

Standardisation of Radar, Racon and ERPS

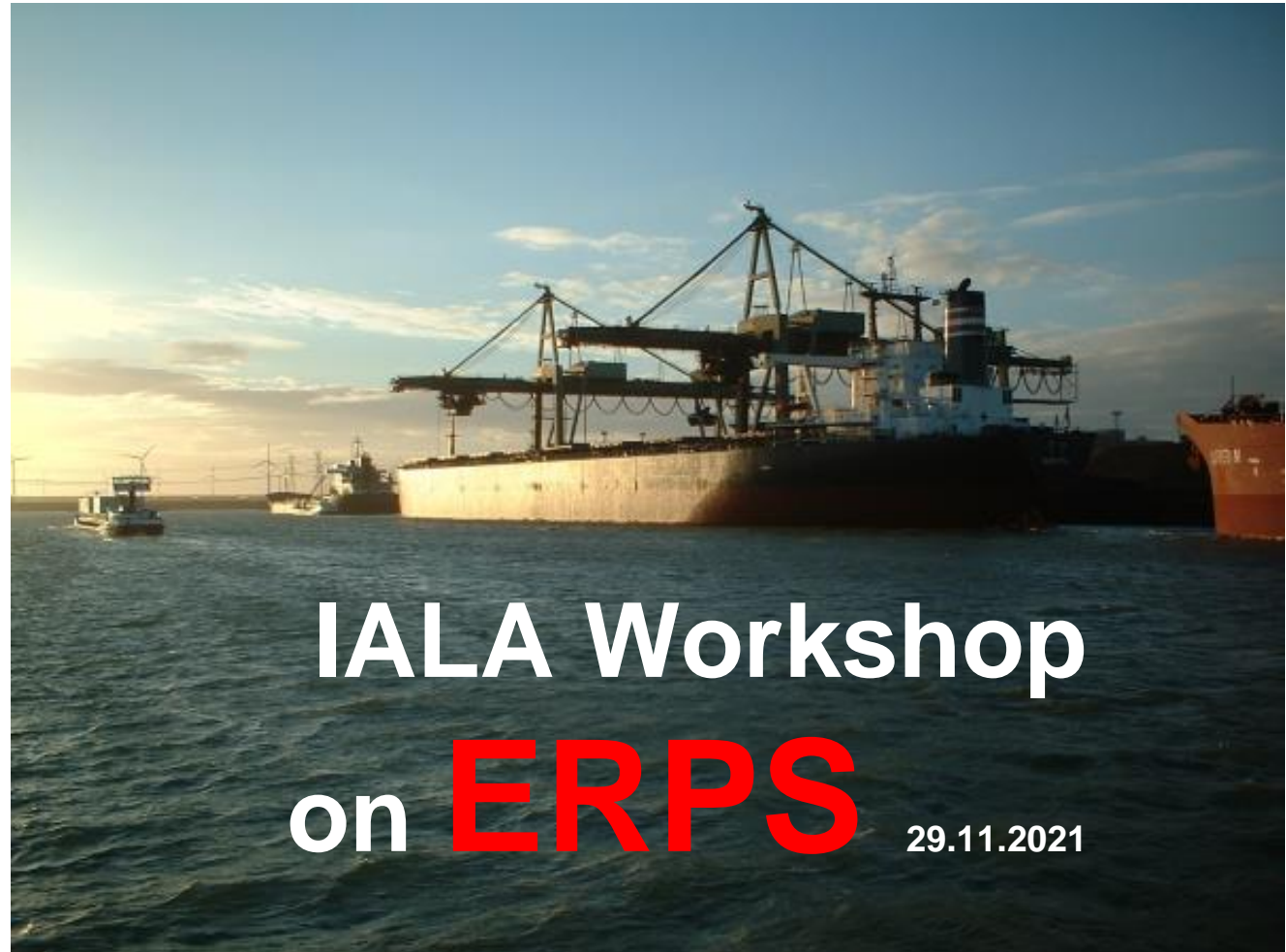
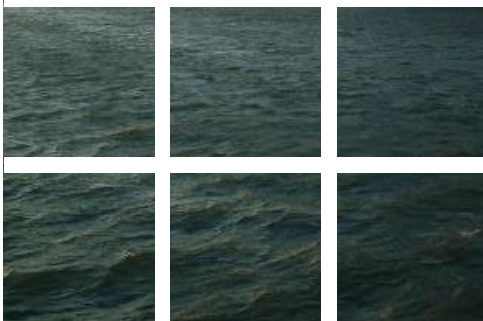


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Generaldirektion

Wasserstraßen und Schifffahrt

Dezernat S33



IALA Workshop
on **ERPS**

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Need for Standardisation



Why is Standardisation important?

