StreamGlobe: P2P Stream Sharing
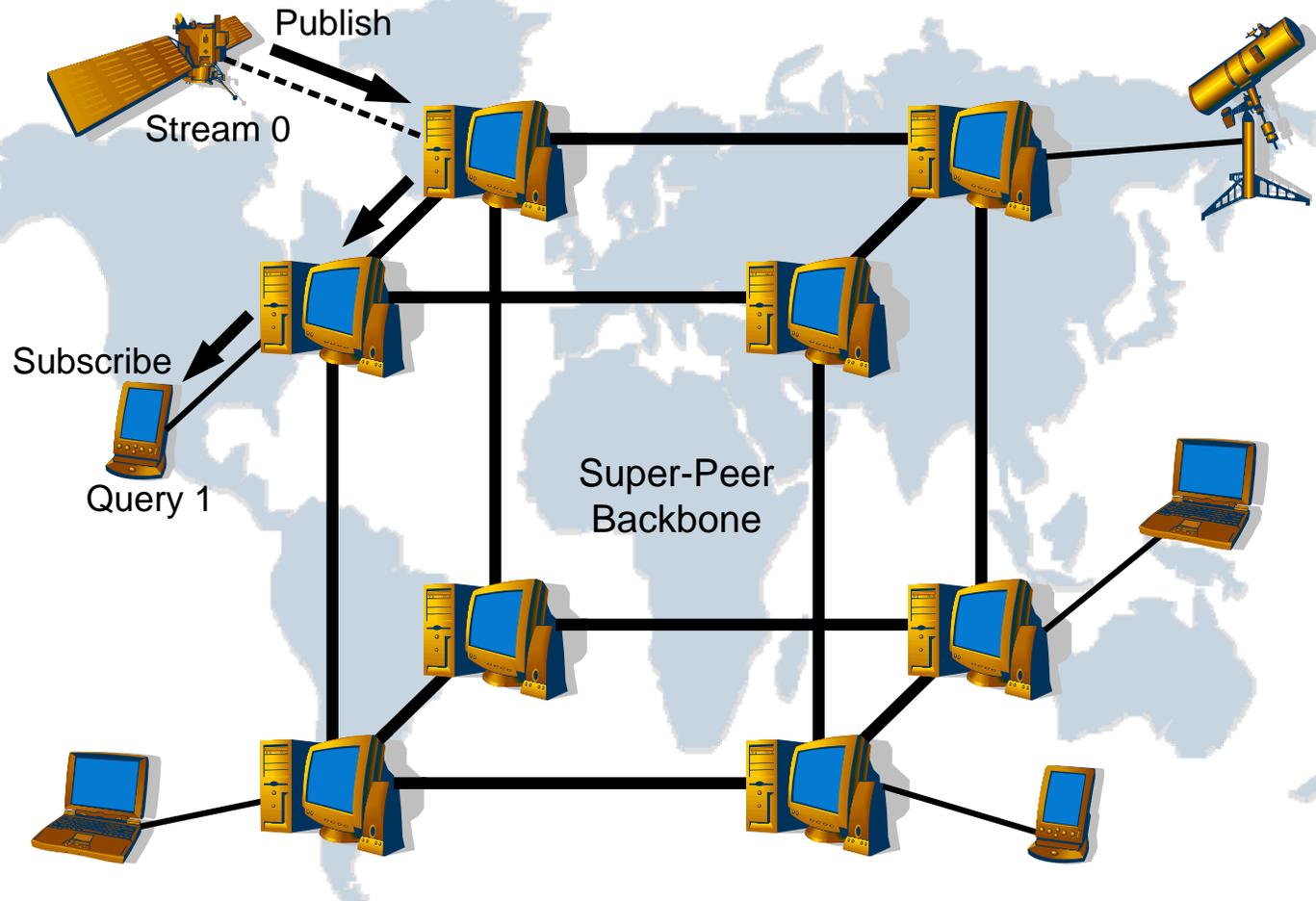
Richard Kuntschke, Tobias Scholl, Bernhard Stegmaier, Alfons Kemper, and Angelika Reiser

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Technische Universität München

