Transparency and Accountability on Digital Earth: A down-to-earth account

Yola Georgiadou
Goals

Political

Digital

Earth

Science
Digital Earth

- Annoni et al. (2011). *A European perspective on Digital Earth*
- Georgiadou et al. (2011). *A Digital Earth view from East Africa*
- Craglia et al. (2012). *Digital Earth 2020: towards the vision for the next decade*
- Goodchild et al. (2012). *Next-generation Digital Earth*
- Ehlers et al. (2013). *Advancing Digital Earth: Beyond the Next Generation*
- Foresman et al. (2014?). *Digital Earth Curriculum (under review)*
- ...
Goals = Things we care about passionately

- Equity (equal access)
- Privacy
- Efficiency
- Security
- Transparency
- Accountability
- Resilience
- Sustainability

Goals ... Principles ... Values ... Criteria
Pres. Obama’s Open Government

THE WHITE HOUSE
Office of the Press Secretary
January 21, 2009

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

SUBJECT: Transparency and Open Government

My Administration is committed to creating an unprecedented level of openness in Government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration. Openness will strengthen our democracy and promote efficiency and effectiveness in Government. Transparency promotes accountability and provides information for citizens about what their Government is doing.
THE WHITE HOUSE
Office of the Press Secretary
January 21, 2009

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

SUBJECT: Transparency and Open Government

My Administration is committed to creating an unprecedented level of openness in Government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration. Openness will strengthen our democracy and promote efficiency and effectiveness in Government. Transparency promotes accountability and provides information for citizens about what their Government is doing.
“DE will not be based on a ready-to-make grand concept but will rather evolve as a series of often small and sometimes disruptive changes.

“In full bloom, DE will manage to bridge the gap between its developers and stakeholders, particularly the private citizen, and thereby stimulate further innovation and co-creation processes.”
Ehlers et al 2013

• *DE will evolve as a series of often small and sometimes disruptive changes* [in relations between ...]

• *DE will bridge the gap between its developers and stakeholders*

• *Commerce vs Citizen: disruptive changes*
  • *Citizen to Citizen: large (?) changes*
  • *Government vs Citizen: small changes (?)*

• *DE will bridge this gap in different ways depending on the type of the policy problem*
DE will evolve as a series of often small and sometimes disruptive changes

→ Empowering citizens

DE will bridge the gap between its developers and stakeholders

→ Engaging society

• Commerce vs Citizen: disruptive changes
• Citizen to Citizen: large (?) changes
• Government vs Citizen: small changes (?)

• DE will bridge this gap in different ways depending on the type of the policy problem
1. Empowering citizens

- Commerce vs Citizen: disruptive changes
- Citizen to Citizen: large (?) changes
- Government vs Citizen: small changes (?)
OpenStreetMap – Map Kibera
Mobile phones

DAILY MOBILE PHONE USAGE IN EAST AFRICA (2011)

Source: iHub research
Mobile phones

By 2012, more Africans will have a mobile phone than access to safe drinking water.

- Mobile phone subscriptions
- Safe water supply
Liberation technologies
Accountability technologies

A group of 23 impoverished west African fishing communities has driven off a fleet of illegal, unreported and unregulated "pirate" trawlers by filing and reporting them when they are found in their waters.

Images of the pirate ships and their GPS positions are analysed to establish the identity of the vessels and the evidence is passed on to European Union (EU) and African governments, fishing ports and other communities. Nine of the 10 ships identified by the Sierra Leonean communities were found to have licences to export their catches to Europe.

The effect of communities policing their own waters has been spectacular, says EJF in a new report on pirate fishing in west Africa. More than US$500,000 in fines has been collected from the vessel owners. Some worth of fish has been seized and none of the vessels has been reported in Sierra Leone’s inshore exclusion zone for six months.
Disruptive apps

Non disruptive apps

Apps for Commerce

Apps for production of knowledge

Apps for Politics
Disruptive apps

Apps for Commerce

Apps for production of knowledge

Apps for Politics

Non disruptive apps
Disruptive apps
Non-disruptive apps

Apps for Commerce
- Citizen - consumer
  - Individual action/benefit
  - Instant gratification
- Commerce - seller
  - Sells with less friction
  - Clear benefits ($$)

