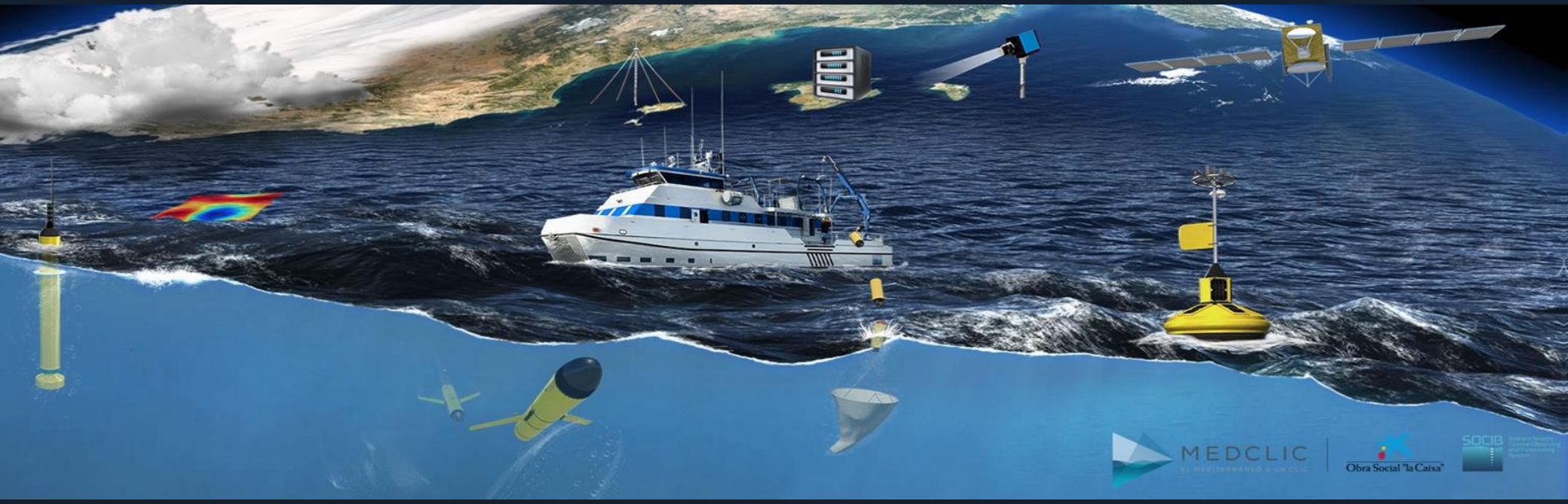
SOCIB Balearic Islands Coastal Observing and Forecasting System

Leveraging FAIR principles to enhance SOCIB corporate Data Management System



C. Muñoz, M. Charcos, S. Gómara, M. Gomila,
X. Notario, P. Rotllán, I. Ruíz, M.A. Rújula,
J.G. Fernández, J. Allen, J. Tintoré

