



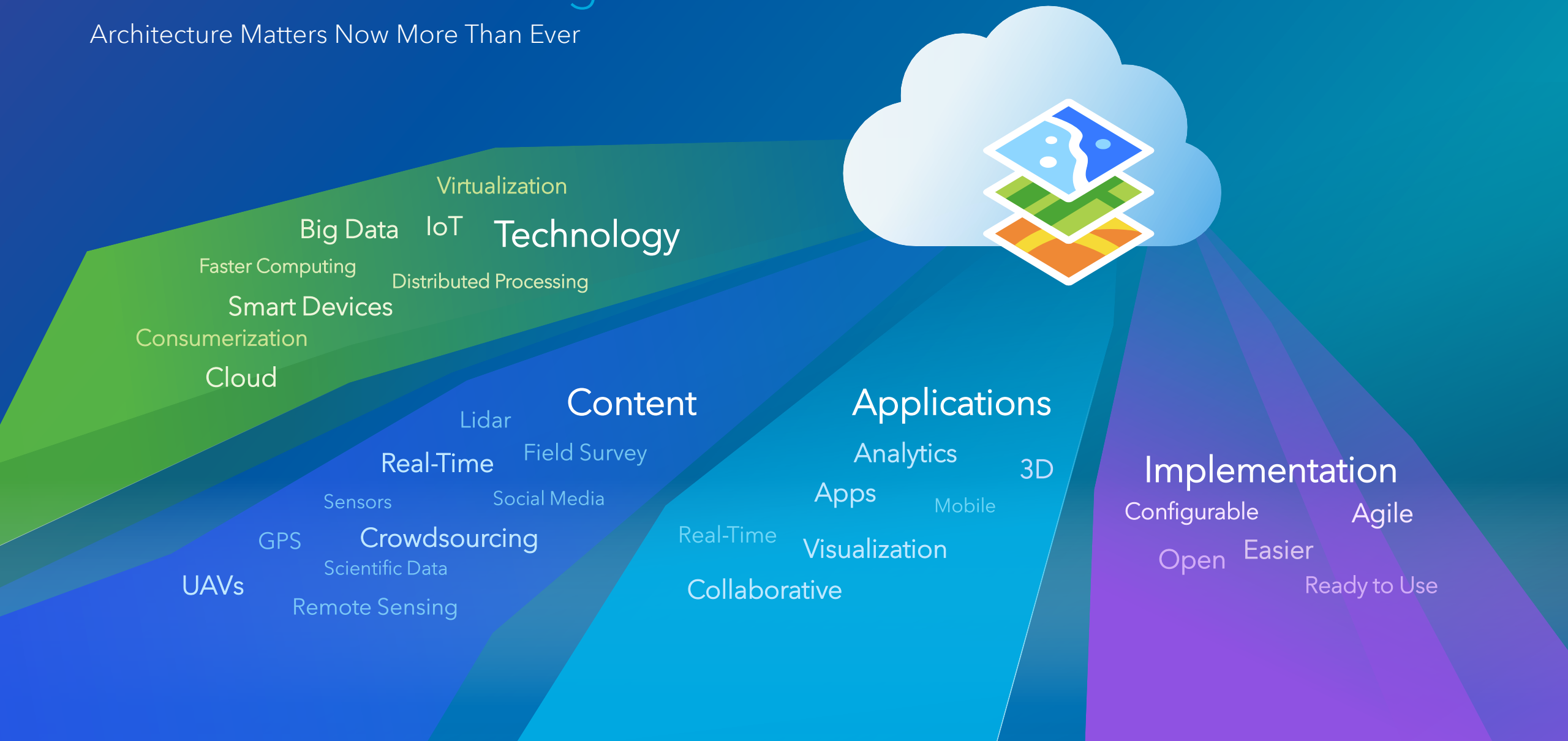
Architecture Best Practices

Witt Mathot

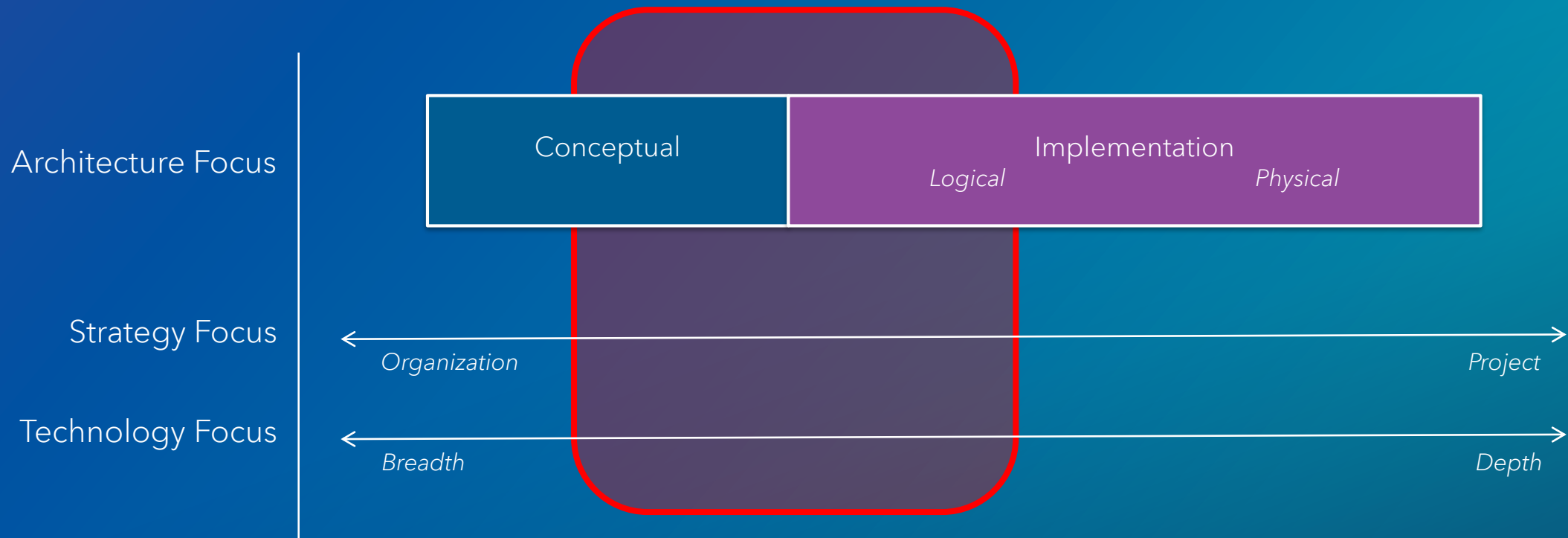
2019 ESRI DEVELOPER SUMMIT
Palm Springs, CA