Apps for production of knowledge
- Citizen to Citizen = Community
  - Common goals
  - Common interests

Apps for Politics
- Citizen
  - Collective action $\rightarrow$ goals
  - Distant gratification
- Government
  - Not willing/able to respond
  - Ambiguous benefits
e.g. Amazon

Citizen - consumer
- Individual action/benefit
- Instant gratification

Commerce - seller
- Sells with less friction
- Clear benefits ($$)

Symmetry

e.g. OSM

Citizen to Citizen = Community
- Common goals
- Common interests

Uniformity

e.g. Ushahidi

Citizen
- Collective action → goals
- Distant gratification

Government
- Not willing/able to respond
- Ambiguous benefits

Asymmetry

Apps for Commerce

Apps for production of knowledge

Apps for Politics
DE will evolve as a series of often small and sometimes disruptive changes

→ Empowering citizens

DE will bridge the gap between its developers and stakeholders

→ Engaging society

- Commerce vs Citizen: disruptive changes
- Citizen to Citizen: large changes (?)
- Government vs Citizen: small changes (?)

GOALS

- DE will bridge this gap in different ways depending on the type of the policy problem
Goals = Things we care about passionately

• Equity (equal access)
• Privacy
• Efficiency
• Security
• Transparency
• Accountability
• Resilience
• Sustainability
• ...

Equity is easy. Right?

equal slices for everyone in this room
Equity – Objection 1

*equal slices but unequal invitations*
Equity – Objection 2

(un)equal slices for (un)equal ranks
Equity – Objection 3

unequal slices but equal blocs
Equity – Objection 4

unequal slices but equal meals
Equity – Objection 5

unequal slices but equal value to recipients
Equity – Objection 6

unequal slices but equal starting positions
Equity – Objection 7

unequal slices but equal statistical chances
Equity – Objection 8

*unequal slices but equal votes*
Equity is easy. Right?

equal slices for everyone in this room
Wrong. Equity is complicated!

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Dilemma</th>
</tr>
</thead>
</table>
| **Recipients** | Equal slices / Unequal invitations  
(Un) Equal ranks / (Un) equal slices  
Equal blocs / Unequal slices |
| **Item** | Equal meals / Unequal slices  
Equal value / Unequal slices |
| **Process** | Equal starting positions / Unequal slices  
Equal chances / Unequal slices  
Equal votes / Unequal slices |
And so are all goals and values we care about so passionately...

- Equity (equal access)
- Privacy
- Efficiency
- Security
- Transparency
- Accountability
- Resilience
- Sustainability
- ...

2. Engaging Society in DE

DE will bridge this gap in different ways depending on the type of the policy problem.

DE knowledge:
Certain or Uncertain?

Goals of stakeholders:
Consensus or Dissensus?
## Digital Earth and Problem Types

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
<th>Dissensus among stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain</td>
<td>Consensus among stakeholders</td>
<td></td>
</tr>
<tr>
<td>Uncertain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Digital Earth and Problem Types

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
<th>Consensus among stakeholders</th>
<th>Dissensus among stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain</td>
<td>Problem type – 1:</td>
<td>Problem type – 3:</td>
<td></td>
</tr>
<tr>
<td>Uncertain</td>
<td>Problem type – 2:</td>
<td>Problem type – 4:</td>
<td></td>
</tr>
</tbody>
</table>
## Digital Earth and Problem Types

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Certain</strong></td>
<td>Consensus among stakeholders</td>
<td>Dissensus among stakeholders</td>
</tr>
<tr>
<td></td>
<td>Debate on technicalities</td>
<td>Debate on goals and values</td>
</tr>
<tr>
<td><strong>Uncertain</strong></td>
<td>Debate on means</td>
<td>Endless debate</td>
</tr>
</tbody>
</table>
## Digital Earth and Problem Types

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain</td>
<td>Consensus among stakeholders</td>
<td>Dissensus among stakeholders</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cell 1: Debate on technicalities</td>
<td>Cell 3: Debate on goals and values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structured problems (tame)</td>
<td>Moderately structured problems</td>
<td></td>
</tr>
<tr>
<td>Uncertain</td>
<td>Cell 2: Debate on means</td>
<td>Cell 4: Endless debate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderately structured problems</td>
<td>Unstructured problems (wicked)</td>
<td></td>
</tr>
</tbody>
</table>
Digital Earth and Problem Types

