

Peer-to-Peer Practical Exercise



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Lab Work

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<http://www.ps.tu-darmstadt.de/teaching/p2p>

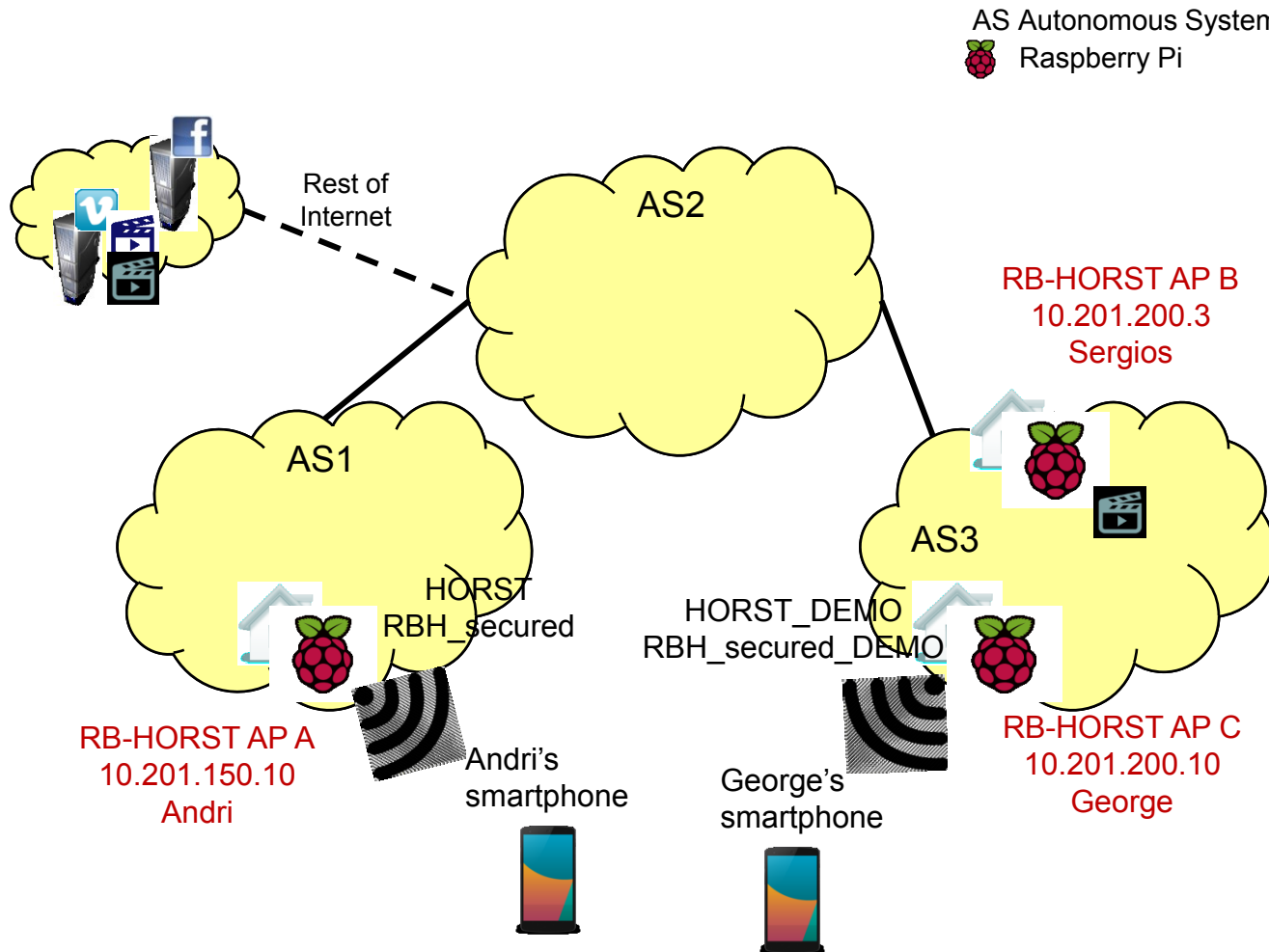
Purpose of Practical Exercise

- ❖ *Goal:* Hands-on experience with a cutting edge P2P research prototype
 - Practical testing and evaluation of a P2P mechanism deployed among students
 - Learn and investigate how a real P2P network works
- ❖ *Means:* Participation in a user study/live deployment
 - The study runs in parallel in three countries
 - You can be part of a EU wide research project
 - Do Lab exercises with the research prototype