Our World is Evolving

Architecture Matters Now More Than Ever

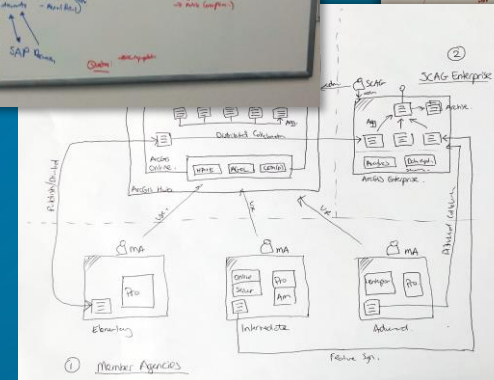
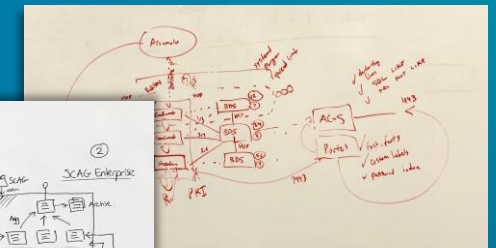
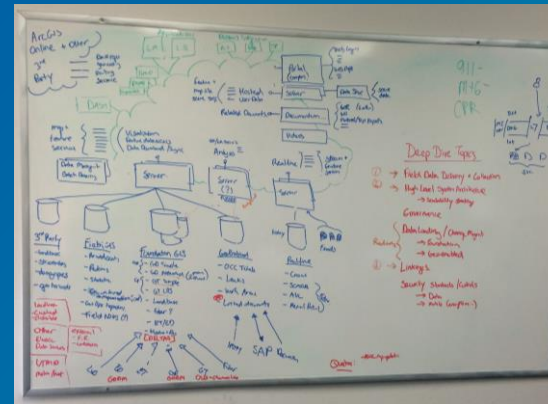