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Consensus</strong></td>
</tr>
<tr>
<td>Certain</td>
<td>DE scientists excel here</td>
</tr>
<tr>
<td>Uncertain</td>
<td></td>
</tr>
</tbody>
</table>

**DE scientists excel here**

**DE scientists do not excel here**
Digital Earth and Problem Types

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consensus among stakeholders</td>
<td>Dissensus among stakeholders</td>
</tr>
<tr>
<td>Cell 1: Debate on technicalities</td>
<td>Cell 2: Debate on means</td>
</tr>
<tr>
<td>Structured problems (tame)</td>
<td>Moderately structured problems</td>
</tr>
<tr>
<td>Uncertain</td>
<td>Cell 3: Debate on goals and values</td>
</tr>
<tr>
<td>Cell 4: Endless debate</td>
<td>Unstructured problems (wicked)</td>
</tr>
</tbody>
</table>

Different strategies needed to tackle each problem type.
# Digital Earth and Problem Types

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain</td>
<td>Consensus</td>
<td>Dissensus</td>
</tr>
<tr>
<td></td>
<td><strong>Structured problems (tame)</strong></td>
<td><strong>Moderately structured problems</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Cell 1: Debate on technicalities</strong></td>
<td><strong>Cell 3: Debate on goals and values</strong></td>
</tr>
<tr>
<td>Uncertain</td>
<td><strong>Cell 2: Debate on means</strong></td>
<td><strong>Cell 4: Endless debate</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Moderately structured problems</strong></td>
<td><strong>Unstructured problems (wicked)</strong></td>
</tr>
</tbody>
</table>
Tackling a tame policy problem

**Research mode:** Product or Service Design

**Key questions:** How? When?

**Research aims:** Measuring, organizing, planning, adjusting

**Research instruments:** Measuring instruments, cost-benefit analysis, design algorithm, observation protocol

**Research outcomes:** Plan, product

**Assessment criteria:** Effectiveness, efficiency
## Digital Earth and Problem Types

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain</td>
<td>Consensus</td>
<td>Dissensus</td>
</tr>
<tr>
<td>Structured problems (tame)</td>
<td>Cell 1: Debate on technicalities</td>
<td>Cell 3: Debate on goals and values</td>
</tr>
<tr>
<td>Uncertain</td>
<td>Moderately structured problems</td>
<td>Unstructured problems (wicked)</td>
</tr>
<tr>
<td></td>
<td>Cell 2: Debate on means</td>
<td>Cell 4: Endless debate</td>
</tr>
</tbody>
</table>
Tackling a wicked policy problem

Research mode: Exploration

Key questions: What? For whom?

Research aims: Interpretation (conceptual coherence, frames)

Research instruments: Interviews (open), participant observation, content analysis (of internet fora, blogs, etc)

Research outcomes: New questions

Assessment criteria: Appropriateness, feasibility, creativity
Digital Earth has different roles

<table>
<thead>
<tr>
<th>DE KNOWLEDGE</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consensus</td>
</tr>
<tr>
<td>Certain Knowledge</td>
<td>DE as Problem Solver</td>
</tr>
<tr>
<td></td>
<td>Dissensus</td>
</tr>
<tr>
<td></td>
<td>DE as Mediator</td>
</tr>
<tr>
<td>Uncertain knowledge</td>
<td>DE as Analyst</td>
</tr>
<tr>
<td></td>
<td>DE as Problem recognizer</td>
</tr>
</tbody>
</table>
Lost in translation? Two suggestions...
• **DE will evolve as a series of often small and sometimes disruptive changes**

• **Commerce vs Citizen: disruptive changes**

• **Citizen to Citizen: large (?) changes**

• **Government vs Citizen: small changes**

• **DE will bridge this gap in different ways depending on the type of the policy problem**

1. We need a DE Curriculum that emphasizes policy problems with dissensus in goals
2. We need new spaces for debating goals & values
References

1. Fung et al. (2013) *Six models for the Internet + Politics*, International Studies Review