Configuring Push-Based Web Services

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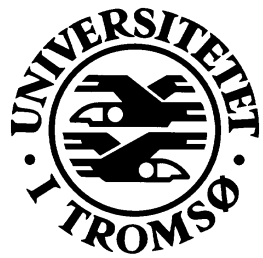
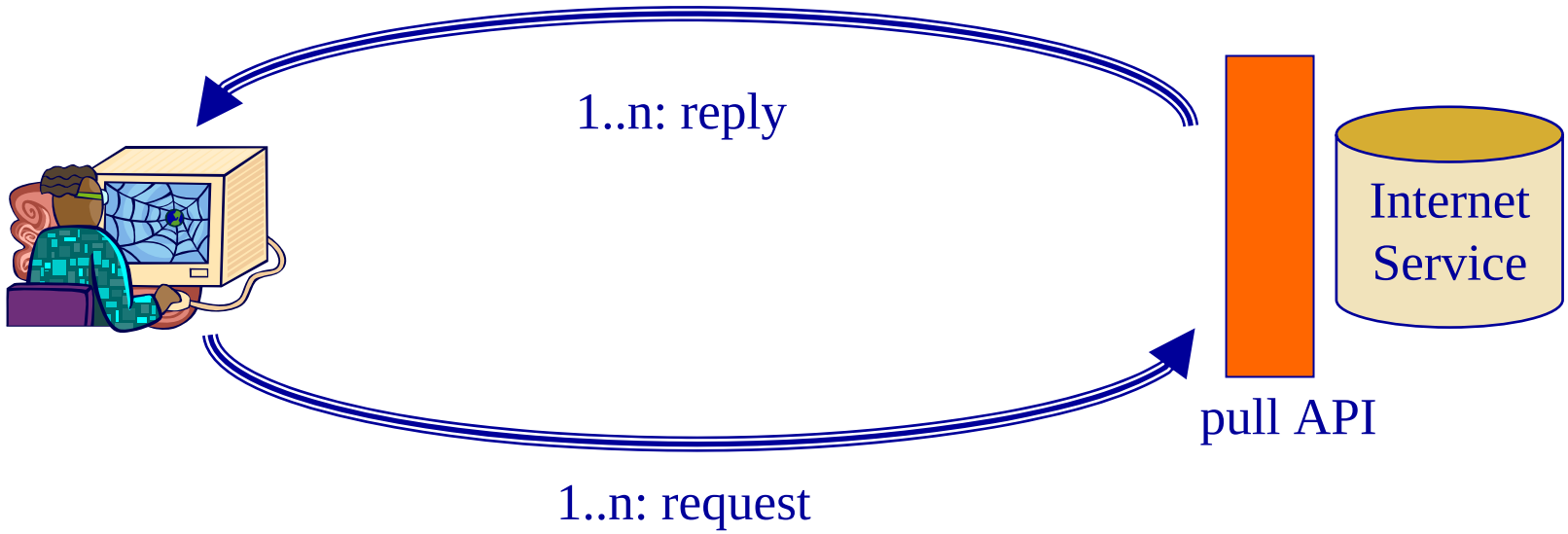


Outline

- Traditional Internet usage pattern inappropriate in some situations.
- Experience with new architectures based on Web Service technologies.
- Generalizations of our findings.

