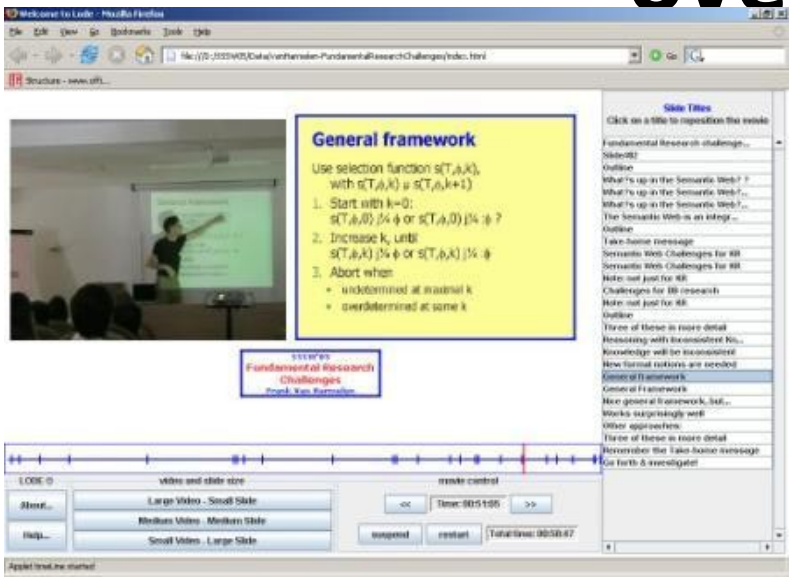
Research on Videolectures

Lectures On DEmand: a system for delivering traditional lectures over the Web.



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What do we need e-learning for?

- Help traditional students
- Support remote students
- Make some activity faster
  - e.g. semi-automatically grading tests
- Change the way we teach
  - Make it more collaborative
- Create a business
  - Get new markets (e.g. Athabasca)
  - Sell content (e.g. SCORM lectures)

Traditional and remote students: how?

Traditional lecturing is dead.

- The lecture model is under attack by people proposing learner centered learning
- E-learning is an opportunity for a change
- However…

Traditional and remote students: how?

… what is going on in *your classroom?*

At our place, we sometimes use a blended approach, much stuff is available through the net,

but the classroom is still there…

Can we make it any better, while the old paradigm still survives?

Breaking the space-temporal unit

Can we free the student from
spatial and temporal constraints?

Classical solutions:

- Paper-based learning material
- VHS cassettes (and TV or satellite broadcasting)

Video distribution through the Internet was not feasible (at least in Europe) until recently

Video is costly . Video is boring!

Videos for teaching?

- TV-based
  - VHS cassettes
  - TV broadcasting of frontal lectures

- Computer network based
  - 1998 Heyes (USA to France)

Our first experiment

We used e-presence on a whole first-year course (48 hours, Object Oriented Programming for Computer Science)

- through the Internet (webcasting)
- through the Internet (asynchronous)
- through the Internet (download)
- offline (through a set of 6 CDs or a single DVD).

Student feedback

Enthusiastic.

We were "forced" to extend the experiment to a second course!

75% anticipated using the system ouen or very ouen

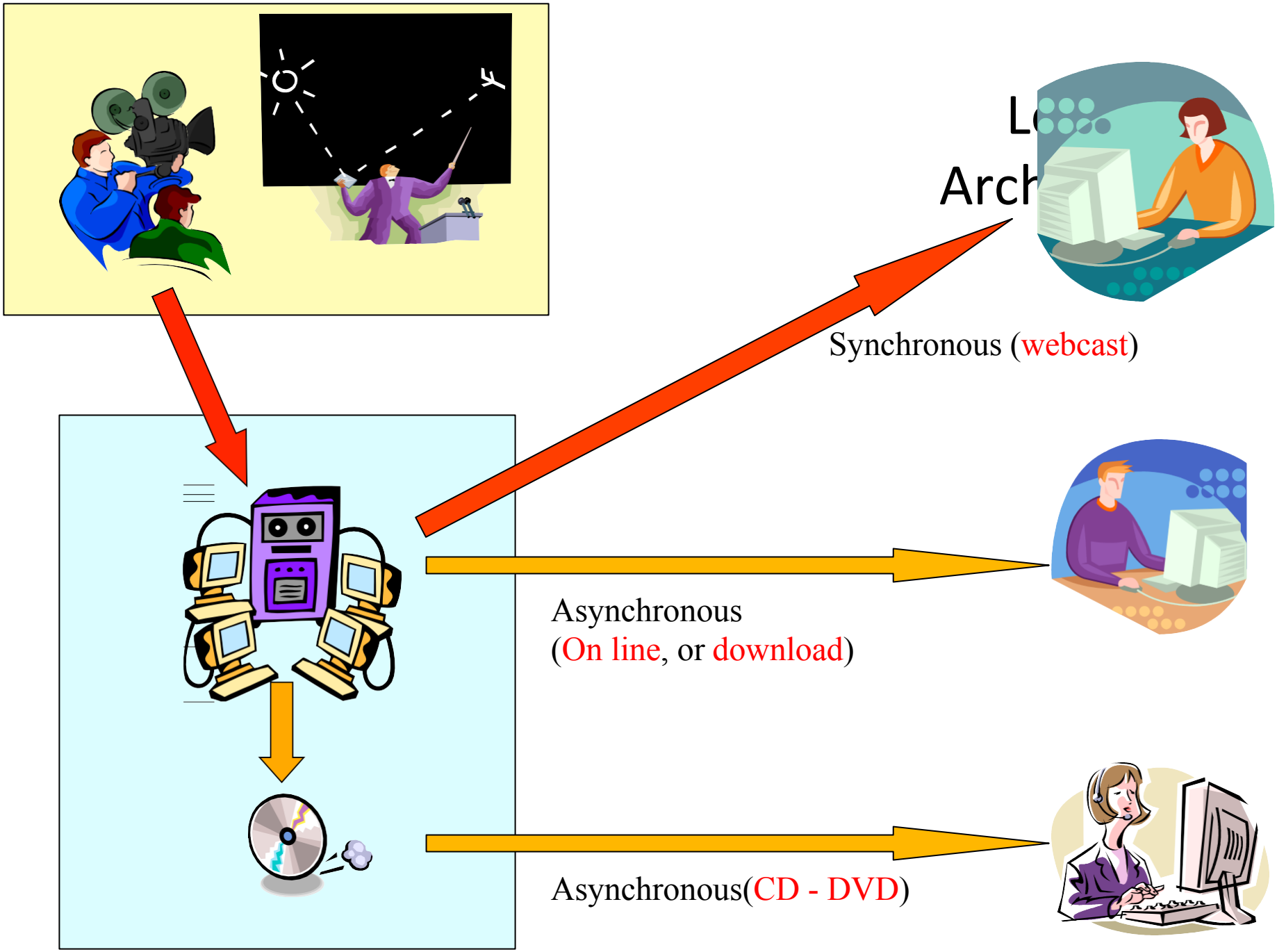
students who…	total	1st exam (45 stud.)	2nd exam (23 stud.)
…used the system to review at least one lecture	63%	51%	87%
…followed the course completely off-line	5%	6%	4%

Advantages from student's perspective

- Better time management:
  - ability to recover lectures lost due to forced absence (illness, work or other time-frame incompatibility);
  - ability to better organize their time, deciding not to be present at some lecture (elective absence);
- Better understanding
  - review some critical point (cases of poor understanding of a section due to concentration drop, excessive speed in an explanation or intrinsic difficulty);
  - ability to check the correctness of notes taken during a lecture;

Other advantages

- Miscellaneous
  - perception by the student of a better service provided by the university;
  - support foreign (italian) students who might have difficulties with the Italian (English) language;
  - enrichment of the e-learning porxolio;
  - possibility for the teacher to view himself;
  - possibility to reuse lectures (across time, or in different contexts!)

