



## **What is the Future of GIS?**

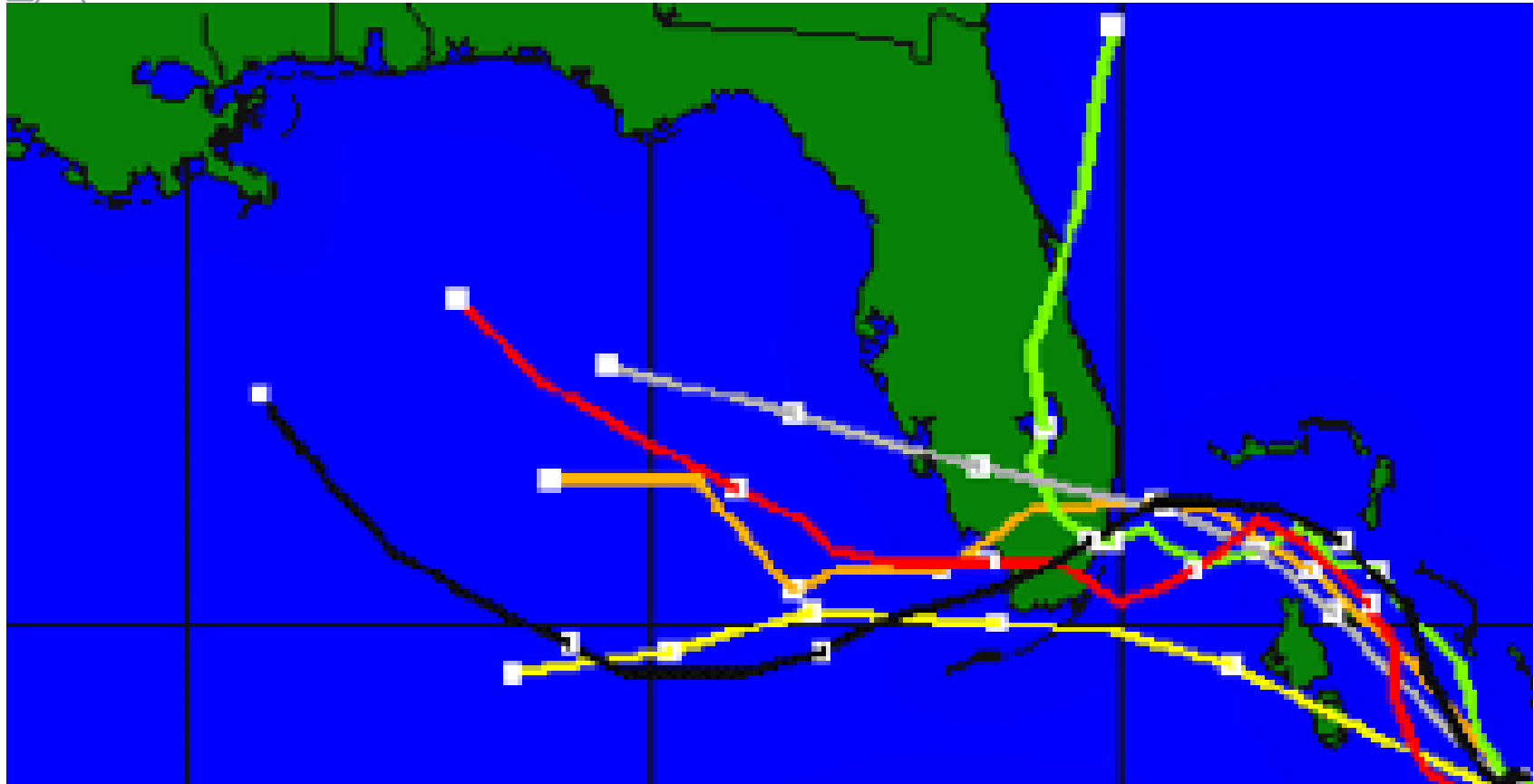
Luis Bermudez, Ph.D.

Sao Paulo, Brazil, May 29, 2012

# We want a better world



# Complex problems



**Onde e que vai passar?**

# Sharing Information in the future for a better world - ideas

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- Commonality of Data used to build a better world
- Sensors and models... another GIS layer
- GIS base maps
- Social challenge
- Agility of standards organization
- Multimedia and fun





# Flooding





# Red Tide



# Hot Hot Hot



Austria During the European Heat Wave of 2003

July and August of 2003, countries across Europe sizzled through what some scientists deemed their hottest summer since 1500 A.D. The scorching temperatures claimed at least 40,000 victims. Here, a coachman douses



