AVT

Aktivitetsdata for vurdering og tilpasning

(Activity data for assessment and adaptivity)

Nina Morlandstø - SLATE (UiB)

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KS

Oslo kommune
Utdanningsetaten

AVT-project is a collaboration between

- KS (owner)
- Oslo Kommune (instigator)
- SLATE (leader)

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Centre for the Science of Learning & Technology

- SLATE, created in 2016, is a national research and competence centre financed by the Norwegian Ministry of Education and the University of Bergen.

- SLATE will advance knowledge by exploring and clarifying concepts such as learning analytics, big and small data in education, assessment for learning, and creativity, learning & technology, in all facets of human learning.

- SLATE is hosted at the Faculty of Psychology, University of Bergen

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The AVT-project is developing a ***framework for learning analytics*** *for adaptive learning in school municipalities*

Comprises 3 models:

1. *A model for appropriate structuring of learning objectives and for the structuring of content by vendors*
2. *A model for sharing of data between vendors for the purpose of learning analytics*
3. *A model for identifying student achievement level and linking to relevant learning resources*

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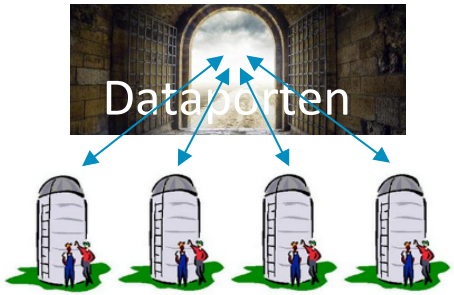
Today's challenges

Vendor Silos: activity data available only to vendor owning the application where the activity was created

Activity data in different format: activity data stored in the vendor's internal formats

National competence objectives (GREP): objectives are not fine-grained enough for designing learning activities, schools break them down (adaptivity and learning analytics)



xAPI-format

standard norge

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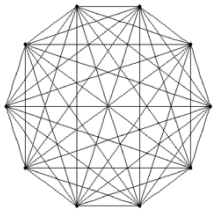
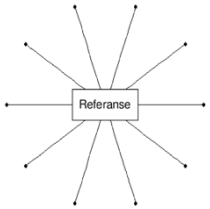
Framework for learning analytics

1. *A model for appropriate structuring of learning objectives and for the structuring of content by vendors*





→ Subject Map, a set of references where learning objectives & topics are structured.

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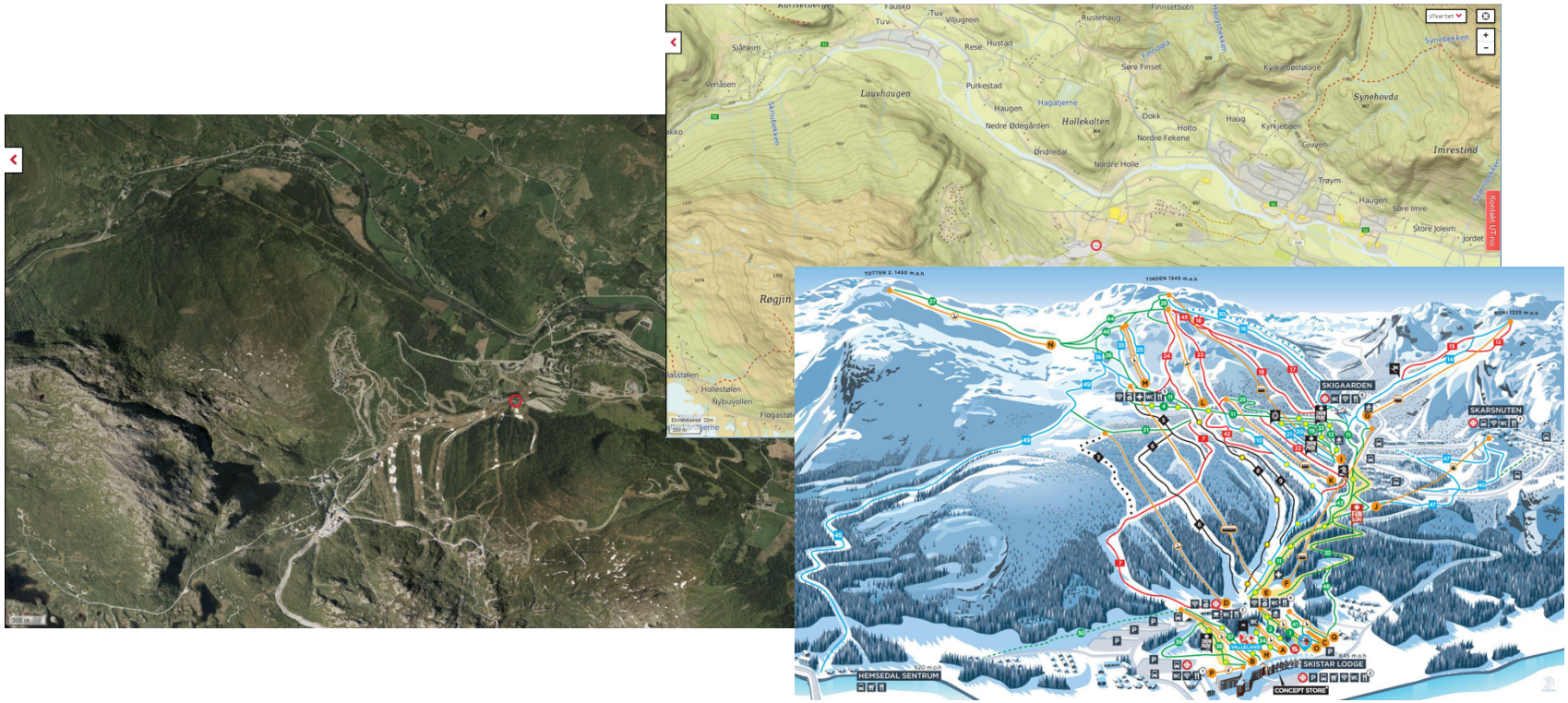
Map of reality (the subject)