A Pull-based Infrastructure



The Pull-based Web

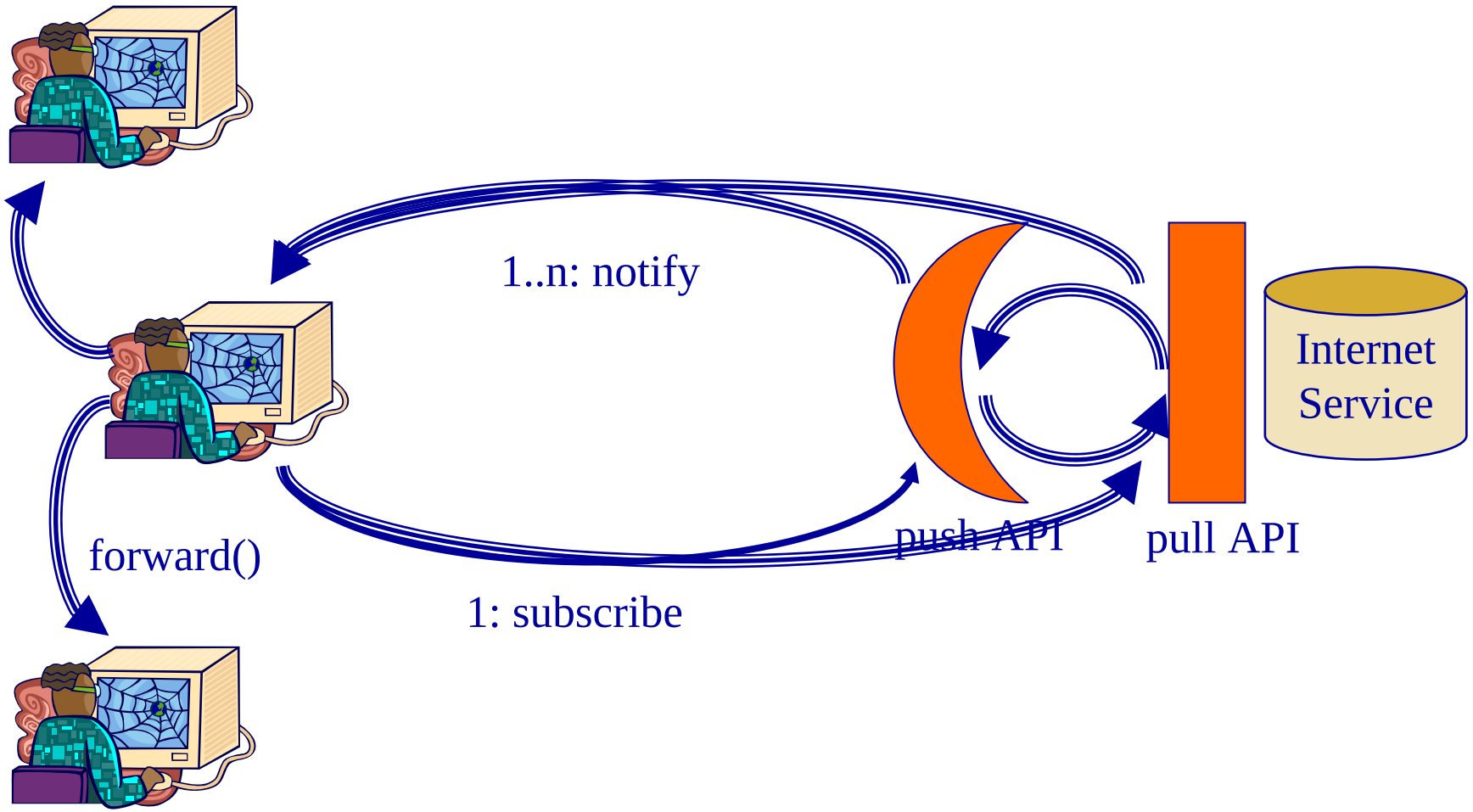
- Traditional Internet is pull-based:
  - Client/Server model.
  - Web browsing, web services, RPC etc.

- Pull does not scale for dynamic information.
  - Short-lived and urgent.
  - Non-predictable update frequency.
  - High pull-frequency strains network resources.
  - Client-side evaluation required.

Extending the Pull-based Web

- Place subscription-based filters close to existing information sources.
- Extend pull-based sources with a push API.
- Reduce strains on sources, network and users.
- New applications possible.

