



A Collaborative Exercise Repository for STACK

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Banks and Databases

- DOMAIN
- Digitaler Aufgabenpool
Mathematik - TH Köln
- abacus
- STACK Question Library
- HELM
- SASIM
- twillo
- OpenRUB
- optes
- SIG Mathe Digital
- ...

Feature Wishlist

- offer **individual questions**, which can be searched, filtered and **previewed**,
- support **robust versioning** for individual questions,
- provide an **interface for LMS** to connect to,
- ensure compatibility across **various LMS**,
- ...

User Scenario 1: Finding Questions

- 1 search courses in databases
- 2 download a course from a database
- 3 import the course to the LMS
- 4 search questions within the LMS
- 5 preview questions within the LMS

User Scenario 1: Finding Questions

- 1 search and preview questions in databases
 - 2 download a question from a database
 - 3 import the question to the LMS
 - 4 ~~search questions within the LMS~~
 - 5 ~~preview the question within the LMS~~
- offer **individual questions**
 - enable **previewing questions**

User Scenario 1: Finding Questions

- 1 search and preview questions in databases
from within the LMS
 - 2 ~~download a question from a database~~
 - 3 import the question to the LMS
 - 4 ~~search questions within the LMS~~
 - 5 ~~preview the question within the LMS~~
- offer **individual questions**
 - enable **previewing questions**
 - provide an **interface for LMS**

User Scenario 2a: Editing Questions

- 1 user edits questions
 - 2 user informs the author
 - 3 author edits the question
 - 4 author uploads the question to the database
- process is too complicated
 - users tend to refrain from submitting their improvements
 - edited questions remain invisible to others

User Scenario 2b: Editing Questions

- 1 user edits questions
 - may lead to many versions
 - 2 user uploads the question to the database
 - hard to keep track of
- support **robust versioning** for individual questions

Feature Wishlist

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Project Goals

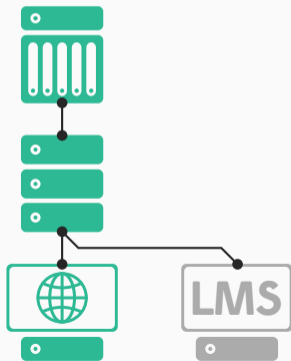
- develop an **open question database software**,
- create a **question bank** based on this software,
- consolidate **existing questions** into the question bank,
- advance **outreach** and **community engagement**.

Idea for a Central **Access Point**



- **Git-based repository** with question-specific data structure, standardized meta data scheme, version control
- **API** handles import and export, search and filter queries, and metadata enrichment
- **Web-based frontend** with import and export, search and filter functions, preview and metadata display

