

*... and Provide Partners with Technology, Services, and Support*

# Esri is Geo-Enabling the Enterprise



**Enrich and improve workflows to increase organisational efficiency**  
**More than dots on a Map**  
**Reduce the cost of Spatial Transactions**

# Web GIS Supports Everyone

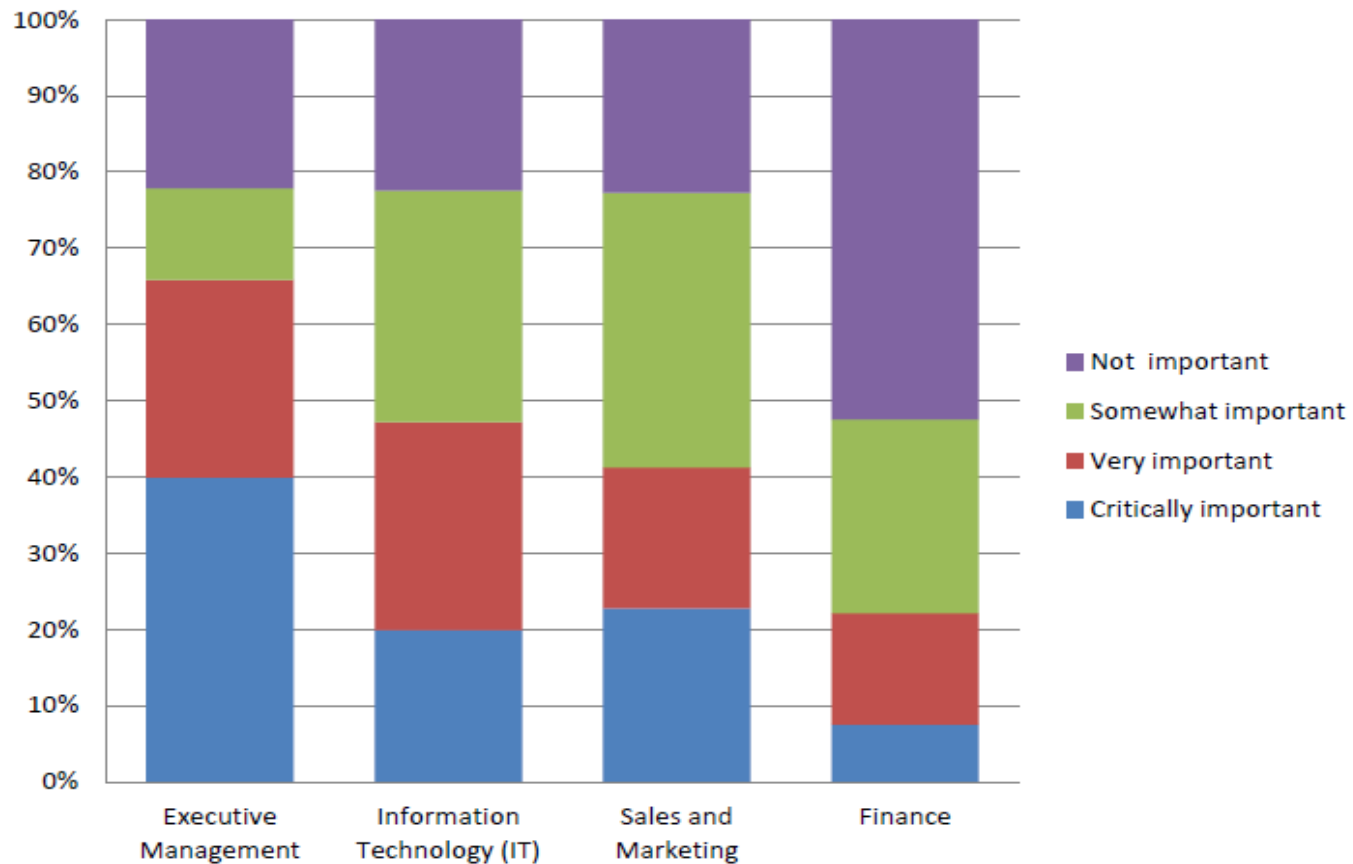
## Providing a Common Enterprise Platform



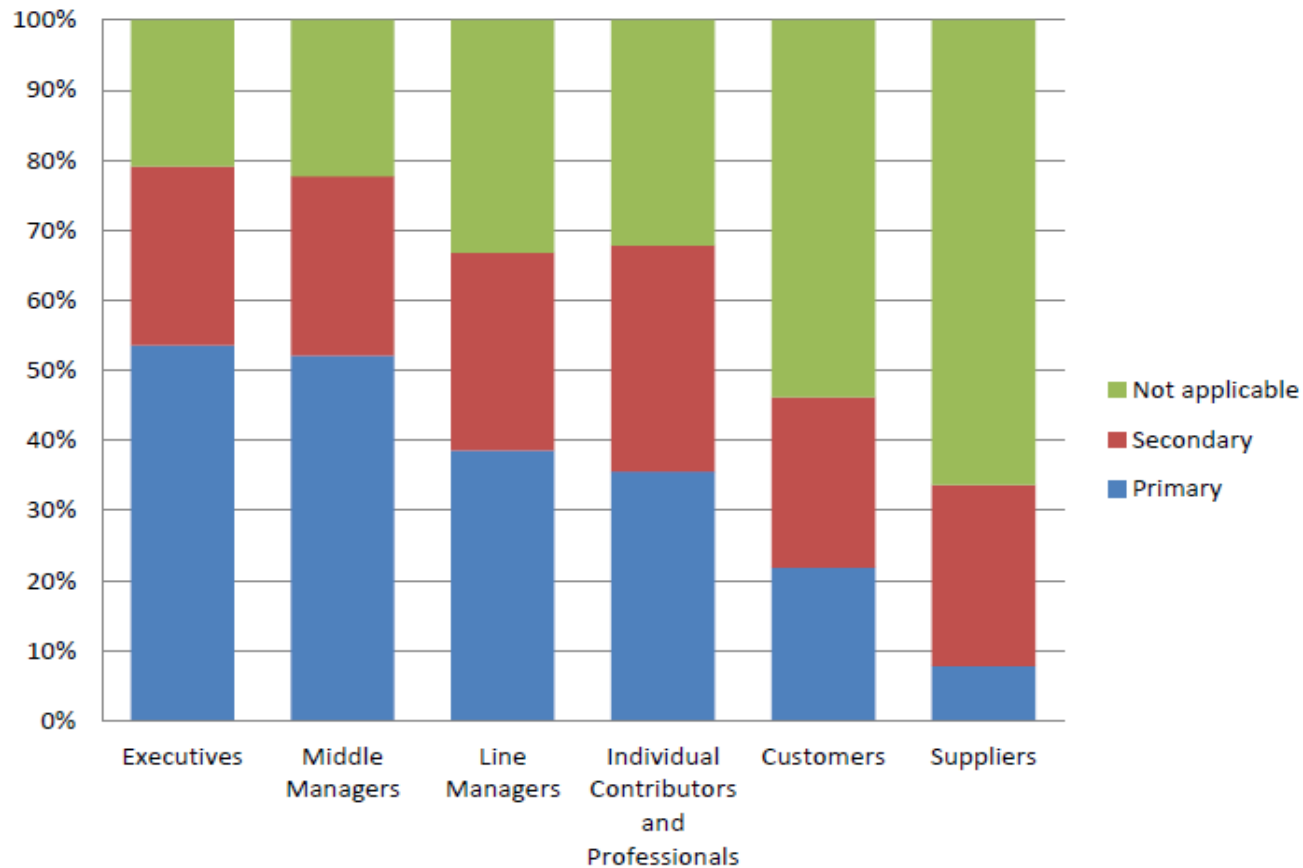
*Across Organisations and Across  
Partners  
... a Framework for  
Integration*



