

One Ocean Summit

Brest 9-11.02.2022

S-100 data to your doorstep

or

An e-navigation view of digitalisation in
the maritime domain

- and why we need the MCP

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S-100 describes data (and portrayal)
Not how data is exchanged

Data exchange today is usually modelled as services

Service provider – service consumer – service oriented architecture (SoA)

The long sad history of misunderstandings (in the context of e-navigation)

Maritime services – technical services

The familiar Maritime Services described in MSC.1/Circ.1610 Initial description of Maritime Services in the context of e-navigation

- MS1 VTS Information service (INS);
- MS2 Navigational assistance service (NAS);
- MS3 Traffic organization service (TOS);
- MS4 Maritime safety information service (MSI);
- MS5 Pilotage service;
- MS6 Tug service;
- MS7 Vessel shore reporting;
- MS8 Telemedical assistance service;
- MS9 Maritime assistance service (MAS);
- MS10 Nautical chart service;
- MS12 Nautical publications service;
- MS13 Ice navigation service;
- MS14 Meteorological information service;
- MS15 Real-time hydrographic and environmental information service; and
- MS16 Search and rescue service.

Regarding the relationships, we have some explanation in

IMO resolution MSC.467(101) ‘guidance on the definition and harmonization of the format and structure of maritime services in the context of e-navigation’

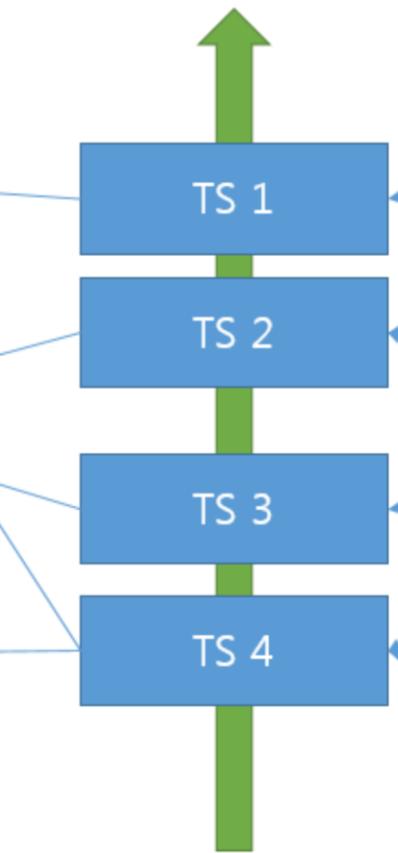
We find

Relationship between Maritime Services, technical services and product specifications

Maritime Services



Technical Services



Data Models



G1128

The e-navigation "building blocks" (how to deliver S-100 data)

Initial description of maritime services **in the context of e-navigation** (IMO MSC.1/Circ. 1610)

Guidance on the definition and harmonization of the format and structure of
maritime services **in the context of e-navigation** (IMO Resolution MSC.467(101))

The specification of e-navigation technical services (IALA G1128)

IHO Universal Hydrographic Data Model (IHO S-100)

Unique identifiers for maritime resources (MRN) (IALA G1143)

Web Service Based S-100 Data Exchange (IALA G1157)

Secure exchange and communication of S-100 based products (SECOM) (IEC 63173-2)
(a link to the ECDIS)

So - do we need anything more?

Well, in principle no - BUT

When we have all these wonderful harmonised services -
everyone can exchange any data with everyone

Anyone (evil eve) could for instance provide a VTS technical service of navigational warning

