Integrating AI Tools with Campus Infrastructure to Support the Life Cycle of Study Regulations

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Status quo

Core problem of digitalization (Germany?)

- less than 40% of the solutions offered
  - data interfaces,
  - persistent connection to other services or
  - quality measures
- most services are digitally isolated
- exchange data is done by standard office tools

Especially the data representation of study regulations is just a PDF which is manually transformed into the configuration of the Student Information System.

What if…

study regulations could be easily written and read,

understood by most people in the same way,

would be consistent and flawless,

and would be usable in all situations necessary?

Requirements for study regulations

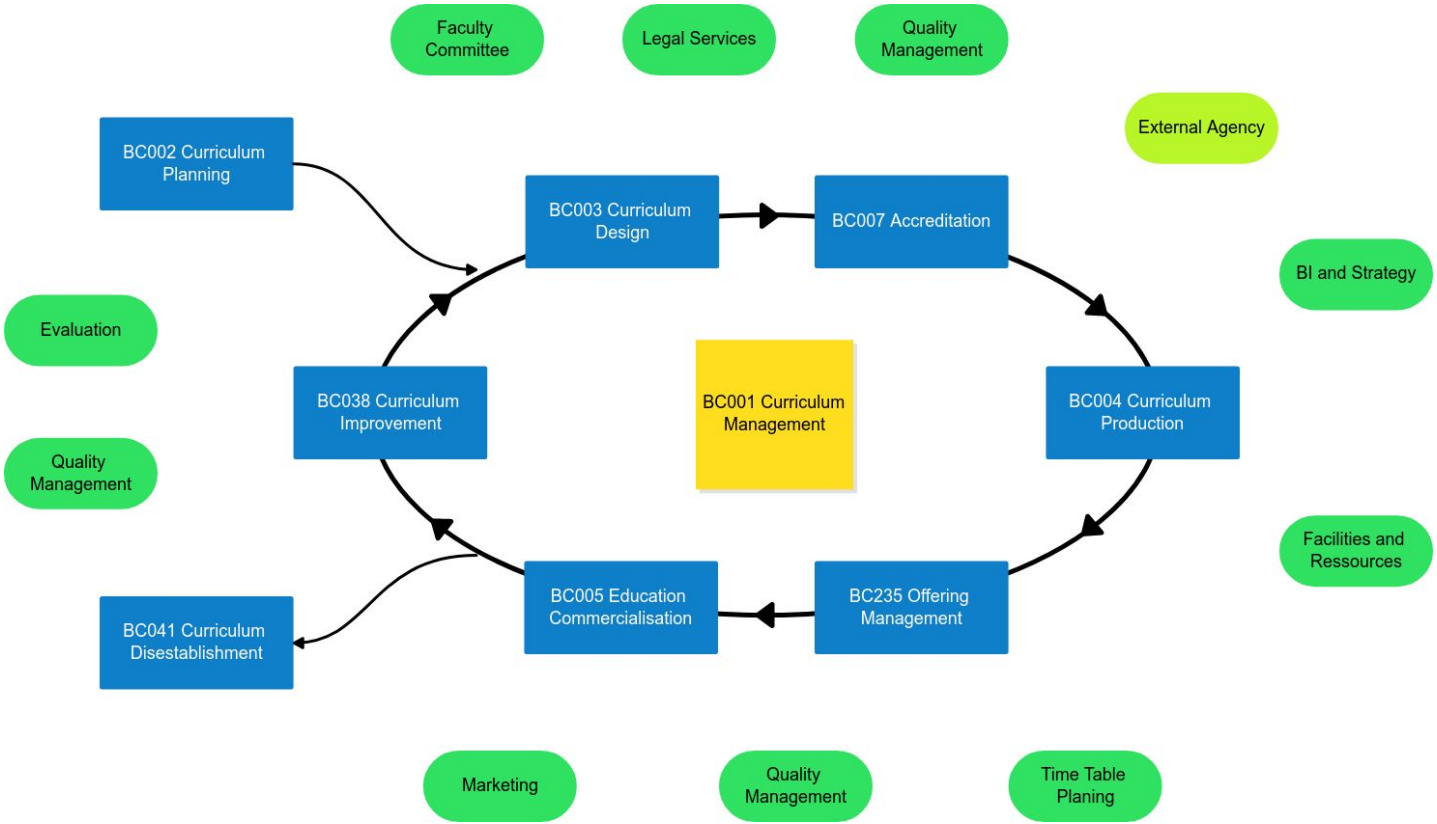
- easy to write and read → simple and consistent wording
- understood by most people → offer multiple perspectives (text + graphics)
- consistent and flawless → automatic validation
- usable in all situations → digitally represented