Architecture | Scope



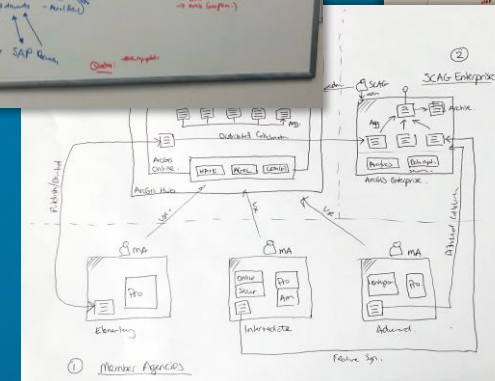
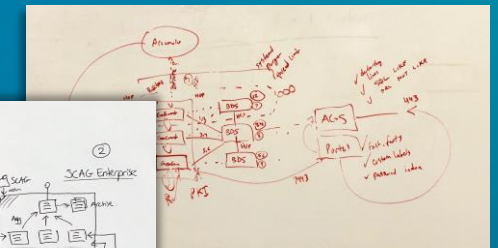
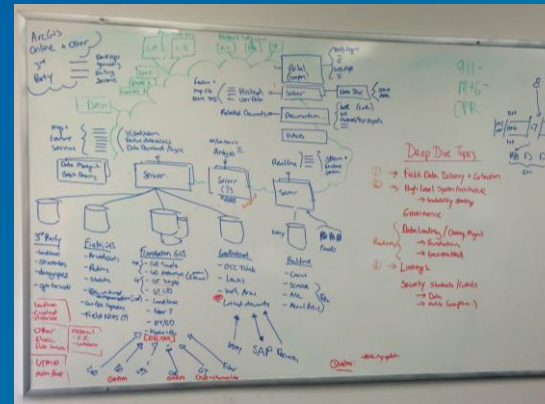
Architecture | Domains

- Enterprise GIS Deployment
- Business Continuity (*high availability, disaster recovery*)
- Security
- Publication Strategies
- Distributed GIS
- Geodata Management
- Imagery Data Management
- Real-time GIS & Big Data
- Enterprise Integration
- Mobile GIS Deployment
- Desktop GIS Deployment
- Organizational Structure & IT Governance
- Operations & Monitoring



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Business Continuity | Terminology



A word cloud of business continuity terminology on a blue background. The words are arranged in a non-uniform, overlapping manner. At the bottom of the image, there are several abstract, colorful geometric shapes in shades of green, yellow, and purple, creating a modern, architectural feel. The text is in various sizes and colors, including white, light blue, and orange.

