

Collaborative E-Learning Resources Development

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A joint and open working group between:

- **HCU Hamburg (Germany)**
- **SHOM (France)**
- **University of West Indies (Trinidad & Tobago)**
- **ENSTA Bretagne(France)**
- **CIDCO (Canada)**

Hydrography is an applied science, including a broad range of different subjects from various scientific fields:

Acoustics, Tides, Oceanography, Geodesy and positioning,
Hydrographic practice , Data management and processing,
Cartography, Remote Sensing, Law, etc...

and

Hydrography education (for both category A and B) requires
practical field training

The problem of insufficient hydrography education capacity

- Need for Lifelong learning (continued education)
- Need for modular & sharable courses (capacity building)
- Limited institutional budget for education
- Limited teaching staff

How E-learning may contribute to enhance the hydrography education capacity

- Modular course modules that can be exchanged & shared by several organizations
- Interest of organizations to have access to modular e-learning resources covering the broad range of the S-5
- Offers flexibility with professional commitments
- May be used in **residential** as well as **blended** learning modes

What keeps us awake about CB Training...

- **Global** demand / **Reduced** offer
- **Cost efficiency**
- Lack of **Reactivity** and **flexibility**
- Lack of **common** learning resources
- **Only one** training method = face-to-face teaching

What is E-learning?

E-learning refers to the use of technology in learning and education.

- **E-learning** is broadly inclusive of all forms of educational technology in learning and teaching.
- **E-learning** may occur in or out of the classroom: it is suited to distance learning, but it can also be used in conjunction with face-to-face teaching (**blended** learning).
- It can be self-paced (**asynchronous** learning) or may be instructor-led (**synchronous** learning).

E-learning aspects

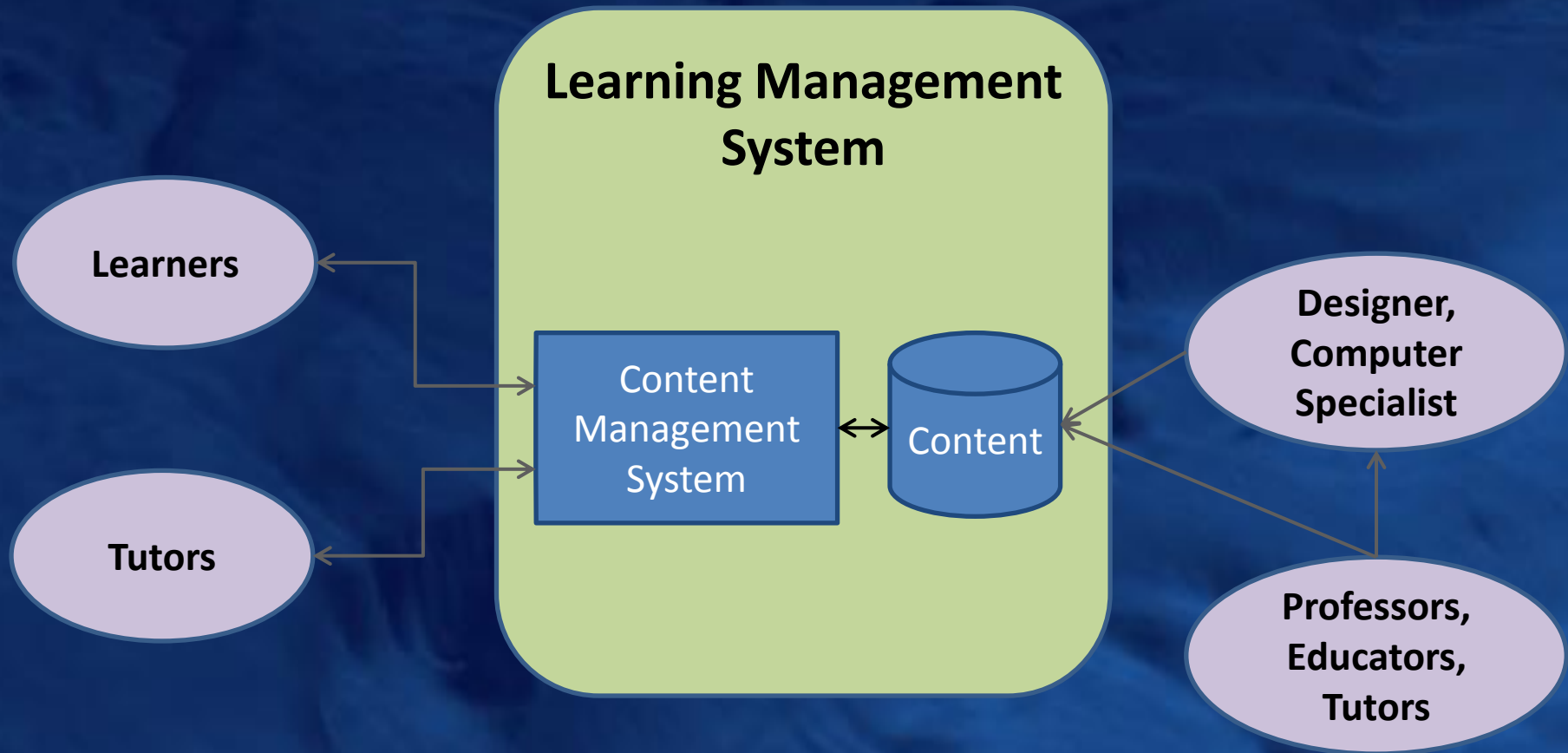
There are several aspects to describe the intellectual and technical development of e-learning:

- as an **educational approach** or tool that supports traditional subjects;
- as a **technological medium** that assists in the communication of knowledge, and its development and exchange;
- e-learning **administrative tools** such as education management information systems (EMIS).

Generalities about E-learning (1 of 2)

- Geared towards competence training
- Supports customization to meet all learners' needs
- Must be combined with proper **tutoring** to be effective
- Progress tracking through **evaluation** is essential

Generalities about E-learning (2 of 2)



Tutors

- Tutors are a **fundamental** component of E-learning
- Tutoring approach provides **consistency** to an e-learning course;
- Tutors need specific training in order to follow-up the learners progression through
 - synchronous forums ,or
 - asynchronous interactions

Learning Management System

- An LSM must:
 - Deliver and manage instructional content;
 - Identify and assess individual learning goals;
 - Track the progress meetings those goals;
 - Collect an present data for supervising the learning process.
- A number of **open source** solutions exist:
e.g. Moodle, Ganesha, Dokeos

Content (1 of 3)

- Standard data format can be used for content sharing among LMS (e.g. SCORM)
- Content may be created within the Content Management System (CMS) of a LMS
- Content may be created locally and uploaded subsequently to a LMS

Content (2 of 3)

- Accessible online or downloadable (offline learning)
- Content (resource) examples include:
 - Text, graphics;
 - Experts' videos;
 - Video illustration from fieldwork;
 - Computer programs (simulation) in static or dynamic modes
- Content (scenario) examples include:
 - Tests, quiz;
 - Student learning routing by automated analysis of quiz, tests answers
 - Self guidance and tutored projects

Content (3 of 3)

- Interactive computing is desirable
 - See two examples at end of presentation
- Interactive computing should be open source (e.g. Scilab, Octave, Ipython)