Curriculum Life-Cycle

HERM

+ stakeholders

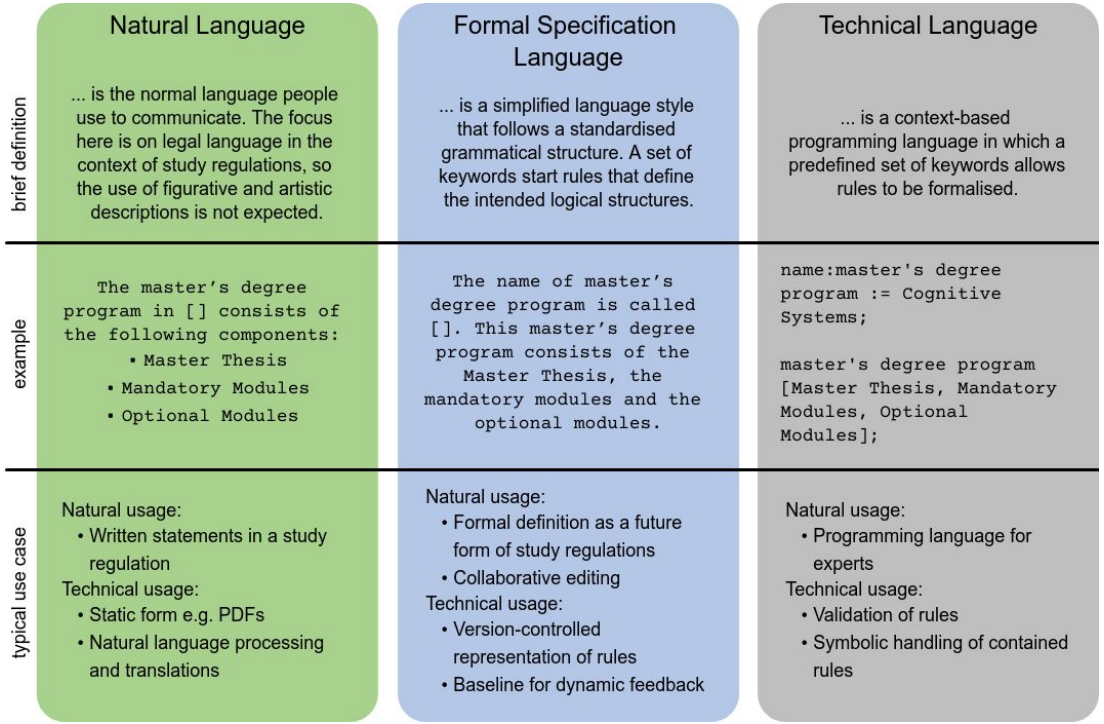
+ scenarios



Languages are used to specify

- representations differ
- semantic stays the same
- most people understand natural and formal language
- computers “understand” (=structurally work with) formal and technical language

→ read and write regulations in formal specification language.



Just edit

- extended Obsidian MarkDown editor with plugin
- dynamically generate structured SVG from semantic tree representation
- embedded feedback in text and graphics

§ 1 Scope

...

The name of master's degree program is called Cognitive Systems. This master's degree program consists of the Master Thesis, the Mandatory Modules and the Optional Modules.

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As regulations for this specific program, they supplement the new version of the general study and examination regulations for non teacher training related bachelor's and master's degree programs at the University of Potsdam of January 30, 2013 (BAMA O).

...

In case of any inconsistencies between these regulations and BAMA O, BAMA O shall have priority over these regulations.

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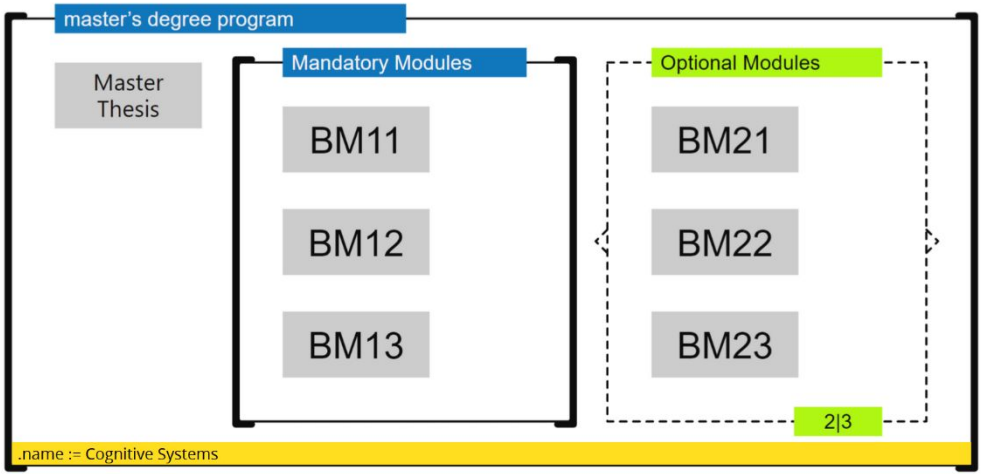
The mandatory modules contains the modules BM11, BM12 and BM13.