BC

Resiliency

Fault Tolerance

RPO

Backups

High Availability

Load Balancer

Disaster Recovery

RTO

Failover

SLA

Round Robin

Geographic Redundancy

Change Management

Redundancy

Recovery

Continuity

Active-Active

Contingency

Mission Critical

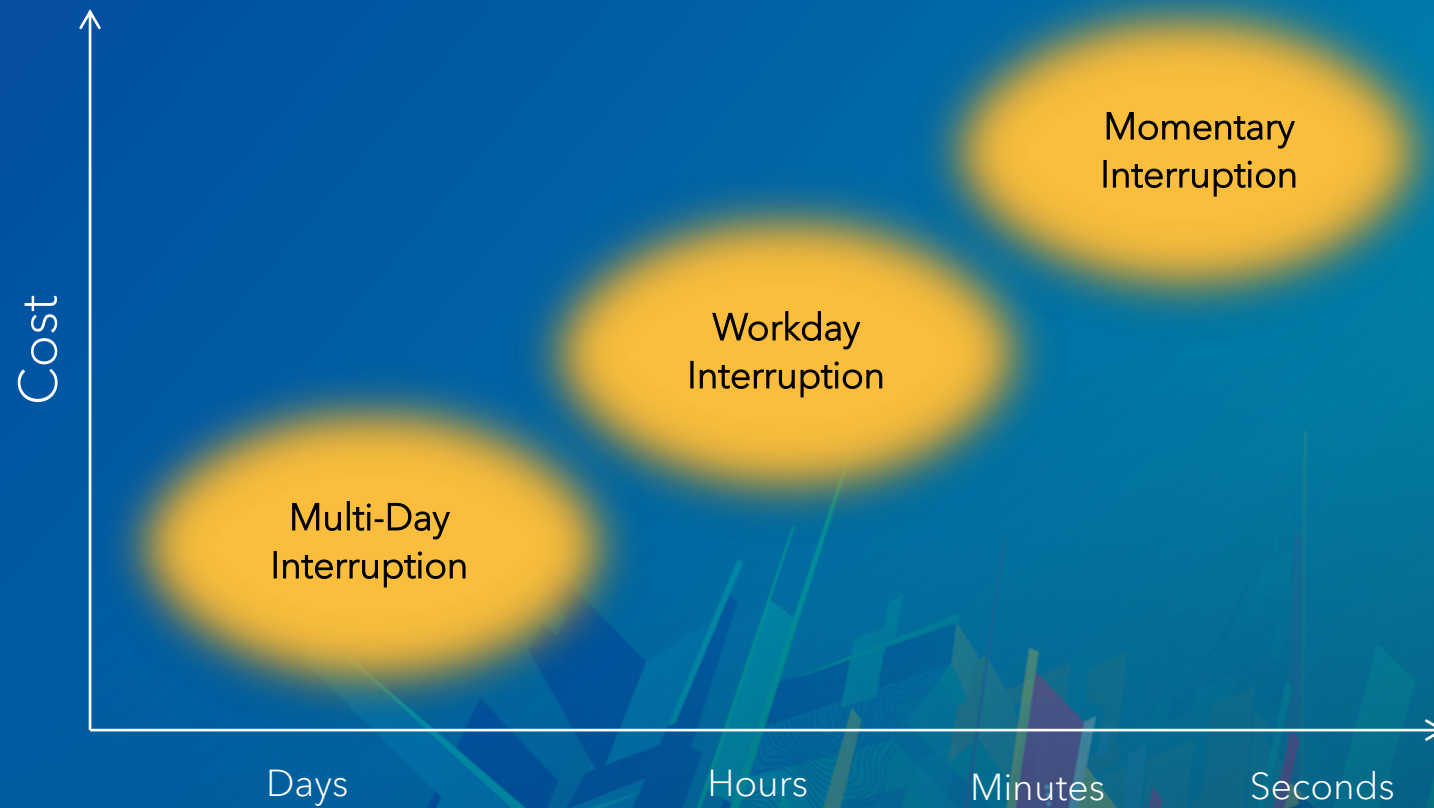
BCM

Federation

Data Loss Threshold


Active-Passive

Business Continuity | Shorter Recovery = \$\$\$



Recovery Time & Point Objective (*decreasing*)

Business Continuity | Likely Varies By System



Tier	Criticality	Recovery Time (RTO)	Recovery Point (RPO)	Others... (test frequency, etc.)
Tier 1	Mission Critical	< 4 hours	< 1 hour	...
Tier 2	Business Critical	< 24 hours	< 1 hour	...
Tier 3	Significant	< 72 hours	< 48 hours	...
Tier 4	No Impact	< 1 week	< 1 week	...

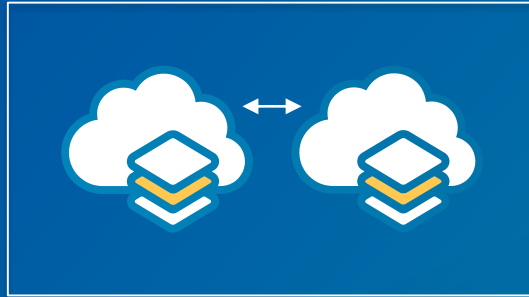
NOTE: Traditional GIS deployments are typically seen in Tiers 3-4, but are becoming more prevalent Tiers 1-2

Business Continuity | With ArcGIS Enterprise

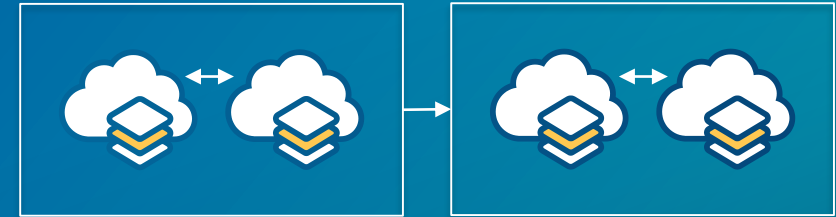
Backup & Restore
(WebGISDR)



High Availability



Disaster Recovery
(WebGISDR)