Advantages and Difficulties

Advantages

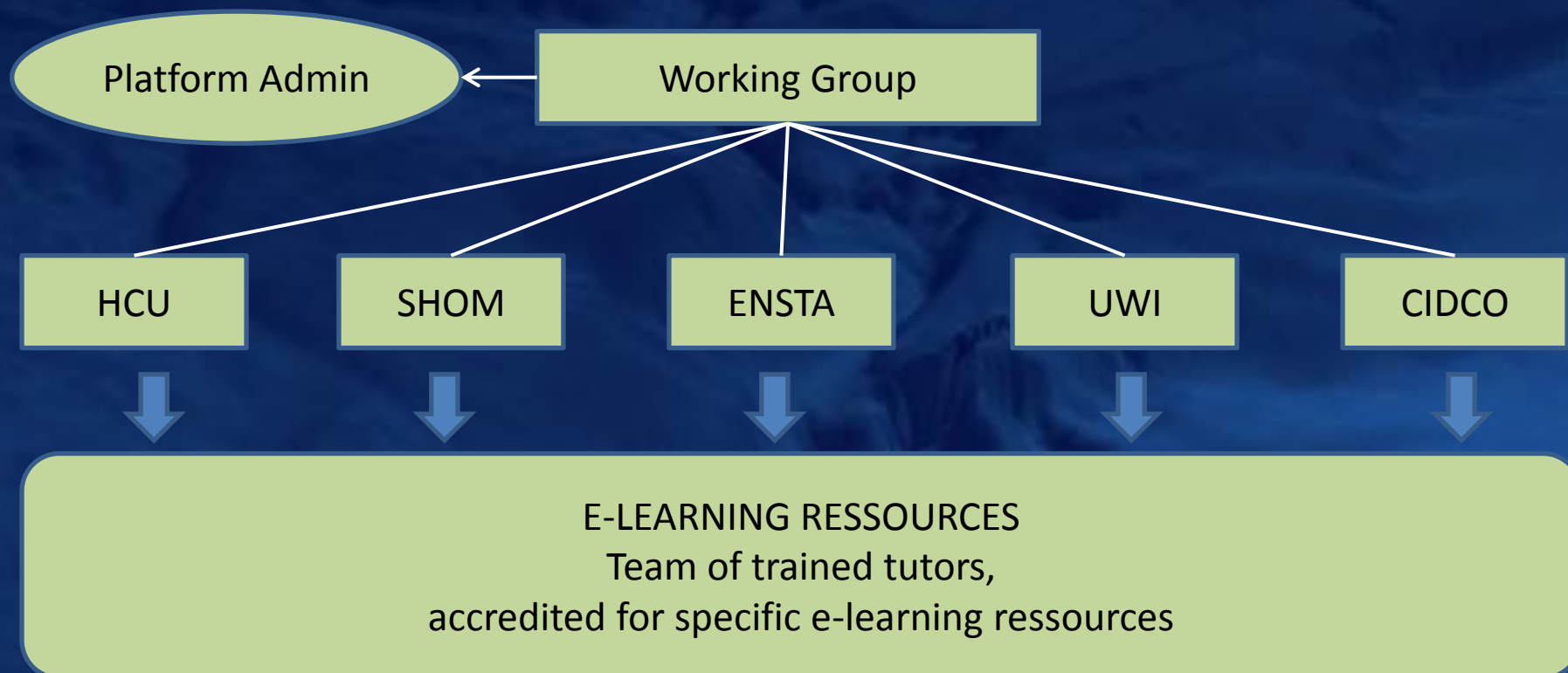
- May be used in any blended learning mode
- Develops learners autonomy
- Course quality assessment is more objective
- Use of advanced learning tools
- International experts inputs

Difficulties

- Development time is high
- Learning scenario design is challenging
- Finding committed tutors

