
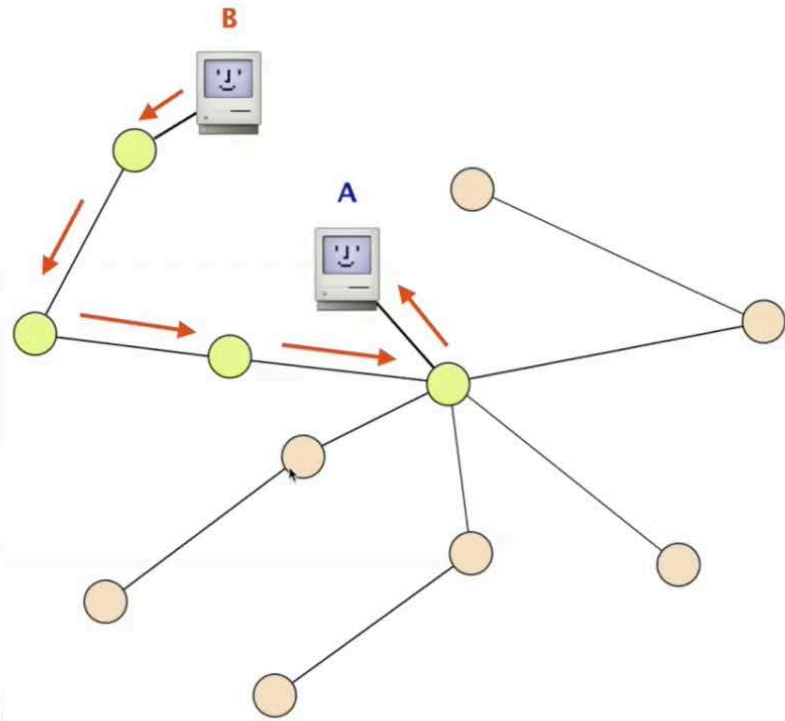


Staying engaged—slides, video and the professor

My experience teaching online



B answers back to A
enabling the green nodes to also learn where B is



Prof. Laurent Vanbever

nsg.ee.ethz.ch

Refresh Teaching @ETH Zurich

Thu Apr 8 2021

Zoom fatigue



About 35'700'000 results (0.48 seconds)

Over the last three semesters,
I've been teaching four lectures

		# students
Spring 2020 2021	Communication Networks (BSc)	~150
Fall 2020	Discrete Event Systems (BSc)	~90
	Adv. Topics in Communications Networks (MSc)	~70

Over the last three semesters,
I've been teaching four lectures

			# students	
hybrid	Spring 2020	Communication Networks (BSc)	~150	
	2021	Fall 2020	Discrete Event Systems (BSc)	~90
			Adv. Topics in Communications Networks (MSc)	~70

Over the last three semesters,
I've been teaching four lectures

			# students
purely online	2020	Communication Networks (BSc)	~150
	Spring 2021		
	Fall 2020	Discrete Event Systems (BSc)	~90
		Adv. Topics in Communications Networks (MSc)	~70

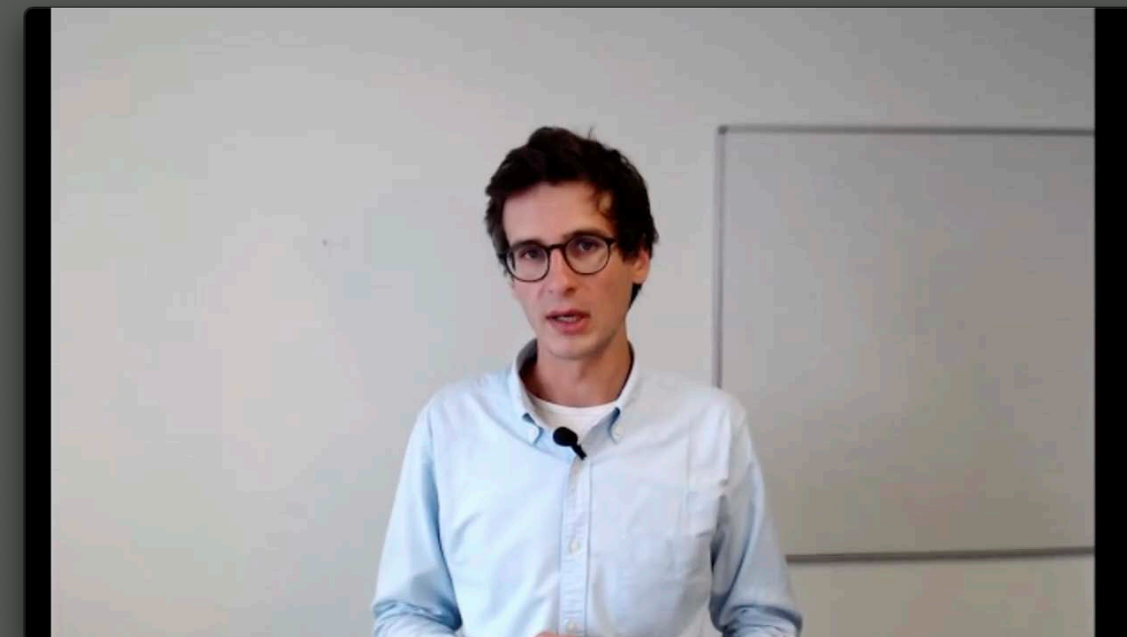
3 semesters, 3 iterations hopefully, for the better

Spring 2020

Forward proxies cache documents close to clients, decreasing network traffic, server load and latencies

The diagram illustrates a network topology where clients (represented by icons) connect to forward proxies (cylinders) located near them. These proxies then connect to Google servers. The text notes that this is typically done by ISPs or enterprises. Logos for Deutsche Telekom, swisscom, and Salt are visible.

Fall 2020



Spring 2021



Example

The diagram shows a finite automaton M_4 with states q_0 , q_1 , and q_2 . Transitions are: $q_0 \xrightarrow{0} q_1$, $q_0 \xrightarrow{1} q_2$, $q_1 \xrightarrow{0,1} q_3$, and $q_2 \xrightarrow{\epsilon} q_3$. States q_1 and q_3 are final states.

Question: Which of the following strings is accepted?

1. ϵ
2. 0
3. 1
4. 0111

1/48

B answers back to A
enabling the green nodes to also learn where B is

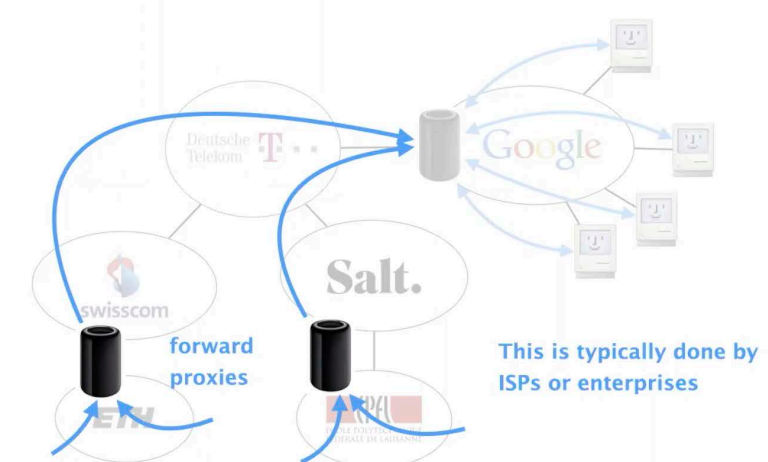
The diagram shows a network of nodes. Node A is a central yellow node, and node B is a red node. Other nodes are orange. Red arrows indicate connections from B to A and from A to other nodes. The text explains that enabling green nodes (not clearly visible in the image) allows them to learn where B is.

