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Collective C2 in Multinational Civil-Military Operations

Research on Information Sharing Method for Future C2 in Network Centric Environment

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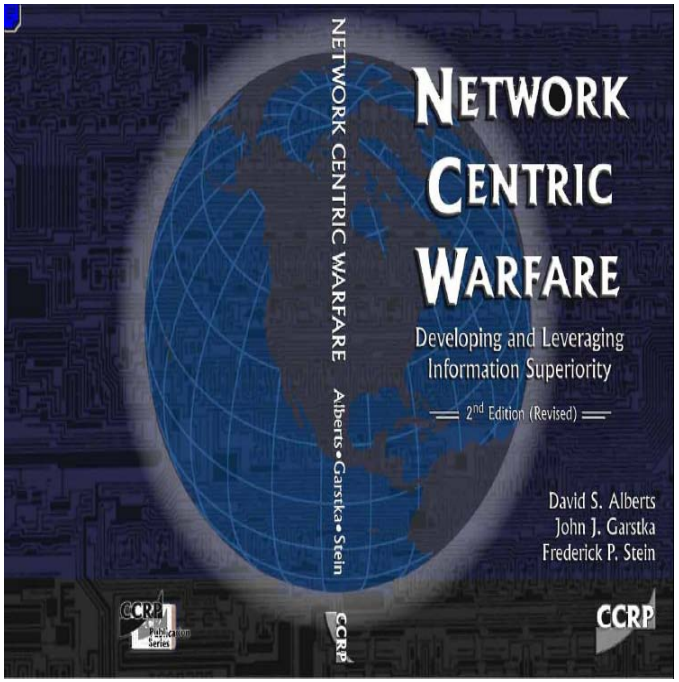
Outline

- Background & motivation
- Our proposed methods
- Simulation experiments
- Measurement of information sharing

Background & motivation

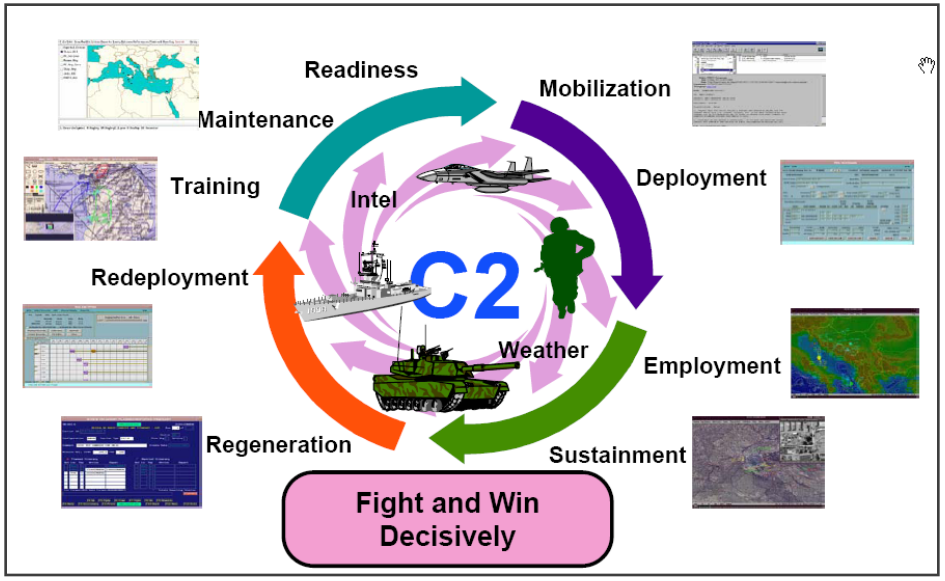
Background & motivation

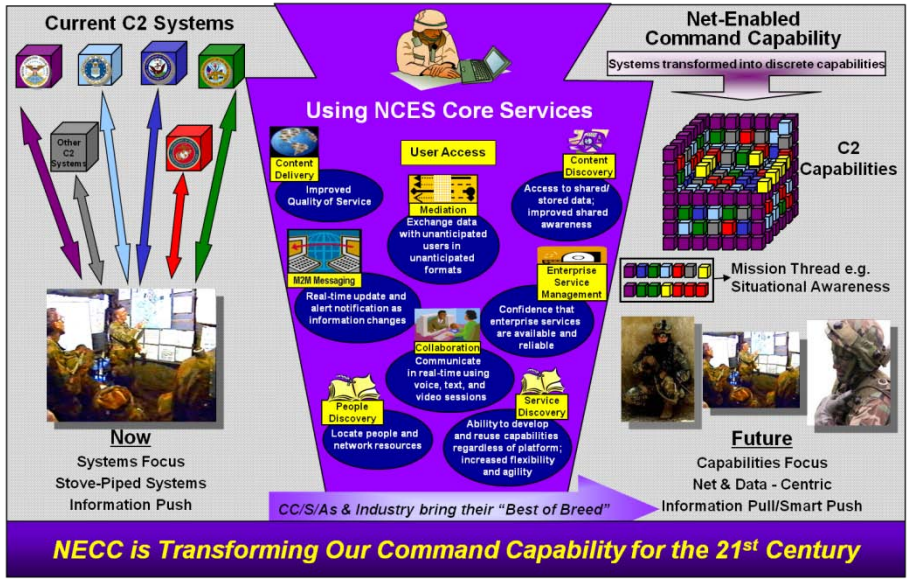
- **NCW (Network Centric Warfare)**
  - provides the theory of warfare in the Information Age
  - presents a kind of operation pattern in future