Stakes of E-learning in Hydrography

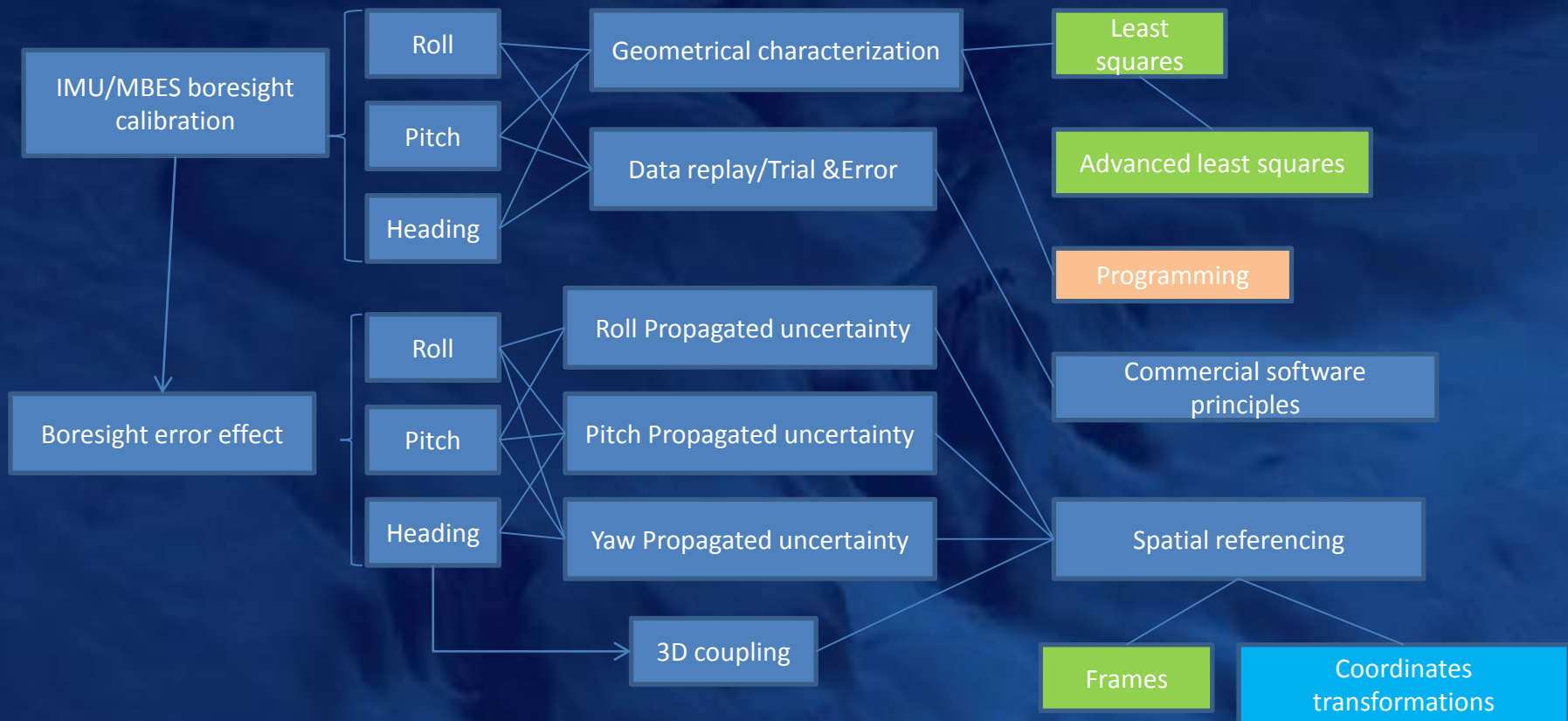
- Definition of **Gouvernance Structure** (use policy, review ...);
- Definition of **Learning scenarii**;
- Setup of a **Tutoring global network**;
- High Development time => **ressources pooling**



Contributions

- Contribution to **Hydrography education**:
 - **access** to resources for registered students from participating institutes;
 - Free access for registered students (in both residential and distance learning);
- Contribution to **Lifelong learning**:
 - Lifelong learning courses can be provided partly by distance learning;
 - Interest from private companies (no need to demobilize personnel for long periods);
 - E-learning access **with tuition fees for Lifelong learning**.

Ressource modular design example



Example

- Moodle lesson (calibration)
 - Quiz,
 - Exercises.
- Scilab programming on MBES datasets
 - Composition,
 - Short study reports.