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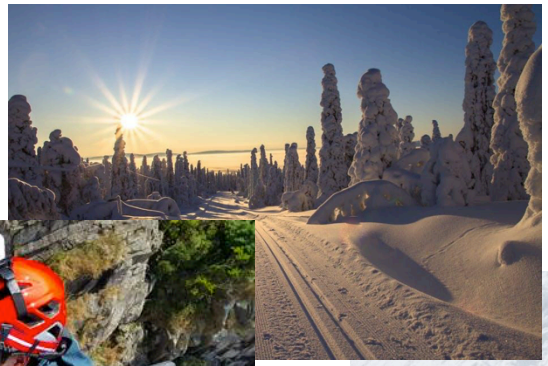
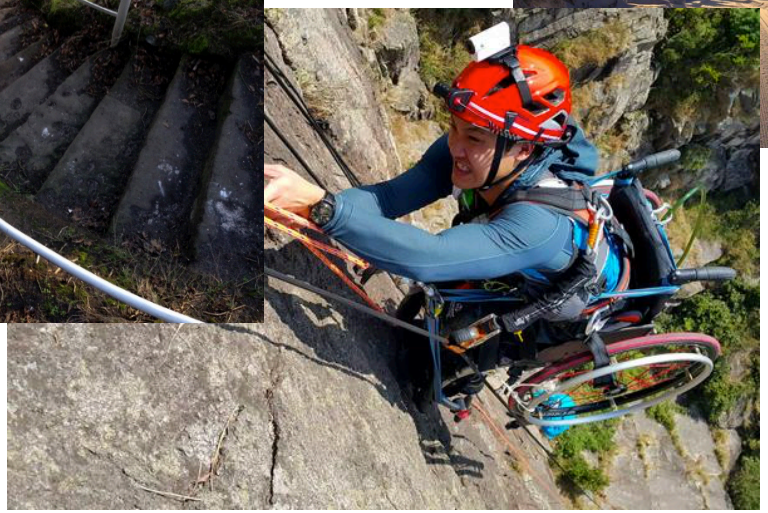
Individual adaptation





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Why subject map?

Competence objectives after 4th grade (math)

Numbers

The student should be able to

- develop and use varied multiplication and division methods, use them in practical situations and use the the small multiplication table in mental arithmetic and task solving

