ENHANCING SEMANTIC WIKIS FOR COLLABORATIVE AUTHORING OF ADAPTIVE EDUCATIONAL HYPERMEDIA
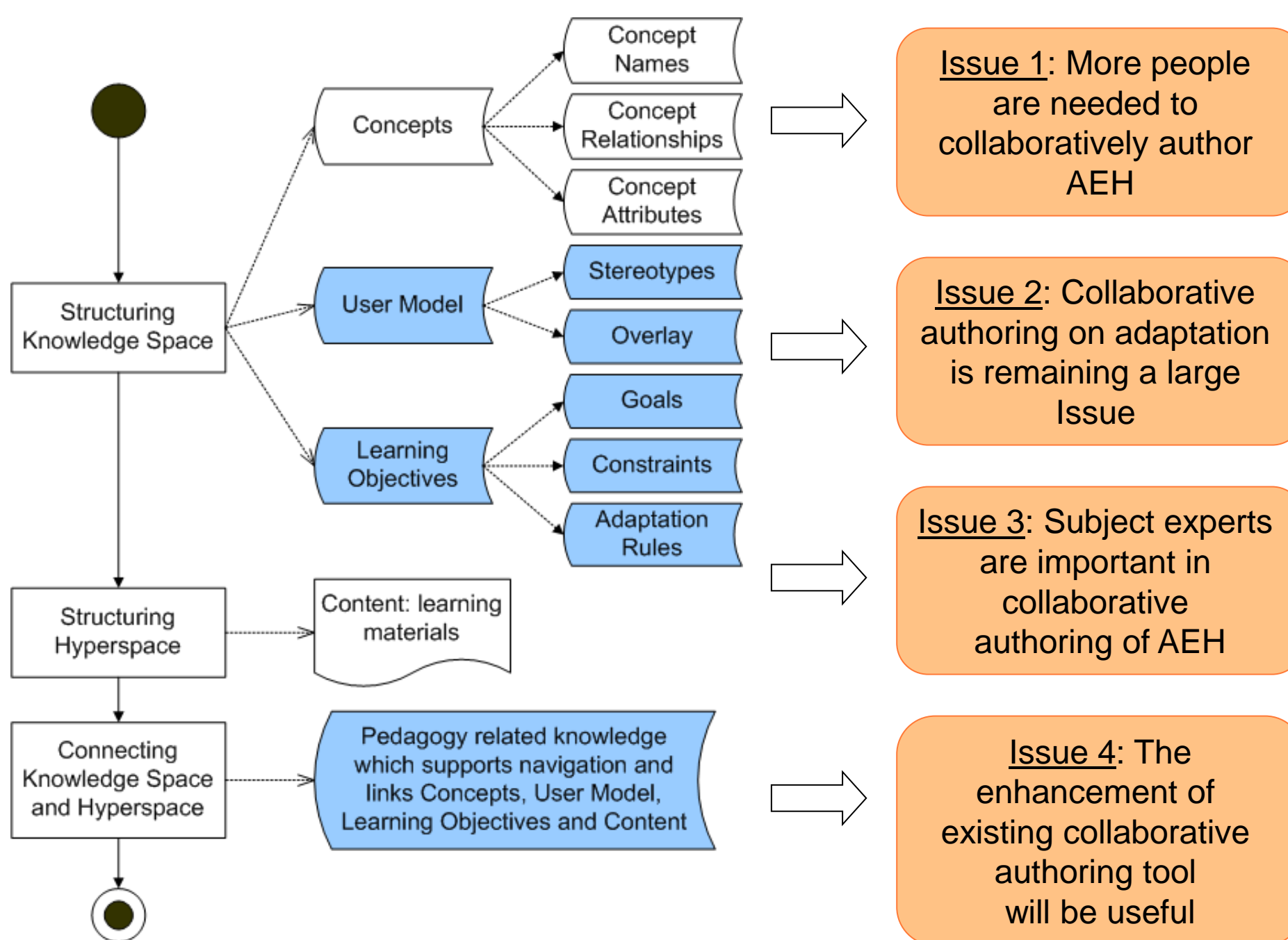
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Abstract

This research is concerned with harnessing collaborative approaches for the authoring of Adaptive Educational Hypermedia (AEH) systems and involves the enhancement of Semantic Wikis with pedagogy aware features to this end. It addresses the issues raised in authoring AEH including the need of collaboration, authoring adaptation, the participation of subject experts and the utilization of existing collaborative authoring tools. The main contribution of this research will be a collaborative authoring model for domain related knowledge by extending a Semantic Wiki and for adaptation related knowledge by enriching the Semantic Wiki's output. It will be reached by conducting a research approach that considers many aspects including educational, technological and social aspects. To prove the suitability of the model, a prototype of system will be established and several software testing will be conducted to test the functionality, the expressivity and the integrity of the system.

