



Second Semester 2014-2015

SS ZG 526: Distributed Computing



Lect 1: Motivation, Communication models, and Design Issues

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Course Overview



Motivation, Distributed communication models, Design Issues

Logical time

Global snapshot

Ordering and group communication

Distributed Mutual Exclusion

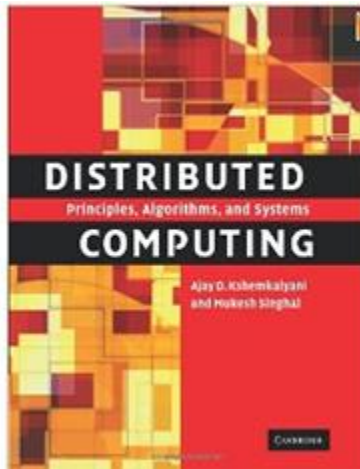
Consensus and Agreement Protocols

Self-Stabilization

Peer-to-Peer computing & Overlay Graphs

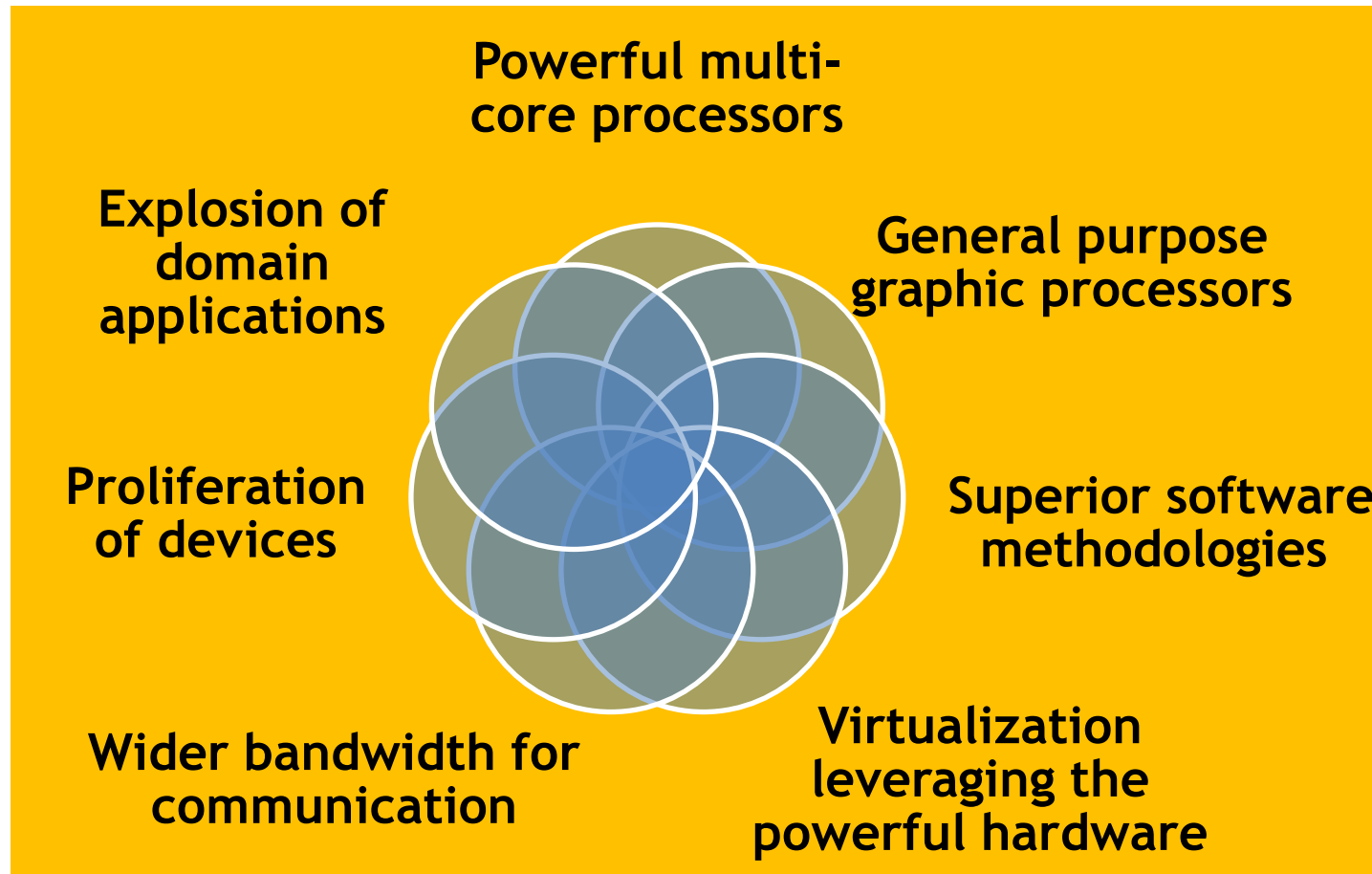
Cluster Computing, Grid Computing, Internet of Things