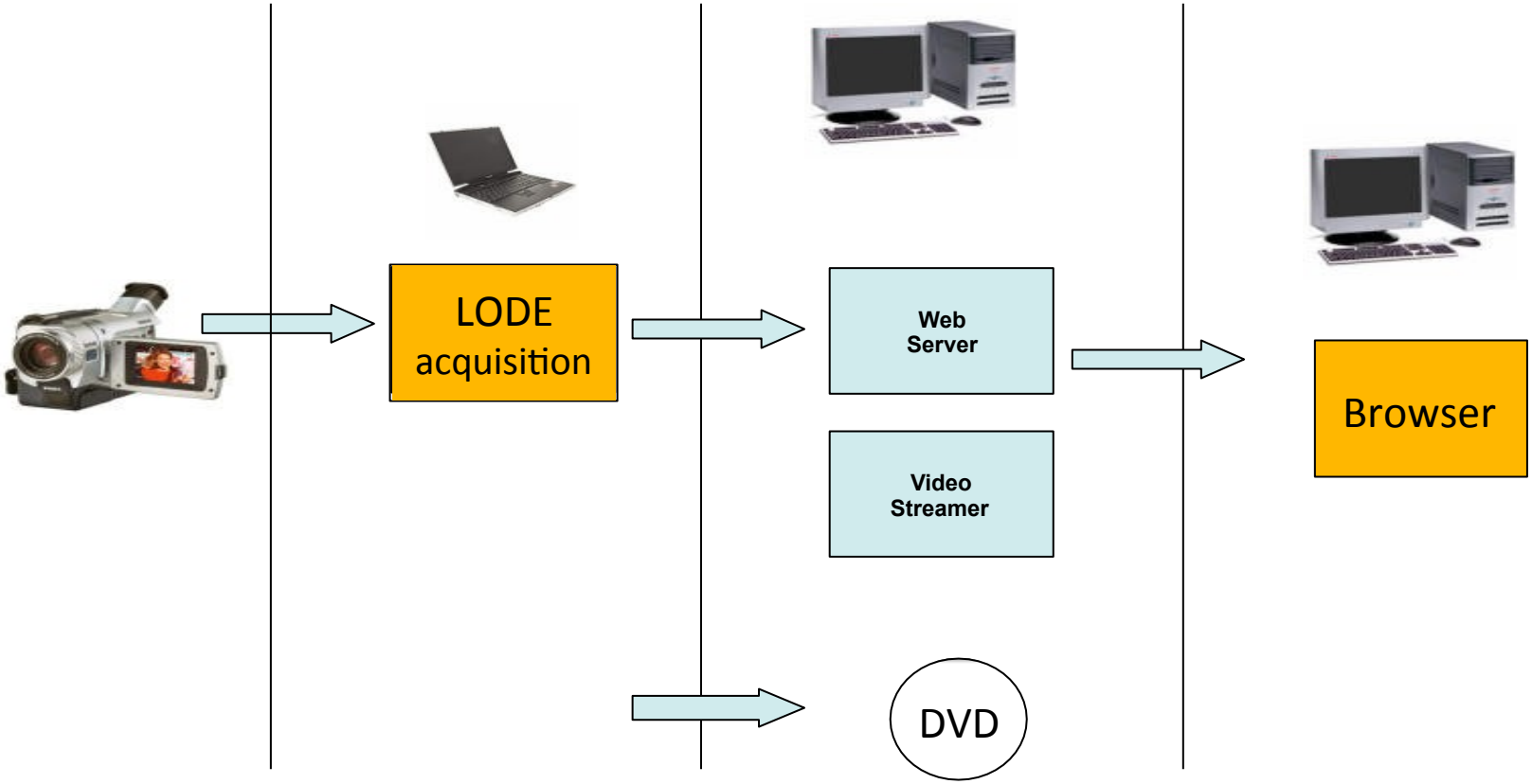

Synchronous (webcast)
Asynchronous
(On line, or download)
Asynchronous(CD - DVD)

Our requirements

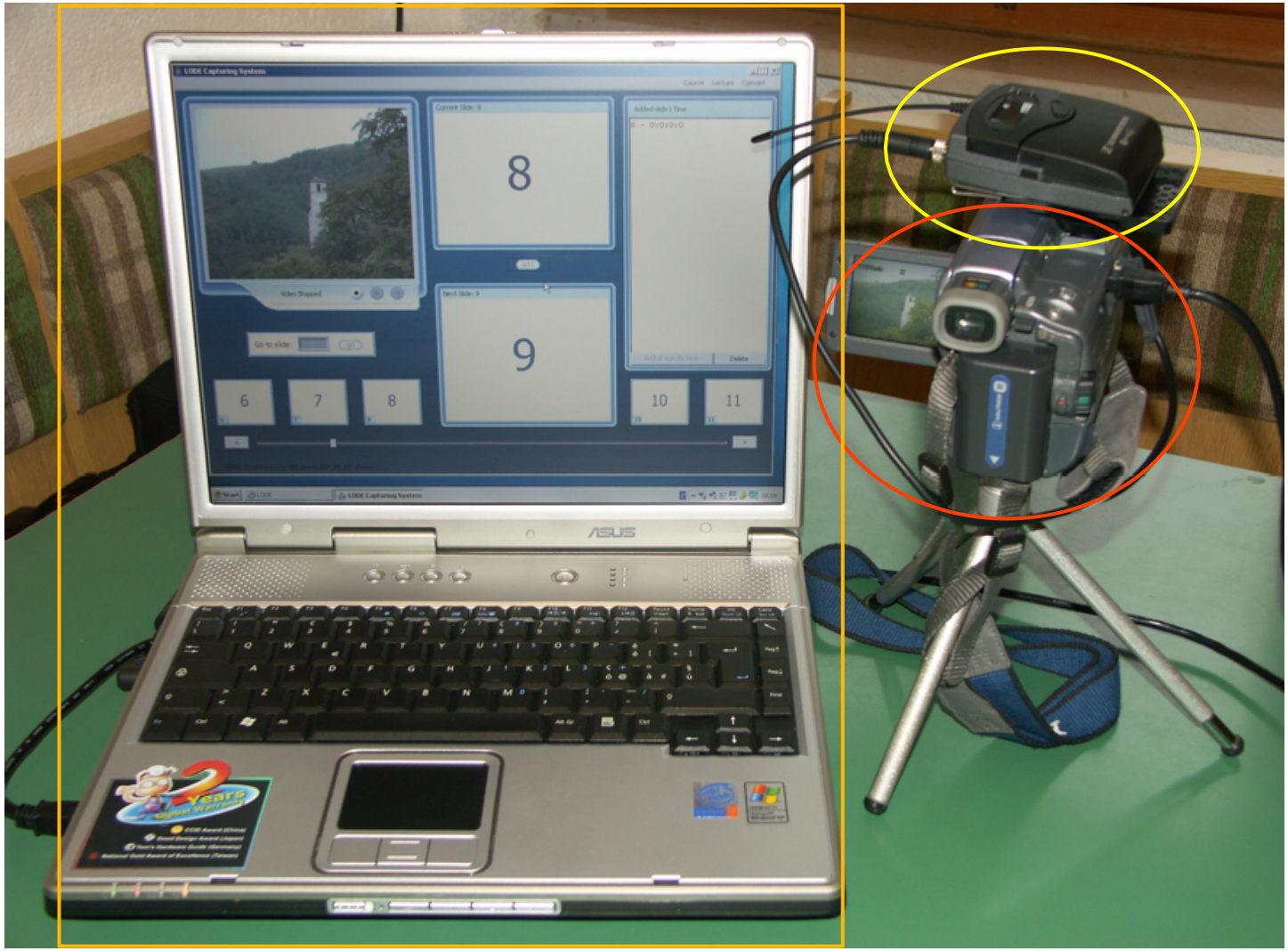
- impact on lectures should be minimal;

