Team HiFi
Owen Cooper, Anil Edakkunni,
Michael Franklin, Wei Hong,
Shawn Jeffery, Sailesh Krishnamurthy,
Frederick Reiss, Shariq Rizvi,
and Eugene Wu!

UC Berkeley, Intel Research Berkeley

HiFi: A Unified Architecture for High Fan-in Systems

hifi.cs.berkeley.edu

The Challenge

- Receptors everywhere: sensor motes, RFID, virtual sensors
- Real-time, tactical decision support in a globally distributed system

Applications

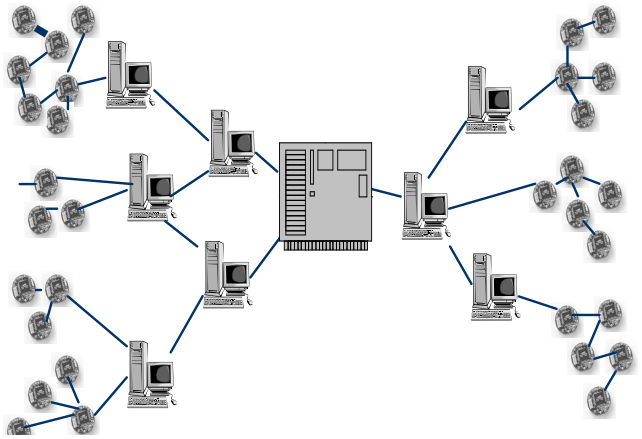
- Supply Chain Management
- Environmental Monitoring
- Network Monitoring
- Telemetry

High Fan-in Systems

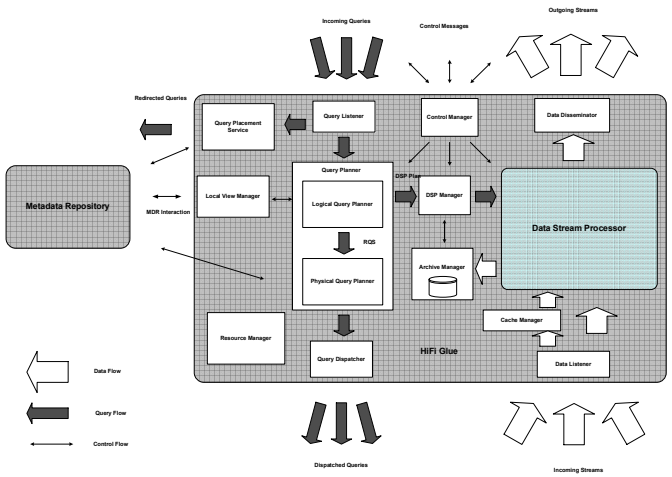
➔**Challenges in 3 Dimensions:**

- **Time**: Real-time information as well as long term, archived data
- **Space**: Globally distributed, geographically partitioned (i.e., shelf-store-regional center-HQ)
- **Resources**: Vast range of processing, storage, communication capabilities

Funding Support:
- IBM
- Intel
- Microsoft
- NSF
- UC Micro Program



A High Fan-in System: The "Bowtie"



A HiFi Node

HiFi

- Stream-based query processing as a *uniform declarative framework*
- Hierarchical windowed views for cascading stream processing

Cascading Streams

➔ Successive processing of data streams at they flow from leaf to root

- Data Aggregation
- Stream Correlation
- Complex Event Monitoring
- Data Cleaning

Research Issues

- Hierarchical query planning and optimization
- Complex event processing
- Virtual Devices
- System topology
- Data placement
- Archiving and historical access
- System management

Powered By:

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