Data collection and Interpretation
GSR's perspective

▼

13/08/2019
Tarawa, Kiribati Islands
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GSR
Global Sea Mineral Resources

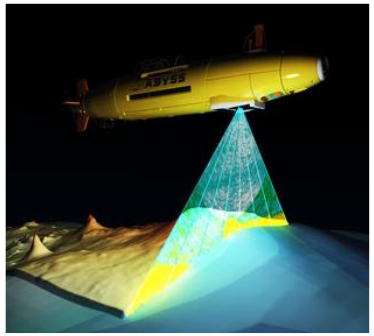
1 Complexity of data

- **Combine as much as possible**
  - Plan | Prepare campaign
    - What are the objective ?
    - What equipment do we need?
    - What is the campaign schedule?
  - Plan | Prepare sampling scheme (every sample is required !)
    - For which objective ?
    - What precaution needs to be taken?
    - What post processing needs to be ready on deck ?
  - Ship time = expensive
    - Optimize
    - Combine samples

Plan for the worst,
Hope for the best !

GSR – Data collection and interpretation | Data sources

Boxcore

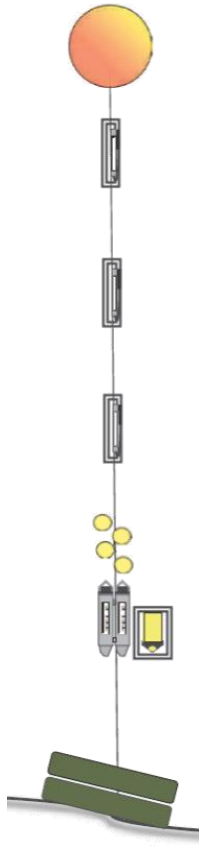


AUV

ROV

SyPRID

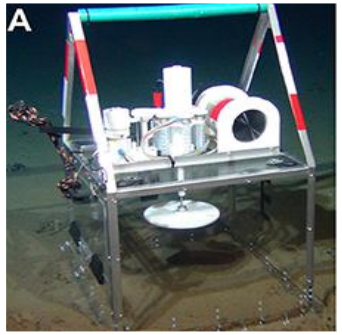
Pushcores



Deep sea Moorings

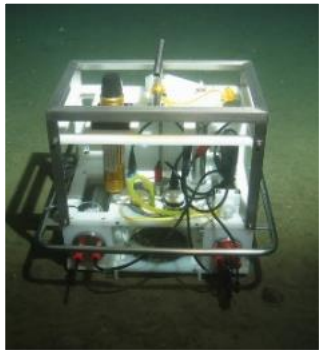
Multicore

Water samplers



CUBE

Landers



Benthic chambers

Environmental sample data

Environmental sensor data

Lab based data

Technical sensor data

Historical data

Modelling

Expert

Reviewers

Environmental sensor data

Environmental sample data

Engineers

Operators

Consultants

Lab based data

Technical sensor data

Surveyors

Historical data

Decision makers

Chemists

Geologists

Modelling

Biologists

Expert

Instant spatial data

Reviewers

Derived data

Environmental sensor data

Environmental sample data

Engineers

In situ data

Located time series

Operators

Consultants

Lab based data

Pictures, videos

Model data

Technical sensor data

Surveyors

Historical data

Decision makers

Chemists

Raw data

Points, line, rasters

Modelling

Biologists

Geologists

Expert

Instant spatial data

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Database(s) management !