Step 1: The genesis

Learning what does *not* work

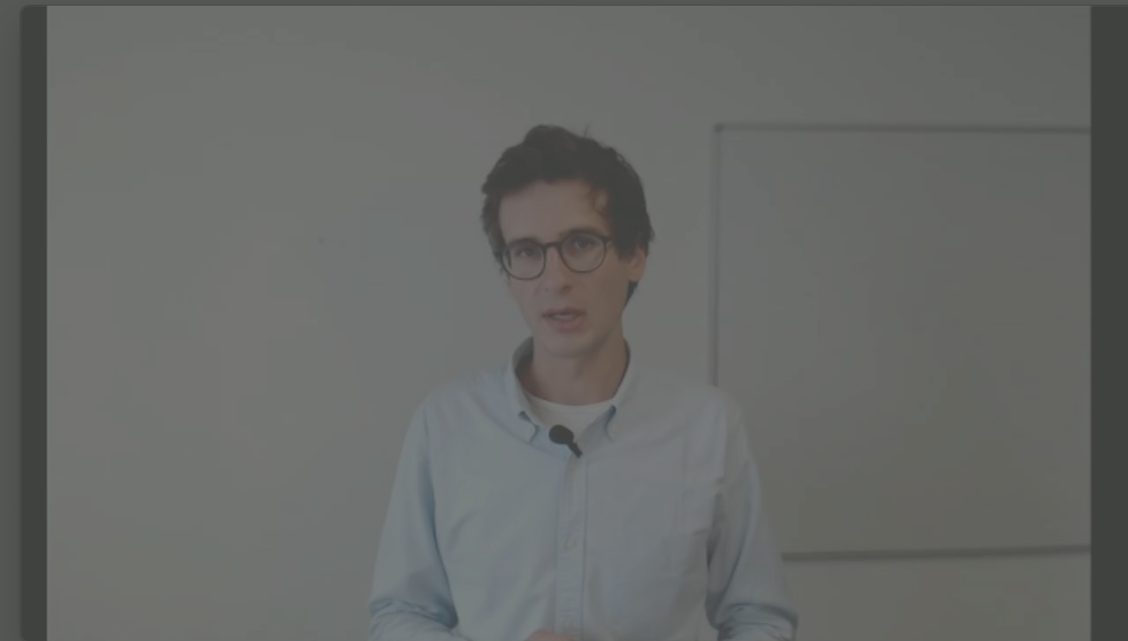
Spring 2020

Forward proxies cache documents close to clients, decreasing network traffic, server load and latencies

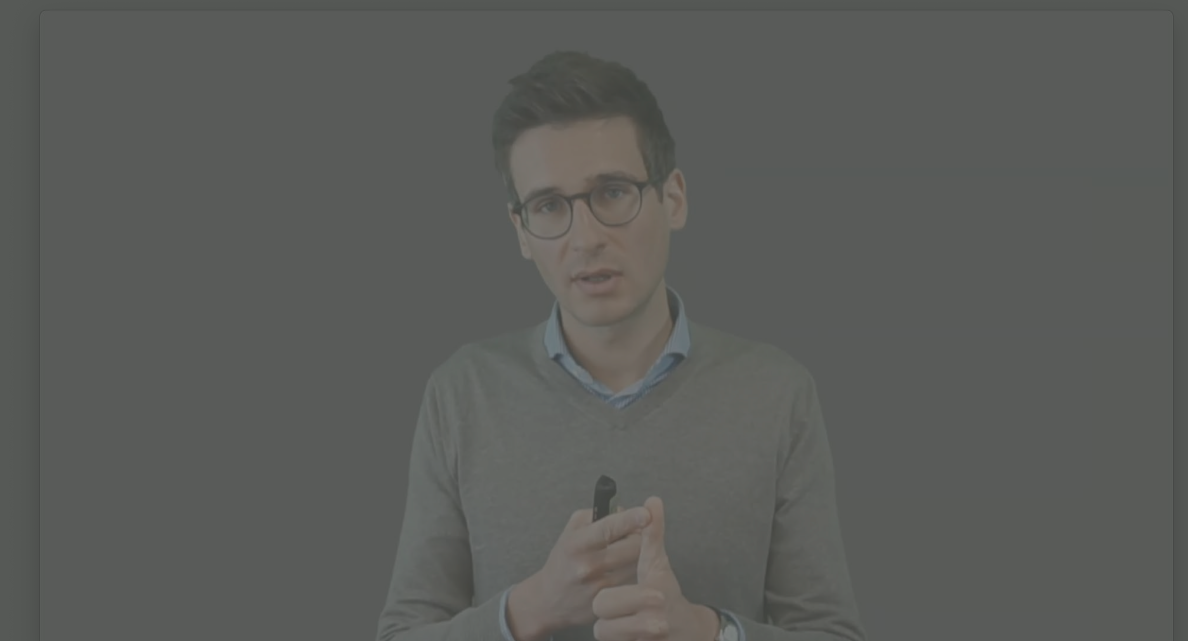


The diagram illustrates the concept of forward proxies. It shows a network of ISPs and enterprises, including Deutsche Telekom, swisscom, and Salt. Blue arrows represent network traffic. Some traffic goes directly to Google, while other traffic is routed through a proxy server (represented by a server icon) located closer to the client. A text box notes: "This is typically done by ISPs or enterprises".

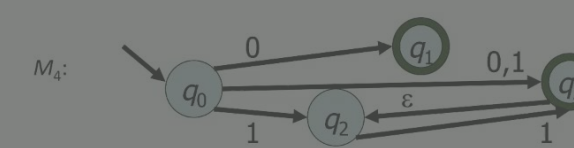
Fall 2020



Spring 2021



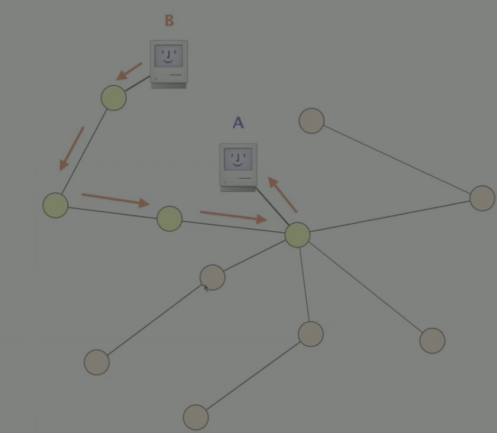
Example



Question: Which of the following strings is accepted?

1. ϵ
2. 0
3. 1
4. 0111

B answers back to A
enabling the green nodes to also learn where B is



I initially thought of reusing our "old" lectures recordings

March 13 2020

Subject

Important information regarding online lecturing

Body

Dear students,

We would like to update you on our online offerings following yesterday's suspension of all classroom teaching by the rectorate. [...]

For the lectures, we'll mostly rely on the 2019 video recordings.
We will update the course website every week with the slides and link to the corresponding recording(s).

[...]

Unsurprisingly,
this ended up being highly suboptimal

Unsurprisingly,
this ended up being highly suboptimal

Students couldn't see me anymore

non-verbal communication was completely gone

Students couldn't see what I was pointing at anymore

nor what I was writing on the blackboard

Students couldn't interact anymore

no more opportunities for questions, comments, etc.

Luckily we identified these problems early on
as we always run our own students survey mid-term

Luckily we identified these problems early on
as we always run our own students survey mid-term

questions
(excerpt)

Are you satisfied with the lecture so far?

What is it that you don't like about the lecture?

Any ideas on how we could improve going forward?

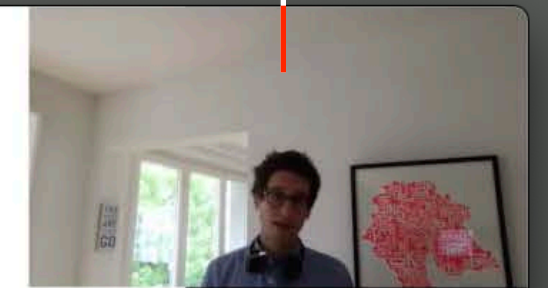
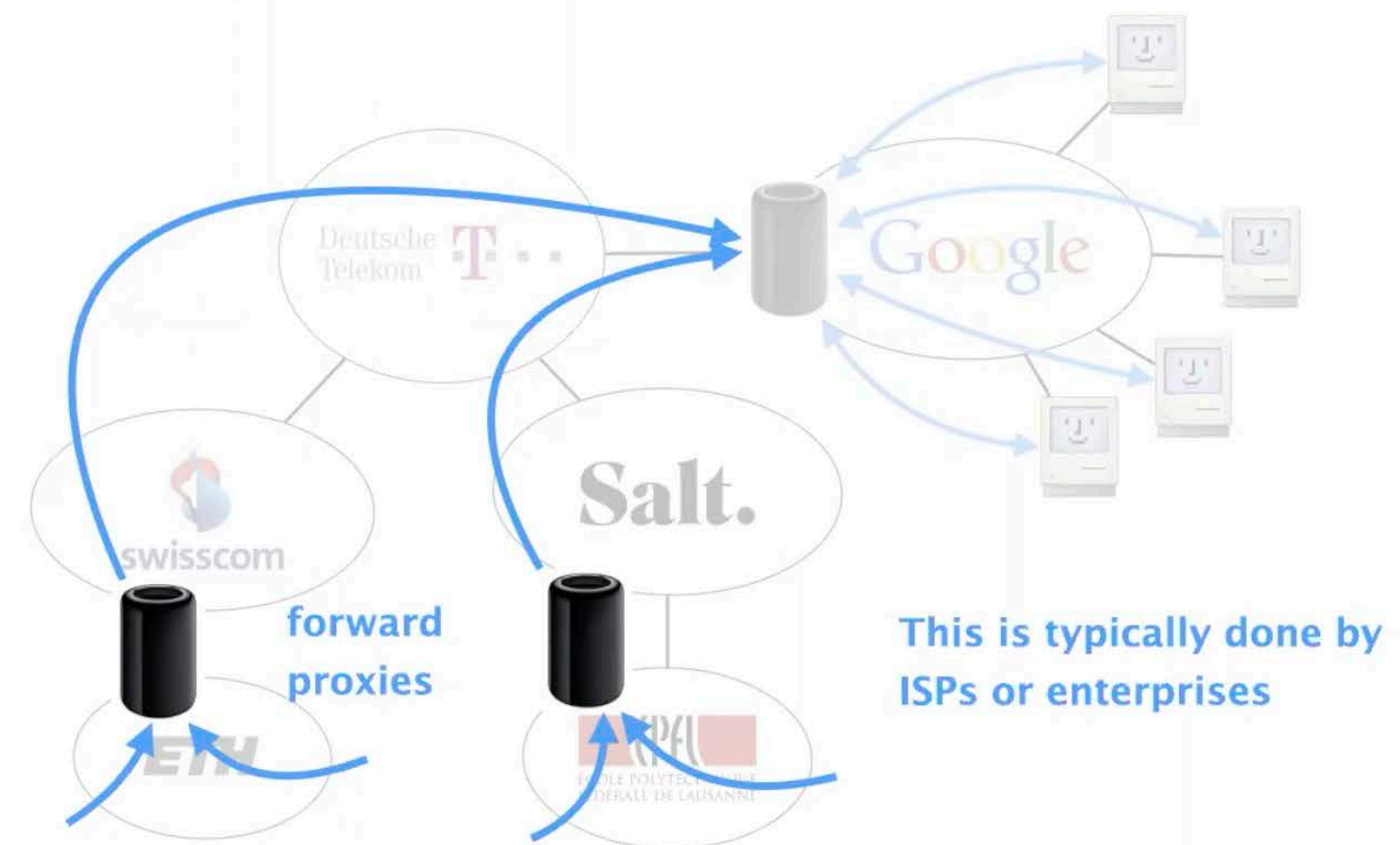
This made us switch to live, Zoom-based lectures