- production costs should be minimal, so as to allow scaling the approach to most courses.
  - Set-up must be lightweight!
  - Operations must be simple (low level skills!)
  - Post-processing operations must be light (i.e. almost automatic), and not require much work

System Architecture



Acquisition setup



Detail of camera and mic receiver

Assessing costs: initial costs:

- Souware acquisition
  - (almost) 0 Euro (QuickTime, Java, Javascript, Darwin Streaming Server, open source components, our sw + one non-free component)
- Hardware acquisition:
  - SERVER 1000 Euro
  - ACQUISITION STATION 1400-2400 Euro
    - 1 Laptop (Euro 800-1500)
    - 1 Digital Camera (Euro 400)
    - 1 Radio Microphone (Euro 200-500)

Assessing costs: running costs

- setting up the system before lectures (10 min.)
- running the system during the lecture (2 hours)
- removing the system auer lectures (5 minutes)
- starting the post-processing: 5 minutes. The post processing would then go by itself for approx. 1 hours for producing a streams of 1 hour.
- ending the post-processing (uploading the video on the web site, producing the master CD): 15 minutes.

=> 35 minutes extra work for a 2 hours lecture

Samples of the evolution

- http://latemar.science.unitn.it/Lode/Programmazione2_2005-06/15/content/start.html
- http://latemar.science.unitn.it/LODE/Programmazione2_2009/Programmazione2_2009_index.html
- http://latemar.science.unitn.it/itunes/archive/ScienzeCognitive/AnalisiMatematica10-11/Defranceschi-13-101021.mp4
- http://latemar.science.unitn.it:3000/lecture.html?content=lectures/LinguaggiProgrammazione/Lezione17
- http://latemar.science.unitn.it/LODE/LinguaggiDiProgrammazione/02-7-Collections/
- http://latemar.science.unitn.it/cad/lecture.html?content=lectures/Analisi1/1219

500 Euro totali

cittàeducante

Once you have the videos…

- Flipped classroom. (2009)

- Scaffolding

Using analytics

Video publication

- Behind the scenes
- No emphasis
- No advertisement
- Just a small link on the course web site

Who are our "users"?
How do they behave?

- Look at the download logs
  - No hints about provenance

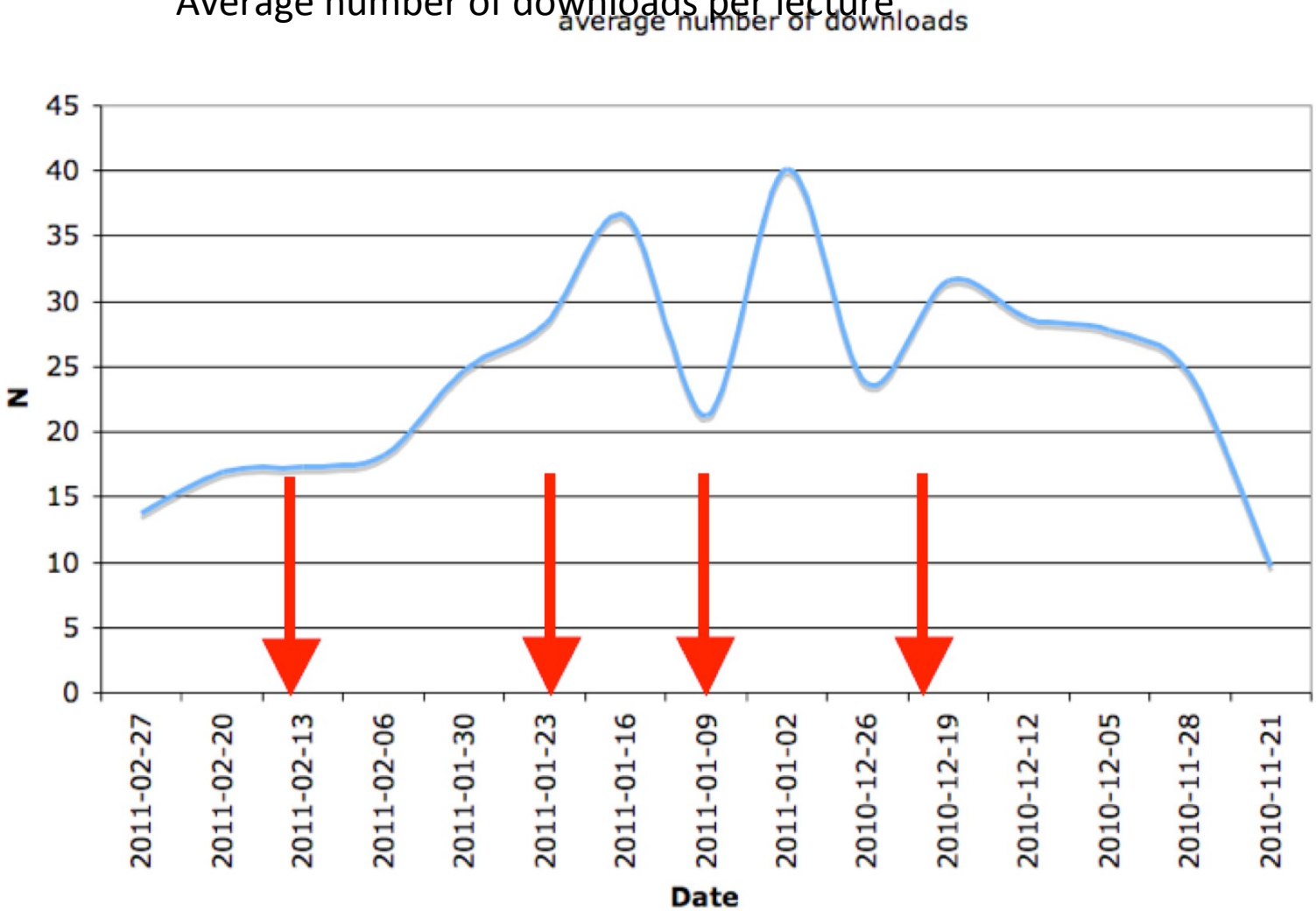
- Ask "our" students

Download statistics
- row numbers -

- Total 11.385 downloads (in the 15 weeks observation period)
- Over 15 weeks: 345 download per lecture
- Average of 23 downoad per lecture per week