Operators

Consultants

Lab based data

Pictures, videos

Model data

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Decision makers

Chemists

Raw data

Points, line, rasters

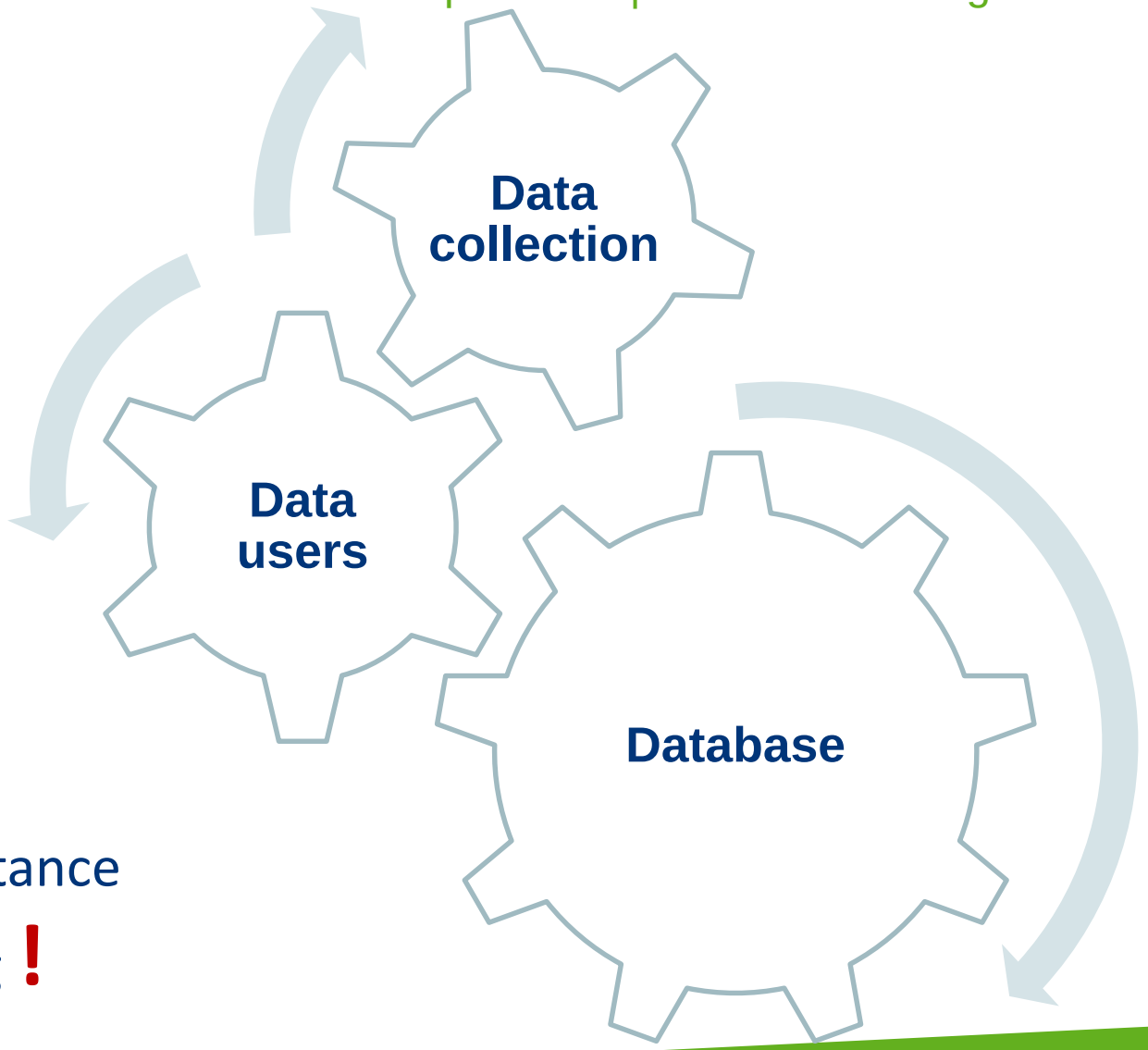
Modelling

Biologists

Geologists

2 Database(s) management

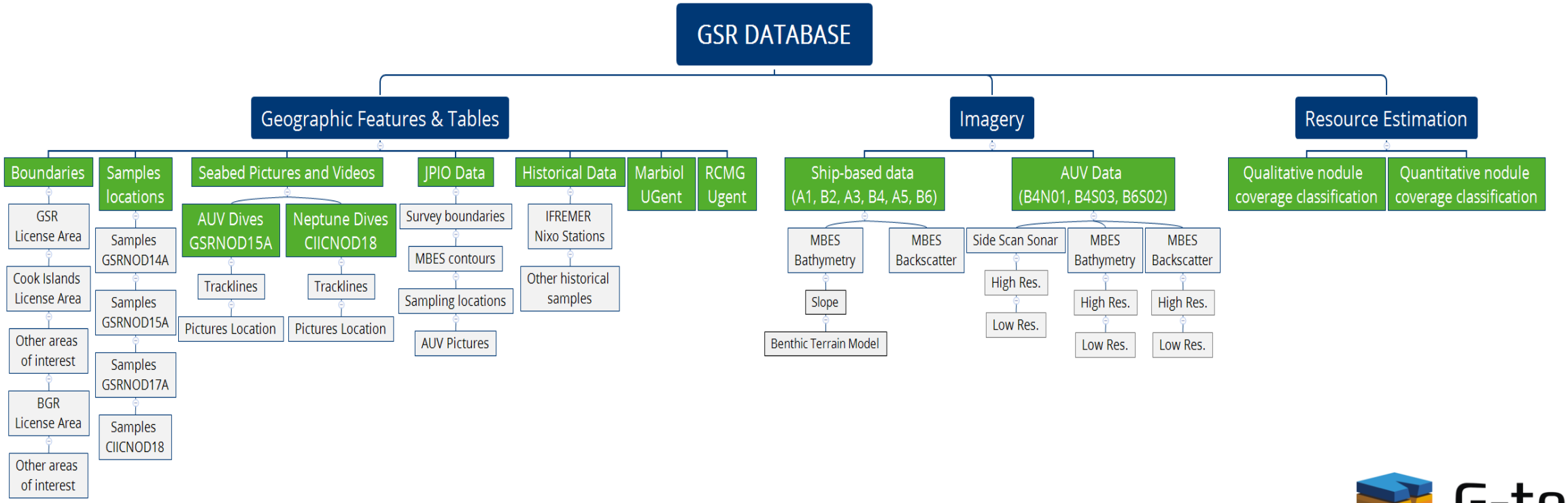
- **Database**
  - Needs to be user – friendly
  - Compact (redundancy)
  - Complete (accuracy & integrity)
  - Accommodating
  - Evolving in time
  - Easy to access