Background & motivation

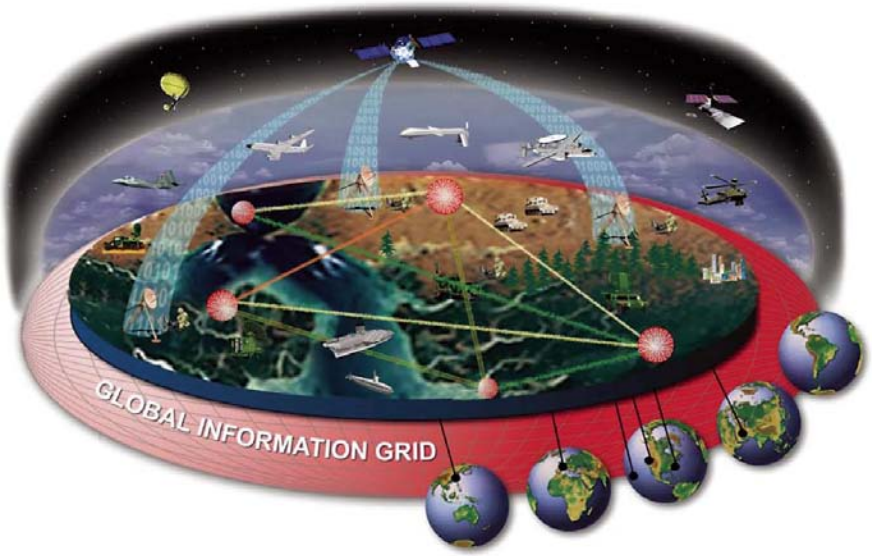
- **Command and Control (C2)** in network centric environment has become one of the research hotspots. for example, Net-Enabled Command Capability (NECC).





Background & motivation

- **Information sharing is one of the important issues of future C2.**
- **information sharing is foundation and core of realizing shared situation awareness and generating COP, and further supports decision-making.**



Background & motivation

- How to organize and share information on demand for C2 missions to support the generating of high-quality battlefield situation in network centric environment?
  - many uncertainties
    - existence or not?
    - where to find?
    - content is complete or consistent ?
    - …
  - such uncertainties have brought great challenges to information sharing in network centric environment

Background & motivation

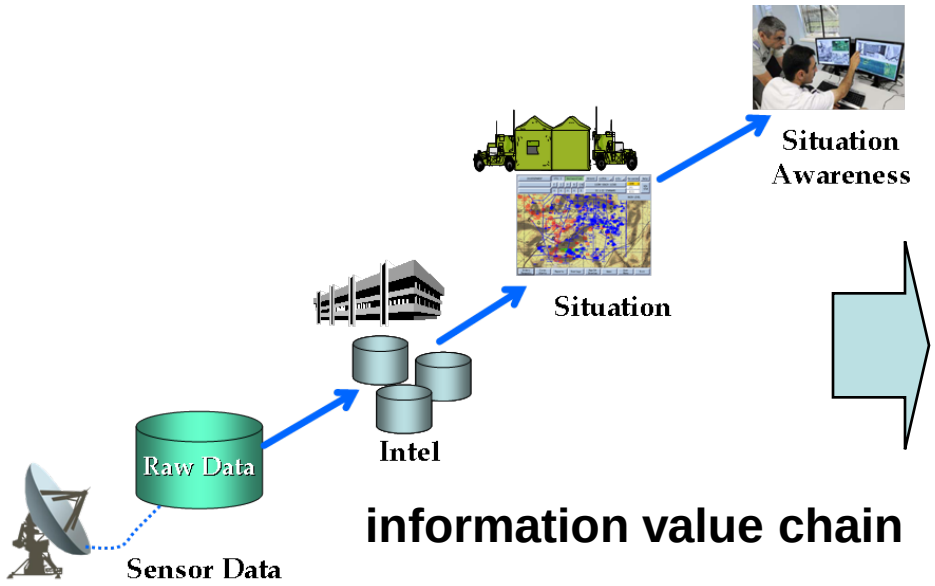
- Our work
  - Propose information sharing method from systematology view
  - Propose information sharing method based on Pub/Sub
  - Give the measurement framework of information sharing