# Complex Observing Systems



# Billions of Sensors – Real Time Data



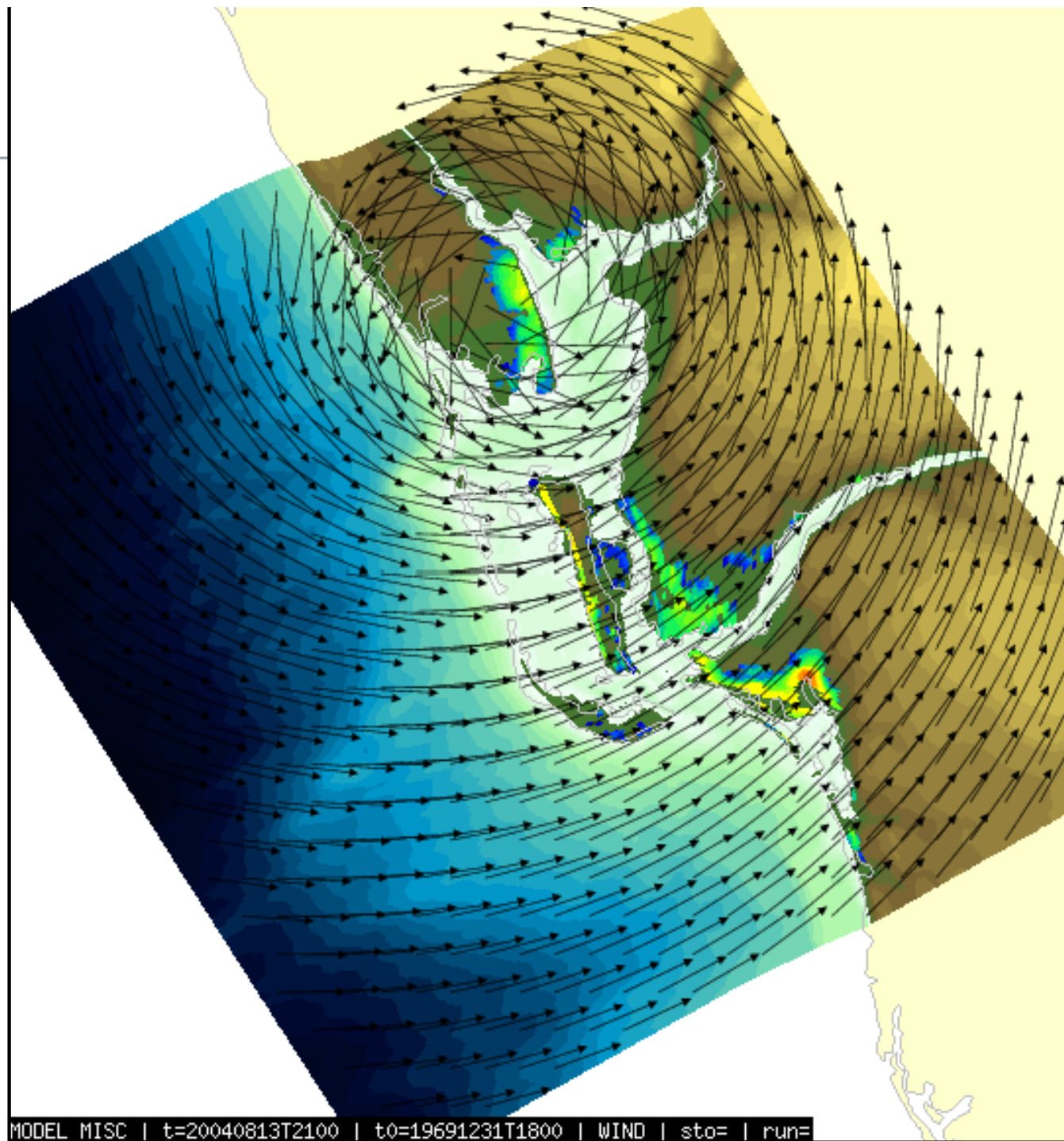




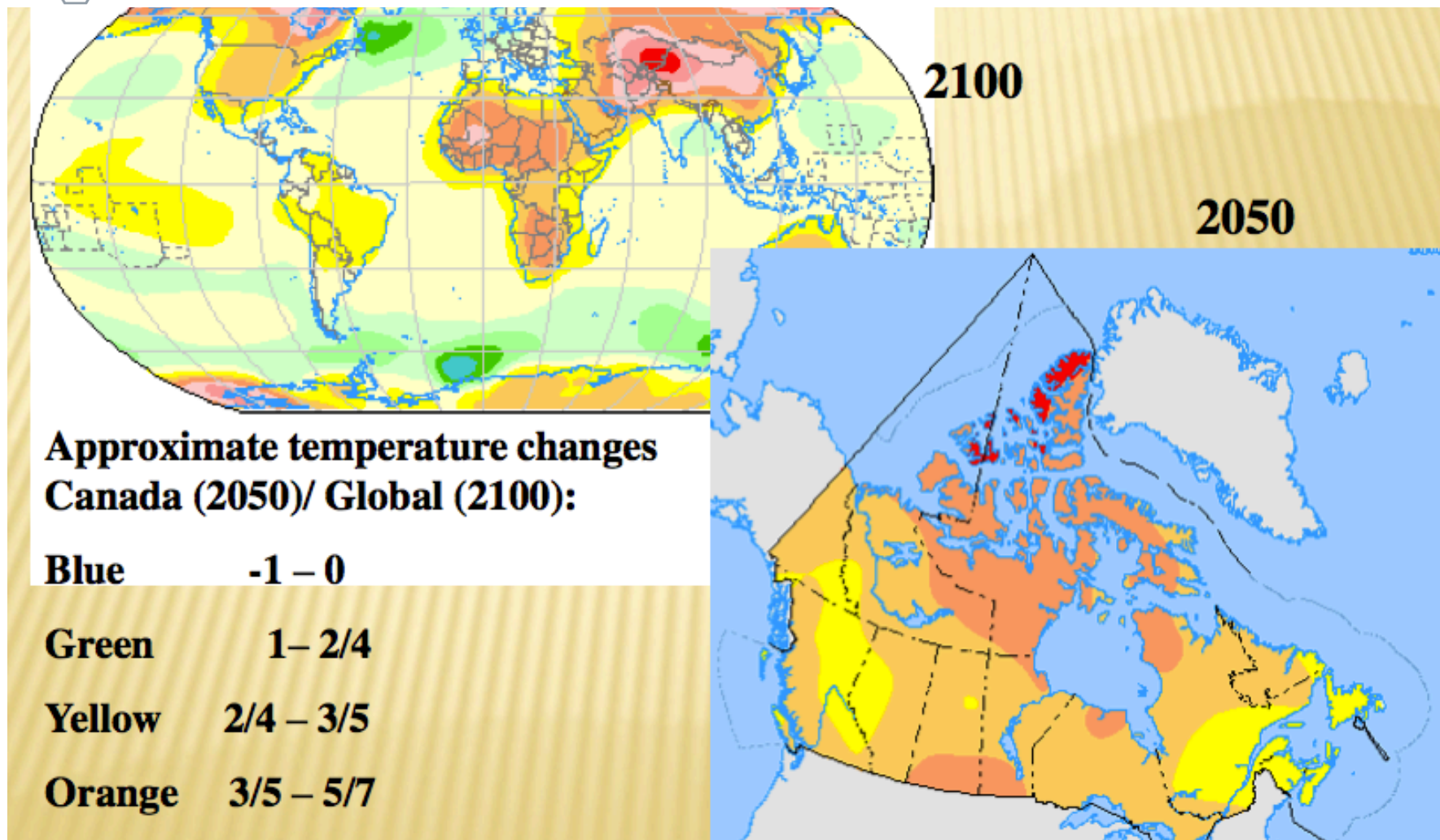
# Numerical Models

## Short Term Prediction

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# Long Term Prediction