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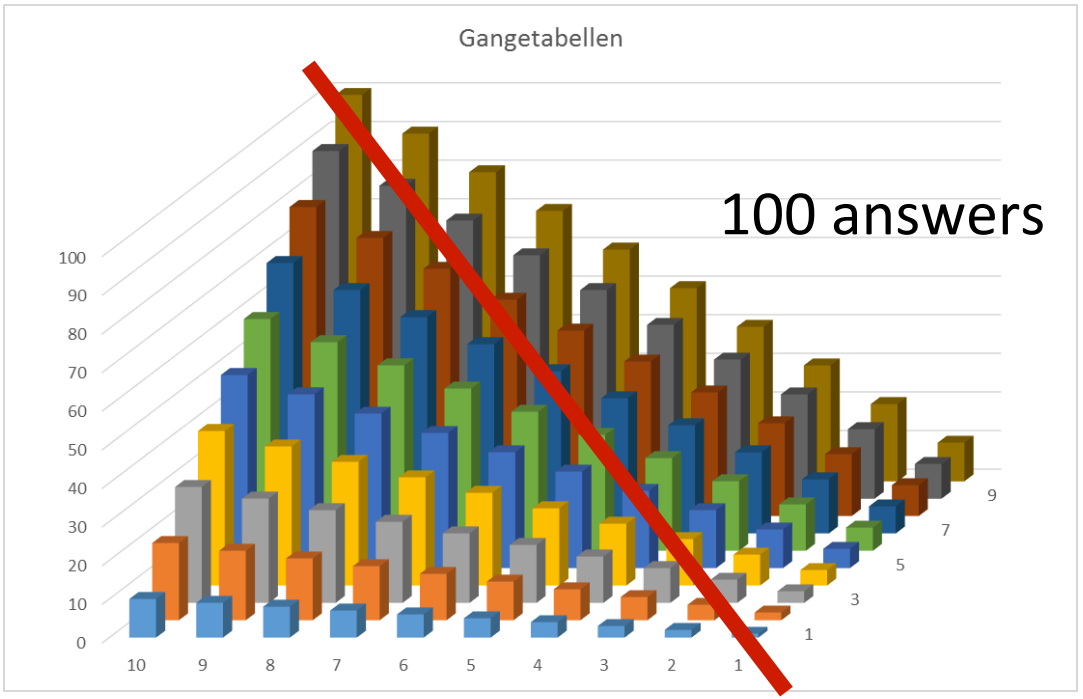
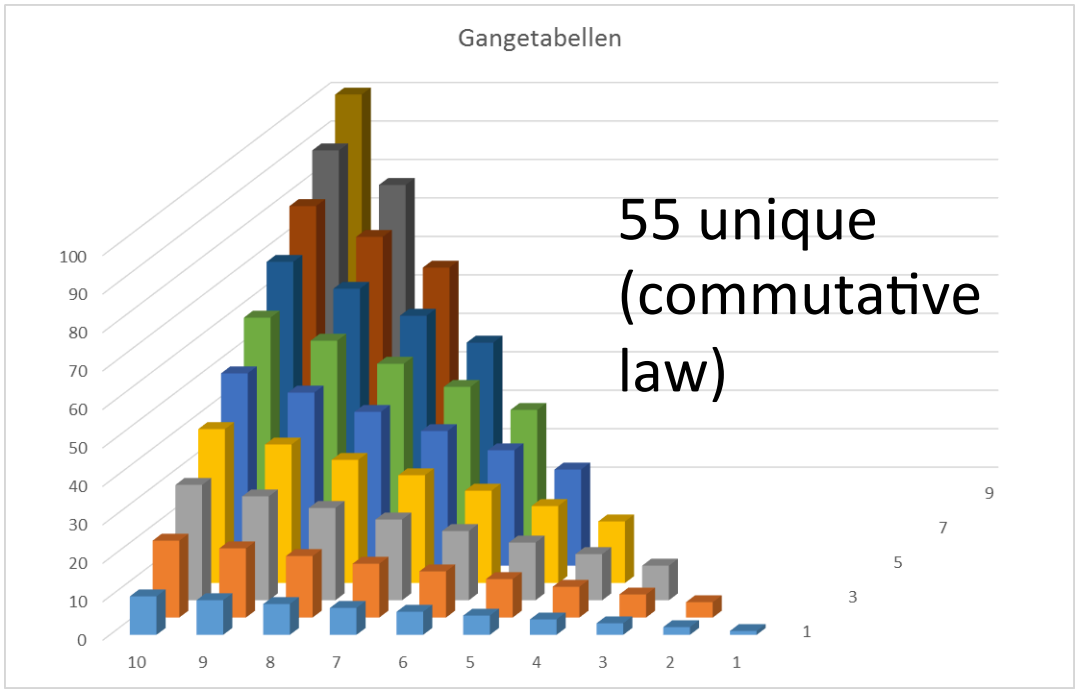
Why subject map?



Why subject map?



