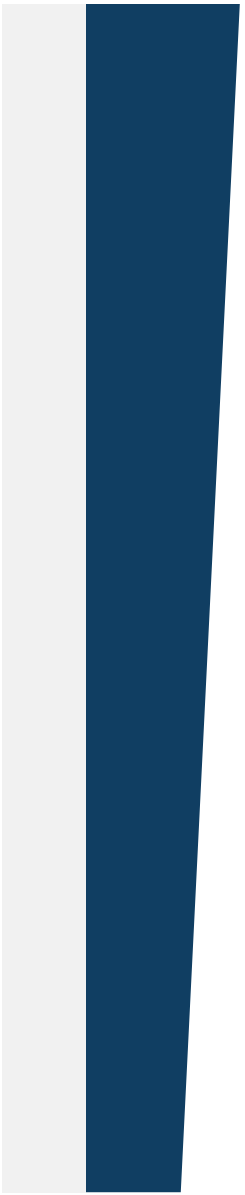
22nd Conference Mediterranean and Black Seas Hydrographic Commission, MBSHC22

Validation of S-100-based products

SevenCs Hamburg

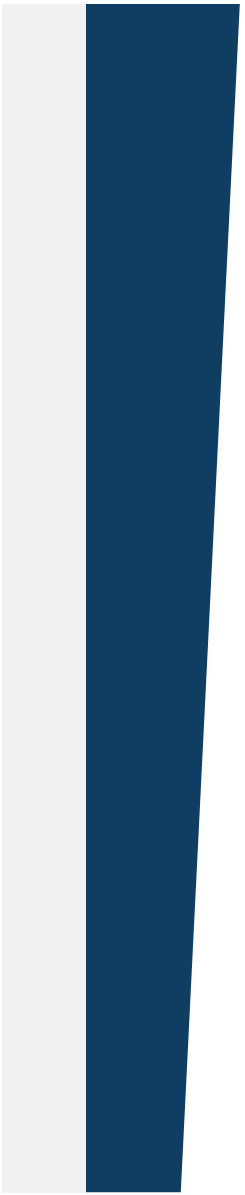
Progress of S-100 development

- Good progress during the last couple of years
- Maturity level of S-100 products has improved significantly
- Some products are already tested in operational distribution services



Status of S-100 Product Specifications

- Current S-100 Product Specifications focus on:
  - Content, encoding structure
  - Rules of portrayal
  - Metadata
  - etc.
- Validation rules are supposed to be included
  - Not available yet, specs have placeholders only
  - Dedicated Sub-Working Groups are dealing with it
  - A long way to go

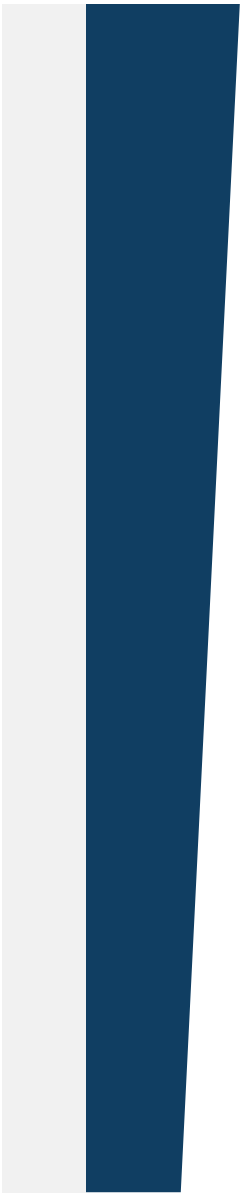


IHO S-100 Implementation Roadmap

- Special focus on the following products:

S-101	Electronic Navigational Chart (ENC)	mandated by IMO
S-102	Bathymetric Surface	optional
S-104	Water Level Information for Surface Navigation	optional
S-111	Surface Currents	optional
S-122	Marine Protected Areas	optional
S-123	Radio Services	optional
S-124	Navigational warnings	optional
S-129	Under Keel Clearance Management	optional