### Importance of Location Intelligence by Function



### Location Intelligence Targeted Users



They want  
**one corporate system.**

**They don't want any**  
limitations for all their users.

They want information at  
everyone's fingertips in  
**3-clicks or less.**

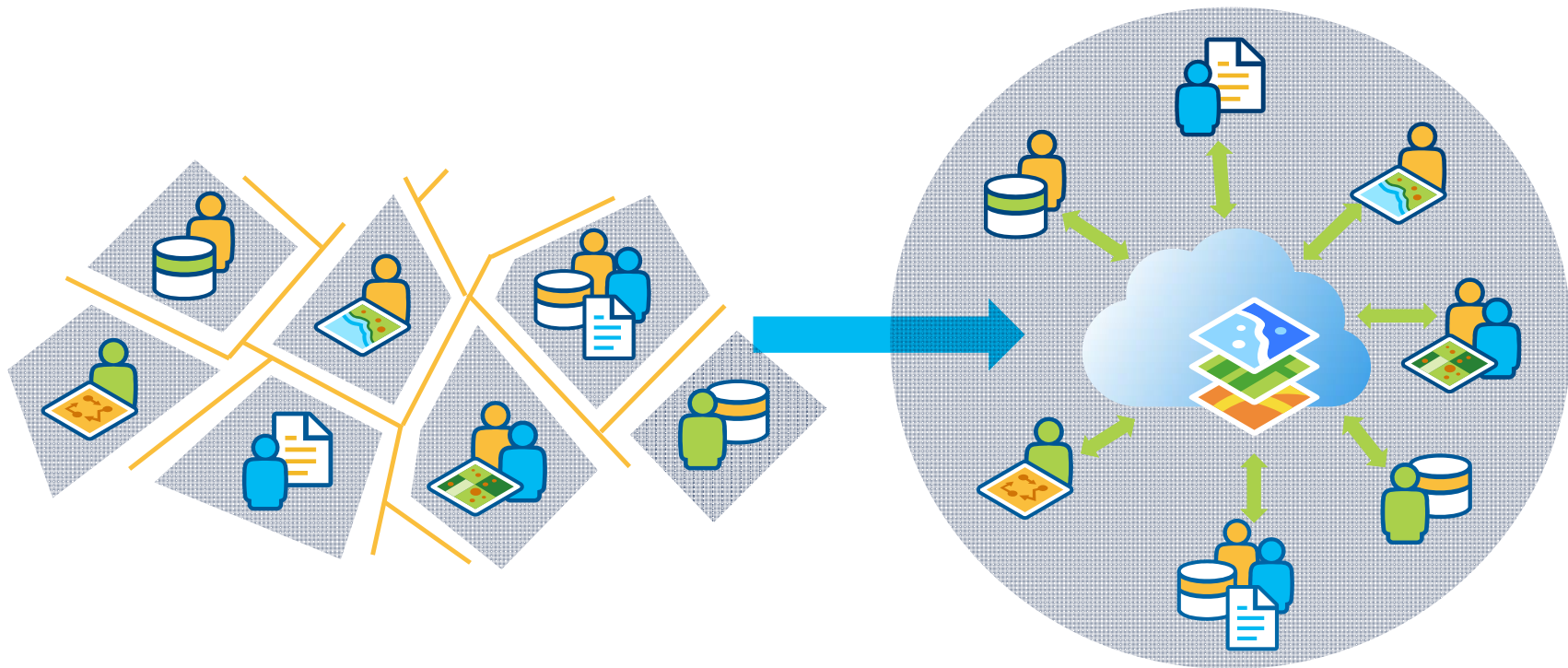
They want uniformity in  
**all their maps.**

And, they want this to be  
**as easy to use as their iPhones.**



# Web GIS Helps Integrate Our Partner Solutions

## Breaking Down the Barriers



Creating New Relationships

... Supporting Collaborative Approaches





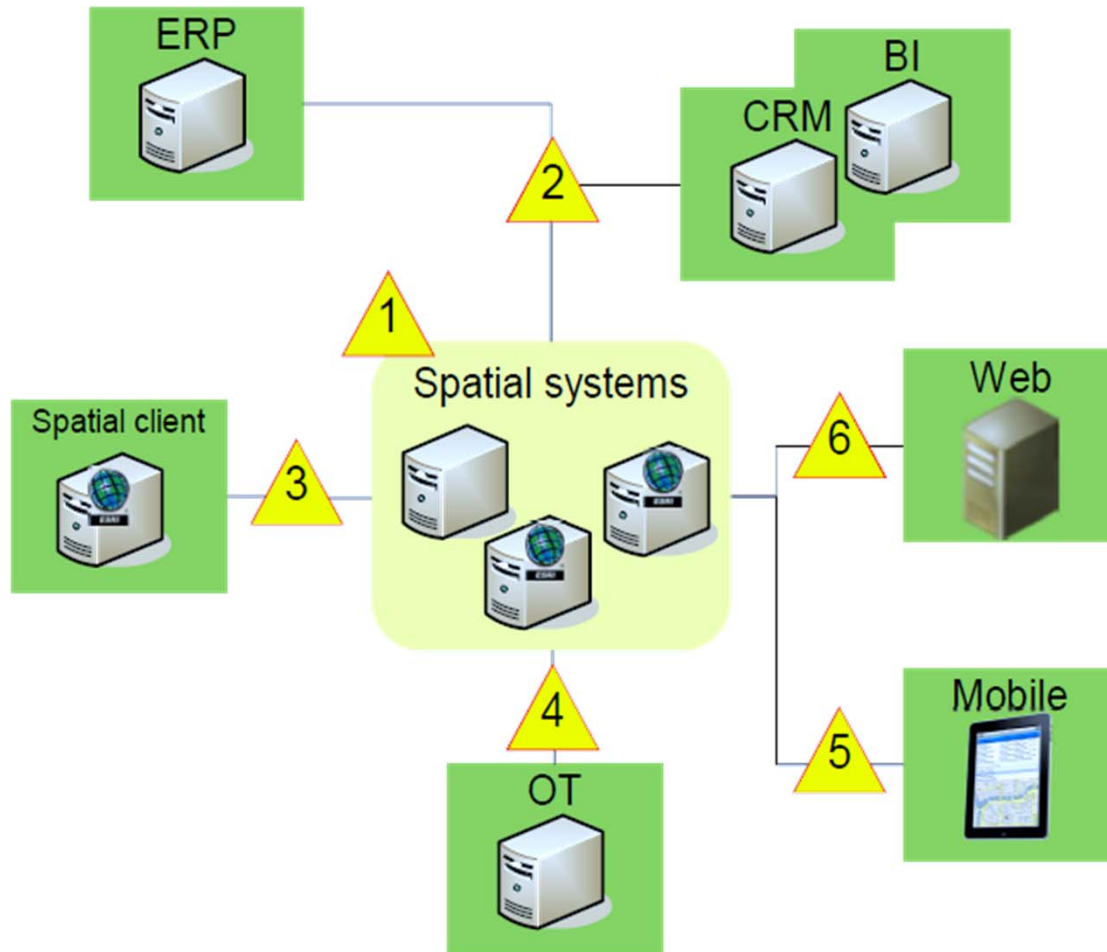
**Without Integration**



# The Past - Sinking Feeling

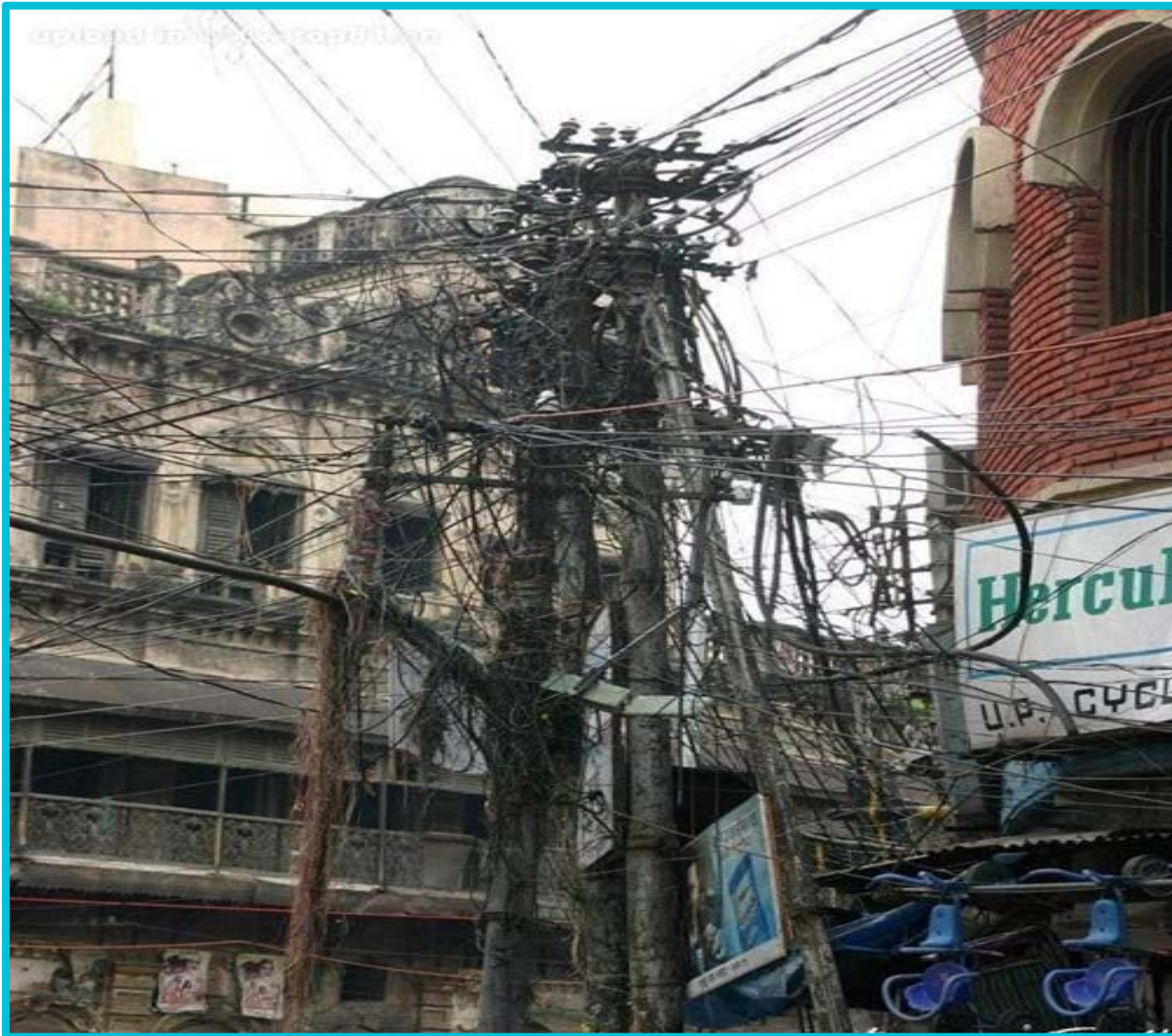


# Our Communities Struggle with Important Questions



1. Which spatial system has my data and which version?
2. How do I sync data between business and spatial systems?
3. How do I access my business data from my spatial client tools?
4. How do I merge business and spatial data with my operations systems?
5. How do I connect and sync spatial data to mobile devices?
6. How to I provide web?