This made us switch to live, Zoom-based lectures

"default" webcam

"default" slides

Forward proxies cache documents close to clients, decreasing network traffic, server load and latencies



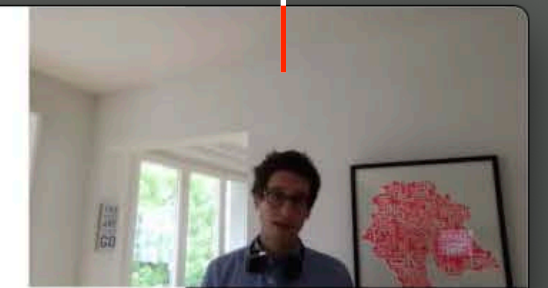
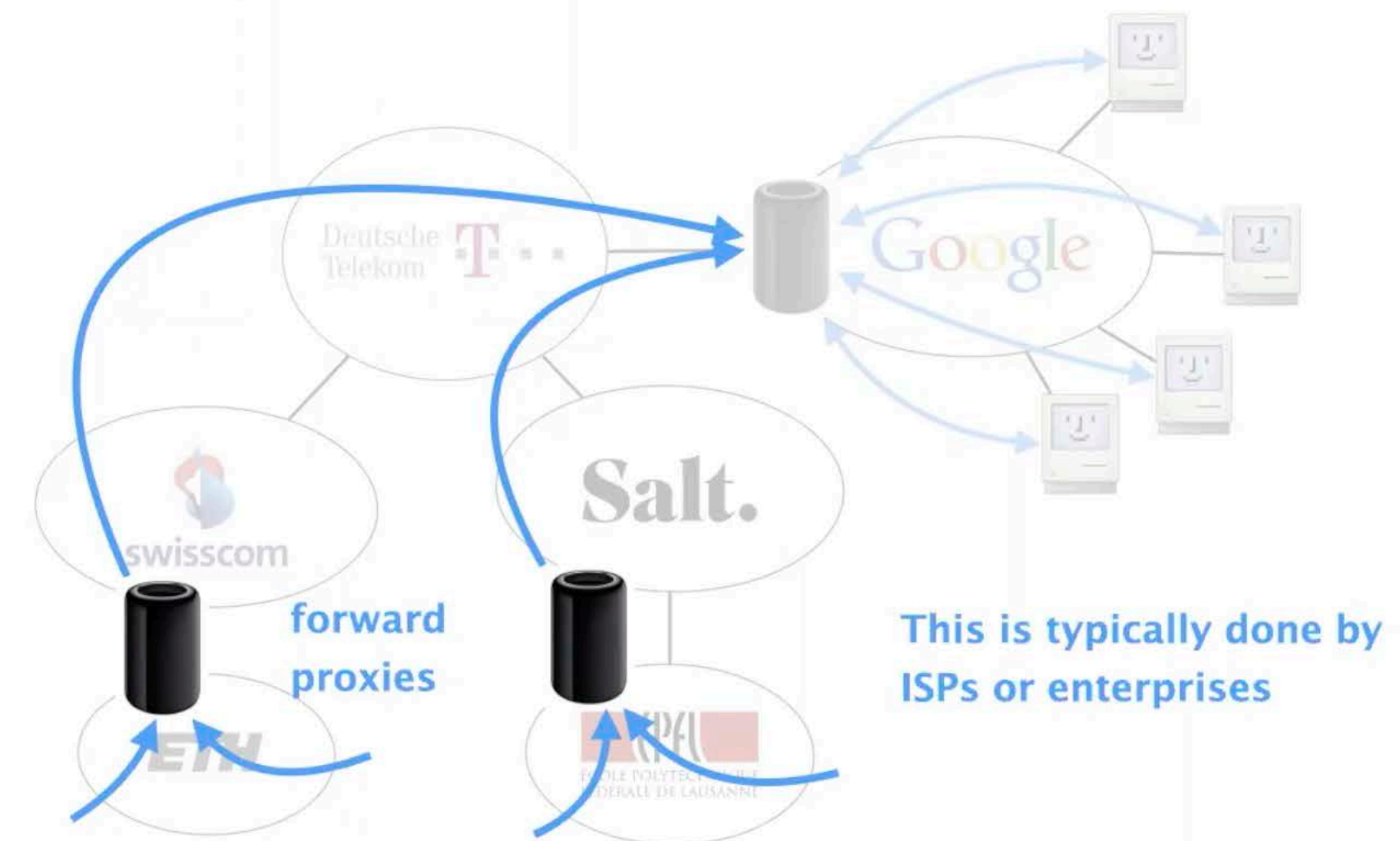
Students appreciated the switch,
even though it was *still* suboptimal

