

PRAGAM12 Working Group Breakout - Telescience

Research on Reputation System in Sensor Network

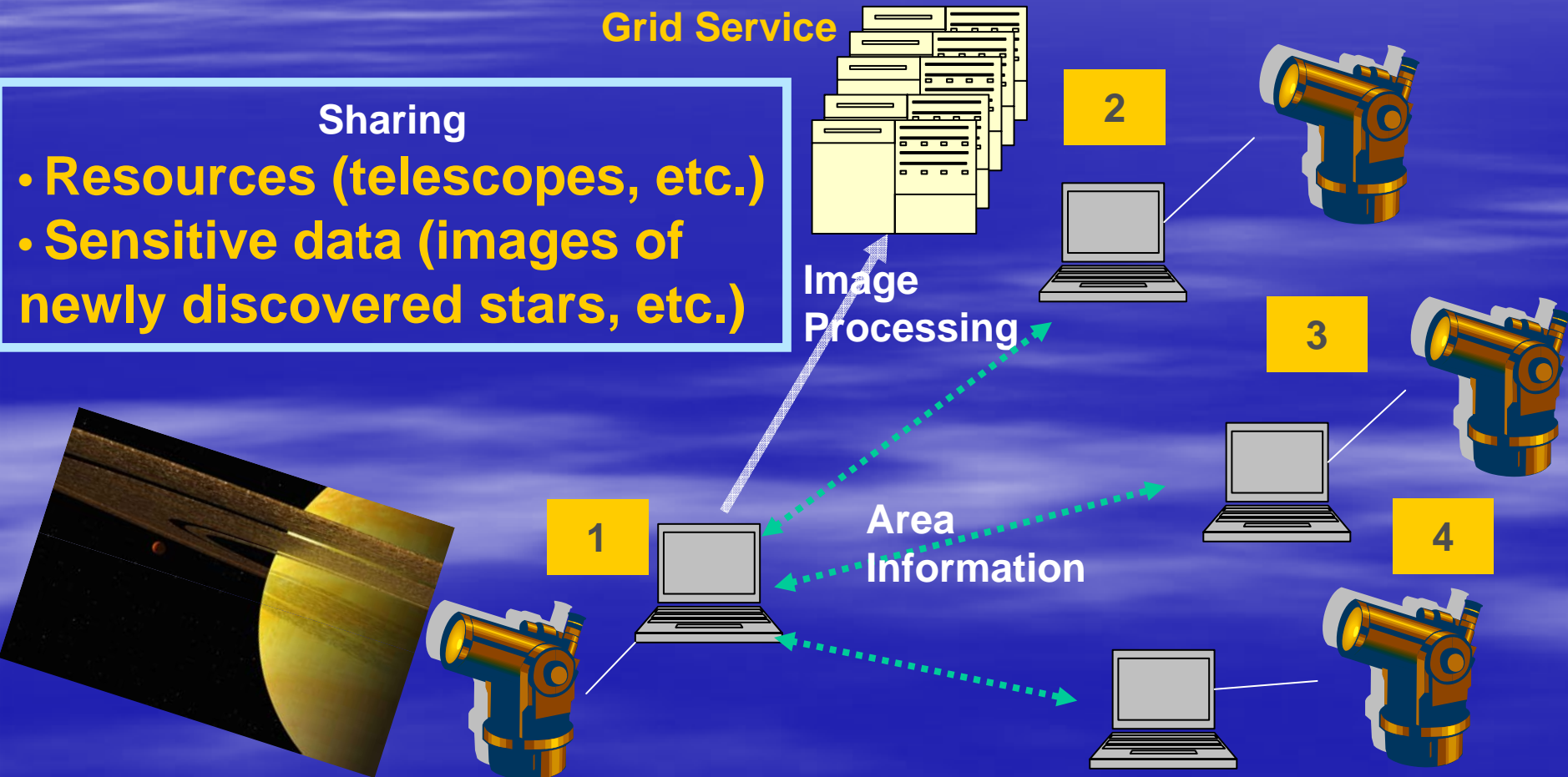
Hiroaki Yamanaka

Hirokazu Tanaka, Seiichi Kato, and Shinji Shimojo

Osaka University Cybermedia Center

An Example of Grassroots Sensor Network

■ The Cooperating Observation System



Necessity for Trust Management

- In Grassroots Sensor Network

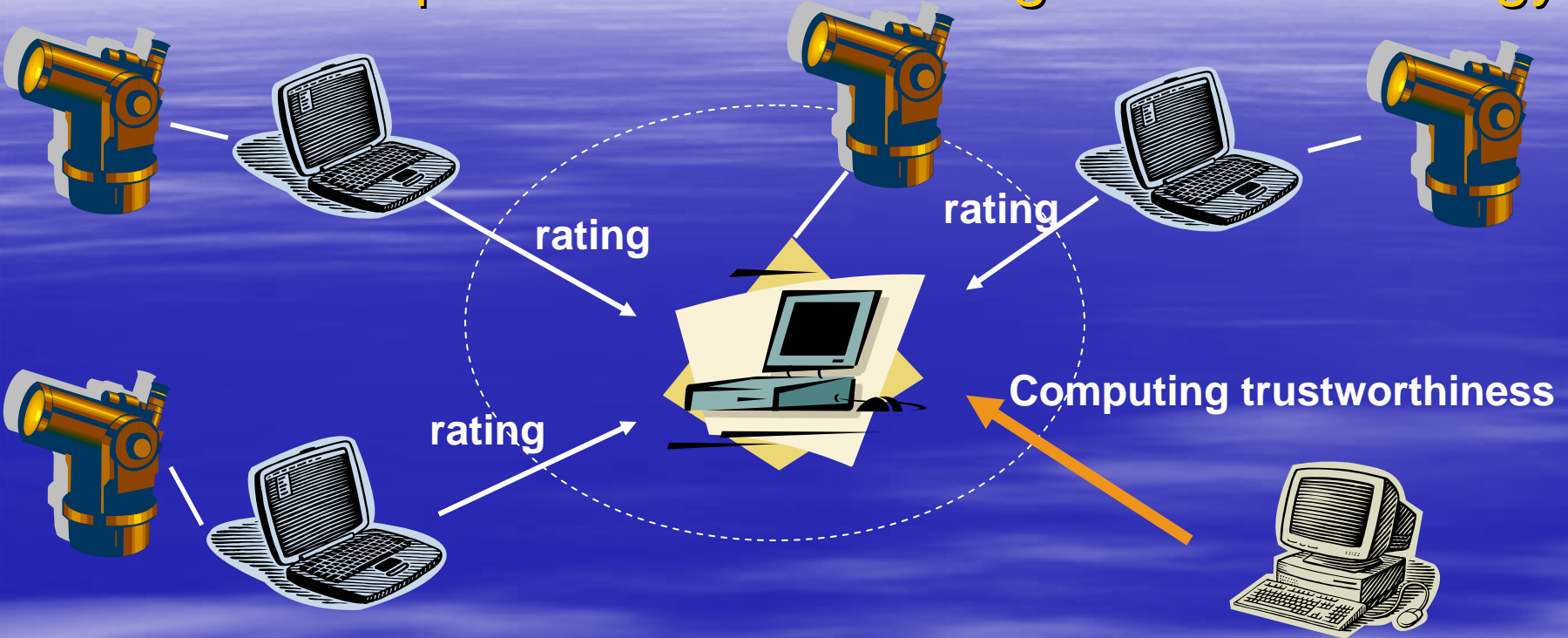
For treating resources or sensitive data with strangers,

Trust Management Technology will

- show us whether the stranger is *trustworthy or not*.
- support our making *decision to collaborate* with the stranger.

Reputation System

- one component of trust management technology



- Computed trust value reflects the rated user's past behavior.
- If there is no central authority, reputation system is good for trust management.

Our Research on Reputation System

- Research plan

Trust Computation Algorithm

