

Open source geospatial software for education and co-creation of knowledge in the field of Geographic Information: giCASES

Marco Minghini ¹, Maria Antonia Brovelli ¹, Milva Carbonaro ², Anders Östman ³, Dirk Frigne ⁴, Giacomo Martirano ⁵, Marco Painho ⁶, Stefan Prüller ⁷, Giorgio Saio ², Danny Vandenbroucke ⁸

¹ Politecnico di Milano, Department of Civil and Environmental Engineering, Milano, Italy

² GISIG - Geographical Information Systems International Group, Genova, Italy

³ Katholieke Universiteit Leuven, Heverlee, Belgium

⁴ Novogit AB, Jönåker, Sweden

⁵ Epsilon Italia, Mendicino, Italy

⁶ Nova IMS, Nova Information Management School, Universidade Nova de Lisboa, Portugal

⁷ Paris Lodron University Salzburg, Department of Geoinformatics - Z_GIS, Salzburg, Austria

⁸ Nova KU Leuven, Spatial Applications Division Leuven (SADL), Leuven, Belgium

About giCASES

giCASES – Creating a University-Enterprise Alliance for a Spatially Enabled Society – is a **Knowledge Alliance project** co-funded within the **EC ERASMUS+ Programme** over the years 2016-18. The project objectives are:

- ✓ to enable and strengthen **innovation** in Geographic Information (GI) education and industry
- ✓ to facilitate the collaborative **creation, management and sharing of knowledge**

These objectives are addressed by developing new, innovative and multidisciplinary approaches to teaching and learning within the Geographic Information (GI) sector, and facilitating the exchange, flow and **co-creation of knowledge**.

In particular, giCASES aims to:

- ✓ improve the quality and relevance of GI courses provided by the University members of the consortium
- ✓ facilitate the growth of new knowledge-sharing processes and tools between enterprises and universities
- ✓ improve the management of knowledge by the partners

The overall approach to address these objectives is to develop new learning material and processes based on **case-based learning**. In the approach taken in the project, enterprises and academia collaborate both when creating learning material based on real cases and also during and after the courses (through a collaborative platform).

Methodology

First, a **study on the State-of-the-Art** is performed to assess the way Higher Education Institutions (HEIs) and public or private sector companies currently collaborate in the context of geospatial education and training. Requirements and expectations as well as examples of best practices are analyzed as well.

The second stage consists in the development of a consistent **approach for case-based learning studies**, and the definition of specifications for a collaborative learning platform to support the Case Studies.

Finally, **the Case Studies are implemented** by preparing the necessary learning materials and conducting a series of training actions at the universities involved.

The main **outputs and outcomes** of the giCASES project are:

- ✓ the knowledge-based assets
- ✓ the process of co-creation of knowledge
- ✓ the new learning material developed within the Case Studies and the collaboration tools adopted

The development of the Case Studies is led by the giCASES business partners, in close collaboration with the academic partners. The details of such processes depend on the detailed requirements of the partners, which in turn define the required functionalities of the collaboration platform.

The Consortium

The giCASES consortium is composed of **14 partners** (5 academic partners and 9 business partners) from 8 European countries:



Collaboration patterns

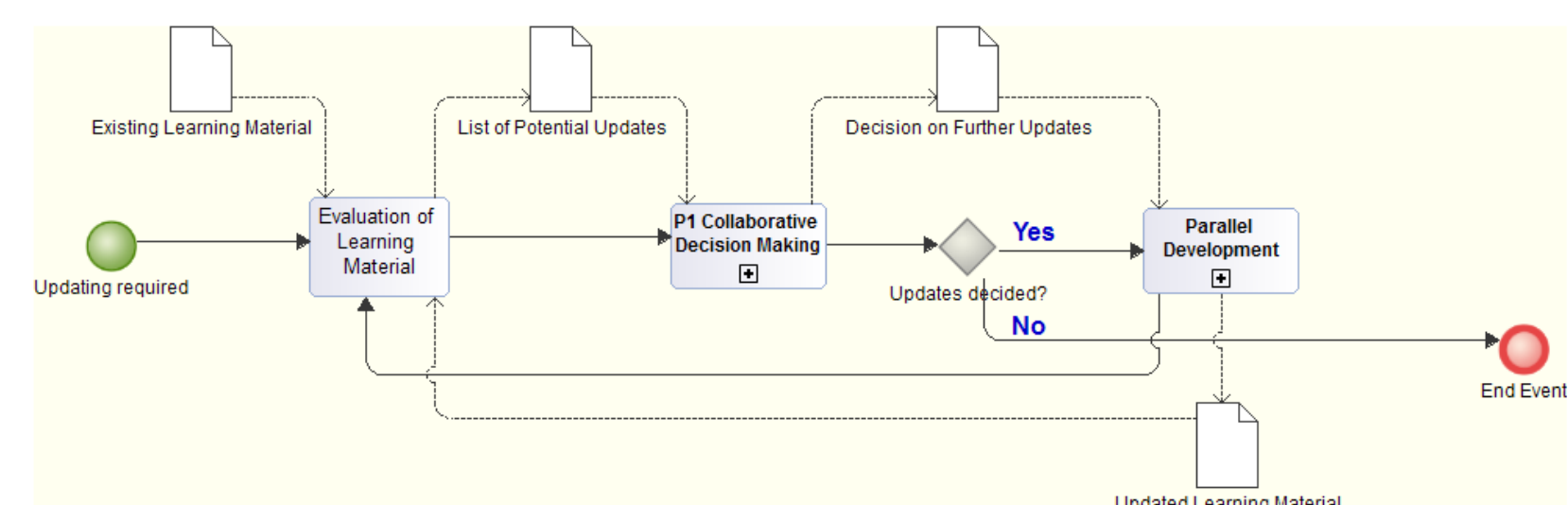
Co-creation of knowledge is the process through which two or more organizations and/or actors interact with each other in a collaborative fashion to generate learning content and gain common insights.

