Science, Technology, and Innovation to Measure and Monitor Progress
Leveraging the Data Revolution
Kumar Navulur, October 24, 2014
Where are we headed as a society?

Location, Time, and Context as the Organization Principle

Geospatial World

Living Atlas of the World

Living Planet

Digital Map of the World

Geography matters
What are the critical technologies in data revolution?

- Internet
- Remote Sensing
- Mobile
- GIS
- Computing
- CAD/BIM
- Crowd Sourcing/Social Media
- GPS

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How many satellites are there mapping the earth?
A recommend approach for leveraging data revolution for sustainable development

Who
• Who are we targeting?

Why
• What problem are we solving

How
• What solution we are creating to solve customer’s problem

What
• What technologies are required?
Satellites, GPS, GNSS, Geodetic Frame, Big Data, Cloud Computing, ...
Evidence Based Decision Making Using Data Revolution
Field Boundaries are the foundation element for crop cadaster, crop statistics calculations.
Crop acreage was estimated for years 2011, 2012, and 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Cultivated Area (Ha)</th>
<th>% of Crop Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>4432</td>
<td>22%</td>
</tr>
<tr>
<td>2012</td>
<td>875</td>
<td>4%</td>
</tr>
<tr>
<td>2013</td>
<td>2426</td>
<td>14%</td>
</tr>
</tbody>
</table>

Cultivated area is in decline in this area.
Crop health was estimated for years 2011, 2012, and 2013.

<table>
<thead>
<tr>
<th>Year</th>
<th>Crop Health Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>0.38</td>
</tr>
<tr>
<td>2012</td>
<td>0.15</td>
</tr>
<tr>
<td>2013</td>
<td>0.24</td>
</tr>
</tbody>
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Overall Decline in Crop Health In This Area
Crop inventory was estimated for years 2011, 2012, and 2013.
gGovernance for Sustainable Development

- Food Sustainability
- Land Sustainability
- Water Sustainability
- National Security
- Infra-Structure Planning
- Natural Resources Management
- Utilities
- Environment

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Old Problems, New Solutions ....
Do we need reconsider traditional mapping scales approach?

Coarse Scale

Finer Scale
Do we need reconsider traditional mapping scales approach?
We can do micro analysis at macro/national/regional/global scale
Let us not forget mapping Water-Land Interface (holistic approach)
Keeping in mind multi-year/decade update and maintenance
Critical Mass of Technologies Have Enabled Data Revolution For Addressing National Level Sustainability Programs and Geospatial Data Allows for Evidence Based Measuring and Monitoring