Germany

Publish & Subscribe in a P2P Network

Publish
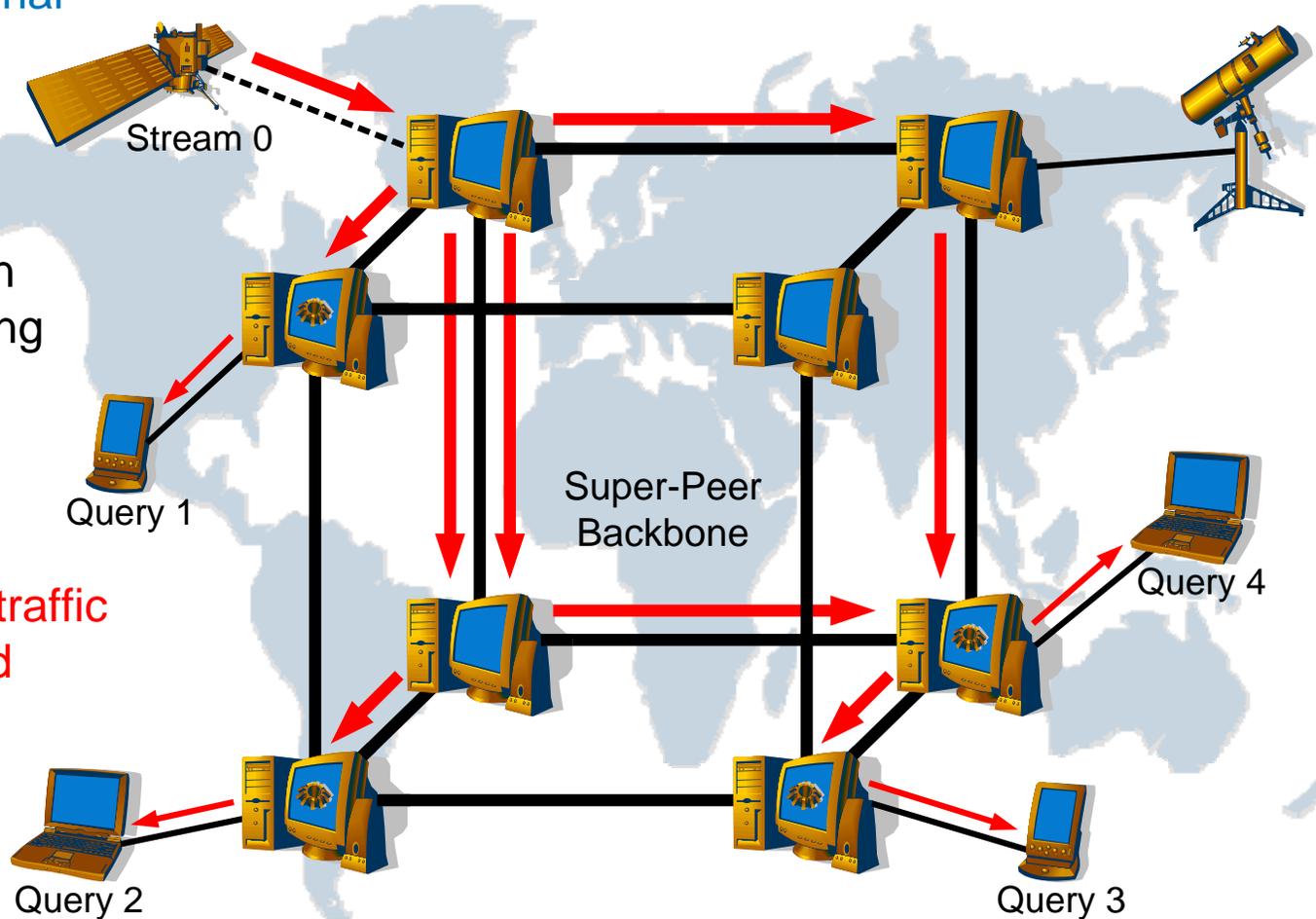
Stream 0

Subscribe

Query 1

Super-Peer
Backbone

Traditional Approach without Stream Sharing

Deficiencies of traditional approach:

- Redundant transmission of data streams
- Redundant execution of stream transforming operators
- Transmission of unnecessary data

⇨ Increased network traffic
⇨ Increased peer load

Stream 0

Query 1

Super-Peer Backbone

Query 4

Query 2

Query 3

StreamGlobe Approach using Stream Sharing

Benefits of StreamGlobe approach:

- Stream sharing avoids redundant data stream transmissions
- Sharing computational results avoids redundant computations
- Early filtering and aggregation avoid unnecessary transmissions