Standardisation of devices ensure

- interoperability
- minimum requirements / performance
- save operation
- secure operation
- protection of privacy
- coexistence with other devices of the same service
- coexistence with devices of other services
- warranty issues
- legal certainty for manufacturers
- many more...

Downsides of Standardisation I

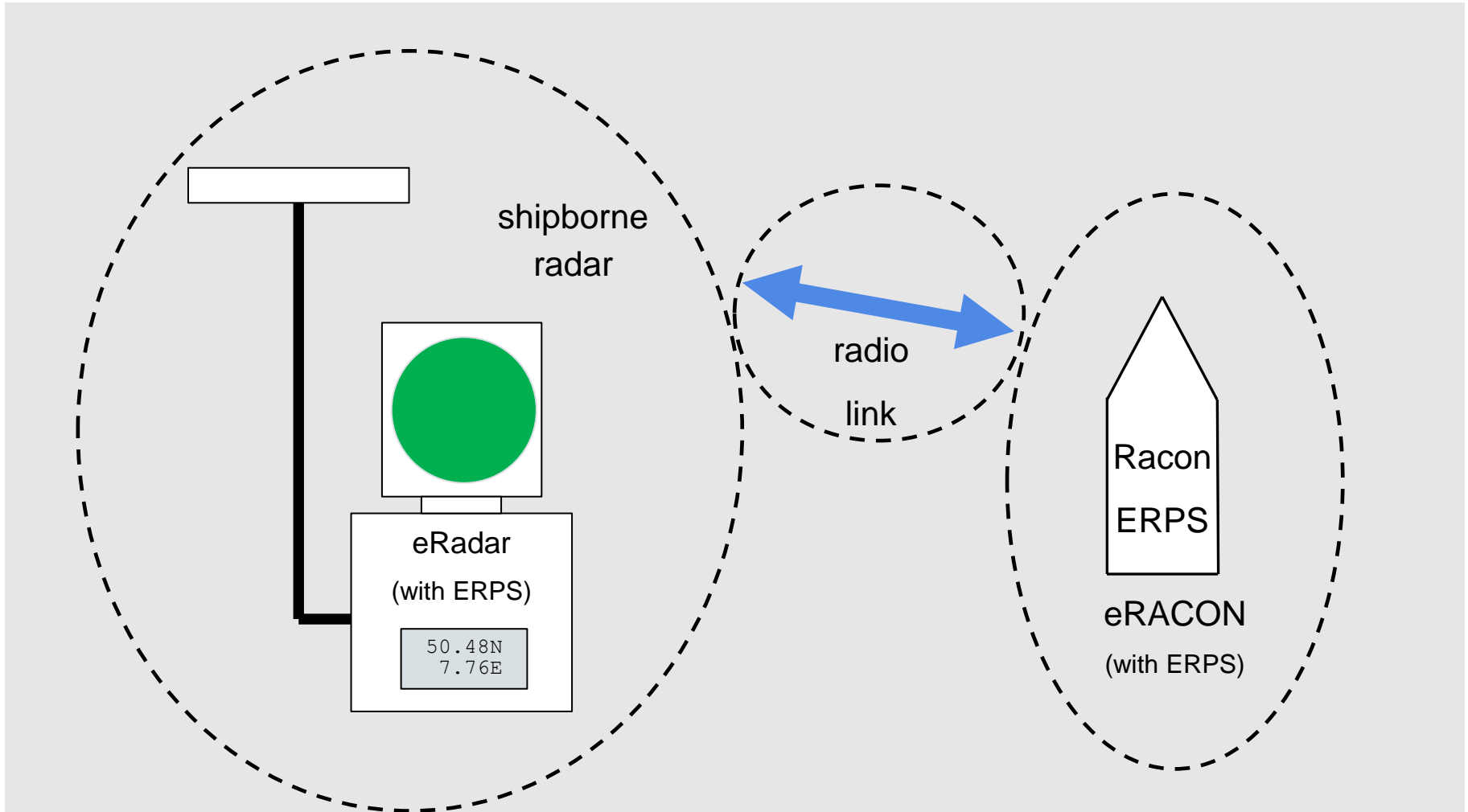
- The development of standards
 - can be time-consuming,
 - can be expensive,
 - is sometimes tricky and difficult!
- The compliance process of a device with a standard
 - can be time-consuming,
 - can be expensive,
 - assumes appropriate process structures in the company,
 - is a repeating task,
 - might be void after modifications to the device.