IMDIS, Barcelona, 5-7/11/2018

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GLOBAL

EUROPEAN

NATIONAL

LOCAL

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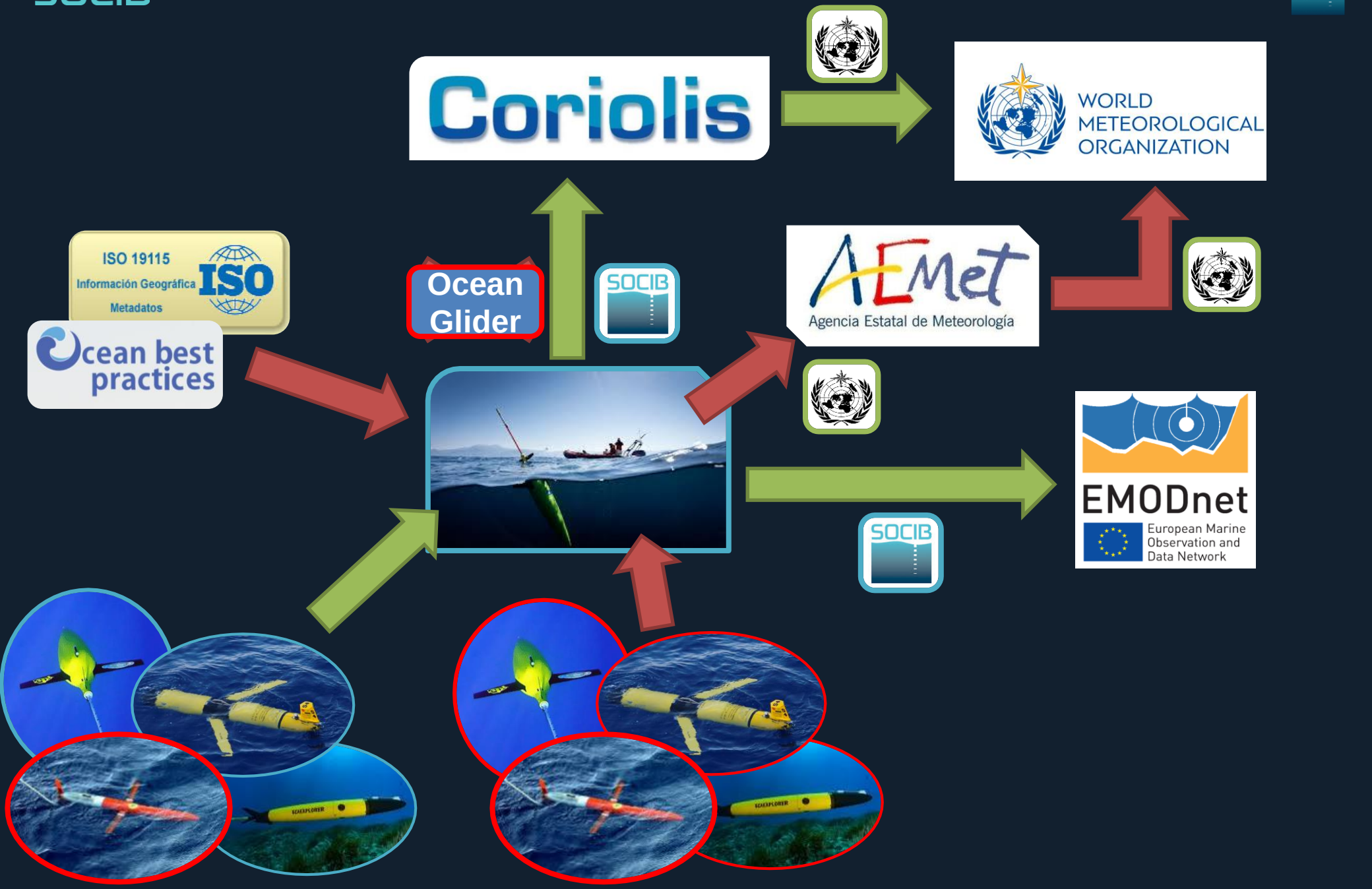
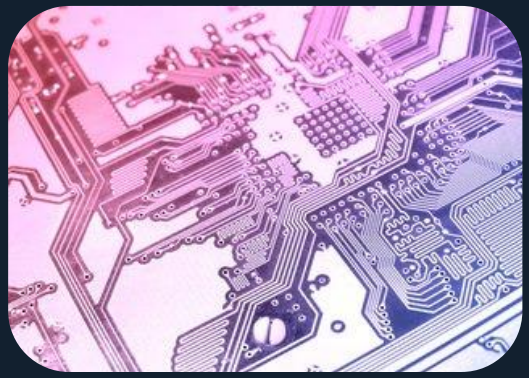

Coriolis
WORLD METEOROLOGICAL ORGANIZATION
ISO 19115
Información Geográfica
Metadatos
ISO
Ocean best practices
Ocean Glider
SOCIB
AEMet
Agencia Estatal de Meteorología
SOCIB
SOCIB
EMODnet
European Marine Observation and Data Network

SOCIB Drivers

Science Priorities



Technology Development

Society Needs

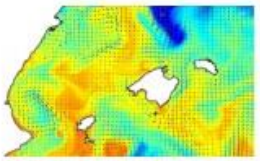
Open Data Policy

SOCIB value chain approach

Data Acquisition Systems

Data Management Services

- Hydrodynamics & Wave Forecasting
- Data Products



Products And Services

- Marine & Coastal Research
- Marine Sports
- Coastal communities & Tourism
- Integrated Coastal Zone Management
- Education
- Ports & Shipping

Benefits for Society

- Coastal Resources Optimization
- Human Impact Mitigation
- Increased Sustainable Awareness

New Developments

Future Requirements

HABITS

WILLINGNESS

PURPOSE

PLAN

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BEST
PRACTICES

QUALITY
MANAGEMENT
FRAMEWORK

PRODUCTS &
SERVICES

DATA
MANAGEMENT
PROGRAM

SOCIB

ON
FAIR
Principles

Benefits of making data FAIR

The FAIR Guiding Principles

To be Findable:
F1. (meta)data are assigned a globally unique and persistent identifier
F2. data are described with rich metadata (defined by R1 below)
F3. metadata clearly and explicitly include the identifier of the data it describes
F4. (meta)data are registered or indexed in a searchable resource

To be Accessible:
A1. (meta)data are retrievable by their identifier using a standardized communications protocol
A1.1 the protocol is open, free, and universally implementable
A1.2 the protocol allows for an authentication and authorization procedure, where necessary
A2. metadata are accessible, even when the data are no longer available

To be Interoperable:
I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
I2. (meta)data use vocabularies that follow FAIR principles
I3. (meta)data include qualified references to other (meta)data

To be Reusable:
R1. meta(data) are richly described with a plurality of accurate and relevant attributes
R1.1. (meta)data are released with a clear and accessible data usage license
R1.2. (meta)data are associated with detailed provenance
R1.3. (meta)data meet domain-relevant community standards

Wilkinson, M. D. et al. The FAIR Guiding Principles for scientific data management and stewardship. Sci. Data 3:160018 doi: 10.1038/sdata.2016.18 (2016)