The RB-HORST Software Prototype

- ❖ RB-HORST is a social-data enabled WiFi access point software based on Peer-to-Peer technology
 - HOme Router Sharing based on Trust
- ❖ Use of local network resources for VoD (Video-on-demand) delivery
 - Prefetch VoD content from the closest source based on P2P
 - ⇒ Improve user experience
- ❖ WiFi roaming and offloading for mobile devices
 - ⇒ Increase available bandwidth
 - ⇒ Improve user experience
 - ⇒ Reduce mobile data costs
 - ⇒ Save battery on device

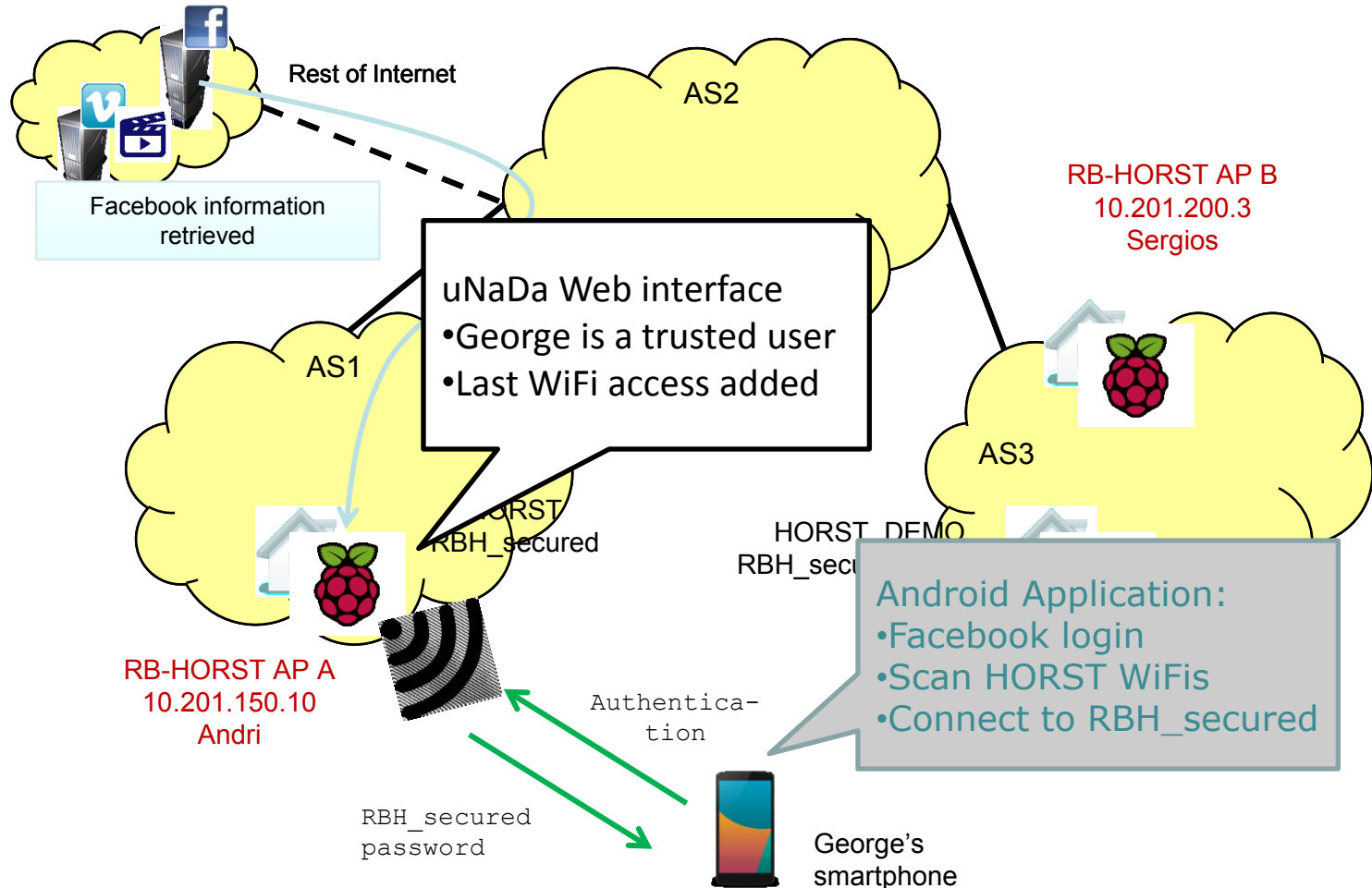
General Scenario



WiFi Offloading

- ❖ George uses 3G mobile data to access the Internet
- ❖ Reaches to Andri's RB-HORST access point A
- ❖ RB-HORST Android application detects RB-HORST access point
- ❖ George is identified to be a friend of Andri and can use Andri's WiFi
- ❖ Effects:
 - Lower energy consumption and mobile data savings