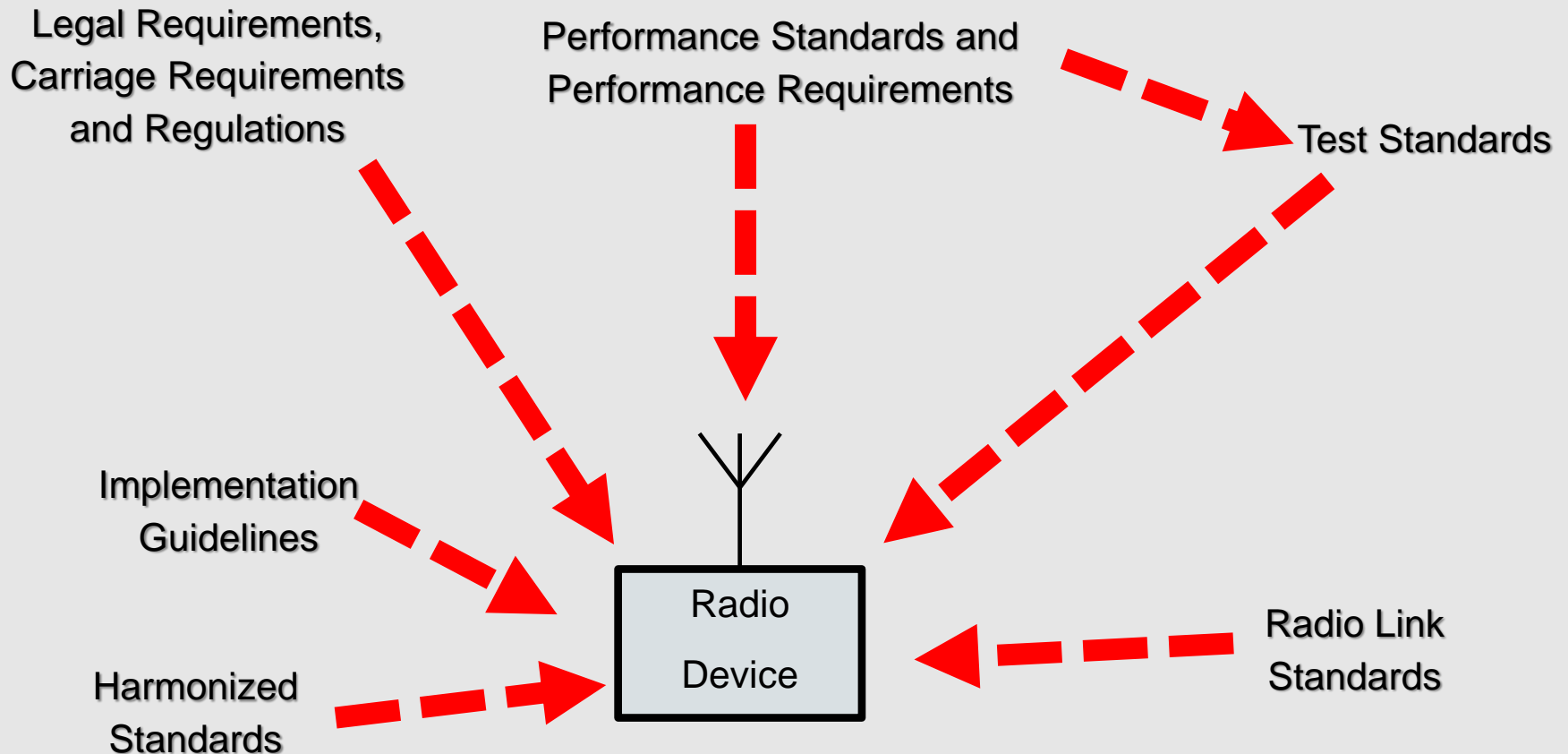
Downsides of Standardisation II

- The standardization of a product
 - may limit the diversity of implementation options,
 - may hamper the innovation.