Problem and Issues in Authoring Adaptive Educational Hypermedia (AEH)

Issue 1: More people are needed to collaboratively author AEH

Issue 2: Collaborative authoring on adaptation is remaining a large Issue

Issue 3: Subject experts are important in collaborative authoring of AEH

Issue 4: The enhancement of existing collaborative authoring tool will be useful

The Potential of Social Semantic Technology for Authoring AEH

Adaptive Educational Hypermedia (AEH)

AEH based social learning

Collaborative annotation for improving personalization

Semantic enabled adaptation and personalization

Semantic tech support knowledge management in AEH

Domain ontology for learning

Collaborative authoring of AEH

Collaborative filtering to find suitable learning path in AEH

Reasoning to establish relationships among educational resources
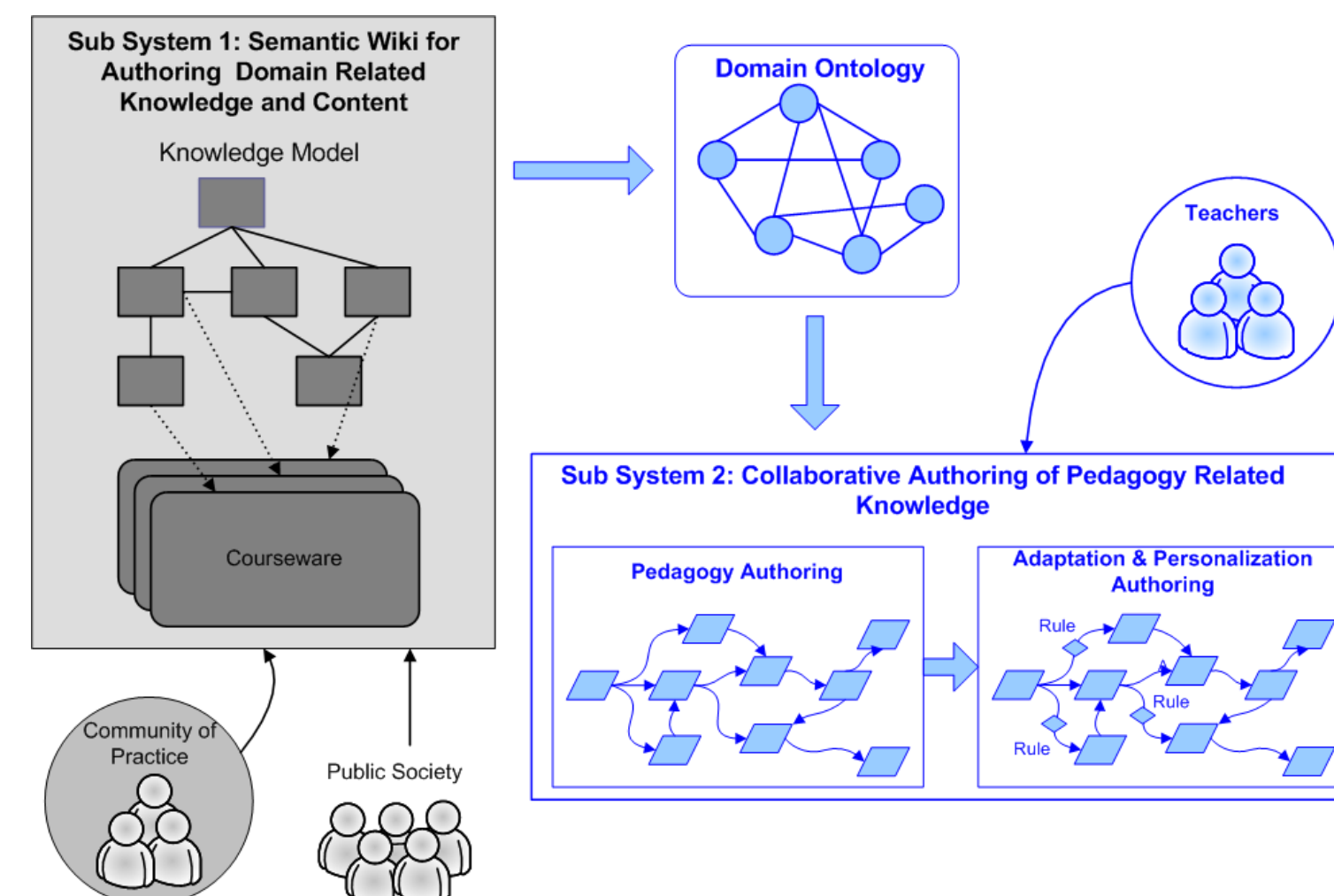
Social Web   *Semantic Web*