# Complexity



# Over Engineered





# Usability

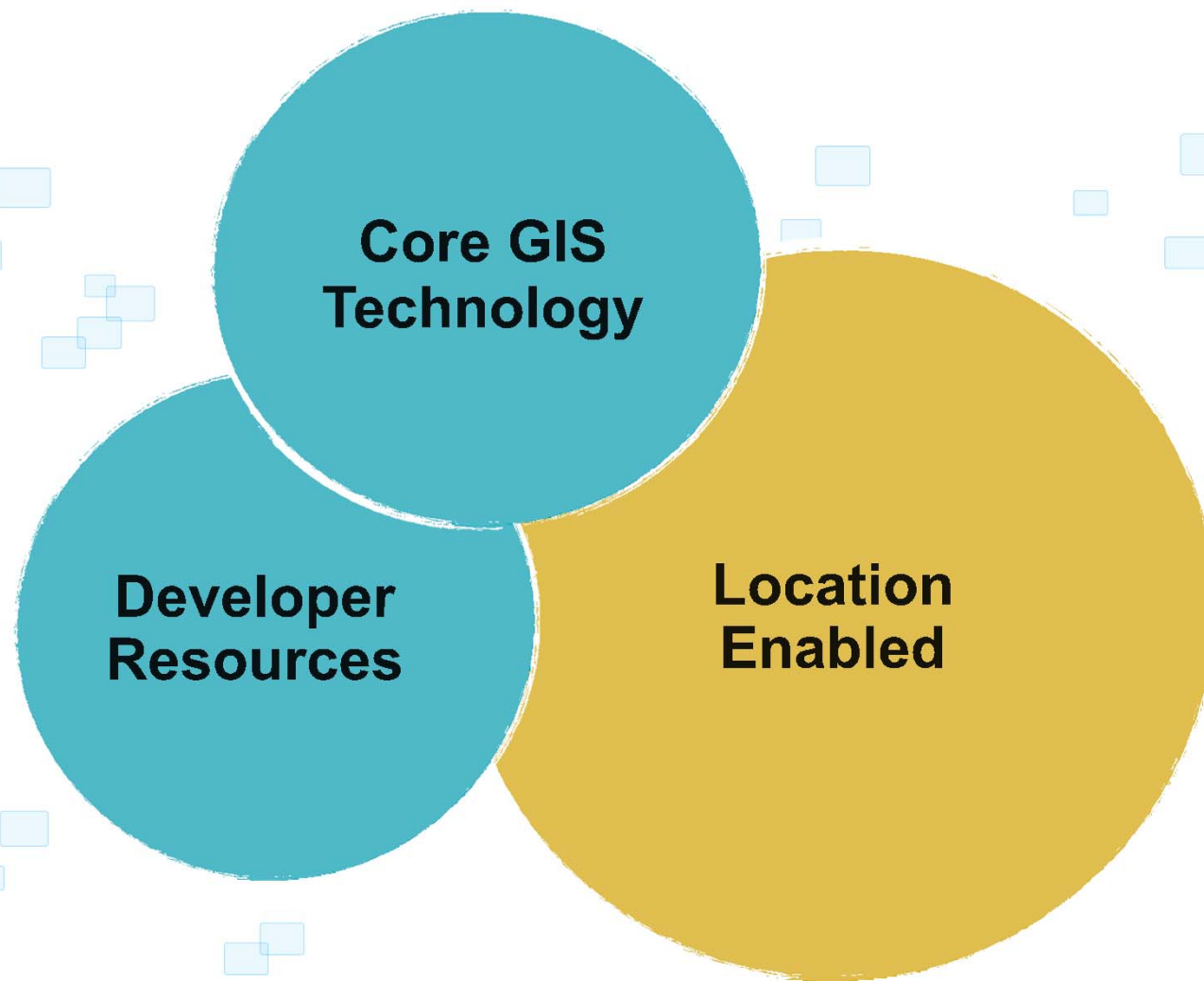


# Lack of Agility



Complementary  
Non-disruptive  
Frictionless  
Transparent

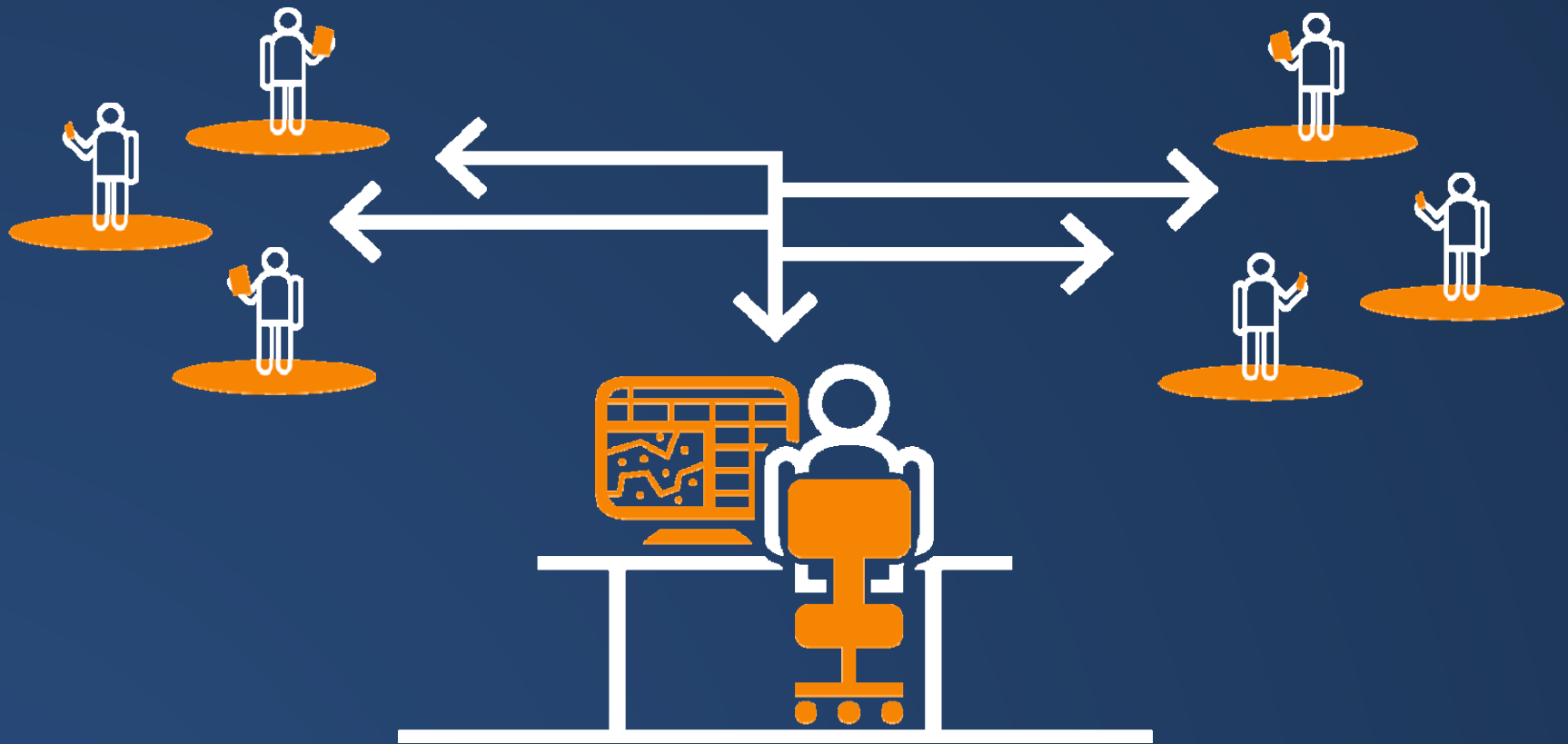




**Core GIS  
Technology**

**Developer  
Resources**

**Location  
Enabled**



After Integration





# Partners

Delivering Thousands of Solutions, Apps,  