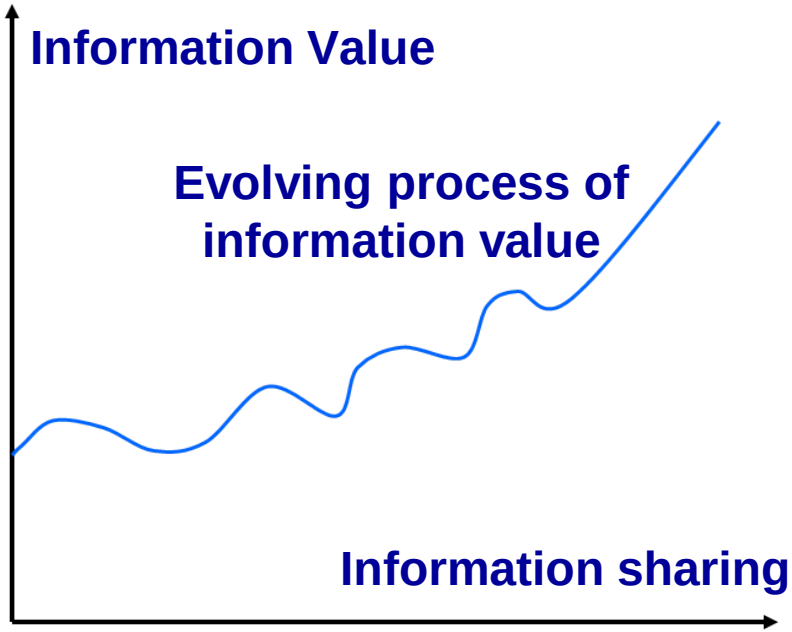
Our proposed methods

Our proposed methods

Basic idea

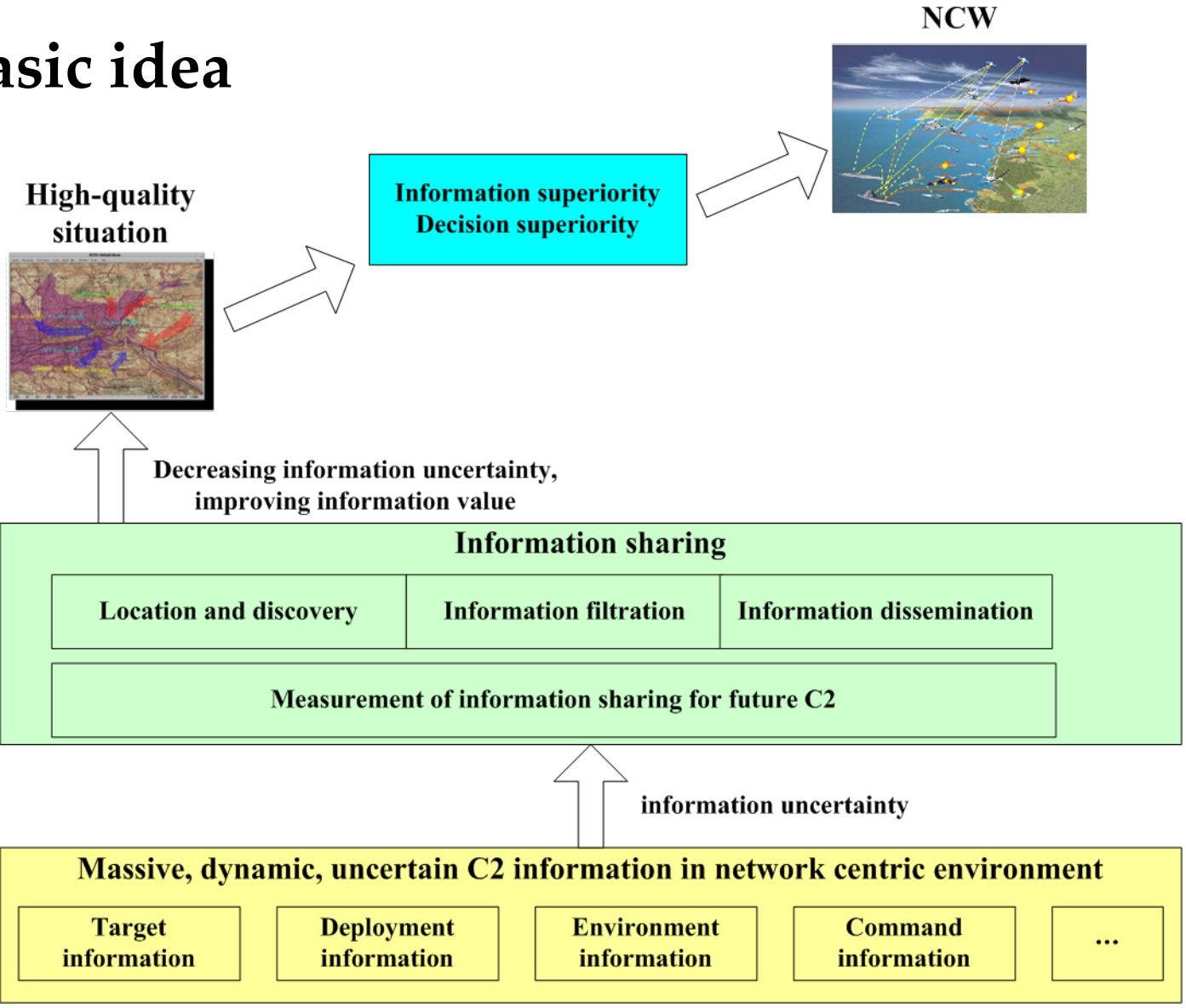
- improve the information value during its evolving through information sharing
- reduce information uncertainty and increase information exploitability and information





