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New Framework for Professional Qualifications in Civil Engineering Programs in Germany

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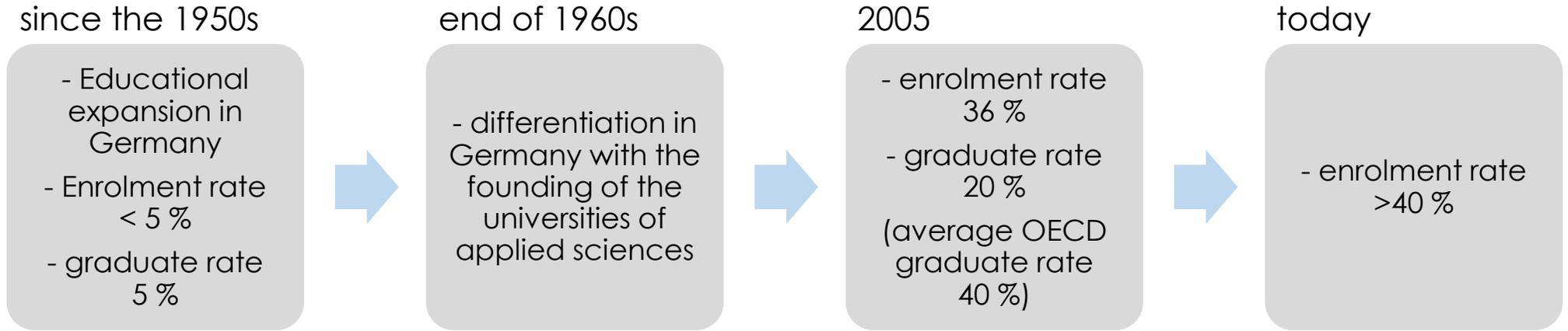
German Association of Departments of
Civil Engineering and Environment Engineering
at Universities of Applied Sciences (GADCE)

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Foreword

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- Introduction
- Study System
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Bologna process: from Diplom-Ingenieur to Bachelor and Master Degree

- new differentiation
- growing interest in vertical differentiation through the increased creation of university rankings and the Excellence Initiative
- Horizontal differentiation is to be achieved through increased profiling of the individual universities → Approaches are not very advanced in Germany
- The universities of applied sciences are moving closer to the universities, but there are still differences

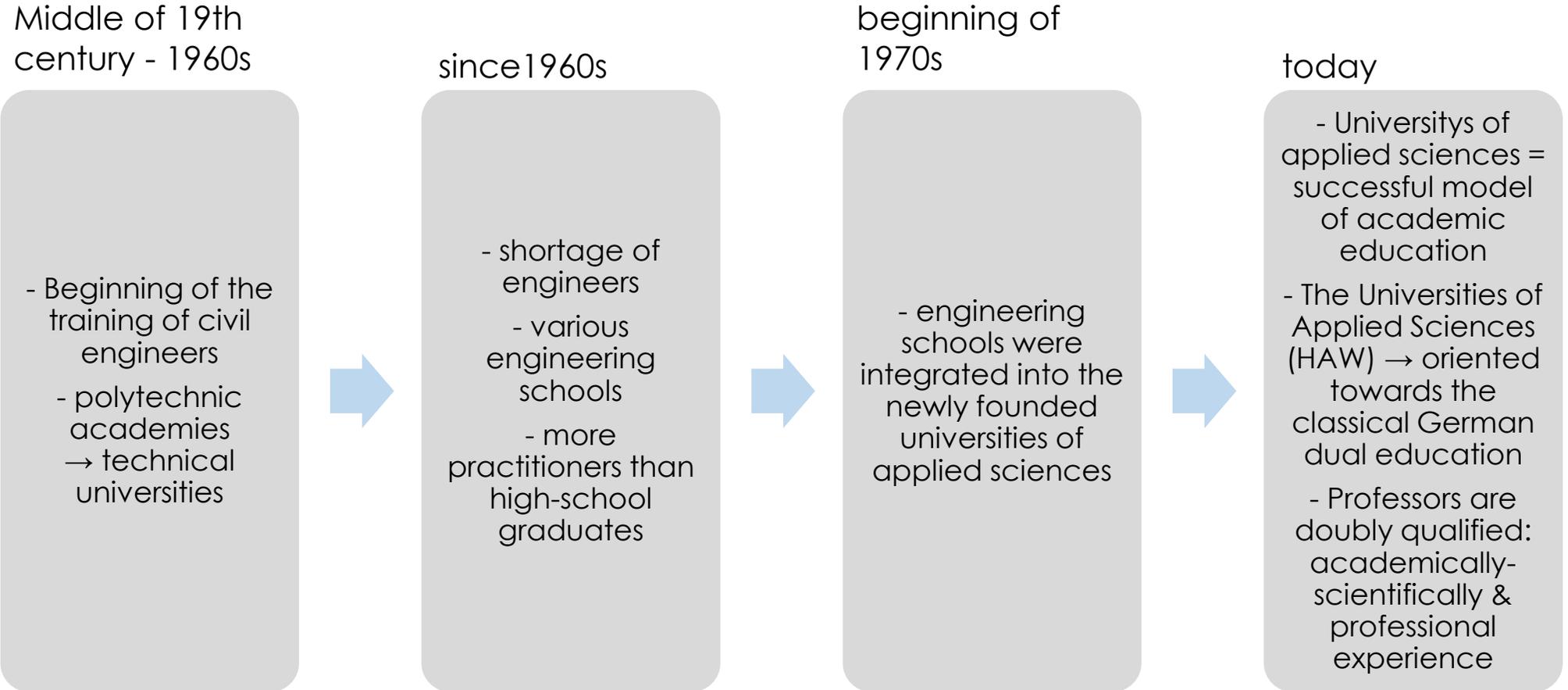
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- The entitlement to use the professional title of civil engineer is regulated differently at international level
- The European Council of Engineers Chambers surveyed the state of training of civil engineers in the countries of the European Union
- In Germany, the title "Civil Engineer" has been associated with the university degree "Diplom-Ingenieur" for about 150 years
 - technical or scientific discipline
 - a standard period of three years
- result of the Bologna Process (Bachelor & Master Degree) and the European Professional Recognition Directive an adaptation of the engineering laws was necessary
 - uncertainty in professional practice
 - The Universities see both legal regulations governing study content and mandatory chamber memberships for their graduates as inadmissible interference with their constitutionally guaranteed freedom from research and teaching
 - ASBau therefore developed the reference framework presented here for civil engineering