Services, Data and Technology



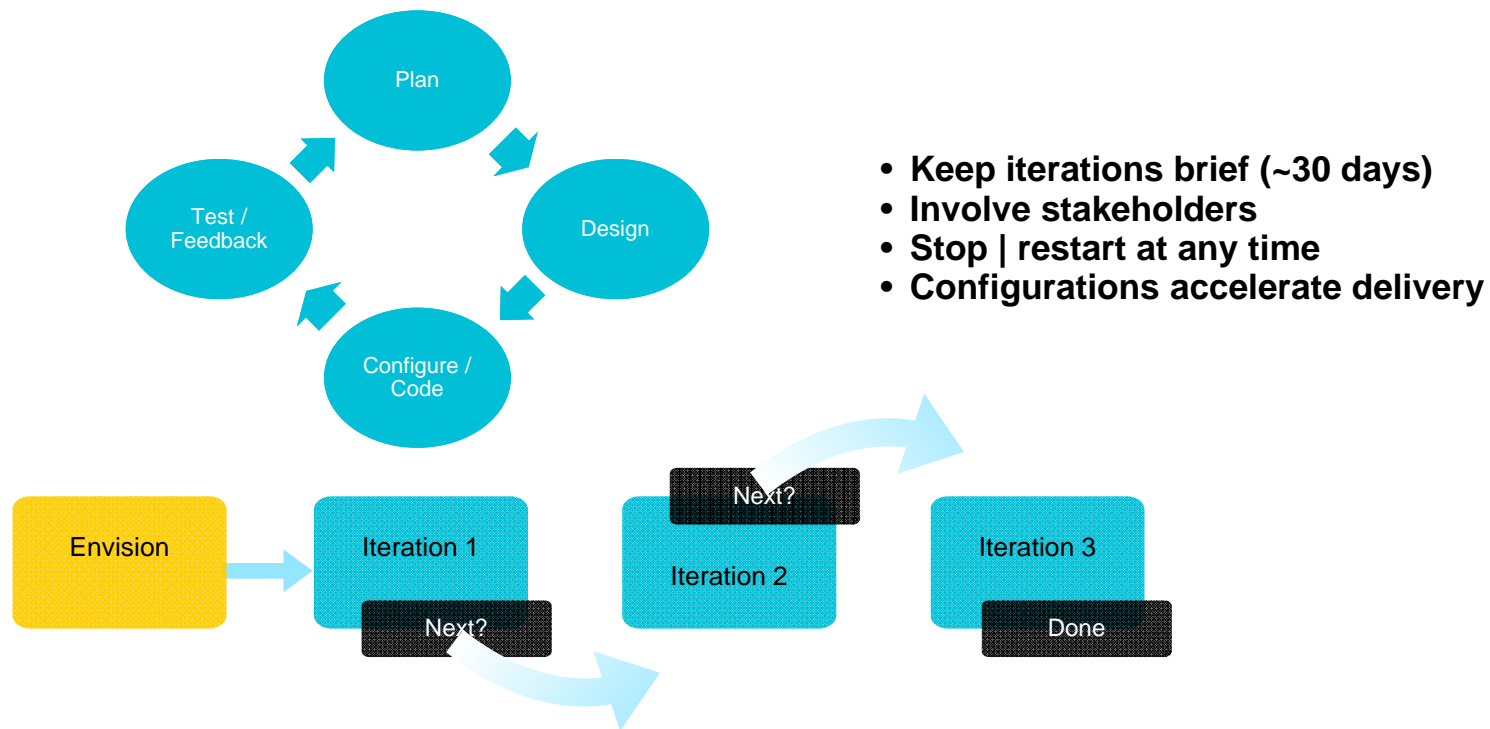


# Connecting Space and Time OSIsoft & Esri



# Use an Agile Methodology

Iteratively and Incrementally Add New Capabilities using COTS

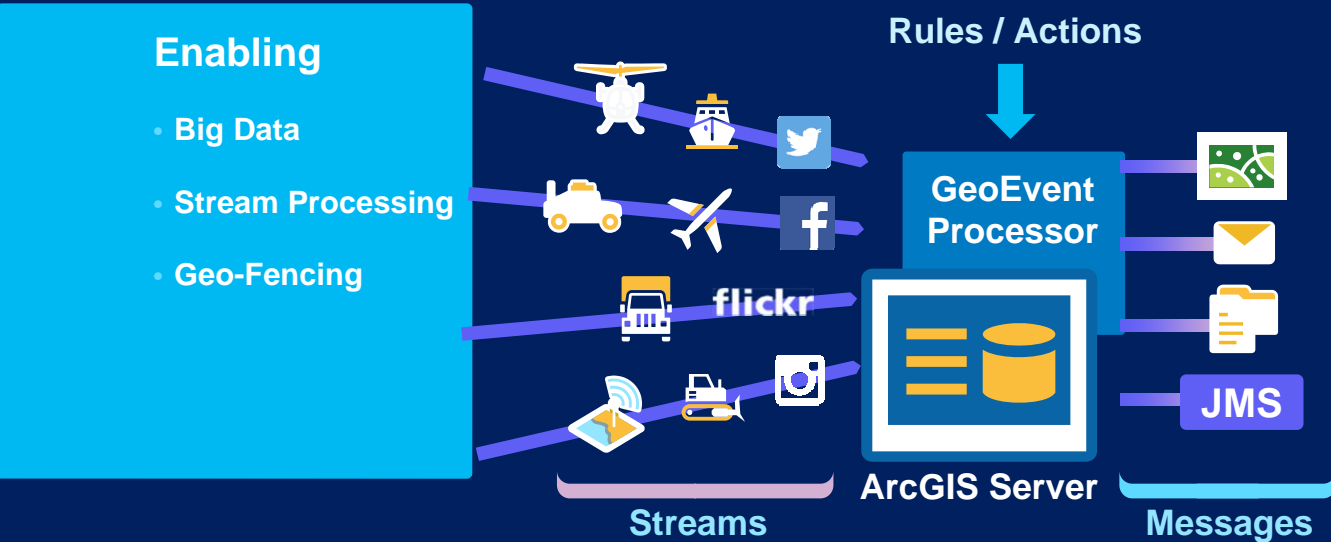


...Each iteration results in deliverables you can use

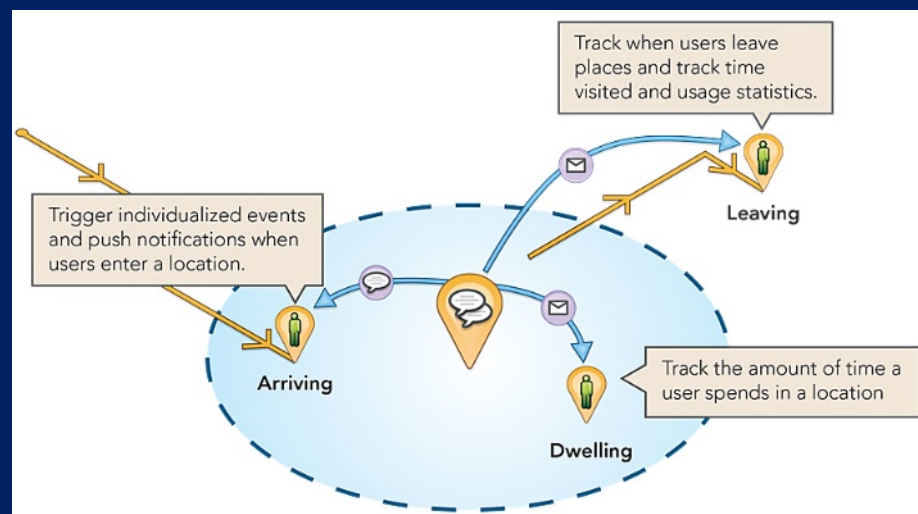
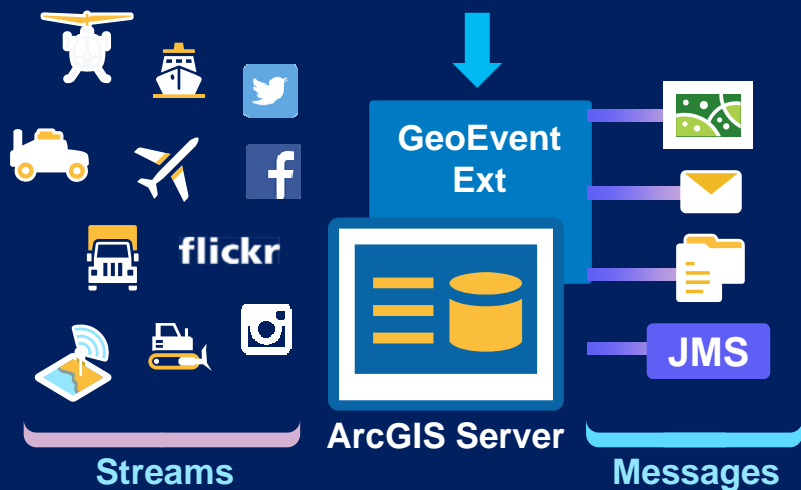


