Survey on Decentralized Online Social Networks

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Supervisor: **Šarūnas Girdzijauskas**

Why DOSN?

- Scalability

- Privacy/Ownership

DOSN Properties and Challenges

- Heterogeneity

- Availability

- Scalability

- Fault Tolerance

- Transparency

- Consistency

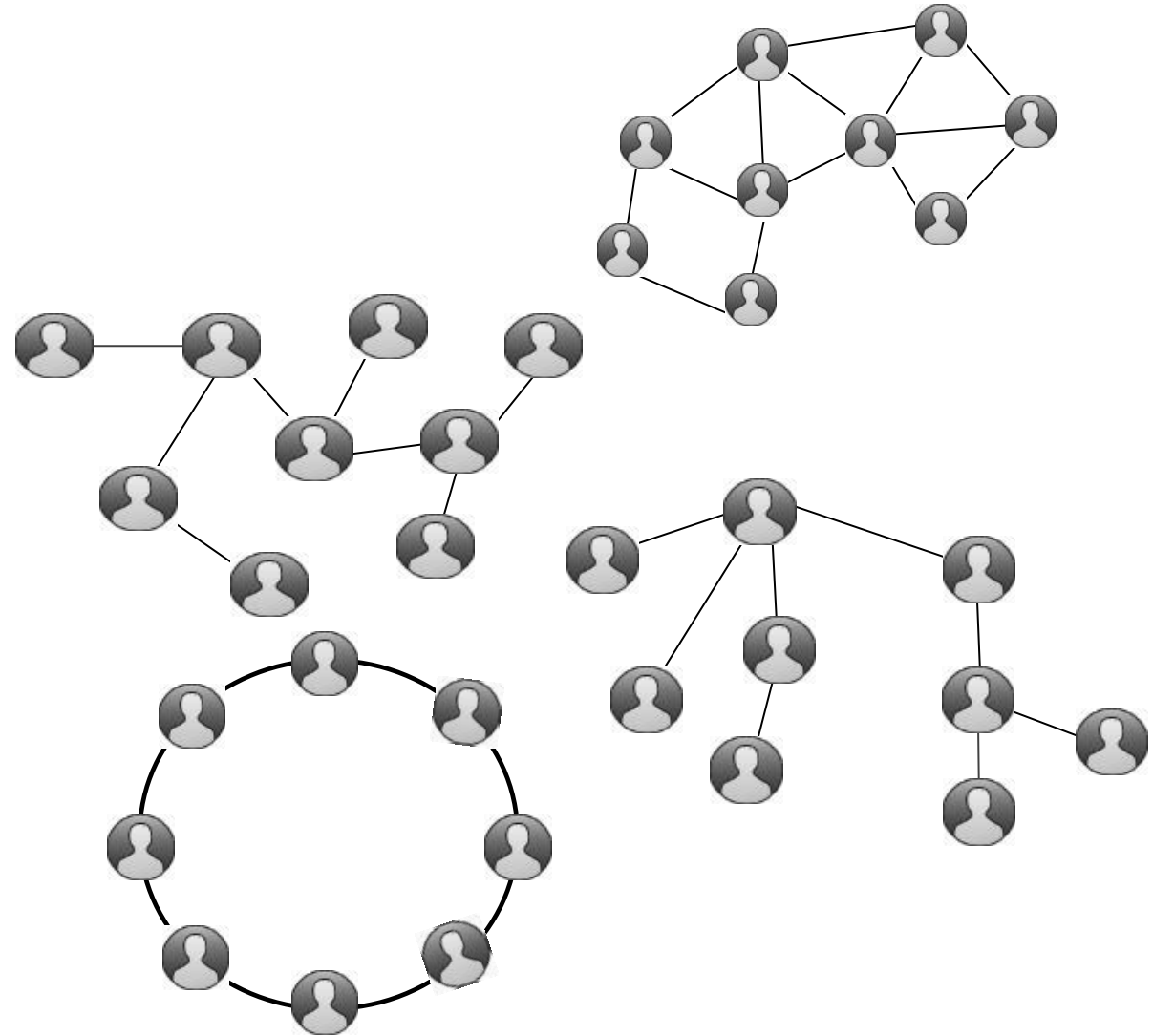# DOSN Properties and Challenges

- 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

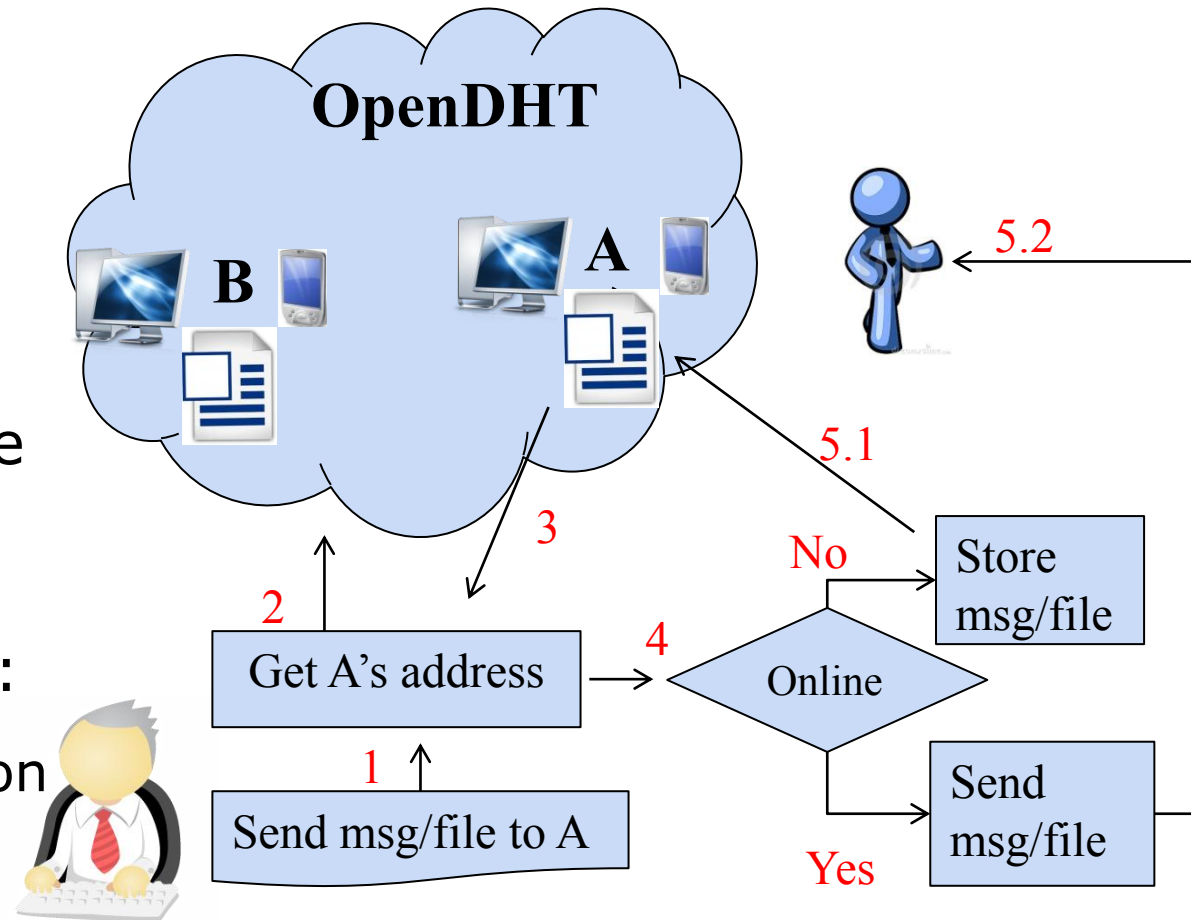▶ SocialTube

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