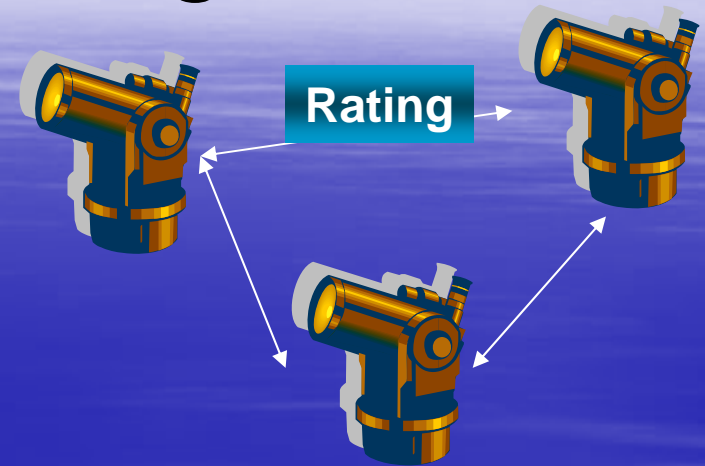
- Trust Model
- Sophisticated Algorithm
- Personalized Trust Value



Rating Data Management in Distributed System

Trust Computation Algorithm

- Elements of the research
 - Trust model considering the nature of sensor network
 - More sophisticated algorithm
 - Based on probability theory
 - Low overhead computation
 - **Personalized trust value**
 - Correspond to each individual's viewpoint



Rating Data Management in Distributed System

- Grassroots sensor network will be distributed(P2P) system in many cases.
- Rating data is very important factor for trust computation.



Rating Data Management Technology guaranteeing Integrity and Origin in distributed system



Conclusion

- In grassroots sensor network community, trust management technology is needed.
- We proceed with the research on reputation system.
 - Trust computation algorithm
 - Rating data management in distributed system