# Real Time

ArcGIS GeoEvent Extension for Server Integrates and Exploits Real Time Data

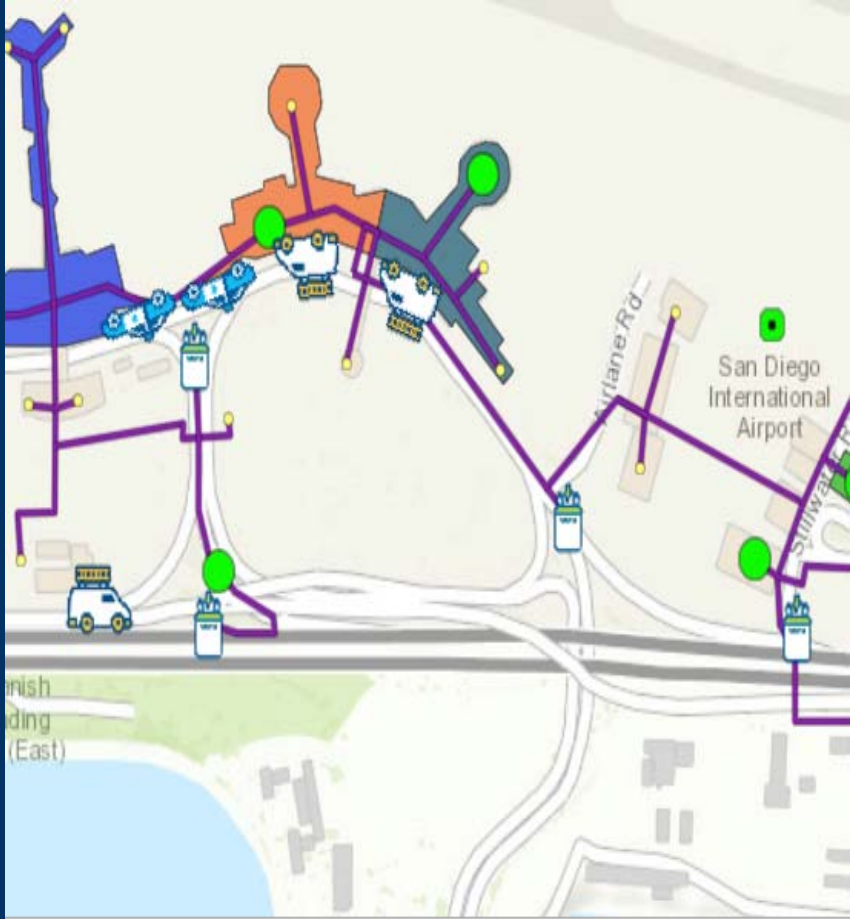


*Continuous Processing and Analysis*

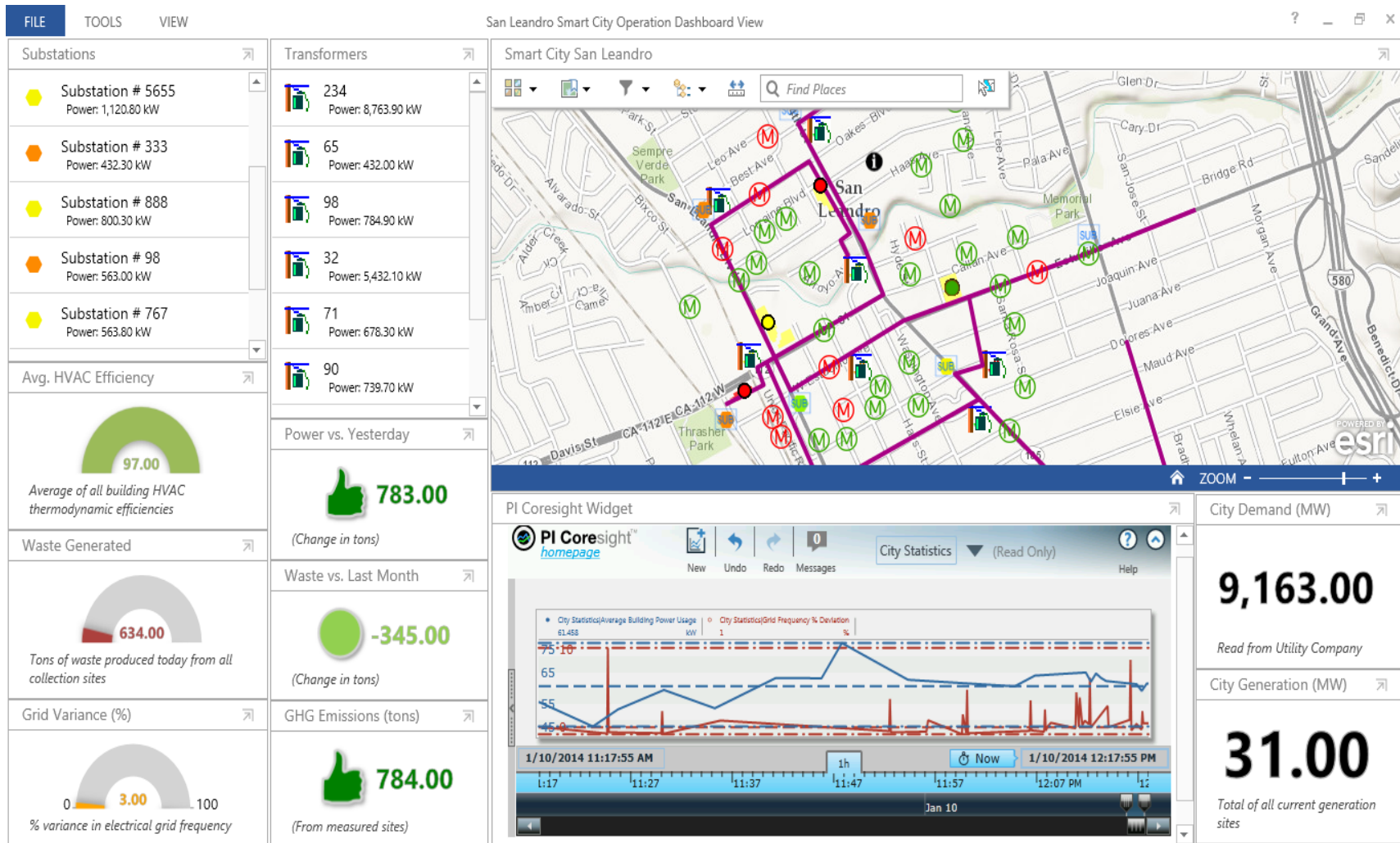




# OSIsoft & Esri



# Operational Performance View



# Energy Management

**Smart City San Leandro Operation View**

**PI Coresight Widget**

Manor Library VAV Display (Read Only)

Value	Units
14.511	%
0	
154.09	ft3/m
22.388	ft3/m
176.48	ft3/m
71.813	°F
62.831	°F

Name	Value	Units	Time	Average	Minimum	Maximum	StdDev	Range
6Cold Deck Dumper Output	14.511	%	21-Mar-2014 09:18:35.91	12.711	0	16.223	4.9006	16.223
6Hot Deck Dumper Output	0	%	21-Mar-2014 09:18:35.91	1.0084	0	12.791	3.5134	12.791
6Cold Deck Flow	154.09	ft3/m	21-Mar-2014 09:18:35.91	156.32	0	381.03	63.624	381.03

**OSI-SERVER**

Name: OSI-SERVER

- Available Memory: 5406.0
- Committed Memory: 2.69095e+009
- C Drive Free Space: 54.2563324
- Login Error Count: 0.0
- System Error Count: 0.0
- Network adapter bytes received per second: 3664.0144
- Network adapter bytes sent per second: 2449.6653
- Page File Usage: 0.216877437
- Processor 0 time: 0.622590542
- Processor 1 time: 0.0
- Processor 2 time: 0.0
- Processor 3 time: 0.0
- Processor queue length: 0.0
- Custom traffic flow per second: 13300.5344

**OSI-SERVER total CPU Usage**

Line graph showing CPU usage percentage over time (21-Mar-2014 09:18:35 to 21-Mar-2014 05:18:36).

