Distributed Algorithms

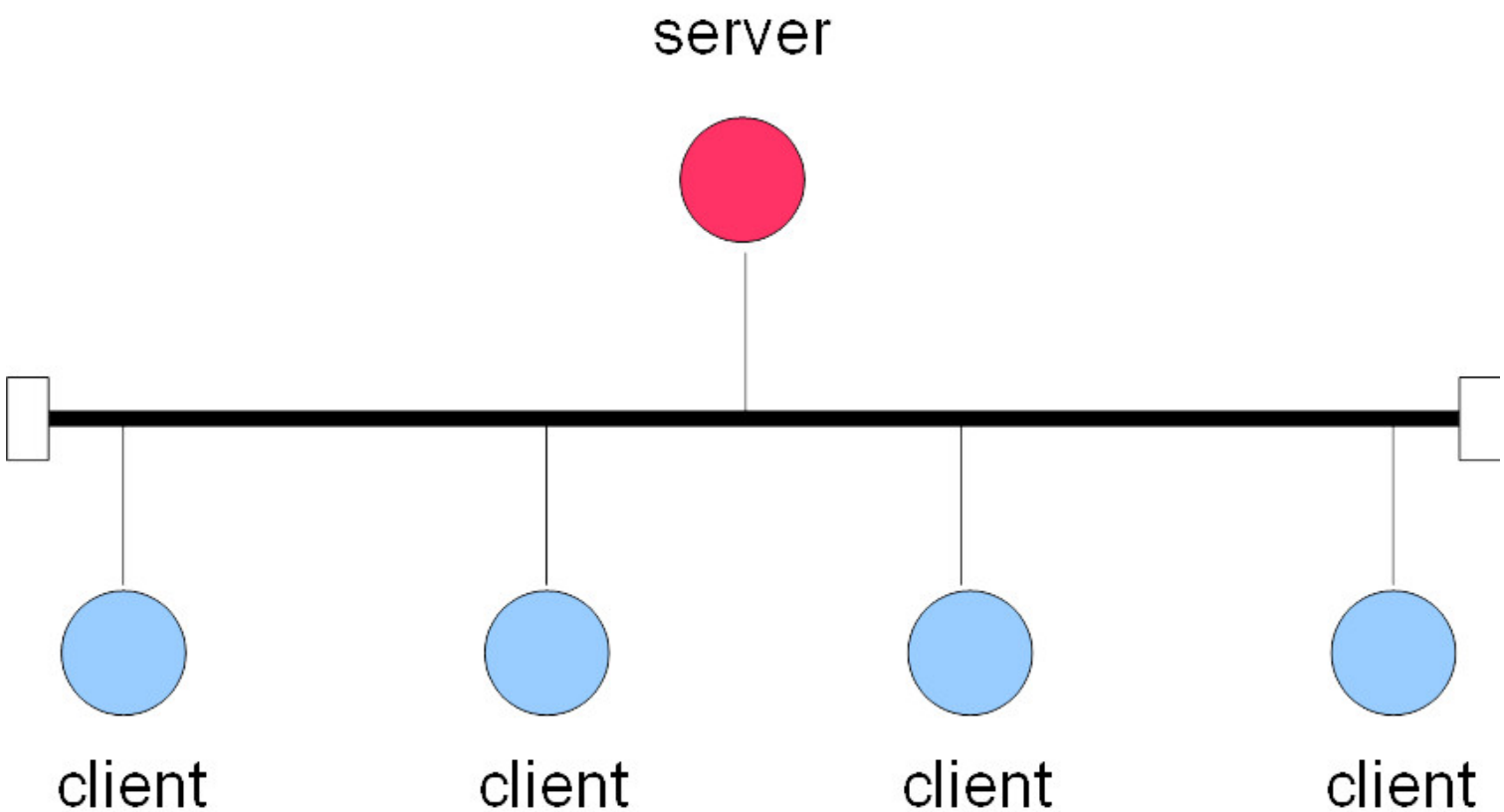
Jan Janeček