Cost & Complexity Increases

Business Continuity | Requires More Than Technology



People


- IT Managed
- Strong Technical Team
- Knowledge of GIS & IT



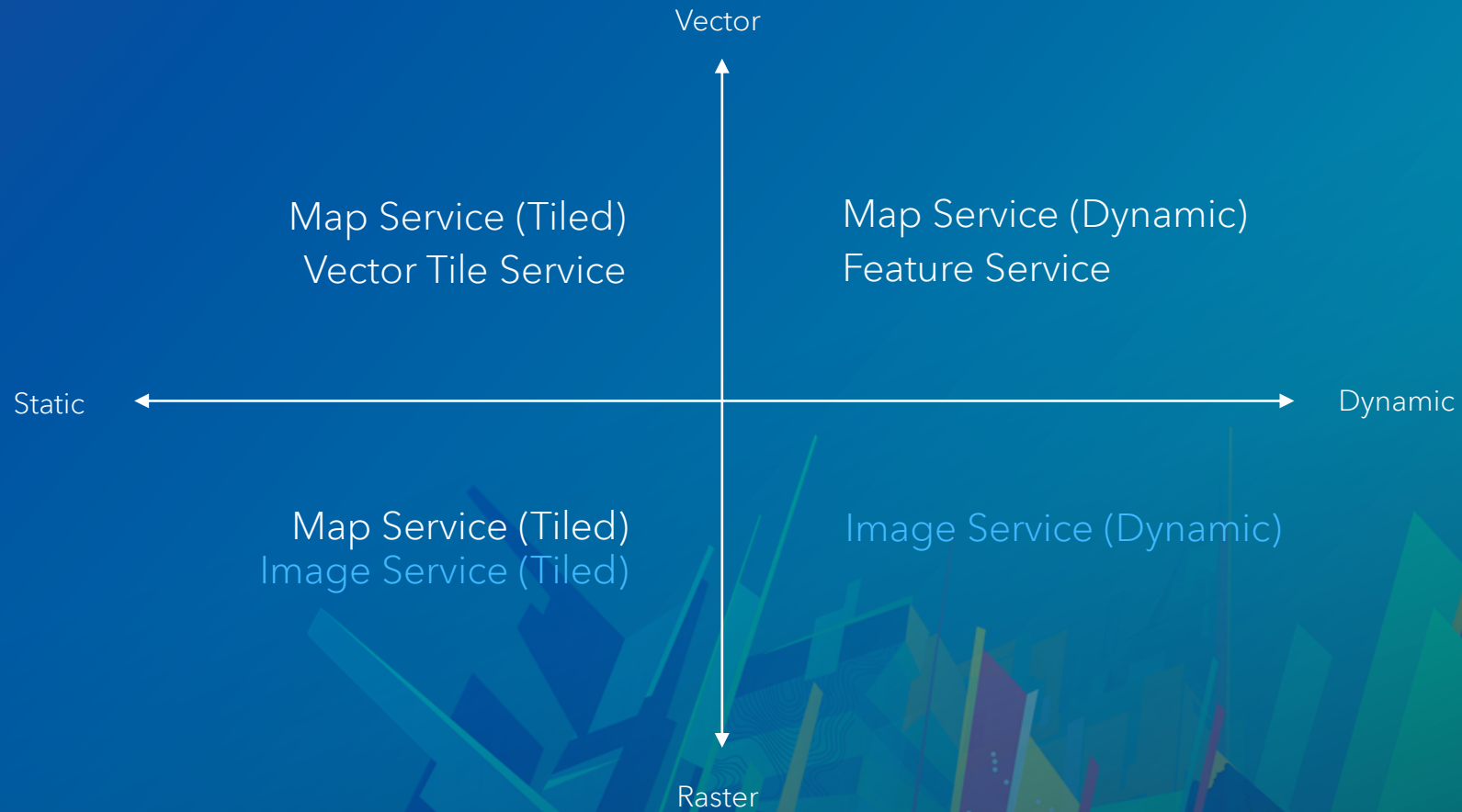
Governance

- Business Alignment
- Established SLAs
- Knowledge Management
- Training

Publication Strategies | Key Considerations

- **Audience** – Where are they? What is their device? What is their ability?
 - **Capabilities** – requisite functionality
 - **Performance** – End user app / back office system
 - **Scalability** – up or out
 - **Reliability** - SLAs
 - **Security** – Access to content, authorization to functionality, protecting the back office
- 

Publication Strategies | GIS Service Types (*mapping & visualization*)



Publication Strategies | GIS Service Types (*mapping & visualization*)

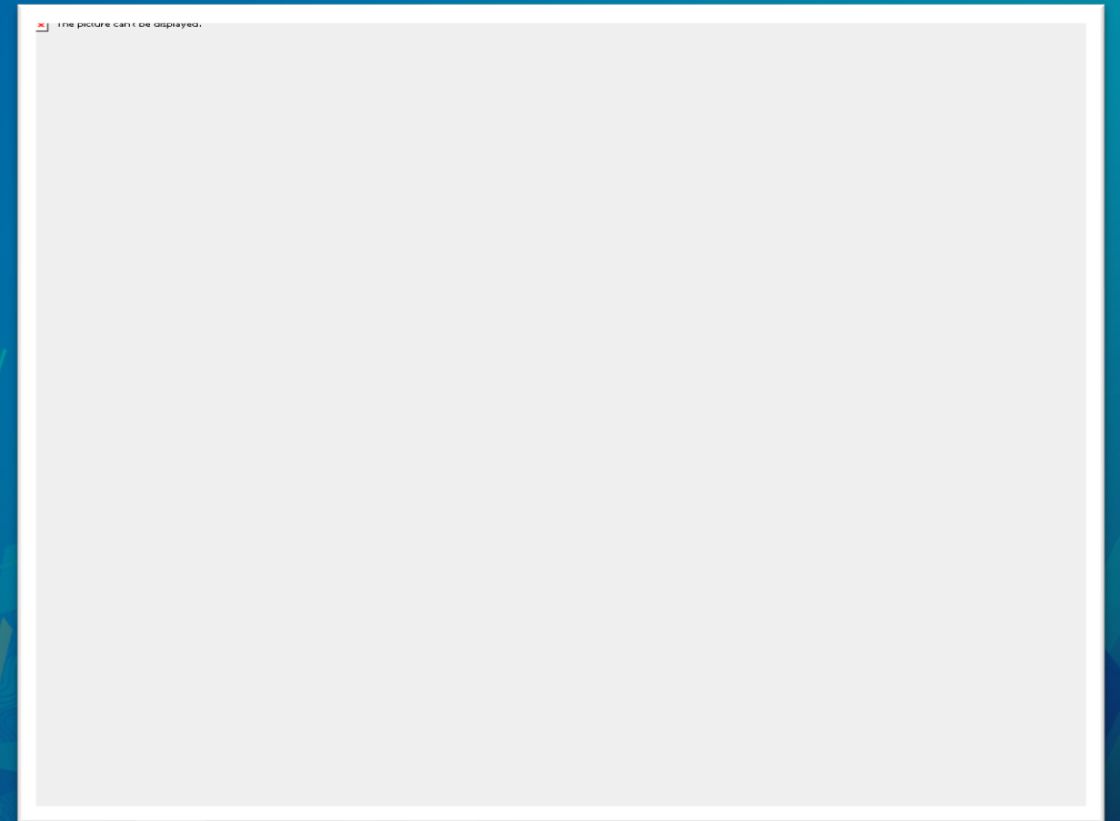
	ArcGIS Online vs. Enterprise	ArcGIS vs. User Managed	Rendering	Identify & Query	Tiled	Generalized	Offline Support	Editable	OGC
Map Service (<i>Dynamic</i>)	E	U	Server	X					X
Map Service (<i>Tiled</i>)	O & E	A & U	Server	*	X		X		X
Map Service (<i>Feature Layer</i>)	E	U	Client	X	+				
Feature Service	O & E	A & U	Client	X	+	X (on-demand)	X	X	X
Vector Tile Service	O & E	A	Client		X	X (pre)	X		