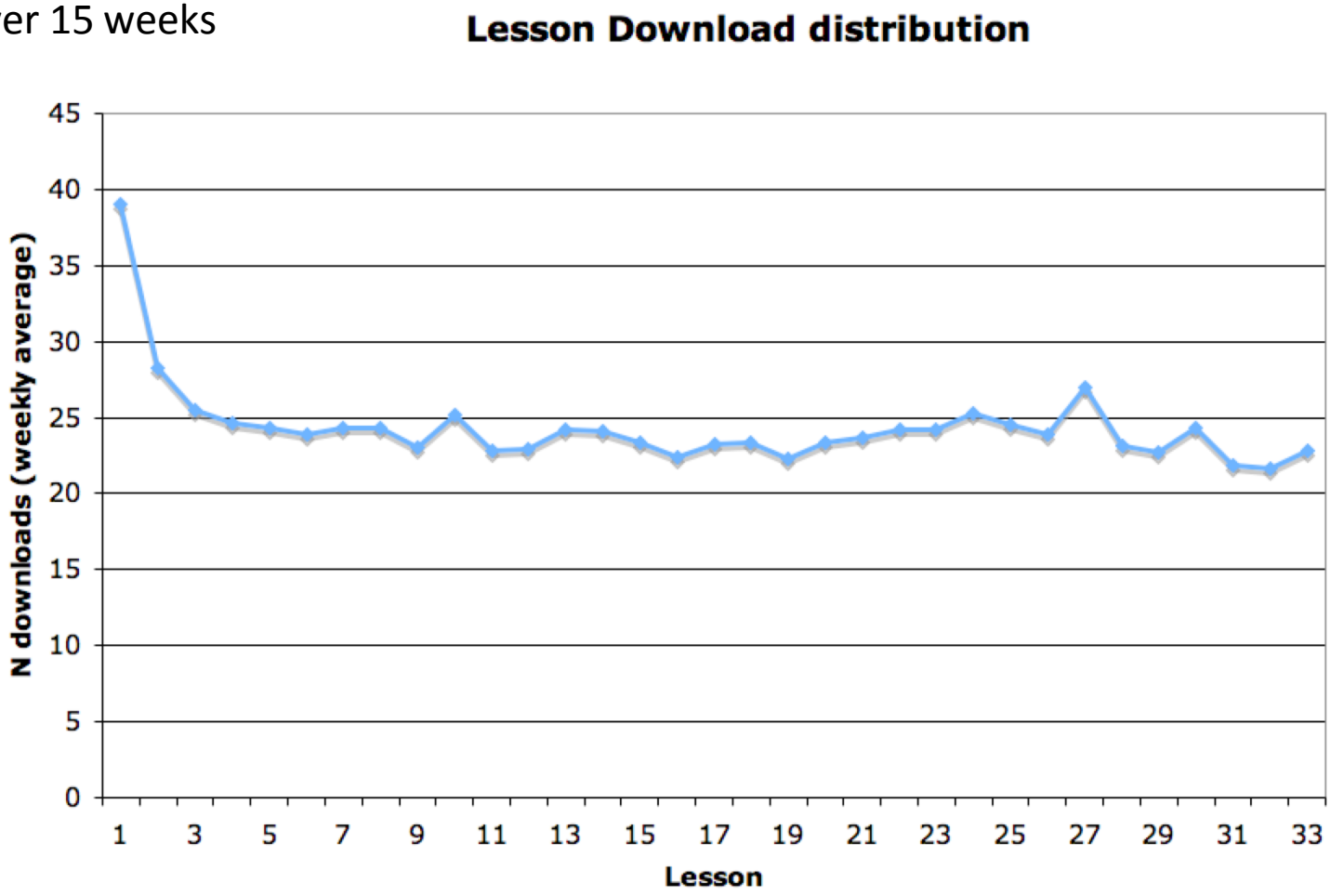
Time distribution of downloads

Average number of downloads per lecture



Do "students" take the entire course?

Stats over 15 weeks



Students survey

- Sample: 91 students passing the exam between January and June (65 responded, 71%)

SurveyMonkey®

Anonymous, free,
web data collection
by invitation

- Used the video: 25%
- Did not know the video were available: 38%
- Decided not to use the videos: 37%

Students survey

- Are videos useful? Yes 84%
- Would you like other courses to use them? Yes 79%
- The format allows following well the lecture? Yes 53%, No 11%

How much did the videos help you passing the exam?

- Little/very litte 38%
- Much/very much 38%

Survey - type of usage

- Did you watch most of the lectures? Yes 50%

- Did you watch some lecture more than once? Yes 50%

- Did you use Desktop-laptop? 100%
- Did you use iPhone-iPad? 0%

Survey - type of usage

- Did you watch some lecture from beginning to end? Yes 38%
- Did you make breaks for resting? Yes 19%
- Did you make breaks for doing exercises? Yes 31%
- Did you watch only some important part of some lecture? Yes 31%
- Did you watch more than once some lecture? Yes 53%

Students survey

- In general, would you stop going to class if you had the videos?

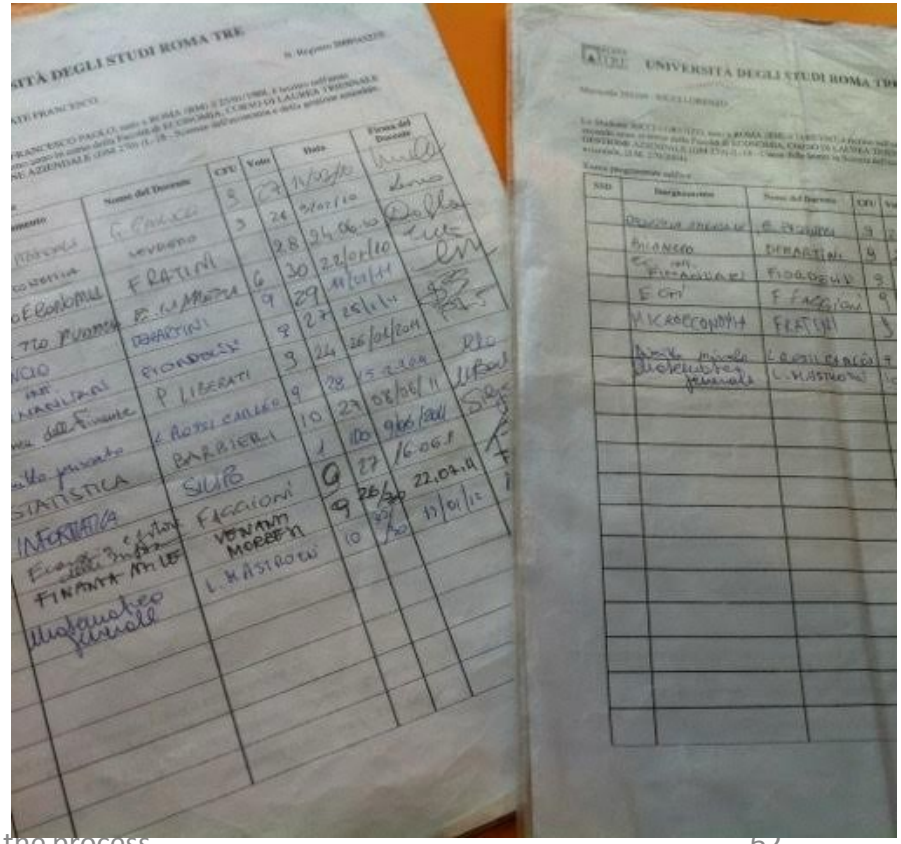
- No 47%
- Yes 12%
- Depends on the type and quality of the lectures 33%
- Depends on the quality of the videos 8%

Where did the other students come from?

- Almost 350 downloads (per lecture) over the first 15 weeks, and going…
- Anectodal evidence

Gentile Professoressa…

Gentile Professoressa,
Dopo mesi di incubi, ci tenevamo a dirLe che anche grazie alle sue
preziosissime lezioni su itunes siamo finalmente riusciti a superare
l'esame di matematica generale.
La ringraziamo del materiale messo a nostra disposizione e le
alleghiamo la foto dei nostri due statini a testimonianza.

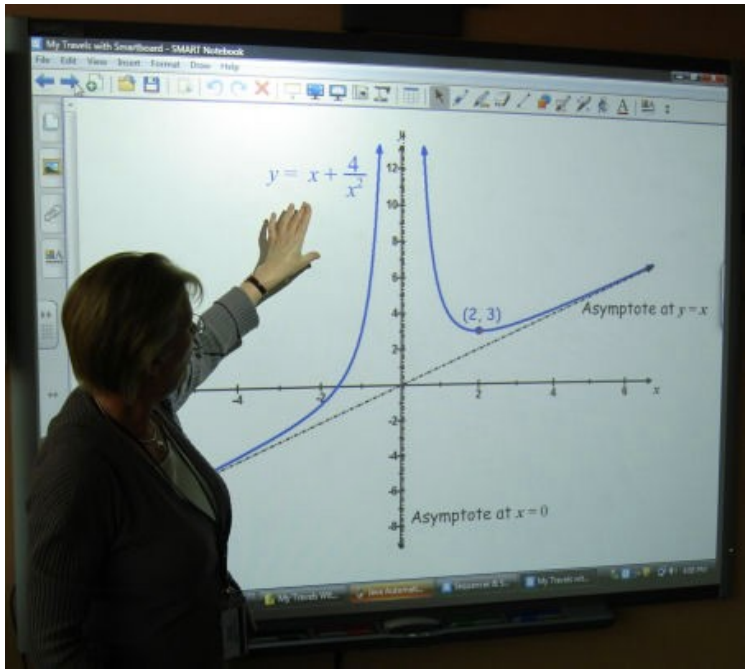


The next step:
Videolecture Annotation

A question

Is giving out lecture material a good thing?

