AISM Association Internationale de Signalisation Maritime

IALA International Association of Marine Aids to Navigation and Lighthouse Authorities

REPORT

IALA Workshop

Employing the e-Navigation Common Shore-Based System Architecture (CSSA)

26 – 29 August 2014

WSV.de
Wasser- und Schifffahrtsverwaltung des Bundes

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Report of the IALA Workshop on Employing the e-Navigation Common Shore-Based System Architecture (CSSA)

Executive Summary

A workshop on the subject of employing the e-Navigation Common Shore-Based System Architecture (CSSA) was hosted by the German Federal Waterways and Shipping Administration in Hamburg, Germany between 26 and 29 August 2014.

The workshop was attended by 47 delegates, representing 16 countries (see ANNEX D).

A series of 11 presentations were given under three broad headings:

1. The CSSA in its context;
2. The generic CSSA service model;
3. The CSSA service model in action: the German example (including lessons learned).

The workshop then broke into two Working Groups to discuss and produce a draft Recommendation on Generic Service Engineering Model for submission to the ENAV Committee at its 15th Session.

The social programme consisted of a Welcome Reception, and a Workshop Dinner and a Technical Tour comprised of a tour to Kiel Canal Brunsbüttel site, to provide insights into a practical working application of the CSSA.

The workshop produced

- A draft Recommendation on the Generic Service Engineering Model [for e-Navigation Shore Infrastructure] in the form of a suite of documents comprising a recommendation with annex and 14 appendices.
- a number of important conclusions for IALA to consider as part of implementing the IALA CSSA which included:
    - The holistic overarching architecture of e-Navigation was reaffirmed in concepts such as “the three sides of the coin” and the ”Seven Pillars model”.
    - It was recognised that the Common Shore-based System Architecture (CSSA) is an instrument contributing to the e-Navigation pillar No. 6, “shore-based infrastructure (‘fit for e-Navigation’)”.
    - It was recognised that mutual benefits could be gained for IALA membership if commonalities of technical systems and features are identified and described in generic approved IALA documents and those under development. For example the draft CSSA System layout, CSSA service model as reflected in input document CSSA1-3.3 / e-Nav14-17.2.5.1.
    - The service-oriented CSSA under development by IALA is considered to be flexible and open enough to support all areas of application within IALA’s remit.
    - The technical services defined in the CSSA System Layout contribute to a definition of the scope of technical services to be eventually included in the development of the Maritime Service Portfolios (MSPs).
    - There is a need to employ a life cycle management and system engineering model for developing, implementing and maintaining a common shore based system but it was recognized that different parts of the system engineering model will be executed by different

stakeholders in the development process, i.e. by IALA, IALA national members, other competent authorities, and manufacturers.

- The need was recognised for a suite of documents bundled together in one draft new IALA Recommendation on the generic CSSA service model as main body and several appendices to cover all relevant topics of the generic service model.
- The further development of IALA Rec V128 could be assisted by employing the CSSA System Layout and the approved / draft CSSA service descriptions for the specific technologies under consideration in V128, for example Radar Service, radio communication services, Direction Finding Service, etc.
- The CSSA under development by IALA has the potential to organise the provision of radio communication services for rescue, VTS communication, public correspondence, etc.
- There is a need to include the definition of approved CSSA terms and acronyms in the IALA dictionary.
- An additional workshop may be required to further develop CSSA and its documentation.

Table of Contents

IALA WORKSHOP ON EMPLOYING THE E-NAVIGATION COMMON SHORE-BASED SYSTEM ARCHITECTURE (CSSA)

1. Introduction

A workshop on the subject of employing the e-Navigation Common Shore-Based System Architecture (CSSA), hosted by the German Federal Waterways and Shipping Agency was held at BSH Hamburg Headquarters, "Landungsbrücken", Bernhard-Nocht-Straße 78, 20359 Hamburg, Germany between 26 and 29 August 2014. The workshop was attended by 47 delegates, representing 16 countries.

A list of participants is at ANNEX D.

2. Overall Programme

The overall programme is shown in the following table.

<table>
<tr><th colspan="4">IALA Workshop on employing the e-Navigation Common Shore-Based System Architecture
Overall Programme</th></tr>
<tr><th>Tuesday 26th August</th><th>Wednesday 27th August</th><th>Thursday 28th August</th><th>Friday 29th August</th></tr>
<tr><td rowspan="3">Registration</td><td>Technical session 4
The CSSA service model in action: the German example (including lessons learned)</td><td rowspan="6">Technical Study Tour to Kiel Canal Brunsbüttel</td><td>Technical session 9
Working Groups</td></tr>
<tr><td>Break</td><td>Break</td></tr>
<tr><td>Technical session 5
Working Groups</td><td>Session 10
Conclusions
&
Closing of Workshp</td></tr>
<tr><td>Session 1
Opening of the Workshop</td><td>Lunch</td><td rowspan="5"></td></tr>
<tr><td>Technical Session 2
The CSSA in its context</td><td>Technical session 6
Working Groups</td></tr>
<tr><td>Break</td><td>Break</td><td>Break</td></tr>
<tr><td>Technical Session 3
The generic CSSA service model</td><td>Technical Session 7
Working Groups</td><td>Technical session 8
Working Groups</td></tr>
<tr><td>Welcome reception</td><td>Workshop dinner</td><td>Free</td></tr>
</table>

3. Conclusions

Following a discussion of the conclusions, the workshop agreed to the following fifteen conclusions:

1. The holistic overarching architecture of e-Navigation was reaffirmed in concepts such as “the three sides of the coin” and the ”Seven Pillars model”.
2. It was recognised that the Common Shore-based System Architecture (CSSA) is an instrument contributing to the e-Navigation pillar No. 6, “shore-based infrastructure (‘fit for e-Navigation’)”.
3. It was recognized that mutual benefits could be gained for IALA membership if commonalities of technical systems and features are identified and described in generic approved IALA documents and those under development. For example the draft CSSA System layout, CSSA service model as reflected in input document CSSA1-3.3 / e-Nav14-17.2.5.1.
4. The service-oriented CSSA under development by IALA is considered to be flexible and open enough to support all areas of application within IALA’s remit.
5. The technical services defined in the CSSA System Layout contribute to a definition of the scope of technical services to be eventually included in the development of the Maritime Service Portfolios (MSPs).
6. There is a need to employ a life cycle management and system engineering model for developing, implementing and maintaining a common shore based system but it was recognized that different parts of the system engineering model will be executed by different stakeholders in the development process, i.e. by IALA, IALA national members, other competent authorities, and manufacturers.
7. The need was recognised for a suite of documents bundled together in one draft new IALA Recommendation on the generic CSSA service model as main body and several appendices to cover all relevant topics of the generic service model.
8. The further development of IALA Rec V128 could be assisted by employing the CSSA System Layout and the approved / draft CSSA service descriptions for the specific technologies under consideration in V128, for example Radar Service, radio communication services, Direction Finding Service, etc.
9. The CSSA under development by IALA has the potential to organise the provision of radio communication services for rescue, VTS communication, public correspondence, etc.
10. The importance of boundaries for the different entities of the CSSA was recognised, for example system boundary, service boundary, functional layer boundary, and component boundary.
11. Each CSSA technical service has its own Service Management which is related to the Service Level Agreement for that technical service.
12. From a CSSA technical management point of view, the required connectivity between the individual technical services is expected to be implemented at Set Up and Run Time Configuration.
13. There is a need to adopt and/or develop and harmonize interfacing protocols and standards throughout the CSSA. This should be aligned with international developments in the field of harmonized open protocols.
14. There is a need to include the definition of approved CSSA terms and acronyms in the IALA dictionary.
15. An additional workshop may be required to further develop CSSA and its documentation.

Annexes to the Report

ANNEX A OPENING OF THE WORKSHOP AND TECHNICAL SESSIONS

4. Session 1 - Opening

Chaired by Jan-Hendrik Oltmann, Federal Waterways and Shipping Agency, Germany and Chairman of WG5 of the IALA ENAV Committee.

All presentations form part of the output of the workshop.

4.1 Address by Gary Prosser, Secretary General of IALA

In his opening remarks, Gary Prosser welcomed all the delegates, observing that the venue of the ship mega-centre of Hamburg was particularly appropriate for this workshop. He noted that the workshop was oversubscribed, indicating the importance of the subject and the timeliness of the workshop. He thanked the WSV for generously hosting the workshop and thanked the steering group for their fantastic work and attention to detail. He noted the excellent line-up of speakers and participants. Observing that this is the first IALA major event since the General Assembly approved the IALA strategy and vision for the next work term in May 2014, he acknowledged the relevance of the important topic of this workshop. The work is very much in line with the discussion at IMO NCSR1 in June 2013 and is an enabler to the development of e-Navigation which is a game changer in marine navigation. Thanking all in advance for the work of the week, he noted that IALA is all the participants in the work as well as the secretariat.

4.2 Administrative and safety information

Administrative and safety information was provided by Jan-Hendrik Oltmann, German Federal Waterways Administration, by means of a presentation.

4.3 Workshop's aim & objectives

A presentation was made by Jan-Hendrik Oltmann of the IALA ENAV Committee. The objectives of the workshop were outlined as follows:

1. Provide an opportunity for knowledge sharing on shore-based e-Navigation architecture,
2. Provide an opportunity for participants to understand the generic service-oriented concept of the CSSA,
3. Enable participants to apply the CSSA to their application fields (such as VTS, GMDSS, AtoN, terrestrial components of the WWRNS),
4. Draft an IALA Recommendation on the IALA CSSA Generic Service Model,
5. Facilitate cooperation between stakeholders involved in the provision of VTS/AtoN services in the context of e-Navigation..

4.4 Introduction to IMO e-Navigation and modernisation of GMDSS

This topic was presented by Jean-Charles Cornillou, Cerema / DtecEMF / DT, France.

Presentation abstract

Since 2006, IMO has developed a strategic implementation plan (SIP) for e-Navigation. It started with an input from Brian Wadsworth of the UK Department of Transport on 21st February 2005. The major argument was the historic opportunity for technology to meet the safety of navigation requirements of IMO for the maritime navigation. Gap analysis, global and basic objectives and

advantages have been discussed and drafted. In 2011, the general e-Navigation architecture was adopted. In 2013, a formal safety assessment focused on five e-Navigation solutions as a first step. In July 2014, the IMO NCSR 1 approved the SIP for submission to the MSC. The next MSC meeting will be in November 2014.

In parallel, IMO decided in 2009 to start the review and modernization of GMDSS.