JCU České Budějovice

9

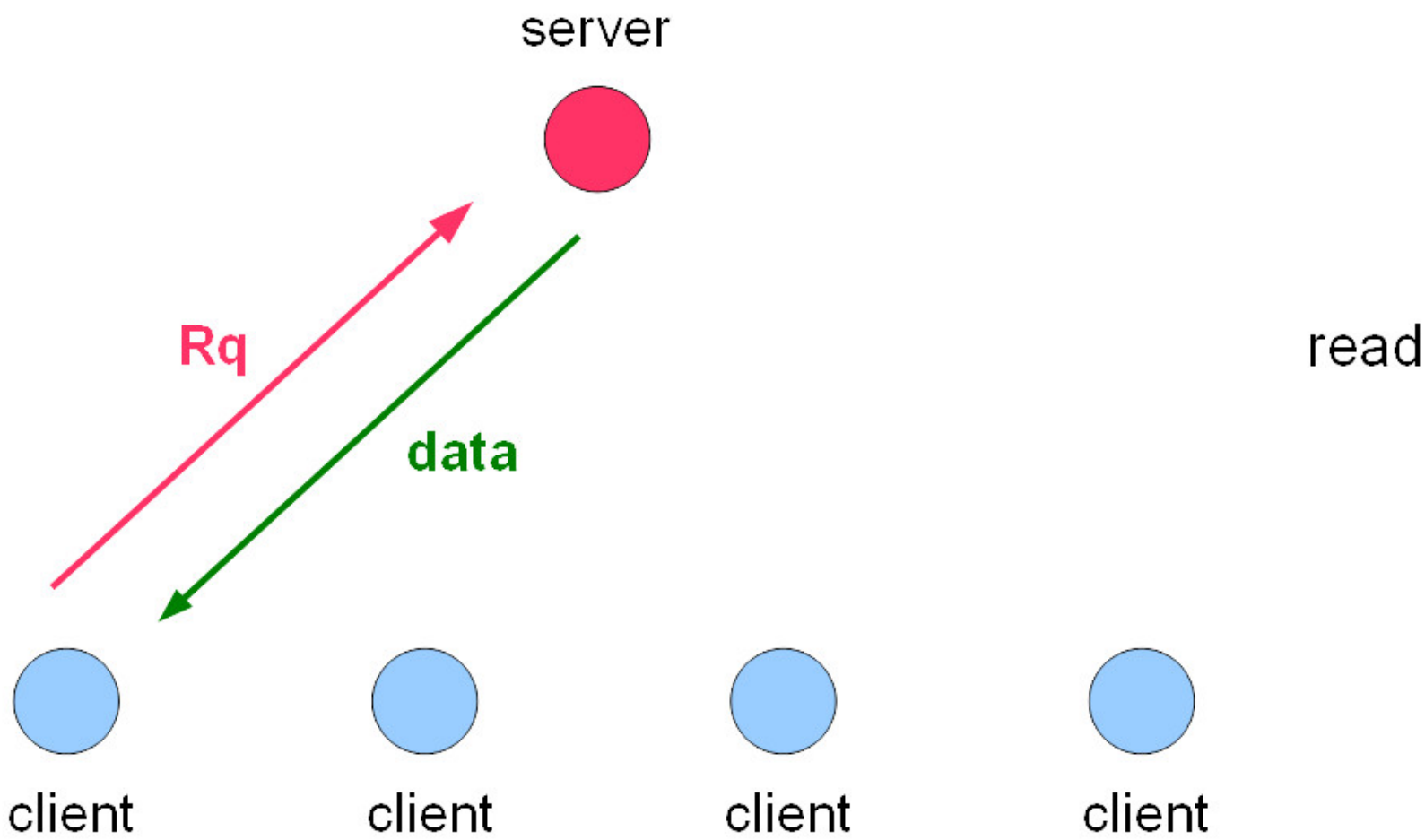
Data sharing