Crucial importance

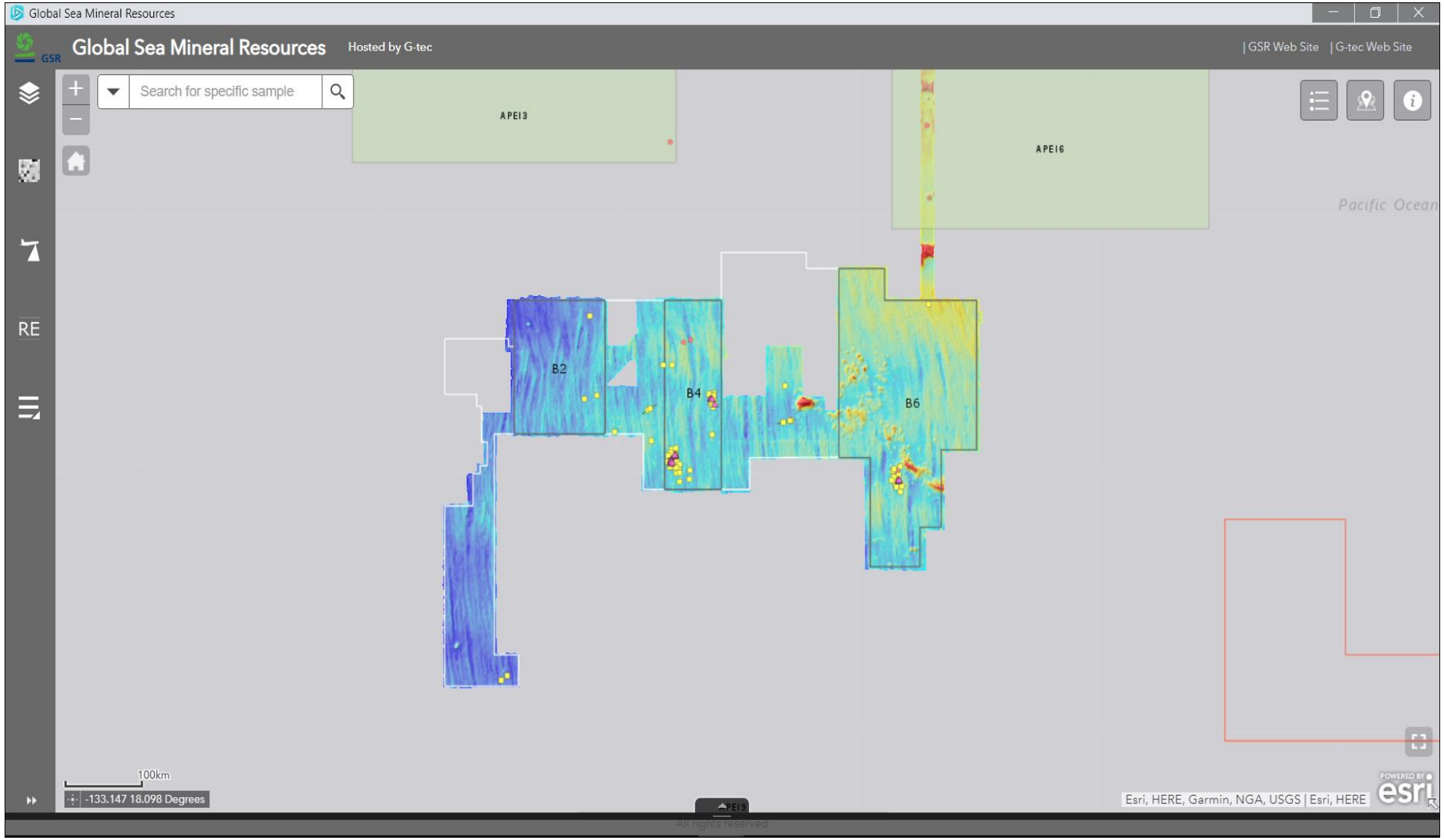
of referencing !