Social bookmarking / semantic tagging

Social ontology construction

Reasoning to gain relationships between people and resources

Managing evolving knowledge

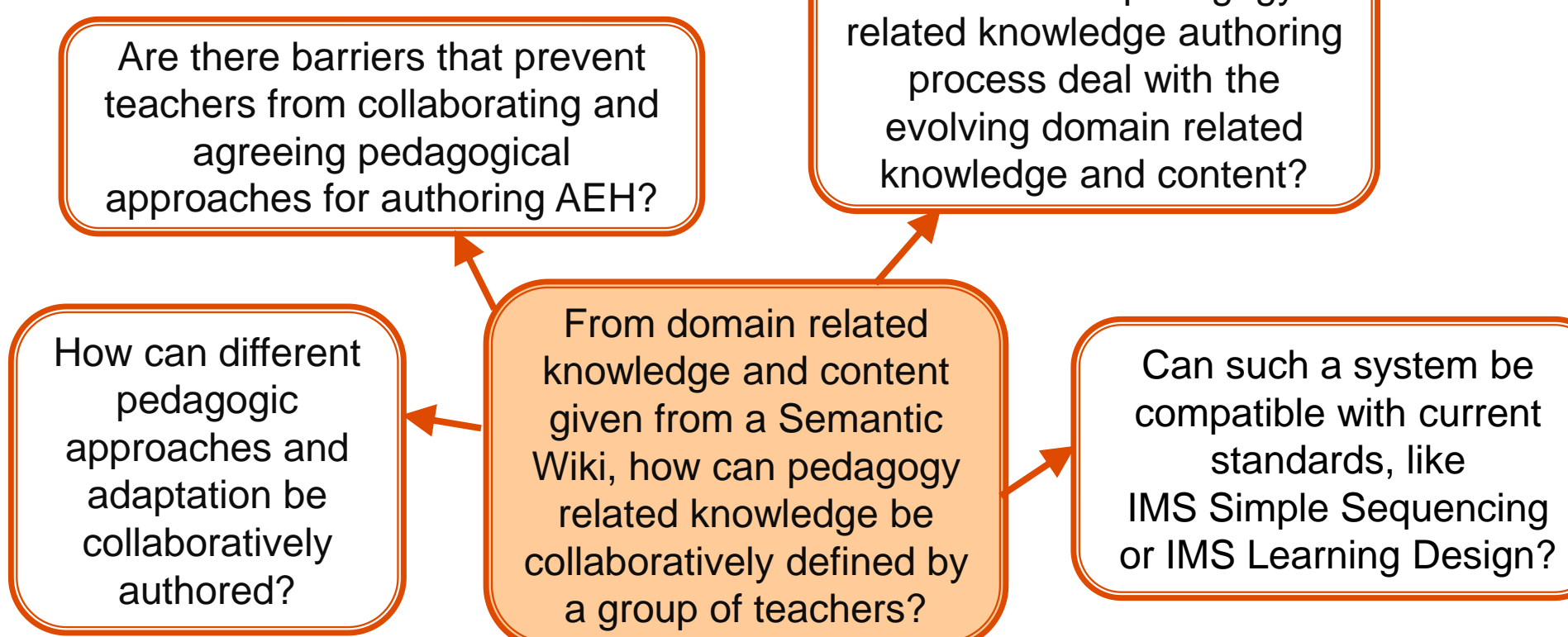Managing collaborative annotation

Description of Proposed Research

This PhD thesis will research the enhancement of Semantic Wikis to support collaborative authoring of Adaptive Educational Hypermedia (AEH).