**Lit San Leandro Fiber Throughputs (GAFKUC Node)**

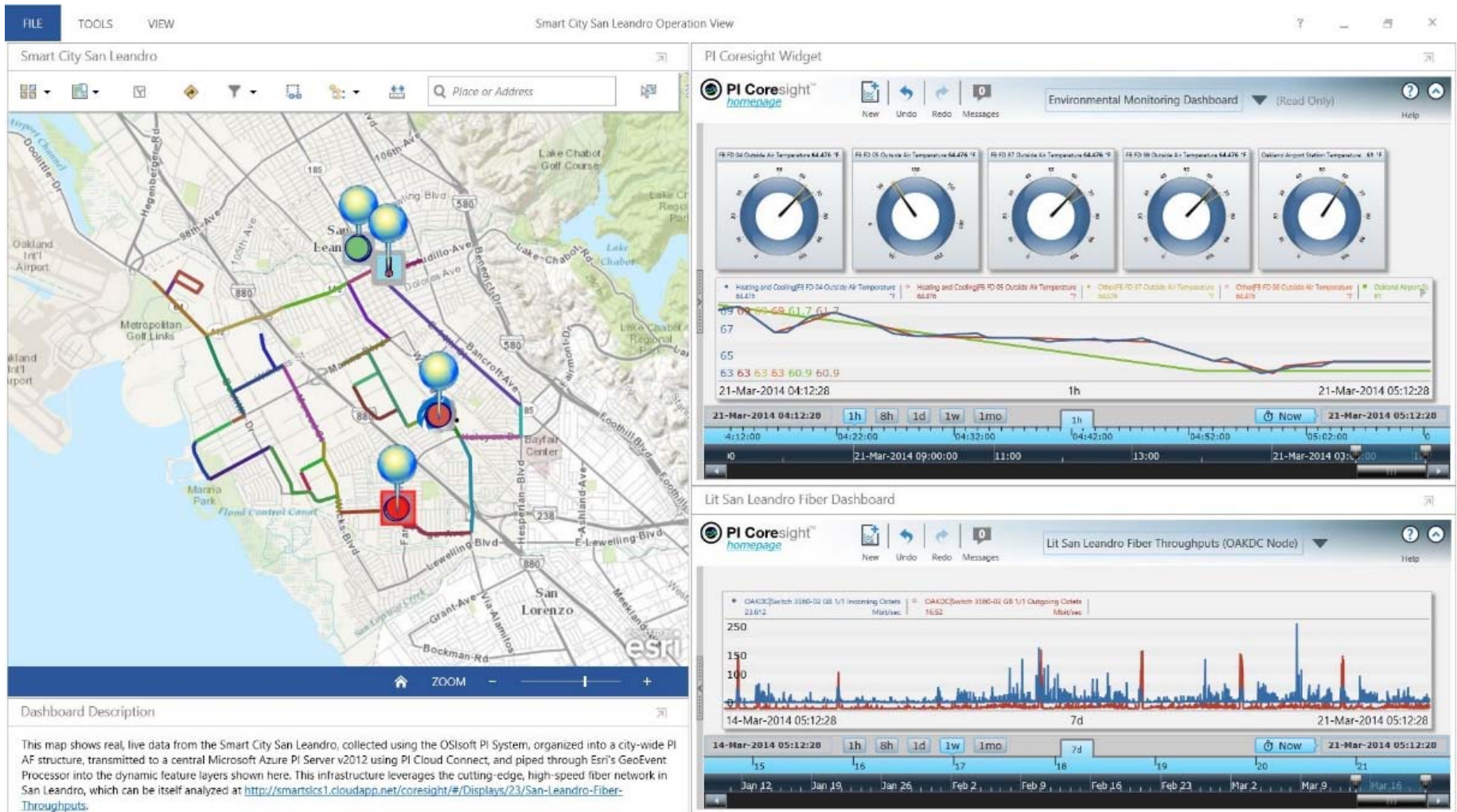
Line graph showing fiber throughputs (Mbps) over time (21-Feb-2014 05:18:36 to 21-Mar-2014 05:18:36).

**Dashboard Description**

This map shows real, live data from the Smart City San Leandro, collected using the OSIsoft PI System, organized into a city-wide PI AF structure, transmitted to a central Microsoft Azure PI Server v2012 using PI Cloud Connect, and piped through Esri's GeoEvent Processor into the dynamic feature layers shown here. This infrastructure leverages the cutting-edge, high-speed fiber network in San Leandro, which can be itself analyzed at <http://smartsf1.cloudapp.net/coresight/#/display/23/San-Leandro-Fiber-Throughputs>.



# Environmental Monitoring



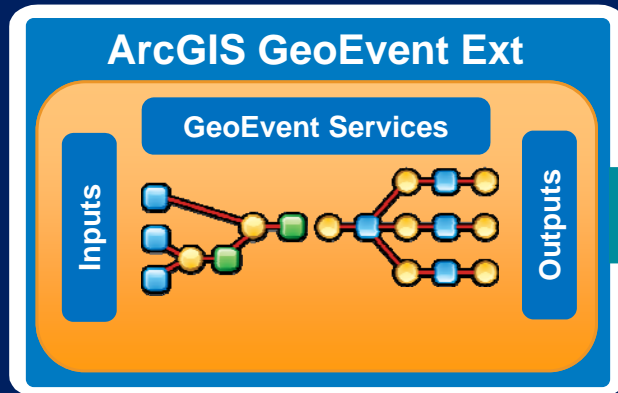
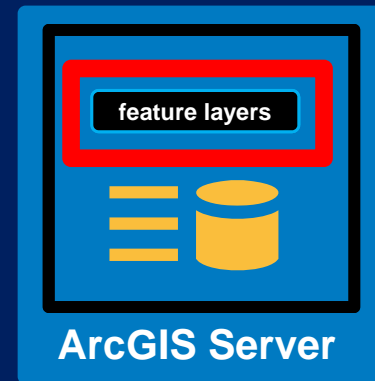
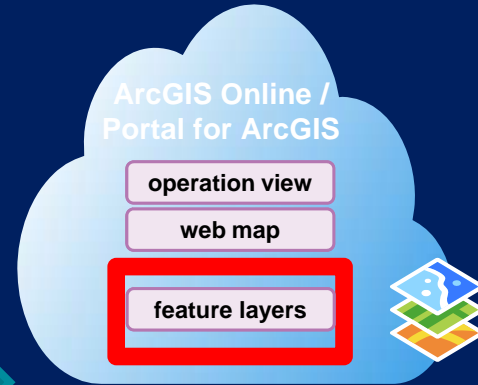
# Smart Building





# Your Dashboards & Apps

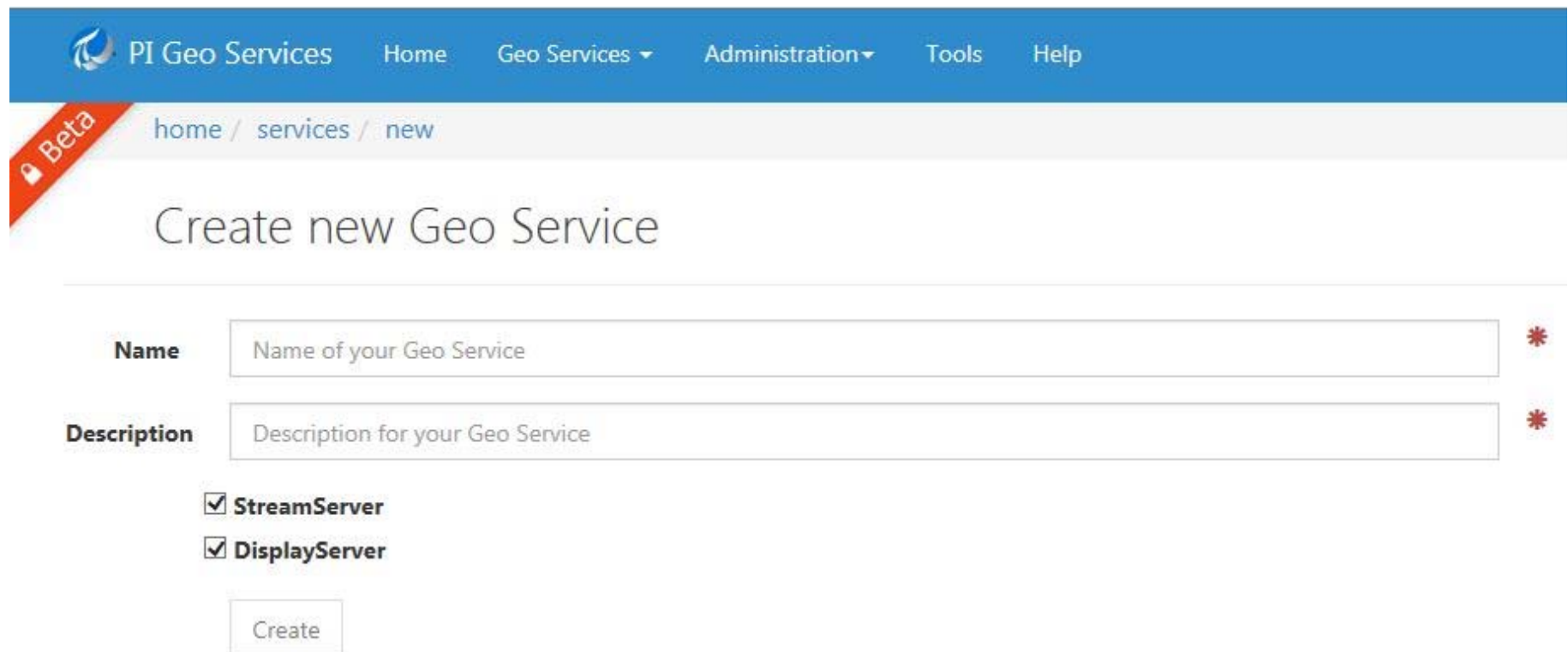
## Operations Dashboard for ArcGIS



PI Integrator  
for  
Esri ArcGIS

# Portal Configuration Experience

## Not a programming project!



The screenshot shows the 'Create new Geo Service' page in the PI Geo Services portal. The page has a blue header with navigation links: Home, Geo Services (dropdown), Administration (dropdown), Tools, and Help. A red 'Beta' badge is visible in the top left corner. The breadcrumb trail is 'home / services / new'. The main heading is 'Create new Geo Service'. Below this, there are two required text input fields: 'Name' (placeholder: 'Name of your Geo Service') and 'Description' (placeholder: 'Description for your Geo Service'). Both fields have a red asterisk icon to their right. Underneath the description field, there are two checked checkboxes: 'StreamServer' and 'DisplayServer'. At the bottom of the form is a 'Create' button.