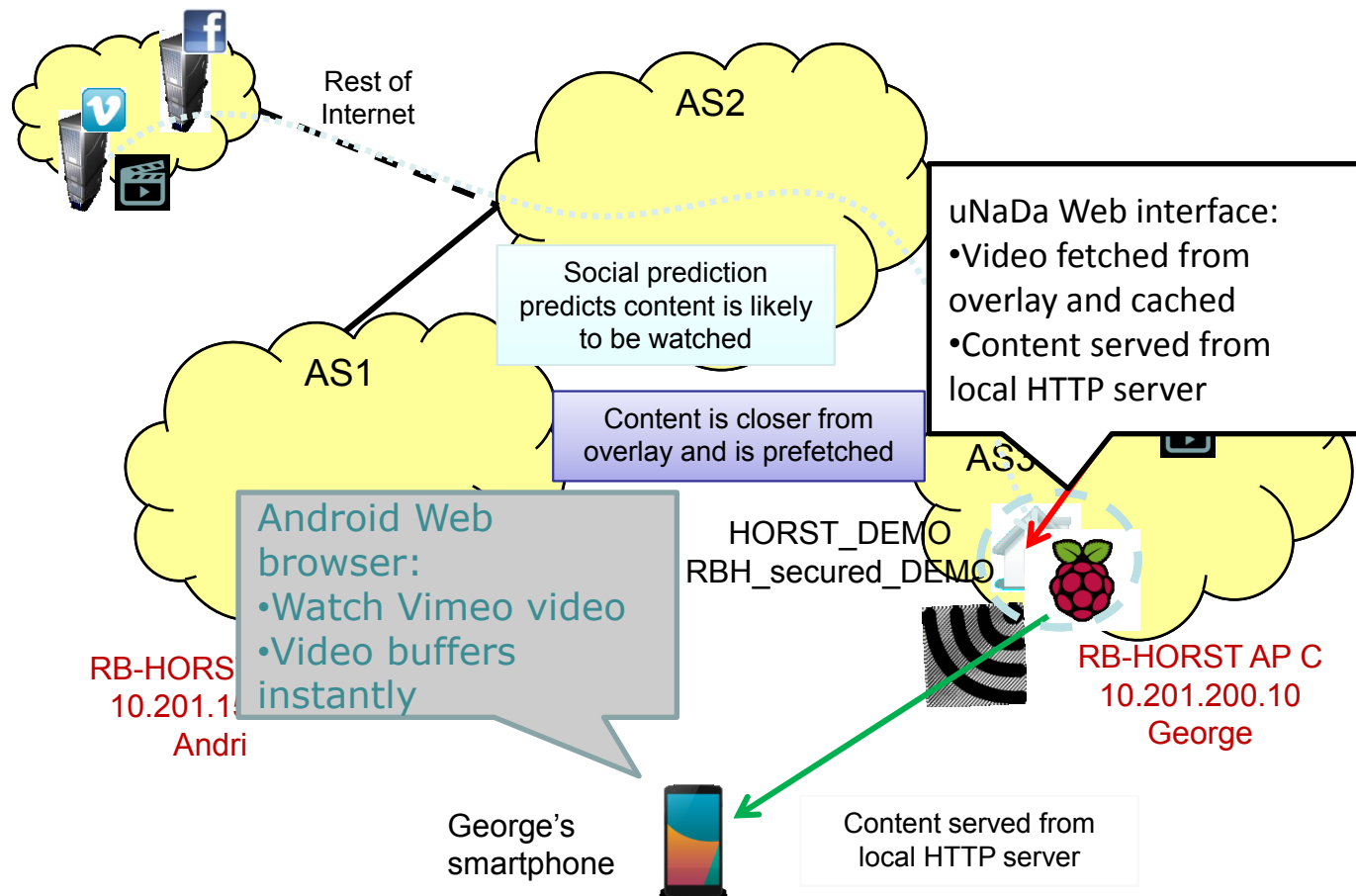
WiFi Offloading



Social Prediction

- ❖ Andri posts a video to his Facebook wall
- ❖ Social prediction in RB-HORST access point C (George) predicts that the video is likely to be watched by George
- ❖ Video also exists in another RB-HORST access point and is refetched from the P2P caching network
- ❖ George watches video from local cache
- ❖ Effects:
 - Better QoE, as video is served from local cache
 - Video is fetched from closest peer = Inter-domain traffic saved

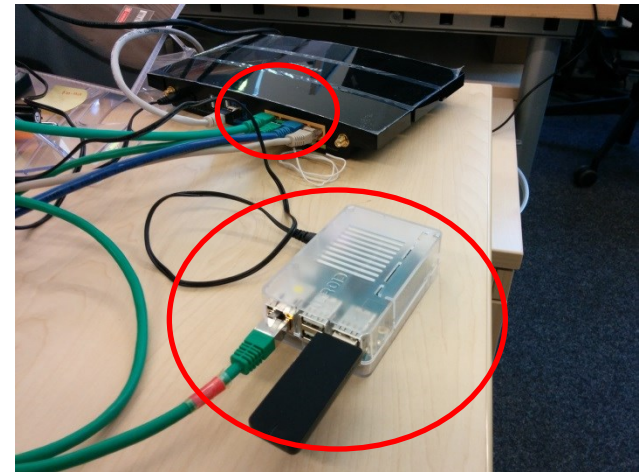
Social Prediction



Privacy and Abuse Policy

- ❖ Your social data never leaves your access point
 - You configure your AP and smartphone with your Facebook account
 - Exception: limited set of anonymized data for research
 - Anonymized friendlist, anonymized offloading activity, anonymized data on the success of social prefetching
 - Anonymization is done before recording
 - Data will never be made available to third parties
- ❖ Offloaded connections are tunneled through TUD network
 - Done to keep you free from legal problems
 - Handled similar to the TUD VPN w.r.t. user policy
 - ➔ we are forced by law to record who offloads where and have to cooperate with the authorities in case of abuse!

- ❖ The RB-HORST access point is a separate device that only has to be plugged to a free Ethernet port of your router
- ❖ RB-HORST is separated from your private LAN
 - AP may contact the gateway, only
 - All offloading traffic is tunneled to the TUD network



- ❖ All of you can participate in the study using their smart phones
 - *First step:* fill in the online survey as indicated on the first exercise sheet
 - *Second step:* install „RB-HORST“ Study App from the Android Play Store
- ❖ Selected students can get hold of an an RB-HORST access point for deployment in their home premise
 - Selection is done based on survey
- ❖ There will be a number of Lab exercise assignments based on RB-HORST
 - Analysis of overlay activities