Survey on Decentralized Online Social Networks

Amira Soliman, Anis Nasir

Supervisor: Šarūnas Girdzijauskas
Why DOSN?

• Scalability

• Privacy/Ownership
DOSN Properties and Challenges

- Heterogeneity
- Availability
- Scalability
- Fault Tolerance
- Transparency
- Consistency
DOSN Properties and Challenges

- Privacy & Security
- Openness
- Autonomy
- Churn
- Global Knowledge
- QoS
DOSN Basic Services

- Privacy and Security
- Search and Ranking
- Data Dissemination
- Distributed Storage
Possible Topologies

• Unstructured
• Structured
• Hierarchical
• Social-based
• Data driven
Search Strategies

- Look up service
  - Like for DNS

- Global Handlers
  - UUID or Email/SIP

- Gossiping

- Random walks
Data Dissemination Strategies

- Publish Subscribe
- Gossiping
- Flooding
  - Swarming
  - Tree or Mesh
- Direct Data Exchange
Existing DOSNs (Taxonomy*)

- PeerSoN
- Safebook
- Vis-à-Vis
- Private Public
- NetTube

- DIASPORA
- DECENT
- PrisM
- GoDisco
- SocialTube
PeerSoN

• Main Features:
  - PKI-Encryption
  - P2P Topology
  - DHT Look up
  - Direct Data Exchange

• However,
  - OpenDHT limitations:
    • Logically centralization
    • Short-term storage
  - No replication
    • no availability when users are offline
Safebook

• Main Features:
  - P2PTopology
  - Trusted Data Replication
  - Matryoshka: traversal via hop-by-hop trusted relationships

• However,
  - Robustness of Matryoshka?
    • Maintainability with dynamic change of users states and relationships
Vis-a-Vis

- Main Features:
  - P2P Topology
  - Organizing users in social groups
  - Two-tier DHT Overlays
  - Trusted Data Replication
  - Deployment
    - **Cloud**
    - Desktop
    - Hybrid

- However,
  - Costly
Private-Public

• Main Features:
  - Personal-Cloud Butler (local/vendor)
  - Semantic Index
  - Access Control List
  - SociaLite Query Language

• However,
  - Performance of SociaLite? Slow
Private-Public

SocialLite Query Language API

Communication | Authentication | Authorization

Pocket Butler

Data Manager | Semantic index | Access Control | ID Manager

Personal-Cloud Butler

Friends Butlers
DIASPORA

- Open, Close and Local Diaspora Servers
- Search (local or via diaspora handle)
- Push design
- Home and foreign profiles (crawling)
DECENT

- DHT to store data
- Use root and container objects
- Privacy and security
PrisM

- Autonomous social networks (ASN)
- Centrally managed ASN- client server model
- Cross-ASN communication require security policies-peer-to-peer
- Bottom up Access and top-down control
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