PI Geo Services Home Geo Services Administration Tools Help

Beta home / services / new

### Create new Geo Service

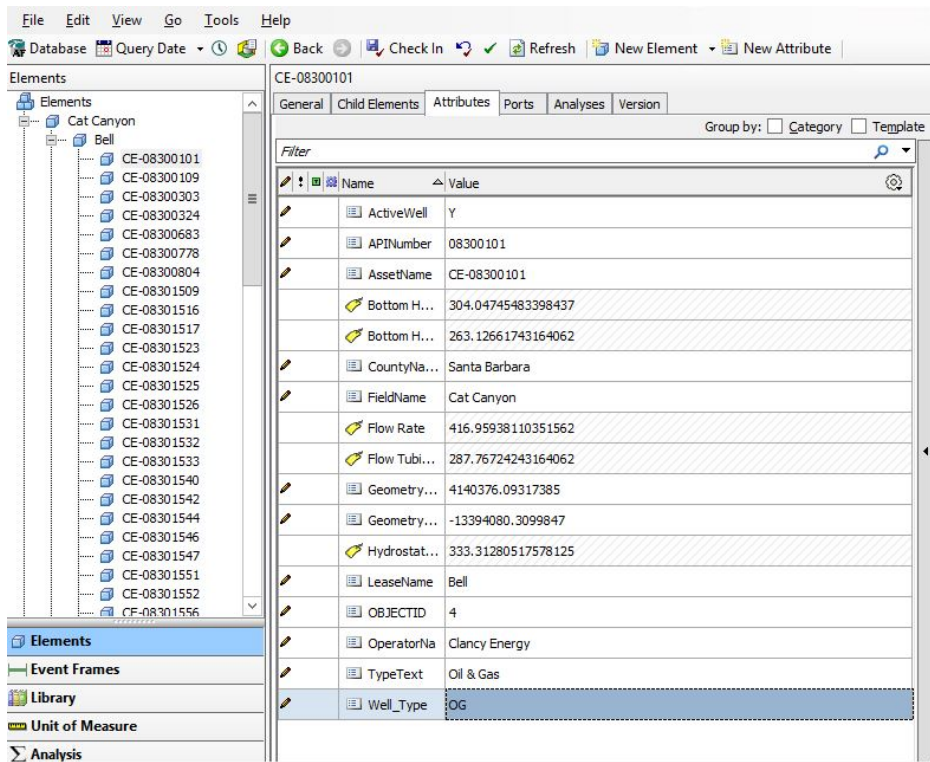
**Name**  \*

**Description**  \*

**StreamServer**

**DisplayServer**

# Publish your layer



Find search root in database PUG Well Data on server AFSERVER-DEMO

PUG Well Data / Cat Canyon / Bell

Cat Canyon	Bell	
		CE-08300101
Supervisor John	Blochman	CE-08300109
Vehicles	Brooking	CE-08300303
	Delaney-Tunnell	CE-08300324
	Dominion	CE-08300683
	Field Fee	CE-08300778
	Fugler	CE-08300804
	Fullerton	CE-08301509
	G.W.P.	CE-08301516
	GWP-RF	CE-08301517
	Los Flores	CE-08301523
	Palmer Stendel	CE-08301524
	Palmer-Stendel	CE-08301525
	Pyramid-DT	CE-08301526
	Recruit Fee	CE-08301531
	Sturgeon	CE-08301532
...	...	...

# Preview the Elements

Selection preview (elements) X  
 Search:  Sort: A - Z Z - A currently showing 149 elements

Aurora 15-8-7-20		Aurora Federal 3-20D-7-20		BBC 1-32D-36 BTR	
api	43-047-51509	api	43-047-52005	api	43-013-50979
county	Uintah	county	Uintah	county	Duchesne
datum	NAD83	datum	NAD83	datum	NAD83
fid	912	fid	924	fid	927
flow	120.59617614746094	flow	120.59617614746094	flow	120.59617614746094
fracture_d	0001-01-01T00:00:00	fracture_d	0001-01-01T00:00:00	fracture_d	0001-01-01T00:00:00
geometryLatitude	4897739.843655001	geometryLatitude	4895459.45020187	geometryLatitude	4892367.09544241
geometryLongitude	-12210958.105615238	geometryLongitude	-12211124.750869216	geometryLongitude	-12309842.875318035
latitude	40.218464	latitude	40.20282	latitude	40.1816
longitude	-109.692903	longitude	-109.6944	longitude	-110.5812
operator	Bill Barrett Corp	operator	Bill Barrett Corp	operator	Bill Barrett Corp
pdf_seqid	31300	pdf_seqid	31296	pdf_seqid	31295
production	Oil	production	Oil	production	Oil
published	0001-01-01T00:00:00	published	0001-01-01T00:00:00	published	0001-01-01T00:00:00
r_seqid	968	r_seqid	972	r_seqid	973
state	Utah	state	Utah	state	Utah
total_wate	840706	total_wate	663228	total_wate	972794
true_verti	8048	true_verti	9974	true_verti	9456
well Pressure	88.42372131347656	well Pressure	88.42372131347656	well Pressure	88.42372131347656
well_name	Aurora 15-8-7-20	well_name	Aurora Federal 3-20D-7-20	well_name	BBC 1-32D-36 BTR
wellhead Flow	88.42372131347656	wellhead Flow	88.42372131347656	wellhead Flow	88.42372131347656
BBC 5-27D-37 BTR		Beckstead 11-17-4-2W		Beckstead 14-17-4-2W	
api	43-013-50847	api	43-013-50446	api	43-013-50448
county	Duchesne	county	Duchesne	county	Duchesne
datum	NAD83	datum	NAD27	datum	NAD83

Close

## **OSIsoft does the work for you with each layer**

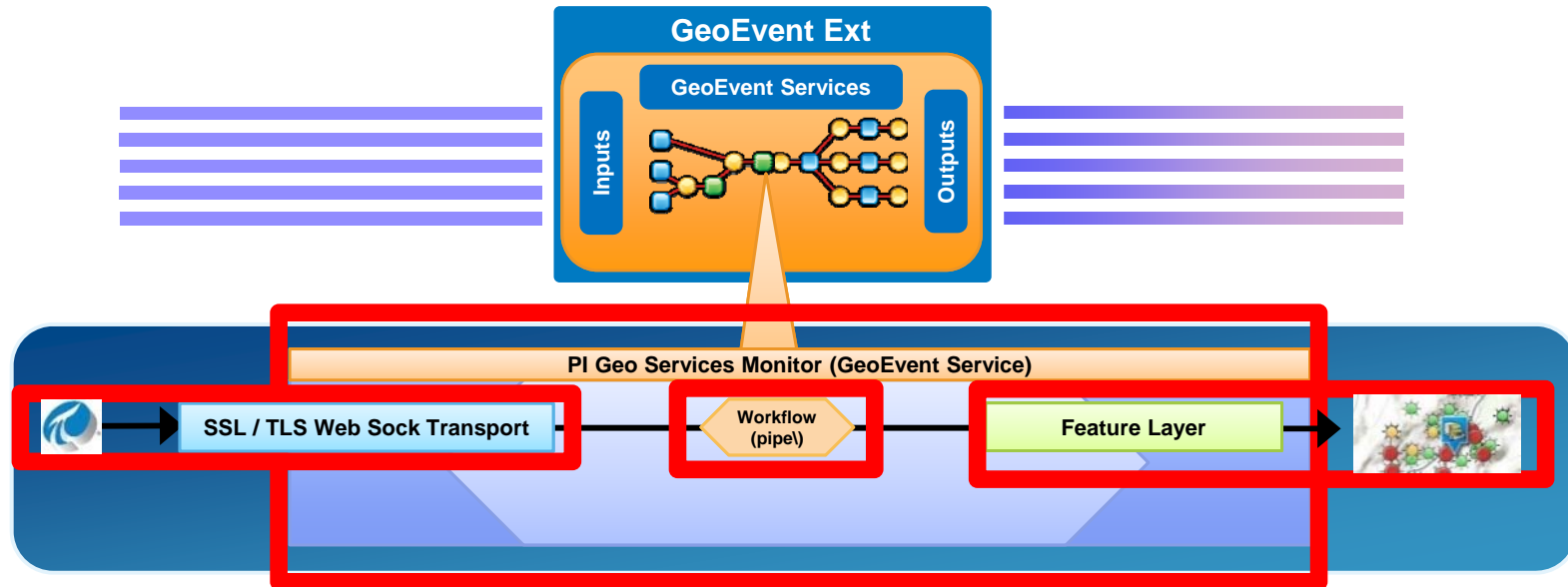
- Automatic Configuration
  - ArcGIS GeoEvent Extension Input Connector
  - ArcGIS GeoEvent Extension Output Connector
  - ArcGIS GeoEvent Extension Workflow
- Create PI Coresight Endpoint