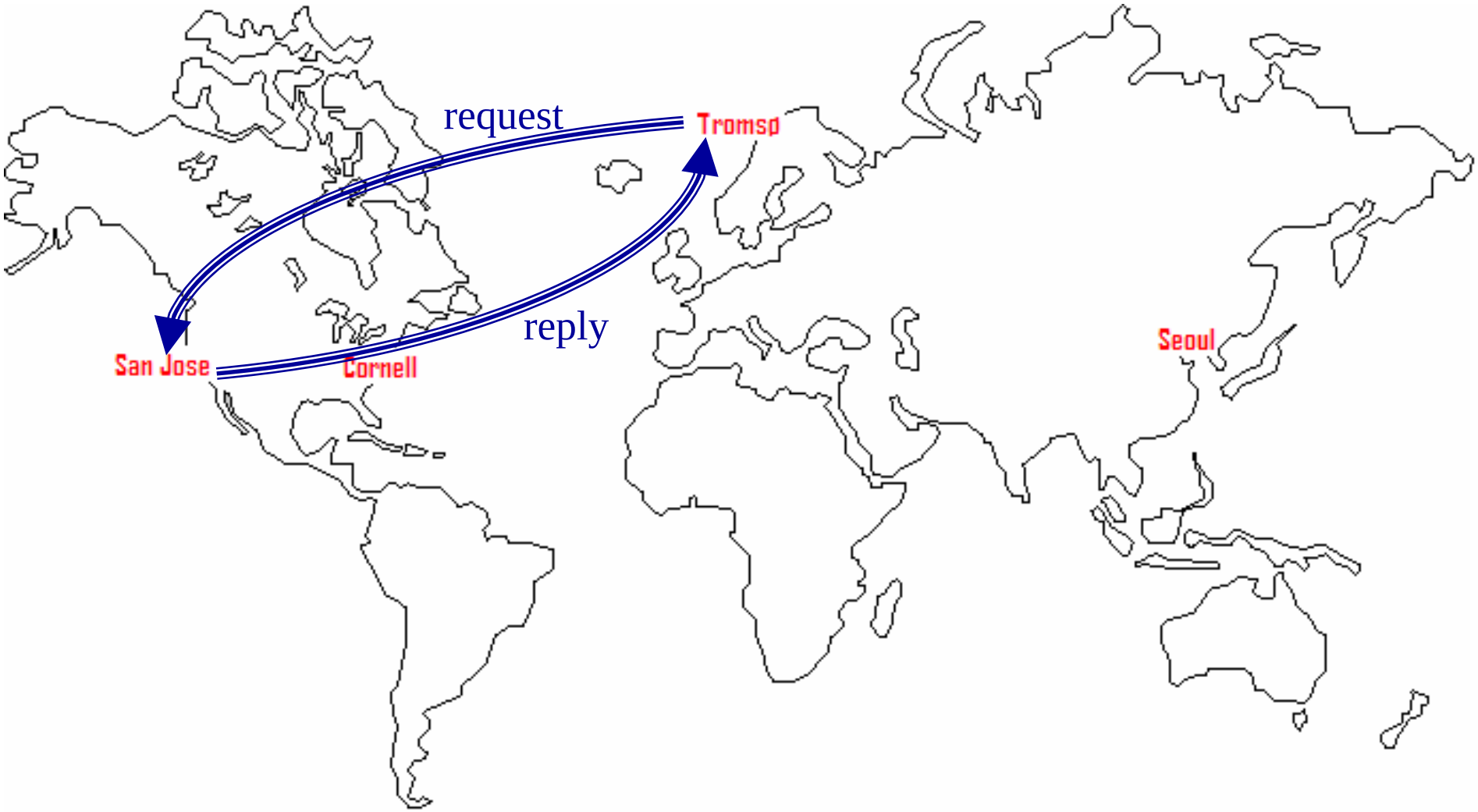
A Push-based Infrastructure



Push-based Wrappers

- Proxy wrapper for pull-based sources.
  - Push-API.
  - Subscription-handling.
  - Filtering.
  - Event correlation.
- Web Services' rich pull-API easy to extend.

