Self-forming P2P

- Self-forming P2P: IETF linkage + motivation

- IETF peer-to-Peer Streaming Protocol WG, running code

- Bar BoF: "Media without censorship"
  - open invite: 1st Aug, 20:00, Regency A
  - Motivation and direction

- draft-pouwelse-censorfree-scenarios-01.txt

DISCLAIMER: early stage, trying to generate interest in IETF

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Self-forming P2P:
# Linkage to IETF TSV technical topics

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- *Build on work that has been done; tackle harder problems*

- No server needed

- Exchange potentially large volumes of traffic at potentially high bandwidths

- NAT traversal (BEHAVE)

- Congestion: LEDBAT, ?

- Service discovery

- Peer discovery

- Reliability over UDP

- RELOAD work

- "special bits": real-time news

TOP 10
MOST FOLLOWED TWITTER ACCOUNTS

		followers	following	tweets
1	**Lady Gaga** (@ladygaga) mother monster	9,564,718	143,592	687
2	**Justin Bieber** (@justinbieber) NEVER SAY NEVER 3D is in THeatres!! and the new NeverSayNever Remix album with Kanye, Rascal Flatts, Miley, Chris Brown, Usher, and Jaden Smith is in STORES!	9,138,663	111,093	8,770
3	**Britney Spears** (@britneyspears) It's Britney Bitch!	7,586,122	420,027	716
4	**Barack Obama** (@BarackObama) 44th President of the United States	7,524,956	698,602	1,331
5	**Kim Kardashian** (@KimKardashian) business woman, exec producer, fashion designer, perfumista	7,261,083	135	7,385
6	**Katy Perry** (@katyperry) i kissed a girl AND diddled her skittle.	6,897,712	69	2,802
7	**ashton kutcher** (@aplusk) I make stuff, actually I make up stuff, stories mostly, collaborations of thoughts, dreams, and actions. Thats me.	6,587,703	627	6,652

Self-forming P2P: motivation

- No single point of failure

- Unbounded scalability: 2 peers – 200 million

- Self-organisation, Self-maintaining, Self-aware;-)

- No business model needed

  - Runs on donated resources

  - Volunteer-based or reward contributors

- Beyond key/value lookup

  - search, share & stream

  - Wiki-style editing

  - Spam & hoaxes

  - Accurate reputations

  - Smartphone network

- **Censorship resiliance**
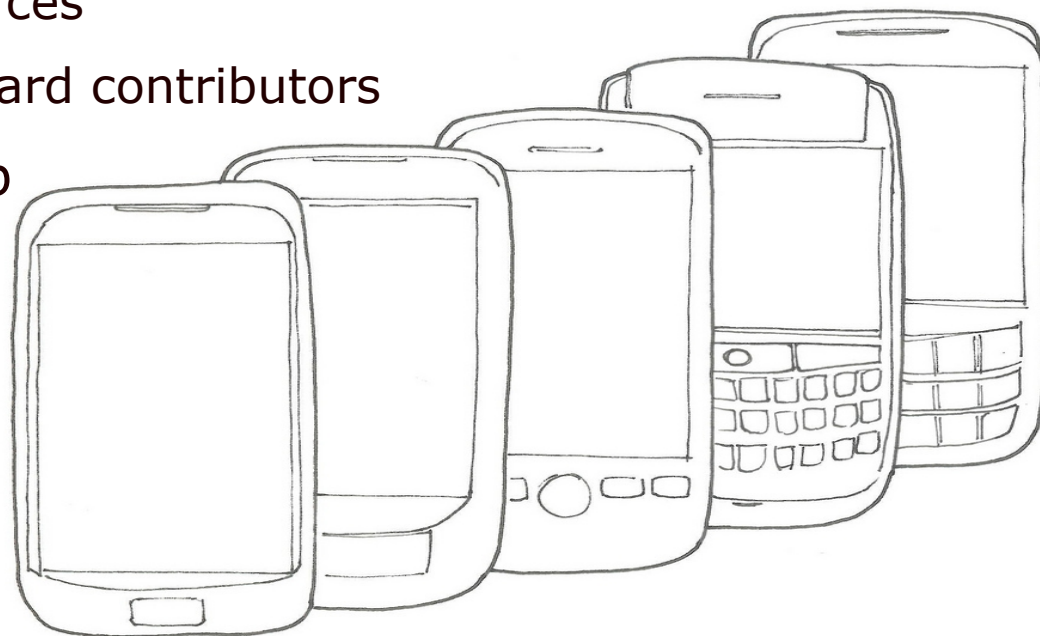
IETF Peer-to-Peer Streaming Protocol (PPSP)

- *No server needed*

- Live and on-demand streaming

- Draft-ietf-ppsp-peer-protocol-02

- Industry implementation: presented at 83rd

- Runs on: PC,TV,iPad, Android, set-top box, Tribler

Source: Grishchenko, "On the Design of a Practical Information-Centric Transport", March 2011,
http://www.pds.ewi.tudelft.nl/fileadmin/pds/reports/2011/PDS-2011-006.pdf;
Petrocco, et al. "Performance Analysis of the Libswift P2P Streaming Protocol", IEEE P2P 2012;
Source code: https://github.com/triblerteam/libswift/

Self-forming P2P: running code

- Self-forming:
  - Keyword search
  - Sharing
  - Streaming
- Running code on a TV
- Samsung UE40D7000
- ARMv7 gcc-toolchain
- Thnx to SamyGO
- PPSP,LEDBAT,NAT,etc.
- Open Source
- 6 years of work
    12-18 people