We don't want that, so we want

Authentication

And integrity and sometimes authorisation and confidentiality

i.e. elements of cybersecurity

Furthermore

When delivering services in the internet jungle

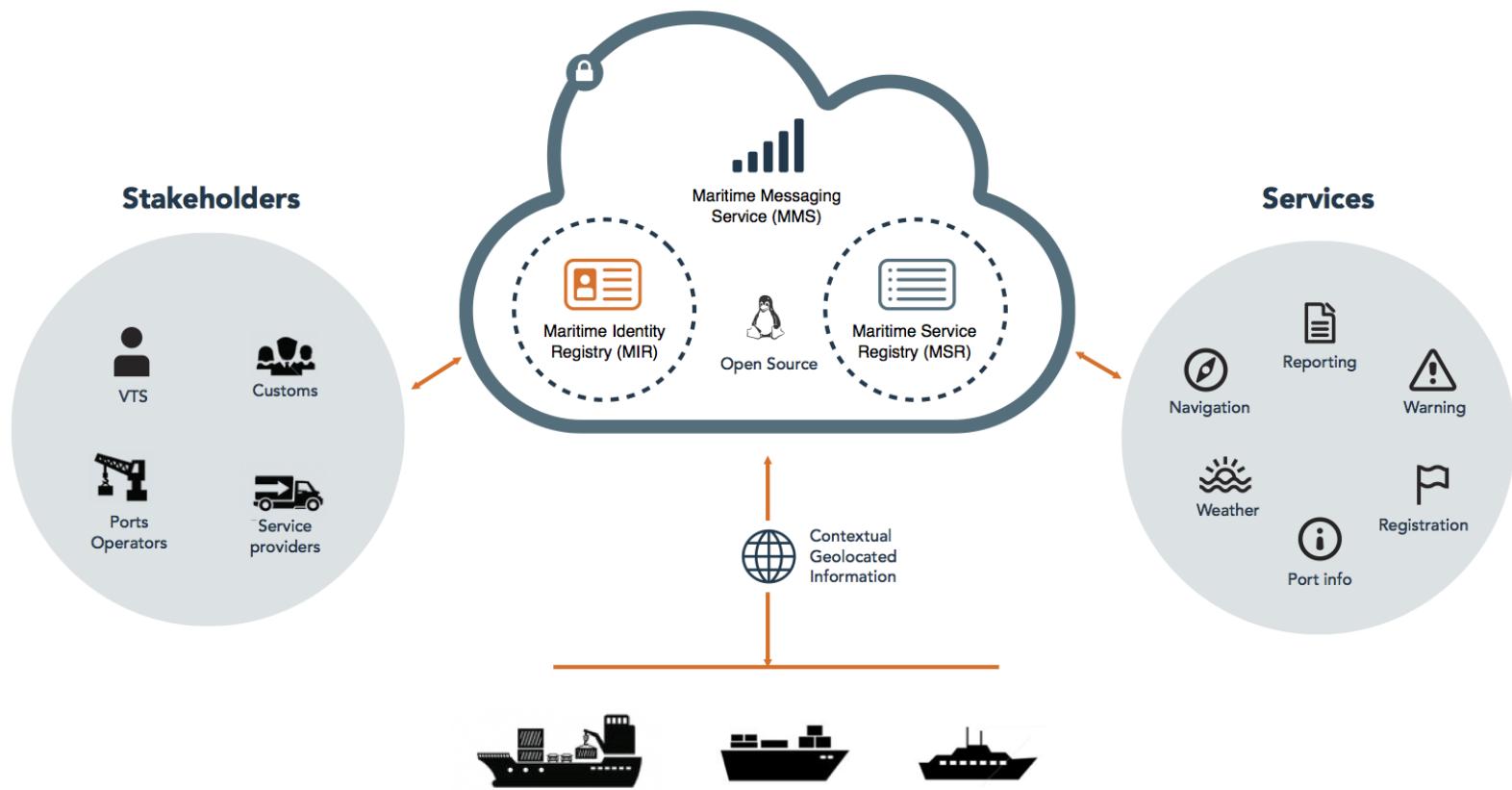
Service discoverability becomes an issue - a mechanism to reliably search for and discover services are needed (google is not the answer)

IALA recently published a new guideline - which described the need for platforms(s) providing such features:

Guideline on platforms to support the provision of maritime services
in the context of e-navigation (G1161)

I.e. a new "building block" for e-navigation! And the answer (could be)...

THE MARITIME CONNECTIVITY PLATFORM





MIR - Maritime Identity Registry

Contains identities for users, ships, devices...



Using unique identifiers (MRN - Maritime Resource Name)

Facilitates standardised single login to access services (OpenID Connect)

Facilitates standardised secure machine to machine communication (X.509 certificates)

Facilitates security; confidentiality, integrity & authenticity



MSR; Maritime Service Registry



Contains service specification on different levels (G1128)

- Service specification (data model: S-100)