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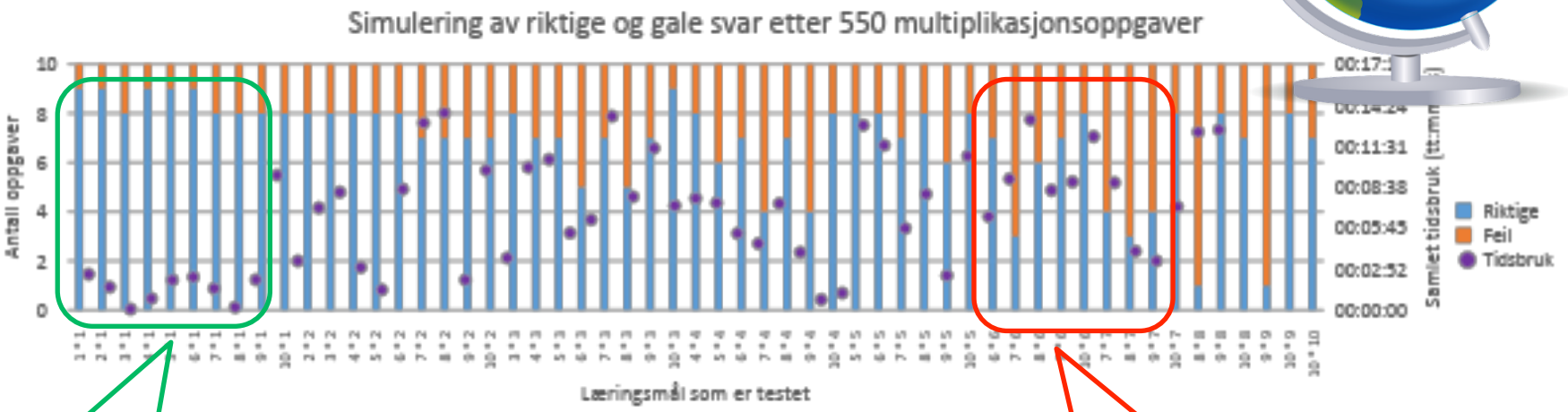
Why subject map?



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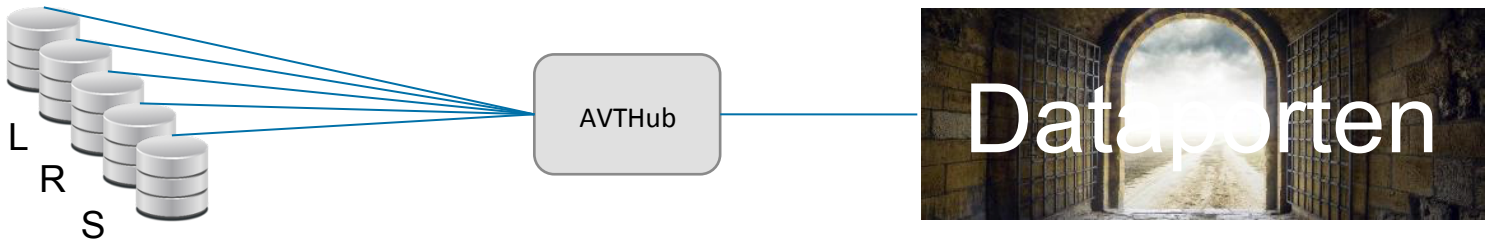
Framework for learning analytics

2. A model for sharing of data between vendors for the purpose of learning analytics

→ Activity data is delivered in the same format, xAPI

→ AVTHub controls the privileges of the entity approaching

→ Identification with Dataporten



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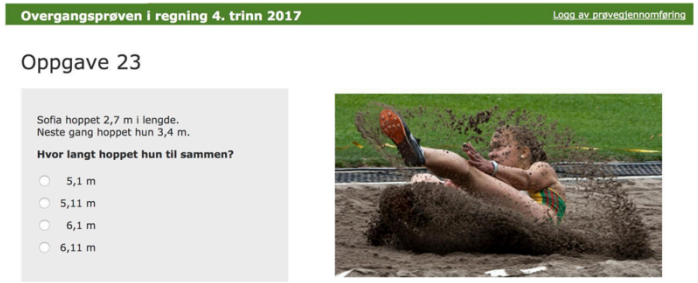
Activity data sources - examples

Utdanningsdirektoratet

Nasjonale prøver



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Format

- Activity data is made available in xAPI format.
- Standards Norge (SN/K 186) defines a Norwegian translation of xAPI
- The xAPI main structure:
  - ***Actor***: Who is the activity data about (student-ID)?
  - ***Verb***: What action does the activity consist of (answered, …)?
  - ***Object***: What is the activity related to (animation, video, item, test, …)?
  - ***Context***: Other relevant metadata about the activity (area in subject map, school, municipality, supplier, competence objectives, complexity level)

Examples of x-API code

Example querying
user and subject map

GET ~/statement?agent=
{“account”:{“name”:”76a7a061-3c55-430d-8ee0-6f82ec42501f”
,”homepage”:”https://docs.dataporten.no”}}
&activity=https://lmbase.no/avt/area-within-the-map/OFK10000
&https://lmbase.no/avt/pisa/mathematical-literacy/competence-level-2
&related_activities=true