**Mid-Sem
ester**



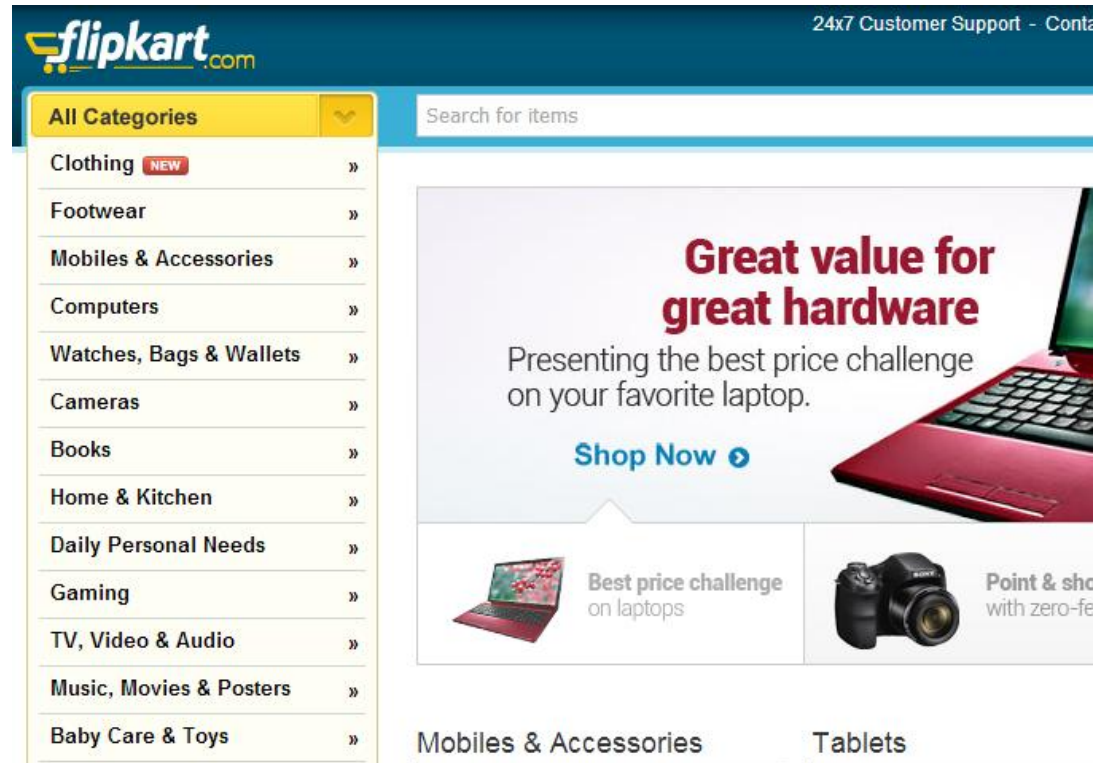
Ajay D. Kshemkalyani, and Mukesh Singhal
“Distributed Computing: Principles, Algorithms,
and Systems”, Cambridge University Press, 2008
(Reprint 2013).