Core

Mirror

Trusted link
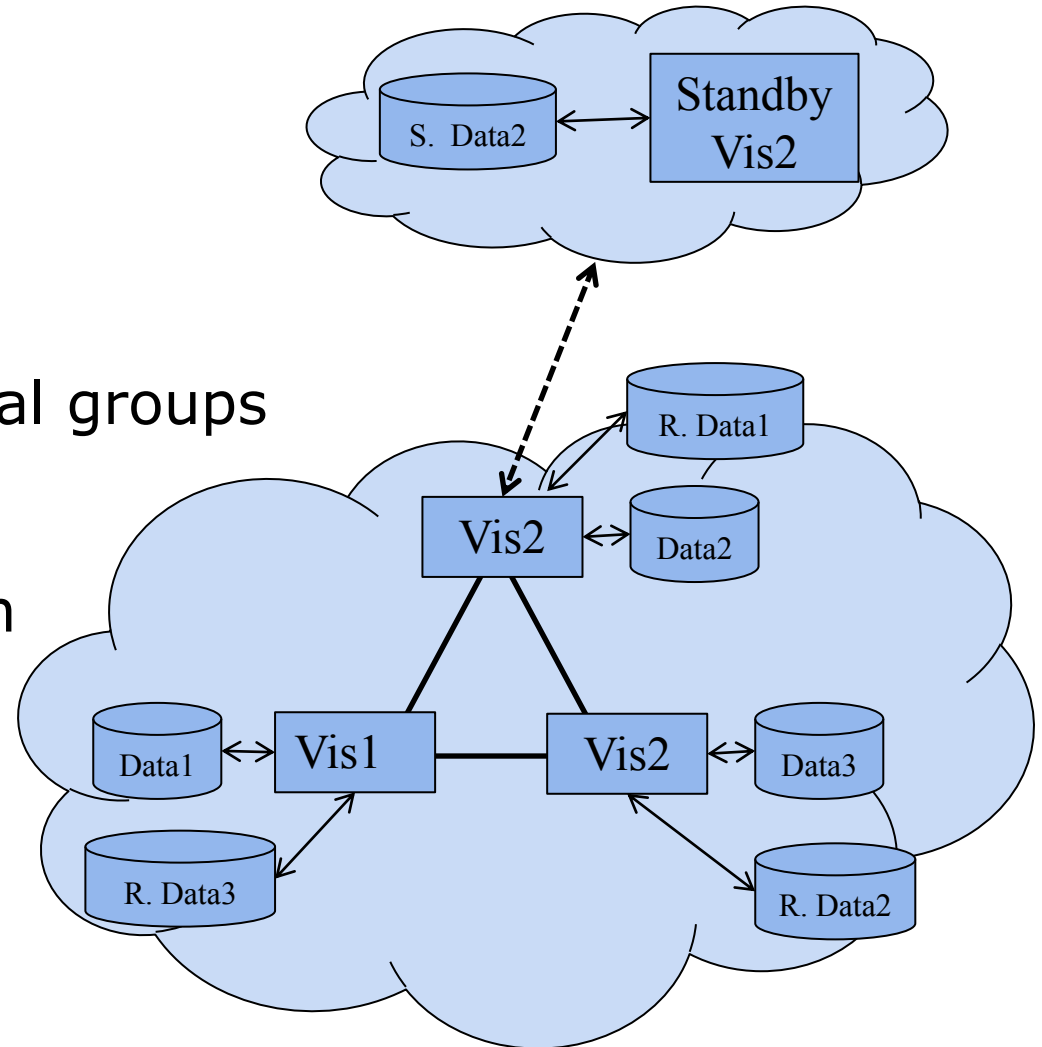
Shell

Entry point

Matryoshka
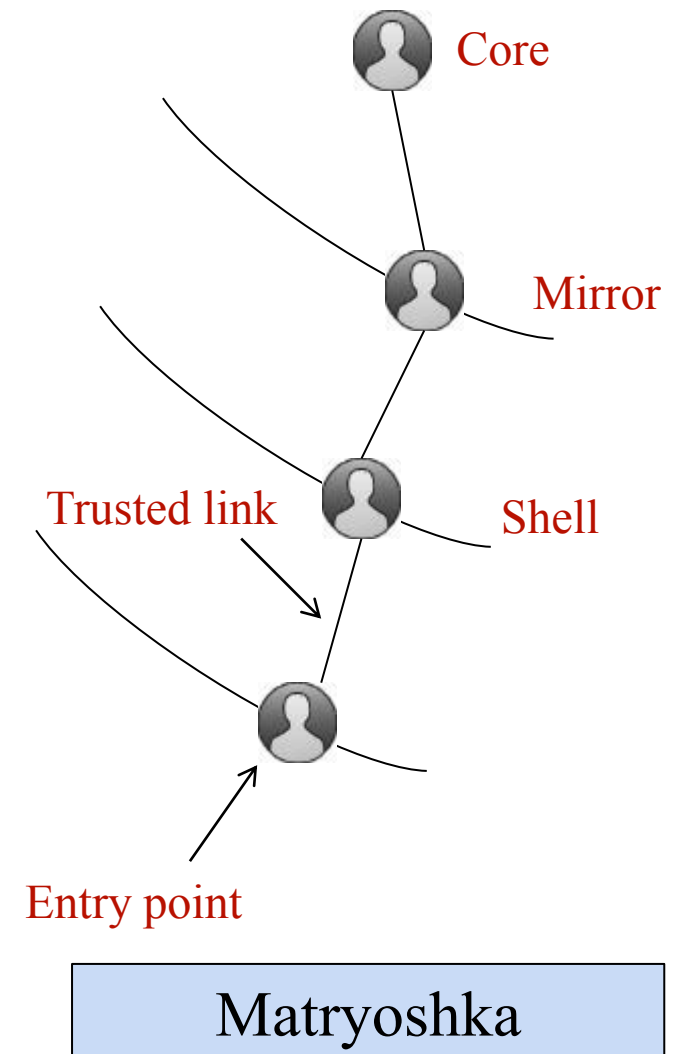
Vis-a-Vis

- 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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