Example: NASDAQ Stock Quotes



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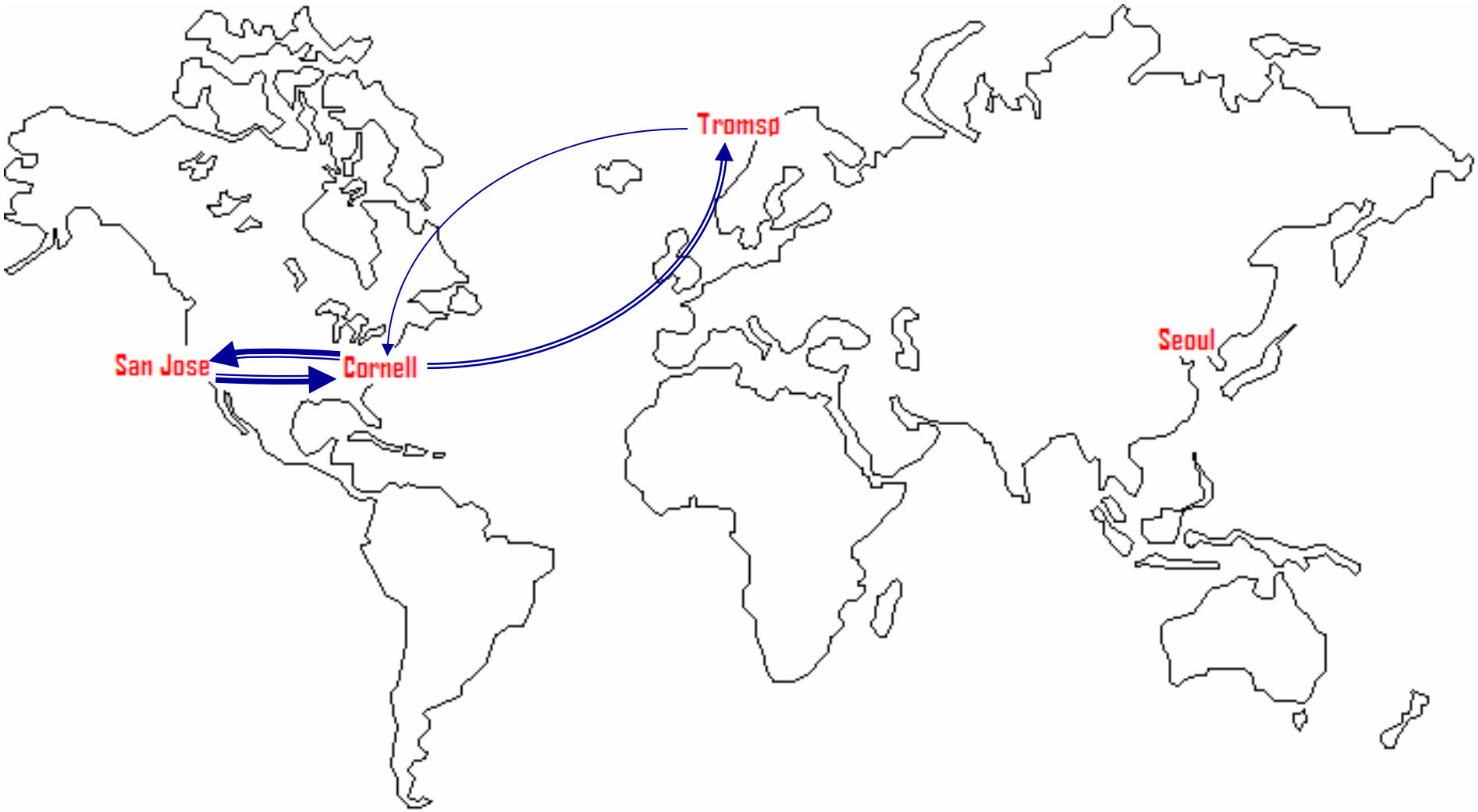


Configuring Push-based Web Services

- Upstream evaluation by wrapping.
  - Subscription-based, personalized filters.
  - Client-specific delivery timing.