Study System in Germany

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From Diplom-Ingenieur to Bachelor Engineer

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- universities/technical colleges → Dipl.-Ing. (Univ.)
- universities of applied sciences → Dipl.-Ing. (FH)
 - FH graduates were very well received on the labour market
 - salary difference was only made in the public building administration
- Bologna Process
 - concept of knowledge transfer changed: learning outcome
 - differentiation of the courses offered
 - Tertiary education no longer distinguishes between types of higher education institutions, only in education levels
- now 20,000 courses of study in Germany → diversity is often deplored today
- In civil engineering are various engineering courses related to civil engineering → for ASBau, these are not civil engineers if frame of reference is'nt taught

Civil engineer's responsibility in society

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- those who perform the classical construction task, have a special responsibility for their actions → state has delegated this task and responsibility to the Chambers of Engineers on a self-organising basis
- Federal Chamber of Engineers with 16 state chambers of engineers
- Professors
 - Right of freedom in research and teaching
 - Civil servants for life
- collisions between the two groups resulted from this competing task of the state, on the one hand to the Chamber of Engineers and on the other hand to the professors → frame of reference for civil engineering courses
- other regions of the world are also working on uniform standards of civil engineering education with regard to teaching content, f.e. East Africa and Canada

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Bachelor: University vs. University of Applied Sciences?

- university degrees at universities and Universities of Applied Sciences are equivalent, but different in orientation
 - Universitys of Applied Sciences attach particular importance to the (immediate) professional qualification of the graduates
- Research in the construction industry in Germany is low compared to other sectors
 - due to the special structure
 - 760,000 employees in the main construction sector
 - more than 70,000 companies plus so-called self-employed individuals
 - average of 10 employees per company → no strategic considerations

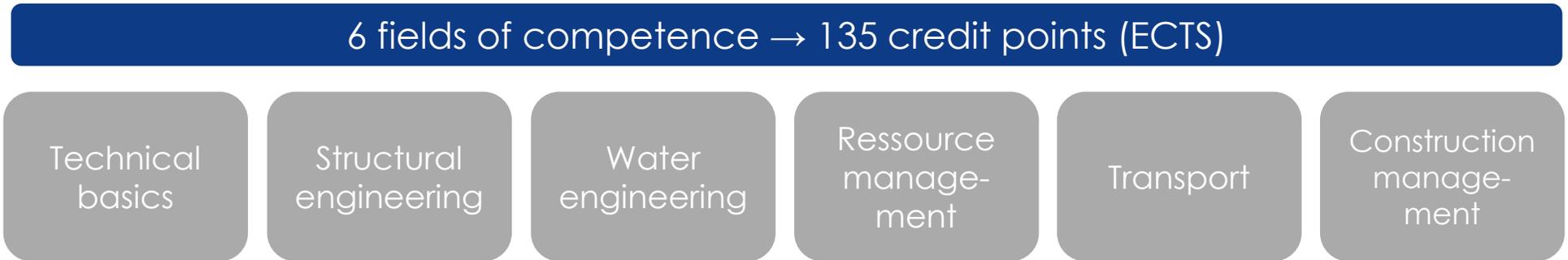
The compromise 'frame of reference'