Students appreciated the switch,
even though it was *still* suboptimal

"default" webcam

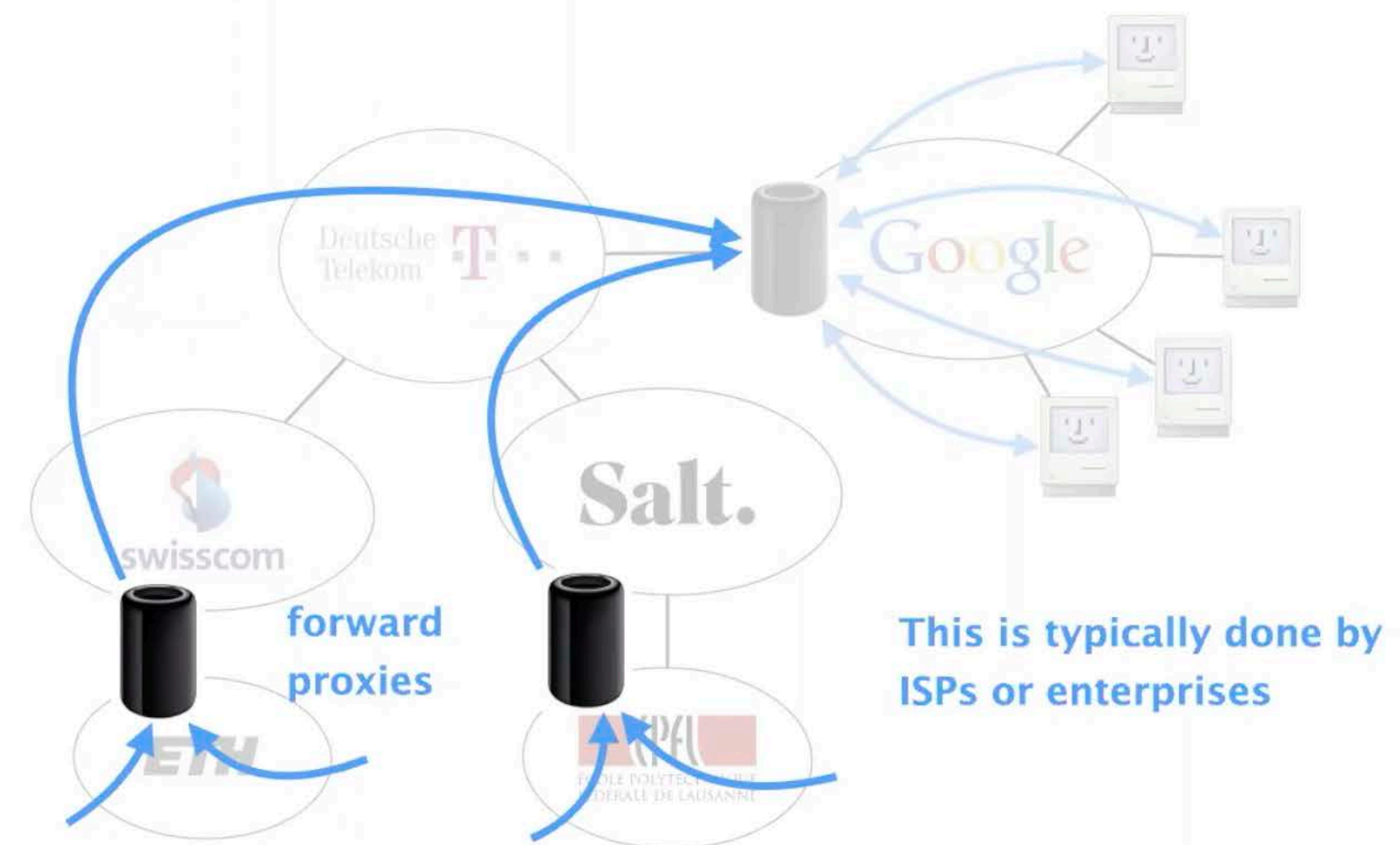
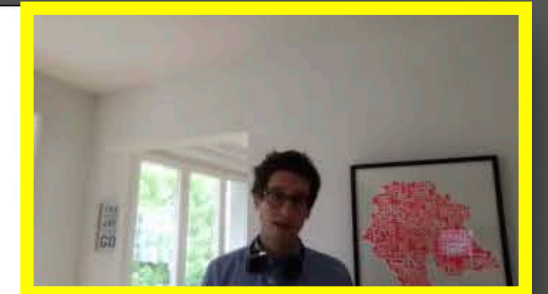
"default" slides

Forward proxies cache documents close to clients,
decreasing network traffic, server load and latencies



tiny speaker view
poor lighting
distracting background

Forward proxies cache documents close to clients, decreasing network traffic, server load and latencies



no more...

body language

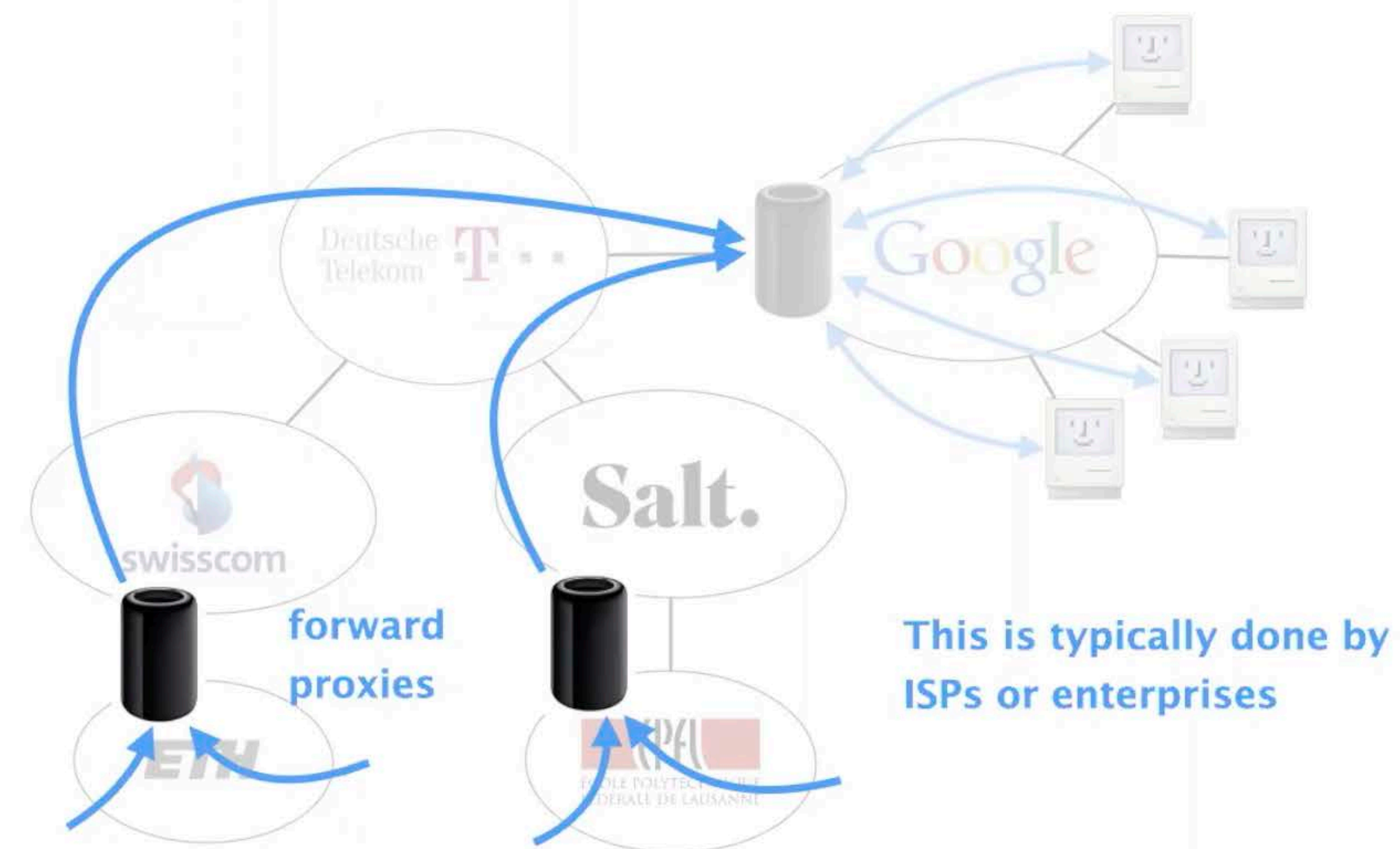
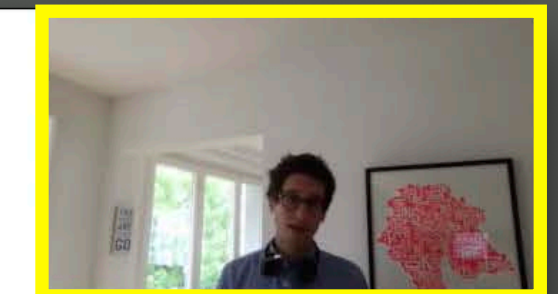
tiny speaker view

facial expression

poor lighting

distracting background

Forward proxies cache documents close to clients, decreasing network traffic, server load and latencies



Step 2: Experimenting

Learning from communication experts

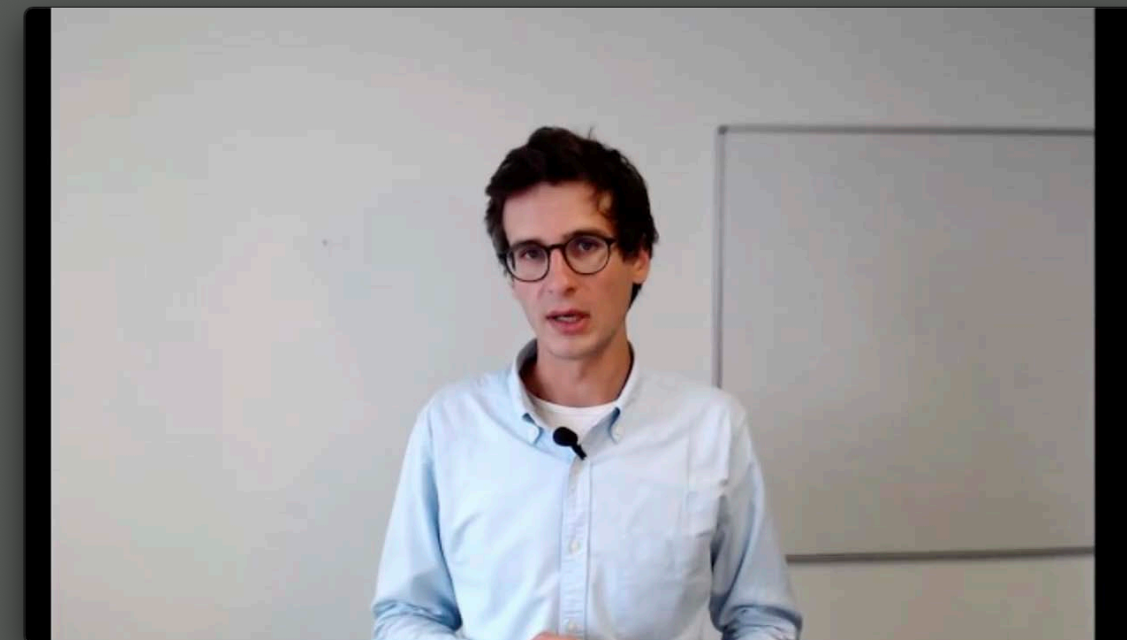
Spring 2020

Forward proxies cache documents close to clients, decreasing network traffic, server load and latencies