Or…



IWB

A question

Is giving out lecture material a good thing?

Or should we encourage students to take notes?

A question

Is giving out lecture material a good thing?

Should we encourage students to take notes?

Or should we attempt a mixed approach?

Taking notes…

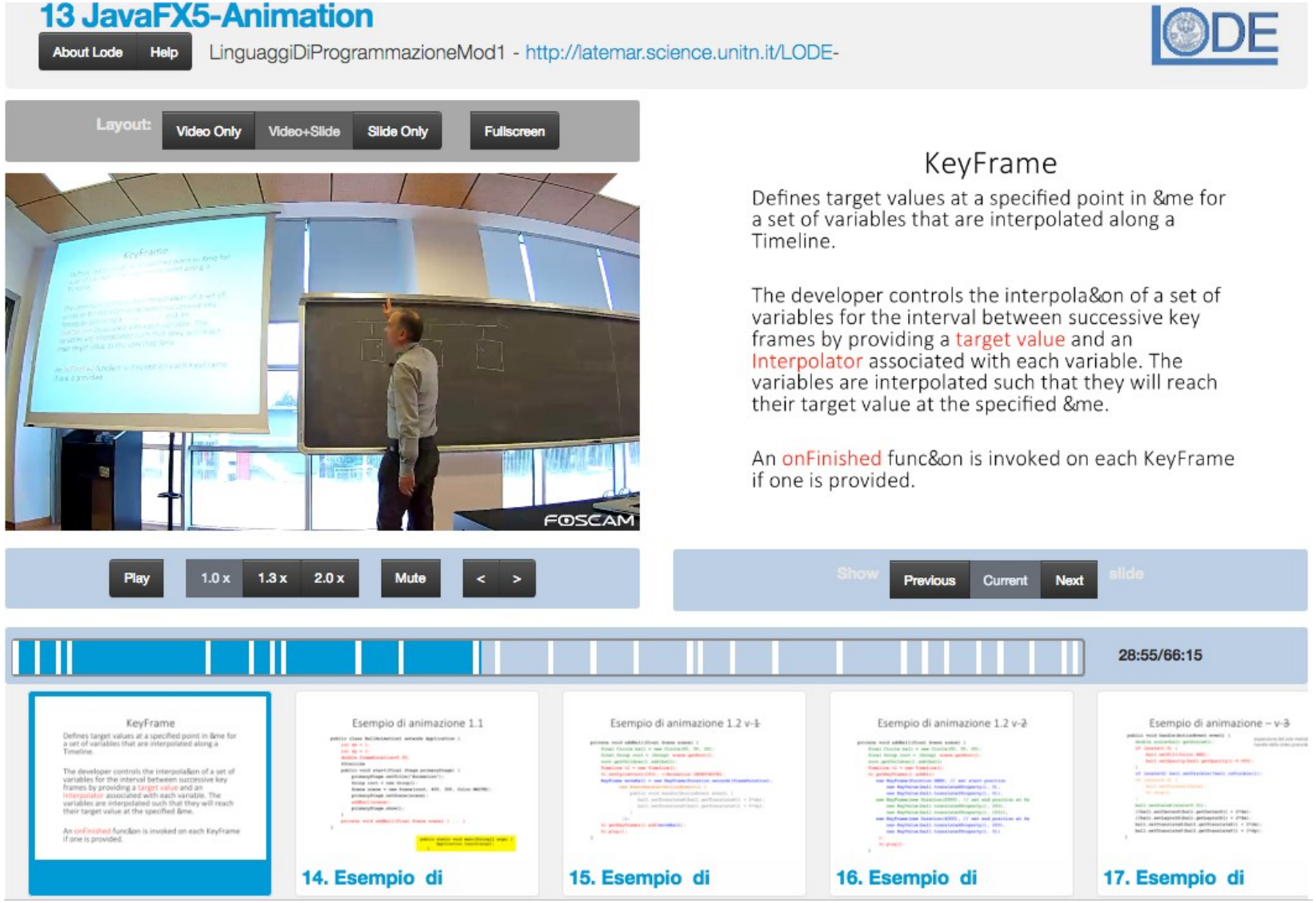
Helps

Or

Hinders

Understanding?

An extreme: giving out the lecture itself…

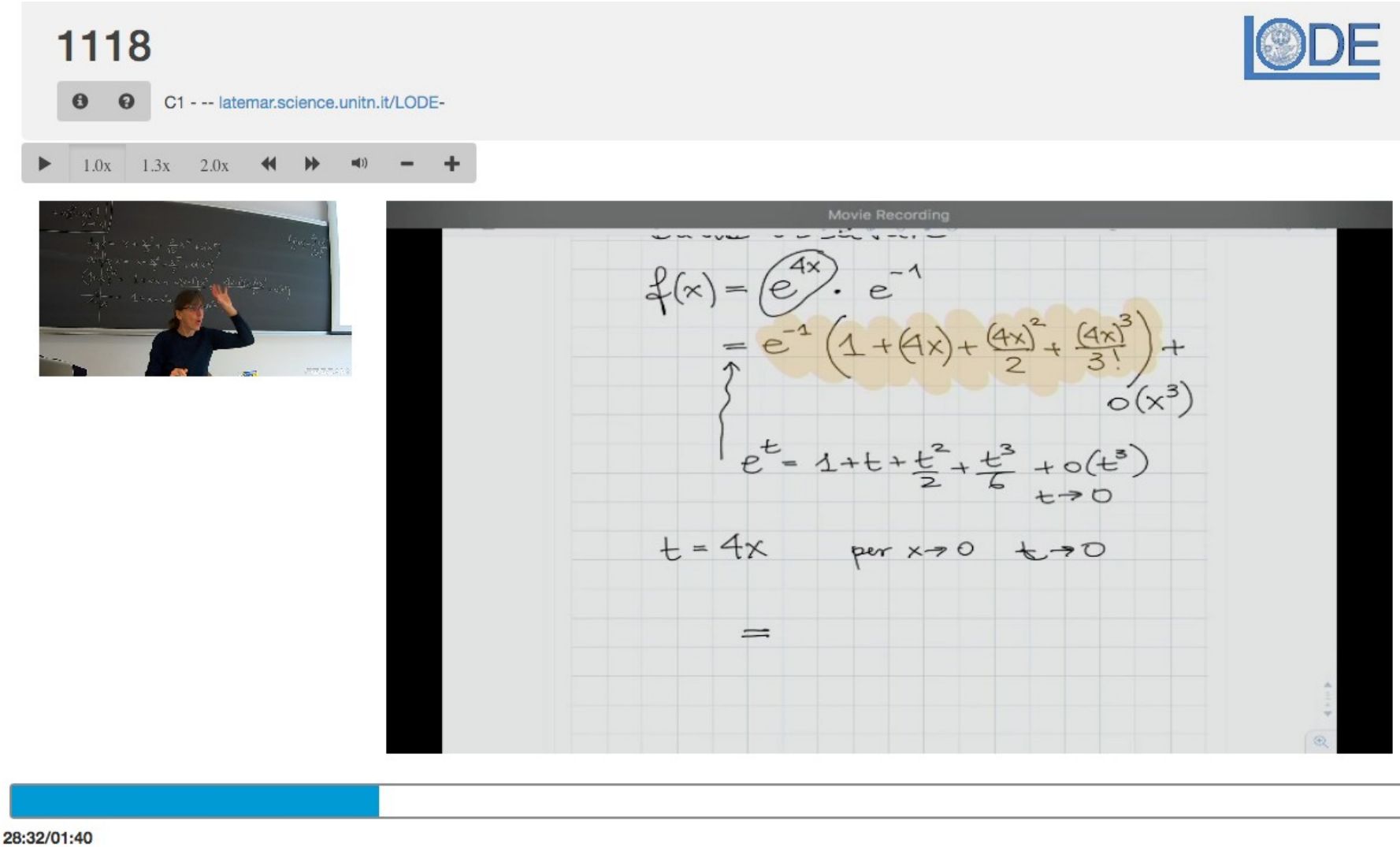


And YES, we do believe in the usefulness of videos!

