IAB Workshop on Stack Evolution in a Middlebox Internet (SEMI)

Problem Statement

The Internet's transport layer has ossified!

- Narrow interfaces (from BSD sockets to pseudo-transport over HTTPS)
- Increasing in-network modification of traffic by middleboxes that make assumptions about the protocols running through them

No innovation in the transport layer possible anymore!

- No deployment of new protocols or the extension of existing ones
- However, emerging applications require functionality that existing protocols can provide only inefficiently, if at all.

Scope of the Workshop

Incrementally deployable approaches to de-ossifying transport

- Interactions with middleboxes

- New methods for implementing transport protocols

- Matching paths through the Internet with certain characteristics to application and transport requirements

Expected Outcome

Architectural and engineering guidance on future work

- Areas for standardization
  - new protocols that separate signaling to and from on-path devices and common transport semantics from the rest of the transport protocol
  - general guidance, e.g. how transports as well as middleboxes can be designed and deployed to achieve these goals

- Future work to be pursued within the IAB Stack Evolution Program

- IAB workshop report
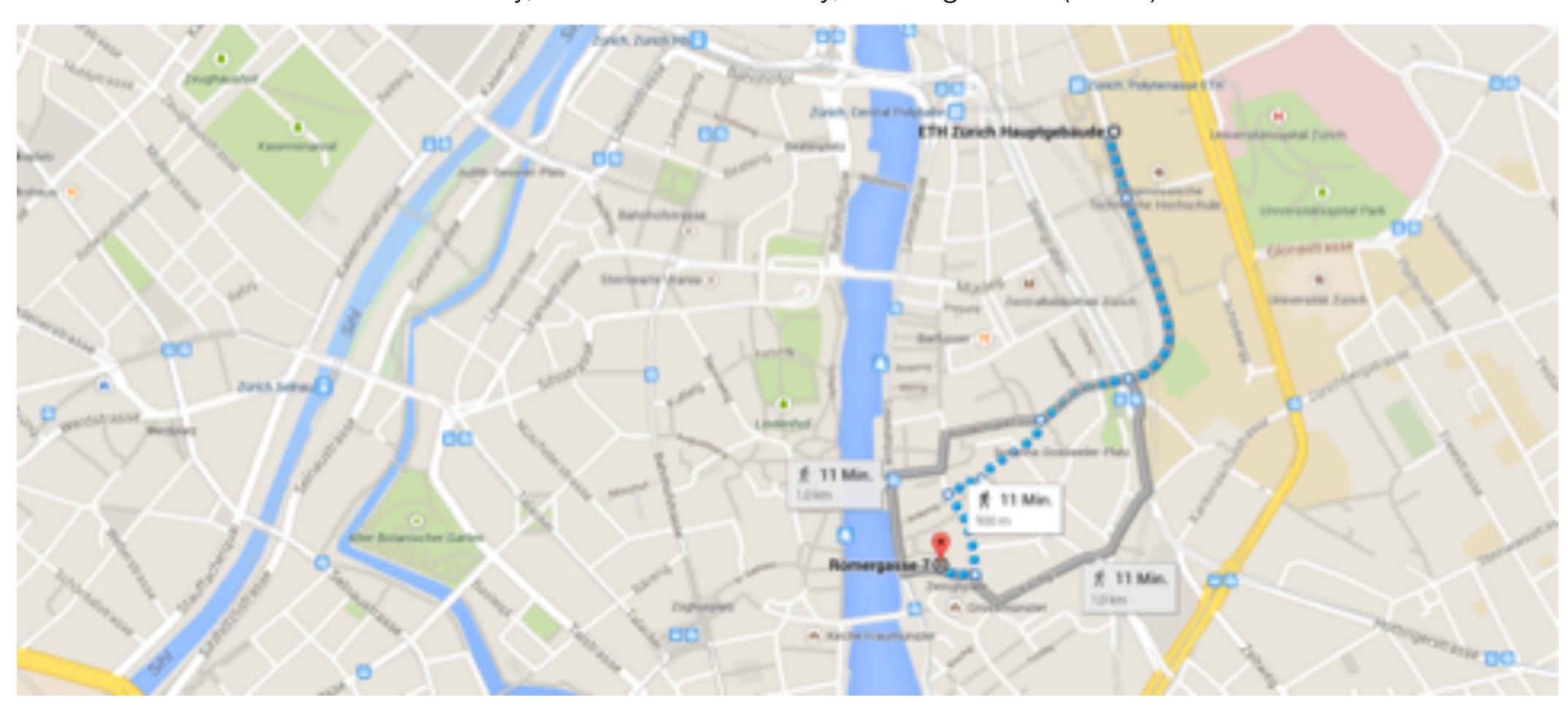
Program Day 1: Monday 26

09:00   **Welcome;** workshop format and goals

09:15   **Introductions:** one minute per person, based on questionnaire

10:00   **The bigger picture**: what is the problem? how did we get here?

10:45   **Coffee Break,** HG Foyer E Süd

11:15   **The bigger picture**: discussion

12:45   **Lunch,** FoodLab, CAB

14:15   **The role and rule of middleboxes**: intro and discussion

15:30   **Coffee break,** HG Foyer E Süd

16:00   **Unbreaking transport:** lightning talks and discussion

17:45   **Close of day 1:** discussion wrap-up, day 2 agenda setting

19:30   **Social Dinner**, Le Dezaley, Römergasse 7

Program Day 2: Tuesday 27

09:00   **Agenda Bash**

09:15   **Discussion Slot One** (topic TBD)

10:45   **Coffee Break,** HG Foyer E Süd

11:00   **Discussion Slot Two** (topic TBD)

13:00   **Lunch,** Dozentenfoyer, HG

14:30   Next steps, concluding remarks, and action items

15:30   **Coffee Break,** HG Foyer E Süd

16:00   Breakout (time to start work on action items)

Social Dinner: Le Dezaley

Monday, Jan 26 @ Le Dazaley, Römergasse 7 (19:30)

Backup

Questions

- Which paths through the Internet are actually available to applications?

- Which transports can be used over these paths?

- How can applications cooperate with network elements to improve path establishment and discovery?

- Can common transport functionality and standardization help application developers to implement and deploy such approaches in today's Internet?

- Could cooperative approaches give us a way to rebalance the Internet back toward its end-to-end roots?