What do challenges,  
phenomena, sensors, and  
models have in common?

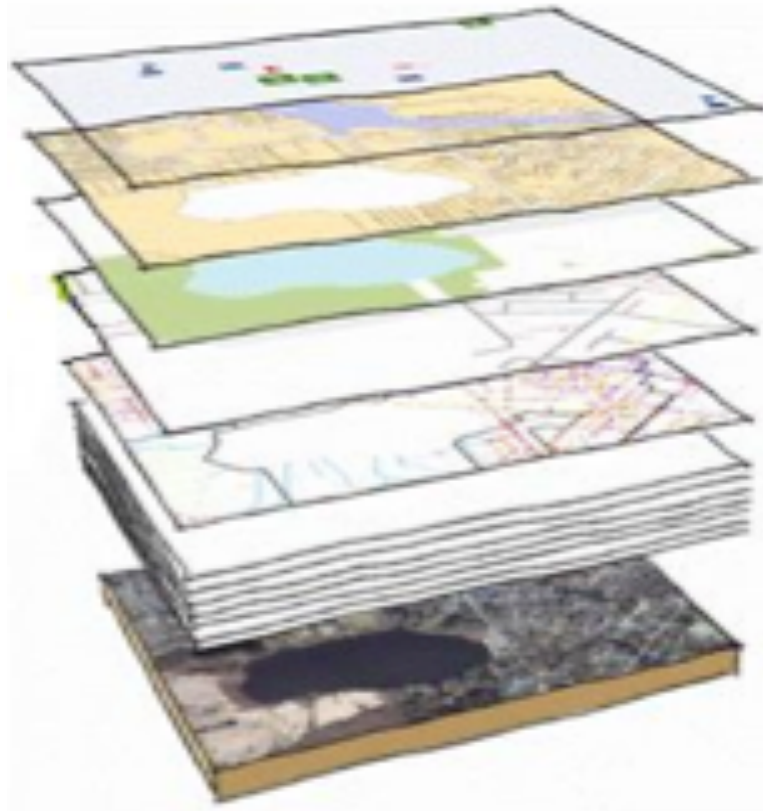
# Still Thinking?



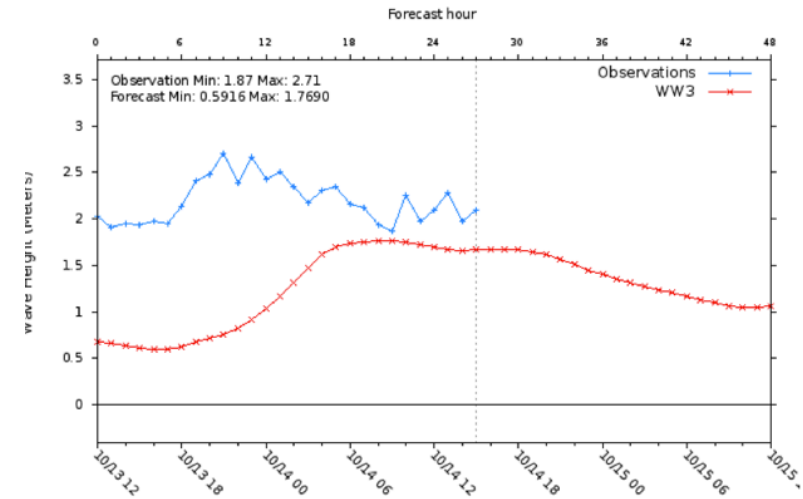
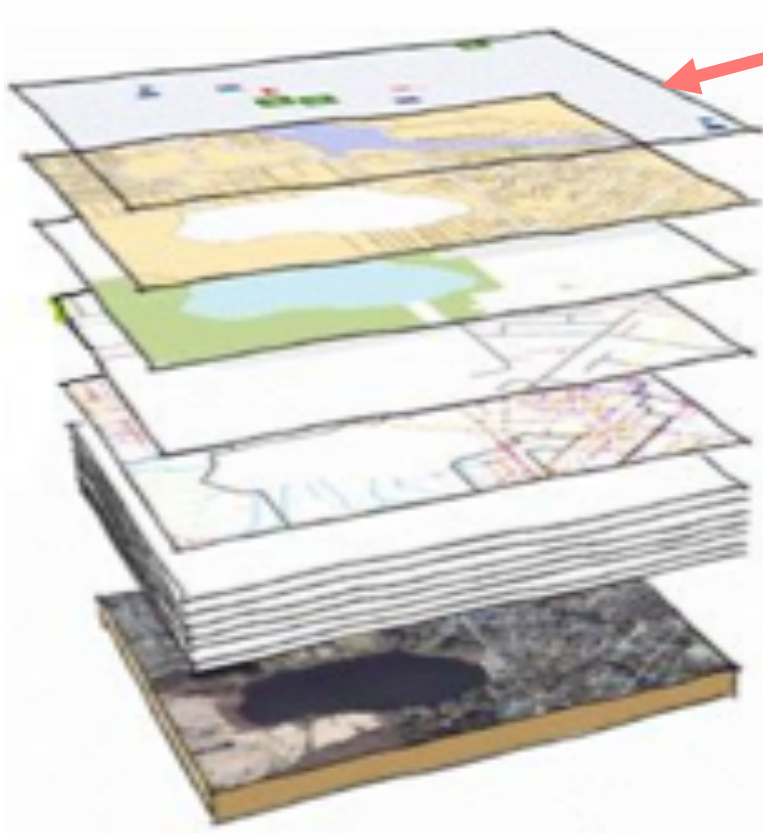
# Geospatial Location