There are many organizations dealing with e-Navigation: IALA, IHO, ITU…while the coordination is under IMO. Nevertheless, it should be kept in mind that e-Navigation and GMDSS need radio communications (whether terrestrial or satellite) and IMO has to clarify its agenda to the ITU World Radio Conference in due time, for ITU governs the regulation of radio frequencies for all kinds of activities. If there is no requirement from IMO, there will be no provision for IMO requirements at ITU. In that respect the task of the IMO/ITU experts group is primary for both e-Navigation and GMDSS.

If e-Navigation is based on human centre designed, e-Navigation is nothing without radio communications. Basic fundamentals should be recalled: GMDSS is described in the Radio Regulations (RR) has the maritime radio communication system not only for distress, but for urgency, safety and routine messages as well and its functionalities are detailed in IMO SOLAS chapter IV, the chapter dealing with radio communication.

The high level review of GMDSS spent a lot of time trying to change the present functional requirements. It was concluded that the functional requirements may need to be clarified, but are still globally relevant. Some systems have already been excluded from a global maritime system, such as internet mobile service, mobile telephone service or BWA, for different technical reasons, mainly lack of robustness and frequencies used are outside the maritime spectrum as defined internationally at ITU. There is no agenda point from IMO relating to an extension of frequencies in maritime activities for the next WRC. On the other hand there are new systems within the maritime frequency spectrum that need to be considered. NAVDAT, a MF broadcasting system for digital maritime security or safety information has been already adopted at ITU. There are others systems under consideration such as VDES, Digital HF.

In the detailed review of GMDSS, there should be a focus on provision of radio communication services (SOLAS IV R5). This side of GMDSS needs to be secured, not only for securing a distress call, but also as it represents the basis of a common shore based system implementation for radio communications of any kind (distress, urgency, safety & routine). Ultimately, consideration should not be about e-Navigation or GMDSS, but simply about radio communications, seeking a way to secure them for the sake of e-Navigation and GMDSS..

The key points of the presentation were:

1 Summary of e-Navigation development at IMO.

2 Proposition of clarification of present GMDSS functional requirements.

3 High level review of GMDSS.

4 Detailed review of GMDSS.

5 Common points between e-Navigation and modernization of GMDSS.

Discussion

It was noted that the author had placed GMDSS in pillar 4 of the IMO Strategic Implementation Plan (SIP) 7 pillars rather than in pillar 6. The author responded that 9 functions have been identified for the ship side while few functions have emerged for the shore side. The IMO SAR Joint Working Group at NCSR1 tried to audit the IMO scope of this. Operations are now looking at the shore side. There is a need to secure ship to shore communications for shipping. Pillar 6 (CSSA) is not relevant without pillar 4 (Communications).

Responding to concerns that the AtoN communications system should not be overloaded by other services, the author stated that GMDSS is not solely for search and rescue (SAR) but also includes urgency communications. GMDSS is a component of CSSA and is being modernised.

Responding to a statement that IMO NCSR1 had decided the GMDSS modernisation should be treated as a separate project, while there is a need for coordination of e-Navigation and GMDSS development, it was noted that the CSSA should state user requirements and GMDSS is just another customer in CSSA.

4.5 Introduction to input documents (pre-reading) and present status of CSSA

This topic was presented by Jan-Hendrik Oltmann, Federal Waterways and Shipping Agency, Germany.

The Workshop input documents ANNEX H were described. The presenter encourage participants to take account of the supplementary documents when reviewing the main input documents.

5. Session 2 – The CSSA in its context

Chaired by Jean-Charles Cornillou, Cerema / DtecEMF / DT.

5.1 Presentation: Harmonization of shore-based User Requirements

The presentation was made by Michele Fiorini, Selex ES, Italy.

Presentation abstract

The International Maritime Organisation (IMO) required a user-needs driven design for the e-Navigation architecture. As a result, a transition process from user needs to structured and traceable system requirements is needed and could be realised by means of systems engineering principles.

Both the shore-based systems harmonised for e-Navigation and the ship technology environment harmonised for e-Navigation need to be capable of processing and using the Common Maritime Data Structure (CMDS) governed by IMO. CMDS represents the entities and relationships among the entities that exist in their domains. Also the links between ship and shore need to be encoding compliant with the CMDS. These relationships can also be represented in terms of services and this is where the IMO introduced the concept of Maritime Service Portfolio(s).

The presentation illustrated certain elements of e-Navigation and how they relate, using systems engineering methodology in order to harmonised user requirements from more precise analysis of the e-Navigation architecture. This can be achieved by means of the IALA e-Navigation Stack that consists of well defined layers arranged in hierarchically top-down fashion starting from the user requirements down to the shore-based system architecture and specific technical e-Navigation services.

The key points of the presentation were:

1 The use of systems engineering process to derive harmonised user requirements.

2 The IALA e-Navigation Stack: a more precise analysis of the e-Navigation architecture.

3 The relationship of the IALA e-Navigation Stack with the IHO Registry.

5.2 Presentation: Shore-based (Unified) Operational Presentation Surface

The presentation was made by Tom Dehmel, University of Wismar, Dept. of Maritime Studies Warnemünde, Germany.

Presentation abstract

The presentation dealt with the development of a coastal-wide, multi-node, multi-service CSSA for the German Waterways and Shipping Administration. A part of this system is a unified human-machine interface (HMI) for VTS operators. The main focus was on the process of the definition of nautical user requirements for this HMI, and how these requirements have been brought to life (i.e. into operation). The presentation allowed a short glance at the result (i.e. the new HMI) and subsumes the "lessons learned" during the whole process. It was noted that one of the main issues arising was system stability.

