The Structure of Maritime Service Portfolio(s) (MSP)

Jan-Hendrik Oltmann, Germany
„e-Navigation Architect“ @ IALA, ACCSEAS, and elsewhere
Presentation overview

- The context of the Maritime Service Portfolios (MSPs)
- 2014, SIP completed – what next?
- The Structure of MSP, proper
- Summary & Conclusions

The architect speaks, here in “construction site management” mode.

Disclaimer: The views presented here are those of the presenter and should not be construed as those of the administration.
"Bringing the maritime domain into the digital age"
= Existing services to be transformed/adapted
+ Innovative service introduced

• How to facilitate that paradigm shift in an orderly manner with “everybody onboard”?
• How to govern the huge complexity?
• How to *break it down*? I. e. reduce it into chunks that people/organizations can chew?
The Context of the MSPs /2

The place of MSPs in overarching architecture

Let’s start with something well known …

... and consider its inherent power to answer above questions.

IMO MSC85/26, Annex 20, 4, MSC-adopted 2008
The Context of the MSPs /3
The place of MSPs in overarching architecture

Operational Services

Technical Services

World Wide Radionavigation System (WWRNS) of IMO (incl. GNSS, GNSS augmentation and terrestrial backup)

Note: There are operational and technical interactions between different shipboard environments. These are not shown for simplicity's sake in this figure.
The Context of the MSPs /4
The “Seven Pillars of e-Navigation” – the application of the e-Navigation architecture to e-Navigation project management
The Context of the MSPs /5
The “Seven Pillars of e-Navigation”

IMO e-Navigation Strategy (MSC85/26, Add.1, Annexes 20/21), IMO NAV Reports/WPs; IMO e-Nav CG; SIP (2014)

Seven pillars = seven working field where recognizable communities can work while being in sync with e-Navigation international movement at large => Means to reduce complexity
IMO/NAV have developed “practical solutions” to prioritize work. How do they use “seven pillars”?

The “Ingredients” or “contributions“

„Practical Solution S.x“

„Practical Solution S.y“

„Practical Solution S.z“

IMO documentation on e-Navigation
### The Context of the MSPs /7

#### The “Practical Solutions” + “Seven Pillars” / Example

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S4</strong></td>
<td>Integration and presentation of available information in graphical displays received via communication equipment.</td>
</tr>
<tr>
<td><strong>S4.1</strong></td>
<td>Implement a Common Maritime Data Structure and include parameters for priority, source, and ownership of information.</td>
</tr>
<tr>
<td><strong>S4.1.1</strong></td>
<td>Standardized interfaces for data exchange should be developed to support transfer of information from communication equipment to navigational systems (INS).</td>
</tr>
</tbody>
</table>

#### Example

<table>
<thead>
<tr>
<th>MSP</th>
<th>SE</th>
<th>COM</th>
<th>SI</th>
<th>PNT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S4.1.3</strong></td>
<td>Provide mapping of specific services (information available) to specific regions (e.g. maritime service portfolios) with status and access requirements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S4.1.4</strong></td>
<td>Provision of system for automatic source and channel management on board for the selection of most appropriate communication means (equipment) according to criteria as, bandwidth, content, integrity, costs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S4.1.5</strong></td>
<td>Routing and filtering of information on board (weather, intended route, etc.).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>Develop SW/HW (module (SI)) for processing, filtering and transfer/routing of information exchanged via communication equipment to the appropriate applications on board, e.g. navigation, other bridge applications (safety, security) and other onboard applications.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td>Provide functionality as part of INS to process and filter exchanged information received via communication equipment for relevance to vessel, route, and conditions, ensuring delivery (routeing) and presentation of safety relevant information on INS tasks (displays).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Note: Analysis not complete.
Conclusions:

1. All “practical solutions” will require “ingredients / contributions” from several pillars.

   => Determine those “ingredients”

2. “Practical solution” = another means to reduce complexity

   => Combine with “Seven Pillars” approach
2014, SIP completed – what next? /1
IMO Governance + digital innovation delivered

Let’s put ourselves into the near future: 1-2 years, only.

2013

2014

Beyond 2014

How structure work after that?
How can IMO governance and wish for digital innovation be “reconciled” in procedural terms?
2014, SIP completed – what next? /2
How to facilitate harmonization large scale

Plan projects using “seven pillars” + “Harmonization Group (HG)” concept:

IMO governance

- HG-A&H
- HGSE
- HGMSP
- HGCOM
- HGPNT
- HGSI
- HGDM
- Common Maritime Data Structure (CMDS)

- IMO e-Navigation Strategy (MSC85/26, Add.1, Annexes 20/21), IMO NAV Reports/WPs; IMO e-Nav CG; SIP (2014)
2014, SIP completed – what next? /3
How to facilitate harmonization large scale

**Plan projects using “seven pillars” + “Harmonization Group (HG)” concept:**

- Define **1 international project** for each of the pillars
- Each international project **lead by a dedicated HG**
- **Governance of all international projects concurrently by IMO (MSC, new Sub-Committee structure)**