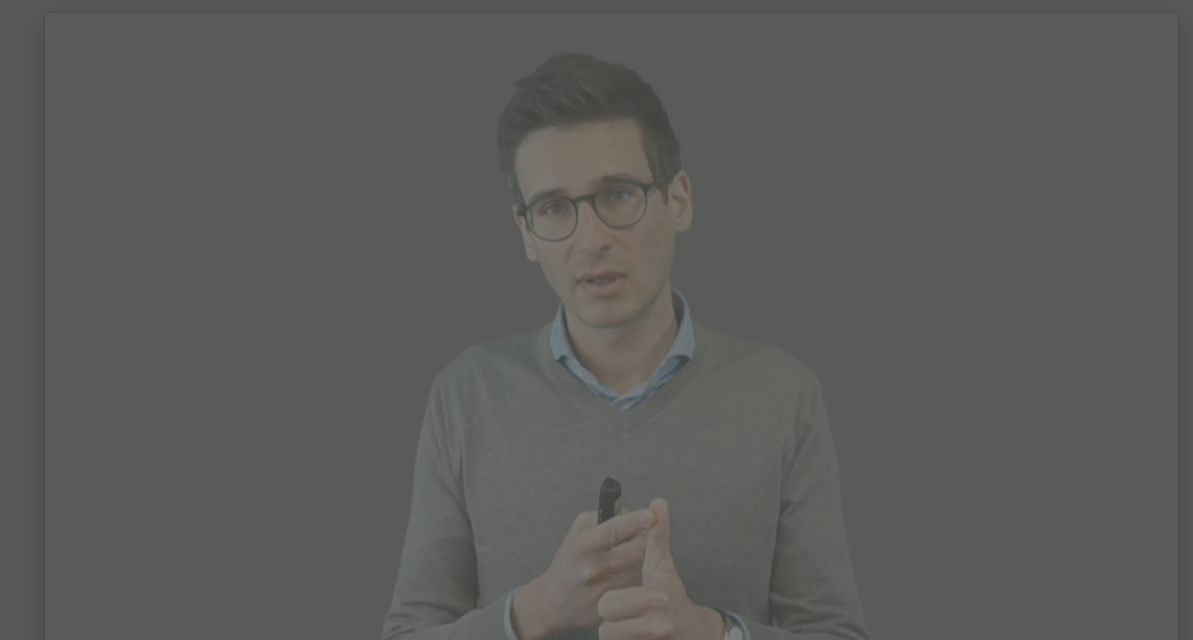
swiscom forward proxies Salt. Google

This is typically done by ISPs or enterprises

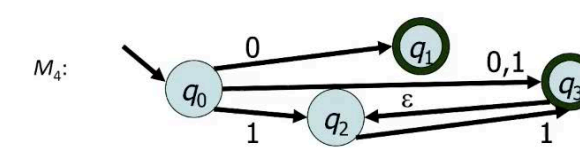
Fall 2020



Spring 2021



Example

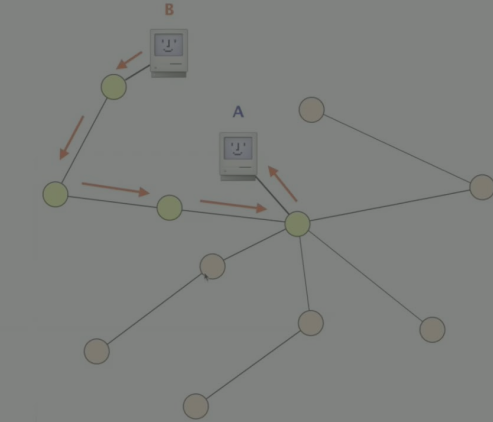


Question: Which of the following strings is accepted?

1. ϵ
2. 0
3. 1
4. 0111

1/48

B answers back to A
enabling the green nodes to also learn where B is



In July 2020 I attended a lecture from Jean-luc Doumont on
Delivering your presentation remotely

In July 2020 I attended a lecture from Jean-luc Doumont on *Delivering your presentation remotely*

Freely-available [handout](http://www.principiae.be) on www.principiae.be

Delivering your presentation remotely

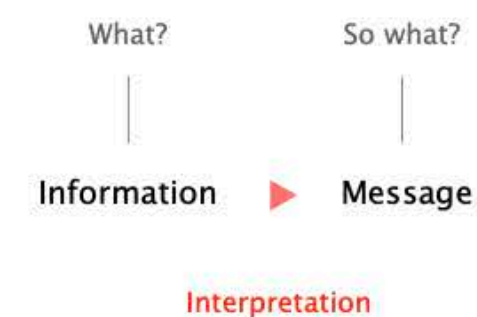
Jean-luc Doumont

When delivering remotely, your main challenge is engaging your audience, which easily gets distracted. At each moment, give them something meaningful to look at and to listen to. In particular, control what the platform allows them to watch: yourself or your slides (perhaps alternating), but nothing else.

Get your audience to

- pay attention to,
- understand,
- (be able to) act upon

a maximum of messages, given constraints



www.principiae.be/lectures
© 2020 by Jean-luc Doumont

To optimize your communication...

First law

Adapt to your audience

Adapting during the talk is hard:
analyze the audience in advance.

Second law

Maximize the signal-to-noise ratio

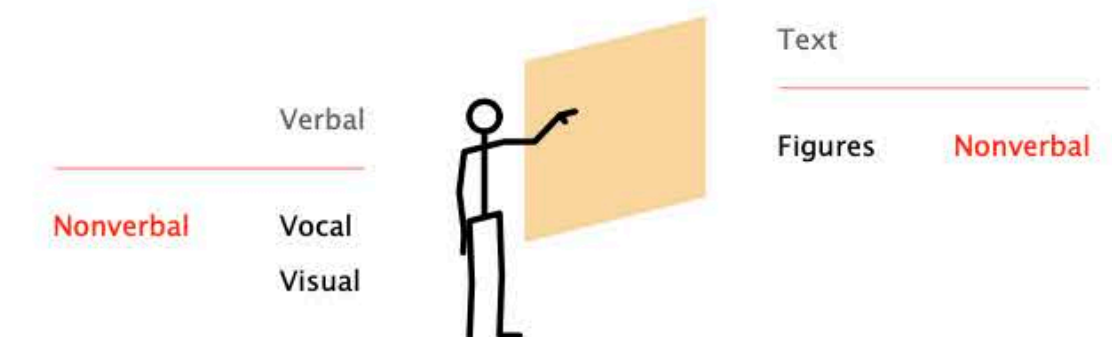
To focus the audience's attention
on the message, don't give them
anything else to look at / listen to.