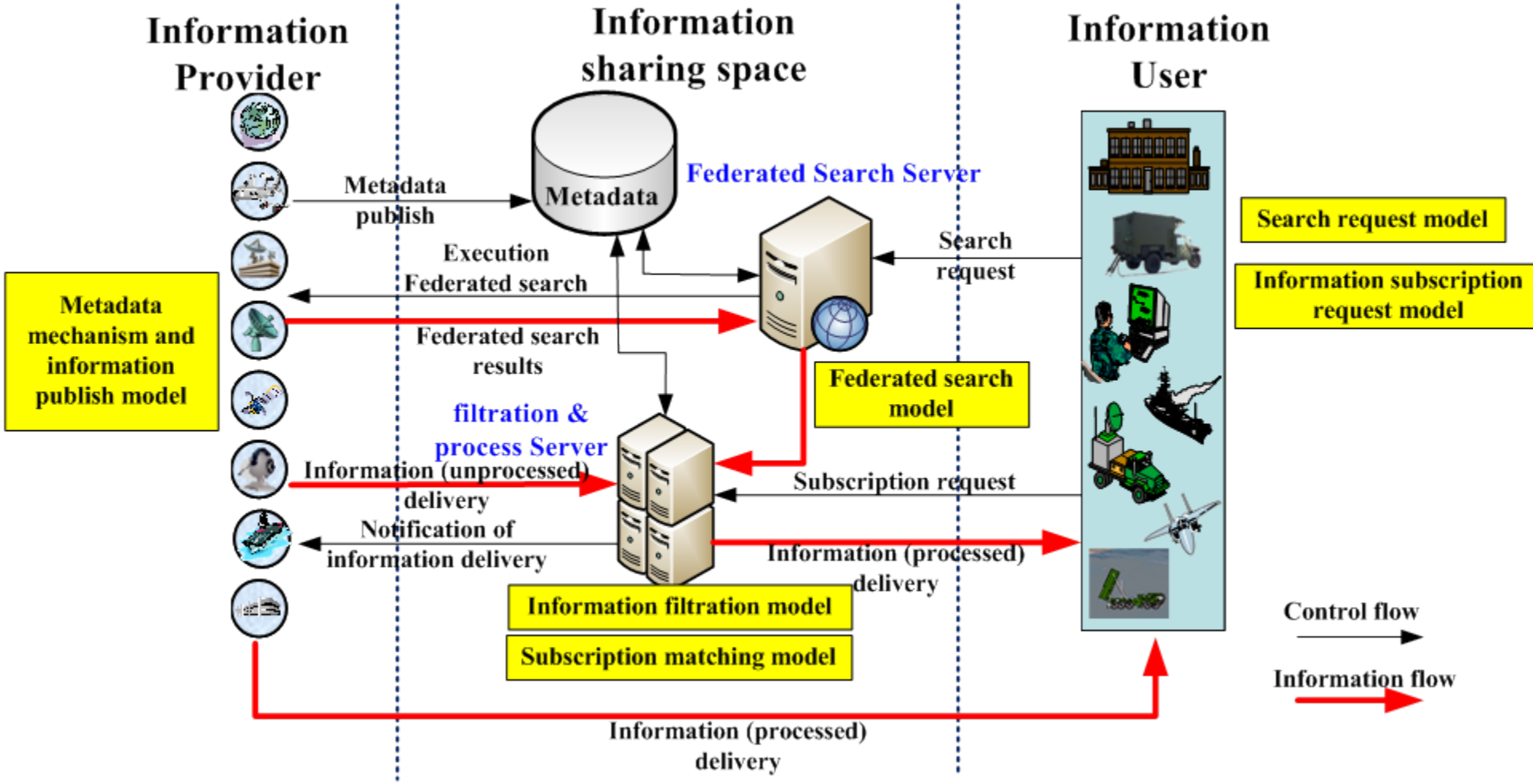
Our proposed methods

Basic idea



Our proposed methods

❖ Information sharing method based on Pub/Sub



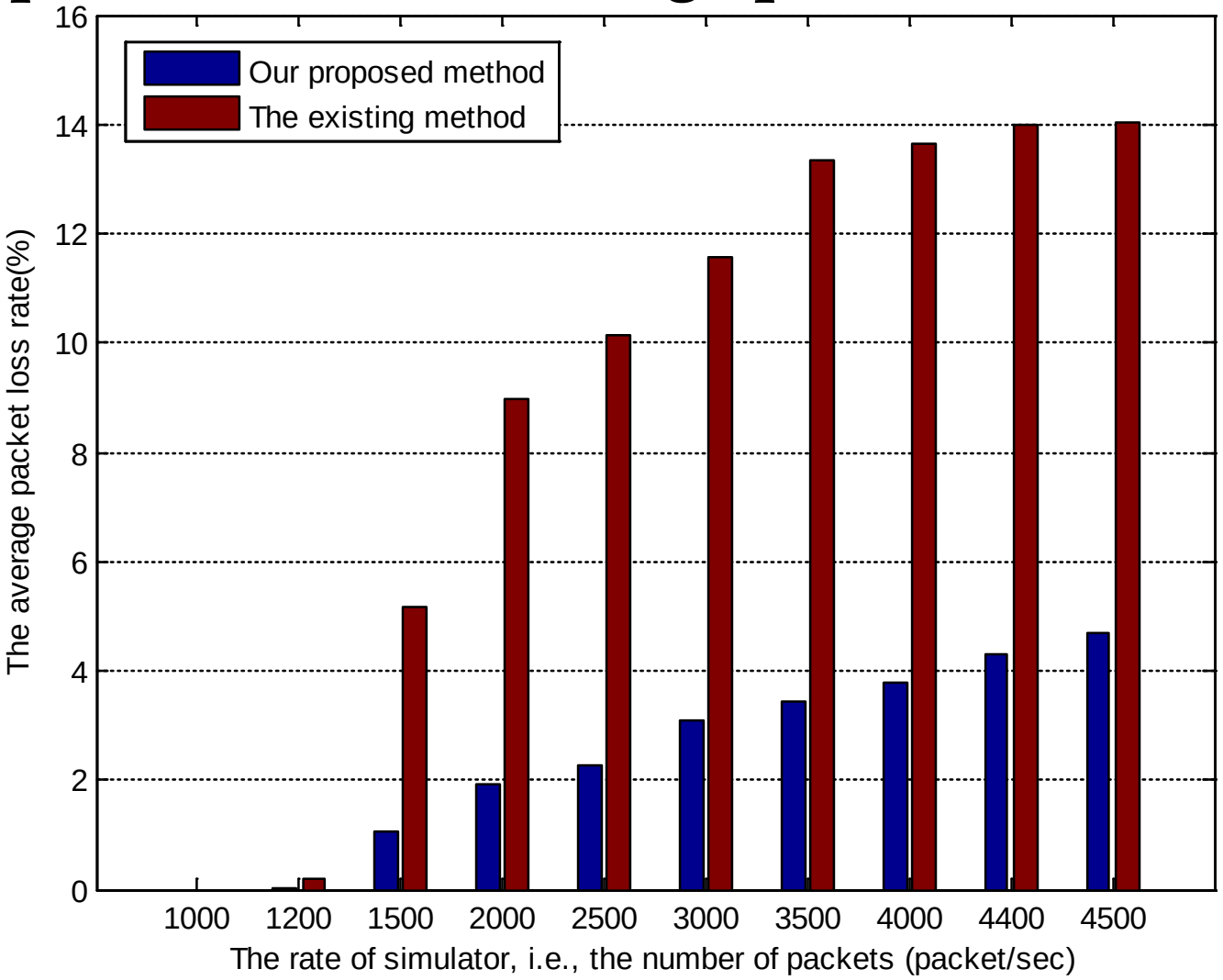
Simulation experiments

Simulation experiments

- Experiments environment
  - The simulation experiments are run in network environments.
  - Bandwidth of link can be adjusted as 100Mbps or 2Mbps by using a "bandwidth controller" equipment.
  - Information provider (or information source) is act as a Radar simulator that simulates the generation of real-time Radar target information.