* Identify & query not supported when cache is disconnected

+ Feature Services are requested in tiles by JSAPI

Publication Strategies | Approach

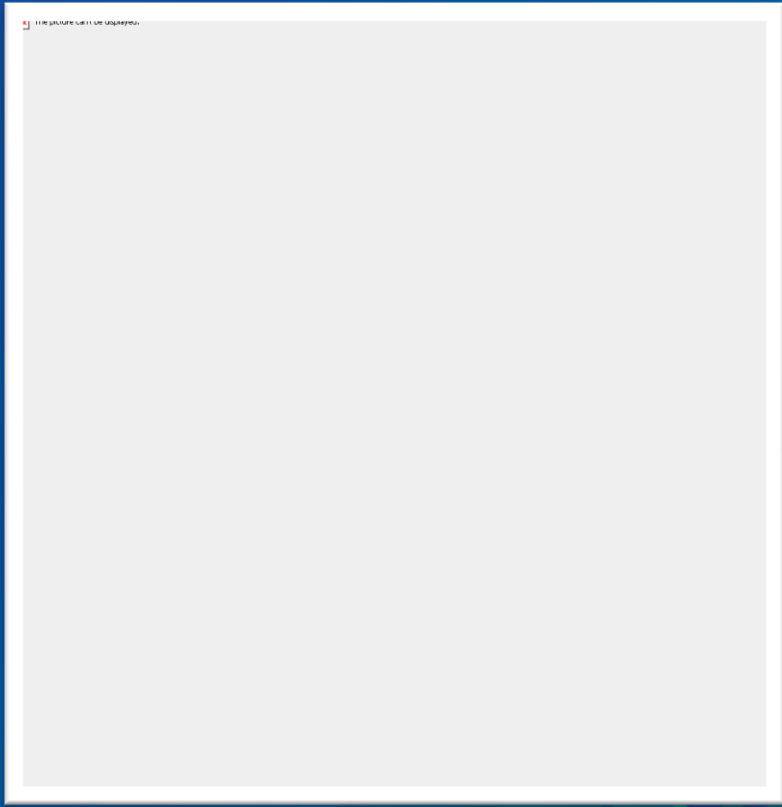
1. Focus on business
2. Start with the end (consumer), build bottom up (data)
3. Align/select technology accordingly
4. Adjust over time – be agile!