The **process patterns** of case-based learning and co-creation of knowledge were classified according to their degree of collaboration and their type of output:

- ✓ according to the **degree of collaboration**, the processes of co-creation of knowledge may be classified as: 1) “autonomous processes, 2) “shared processes” or 3) “collaborative processes”
- ✓ according to the **type of output**, the processes of co-creation of knowledge may be classified based on the main result(s) achieved: “learning material” and/or “training/education”.

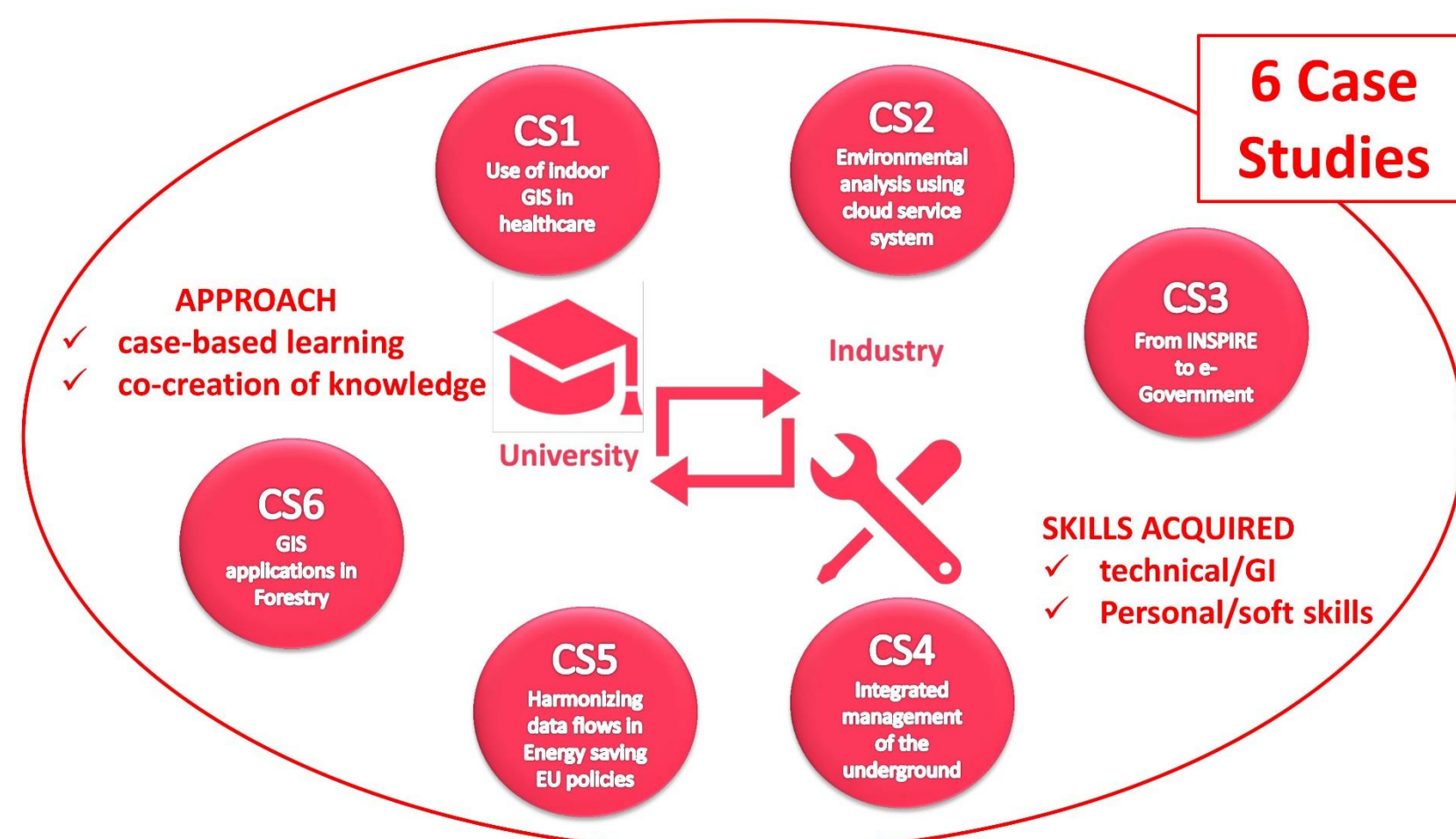
The combination of these classification schemes leads to a total of six possible process patterns modelled. Among them, 4 collaboration patterns were identified and described using **BPMN** (Business Process Model and Notation) diagrams:

- ✓ Shared Development of Learning Material
- ✓ Collaborative Development of Learning Material
- ✓ Shared Provision of Training
- ✓ Internship



Case Studies

The process patterns for co-creation of knowledge are experimented and practice on **6 Case Studies**. Each of them tackles a real-world issue in the domain of GI and is jointly developed by one academic and one business partner using **open source geospatial software**:



www.gicases.eu

With the support of the Erasmus+ programme of the European Union Knowledge Alliance N° 562657-EPP-A-2015-1-IT-EPPKA2-KA

The European Commission support for the production of this publication does not constitute endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



Co-funded by the
Erasmus+ Programme
of the European Union