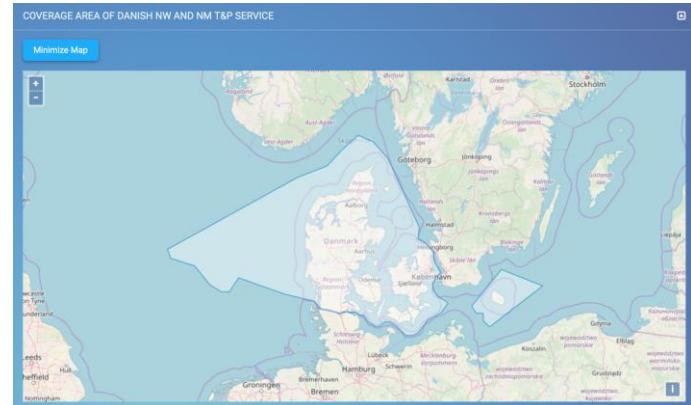
- Service design

- Service instance

Searchable for endpoint to services

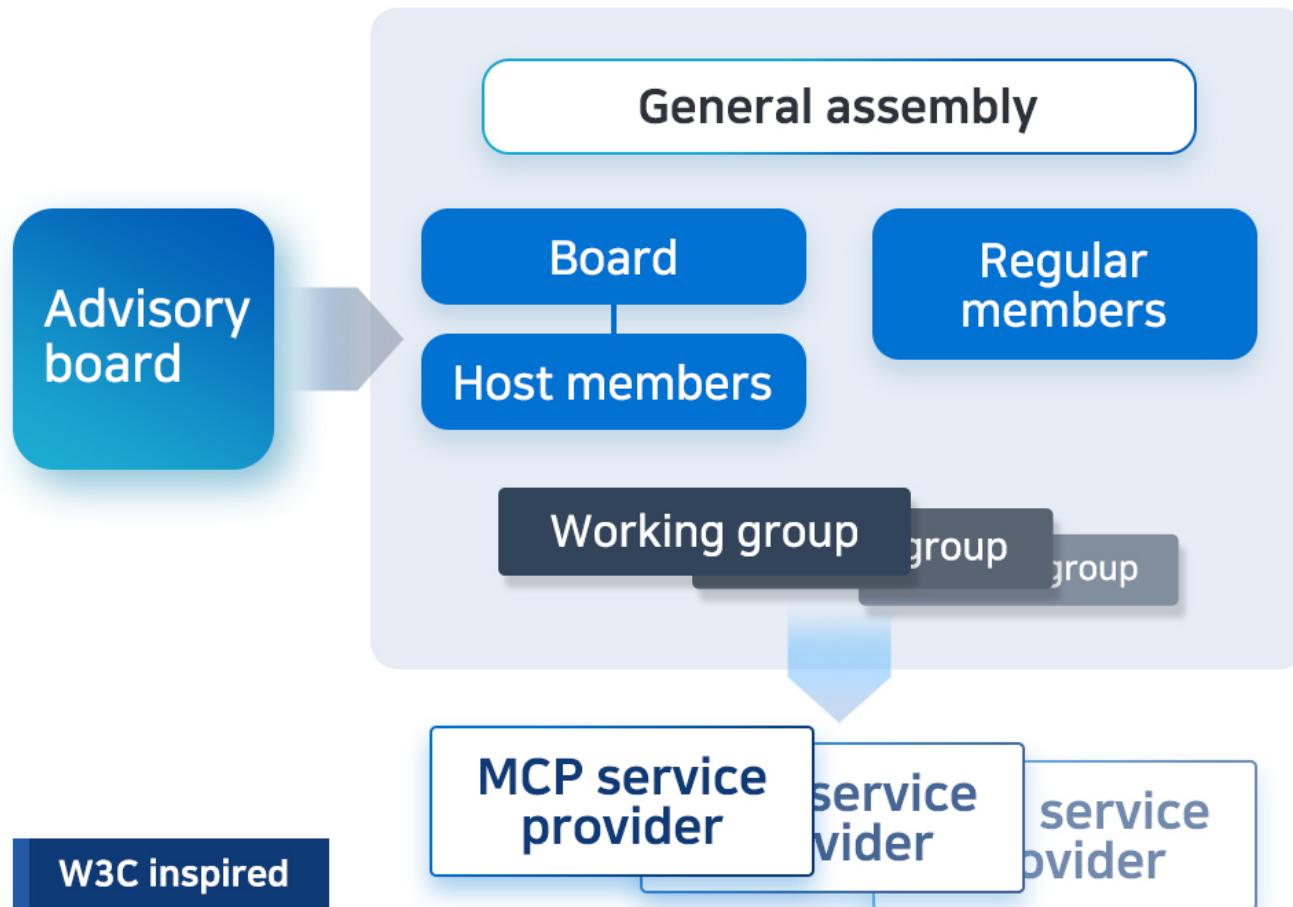
Criteria: keywords, geographic coverage, etc