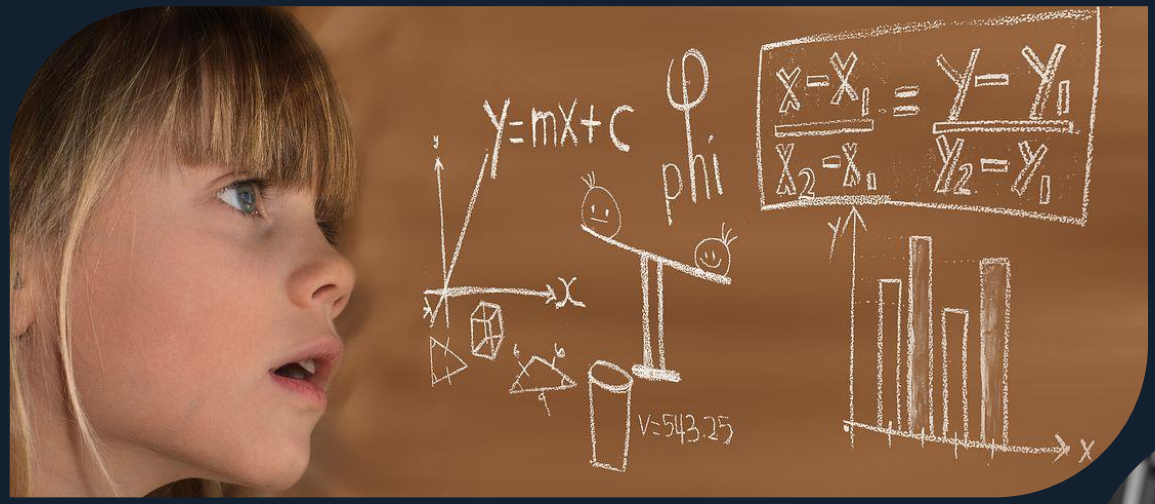
Enabling FAIR Data Across the Earth and Space Sciences

The necessary elements needed to effectively share data between repositories and publishers already exist at small scales.

The greatest difficulty was thought to be around interoperability, with reusability a close second.

Stall, S., E. Robinson, L. Wyborn, L. R. Yarmey, M. A. Parsons, K. Lehnert, J. Cutcher-Gershenfeld, B. Nosek, and B. Hanson (2017), Enabling FAIR data across the Earth and space sciences, *Eos, 98,* https://doi.org/10.1029/2017EO088425. Published on 08 December 2017.

FAIR principles



From the Theory …

… to the Practice

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FRAMEWORK

PRODUCTS &
SERVICES

DATA
MANAGEMENT
PROGRAM

CMMI DMM model

DATA MANAGEMENT STRATEGY
- Data Management Strategy
- Communications
- Data Management Function
- Business Case
- Funding

DATA GOVERNANCE
- Governance Management
- Business Glossary
- Metadata Management

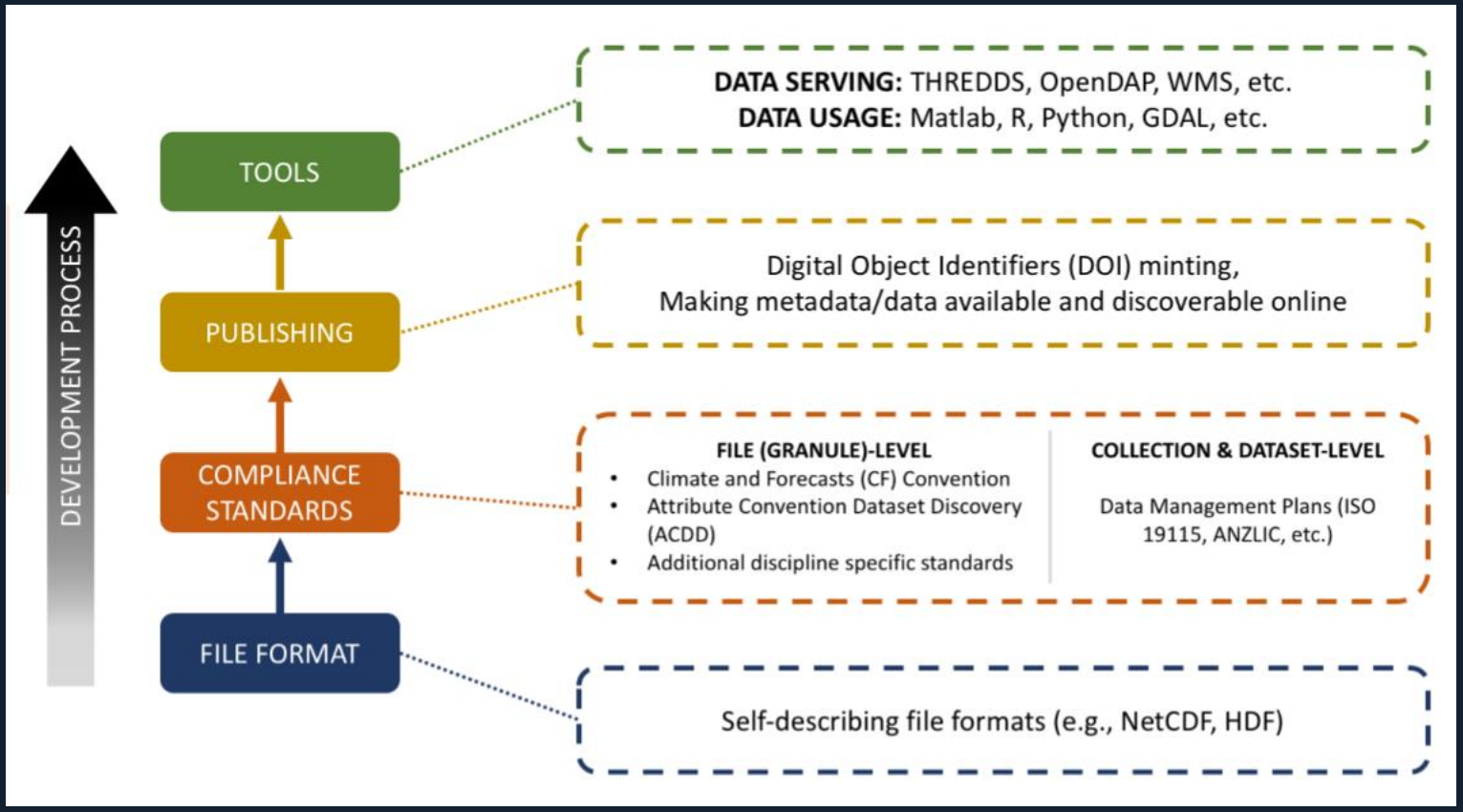
DATA QUALITY
- Data Quality Strategy
- Data Profiling
- Data Quality Assessment
- Data Cleansing