# Stream Service




## Configuration Results



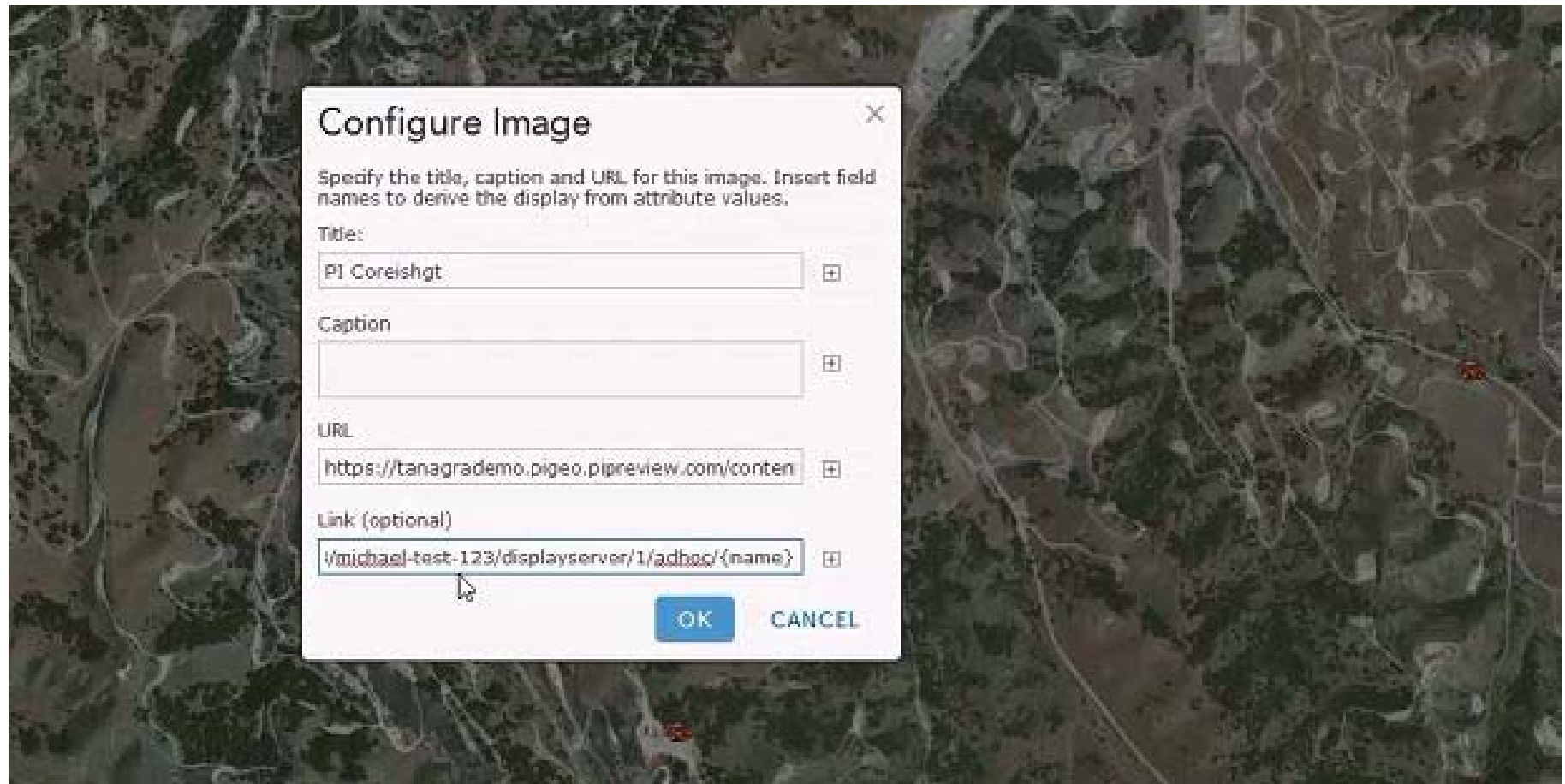
# Coresight End Point Created

PI Geo Services Home Geo Services Administration Tools Help Kuiee, Michelle Log Off

## Sharing

Ad hoc display	<a href="https://tanagrademo.pigeo.pipreview.com/api/services/michael-test-123/michael-test-123/displayserver/0/adhoc/">https://tanagrademo.pigeo.pipreview.com/api/services/michael-test-123/michael-test-123/displayserver/0/adhoc/</a>	
AF Button Image	<a href="https://tanagrademo.pigeo.pipreview.com/content/img/display/analyse-af.png">https://tanagrademo.pigeo.pipreview.com/content/img/display/analyse-af.png</a>	
OSIsoft Button Image	<a href="https://tanagrademo.pigeo.pipreview.com/content/img/display/analyse-osisoft.png">https://tanagrademo.pigeo.pipreview.com/content/img/display/analyse-osisoft.png</a>	
Coresight Button Image	<a href="https://tanagrademo.pigeo.pipreview.com/content/img/display/analyse-coresight.png">https://tanagrademo.pigeo.pipreview.com/content/img/display/analyse-coresight.png</a>	

# Configure Pop Up to Launch PI Coresight



# Pop Up with PI Coresight Hyperlink

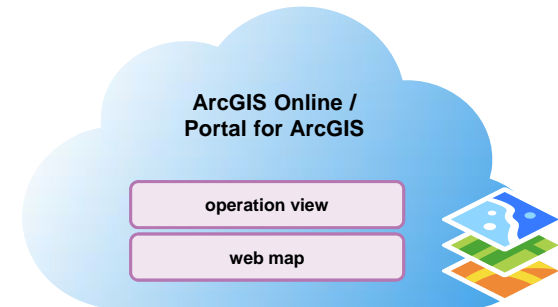
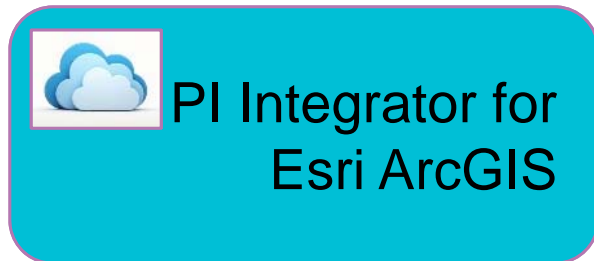


# PI Integrator for Esri ArcGIS

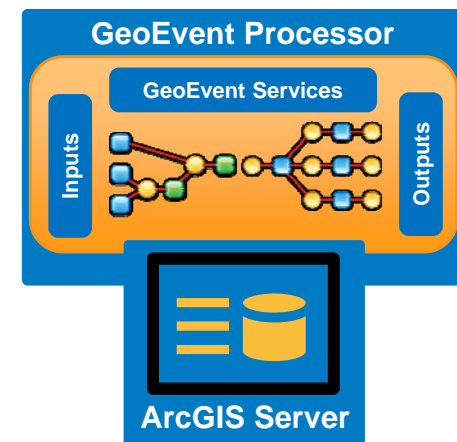
- Automatic Configuration of GeoEvent Processor
- Send PI Current Values to ArcGIS Platform
- Analyze historical data with PI Coresight
  - Ad Hoc Trends
  - Processbook Displays via PB Viewer
- Jump Start PI AF with Map Extractor



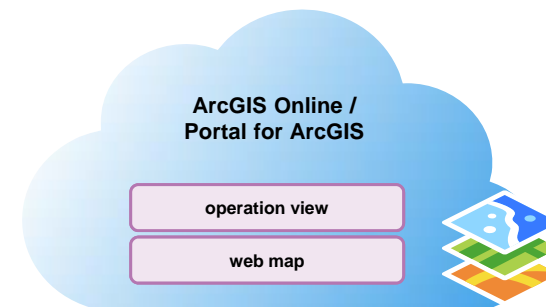
# Cloud Architecture



PI System

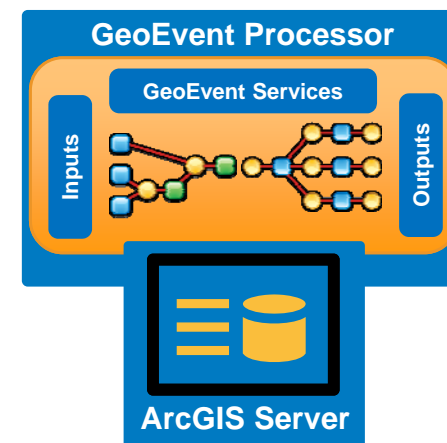


# On Prem Architecture



PI System

PI Integrator  
for  
Esri ArcGIS



# Esri Map Extractor

- Concepts
  - Map Features can represent a PI AF Element
  - Feature Layers can be represented as PI AF Template
- The Map Extractor builds AF templates and elements from features on a map

# OSIsoft and Esri Supports Everyone

## Providing a Common Enterprise Platform



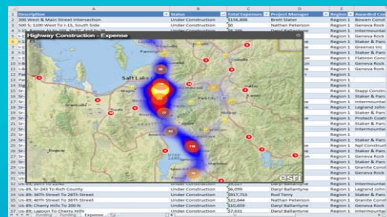
PI Integrator  
for  
Esri ArcGIS



# OSIsoft and Esri Supports Microsoft

## Providing a Common Enterprise Platform

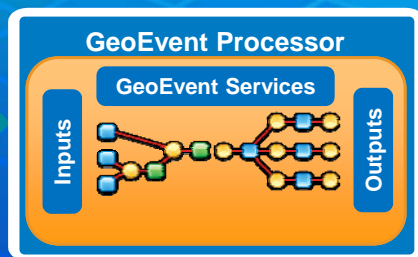
Esri Maps for Office



Esri Maps for SharePoint



Esri Maps for Dynamics CRM



PI Integrator  
for  
Esri ArcGIS



ArcGIS



Professional  
GIS



# Top 7

1. Configurable Integration
2. Deliver Real Time data across the organisation on any device, any app, any time
3. Designed for non technical users
4. Increase Speed of Deployment
5. Greater Agility to meet changing business need
6. Better Business Decisions
7. Reduced Costs and Higher Value



THANK  
YOU

Brought to you by  **OSIsoft.**