

# On the Construction of an Enterprise Architecture Course: a Framework for the Description of Competencies

*Plessius, H.; Slot, R.*

*Hogeschool Utrecht, University of Applied Science*

The challenge: to construct an Enterprise Architecture course with a size of 15 European Credit points (approx. 400 hours of study) for an audience of Bachelor students in IT. The students have an IT-related job and follow this course part-time. Consequently, contact time is restricted to one evening per week.

The policy of our department is to offer competency-based courses. A competency is usually associated with a combination of knowledge, skills and attitudes that are appropriate in a given context. We use the definition of Dochy and Nickmans<sup>[1]</sup> who state that “a competency is a personal capability that becomes visible by showing successful behavior in a specific context”. They also highlight the difference between domain-general competencies and profession-specific competencies. Competency-based education means that students have to demonstrate their ability to produce results, which should be comparable to the results produced by professionals.

In an Enterprise Architecture a coherent description is given of activities, information and technology. This description acts as a blueprint for future developments. An Enterprise Architecture course must incorporate the desired competency levels for the students and be based on the activities performed by architects in real life situations. To achieve these goals, we developed a learning framework, in which the relevant topics and skills can be described, based on the ambition levels as described by Wiersema<sup>[2]</sup> and the phases of architectural work as specified in TOGAF<sup>[3]</sup>.

The competency levels we implemented are:

1. Work under architecture (simple tasks in a simple environment)
2. Junior architect (simple tasks in a complex environment or complex tasks in a simple environment)
3. Architect (complex tasks in a complex environment)

For the activities we devised the following categories:

- Vision (TOGAF phase A)
- Developing architectures (TOGAF phases B, C, D)
- Define Solutions and Migration planning (TOGAF phases E, F)
- Govern implementation and architecture change (TOGAF phases G, H)

Using this framework, the contents of the course can be derived using the 4C/ID-methodology<sup>[4]</sup>. Also, professional architectural products can be defined. Students have to deliver these products to show their ability in enterprise architecture. Having decided on the content of the course – i.e. the knowledge, skills and attitudes we are aiming at – we still have

to deal with the very limited contact time. Here the use of an e-learning environment is very advantageous, as we have shown before<sup>[5]</sup>.

From the previous paragraph, it is clear that we did choose a constructivist approach, based on sound scientific principles and best-practices as recorded in literature.

The course being on a Bachelor level, we aimed for a combination of the first two competency levels. With the aid of the framework we could easily outline the contents of the course. We decided that every course topic had to be discussed from a theoretical point of view as well as from a practical point of view (preferably by a professional architect).

When defining the professional products, we made use of the fact that all students do have an IT-related job. We asked them to describe (a part of) their organizations enterprise architecture and comment on that architecture. Deriving this product is a complex task, which needs a lot of structuring by the students themselves. According to the 4C/ID-methodology, students should be confronted with more structured tasks first to prevent too steep a learning curve [4]. Therefore, three introductory cases were developed, each addressing a different aspect of the final assignment. To develop domain-general competencies, students had to work in teams of 2 on these introductory cases. We introduced SharePoint to facilitate collaboration.

Using this methodology, we developed a rich and demanding course (with ten speakers), where all desired topics were addressed. This course has been given in the spring of 2011, for an audience of 15 students.

After the course an extensive evaluation has been held. The overall goal, i.e. acquiring the desired competencies, was achieved by 85% of the students. Students were reasonable satisfied with the course (a 7 on a scale from 1 to 10), but found it hard to address the theory.

Specifically, having ten lecturers in the course did not help. A challenge for next year's course!

## References

(A more exhaustive list will be found in the paper)

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- [4] J.G. van Merriënboer, (1997). Training Complex Cognitive Skills. Educational Technology Publications, Inc., New Jersey
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