⇨ Reduced network traffic
⇨ Reduced peer load

Stream 0

Query 1

Query 2

Super-Peer Backbone

Query 4

Query 3
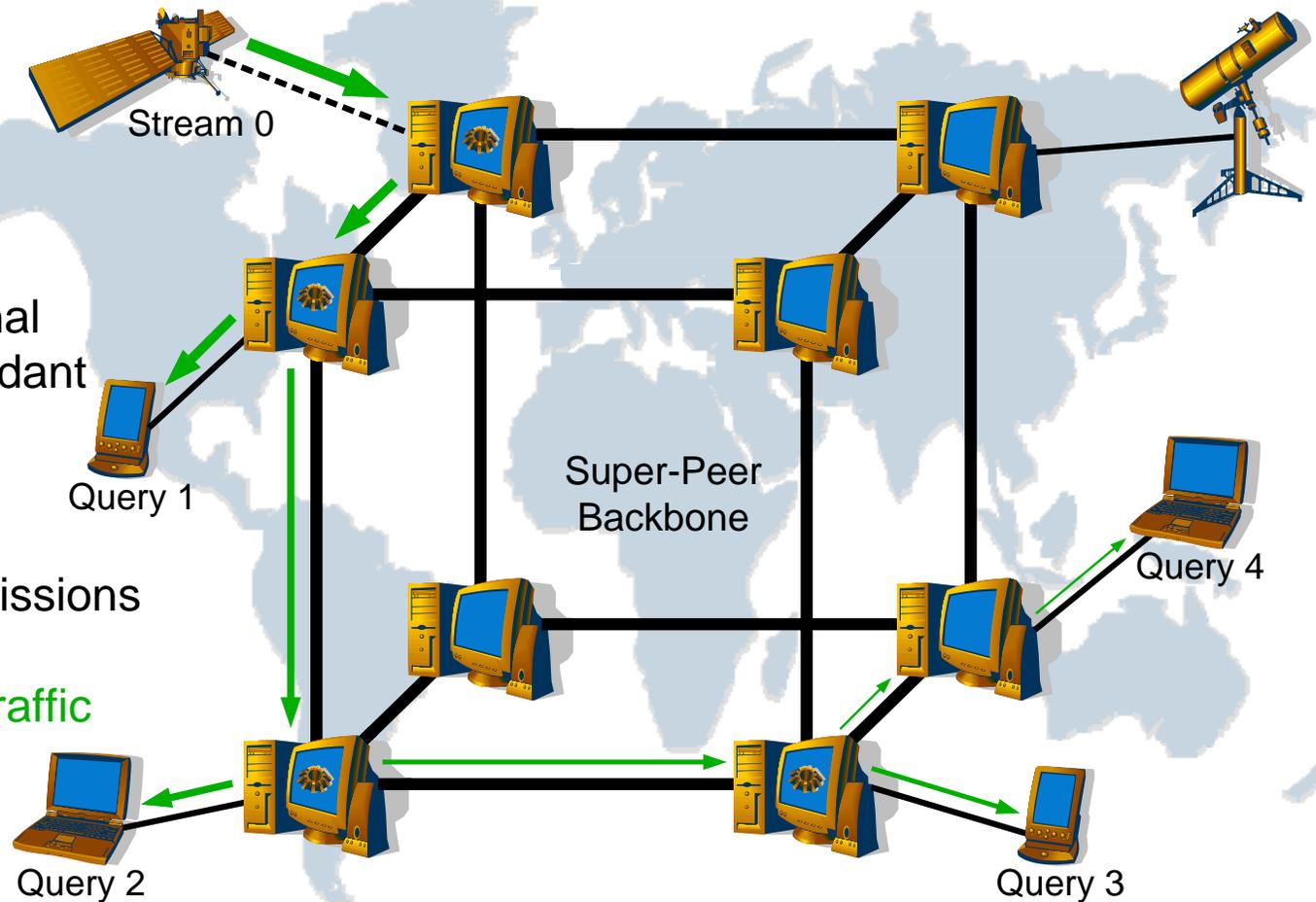
Demonstration Outline

- Publish & Subscribe to data streams in a Grid-based P2P Data Stream Management System

- Optimization using data stream sharing

- Prevention of overload situations

- Throughput experiments

- Various network topologies and scenarios

- Real astrophysical data (ROSAT All Sky Survey (RASS) and others)

Vela Supernova Remnant
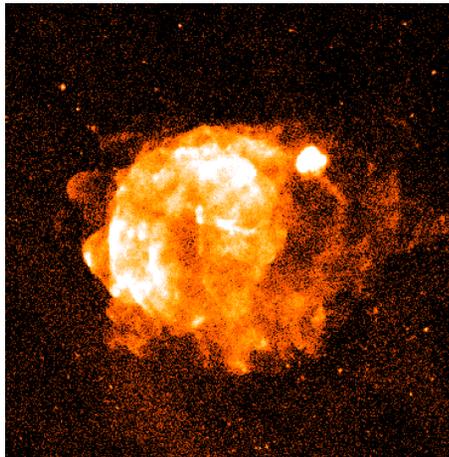
RXJ0852.0-4622 Supernova Remnant
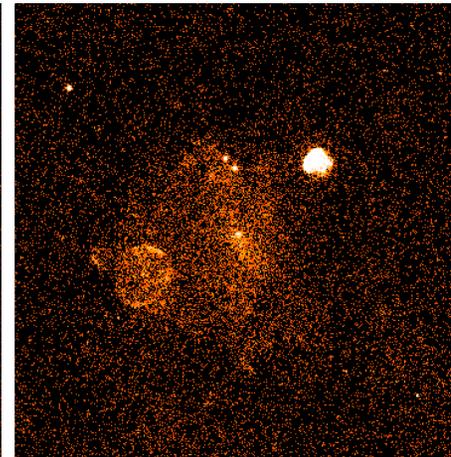
Demonstration Times

Group 2: P2P Based Systems

- Tuesday 14:00-15:30
- Thursday 14:00-15:30