The key points of the presentation were:

1. VTS human-machine interface.
2. Definition of user requirements.
3. Acceptance tests.

5.3 Presentation: Relationship of CSSA with other "e-Navigation pillars" (MSPs, CMDS, PNT, Communications etc) and S-100 based "products".

The presentation was made by Yung-Ho Yu, Korea Maritime and Ocean University, Korea.

Presentation abstract

The e-Navigation Strategy Implementation Plan (SIP) is being developed from the analysis of user requirements. IMO has derived 16 Maritime Service Portfolios (MSPs) through prioritization and Formal Safety Assessment. The method of how to evaluate, manage, implement, provide and display the MSPs is considered. Because MSPs are also a kind of IT service, how to improve the service quality is surveyed. To implement e-Navigation efficiently, roles of the CSSA are emphasized. To harmonize with the S-100 concept, where overarching S-100 based products can be provided, e-navigation is considered. To help understanding of the relationship between the CSSA and S-100 based products, MSP number 8 Vessel shore reporting of IMO is implemented with the S-100 concept.

The key points of the presentation were:

1. Evaluation model of MSP.
2. Relationship of CSSA and S-100 based Products.
3. ITIL V3 for IT service improvement.
4. HCD design and U-TEA (Usability Test, evaluation and assessment).

5.4 Presentation: The CSSA System Layout – Introduction to the IALA Recommendation

The topic was presented by Jan-Hendrik Oltmann, Federal Waterways and Shipping Administration, Germany.

Presentation abstract

The IALA e-NAV Committee, during its 14th session, September 2013, finalised a draft new IALA Recommendation on the Common Shore Based System Architecture (CSSA) System Layout. The intention of this recommendation is, amongst others, to provide a common generic reference framework to, in particular, national IALA members when they set up appropriate shore infrastructure for Aids-to-Navigation, VTS and other services offered. Also, it was the intention to develop this common

generic reference framework in the spirit of the IMO-developed e-navigation strategy. The main generic building block of the CSSA is an entity which is called “technical service”, and the CSSA essentially is a service-oriented architecture. Thus, the draft new IALA Recommendation also provides the framework for the generic service model for which the development of a generic service model has started some time ago in the IALA e-NAV Committee. This is the focus of the present Workshop. The presentation introduced the draft new IALA Recommendation on the CSSA System Layout in general and raised specific points of interest for the Workshop, such as the relationship to the emerging concept of the Maritime Service Portfolios (MSPs).

5.5 Discussion

Responding to concerns that the input documents contain definitions that may not be recognised by the international community and the suggestion that IALA should address this issue, the author noted that there are 87 IALA national members while there are 176 IMO states and consequently there is a danger that IALA definitions will not be sufficiently global for a global e-Navigation service and that IMO and IALA definitions must not be separate.

Responding to a question about the relationship between the e-Navigation Stack and Product Specifications, it was stated that Product Specifications is the package meeting needs of portrayal, data modelling, and architecture elements of the stack while the stack provides the building blocks.

Responding to statements that people generally do not like to change, it was noted that reluctance to change can provide a first filter to remove existing bad practices and discussion is the key to encouraging participation. Some practices which are acceptable in legacy systems may not be acceptable in new systems because of the increased scope and integration of new systems.

6. Session 3 – The generic CSSA Service Model

Chaired by Michele Fiorini, Selex ES, Italy.

6.1 Presentation: Introduction to the generic CSSA Service Model with special reference to IALA AIS Service (A-124)

The topic was presented by Jan-Hendrik Oltmann, Federal Waterways and Shipping Administration, Germany.

Presentation abstract

The IALA e-NAV Committee, during its previous sessions, has developed both a structure as well as substantial materials for a draft new IALA recommendation on the generic CSSA Service Model. This work was carried out in close collaboration with the development of the IALA Recommendation on the shore-based AIS Service (A-124), which serves as a technology-specific example. Due to the complexity of a shore-based service, when considering not only structural but also life cycle management and configuration issues, the materials relevant to describe a shore-based service were distributed over a standardised set of appendices. Each appendix addresses specifically one or a number of related topics. The presentation introduced the work of the e-NAV Navigation Committee of the past years in this regards, in particular the “suite” of appendices. Reference is made to the IALA Recommendation A-124, where appropriate. The presentation also introduces the different degrees of maturity of the materials developed by the IALA e-Navigation Committee over the years and thus sets the scene for the working groups in this regards.

The key points of the presentation were:

1. IALA e-Navigation Stack.
2. Common Shore-based System Architecture.
3. Service-oriented Architecture.
4. Generic technical service model.
5. Maritime Service Portfolios (MSPs).

6.2 Presentation: From model to procurement: necessary steps and relevant precautions

The topic was authored by Yves Desnoes, Institut Français de Navigation (IFN), France and presented by Jean-Charles Cornillou, CEREMA, France.

Presentation abstract

e-Navigation is mainly about integration and interoperability, which increases system complexity. e-Navigation will be markedly more complex than ECDIS. A necessary leap forward in quality assurance (implying human centred design) is necessary to mitigate complexity. As there is no easily applicable method to deal with interoperability, we have to innovate in this complex area, so that we should start with concepts and designs as simple as possible. For the sake of simplicity and of state-of-the-art configuration management, precise targets for successive phases of e-Navigation are needed, as well as proven methods for individual projects. A first target could be what can be achieved with the GMDSS (hopefully modernized) as well as the AIS and the VDES in their currently defined states, with simple improvements for which solutions are available, like NAVDAT and also some reporting from ship to shore. Among the key success factors will be the building of multidisciplinary teams, including seafarers, as well as cooperation with ship-side projects and with other shore systems. Innovation cannot be fully and precisely defined from the beginning, so that flexibility in contracts and budgets will be needed.