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Examples of x-API code

Example response
    user and subject map

https://github.com/KS-AVT/avt/blob/master/eksempel1_overgangsprove.md

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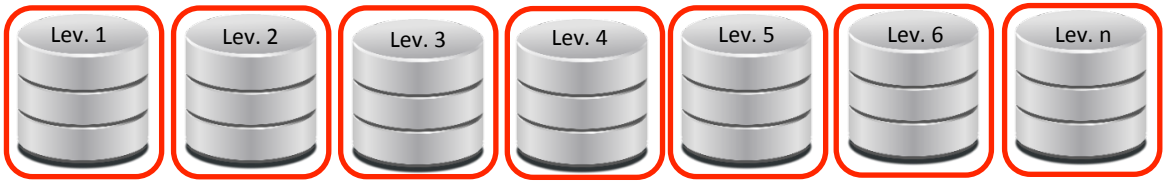
Currently: **Supplier centric** activity data



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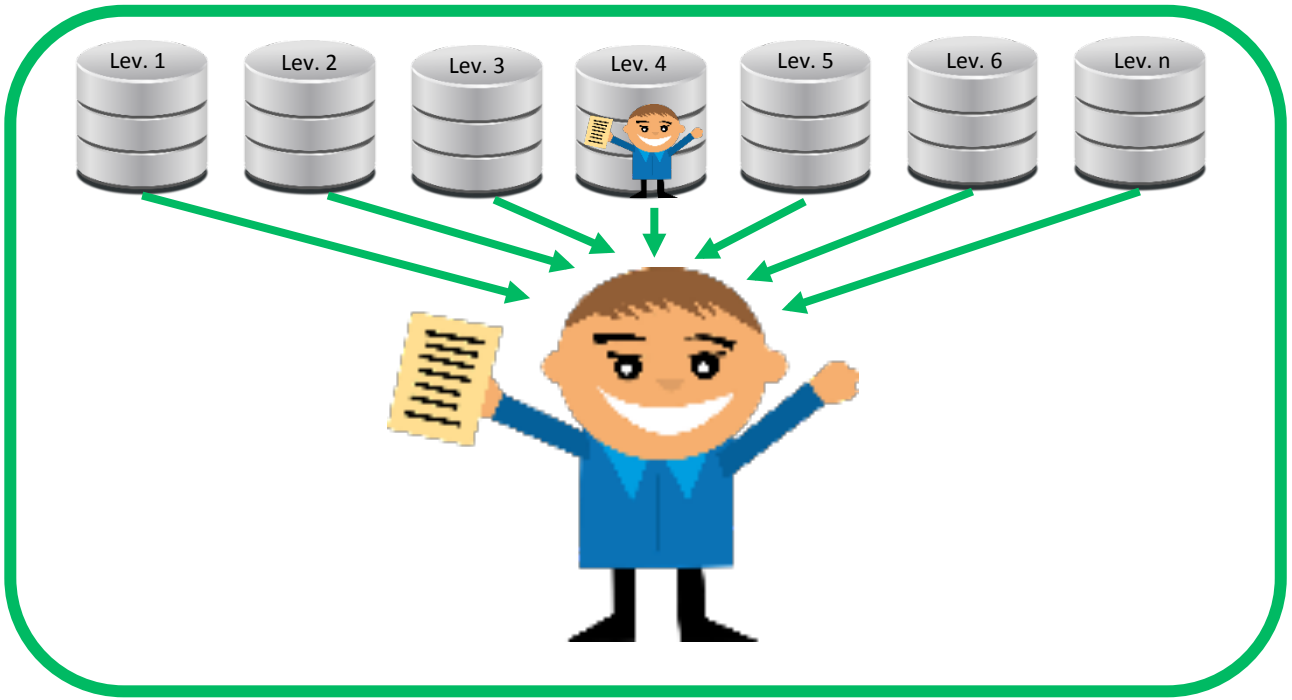
AVT: **Student centric activity data**