Distributed GIS | Next Evolution in GIS

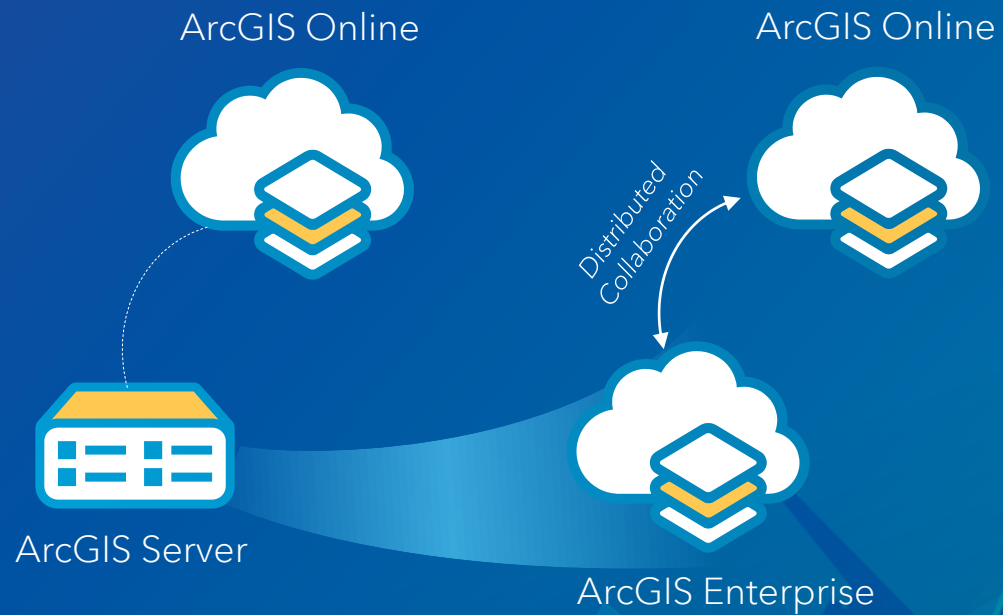


Distributed GIS | Multiple GIS Working in Trusted Collaboration



- Model after the organization
- Preserves departmental control
- Supports enterprise needs

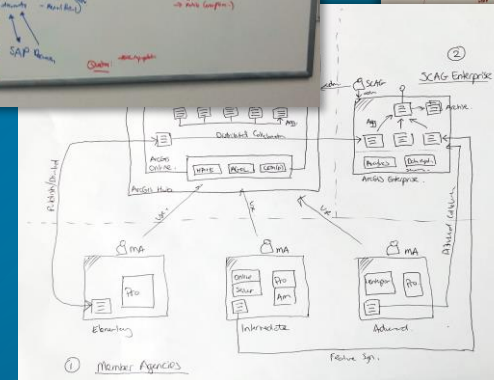
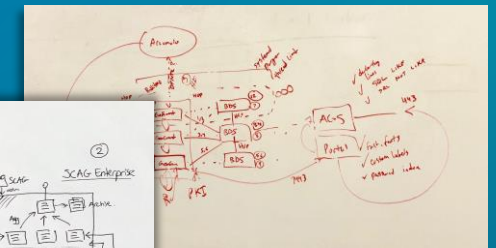
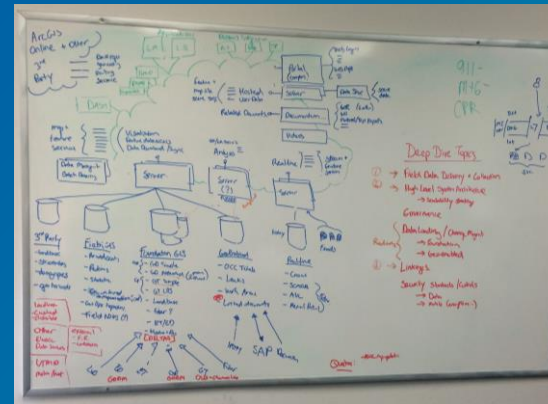
Distributed GIS | Powering the Modern Hybrid Pattern



