Innovation - the contribution of industry in the e-Navigation domain

Presented at e-Navigation Underway Conference 2013

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January 2013
When have you last used...
The World is changing

- What is nowadays called “Age of Modern Man” started around 150,000 years ago.
- The Agricultural Age started 10,000 years ago.
- The Industrial Age manifested 300 years ago.
- The Information Age began almost 40 years ago.
- What is called the “Threshold Decades” (1985-2005) was the timeframe when the developed countries fully transitioned from Industrial to Information Age.
## A changing world

<table>
<thead>
<tr>
<th>Number (world)</th>
<th>1950</th>
<th>1975</th>
<th>1985</th>
<th>1995</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computers</td>
<td>60</td>
<td>650,000</td>
<td>50,000,000</td>
<td>200,000,000</td>
<td>822,150,000</td>
</tr>
<tr>
<td>Cell Phone Subscribers</td>
<td>700,000</td>
<td>89,000,000</td>
<td>2,065,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People using the Internet</td>
<td>21,000</td>
<td>45,100,000</td>
<td>1,081,000,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Car manufacturers (U.S.)</td>
<td>22</td>
<td>16</td>
<td>13</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Radio stations</td>
<td>2232</td>
<td>4463</td>
<td>8593</td>
<td>11,987</td>
<td>13,499</td>
</tr>
<tr>
<td>Web sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>71,000,000</td>
</tr>
<tr>
<td>Published books</td>
<td>11,022</td>
<td>39,372</td>
<td>75,452</td>
<td>113,589</td>
<td>350,250</td>
</tr>
<tr>
<td>TV channels (avg)</td>
<td>2</td>
<td>3</td>
<td>18</td>
<td>41</td>
<td>102</td>
</tr>
</tbody>
</table>

Source: David Houle – The Shift Age
## Speed of Change

<table>
<thead>
<tr>
<th>Era</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Age</td>
<td>speed of change barely noticeable within a lifetime</td>
</tr>
<tr>
<td>Industrial Age</td>
<td>speed of change accelerated, noticeable within a lifetime change was sequential and was slowly acceleration</td>
</tr>
<tr>
<td>Information Age</td>
<td>speed of change accelerated greatly, change perceived and felt within a decade, change started to be simultaneous in different sectors “Future Shock”</td>
</tr>
<tr>
<td>Shift Age</td>
<td>speed of change now part of our environment, it is constantly accelerating</td>
</tr>
</tbody>
</table>

Source: David Houle – The Shift Age
What to do?

“We should try to be the parents of our future rather than the offspring of our past”

Miguel de Unamuno (1864-1936)
Spanish essayist, novelist, poet, playwright, and philosopher
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Speed of Change
An Aviation Example

1962
1977
2002
2006
Digital
Innovation - An Industry Approach

- **Focus on User needs:**
  - Clearly expressed User Needs (Requirements document)
  - Not yet realized User Needs (Human Factor Design)

- **Modular System Approach**
  - Phased implementation capability
  - Chances for implementation of future needs

- **System Encapsulation Approach**
  - Modules not negatively affecting existing system behaviors
  - Three “Application Categories”
    - Cat 1: Not integrated
    - Cat 2: “Read Only” integration
    - Cat 3: Fully integrated
The Data Quality Aspect – Data Supply Chain Certification

1. Accuracy
2. Resolution
3. Assurance Level
4. Traceability
5. Timeliness
6. Completeness
7. Format
The System Quality Aspect

• Software quality systems through Process Certification (e.g. CMMI)

• System quality certification (e.g. learn from aviation D-178B, IEC standards)

• Service Provider certification (e.g. ISO or “Letter of Acceptance - LoI”)
Context: e-Navigation Framework

Existing ECDIS Regulations
Detail Performance Standards including “What and How”

General e-Navigation Specifications
(Policies, Collaborations, Architecture, Communication, Portrayal…)

Innovative Space for Industry on
HOW
Drivers for implementing e-Navigation

From Presentation Andreas Nordseth, Director General, Danish Maritime Authority, e-Navigation Underway 2012

Drivers for implementing e-Navigation

We need to push for solutions in close partnerships with industry
Public-private partnership (PPP) describes a government service or private business venture which is funded and operated through a partnership of government and one or more private sector companies. These schemes are sometimes referred to as PPP or P3.

(Wikipedia – 2008)

The term “Private-Public Cooperation” (PPC) builds on the P3 definition and expands it to any type of cooperation, including those, which do not need funding.
Conditions for a successful partnership

- Knowing: Clearly define each other’s role and responsibility

- Accepting: strengths and limitations and allowing the partner to fill the gap for greater success of the defined outcome

- Communicate: regularly to building and maintaining full trust on the agreed topic

- Communicate: any information regarding the partnership subject without limitations
PPC as a method to master the dilemma

- Public Sector Organizations – key competence is creating and issuing data, defining regulations, inspecting and advising…

- Private Sector Organizations are well equipped to develop innovative product and manage product lifecycle

- PPC allows both partners to focus on core competence and perfect the delivery in those areas

- Clear definition on roles and responsibilities, acknowledging the competence of the partner, allows full concentration on success of the common goal

- PPC can utilize innovations, created by PPC or public sector, to drive adaption of existing standards or creation of new ones – i.e. foster and channel innovation
Innovation can not be stopped and will increase in speed.

Industry is able and willing to collaborate with the public sector to ensure quality and usability of future systems to ensure the goal is reached: Safe and Efficient transportation at sea.
THANK YOU!

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