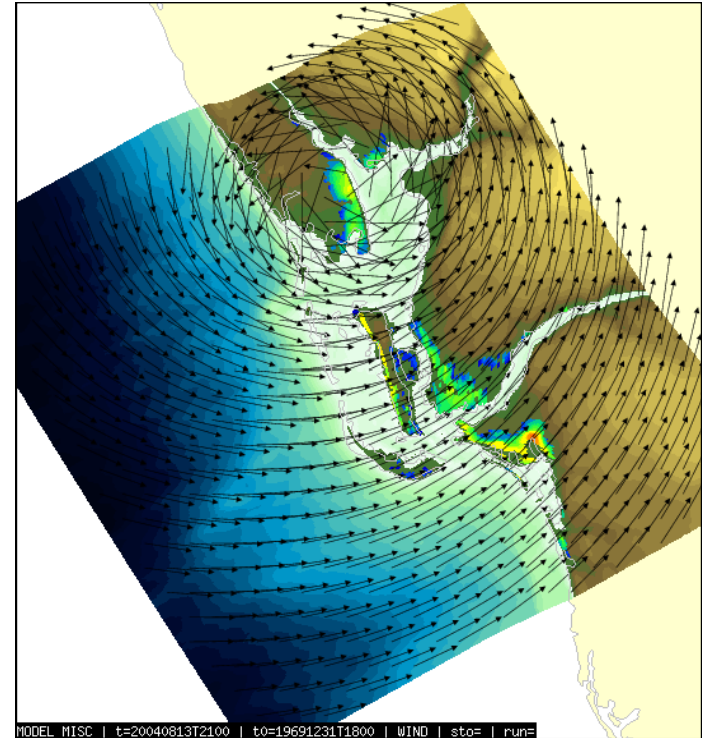
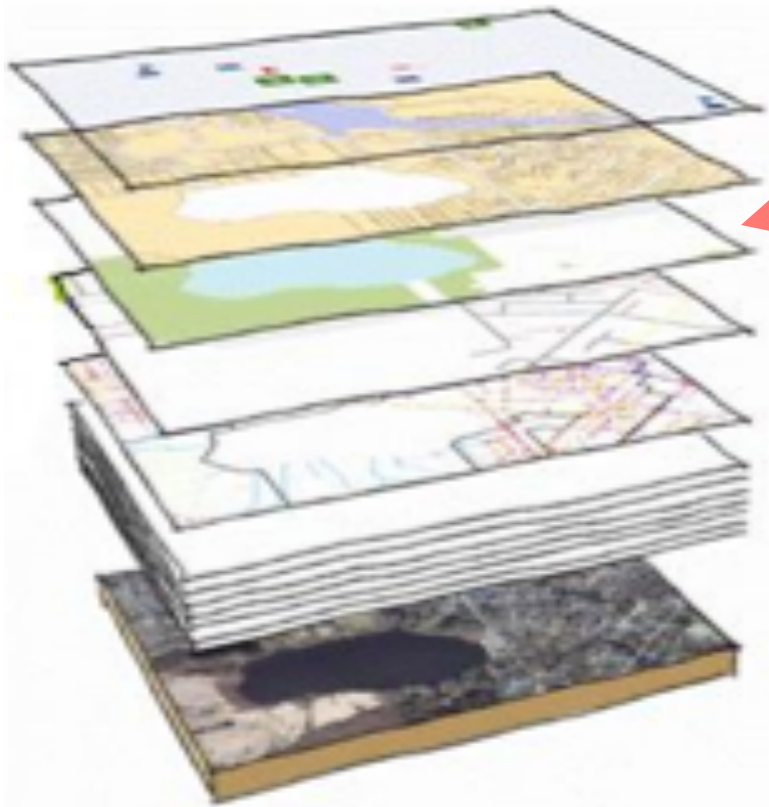
# Geospatial Integration