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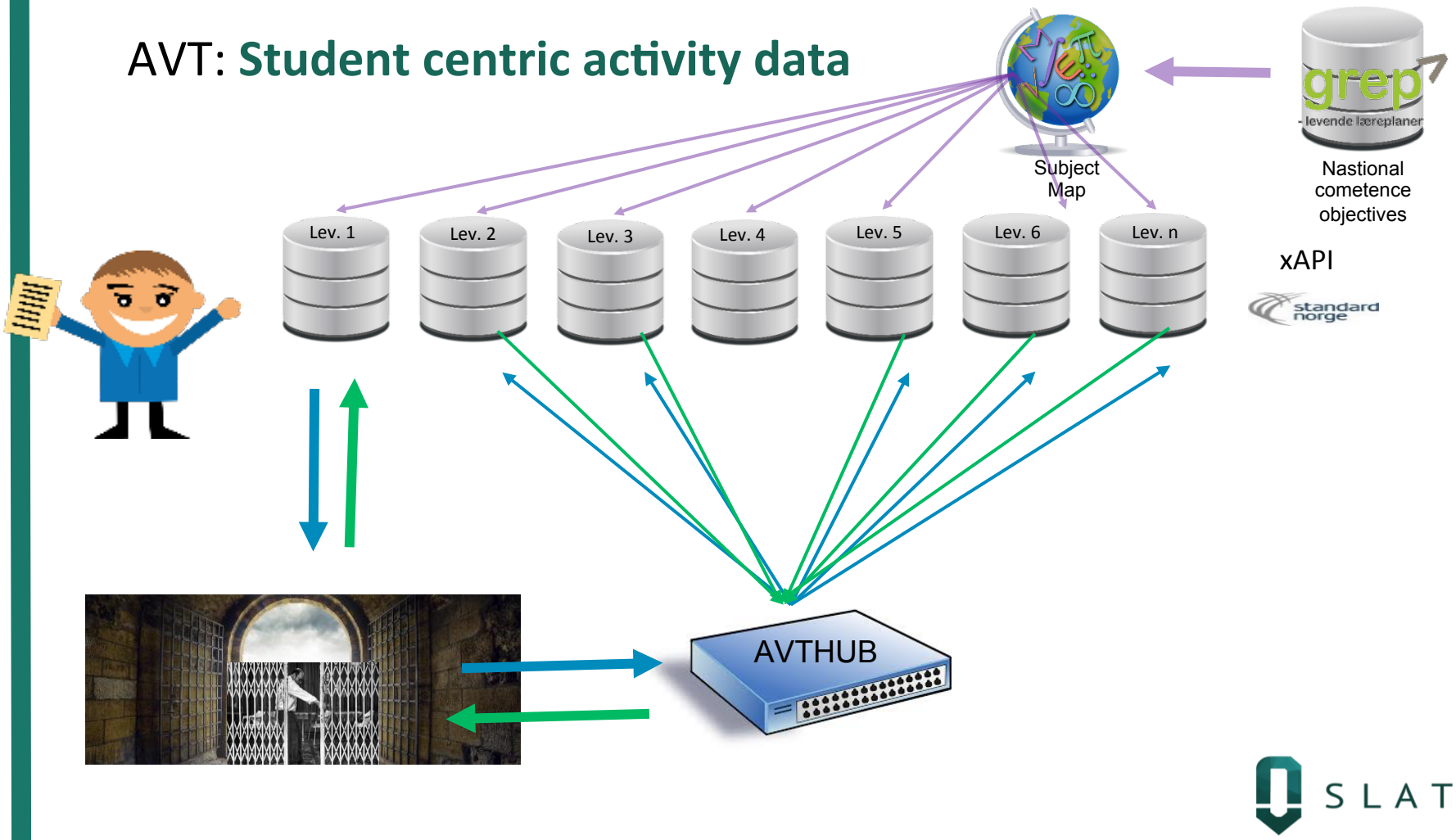
AVT: **Student centric activity data**



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Framework for learning analytics

3. *A model for identifying student achievement level and linking to relevant learning resources*

We identify where the student is lacking competence ...

… and the user (student or teacher) receives recommendations for relevant learning resources, adapted to the student.

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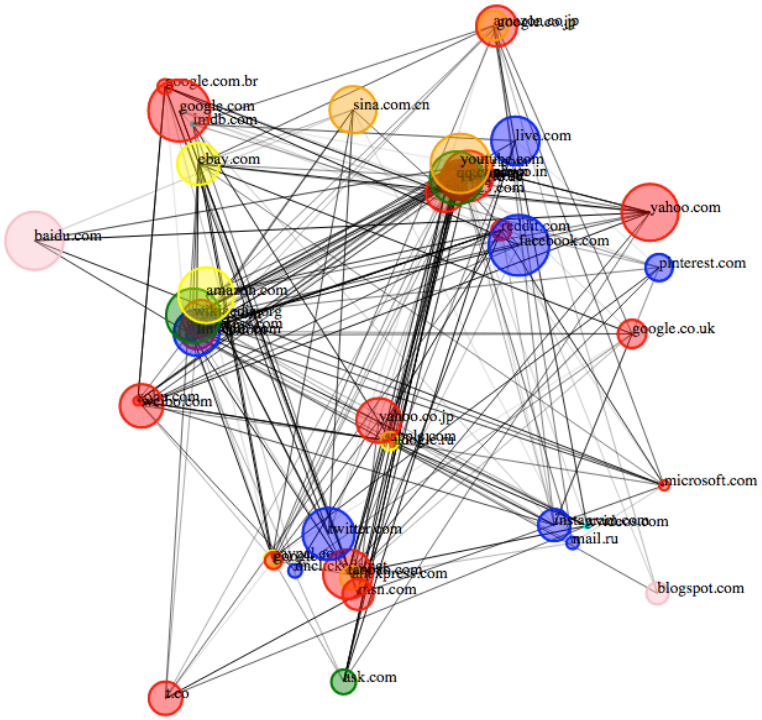
Do we get meaningful results?