The key points of the presentation were:

6. e-Navigation systems will be more complex than current systems.
7. A leap forward in quality assurance is necessary to mitigate this increase in complexity.
8. We have to define a precise target for the first phase of e-Navigation.
9. This target should be made up of individually simple improvements and add-ons.
10. Team building and cooperation will be key factors for success.

6.3 Presentation: Implementation Options: What UPnP (Universal Plug and Play) can contribute

The topic was presented by Fred Pot, Marine Management Consulting, USA.

Presentation abstract

Inter-vendor operability is a requirement in the proposed CSSA. A standard for seamless, secure, robust Machine-to-Machine (M2M) communications is required to allow tight integration of devices, systems and services from a variety of vendors. Such a standard will ensure modularity and flexibility, avoid vendor lock-in, allow mixing and matching of best-in-class solutions and make CSSA future proof.

The Universal Plug-n-Play (UPnP) Forum offers a set of widely adopted, publicly available protocols that provide practical, zero configuration implementations for inter-vendor operability, security, flow control, remote maintenance and a number of other features. UPnP protocols are based on internet technology and are independent of the operating system and the programming language. UPnP protocols can be deployed on a Local Area Network (LAN) and on the world-wide web.

The presentation detailed how UPnP works, what enhancements vendors would need to make to products to make them UPnP compatible and what is involved in obtaining UPnP certification for products.

The key points of the presentation were:

1 Machine-to-Machine (M2M) Communications in the CSSA require a standard.

2 Universal Plug-n-Play (UPnP) protocols are readily available standard implementations for seamless, zero configuration M2M communications that fulfil requirements for security, scalability, modularity, flexibility, integrity and maintainability.

3 Adapting devices, systems and services to be able to use standard UPnP protocols is relatively simple because they are based on internet technology and are independent of the operating system and the programming language.

4 Self-certification of devices, systems and services to comply with UPnP standards is inexpensive and doesn't involve a long process.

7. Session 4 – CSSA Service Model in Action; the German example (including lessons learned)

This session was chaired by Jan-Hendrik Oltmann, Federal Waterways and Shipping Administration, Germany.

7.1 Presentation: Deploying a coastal-wide, multi-node, multi-service CSSA.

The topic was presented by Christian Herrlich, Federal Waterways and Shipping Administration, Germany.

Presentation abstract

The Presentation showed the German example of how to create a maritime traffic technology system. Both targets and state of implementation were shown. The lessons learned considered technical and organisational aspects to deliver German experiences for benefits and challenges en-route to implementation.

The key points of the presentation were:

1 The German example of how to create a maritime traffic technology system.

2 State of project implementation.

3 Interaction during implementation process.

4 Lessons learned.

5 Summary and Forecast.

Discussion

The author confirmed that the system described was implemented on rivers.

Responding to a question re how the interface radar specifications were developed, the author stated that international standards are best and were used where available. In the absence of international standards where in-house specifications were used, care should be taken to regulate intellectual property rights.

7.2 Presentation: Organisational and Cost Implications of CSSA for the German Administration

The topic was presented by Dirk Eckhoff, Federal Waterways and Shipping Administration, Germany.

Presentation abstract

In year 2000 the German Waterways and Shipping Administration started to restructure their AtoN and VTS-systems along the German coast. The CSSA-like Maritime Traffic Technology System (MTTS) was developed. Since a holistic approach was also taken the organisational structure for technical development

and maintenance was changed in accordance with the new system architecture.

The presentation highlighted the organisational and cost implication for the German example during a decade of development and realisation.

The key points of the presentation were:

6 Previous organisational structure (local , heterogeneous).

7 New organisational structure (coastal-wide, homogeneous).

8 Measures to restructure at management and maintenance level.

9 Implication for the personnel.

10 Cost for the technical system.

Discussion

Addressing a query regarding whether functional or technical specifications were used in procurement, the author responded that functional specifications were generally used, except where there was certainty of requirements or special features.

7.3 Presentation: Roles and functions of Technical Development and Technical Operations Personnel

The presentation was made by Sascha Heesch, Central Engineering and Maintenance Office for Maritime Traffic Technology, Germany.

Presentation abstract

The implementation of a new system takes a large number of personnel in the Technical Development department. During evolution of the system there is a need to increase the number of Technical Operations Personnel. The presentation outlined which roles and functions are needed for Development and Operations.

The key points of the presentation were:

1 There is a need for a review of organisational structure when changing technical structures in an organisation.

2 There is a need for technical development and technical operations departments to collaborate closely in technical infrastructure projects.

8. Sessions 5 to 9 – Working Groups

The Working Groups sessions were introduced by Jan-Hendrik Oltmann and co-ordinated by Jean-Charles Cornillou.

The workshop broke into two Working Groups, to progress the draft Recommendation:

WG1 The generic service model Leader: Jan-Hendrik Oltmann

WG2 The service operation and service life-cycle management Leader: Michele Fiorini

9. Session 10 – Reports of Working Groups

Chaired by Jan-Hendrik Oltmann and Michele Fiorini.