# Layers can represent real time data

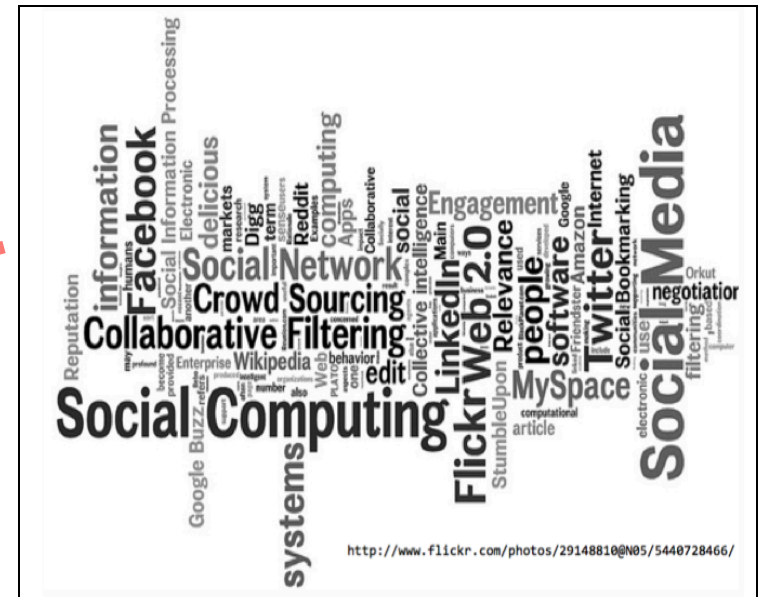
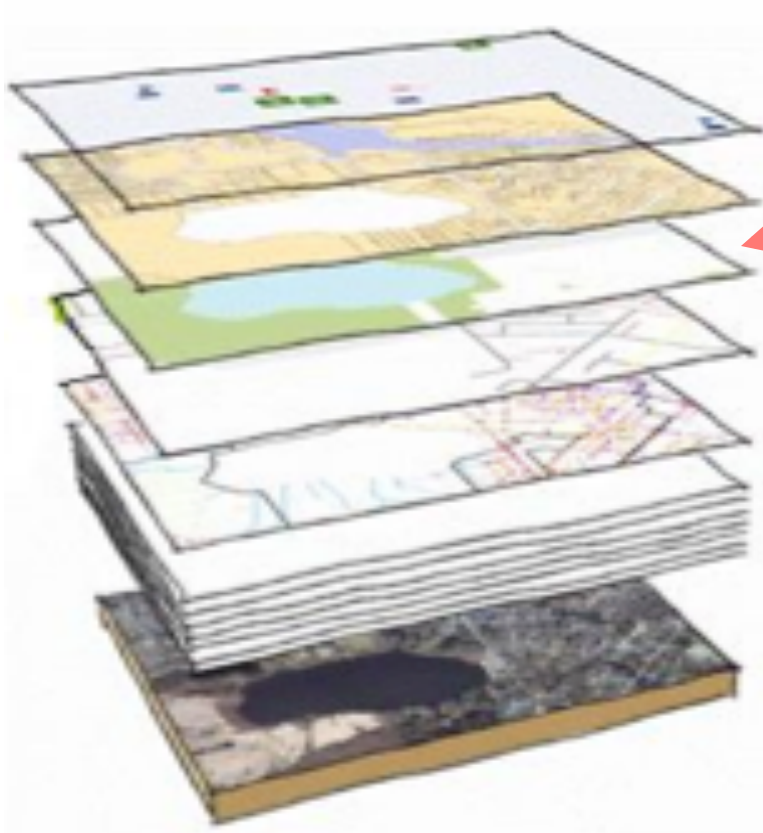