DATA OPERATIONS
- Data Requirements Definition
- Data Lifecyle Management
- Provider Management

PLATFORM & ARCHITECTURE
- Architectural Approach
- Architectural Standards
- Data Management Platform
- Data Integration
- Historical Data & Archiving

SUPPORTING PROCESSES
- Measurement & Analysis
- Process Management
- Process Quality Assurance
- Risk Management
- Configuration Management

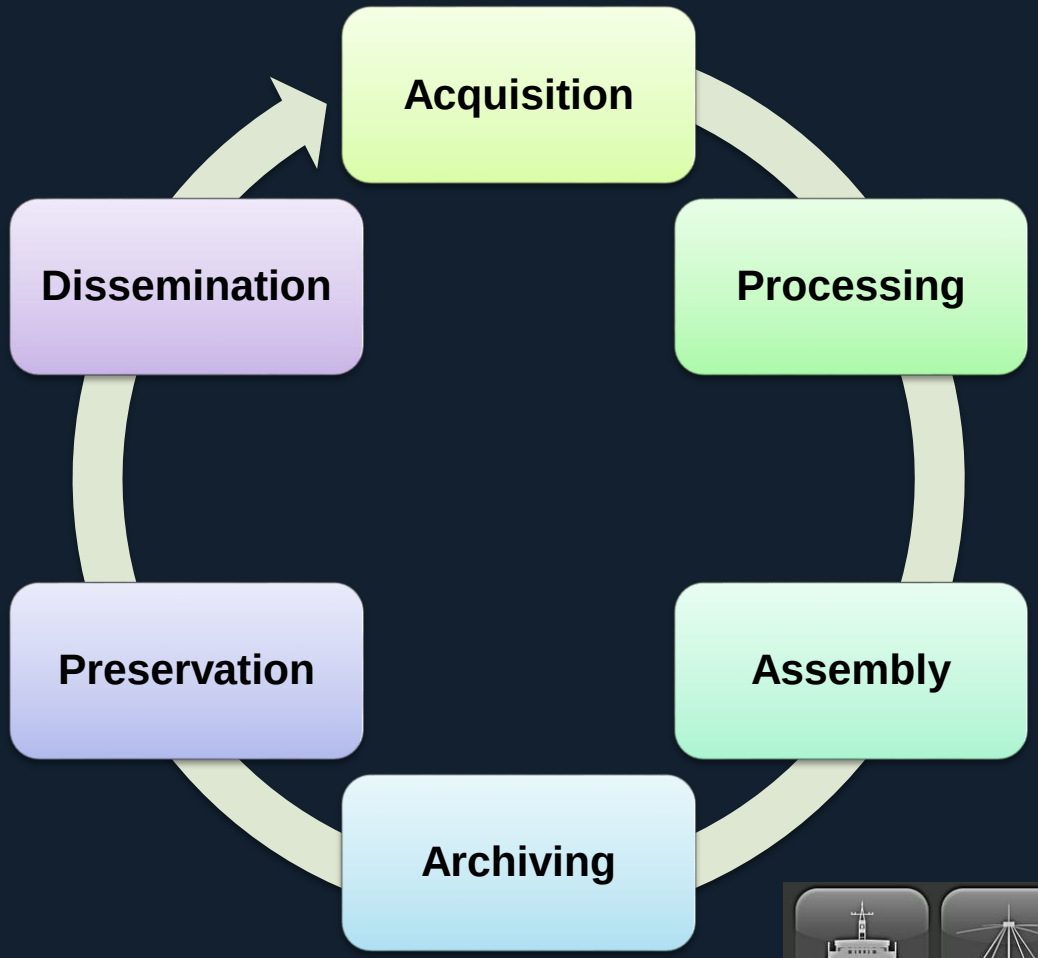
Data Quality Strategy



Evans, B.; Druken, K.; Wang, J.; Yang, R.; Richards, C.; Wyborn, L. A Data Quality Strategy to Enable FAIR, Programmatic Access across Large, Diverse Data Collections for High Performance Data Analysis. Informatics 2017, 4, 45.