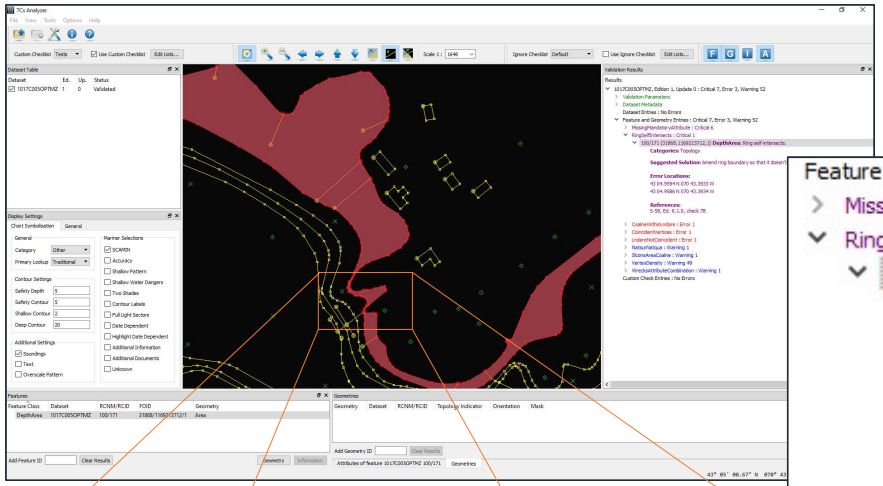
- New validation rules will be required
- For S-101 we can adopt certain rules from S-58
- For other products we must start from scratch

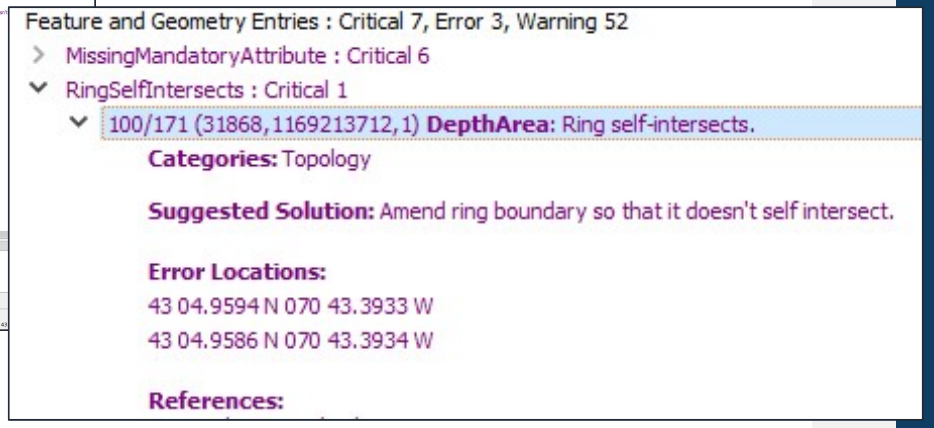


SevenCs role and activities

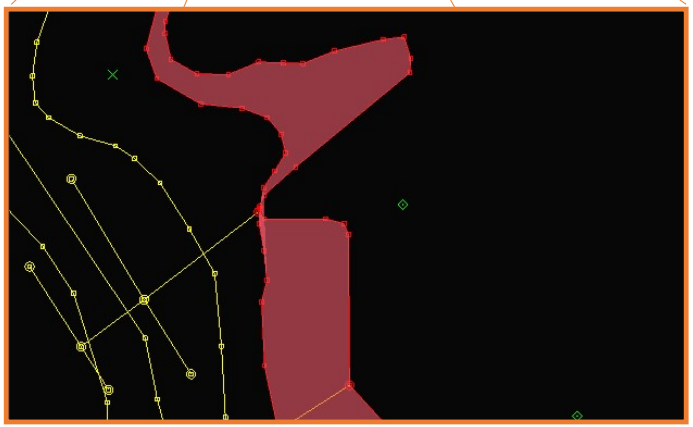
- Contribute to IHO sub-working groups dealing with the development of S-10x validation rules
- Provide validation software for test-beds
- Extend validation software to test new validation rules
- Implementation of dedicated data conversion checks:
  - on S-57 side, prior to conversion
  - resulting S-101 data