Client - server



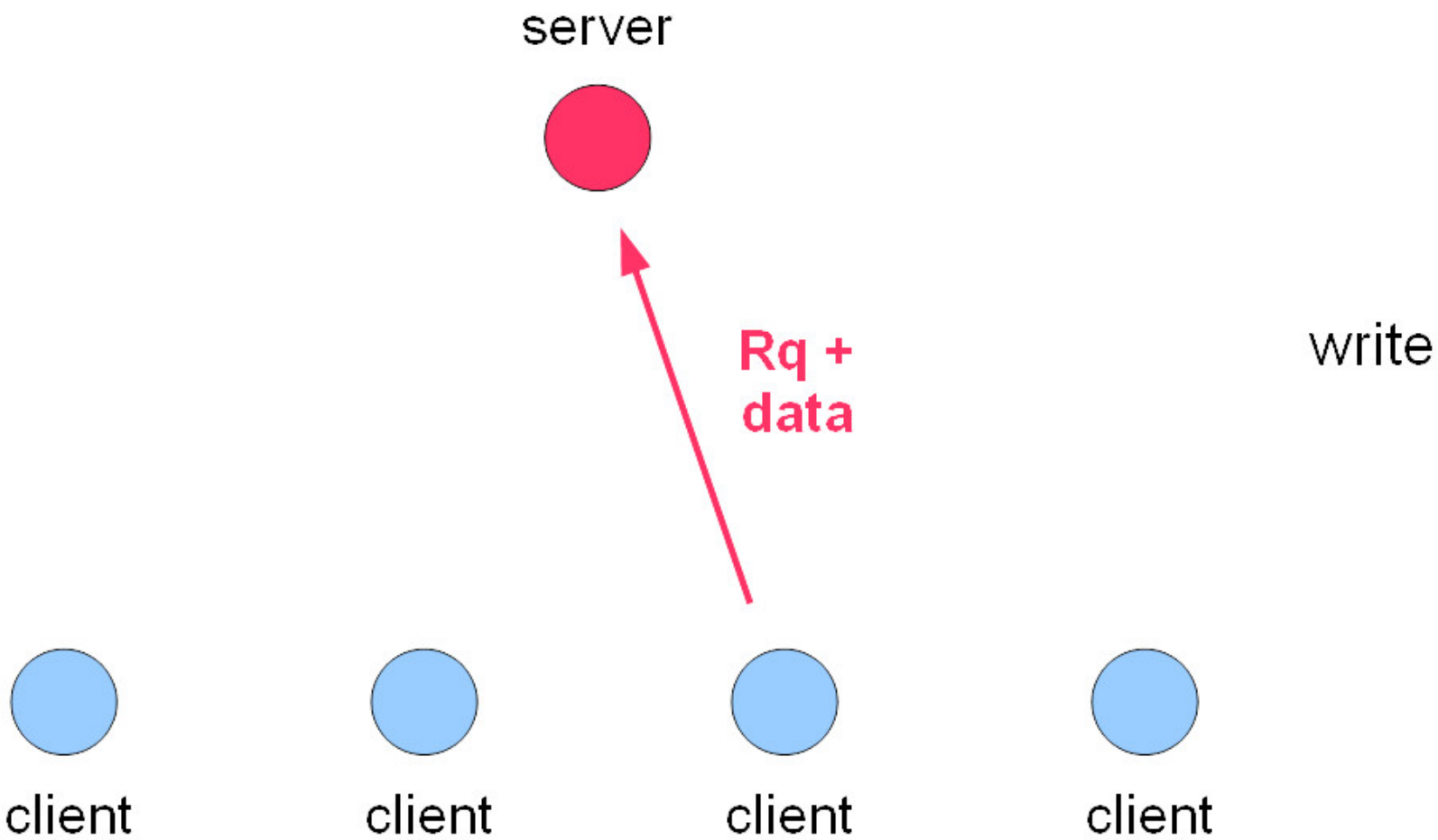
Data sharing

Client - server