LodeBox

LodeBox

… also if it is not PPT based



But…

If you have videos, what is the point of taking notes?

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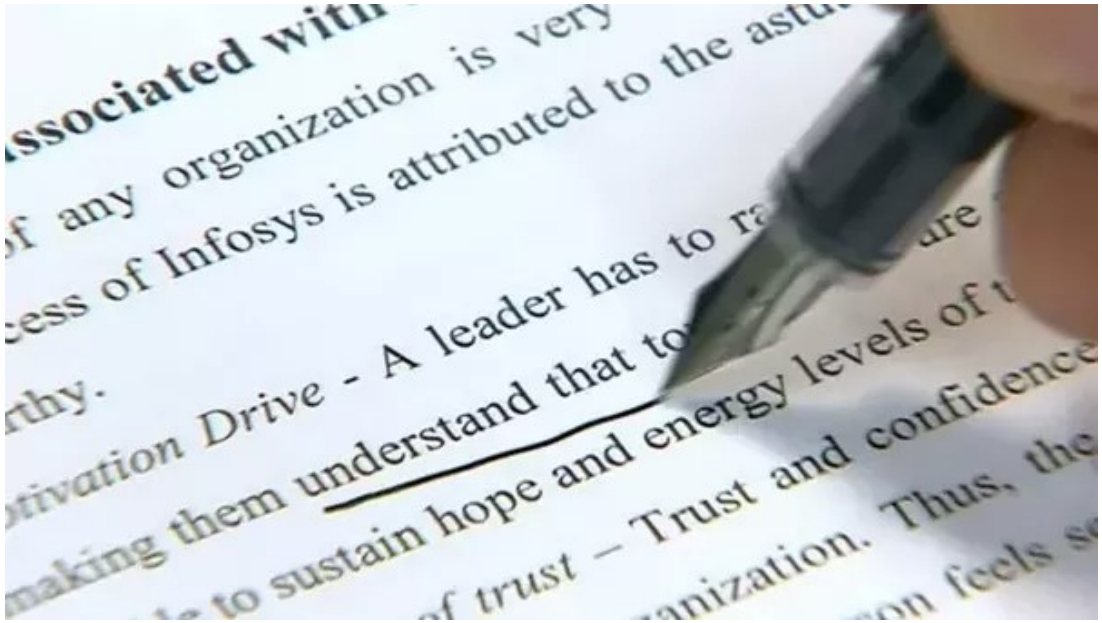
Well, why do we underline books? (or take notes in margin)



But…

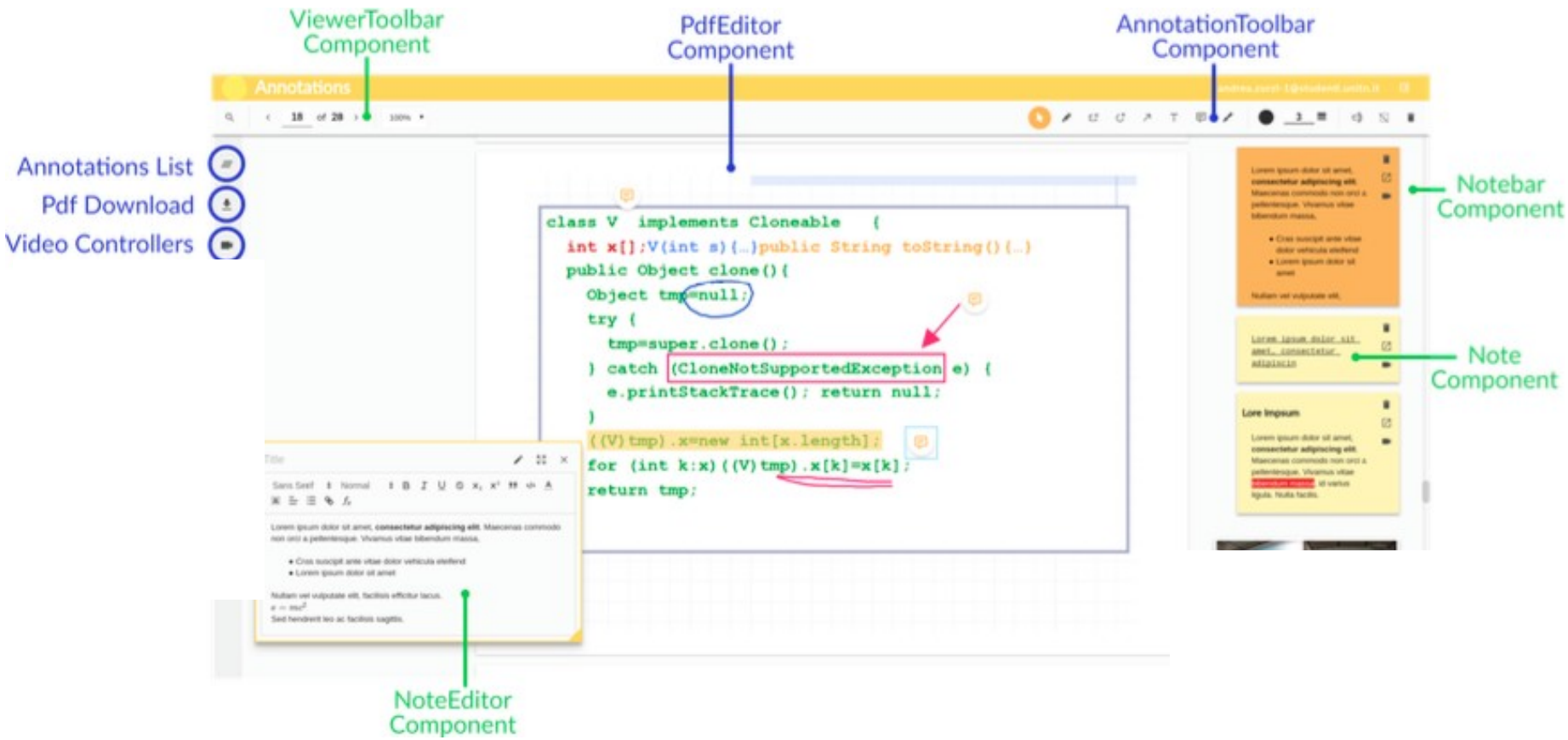
If you have videos, what is the point of taking notes?