S-101 Validation – Example in 7Cs Analyzer

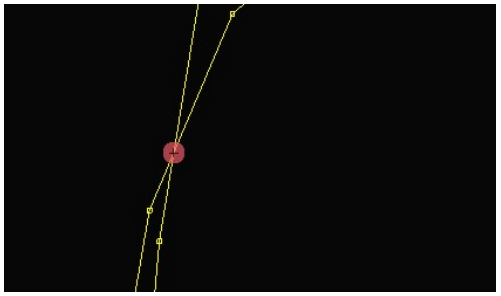




S-101 specific error messages

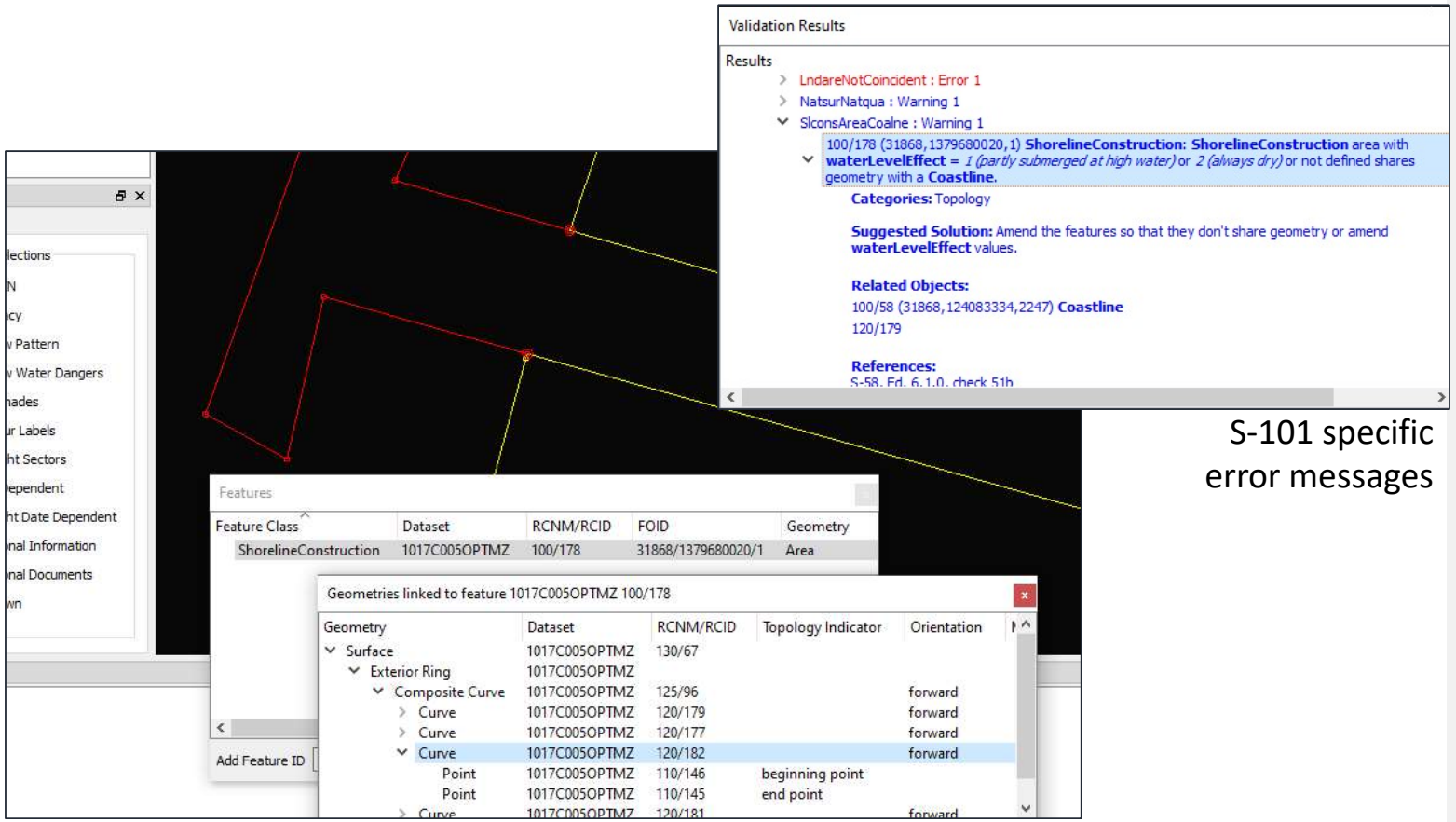


highlighting the affected S-101 feature



highlighting the exact location of the error

S-101 Validation – Example in 7Cs Analyzer

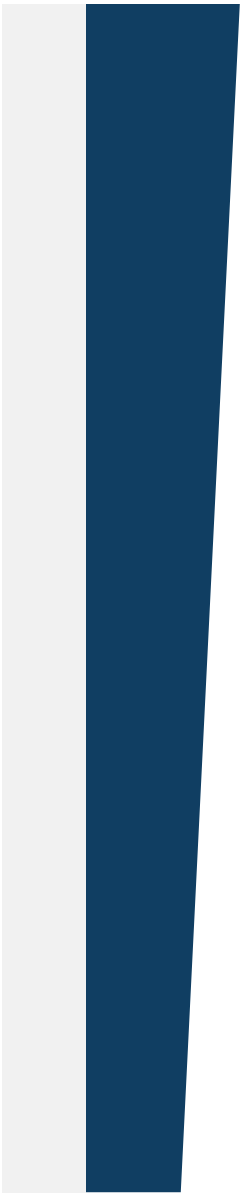


S-101 specific error messages

Feature and Geometry relations of erroneus S-101 *ShorlineConstruction for in-depths analysis*

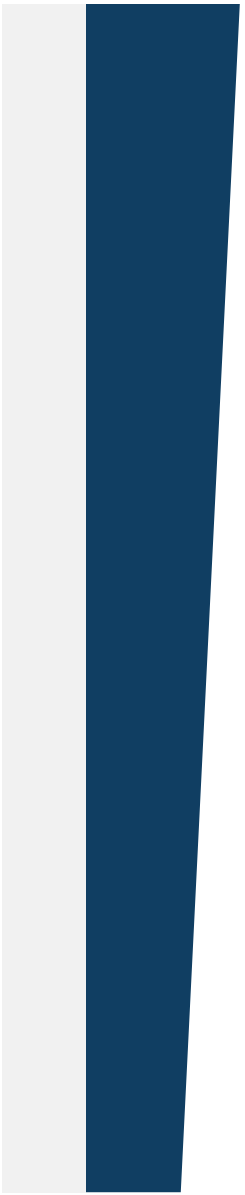
S-100 key aspect is interoperability

- Today ECDIS uses a single S-57 product only
- Proprietary overlays are vendor-specific