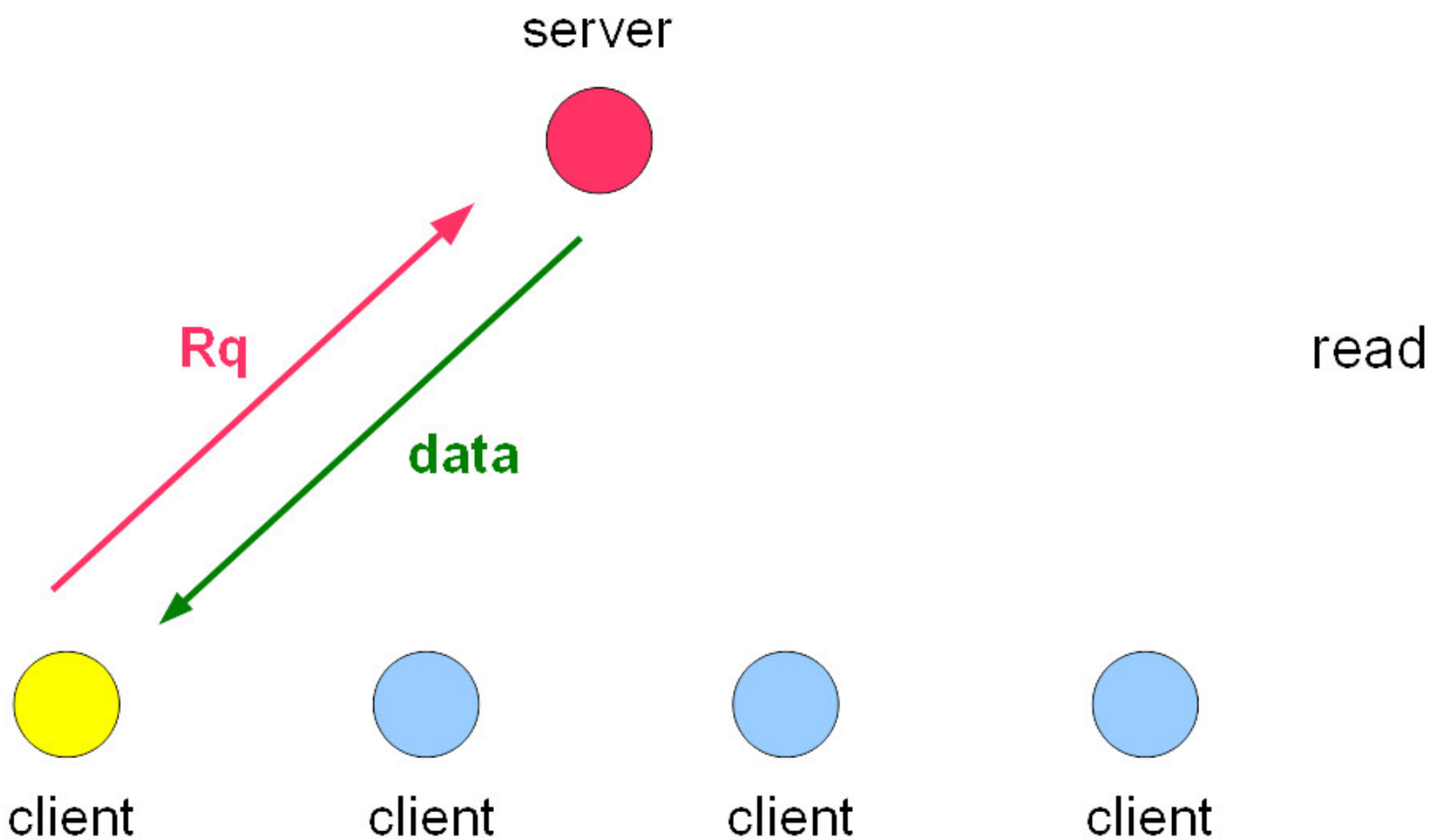
Data sharing

Client - server