9.1 Report of Working Group 1 - The generic service model

The WG chair (Jan-Hendrik Oltmann) reported on progress by WG1 on sections of the draft Recommendation on CSSA generic service model.

1. A full review of the Main Body of the Recommendation was carried out, providing a general understanding of underlying Service Oriented Architecture. Editorial amendments to improve readability and to update content were agreed which will be implemented by Jan-Hendrik Oltmann and submitted to ENAV15.

Action item

Jan-Hendrik Oltmann is requested to editorially revise the Main Body of the draft Recommendation on CSSA generic service model as agreed and submit the revised draft Recommendation to ENAV15.

2. Appendix 5 "Interfacing Model" was revised with the introduction of UPnP aspects.
3. Appendix 7 "Reliability Model" was updated in terms of structure and content specification.

9.2 Report of Working Group 2 - The service operation and service life-cycle management

The WG chair (Michele Fiorini) described the work which had been carried out by Working Group 2. The WG carried out brainstorming exercises on four input documents.

1. Text was drafted for Appendix 8, Test Model.
2. Appendix 11, Generic Functional Description of the Service Management, was amended.
3. Text was drafted for Appendix 13, Efficient Operation and Maintenance of a service.
4. Appendix 14, Runtime Configuration Management of a service, was amended

9.3 Plenary discussion

In discussion, it was observed that a lot of work had been carried out in the preparation of a CSSA model. However many questions and needs for clarification still remain.

The CSSA model may help national, regional and local competent authorities to implement harmonised shore based e-Navigation architecture, although the circumstances in different countries or regions may vary responsibility / authority for provision of services, possibly limiting the full adoption of the model.

Finalisation of the CSSA Recommendation should be done in such a way that the ENAV Committee can deal with the whole CSSA methodology.

The machine – machine software interface is included in the model but was not discussed during the workshop.

Following expression of concern that some references quoted in the draft Recommendation are not approved documents, it was agreed that the whole Recommendation will be accepted by the ENAV Committee and approved by the IALA Council, thereby ensuring that the entire content is approved irrespective of its original source.

9.4 Workshop report

Seamus Doyle noted that the workshop documents and photographs would be available on the workshop Dropbox for one month. The workshop report will be posted on the workshop Dropbox within one week and will be available long term on the IALA website.

Action Item

The IALA Secretariat is requested to forward the output documents to the 15th Session of the IALA ENAV Committee.

10. Closing of the workshop

Seamus Doyle, IALA, thanked everyone for attending and working so hard. He said that the workshop was of great value to the IALA ENAV Committee and that he hoped that it had been professionally beneficial to all the delegates. He felt that significant progress had been made and the draft IALA Recommendation would be progressed at ENAV15. He thanked the members of the Federal Waterways and Shipping Administration for their excellent hosting of the event, the steering group and session chairs, IALA Secretariat and the delegates for making the workshop such a success.

He wished everyone a safe journey home and declared the workshop closed.

ANNEX B TECHNICAL STUDY TOUR

On Thursday, a bus tour was made to the Kiel Canal Brunsbüttel site, including a visit to the locks assembly, to see a CSSA first hand and to provide insights into a practical working application of the CSSA. The Kiel Canal is an European motorway of the sea and was an excellent venue for witnessing a CSSA in action. The group visited the Central Control Centre for the German coastal-wide CSSA implementation, the associated Brunsbüttel server/communications node of the German CSSA implementation which is one of three such nodes in Germany providing double redundancy of all VTS and AtoN data and control, the VTS centre for the Kiel Canal, and the VTS centre for the Elbe river Hamburg approach. The visit was very informative and much appreciated by participants.

ANNEX C SOCIAL EVENTS

10.1 Welcome reception

On Tuesday 26 August, delegates were welcomed at a reception at the Hotel Hafan Hamburg.

10.2 Workshop dinner

A workshop dinner was held at the Blockbraeu, on Wednesday 27 August. The master of the local brewery at the Blockbreau explained the brewing process and introduced participants to samples of the ingredients used in brewing. This was followed by an excellent dinner with a variety of typical German food. The event was a huge success.

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ANNEX E WORKING GROUP PARTICIPANTS

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ANNEX F WORKSHOP PROGRAMME

DAY 1 – Tuesday, 26 August 2014

1200 – 1300 Registration

Time	Activity	
1300 - 1415	**Session 1 – Opening of the Workshop**	**Chair: Jan-Hendrik Oltmann**
1300-1310	Welcome from IALA	Gary Prosser
1310-1315	Administration & Safety Briefing	Jan-Hendrik Oltmann
1315-1330	Workshop's aim & objectives	Jan-Hendrik Oltmann
1330-1350	Introduction to IMO e-Navigation and modernisation of GMDSS	Jean-Charles Cornillou
1350-1415	Introduction to input documents (pre-reading) and present status of CSSA	Jan-Hendrik Oltmann
1415 - 1445	**Break**	
1445 - 1630	**Session 2 – The CSSA in its Context** (User Interactions and relationship to other "e-Navigation pillars")	**Chair: Jean Charles Cornillou**
1445 – 1505	Harmonization of shore-based User Requirements	Michele Fiorini
1505 - 1525	Shore-based (Unified) Operational Presentation Surface	Tom Dehmel
1525 – 1545	Relationship of CSSA with other "e-Navigation pillars" (MSPs, CMDS, PNT, Communications etc) and S-100 based "products".	Yung-Ho Yu
1545 – 1605	The CSSA System Layout – introduction to the IALA Recommendation	Jan-Hendrik Oltmann
1605 – 1630	Discussion	Jean Charles Cornillou
1630 - 1700	**Break**	
1700 - 1800	**Session 3 – The generic CSSA Service Model**	**Chair: Michele Fiorini**
1700 – 1720	Introduction to the generic CSSA Service Model with special reference to IALA AIS Service (A-124)	Jan-Hendrik Oltmann
1720 – 1740	From model to procurement: necessary steps and relevant precautions	Yves Desnoes (Presenter Jean-Charles Cornillou)
1740 – 1800	Implementation Options: What UPnP (Universal Plug and Play) can contribute	Fred Pot