...

In the optional modules you can choose 2 till 3 from the modules BM21, BM22, BM23.

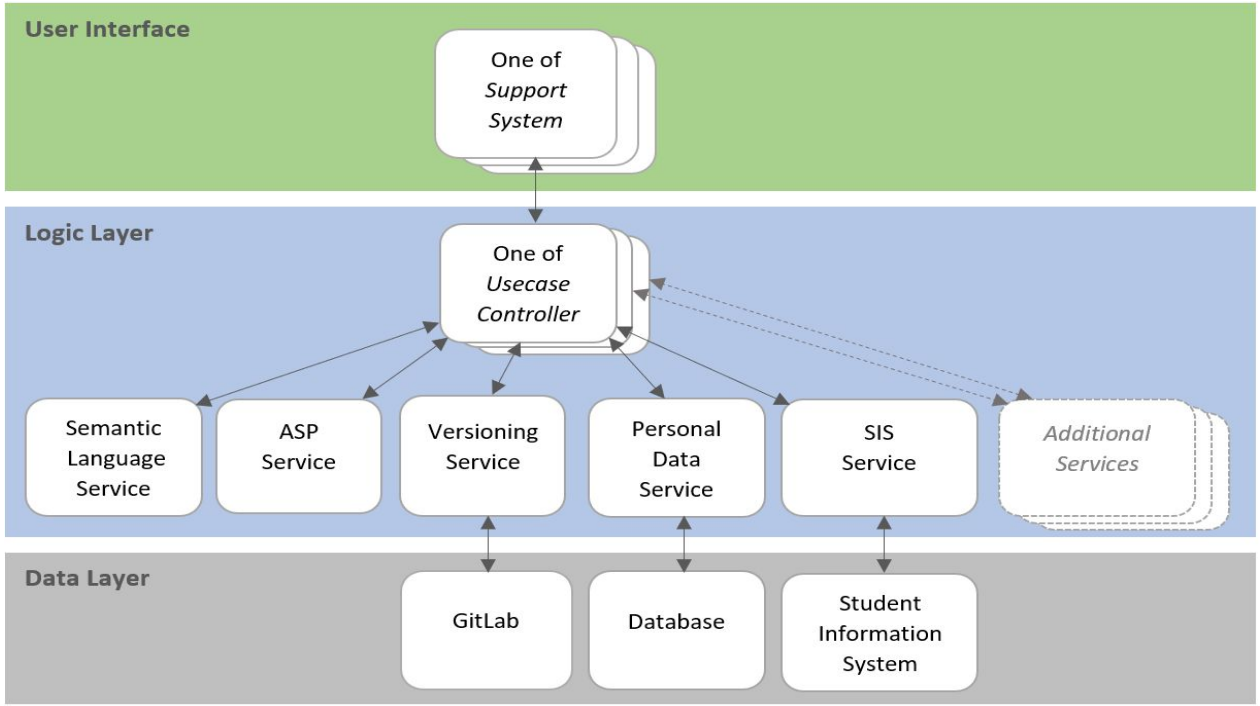
...



Generic architecture for AI based assistant systems

- flexible
- extensible
- scaleable
- easy to integrate

→ prototyping of various support systems



Use cases along the Curriculum Life Cycle

HERM Capability	Use Case
BC003 Curriculum Design	The interactive development of the curriculum with real-time feedback on the coded rules reduces minor errors during the editing process and improves consistency within the model of the study programme. The structured result is used in the other use cases.
BC007 Accreditation	The internal validation of each study regulation follows the local quality management procedures. The ancillary conditions of underlying regulations and external requirements for accreditation can be supported by formal examination routines.
BC004 Curriculum Production	From a curriculum planning perspective, a recommendation can be made as to which modules should receive special consideration in future course offerings based on the regulations to be covered in a teaching unit and the courses offered in previous semesters.
BC235 Offering Management	All requirements for available teaching staff time slots and room capacities are fitted into schedules that correspond to the requirements of the cohorts (like number or special needs of students) in the modelled study programmes.
BC005 Education Commercialisation	The number of study progressions that can be studied for a degree in the standard period of time can be generated from the formalised regulations in comparison with the previous course offerings and form a basis for planning and advising processes.
BC027 Timetable Management	From the student's perspective, a recommendation can be made as to which courses would be possible for a degree in the chosen major based on the applicable regulations, previous performance, individual preferences and current course offerings.

Summary

- Digital representation of study regulation in formal specification language
- Real time editing as MarkDown with direct feedback
- Rapid prototyping for AI based support systems
- Use cases are embedded into HERM based Curriculum Life Cycle