Golden era in Computing



Source: Cloud Futures 2011, Redmond

Re-imagination of Commerce



Re-imagination of Ticketing



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Re-imagination of Teaching/Learning




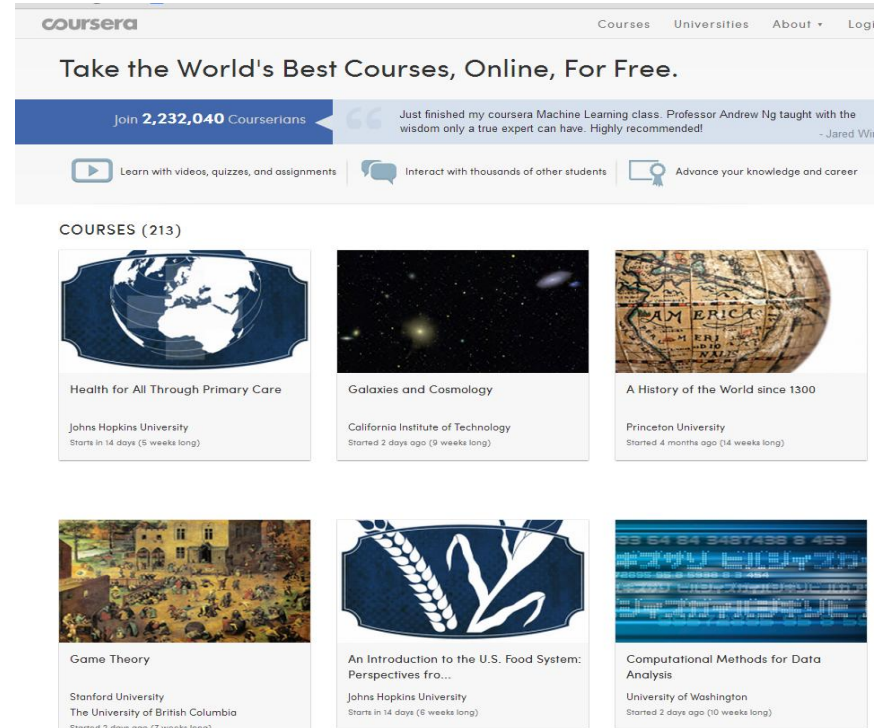
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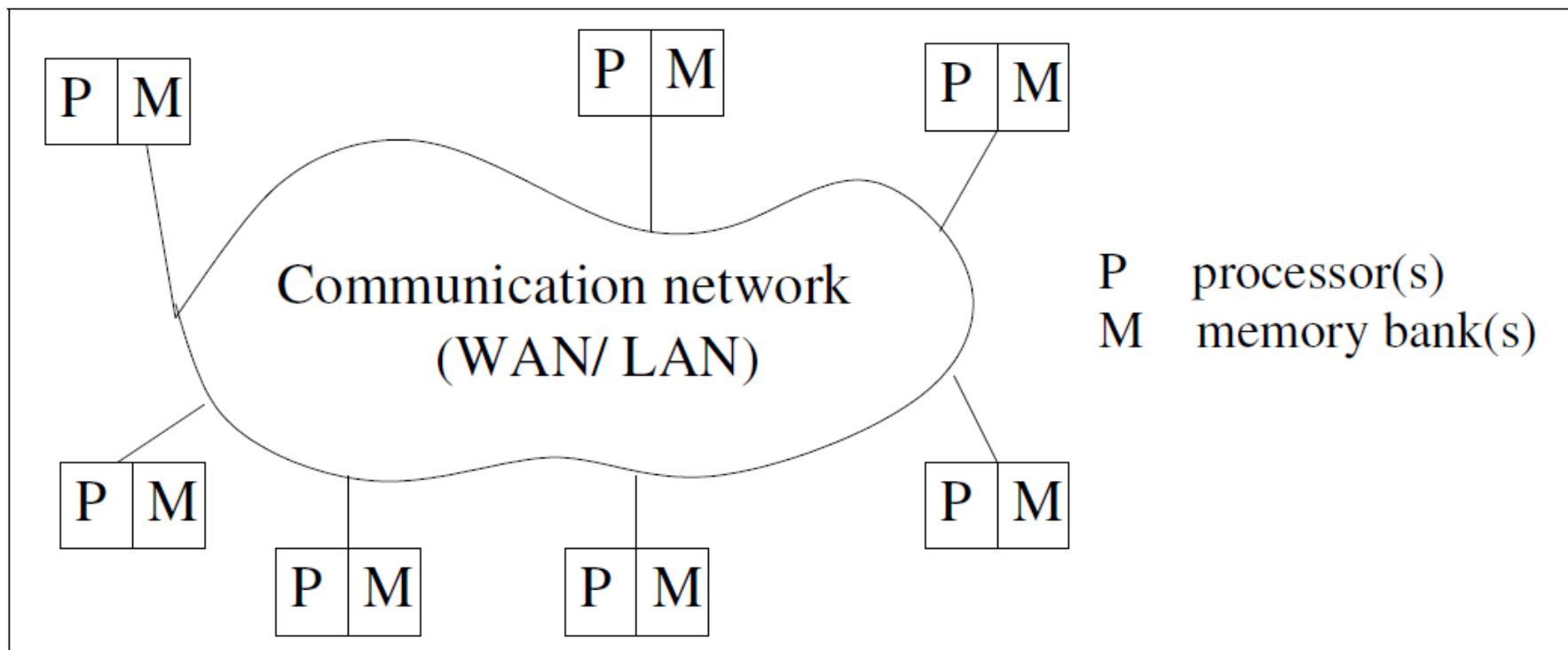
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- Jared W...