Scope of ERPS regarding Standardisation



Different Types of Standards





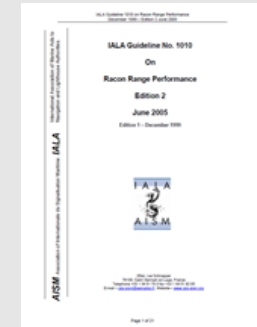
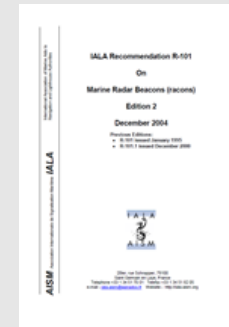
International Maritime Organisation (IMO)



- IMO issues global **Regulations and Carriage Requirements** for onboard devices
e.g. SOLAS Chapter V: Safety of navigation
- IMO issues global **Performance Requirements** for services
e.g. Resolution A.615(15) Radar Beacons and Transponders
Resolution A.222(VII) Performance Standards for Navigational Radar Equipment (amended by A.477)
Resolution A.278(VIII) Supplement to the Recommendation on Performance Standards for Navigational Radar Equipment (A.222(VII)) Symbols for Controls on Marine Navigational Radar Equipment
Resolution A.477(XII) Performance Standards for Radar Equipment (Revised by MSC.192(79), for older radars only)
- IMO issues global **Performance Standards**, incl. **Minimum Requirements** for marine devices
e.g. Resolution MSC.192(79): Adoption of the revised performance standards for radar equipment
Resolution MSC.191(79): Performance standards for the presentation of information related information on shipborne navigational displays



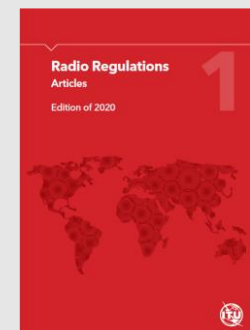
International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)



- IALA issues global *Standards* for marine aids to navigations
- IALA issues global *Recommendations* for marine aids to navigations
e.g. IALA Recommendation R-101 On Marine Radar Beacons (racons)
- IALA issues global *Guidelines* for marine aids to navigations
e.g. IALA Guideline No. 1010 On Racon Range Performance



International Telecommunication Union (ITU)



- ITU issues global *Radio Link Standards*

- e.g. Recommendation ITU-R M.824-4: Technical parameters of radar beacons

- Recommendation ITU-R M.1460-2: Technical and operational characteristics and protection criteria of radiodetermination radars in the frequency band 2 900-3 100 MHz

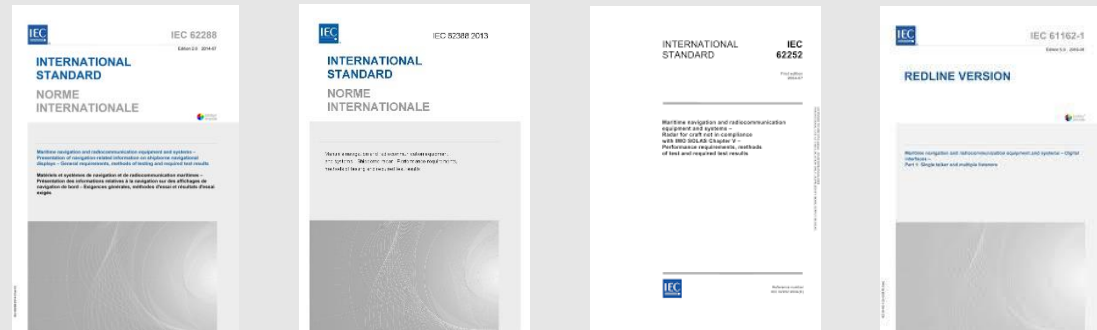
- Recommendation ITU-R M.1796-2: Characteristics of and protection criteria for terrestrial radars operating in the radiodetermination service in the frequency band 8 500-10 680 MHz