- S-100 ECDIS will support a variety of products
- Use of multiple products simultaneously
- Special interoperability rules are required
- => all this will have an impact on data validation!



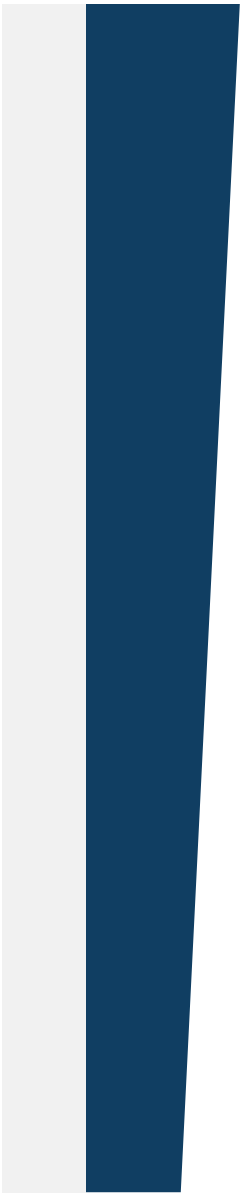
Levels of S-100 data validation

- Generic S-100 checks
  - ISO 8211-related (e.g. record count, dataset structure)
  - HDF 5-related (e.g. general structure, data types)
  - Feature Catalogue (e.g. prohibited features)
  - …
- Validation checks at single-product level
  - Checks specific to individual products (mandatory features, illegal geometric relationships of features, …)