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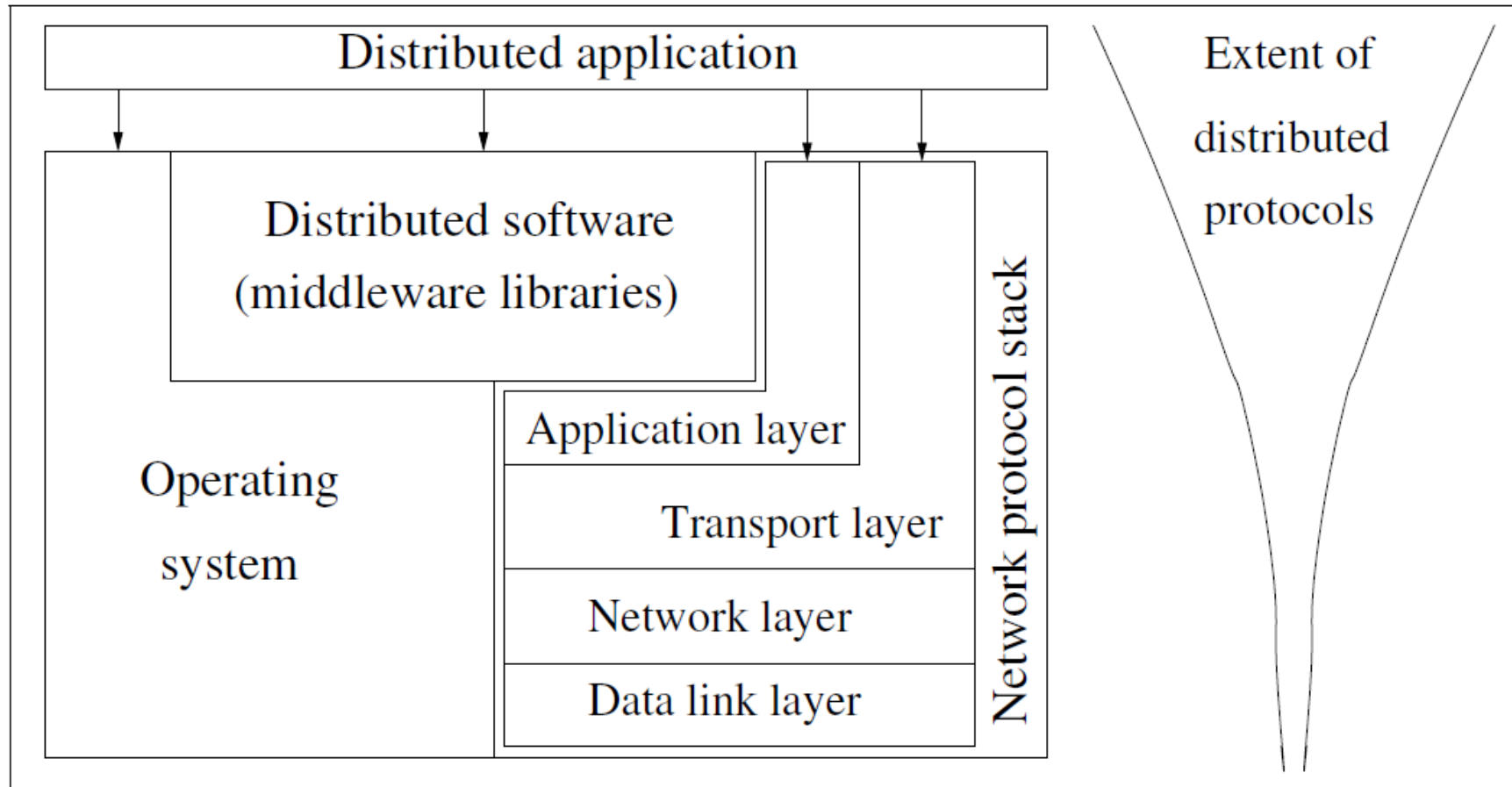
COURSES (213)