- ITU issues the *Radio Regulations (RR)*

- i.e. Radio Regulations Articles Edition of 2020



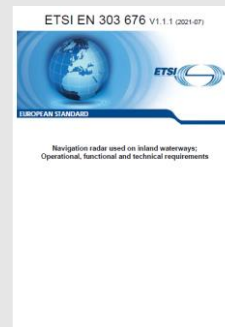
International Electrotechnical Commission (IEC)



- IEC issues global *Test Standards* for devices
 - e.g. IEC 62288: Presentation of navigation related information on shipborne navigational displays – General requirements, methods of testing and required test results
 - IEC 62388: Shipborne radar – Performance requirements, methods of testing and required test results
 - IEC 62252: Radar for craft not in compliance with IMO SOLAS Chapter V – Performance requirements, methods of test and required test results
- IEC defines global *Digital Interfaces* for devices
 - e.g. IEC 61162: Digital Interfaces



European Telecommunications Standards Institute (ETSI)



- ETSI issues regional *European Standards (EN)*
e.g. ETSI EN 303 676: Navigation radar used on inland waterways; Operational, functional and technical requirements
- ETSI issues regional *Harmonised Standards (HS)*
e.g. ETSI EN 302 248: Navigational radar equipment for use on non-SOLAS vessels;
Harmonised Standard for access to radio spectrum; Part 2: Solid State Radars
ETSI EN 302 194: Navigational radars used on inland waterways;
Harmonised Standard for access to radio spectrum; Part 1: Magnetron Radars

Standardisation Bodies



European Committee for Electrotechnical Standardization (CENELEC)



Institute of Electrical and Electronics Engineers (IEEE)



Radio Technical Commission for Maritime Services (RTCM)



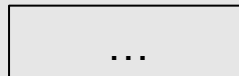
International Hydrographic Organization (IHO)



European Committee for drawing up Standards in the field of Inland Navigation (CESNI)









Deutsche Kommission Elektrotechnik Elektronik Informationstechnik (DKE)



more regional and national bodies

Standardisation Bodies



	Global	Regional
Legal Requirements, Regulations		
Performance Standards Performance Requirements		
Test Standards		
Radio Link Standard		
Implementation Guidelines		
Harmonized Standards		

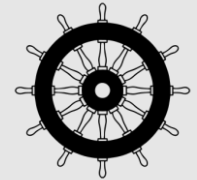


European Commission (EC)

Marine Equipment

that is addressed by international requirements are implemented in the EU by Directive 2014/90/EU (MED - Marine Equipment Directive)

→ Notified Body tests and certifies a device for compliance with Performance Standard, applying the appropriate Test Standard



All other Radio Equipment

have to be in compliance with

Directive 2014/53/EU (RED – Radio Equipment Directive)

→ Self declaration by manufacturer on basis of Harmonised Standards

→ If no Harmonised Standard is available → Notified Body

→ RED comprises „EMC“, „efficient use of spectrum“, „cyber security“, „privacy“ etc.



Summary



	RACON	Radar	eRACON (ERPS)	eRadar (ERPS)
Legal Requirements, Regulations	national	IMO SOLAS V		
Performance Standards Performance Requirements	IMO A.615(15)	IMO A.222(VII) IMO A.278(VIII) IMO A.477(XII) IMO MSC.192(79) IMO MSC.191(79) (ETSI EN 303 676)		
Test Standards	IEC 62388 IEC 62288 IEC 62252	IEC 62388 IEC 62288 IEC 62252 (ETSI EN 303 676)	TBD	
Radio Link Standard	ITU-R M.824-4	ITU-R M.1796-2 (ITU-R M.1460-2)		
Implementation Guidelines	IALA R-101 IALA GI 1010	?		
Harmonized Standards	?	ETSI EN 302 248 (ETSI EN 302 194)		

Wir machen Schifffahrt möglich.

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Thank you for your attention