GSR – Data collection and interpretation | Database management



G-tec
Experts in Geo-Engineering

GSR – Data collection and interpretation | Database management



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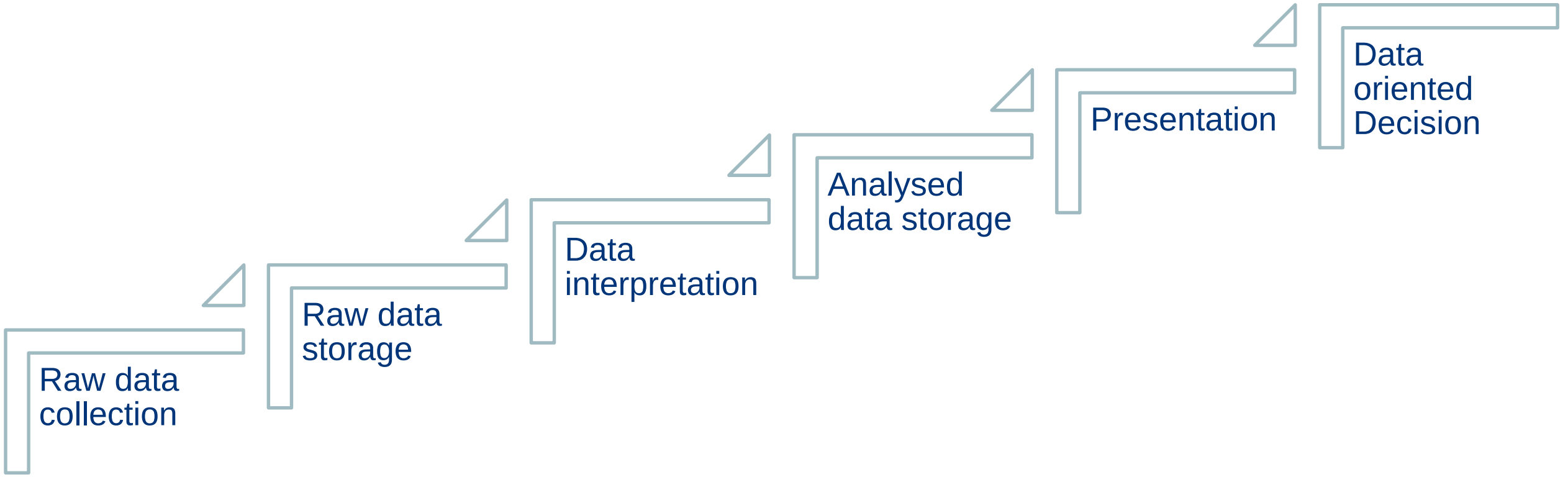
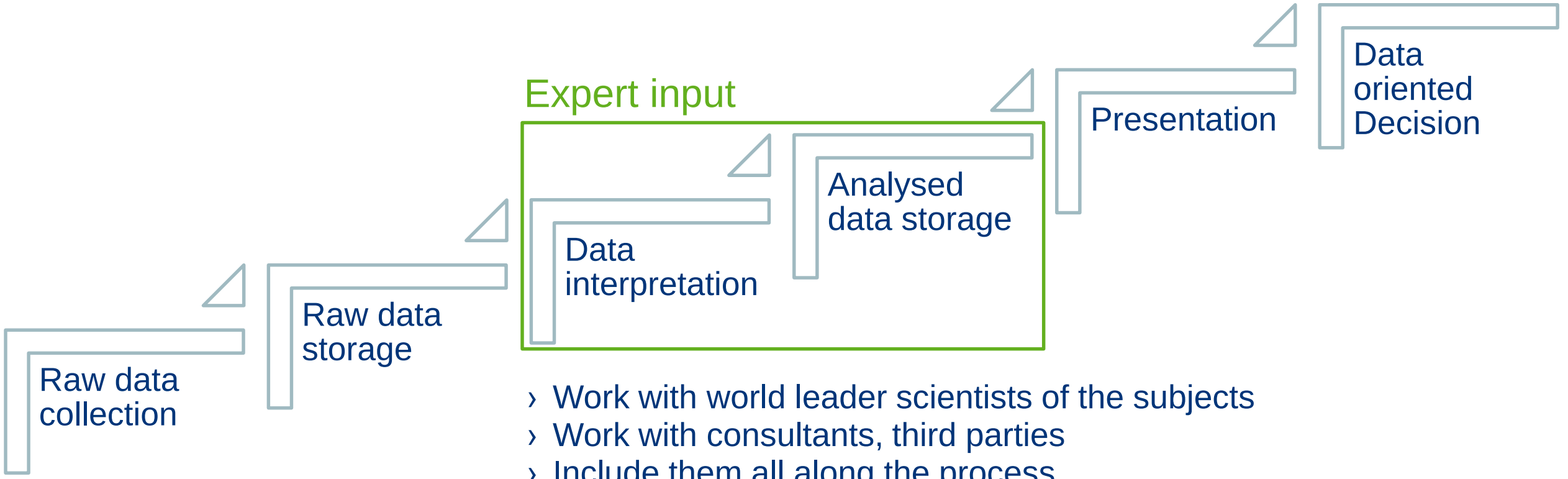
Experts in Geo-Engineering