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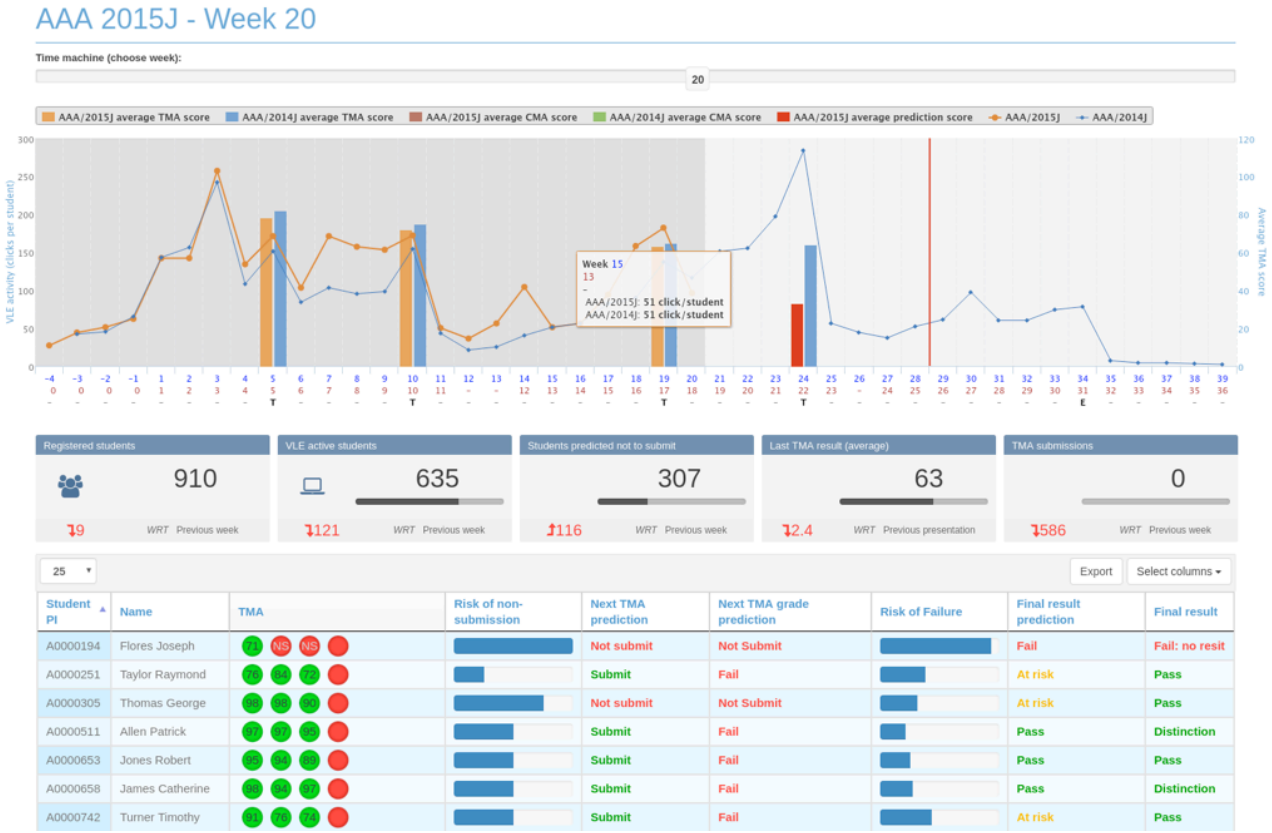
Adaptive learning