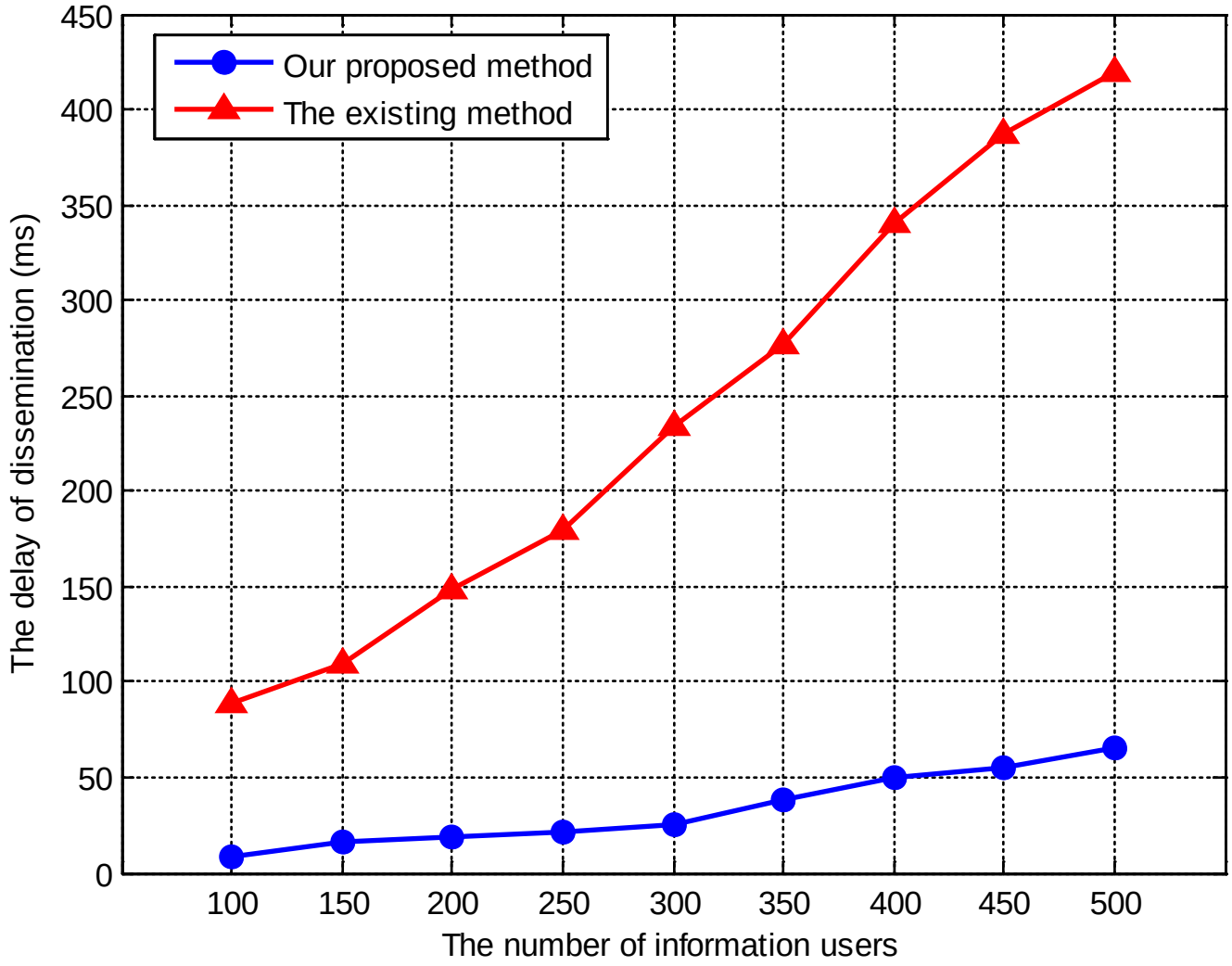
Simulation experiments

Experiment 1: the average packet loss rate

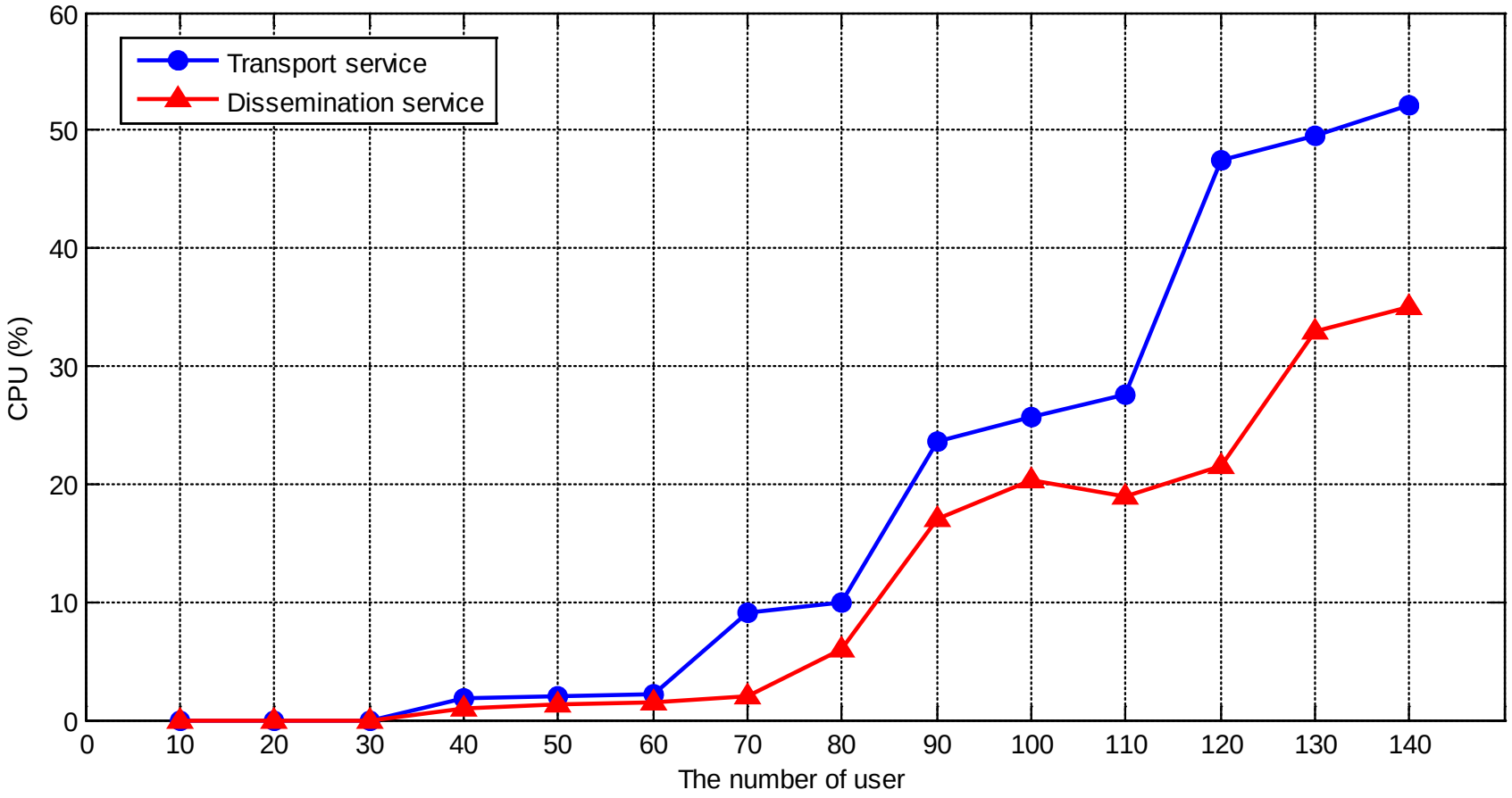


Simulation experiments