- Significant gains possible.
  - Experiments show more than 97 % reduction message volume (for stock data).
  - Reduces network strain and client disturbance.

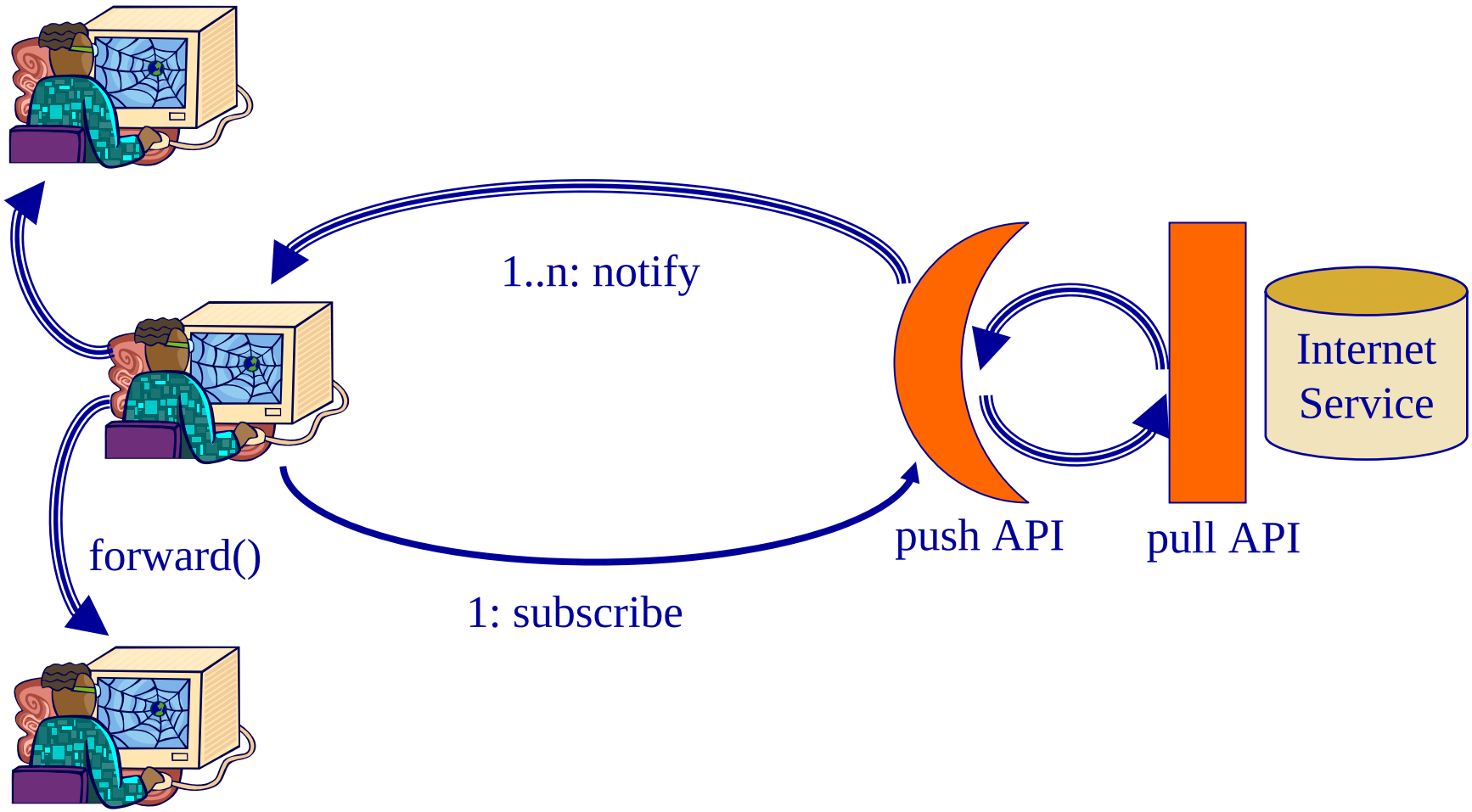
Wide Area Information Filtering

- Computer interaction patterns are changing.
- Continuous computing on users behalf.
  - Personal Overlay Network Systems (PONS).
- Push communication on many levels.
  - Fine-grained file system events.
  - Collaborative filtering and recommendations.