# Layers can be forecast numerical model data





# Layers can come from crowd sourced data

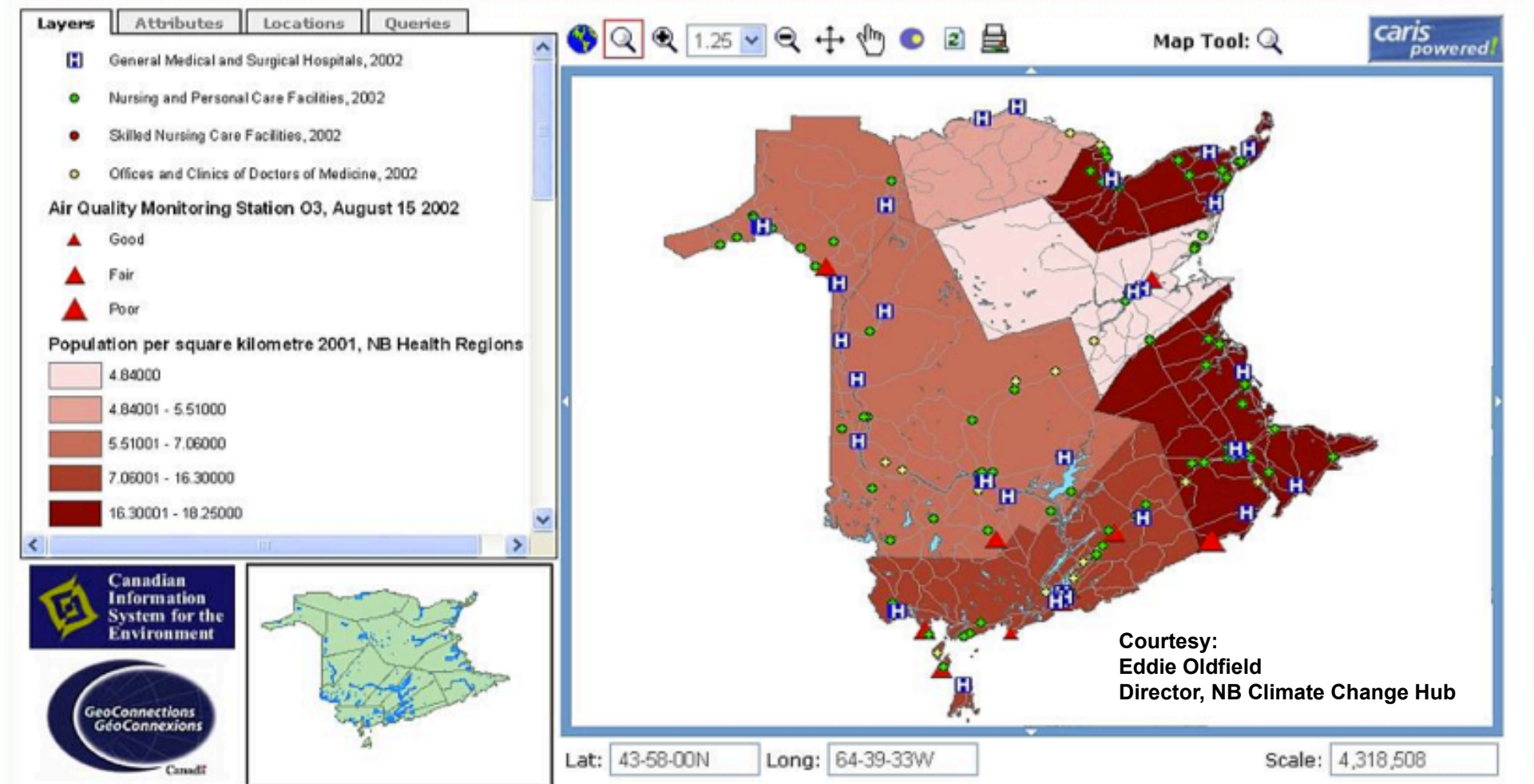


# Base maps are real time features !



WIKITUDE





# What technologies should we use?



~~What technologies should we use?~~



**Better...**

**What processes should  
we engage with?**

# Social Challenge



“Interoperability seems to be about the integration of information. What it’s really about is the **coordination of organizational behavior.**”

*David Schell*

*Founder and  
Chairman Emeritus,  
Chief Strategist*

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# Standard Development Organizations (SDO)

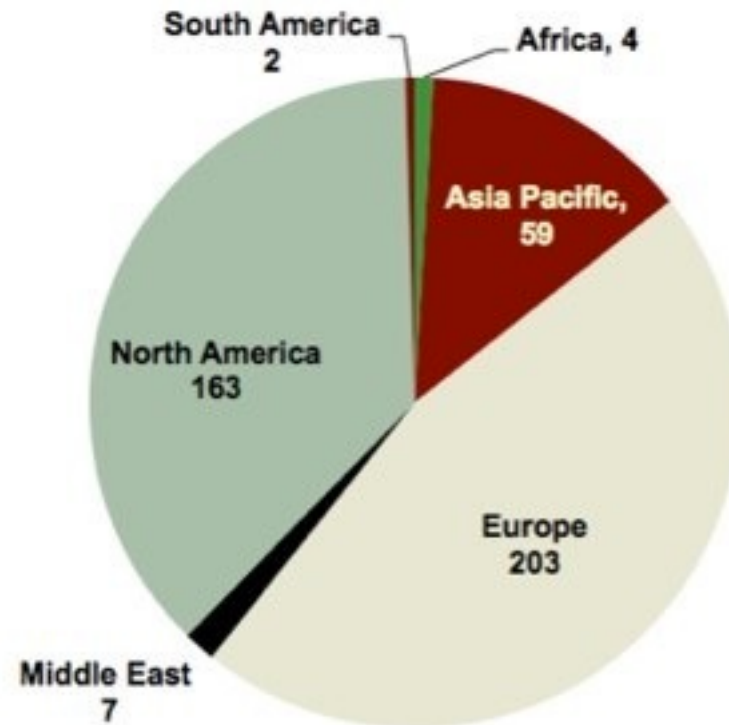
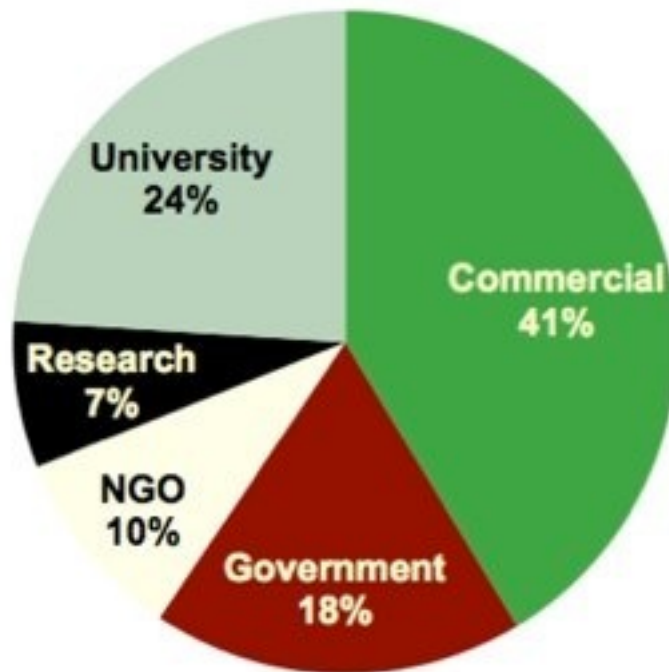