- Experiment 2: the delay caused by disseminating

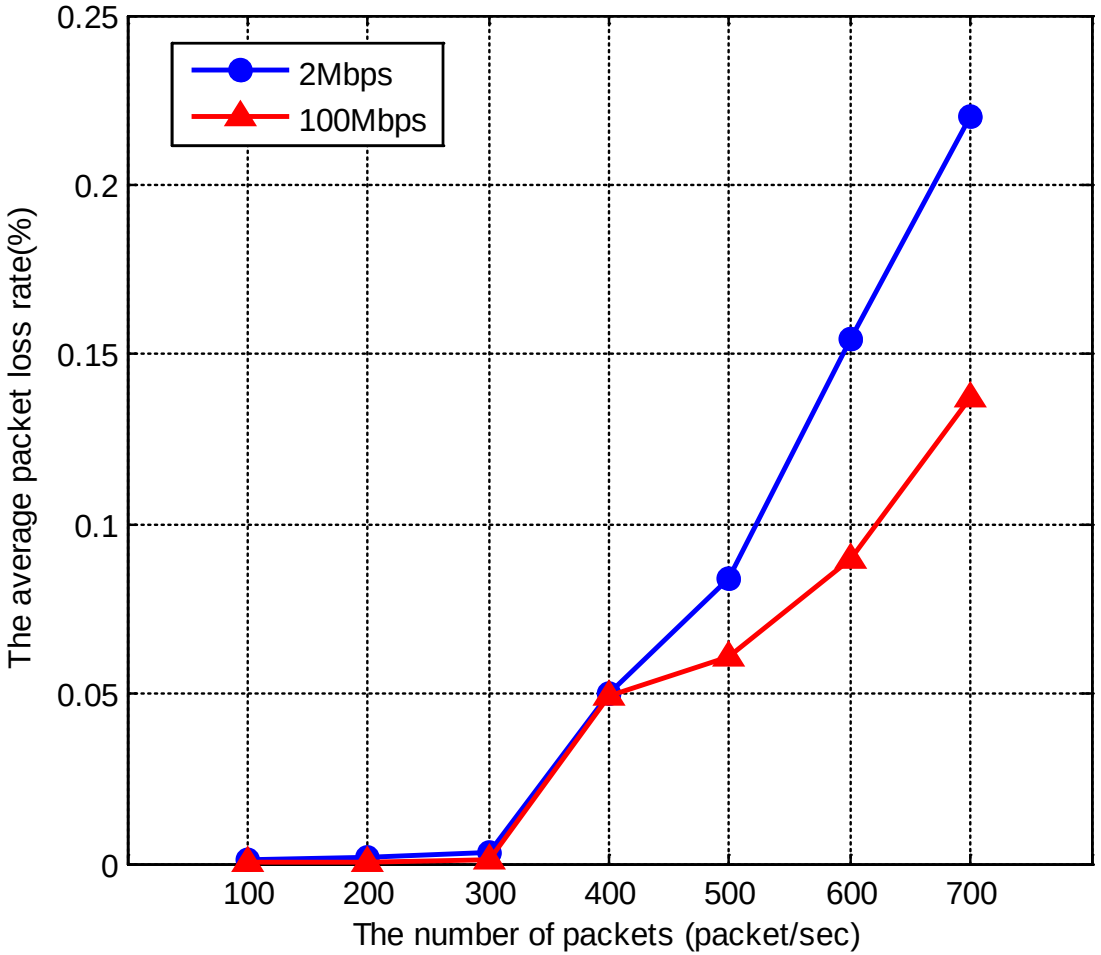


Experiment 3: the CPU occupancy caused by "Transport service" and "Dissemination Service"



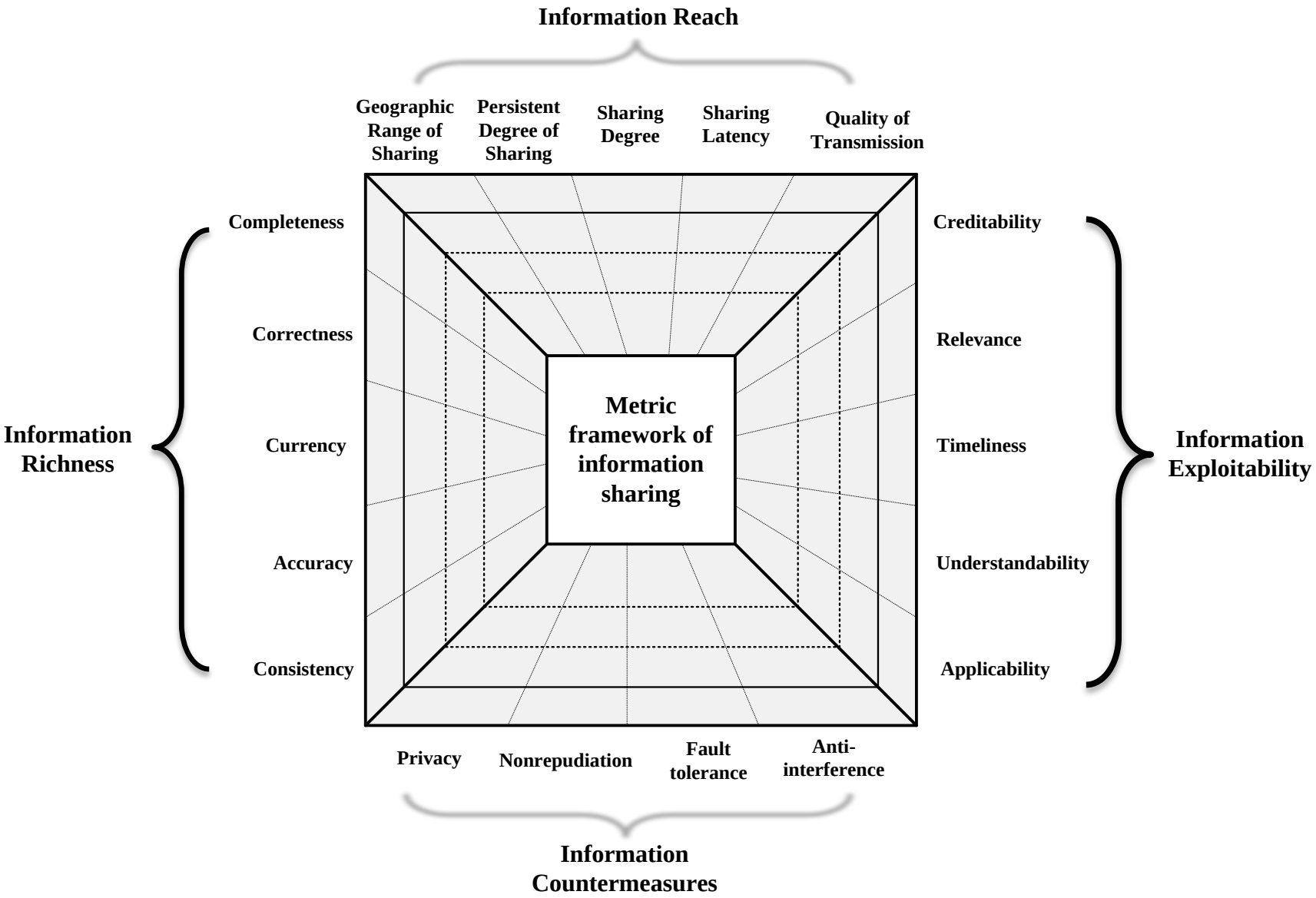
Simulation experiments

- Experiment 4: the average packet loss rate with different bandwidths (2Mbps/100Mbps)



Measurement of information sharing

Measurement of information sharing



Thank You !