Third law

Use effective redundancy



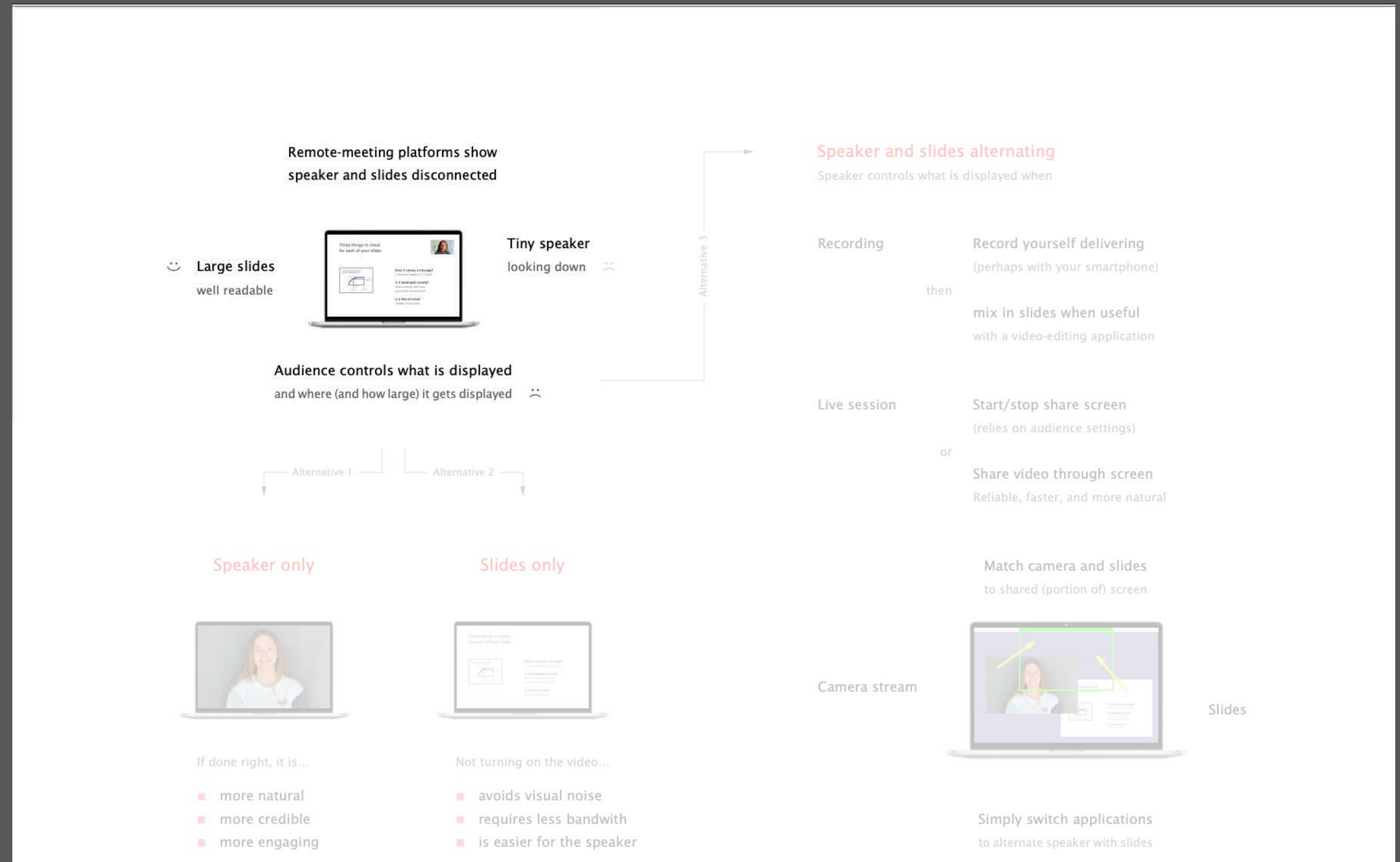
Oral presentations convey credibility
through nonverbal communication



Jean-luc perfectly describes the drawbacks of remote platforms

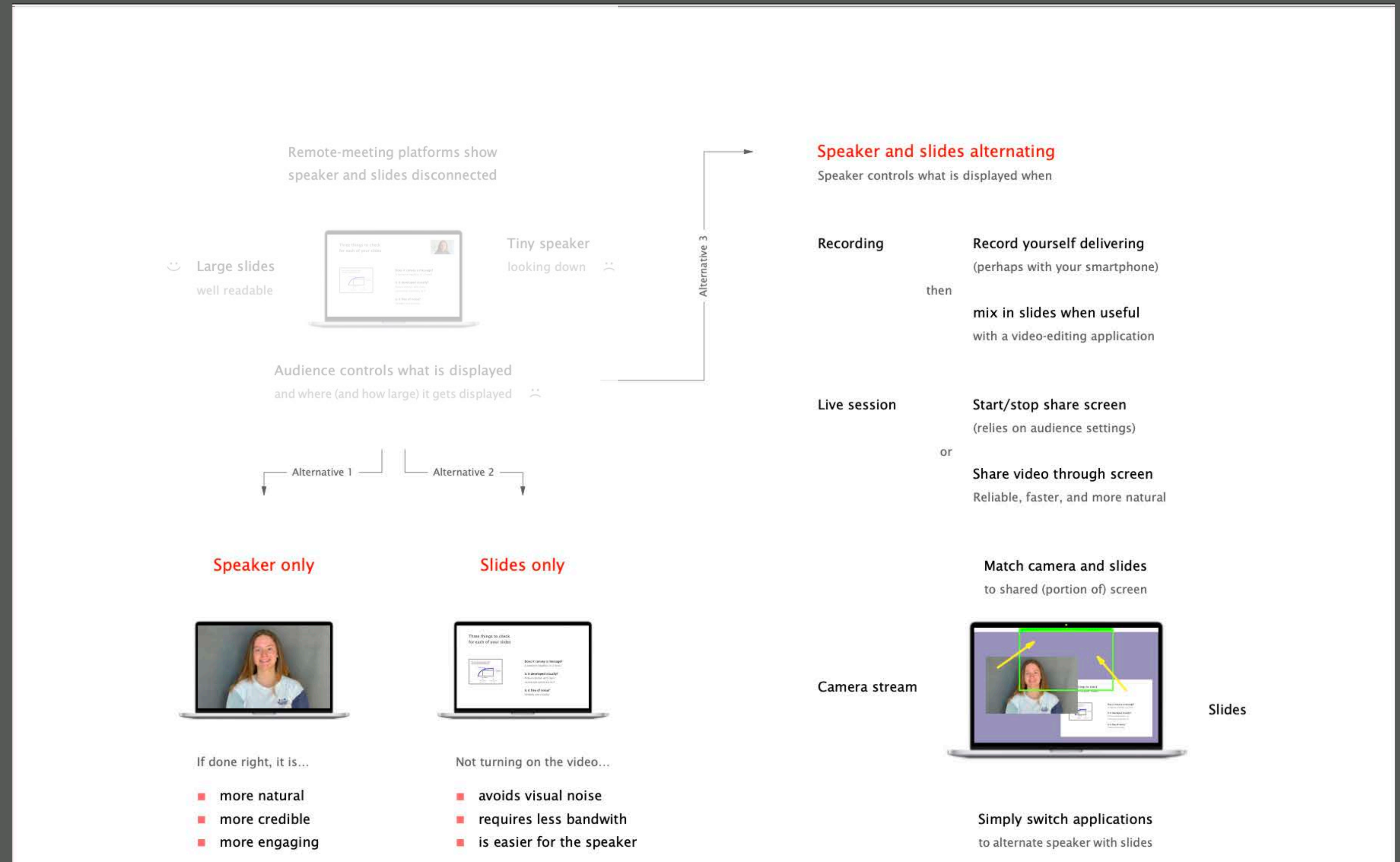
Jean-luc perfectly describes the drawbacks of remote platforms including the loss of control and of non-verbal communication

Freely-available [handout](http://www.principiae.be) on www.principiae.be



Jean-luc perfectly describes the drawbacks of remote platforms as well as worthwhile alternatives

Freely-available [handout](http://www.principiae.be) on www.principiae.be



During the Fall 2020

I decided to give the "alternating views" a shot

During the Fall 2020

I decided to give the "alternating views" a shot

"me" full screen
view 1

clicker
shortcut



slides full screen
view 2



Example

Question: Which of the following strings is accepted?

1. ϵ
2. 0
3. 1
4. 0111

1/48

Student feedback was good *better* than in the Spring

Student #1

Prof. Vanbever's video set up was grand, I loved it [...]

Student #2

Prof. Vanbever's Zoom-Setup und Unterricht hat grosser Lob verdient (beste Zoom-Vorlesungen die ich in den letzten zwei Semester hatte)

Student #3

It was an absolute joy watching Prof. Vanbever's lectures [...]