3 Data interpretation

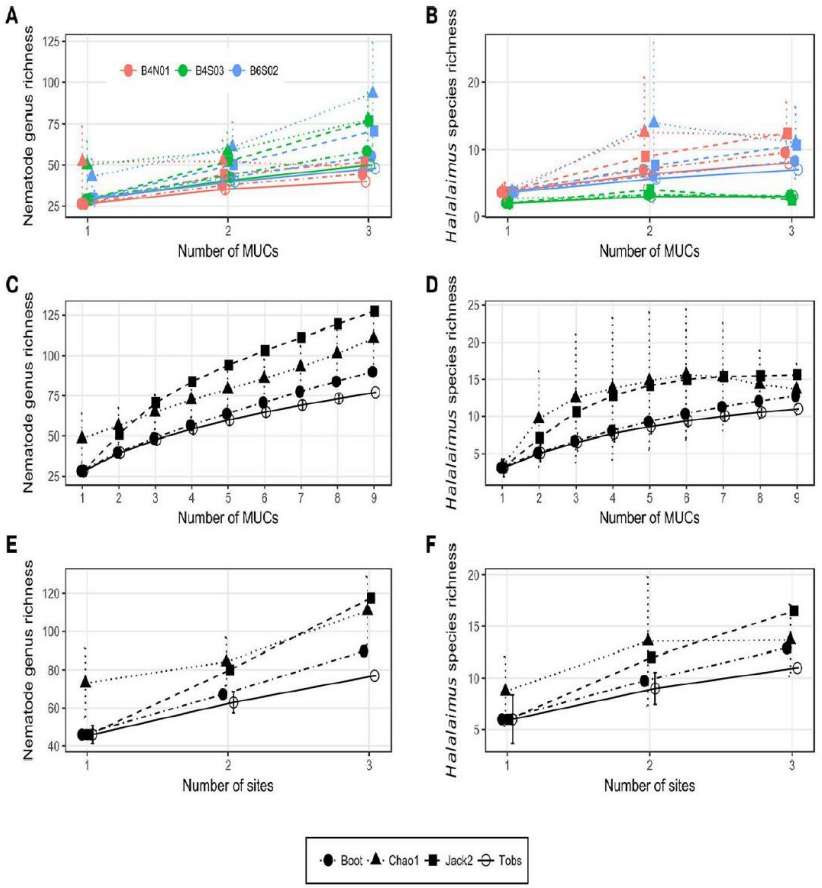

Raw data collection
Raw data storage
Data interpretation
Analysed data storage
Presentation
Data oriented Decision



- Work with world leader scientists of the subjects
- Work with consultants, third parties
- Include them all along the process
- Publish results, to ensure larger agreement, comparison & transparency

- **Data Interpretation - working in a transparent manner**
  - Belgium level :
    - Universities : University of Ghent, University of Liège, University of Leuven
    - Institutes : RBINS, Flanders Hydraulic Research center, Flemish Institute for the Sea, ..
  - International level :
    - Universities : Massachusetts Institute for Technologies (MIT), Cambridge University, Bremen University, Scripps (USD), …
  - International collaboration in Publicly funded project :
    - Blue Mining, MIDAS, Blue Nodule, MiningImpact, MiningImpact 2, COMPASS, PLUMEX, …
    - Upcoming : ASSURE, DeepEST