Dashboard



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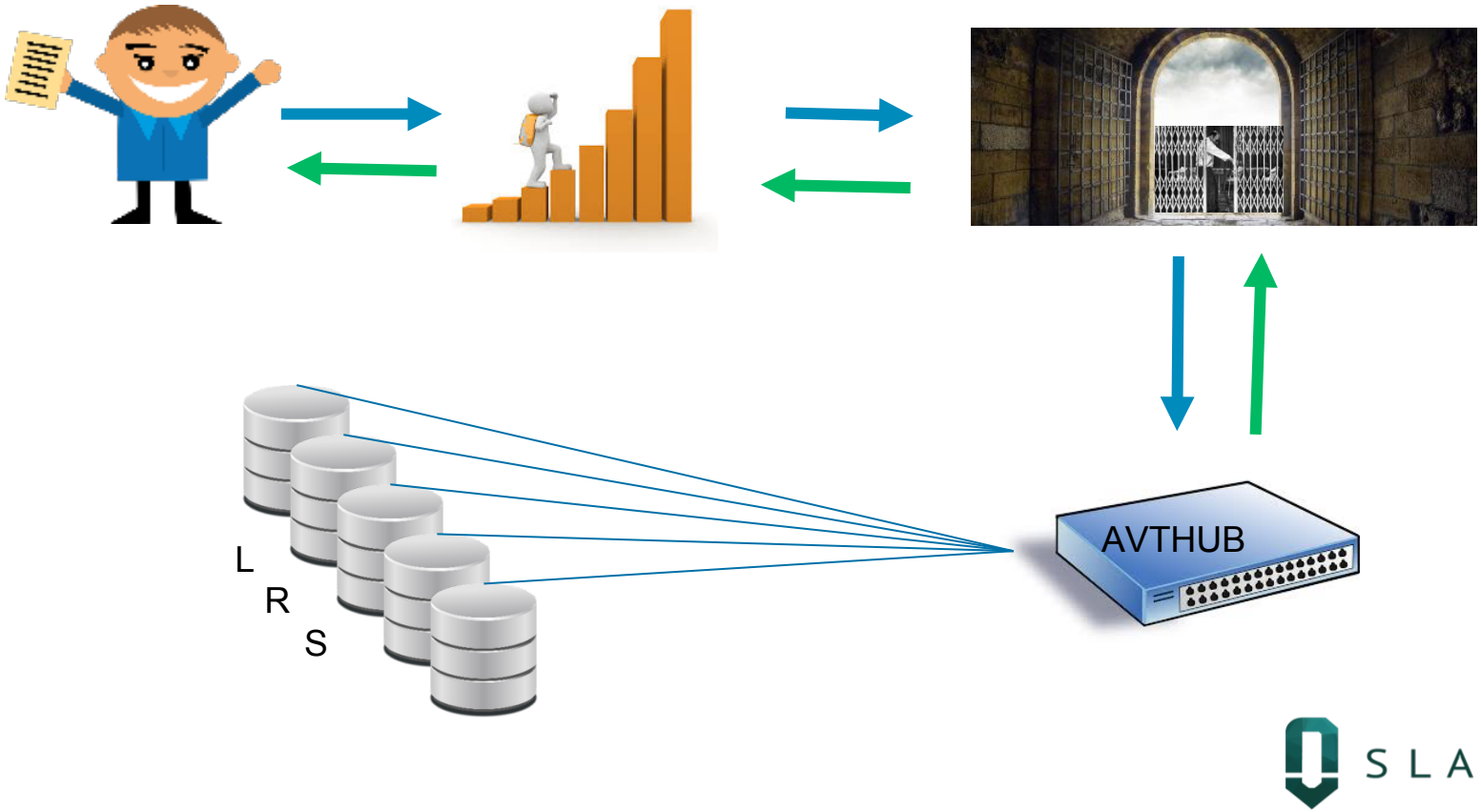
Recommendation of relevant learning resources



Opportunities and areas of use

Teachers get better tools for

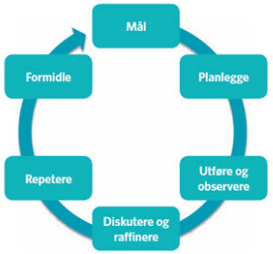
- developing learning activities adapted to the student[1)]
- obtaining more accurate information about individual student and class competence levels, for use in assessment[2)]

School leadership

- overview of the level of class, school

School owner

- school-based assessment and quality assurance



Grounded in the Education Act, § 1-3
Defined in the regulations to the Education Act, Chapter 3
Defined in the regulations to the Education Act § 2-1

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Project Management

- Chairing
- Coordinating
- Reporting

Developing of models

- Structuring of objectives
- Activity data coding
- Identify competence gaps
- Recommending learning resources

Research

- Knowledge base for research on learning analytics

Oslo Kommune (Municipality)

Participating Schools

- School A
- School B
- School C
- School …

Subject Map

- Implement a Subject Map for mathematics
- numbers and algebra, grades 8-10

Interface

- Implement a user interface (dashboard) for students and teachers to access student activity data

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Vendors

Participating suppliers

- Aschehoug
- Cappelen Damm
- Cerpus
- Conexus
- Cyberbook
- itslearning
- Kikora
- TV2 Skole / Studix
- Osloskolen (Osloprøver)

Connecting Resources

- Connecting own digital resources to areas in the Subject Map

xAPI

- Develop an API for delivering activity data in xAPI-format
- Make available the API in Dataporten

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The road ahead

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List of references

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