**Core Terms of Reference for international projects / HGs:**

- Task in general terms: *Provide harmonization/co-ordination to progress assigned “pillar” (working field) in the spirit of e-Navigation.*
- **Contribute “ingredients” of assigned working field to “practical solutions”;**
- **Develop respective working field at large using expert knowledge;**
- **Liaise with relevant international organisations;**
- **Liaise with other 6 HGs as needed to achieve consistency;**
- **Report to IMO governing body.**
Listen to what I have NOT said:

I have **NOT** said,

that IMO is supposed to run all or even most of the international projects themselves;

I have **NOT** said,

that IMO is supposed to support all proposed Harmonization Groups (HGs) themselves.

What I **HAVE** implied, though, is,

that IMO develop their way how to introduce required flexibility while maintaining desired governance.
The structure of MSP, proper /1

Topics identified regarding MSP Structure

- **By very definition, MSPs have internal structure.**
- **Following architectural topics have been recognized:**
  - Designating and naming MSPs: Categorization of MSPs as a means to handle complexity
  - Service / MSP provision area definitions:
    - several recognized ways to define areas in different services’ domains;
    - blanket coverage vs. traffic-related coverage (route topology-based)
  - Metadata on MSP (MSP catalogue/ status) in the CMDS
  - Dynamic service / MSP selection at vessel during a voyage: „spectrum“ of available services
  - Pre-selection of service usage for a voyage in advance
  - Dynamical (i.e. time-variable) MSPs offered

- **These topics must have be addressed (eventually) in order to arrive at a viable MSP architecture / structure.**
The structure of MSP, proper /2

Service “Spectra”

The spectra of services
- The spectrum of operational services
- The spectrum of technical services

Maritime Service Portfolios

OPERATIONAL Services

TECHNICAL Services

The spectrum of operational services

The spectrum of technical services
The structure of MSP, proper /3
Service “Spectra” + Management of Requirements

The spectra of services

Maritime Service Portfolios

The spectrum of operational services

- VTS
- Radar
- INS
- NAS
- TOS
- SAR
- Pilotage

The spectrum of technical services

- AIS
- Comms
- RDF
- ENC Updates
- VHF
- HF
- MF
- SAT

Requirements (Examples):
- Which technical services?
- What service level in which area?
- What service quality parameters?
Power of the services spectra concept:

All services (existing + new) identified, named and thereby recognized in an internationally harmonized manner => catalogues of services.

Service levels, service quality parameters (existing + new) equally identified, named and thereby recognized in internationally harmonized manner => catalogue of service levels + service parameters.

Such catalogues may be transferred into a data model (product specification within S-100 framework) at CMDS => electronic exchange feasible and measurement of service spectra at run time.

Service-to-service dependencies (= requirements) would be known exactly => applicability of requirement management methods.

International, harmonized role assignment for maintaining service descriptions by clearly identified international organisations feasible.

Reduction of complexity regarding MSP handling.

Synergies for (at least technical) services could potentially be gained by using same service levels + service parameters for several requirements.
The structure of MSP, proper MSP Management + the Lifecycles of MSP

How can governance of complex MSP/service spectra be achieved?

Don’t re-invent the wheel … It’s there! LITERALLY

Remember “digital age”
⇒ Learning from IT
⇒ Use ISO 20000 series (ITIL V3 toolbox)
Conclusions:

- Introduce “Maritime Service Portfolio Management”
  = governance “tool” for IMO
  = what services with what features!?

- Using the best practice “tool box” ITIL V3 (ISO 20000)
  when developing MSPs and services

- Initial “Maritime Service Portfolio Management” to be developed by proposed international project, lead by proposed Harmonization Group on MSP (“HG-MSP”)
The structure of MSP, proper /7
Impact of MSP Management on Service Definitions

There will be an impact on basically all services in the service spectrum (in the maritime domain)!

How to proceed? – Step-by-step as follows (“cookbook”):

1. **Extract functional essence of services, if not already done** (i.e. create services descriptions NOT depending on any specific technology).

2. **Consolidate existing requirement base** in accordance with above functional essence.

3. **Add / complete / describe important service parameters**, namely service levels and service quality parameters.

4. **Harmonize service descriptions with other pillar’s results**, in particular with CMDS (HGDM).

Above steps can be given for each service to a dedicated international working community to work on + finalize. Thus reduce complexity.
Definitely the last slide – Iconic Summary

Three concepts presented...

The spectrum of operational services

The spectrum of technical services

The international e-Navigation movement / IMO governance

IMO documentation

Architecture / Human Element / Generalities

Shipboard Equipment

Maritime Service Portfolios (MSPs)

Resilient PNT

“fit for e-Navigation” Shore-based Infrastructure

“fit for e-Navigation” Shipboard Equipment

Common Maritime Data Structure (CMDS)

“Practical Solution S.x”