SOCIB Data Management Plans

Covering the whole data lifecycle in each Facility



Based on:

Allows us to:

- ***Understand Processes***
- ***Improve System***

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SERVICES

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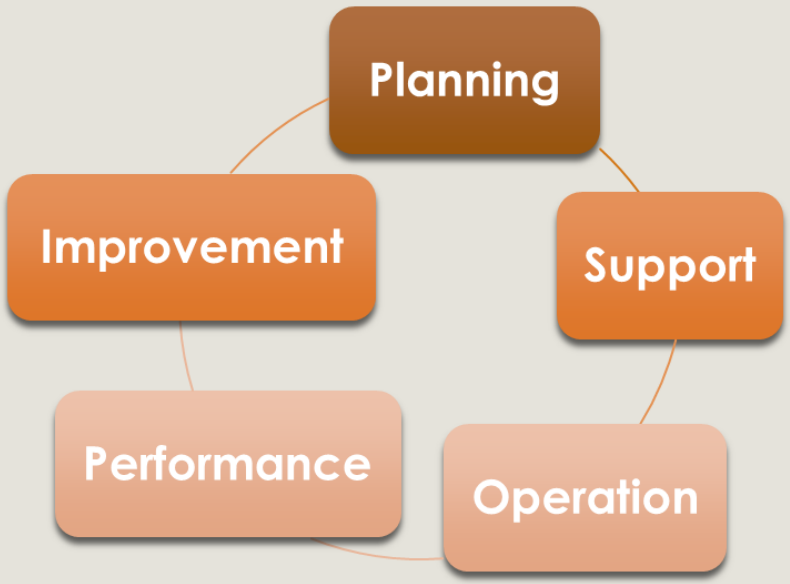
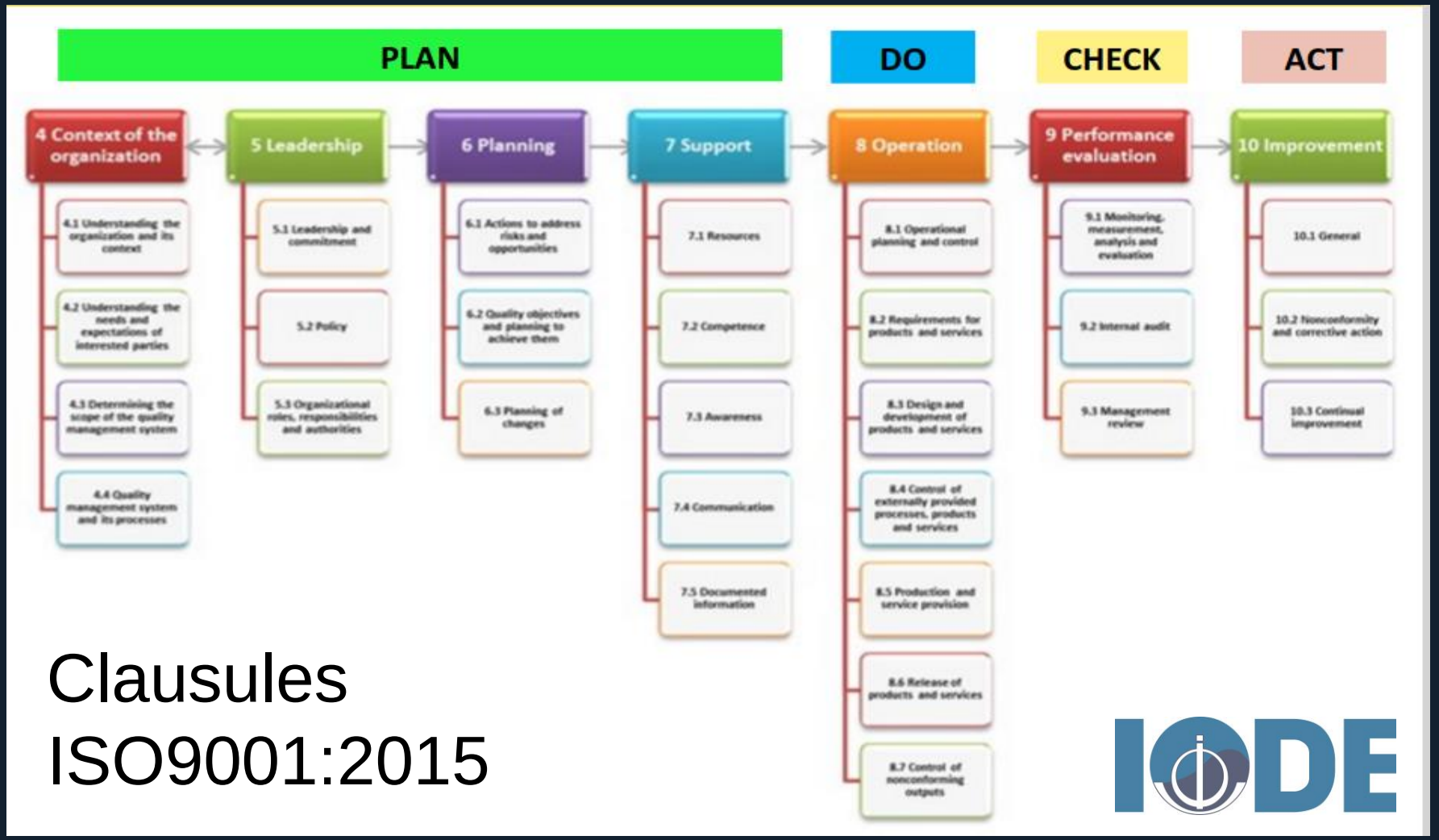
Measure on how closely a
PRODUCT / SERVICE
aligns to a set of identified
REQUIREMENTS / SPECIFICATIONS