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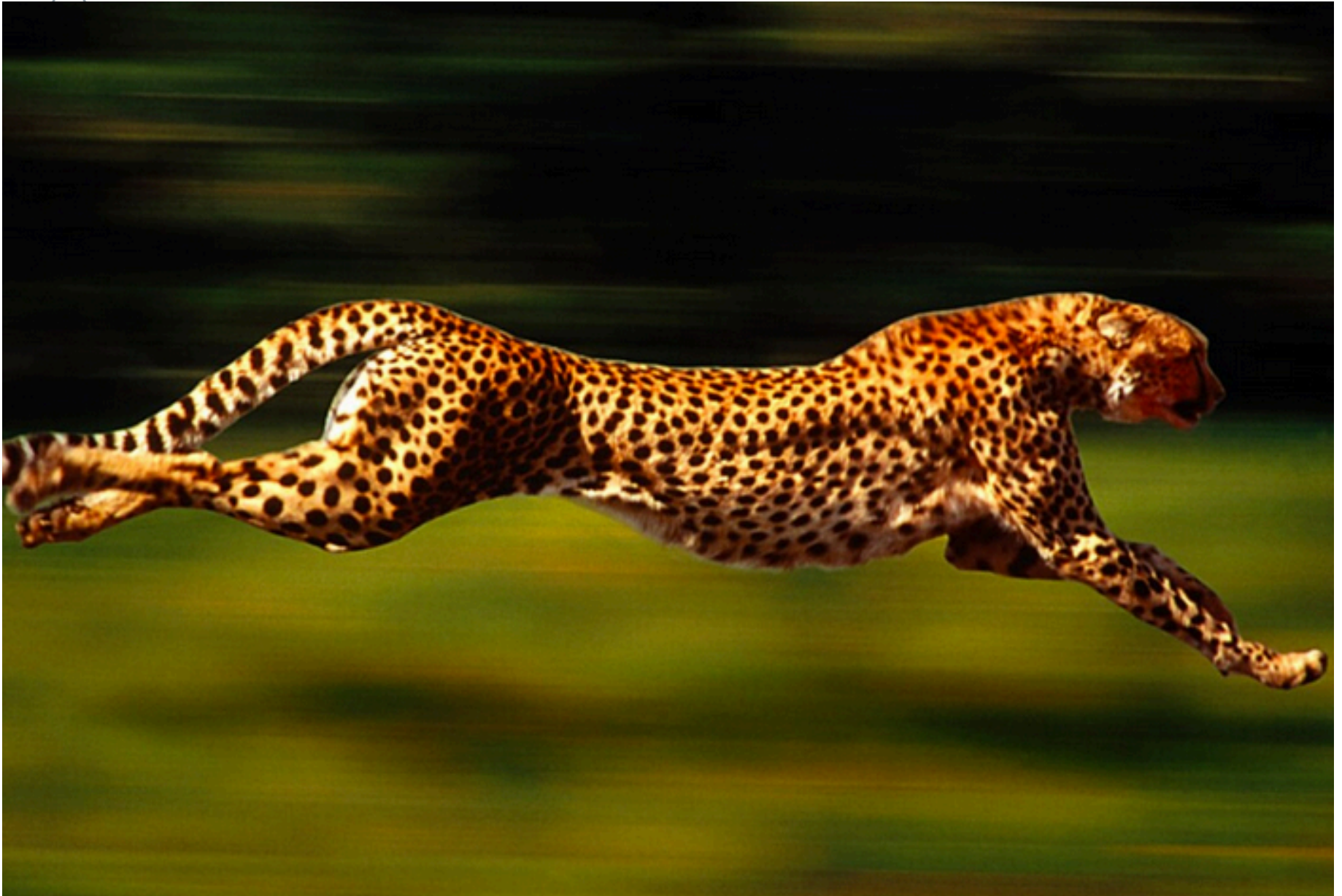
# World Wide Consensus