Well, why do we underline books? (or take notes in margin)

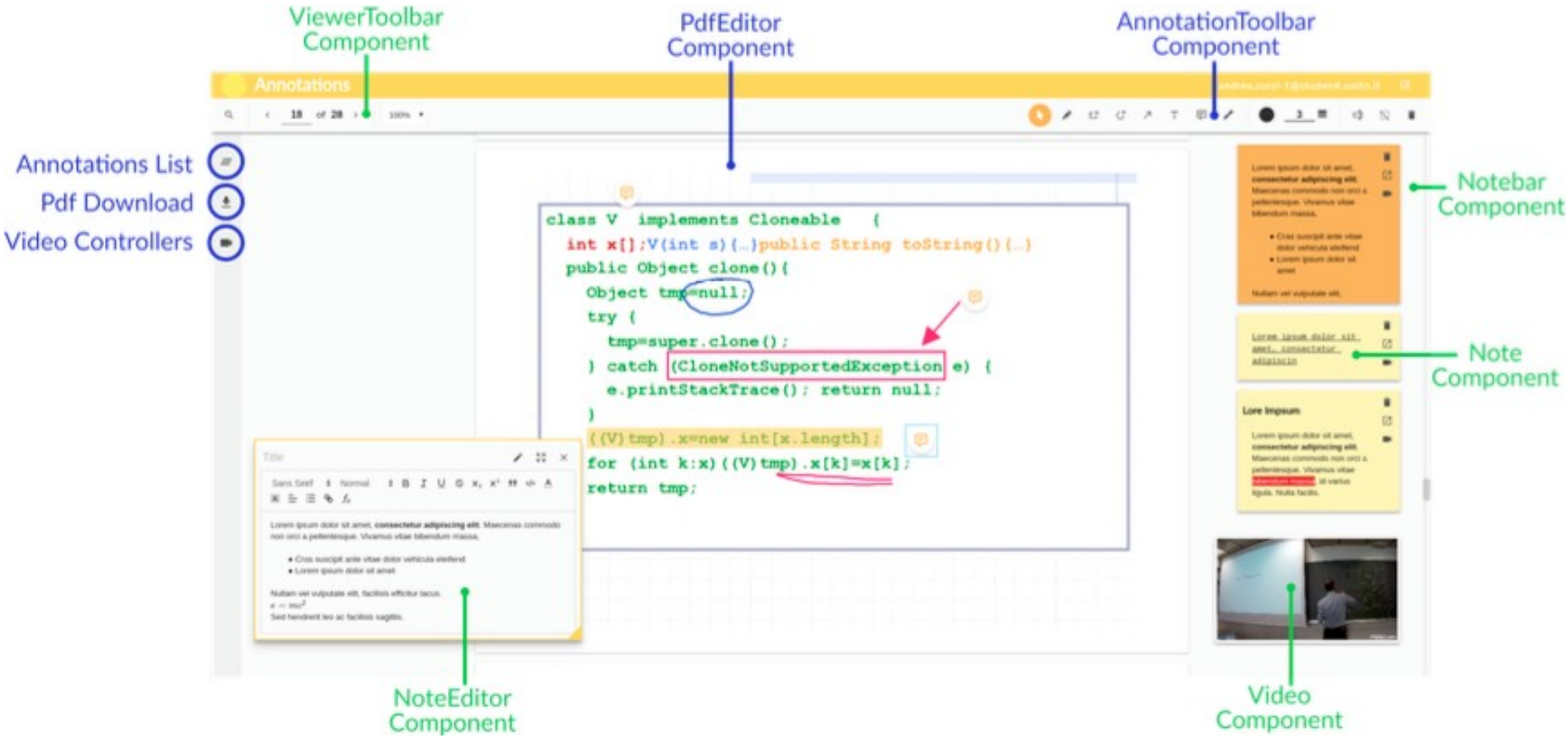
- Give relevance
- refind

Can we annotate videolectures? How?

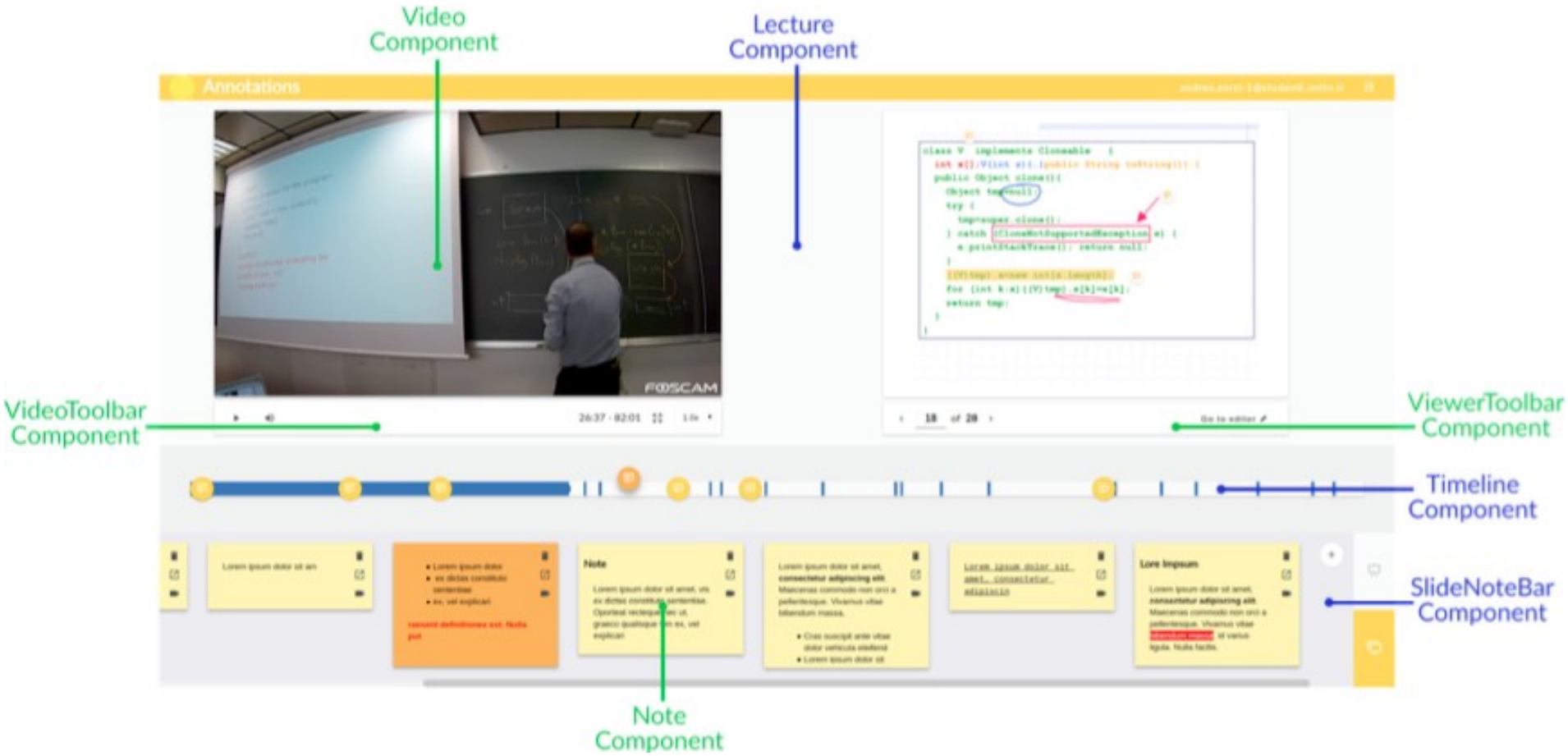
Our prototype: in class



Our prototype: at home



Reviewing annotation



Advantages

- Combining “passive” and “active” approach
- “Delta” annotations
- Quick jump to a point in the lecture (“refind”)