Firmware: http://www.tribler.org/SwiftTV
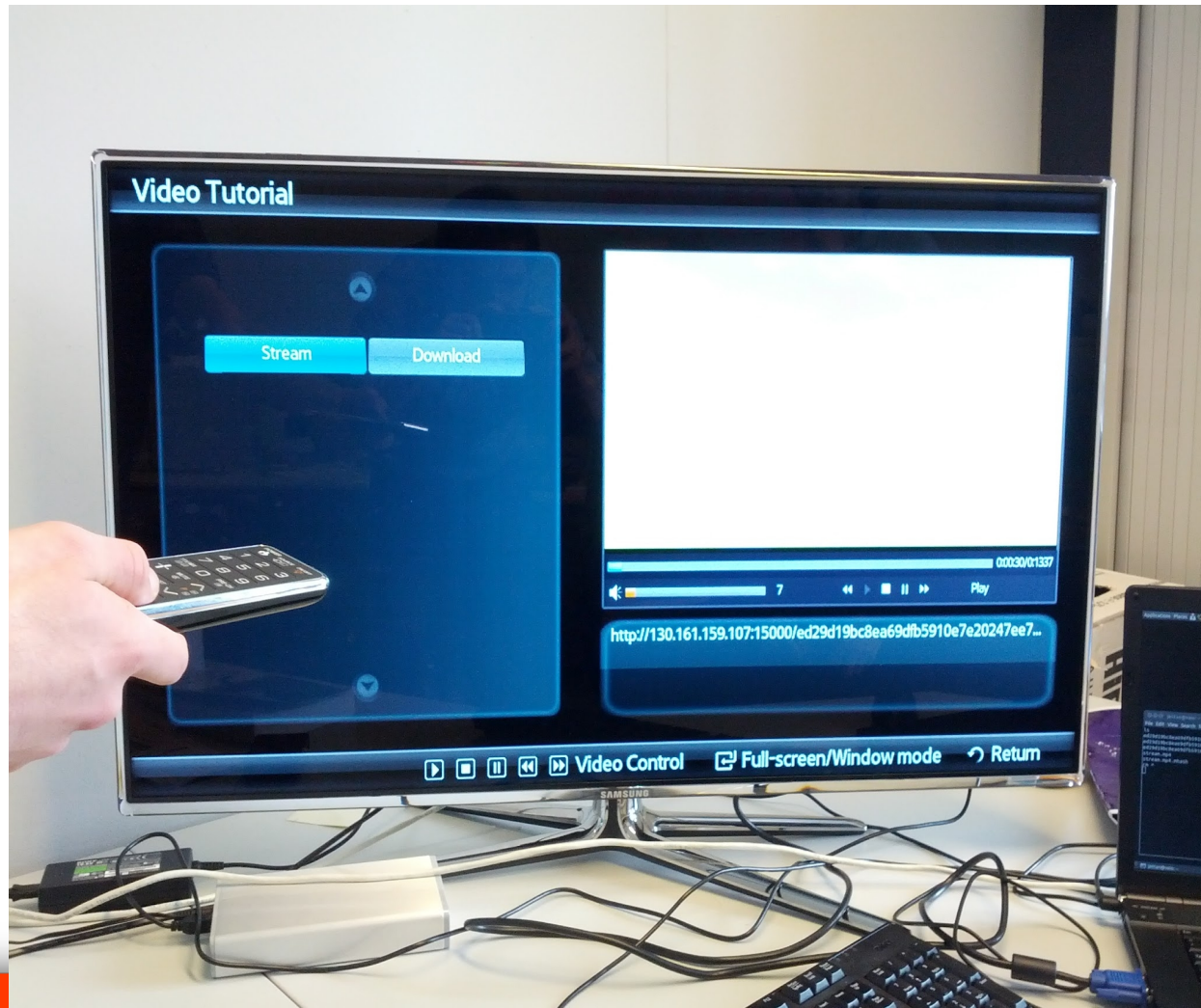
News dissemination without censorship: motivation and direction

- Internet freedom declining in many areas

- Fragmented small team initiatives

- Microblogging is having real-world impact

- Smartphones below 100Euro

- Self-forming overlay on smartphones

- Initial running code at several Open Source projects

- Userspace API direct-wifi and NFC on Android

- Future-proof evolution?

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SIMLOCKVRIJE DUAL-SIM SMARTPHONE,
ANDROID 2.3, PROCESSOR MT-6573, 650 MHZ, ARM11
2.8" CAPACITIVE TOUCHSCREEN MET QVGA RESOLUTIE (240X320)
WIFI B/G, 2.0 MP CAMERA ACHTER EN 0.3 MP VOOR
5467   2 JAAR GARANTIE   20W0

99.99

Bar BoF: Media without censorship

- Time&place:Wednesday 1st Aug 20:00, Regency A

- Draft: draft-pouwelse-censorfree-scenarios-01.txt

- Transport protocols for microblogging on smartphones
  - self-forming P2P overlay
  - Full implementation using smartphone app

- Security and censorship resistance.

- Microblog entry: 140 char messages+picture+video

- Guard against all known forms of censorship such as: cyberspace sabotage, digital eavesdropping, infiltration, fraud, Internet kill switches and lawyer-based attacks with the best known protective methods.

- *Join and share your experience, insight and code*

Draft-pouwelse-censorfree-scenarios: 4 Scenarios

- **20sec:** Duplicate existing microblogging practices. Ability to reach 20 million people in 20 seconds

- **Internet-Free:** without direct Internet access. ad-hoc packet forwarding between smartphones.

- **Friends-only**: uses friend-to-friend networking to remove the requirement for active networking and wifi sensing. The smartphones of Alice and Bob need to manually synced

- **Spammers and hoaxes:** All technology MUST have capability to deal with spam. Eve is actively disrupting the system by injecting news channels with a mix of genuine news, obviously fake messages (consuming valuable system resources and user attention) and hoaxes.

- *Wednesday 1st Aug 20:00; Room: Regency A*