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 <p>Game Theory</p> <p>Stanford University The University of British Columbia Started 2 days ago (7 weeks long)</p>	 <p>An Introduction to the U.S. Food System: Perspectives from...</p> <p>Johns Hopkins University Starts in 14 days (6 weeks long)</p>	 <p>Computational Methods for Data Analysis</p> <p>University of Washington Started 2 days ago (10 weeks long)</p>

Distributed Computing

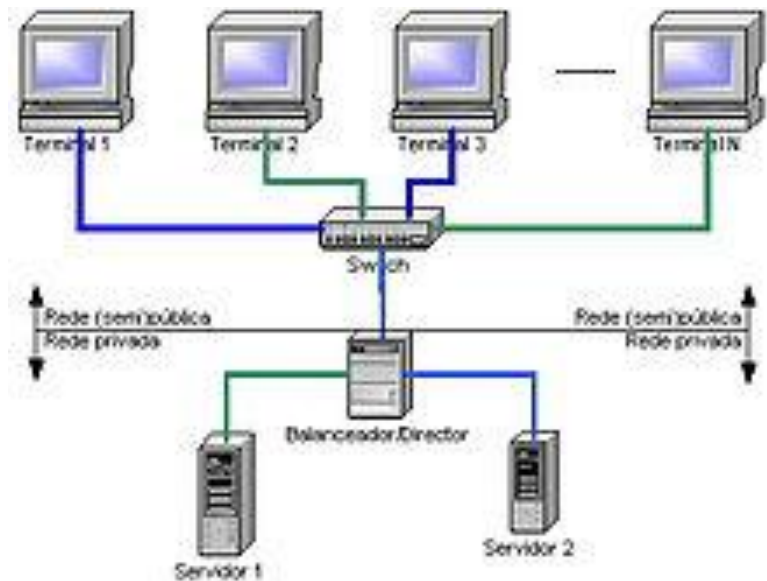


Relation between software components

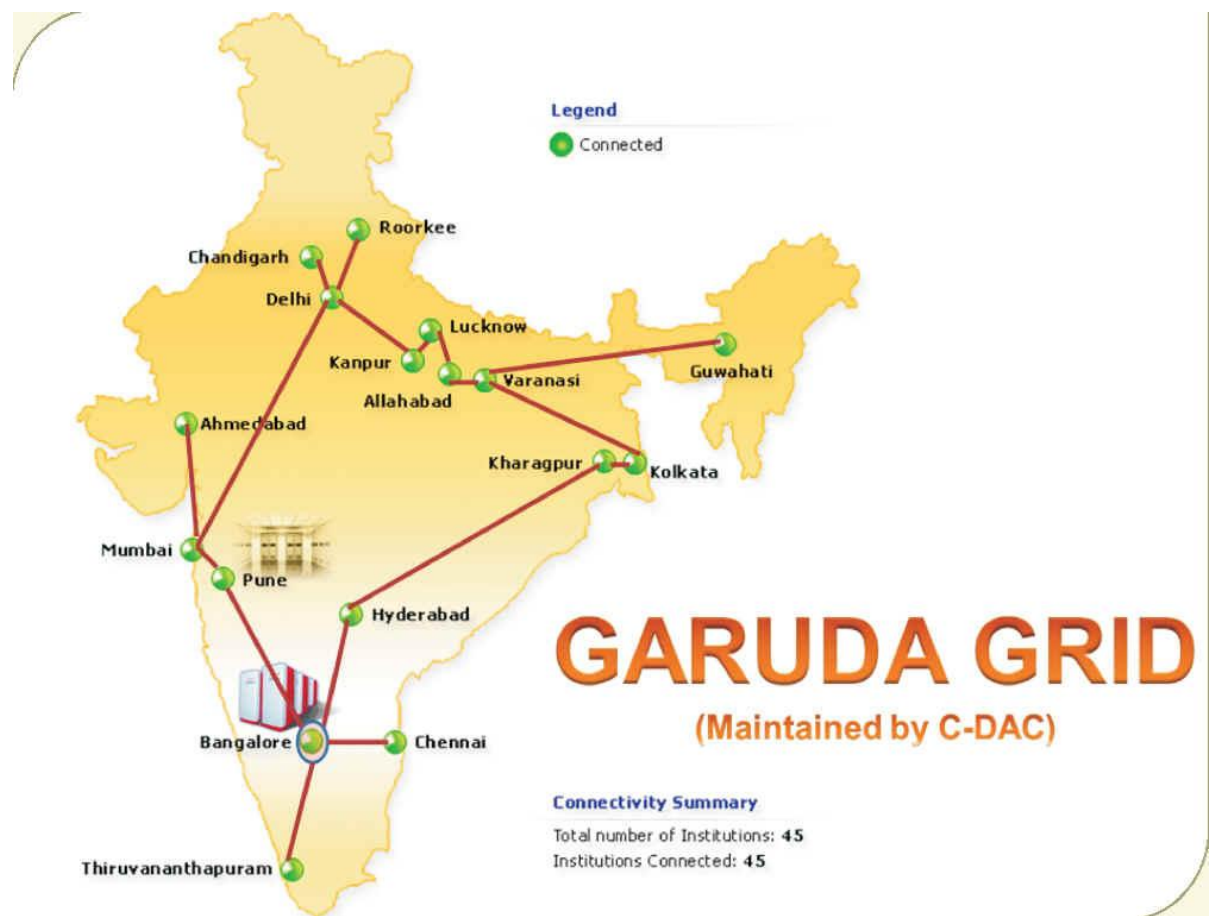


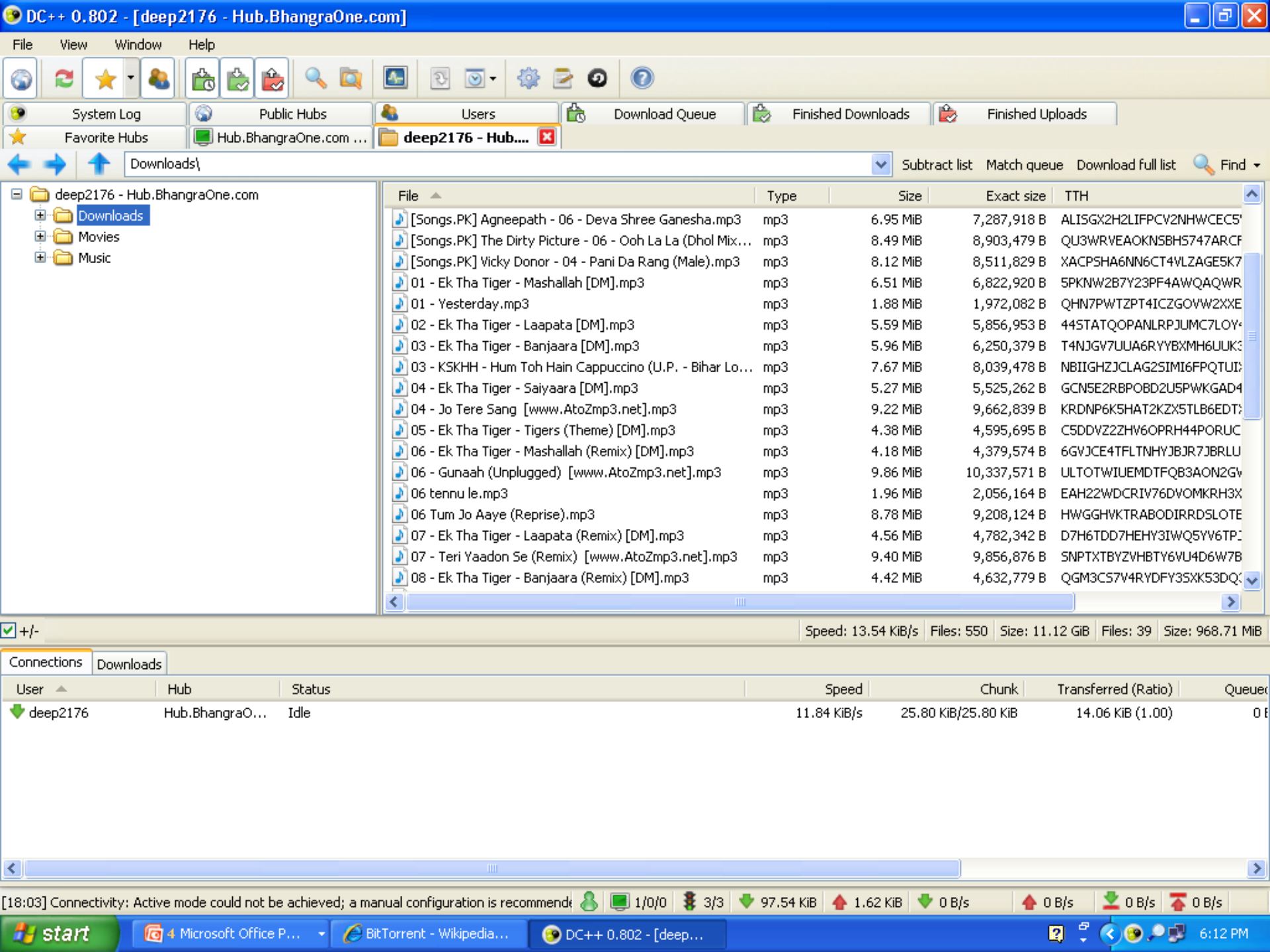
- Inherently distributed computation
- Resource sharing
- Access to remote resources
- Increased performance/cost ratio
- Reliability
 - Availability, integrity, fault-tolerance