Coordinate Control → QUALITY

FRAMEWORK FOR CONTINUAL IMPROVEMENT



Clausules
ISO9001:2015

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ACT

PLAN

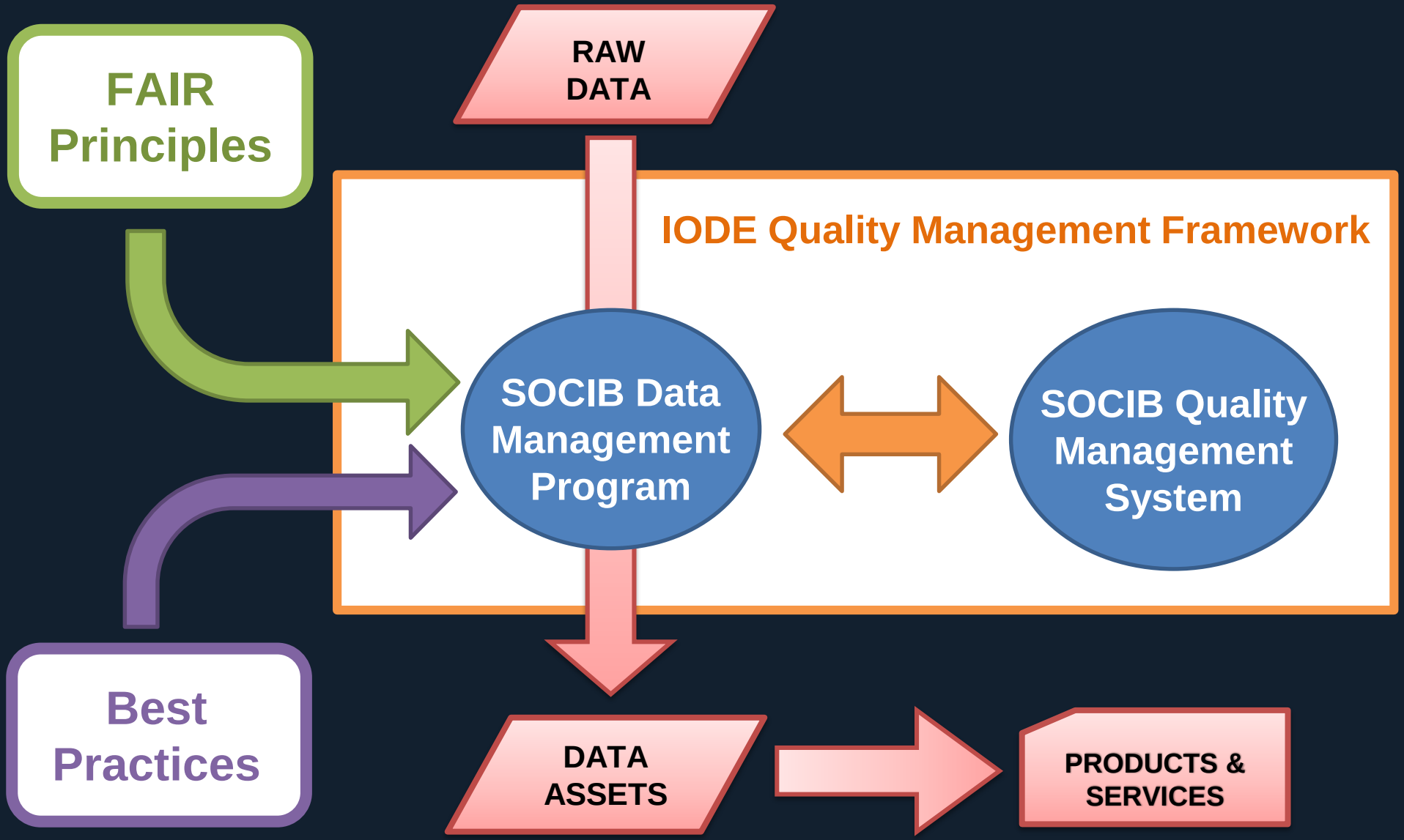
QUALITY
MANAGEMENT
FRAMEWORK