1800 – 1930

Welcome reception. Venue: Hotel Hafen Hamburg

Dress code: Business attire / Casual

DAY 2 – Wednesday, 27 August 2014

Time	Activity	
0900 - 1000	**Session 4 - CSSA Service Model in Action; the German example (including lessons learned)**	**Chair: Jan-Hendrik Oltmann**
0900 – 0920	Deploying a coastal-wide, multi-node, multi-service CSSA	Christian Herrlich
0920 – 0940	Organisational and Cost Implications of CSSA for the Administration	Dirk Eckhoff
0940 – 1000	Roles and functions of Technical Development and Technical Operations Personnel	Sascha Heesch
1000 – 1020	Introduction to the Working Groups	Jan-Hendrik Oltmann / Michele Fiorini
1020 - 1050	**Break**	
1050 - 1230	**Session 5 - Working Groups (WG)**	**Co-ordinator: Jean-Charles Cornillou**
1050 – 1230	WG1- The generic service model	Leader: Jan-Hendrik Oltmann
1050 – 1230	WG2- The service operation and service life-cycle management	Leader: Michele Fiorini
1230 - 1330	**Lunch and Group Photograph**	
1330 - 1530	**Session 6 – Working Groups (WG) Continued**	**Co-ordinator: Jean-Charles Cornillou**
1330 - 1530	WG1- The generic service model	Leader: Jan-Hendrik Oltmann
1330 - 1530	WG2- The service operation and service life-cycle management	Leader: Michele Fiorini
1530 - 1600	**Break**	
1600 - 1730	**Session 7 – Working Groups (WG) continued**	**Co-ordinator: Jean-Charles Cornillou**
1600 - 1730	WG1- The generic service model	Leader: Jan-Hendrik Oltmann
1600 - 1730	WG2- The service operation and service life-cycle management	Leader: Michele Fiorini
1730 – 1800	**Meeting of Session Chairs**	**Day Session Chairs, Jan-Hendrik Oltmann, Seamus Doyle**

1900 – 2200, Workshop dinner, Venue Blockbraeu

Dress code Casual

DAY 3 – Thursday, 28 August 2014

Time	Activity	
0800 - 1500	**Technical Study Tour** Tour to Kiel Canal Brunsbüttel site (including visit to the locks assembly, Central Control Centre for the German coastal-wide CSSA implementation, VTS centre(s) for Kiel Canal and/or for Elbe river Hamburg approach, Brunsbüttel node of the German CSSA implementation) to provide insights into a practical working application of the CSSA.	
1500 – 1530	**Break**	
1530 - 1730	**Session 8 – Working Groups (WG) continued**	**Co-ordinator: Jean-Charles Cornillou**
1600 - 1730	WG1- The generic service model	Leader: Jan-Hendrik Oltmann
1600 - 1730	WG2- The service operation and service life-cycle management	Leader: Michele Fiorini
1730-1800	**Meeting of WG chairs**	**WG chairs, Jean-Charles Cornillou, Seamus Doyle**

Free evening

DAY 4 – Friday, 29 August 2014

Time	Activity	
0900 - 1030	**Session 9 – Working Groups Continued**	
0900 - 1030	WG1- The generic service model	Leader: Jan-Hendrik Oltmann
0900 - 1030	WG2- The service operation and service life-cycle management	Leader: Michele Fiorini
1030 - 1100	**Break**	
1100 - 1300	**Session 10 – Plenary – Conclusions & Closing**	**Chair: Jan-Hendrik Oltmann / Michele Fiorini**
1100 – 1120	WG1- Review of output and future work	Respective WG-Leader Jan-Hendrik Oltmann
1120 – 1140	WG2- Review of output and future work	Respective WG-Leader Michele Fiorini
1140 – 1200	Plenary Discussion on WG findings: Synthesis	Jan-Hendrik Oltmann
1200 – 1220	Conclusions from Workshop	Seamus Doyle
1220 – 1240	Review of Workshop Report	Seamus Doyle
1240 – 1300	Closing of the workshop	Seamus Doyle

ANNEX H WORKSHOP INPUT PAPERS

Together with the presentations made during sessions 2 – 4, the following papers were input to the workshop:

Meeting	Agenda Item	Previous reference	Title / Author (if required)	Presented by / WG
CSSA1-	1		ENAV CSSA WS 2014-08 Papers' list rev (Rev 3)	All
CSSA1-	2.1		Technical Programme (final version)	Jan-Hendrik Oltmann Seamus Doyle
CSSA1-	2.2	e-NAV14-12.2.10 + e-NAV14-12.2.6	Main Draft IALA Recommendation On Generic Service Engineering Model V0-07 20140813 **- Main Part**	
CSSA1-	2.3	e-NAV14-12.2.10 + e-NAV14-12.2.7	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 0 = References, Glossary of Terms, Abbreviations**	
CSSA1-	2.4	e-NAV14-12.2.10 + e-NAV14-12.2.7	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 1 = Basic Service Categories definitions and Minimum Set of Required Basic Services**	
CSSA1-	2.5	e-NAV14-12.2.10 + e-NAV14-12.2.7	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 2 = Data objects of a service and their properties (data model)**	
CSSA1-	2.6	e-NAV14-12.2.10 + e-NAV14-12.2.7	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 3 = Distribution model**	
CSSA1-	2.7	e-NAV14-12.2.10 + e-NAV14-12.2.8	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 4 = Interaction and data storage model**	
CSSA1-	2.8	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 5 = Interfacing model**	
CSSA1-	2.9	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 6 = Internal Time Latency model**	
CSSA1-	2.10	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 7 = Internal Reliability model**	
CSSA1-	2.11	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 8 = Test model**	
CSSA1-	2.12	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 9 = Generic Functional description of the Logical Shore Station**	
CSSA1-	2.13	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 10.1 = Generic Functional description of the Physical Layer as a whole**	
CSSA1-	2.14	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 10.2 = Generic Functional description of the Physical Shore Station**	

Meeting	Agenda Item	Previous reference	Title / Author (if required)	Presented by / WG
CSSA1-	2.15	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 10.3 = Generic Functional description of the Physical Link Terminal Equipment**	
CSSA1-	2.16	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 10.4 = Generic Functional description of the Physical Link Couplers**	
CSSA1-	2.17	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 11 = Generic Functional description of the Service Management**	
CSSA1-	2.18	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 12 = Site Co-Location Issues and On-Site Infrastructure Considerations**	
CSSA1-	2.19	e-NAV14-12.2.10 + e-NAV14-12.2.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 13 = Recommendation regarding efficient operation and maintenance of a service**	
CSSA1-	2.20	e-NAV14-12.2.10	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 14 = Runtime configuration management of a service**	
Supplementary documents provided before the Workshop				
CSSA1-	3.1	e-NAV14-17.1.5.2	Draft Revision Of Rec e-NAV-140 on e-Navigation Architecture-Shore Perspective(Ed2)a	
CSSA1-	3.2	e-NAV14-17.1.5.1	IALA Recommendation on the IALA Common Shore-based System Architecture (CSSA) 20130925d, EditoriallyFixed2	
CSSA1-	3.3	e-NAV14-17.2.5.1	Relationship Between e-Navigation Technical Architecture Documents	
CSSA1-	3.4	e-NAV14-12.2.10	Report of Dublin meeting of e-NAV Committee WG3 & WG5 -Output1 (Report)	
CSSA1-	3.5		Workgroup-Coordination & assignment V4	Jan-Hendrik Oltmann
Session papers				
CSSA1-	4.1.1		Intro to IMO e-Navigation & GMDSS modernisation - V4	Jean-Charles Cornillou
CSSA1-	4.2.1		Relationship e-Nav Pillars and S100 Products	Yung-Ho Yu
CSSA1-	4.3.1		From model to procurement - necessary steps and relevant precautions	Yves Desnotes

ANNEX I WORKSHOP OUTPUT DOCUMENTS

Number	Title
CSSA1- 5.1	Report of the IALA Workshop on Employing the e-Navigation Common Shore-Based System Architecture (CSSA)
CSSA1- 5.2	Draft IALA Recommendation on Generic Service Engineering Model **– Main Part**
CSSA1- 5.3	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 0 = References, Glossary of Terms, Abbreviations**
CSSA1- 5.4	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 1 = Basic Service Categories definitions and Minimum Set of Required Basic Services**
CSSA1- 5.5	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 2 = Data objects of a service and their properties (data model)**
CSSA1- 5.6	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 3 = Distribution model**
CSSA1- 5.7	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 4 = Interaction and data storage model**
CSSA1- 5.8	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 5 = Interfacing model**
CSSA1- 5.9	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 6 = Internal Time Latency model**
CSSA1- 5.10	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 7 = Internal Reliability model**
CSSA1- 5.11	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 8 = Test model**
CSSA1- 5.12	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 9 = Generic Functional description of the Logical Shore Station**
CSSA1- 5.13	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 10.1 = Generic Functional description of the Physical Layer as a whole**
CSSA1- 5.14	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 10.2 = Generic Functional description of the Physical Shore Station**
CSSA1- 5.15	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 10.3 = Generic Functional description of the Physical Link Terminal Equipment**
CSSA1- 5.16	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 10.4 = Generic Functional description of the Physical Link Couplers**

Number	Title
CSSA1- 5.17	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 11 = Generic Functional description of the Service Management**
CSSA1- 5.18	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 12 = Site Co-Location Issues and On-Site Infrastructure Considerations**
CSSA1- 5.19	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 13 = Recommendation regarding efficient operation and maintenance of a service**
CSSA1- 5.20	Draft IALA Recommendation on Generic Service Engineering Model **- Appendix 14 = Runtime configuration management of a service**

ANNEX J ACTIONS ARISING FROM THE WORKSHOP

Actions for the Secretariat

1. The IALA Secretariat is requested to forward the output documents to the 15th Session of the IALA ENAV Committee. 16

Actions for Delegates

2. Jan-Hendrik Oltmann is requested to editorially revise the Main Body of the draft Recommendation on CSSA generic service model as agreed and submit the revised draft Recommendation to ENAV15. 16