GSR – Data collection and interpretation | Data interpretation



frontiers in Marine Science
ORIGINAL RESEARCH
published: 29 June 2017
doi: 10.3389/fmars.2017.00205

Limited Spatial and Temporal Variability in Meiofauna and Nematode Communities at Distant but Environmentally Similar Sites in an Area of Interest for Deep-Sea Mining

Ellen Pape, Tania N. Bezerra, Freija Hauquier and Ann Vanreusel*

frontiers in Marine Science
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published: 11 April 2017
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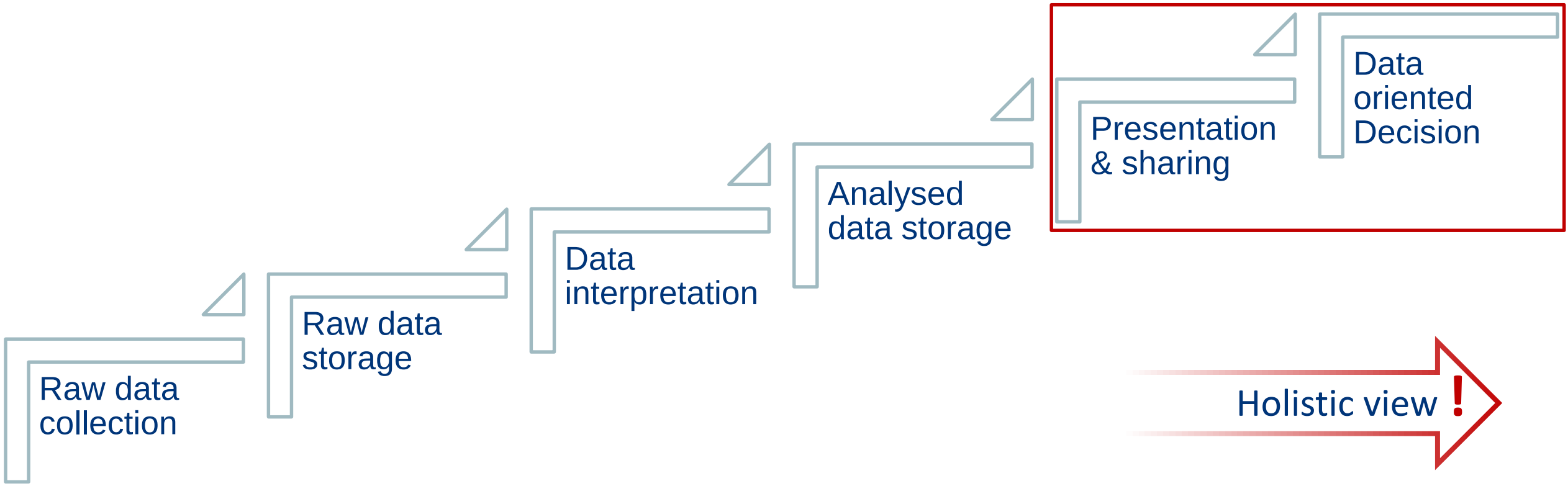
The Community Structure of Deep-Sea Macrofauna Associated with Polymetallic Nodules in the Eastern Part of the Clarion-Clipperton Fracture Zone

Bart De Smet[1], Ellen Pape[1], Torben Riehl[1,2], Paulo Bonifácio[3], Liesbet Colson[1] and Ann Vanreusel[1]*

FIGURE 5 | Nematode genus **(A,C,E)** and *Halalaimus* species **(B,D,F)** accumulation curves for **(A,B)** all MUCs taken per site, **(C,D)** all MUCs taken, and **(E,F)** all sites sampled during GSRNOD15A. Error bars denote standard deviations and are only provided for T_{obs} and Chao1 in the PRIMER v6 software. Boot, Bootstrap; Jack2, Jackknife 2; T_{obs}, observed taxon richness.


Raw data collection
Raw data storage
Data interpretation
Analysed data storage
Presentation & sharing
Data oriented Decision
Holistic view !


Thank you
Any Questions ?
HOW CAN THE WORLD MEET AN INCREASING METAL DEMAND, IN THE MOST ENVIRONMENTALLY RESPONSIBLE MANNER?
www.deme-group.com/GSR