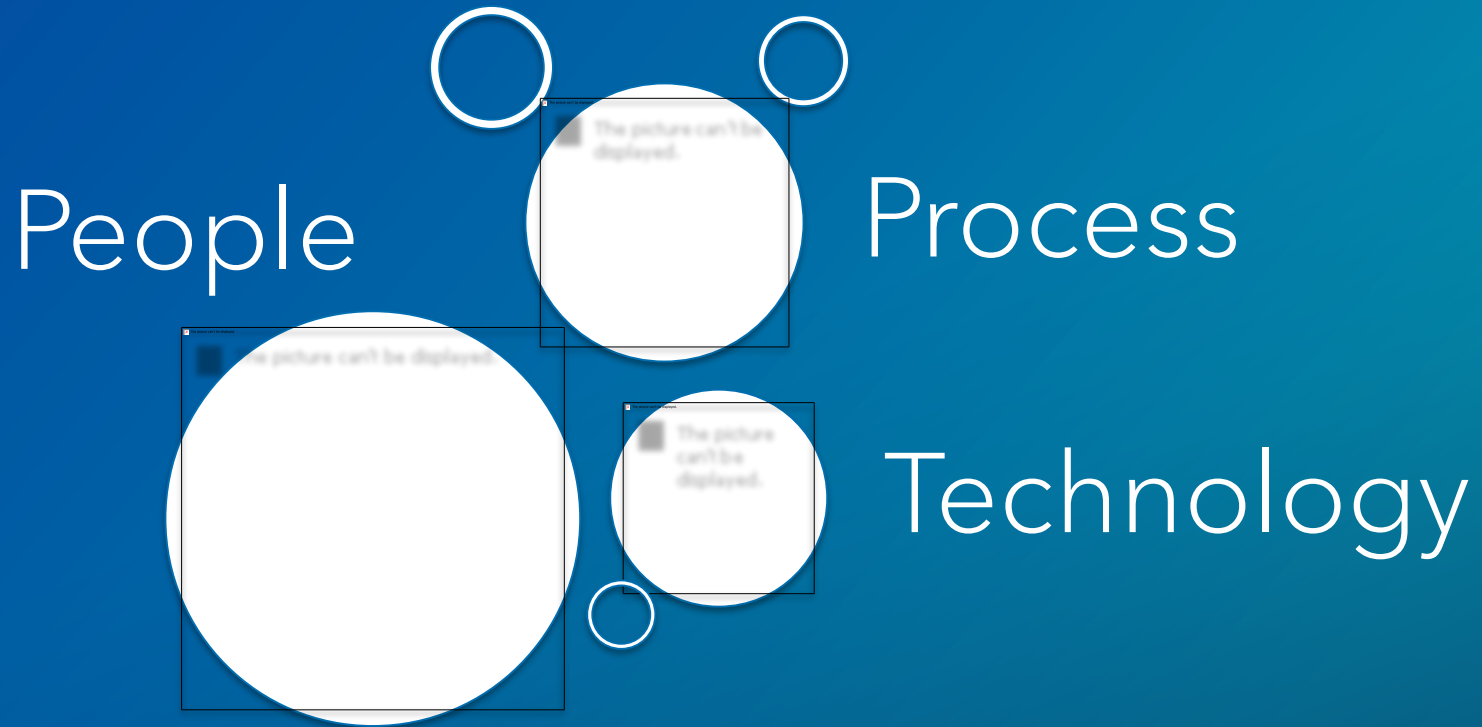
- Seamless bi-directional sync
- Supports new functionality
- Publish & Administer w/ ArcGIS Pro
- Separate destinations for internal & external stakeholders

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Architecture | Don't Forget About the People & Process!





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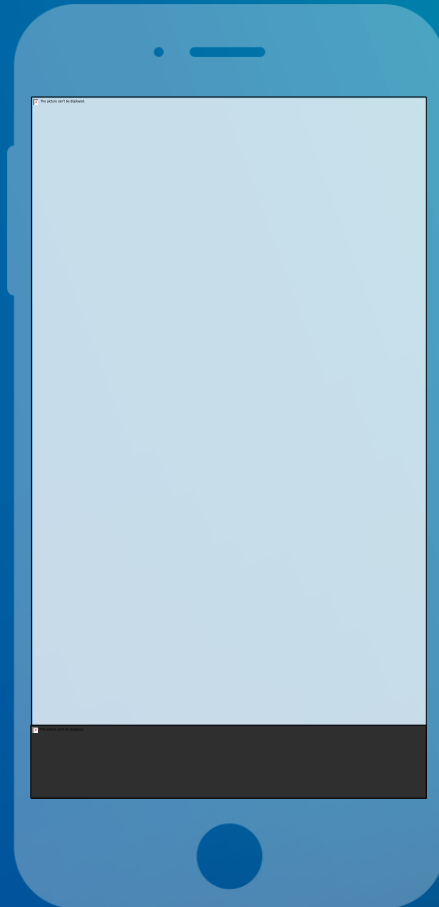
THE
SCIENCE
OF
WHERE

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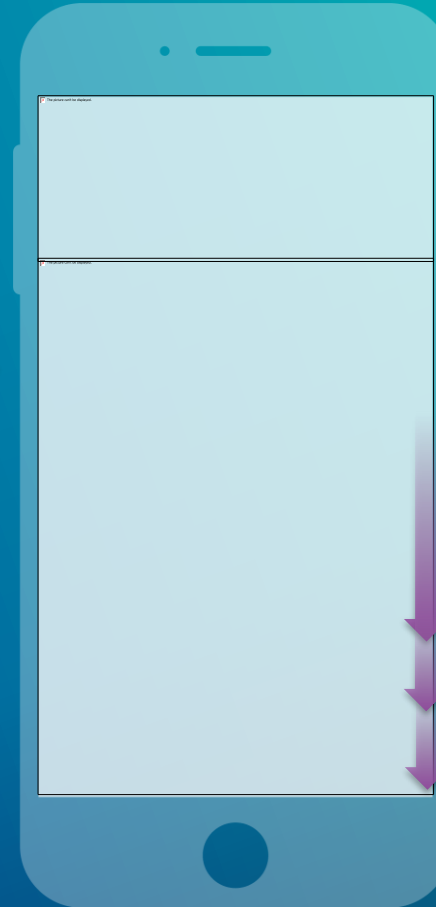
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