Step 3: Polishing

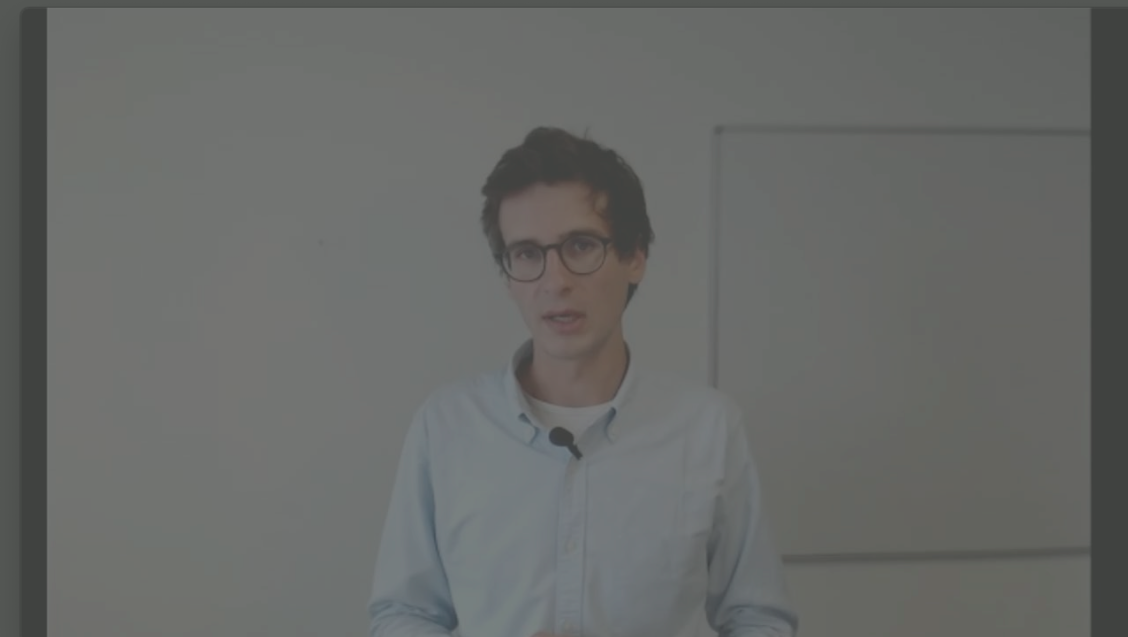
Learning from... YouTube?

Spring 2020

Forward proxies cache documents close to clients, decreasing network traffic, server load and latencies

swiscom forward proxies Salt. This is typically done by ISPs or enterprises

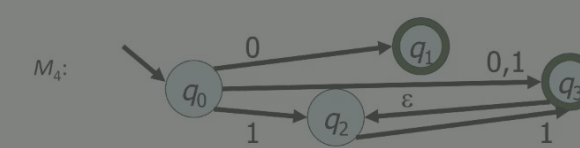
Fall 2020



Spring 2021



Example

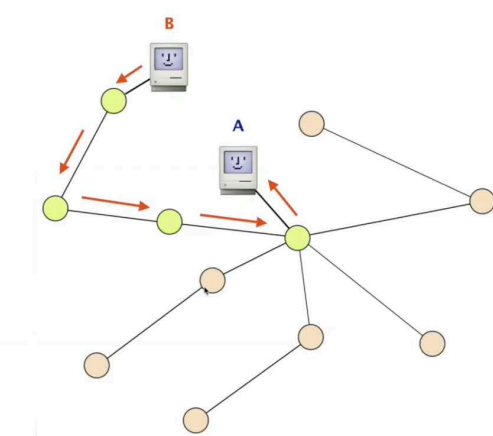


Question: Which of the following strings is accepted?

1. ϵ
2. 0
3. 1
4. 0111

1/48

B answers back to A
enabling the green nodes to also learn where B is



My hardware setup

My hardware setup

behind



My hardware setup



green screen

My hardware setup

front



My hardware setup

yellow-ish lights
for my face

studio lights
for the green screen



My hardware setup



decent microphone

My hardware setup

tablet for "blackboard-ing"



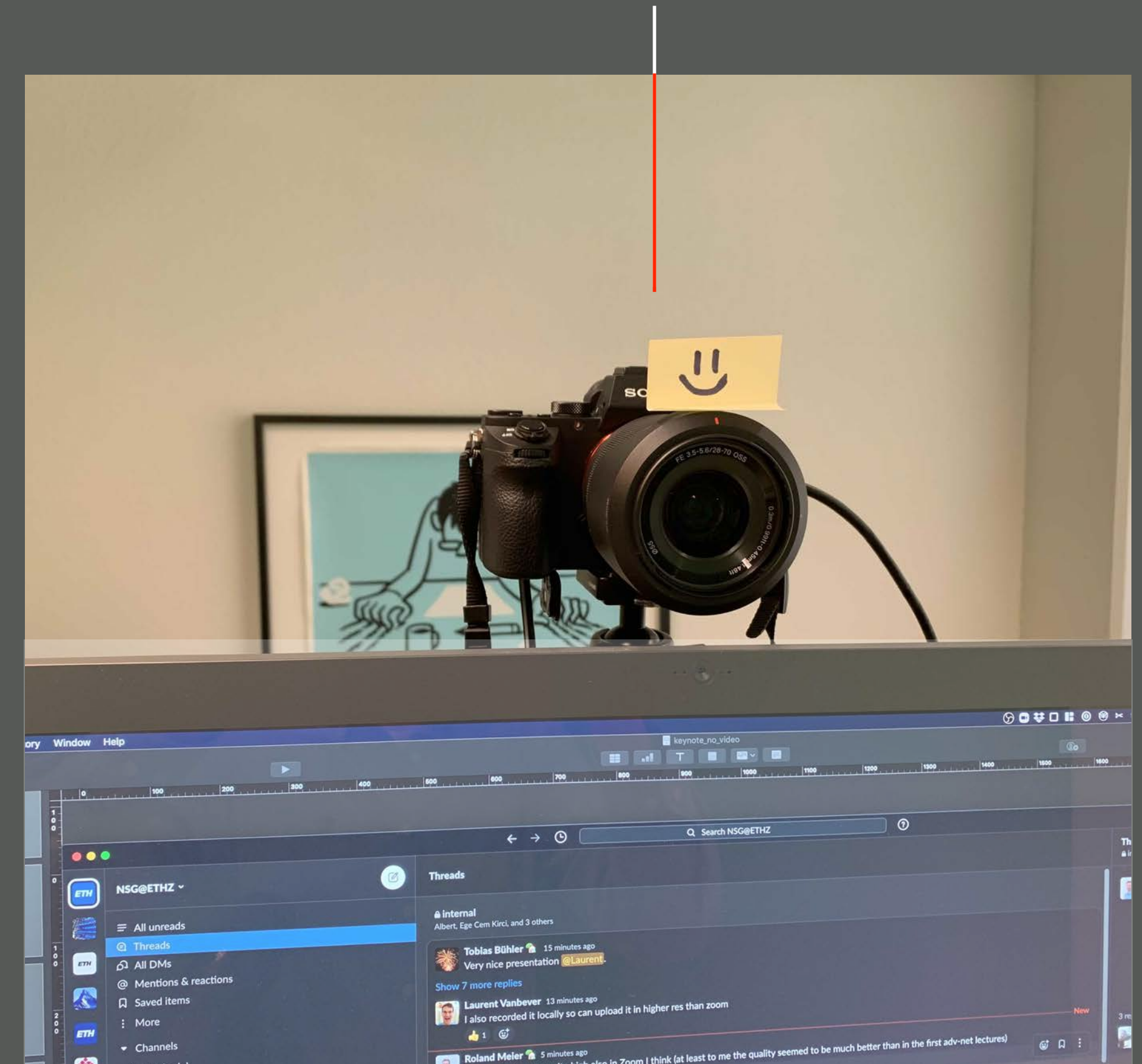
My hardware setup

clicker for changing slides



My hardware setup

decent camera (personal one)



Much simpler setup works well too
this is how I started—this gets you 80+% there already

simple webcam



IKEA bed sheet...

My **software** setup (I'm a mac user)

My software setup (I'm a mac user)

Open Broadcast Software

blends multiple video scenes into one "virtual camera"

Loopback + Audio Hijack

delay the audio wrt the video

Zoom/Teams/Hangout...

meeting platforms

Open Broadcast Software

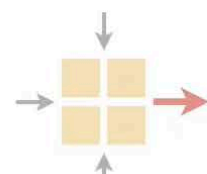
blends multiple video scenes
into one "virtual camera"

me only



slides only

Communication Networks
Spring 2021



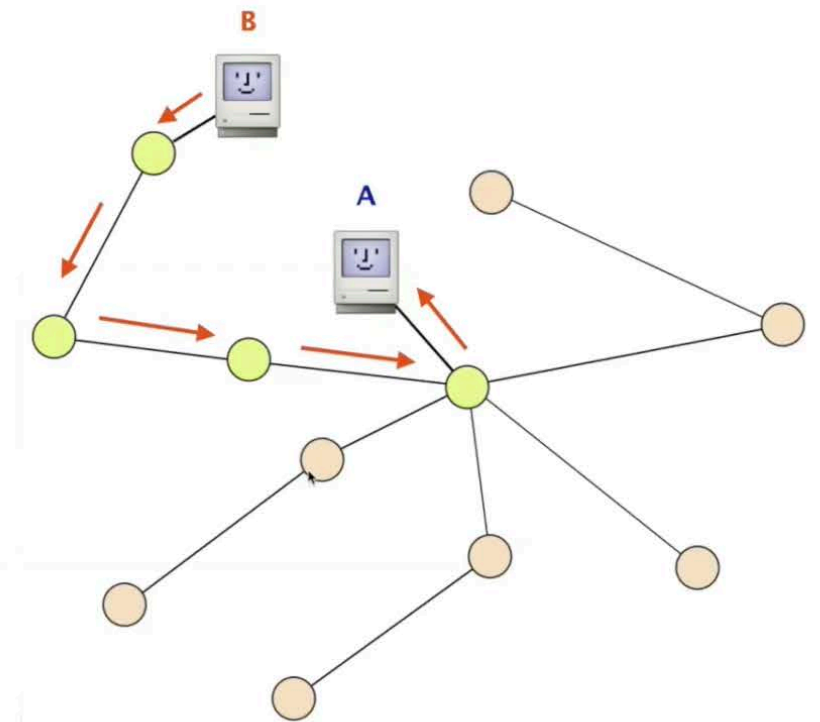

Laurent Vanbever
nsg.ee.ethz.ch

ETH Zürich (D-ITET)
April 1 2021 (addendum)

Materials inspired from Scott Shenker & Jennifer Rexford

me + slides

B answers back to A
enabling the green nodes to also learn where B is





Search 09:41 Tue 9 Jan Lectures Notes

just table nh (output part)

addresses			
2		0	
		⋮	
2 ³¹		2	

RA



addr	ptr	ptr	nh.
A		A	1
B		B	2

after the
failure.