  - User environment migration.

Questions?

http://www.waif.cs.uit.no

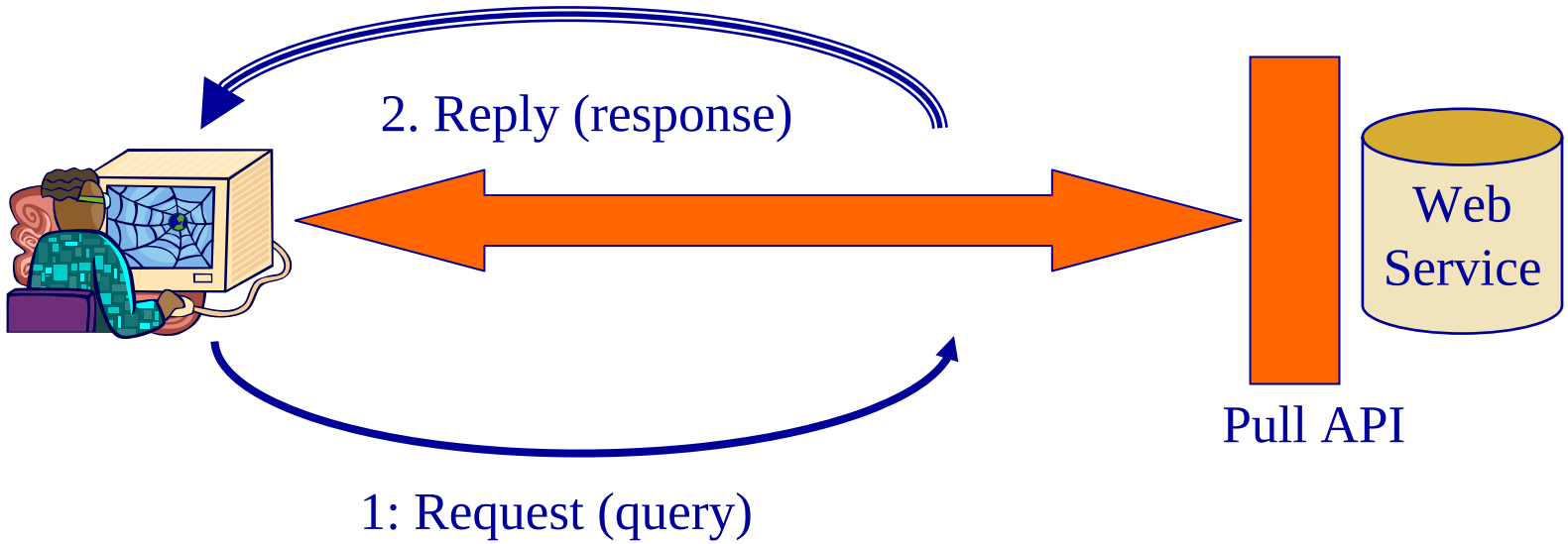
A Push-based Infrastructure



Alternatives to Frequent Pulling

- Upstream evaluation.
  - Subscription-based filtering.
  - Delivery by (in-frequent) pull or push.
  - High precision.
  - Better timeliness.
- Wide Area Information Filtering (WAIF)
  - Push-based filtering networks.

A Pull-based Infrastructure



A Push-based Infrastructure