Endorsement of services



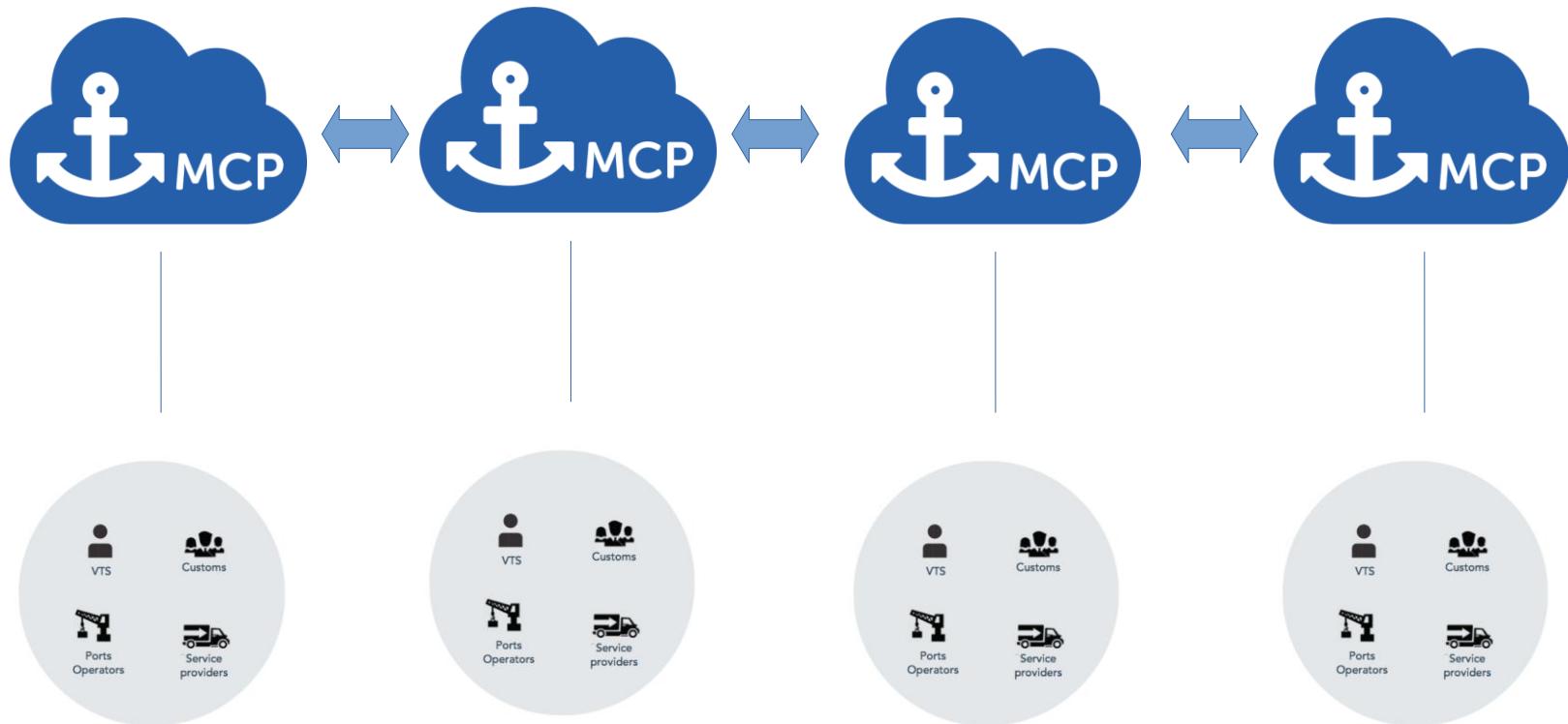


Maritime Connectivity platform Consortium





Multiple MCP service providers



i.e. several HARMONISED platforms or one decentralised platform

MCC members



Hosts

DLR (DE)
RISE (SE)
UCPH (DK)
KRISO (KR)
GLA (UK,IE)

Members

Bergman Marine (DE) IALA
VTS Finland (FI) CIRM
P3KI (DE) IHO
Vissim (NO)
Iridium (US)
National Technical University of Athens (GR)
Australian Maritime Safety Authority (AU)
SeaTopic (FR)
MarineFields (CY)
Navelink (SE)
Sternula (DK)
Sitronics (RU)
Italian Hydrographic Institute (IT)
GMT (KR)
Neonex (KR)

Observers

MOF (KR)
SMA (SE)
DMA (DK)

Members

DFDS (DK)
SSPA (SE)
Fraunhofer (DE)
Frequentis (AT)



Status

MCP

MIR final

MSR prototype

Technical services

Navigational Warnings (S-124) IHO

AtoN information (S-125, S-201) IALA (IHO)

Voyage information / STM / Navelink (S-421)

Harbour infrastructure (S-131) IHO-Singapore lab ?

VTS services ?



More info and access to the testbed at

www.maritimeconnectivity.net