The objective of this research is to provide a model of organizing learning knowledge that can be adaptively reused and repurposed to support AEH systems
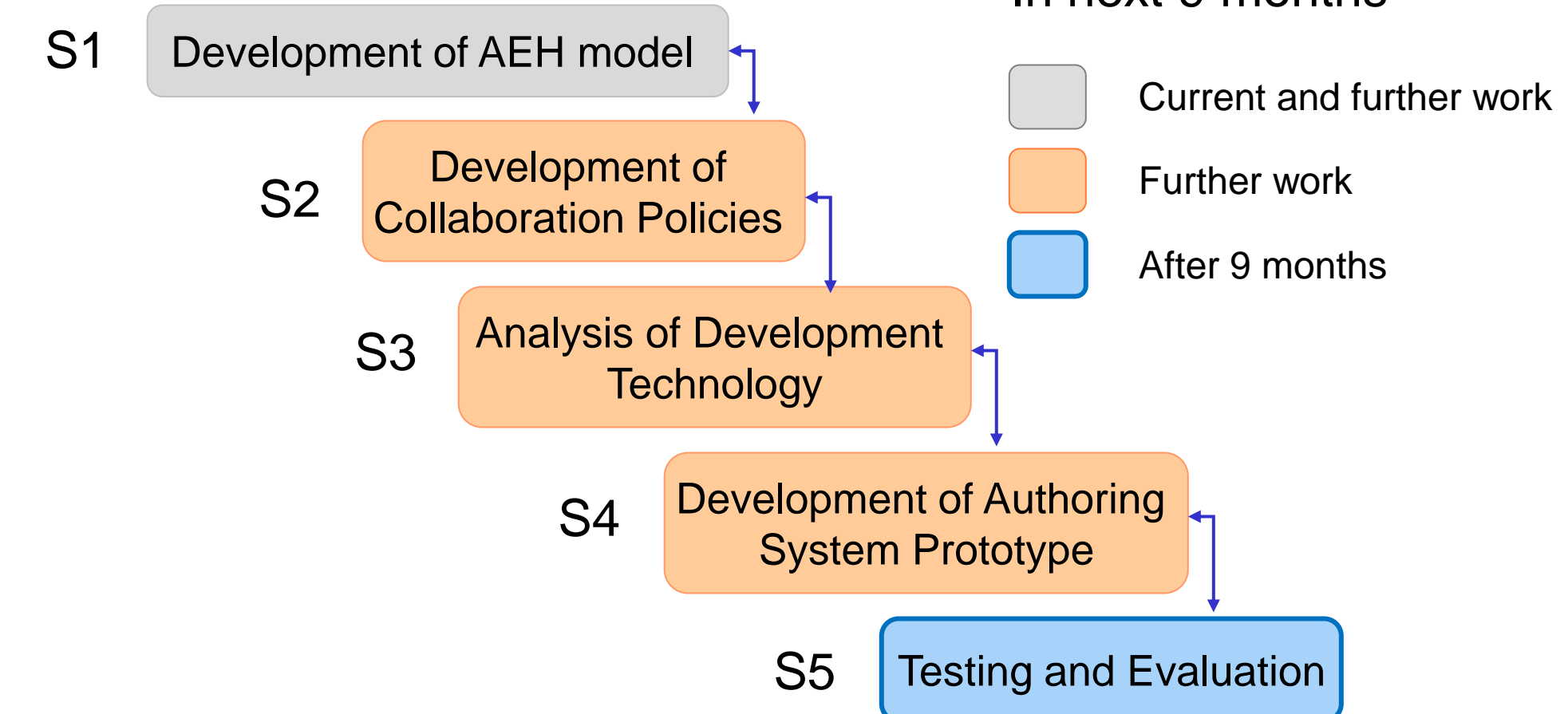

Research Questions

Are there barriers that prevent teachers from collaborating and agreeing pedagogical approaches for authoring AEH?

How can the pedagogy related knowledge authoring process deal with the evolving domain related knowledge and content?

How can different pedagogic approaches and adaptation be collaboratively authored?

From domain related knowledge and content given from a Semantic Wiki, how can pedagogy related knowledge be collaboratively defined by a group of teachers?