Idea for a Central **Access Point**

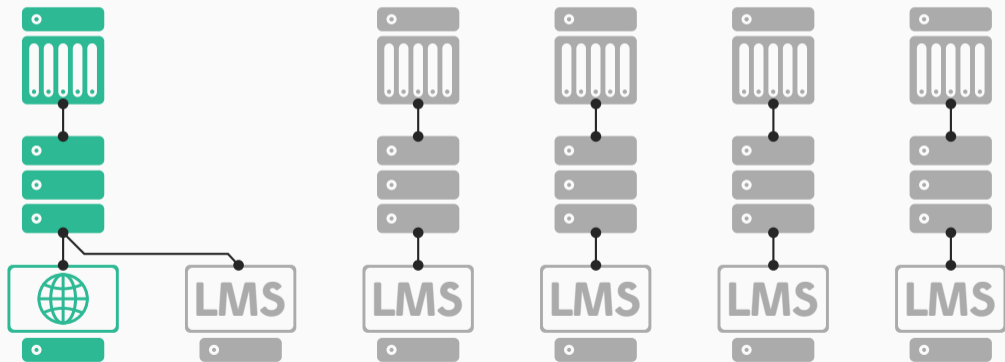


- **LMS plugins** for Moodle and ILIAS to synchronize and version questions

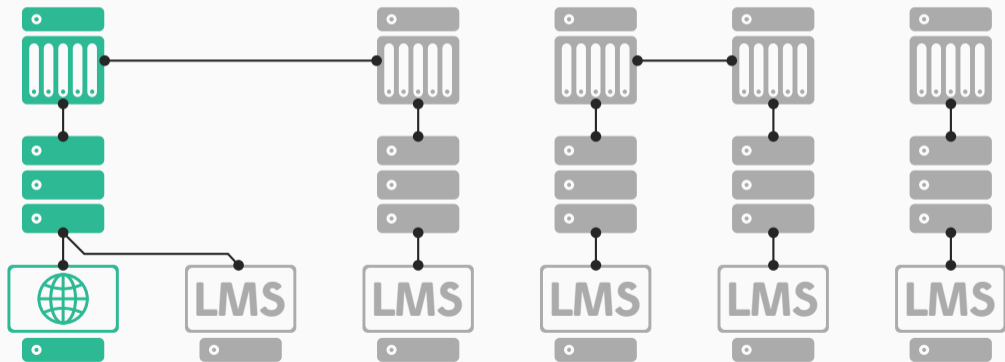
Core Infrastructure as Open Software

- API and LMS plugin will be **freely available**
- allows institutions to host their **own repositories**
- allows to share repositories **between institutions**

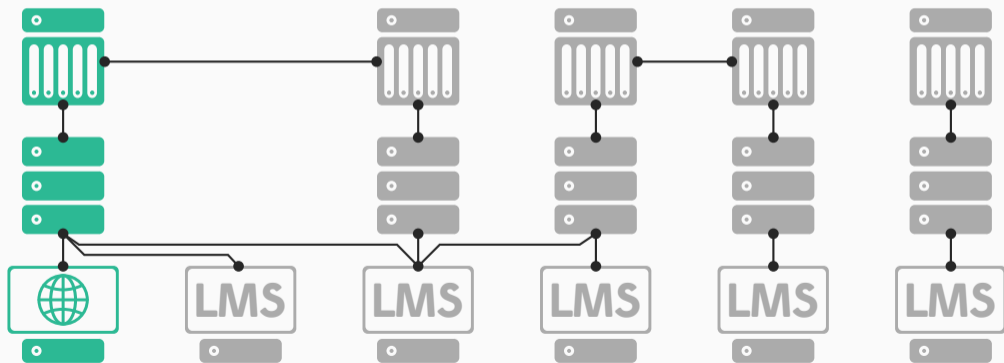
Centralized and Decentralized Infrastructure



Centralized and Decentralized Infrastructure




Centralized and Decentralized Infrastructure



Progress So Far

- manage, join and split questions on the level of xml files
- preview questions, sample solutions and, response trees
- generate meta data with ai

STACK Question Viewer


 Drag XML file here
 or
[Browse](#)

Available Questions

Lagebeziehung von Geraden und Polygonen (3) (Orientierte Dreiecke)

Lagebeziehung von Geraden und Polygonen (3) (Orientierte Dreiecke)

[Question](#)
[Solution](#)
[Information](#)
[PRT](#)
[AI Solve](#)
[AI Keywords](#)


prt1

prt2

prt3

prt4

prt5



Community Engagement

Conference goals

- explore what standards and technologies already exist **Thank you!**
- see where we can work together
- understand what educators actually need

Community Engagement

Survey

- current use of question banks and common challenges,
- desired features and functions, and display preferences
- willingness to contribute questions and potential barriers


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🌐

Questionnaire - Database for digital STEM questions 4 | 7


User interface and question information

Which view do you find practical? (multiple selections possible)


list



list with pictures



tiles of screenshots



Is there another view that you would like to see?

What information should be displayed with the questions in a new question database? Please rate the importance of the following information and whether it should already be visible in an overview.

	unimportant	rather unimportant	rather important	important	Information in overview
<i>Evaluation of the question by users</i>					👍
Author	○	○	○	○	○
Uploader	○	○	○	○	○
Uploaded on	○	○	○	○	○
Topic	○	○	○	○	○
Description	○	○	○	○	○
Type	○	○	○	○	○
Random question (yes/no)	○	○	○	○	○
Description of the type of random question creation in words (e.g. randomised parameters)	○	○	○	○	○
Export count	○	○	○	○	○
Languages	○	○	○	○	○
Keywords	○	○	○	○	○
Screenshot/ preview of the question	○	○	○	○	○
Interactive preview of the question	○	○	○	○	○



Please, share your perspective and
take part in our survey under

🌐 <https://stack.nrw/en/durham25.shtml>

Thank You!

🌐 <https://stack.nrw/en>

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