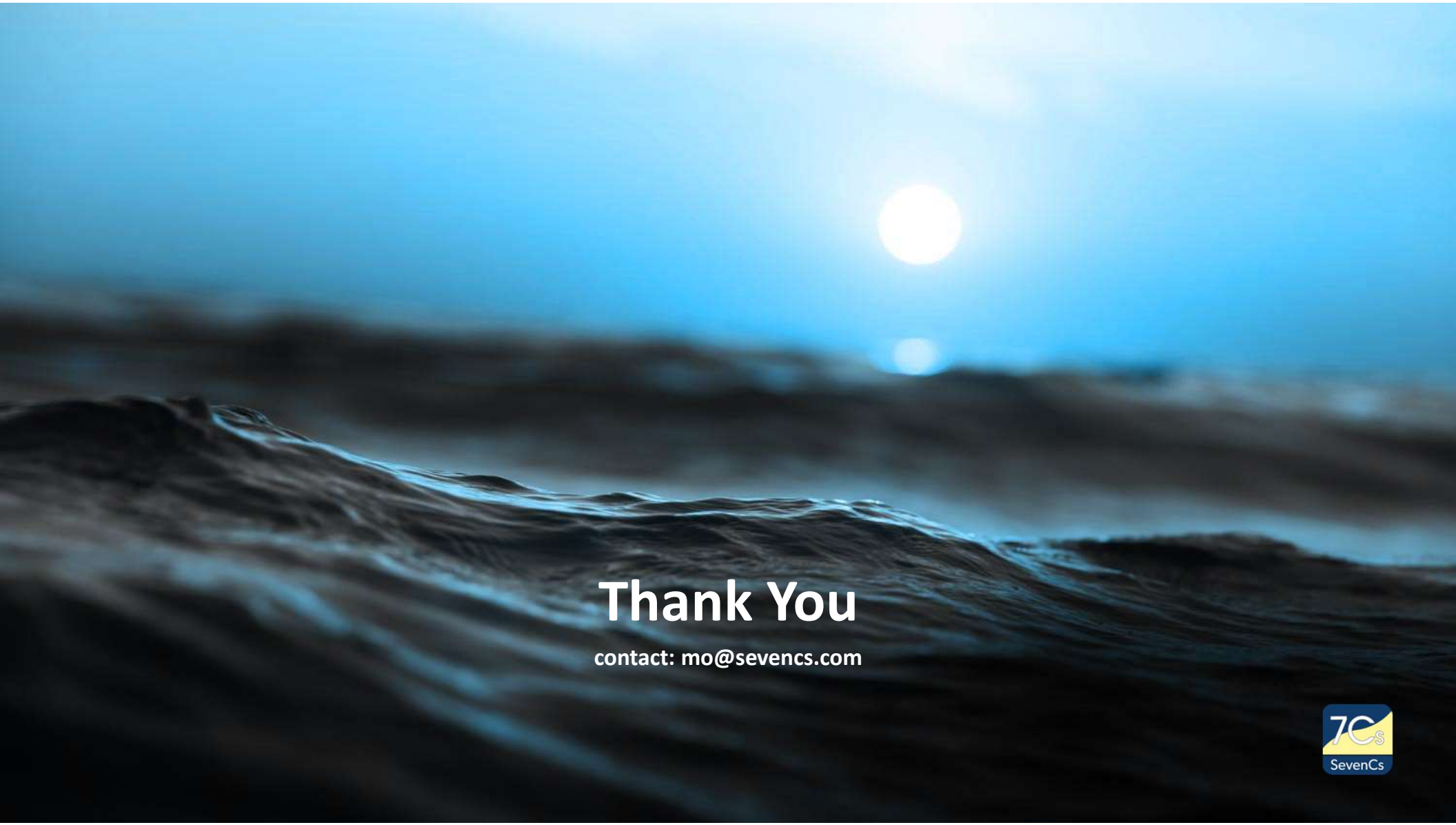
Challenges of S-100 data validation

- Sheer number of new checks that will be required is a challenge in itself
- New types of checks due to interoperability
  - Consistency across products (e.g. ENC vs. S-102)
  - Finding any contradictory information
  - Detecting redundant information
- Creating suitable test datasets
  - test validation checks at single-product level
  - test of interoperability checks
  - may demand greater effort than defining the checks



Our conclusion from industry perspective

- With more and more S-100 products in place, validation will become a much more complex task than it used to be
- Independent data validation must transform from being an isolated procedure into being an integrated process
- We want to contribute and support this process


Thank You
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