Can such a system be compatible with current standards, like IMS Simple Sequencing or IMS Learning Design?
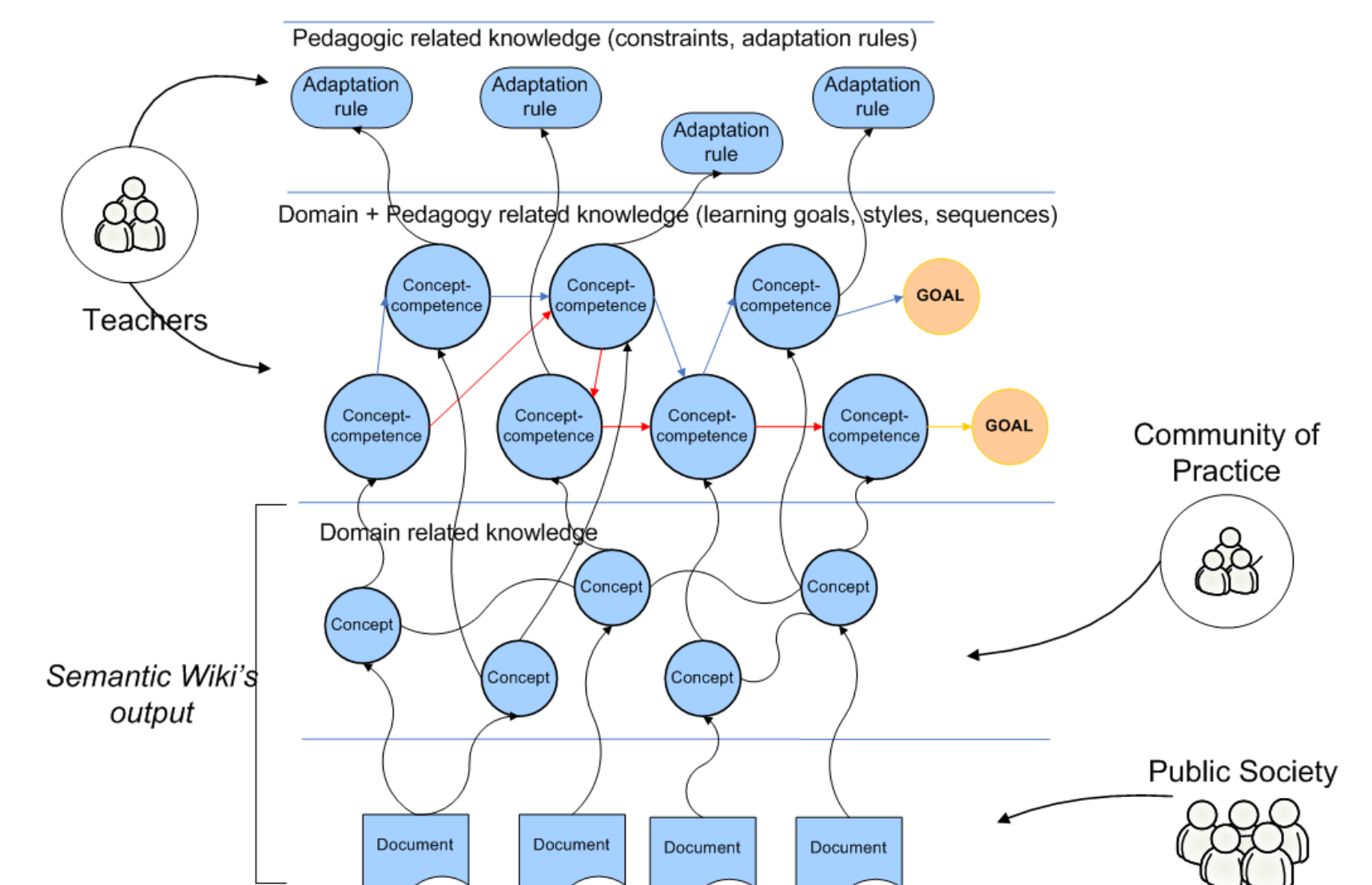
State Of The Art

- Past research on AEH's architectures implemented concept based domain.
- Past research on pedagogy authoring implemented learning model theories.
- Most of the work in academics and business was completed by groups of people.
- Collaborative work must consider social interaction including conflict, coercion, competition, conviviality, combat, coordination, caution and control.
- Social web and semantic web technologies are useful to develop systems based on large knowledge with many contributors.
- Wikis have been used for developing and maintaining learning content by large online communities.
- Semantic Wikis improve Wikis in managing a knowledge layer underlying documents.

Research Approach

In next 9 months

S1 Development of AEH model

S2 Development of Collaboration Policies

S3 Analysis of Development Technology

S4 Development of Authoring System Prototype

S5 Testing and Evaluation

Current and further work
Further work
After 9 months

Progress: Domain Related Knowledge Model

The knowledge will be enriched by pedagogy related knowledge including learning goals, learning styles, learning sequences, constraints, adaptation rules and learning context.

Conclusions

The novelty of this research will be on the system's capabilities to repurpose an existing Semantic Wiki for collaborative authoring of domain related knowledge and courseware for AEH system, and to enrich its output to establish pedagogy related knowledge. In addition, the participation of teachers, communities of practice, and general public is another novelty of this research.

Main Reference

BRUSILOVSKY, P. (2003) Developing adaptive educational hypermedia systems: From design models to authoring tools. IN T. MURRAY, S. B. A. S. A. E. (Ed.) *Authoring Tools for Advanced Technology Learning Environment.* Dordrecht, Kluwer Academic Publishers.