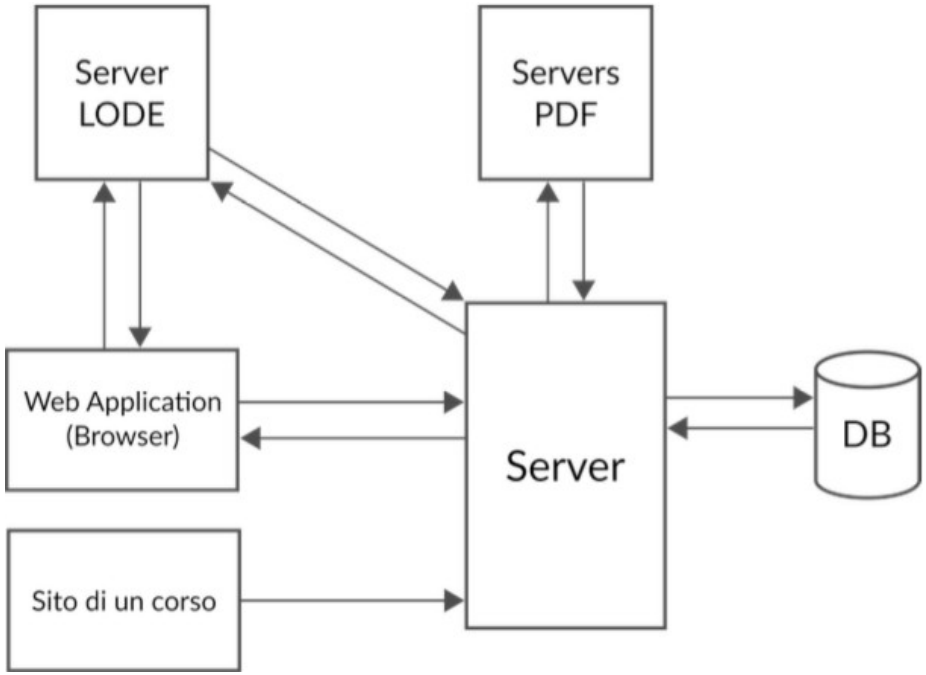
- Gather statistics (analytics)

- Share annotations with friends (possibly)

Validation

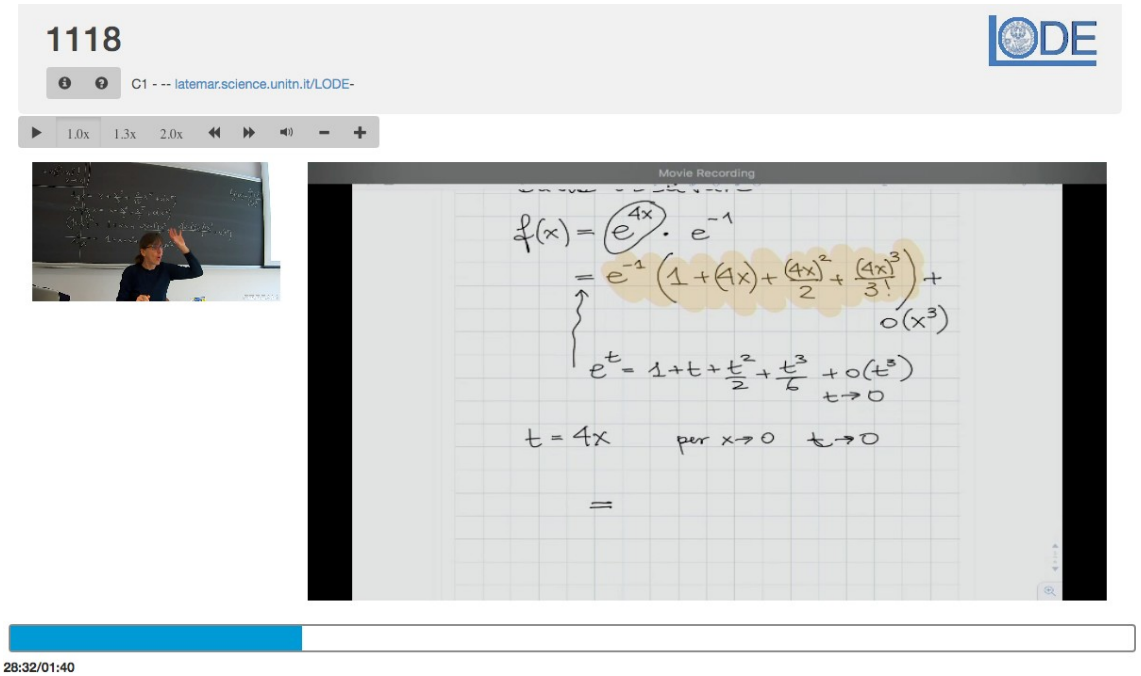
- Very little yet, but promising…
- Extended validation planned since next semester

SW architecture



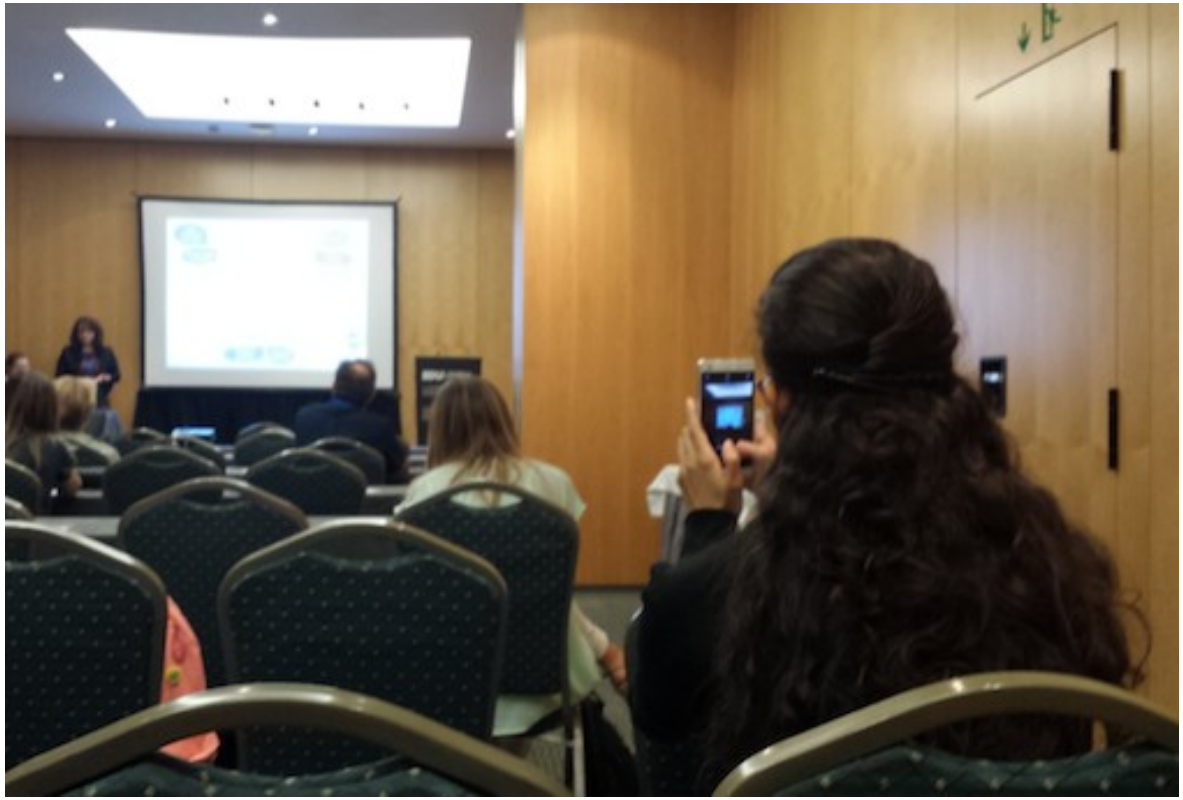
Variants

- Pre-uploaded slides
- On the flight generated screenshots



Scenarios

- What if you could capture the projected screen you're looking at?



Scenarios

- What if you could capture the projected screen you're looking at?

- Avoid giving out the material!
- Students must (and will) create their own.
- Then they can share, if the want to