

### Motivation and Challenges

Virtual communities allow users with mutual interests to interact through a shared media, usually a website. Decentralizing them allows users to remain in control of their data.

*But*, ensuring an optimal user experience for all users is difficult due to the lack of a centralized authority.

- New identities are free
- Vandalism is simple
- Current solutions limit control of users

### Proposed Solution

Transpose ideas deployed by Wikipedia to combat vandals and create a fully decentralized virtual community platform without the drawbacks of previous solutions.

- Wikipedia is centralized, but their approach to combat vandals is not. Everyone can edit, no user account required.
- By exposing all activity and motivating users to contribute they manage to achieve a quality equal to Encyclopaedia Britannica.<sup>[1]</sup>

[1] J. Giles. Internet encyclopaedias go head to head. Nature,438(7070):900-1, Dec. 2005.

### System Architecture

#### Features

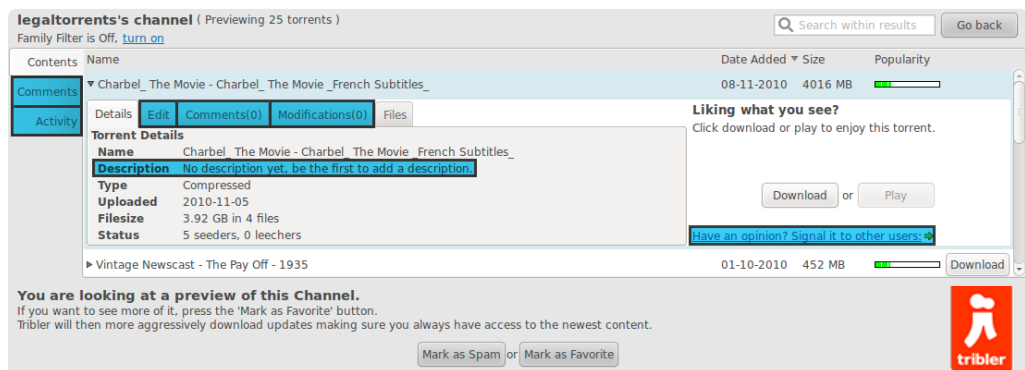
- Everyone can add, download, comment on, improve, revert and rate items

#### Completely transparent

- All activity is linked to a user
- Personalized activity lists allow for easy monitoring

#### Implementation

- Channels are virtual communities
- Build into Tribler
- Build using a distributed permission system (Dispersy)
- Every channel has a separate overlay
- One additional overlay used for discovering channels
- All messages are signed, verified accountability
- Modifications and comments have pointers to their latest received messages, allowing for ordering



Virtual community as implemented, features highlighted

### Results & Analysis

#### Experiments

- Performed on DAS-4 supercomputer
- Deployed 250 peers on 10 nodes
- Used trace from actual community
- 1 peer creating all messages, other peers synchronizing
- 10 peers join community after 1300s, hence vertical lines

#### Results

- Peers can easily stay in sync
- Very efficient due to use of Bloom-filters
- On average a peer consumed 1 KB/s, inserting peer consumed 2 KB/s
- Load is divided between peers
- Tribler 5.5 will be released with Open2Edit enabled, thousands of users will allow us to further evaluate it's social features.