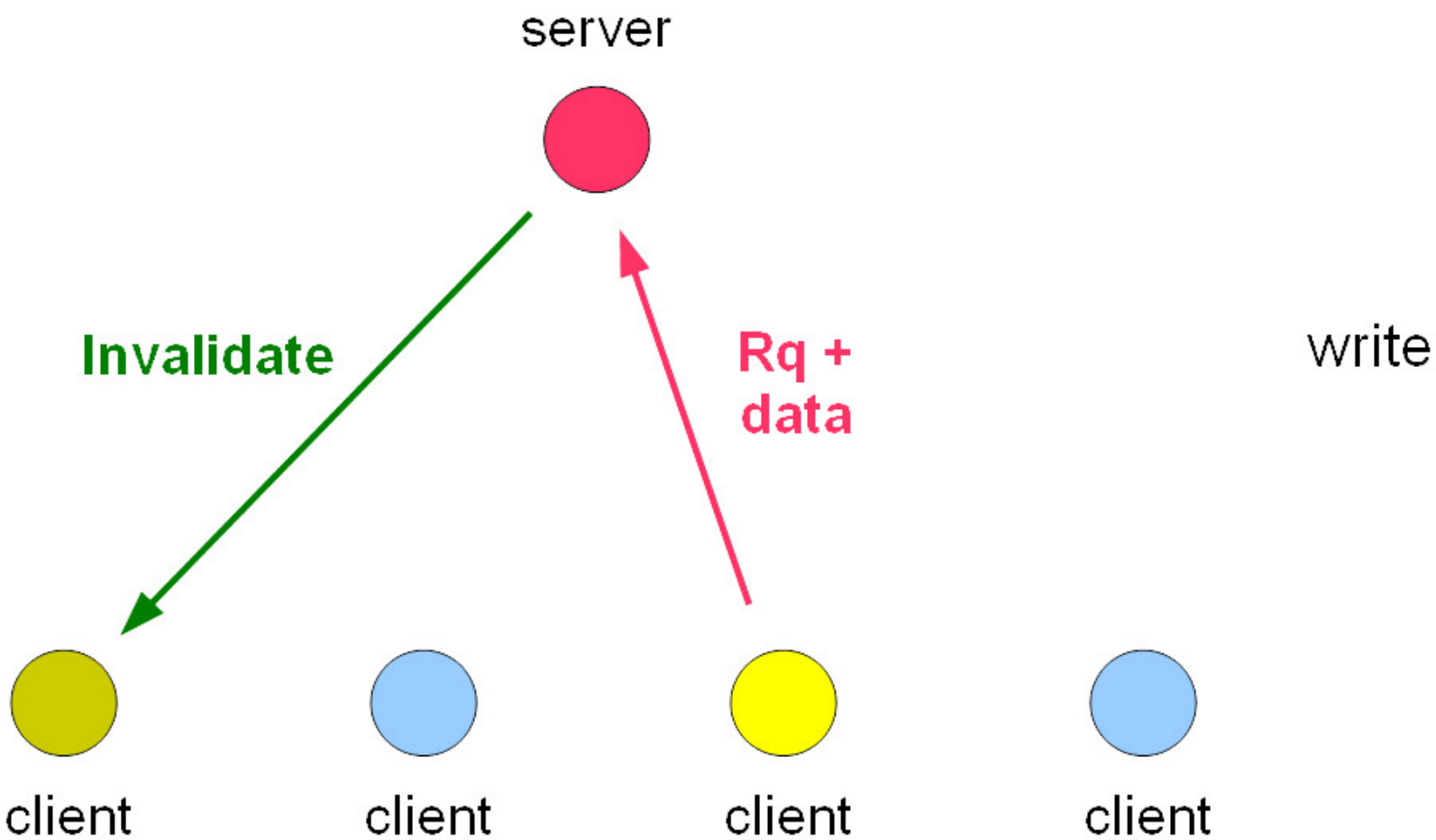
Data sharing

Cashing - Read-only mode