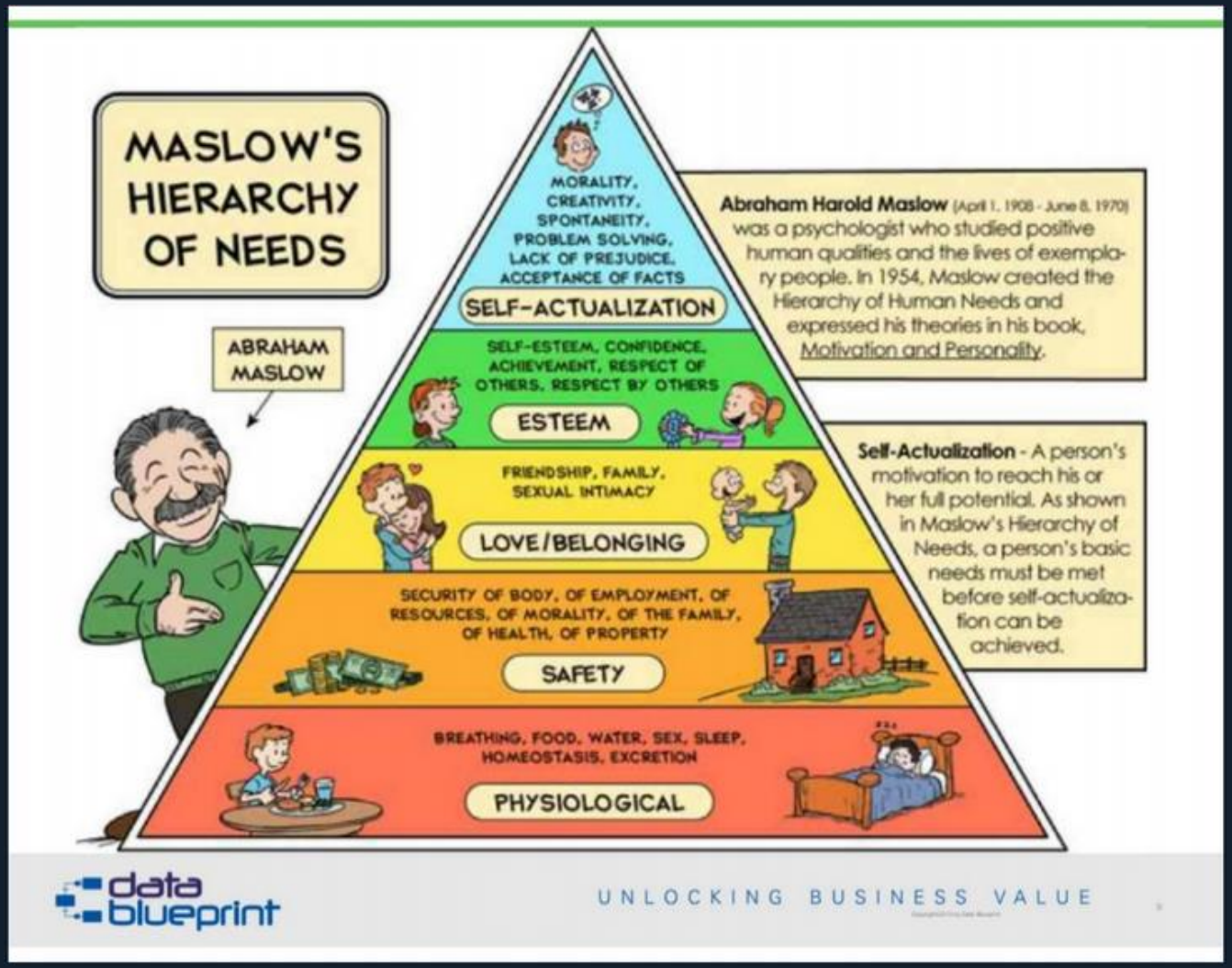
CHECK

DO

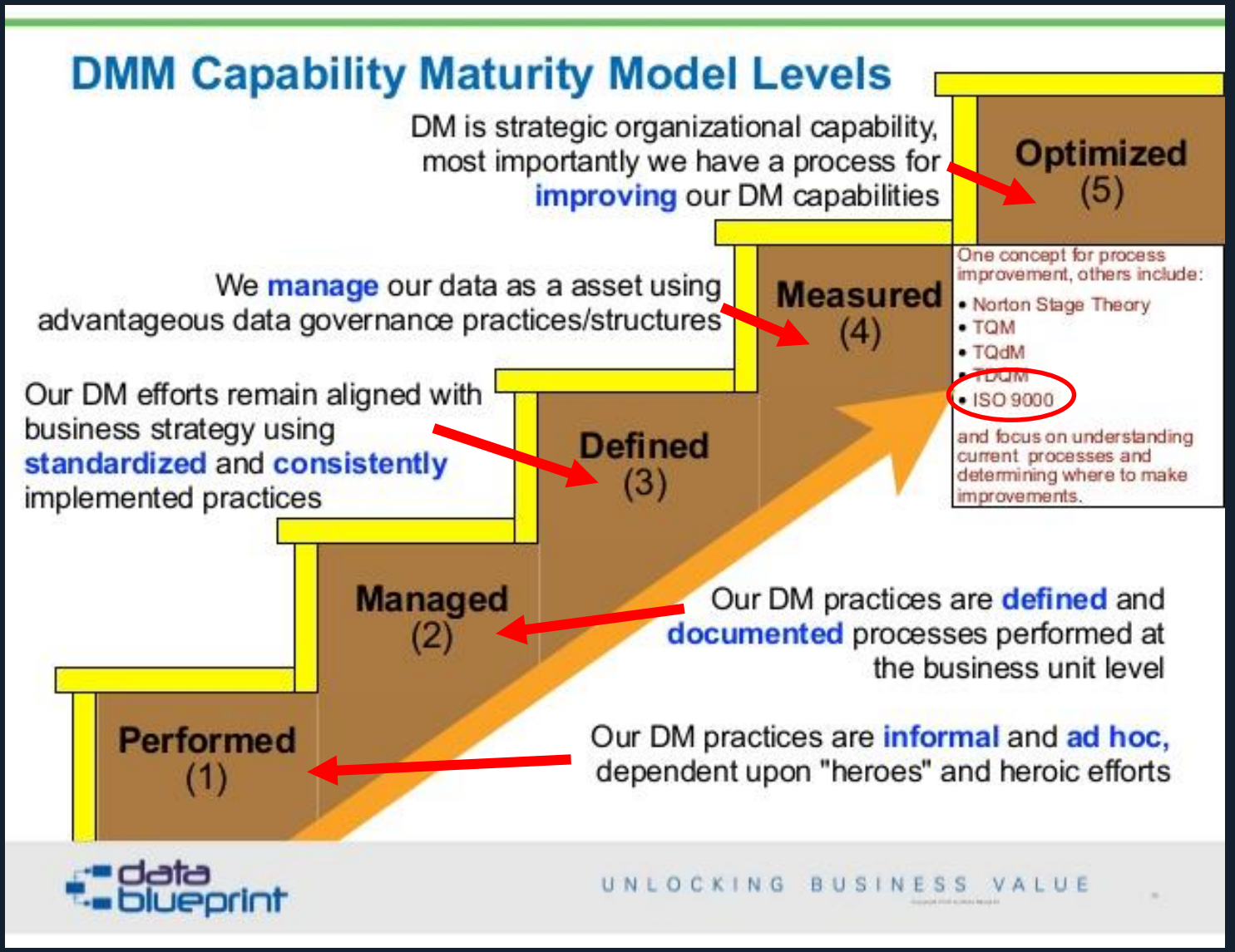
SOCIB

SOCIB Data Management Strategy



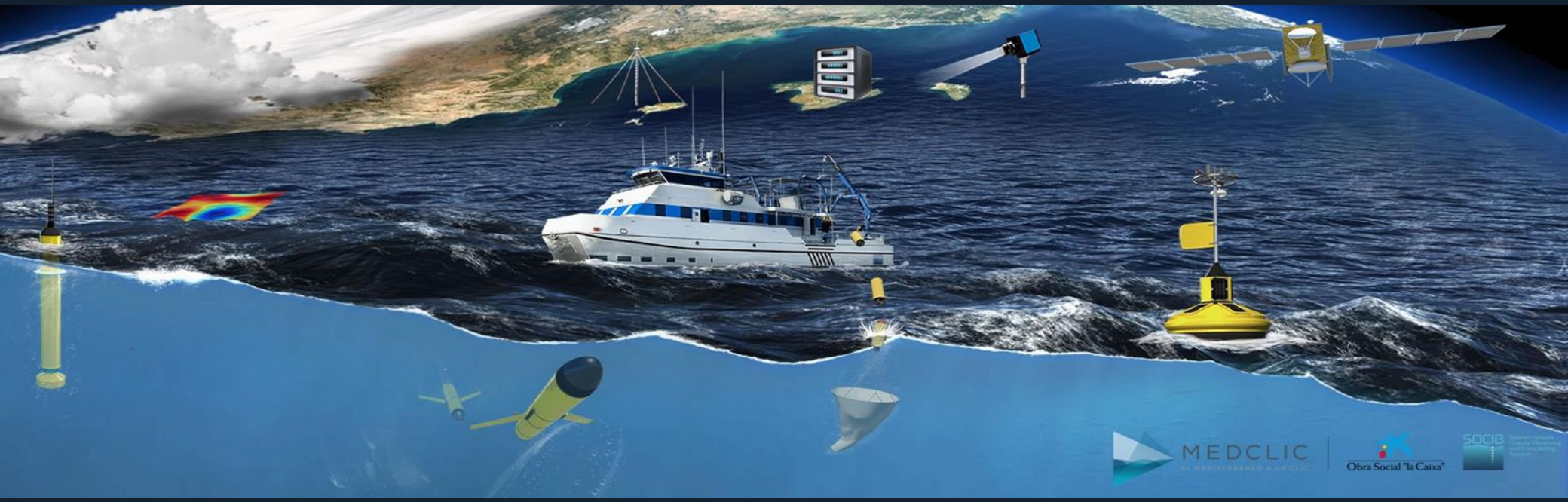


M. Mecca, P. Aiken, Achieving Best Practices using DMM The Data Management Maturity (DMM) model, Data Blueprint Welcome, 2014



M. Mecca, P. Aiken, Achieving Best Practices using DMM The Data Management Maturity (DMM) model, Data Blueprint Welcome, 2014

Thank you



Questions?