## 450 Members



# Agility – testing, prototyping ...





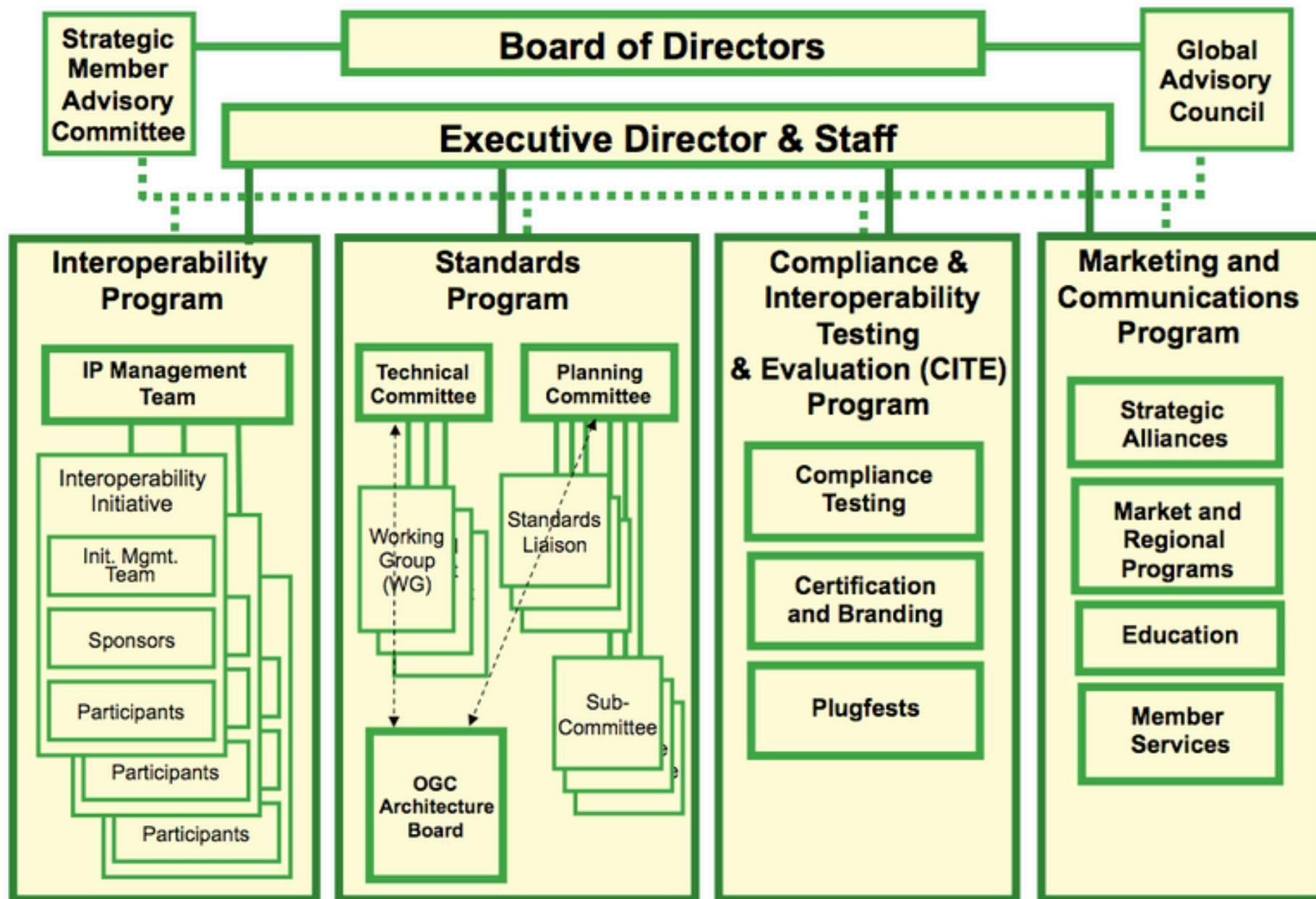
# Product -> standard

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- **Agreement**
- Document
- Set of rules
- Implementable
- **World Wide Accepted**





# Capturing real needs

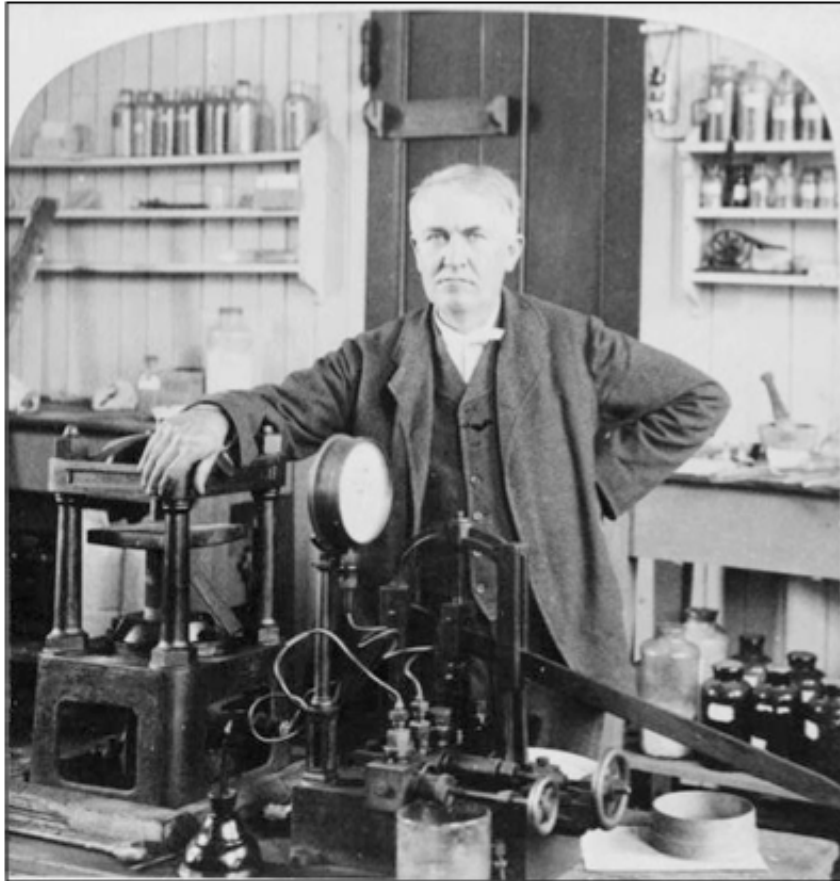
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## Capturing Requirements from **Domain Working Groups**

- Decision Support
- Earth Systems Science
- Meteorology and Oceanography
- Workflow
- ...

# Interoperability Program



**I have not  
failed, I've  
just found  
10,000 ways  
that won't  
work.**

**Thomas Edison**

# Compliance Program



**More than 650 implementing products in the market**

<b>ESRI</b>	
Product Name	OGC Spec
ArcGIS 8.1	
ArcGIS Server 9	
<b>KSIC(Korea Geospatial Information &amp; Communication Co., LTD.)</b>	
Product Name	OGC Spec
IntraMap/Web v5.6	GML 3.0,
IntraMap/Web 6.0	WMS 1.3,
<b>lat/lon GmbH</b>	
Product Name	OGC Spec
<b>Oracle Corporation</b>	
Product Name	OGC Spec
Oracle Application Server MapViewer, 10g Release 2	WMS 1.1.1 (server compliant)
<b>Rohta India Ltd.</b>	
Product Name	OGC Spec
Rolta OnPoint 6.4	WMS 1.3.0 (server compliant), CAT 2.0.2, WFS 1.0.0 (server compliant)
Coverage Service 2.1.0	WFS 1.0
degree Web Feature Service 2.3.0	Gaz 0.9.1
<b>Oracle Locator, 10g Release 2 (10.2.0.1)</b>	
	SFS(TF) 1.1 (server compliant)

# Expect in the future more **multimedia** and **fun**

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... OGC in 2 min.

<http://www.youtube.com/watch?v=bfkCdir-yO8>

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# Obrigado



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