A	2
B	2

tablet

Few lessons I learned

Few lessons I learned

Teaching online is more *tiring*

Make sure to be fueled properly

Few lessons I learned

Teaching online is more *tiring*

Make sure to be fueled properly

Maintaining eye contact is key for students' engagement

Stick a friendly face to your camera, it helps a ton

Few lessons I learned

Teaching online is more *tiring*
Make sure to be fueled properly



Maintaining eye contact is key for students' engagement
Stick a friendly face to your camera, it helps a ton

Few lessons I learned

Teaching online is more *tiring*

Make sure to be fueled properly

Maintaining eye contact is key for students' engagement

Stick a friendly face to your camera helps a ton

Reading from a script doesn't work (for me)

Rehearse only the beginning then go with the flow

Few lessons I learned

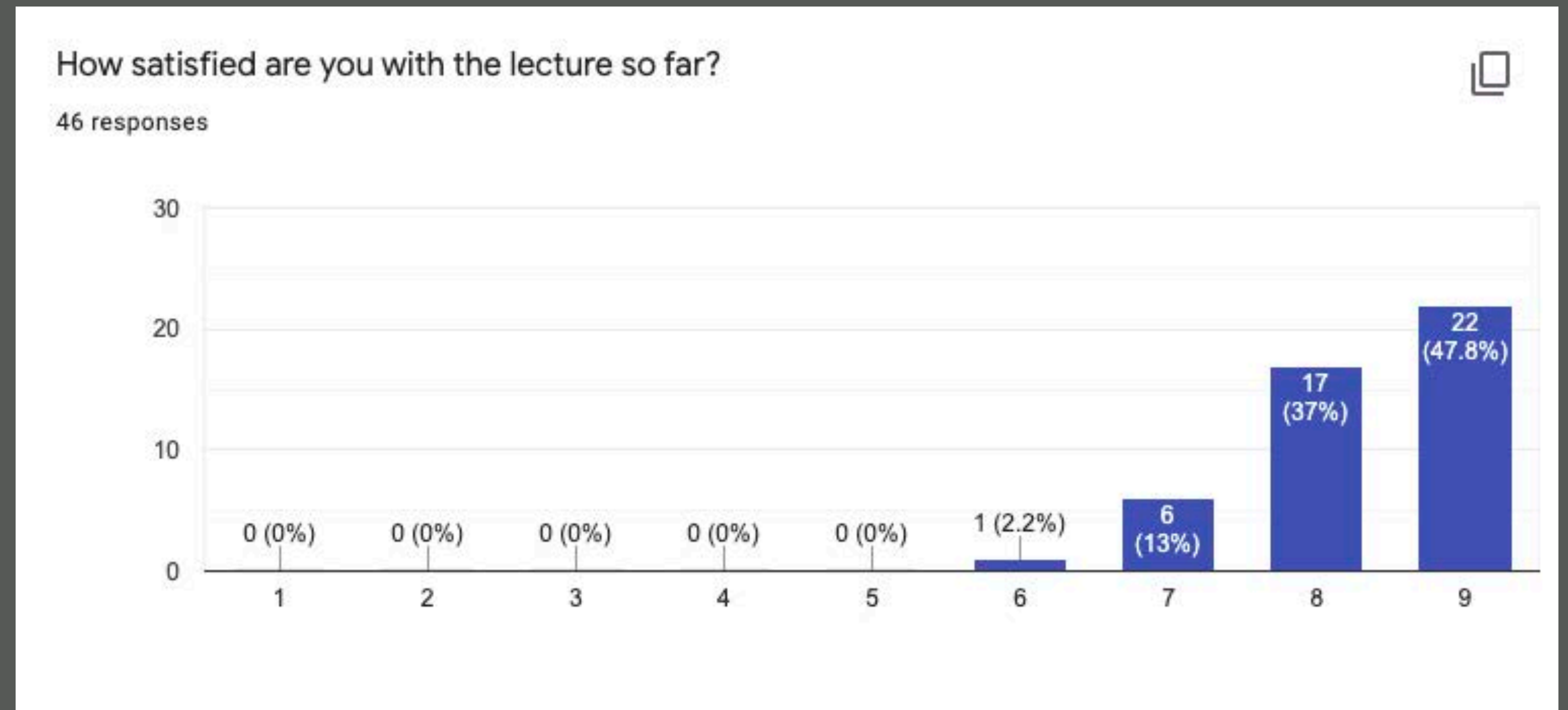
Knowing "how to stream" is useful beyond the classroom
See it as a long term investment for you and your team

Few lessons I learned

Knowing "how to stream" is useful beyond the classroom
See it as a long term investment for you and your team

It's actually quite **fun!** 😊

Our student feedback is *even* better now
better than Fall 2020, which was itself better than Spring 2020



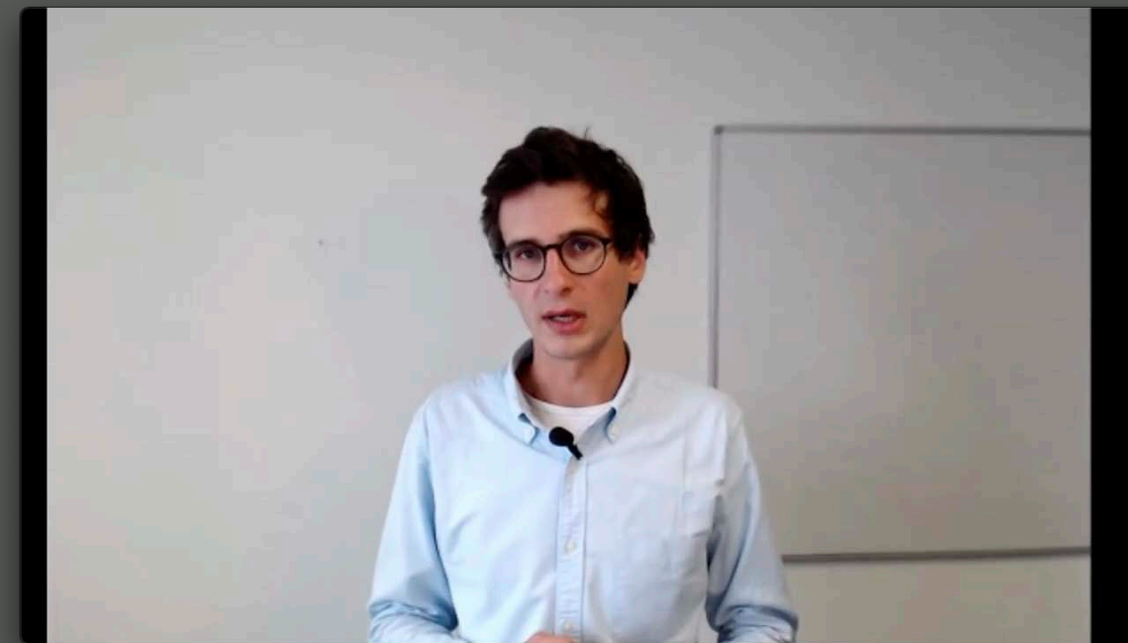
Communication Networks 2021 mid-term student survey

Staying engaged—slides, video and the professor

My experience teaching online

Forward proxies cache documents close to clients, decreasing network traffic, server load and latencies

swisscom forward proxies Deutsche Telekom Google Salt. This is typically done by ISPs or enterprises



Example

Question: Which of the following strings is accepted?

1. ϵ
2. 0
3. 1
4. 0111

1/48

B answers back to A enabling the green nodes to also learn where B is