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- German accreditation system
 - closely related to the objectives of the study structure reform and Bologna process
 - established European and international standards of quality assurance
- To evaluate the vocational qualification and employability of the graduates an outcome-oriented reference framework for study programmes in civil engineering (Bachelor) was developed
- reference framework describes fields of competence in a volume of 135 credit points (ECTS) which should be covered within the framework of a Bachelor's programme in civil engineering
- a learning objective-oriented matrix is defined → application is voluntary
- very large circle of stakeholders was represented
- universities and universities of applied sciences have jointly agreed on a uniform job description for civil engineering

Presentation of the frame of reference

- Goal: impart a basic knowledge of civil engineering to bachelor's degree courses



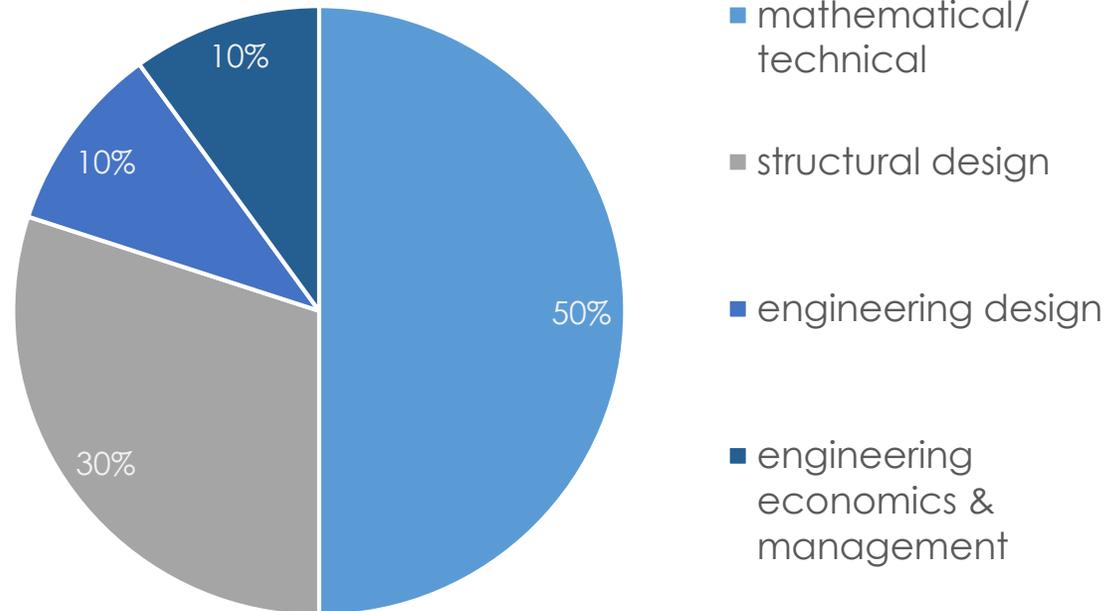
- Knowledge, skills and competences are listed to concretize the fields of competence
- The selection and focus of each course will be left to the specific course design

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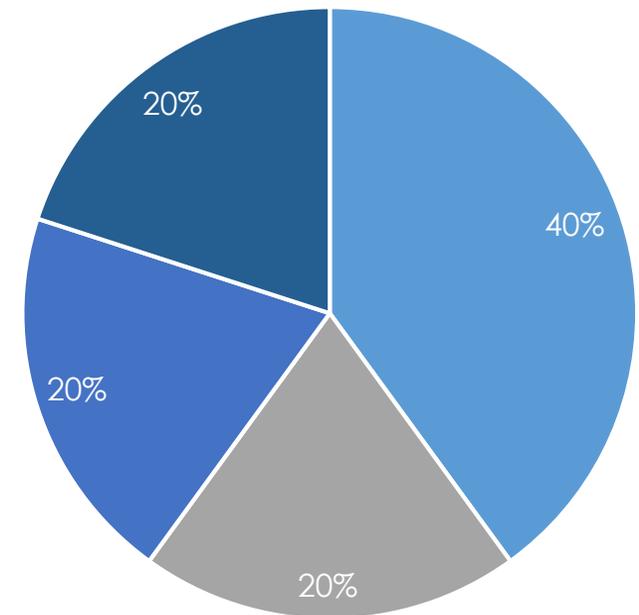
Presentation of the frame of reference

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traditional study program academic competencies [%]



ASBau framework academic competencies [%]



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Summery

frame of reference

- + describes the current professional understanding in civil engineering in Germany in a transparent and goal-oriented way
- + universities and universities of applied sciences have agreed on a common job description for civil engineers
- + reference framework takes into account the level of competence of the graduates required from the point of view of construction practice
- + provides criteria for this that give universities sufficient flexibility in designing their degree programmes
- + do not restrict the legally guaranteed freedom of research and teaching
- + successful example for „democratic involvement in educational processes“

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