- Scalability
- Modularity and incremental expandability

Cluster of Cooperative Computers



Computational Grids: GARUDA from CDAC

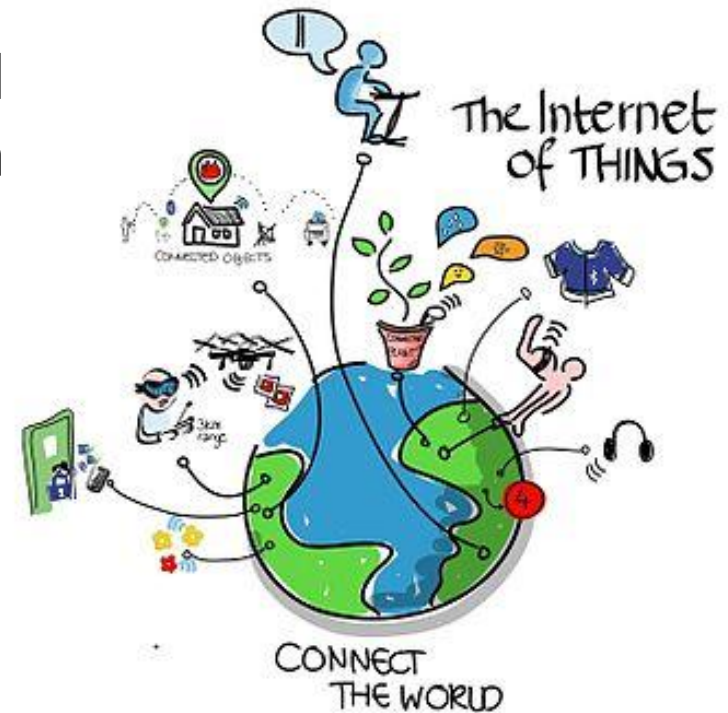




Internet of Things (IoT)



- Network of physical objects accessed through the Internet.
- These objects contain embedded technology to interact with internal states or the external environment.



Img. Source: Wiki