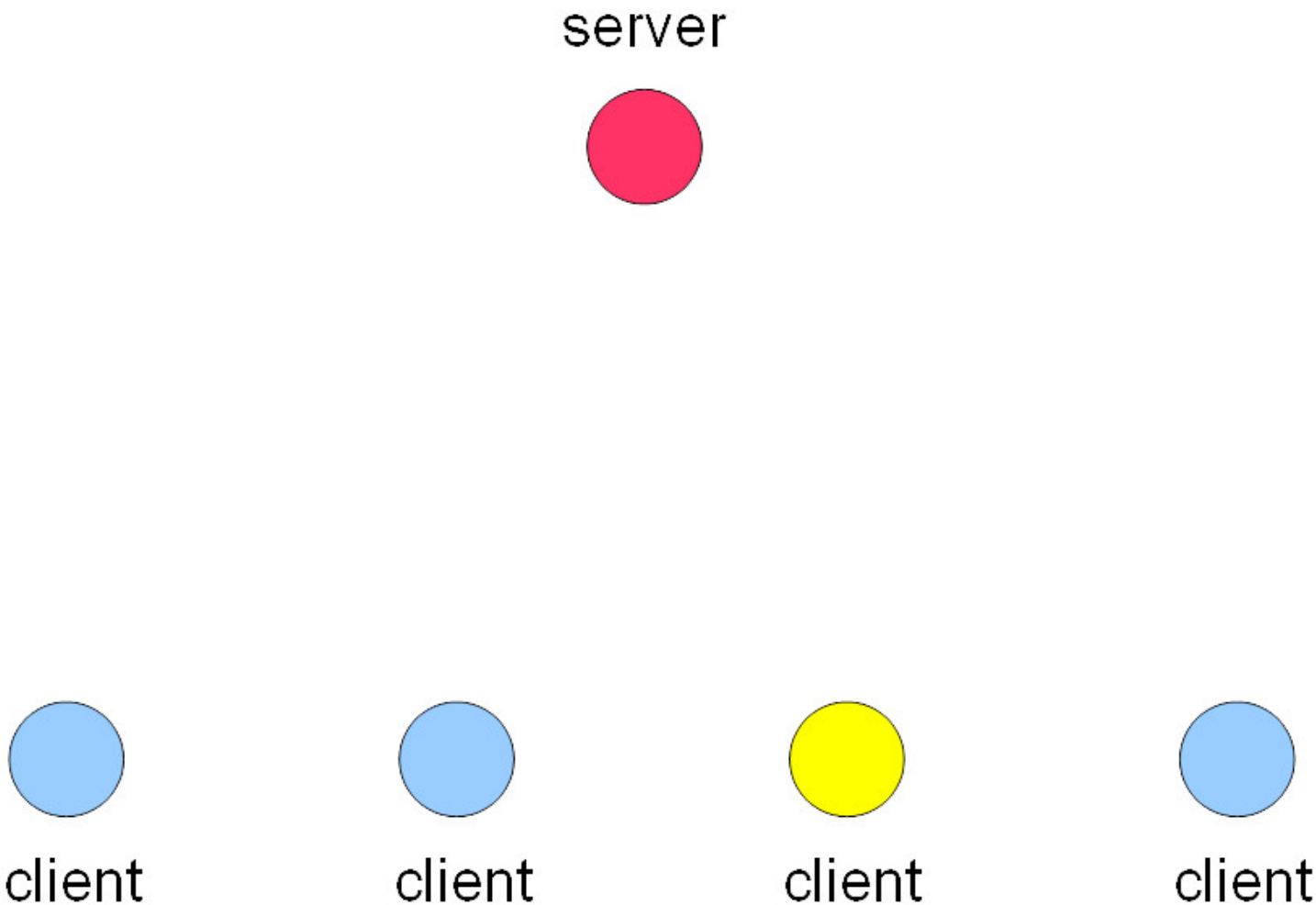
Data sharing

Cashing - Read-only mode

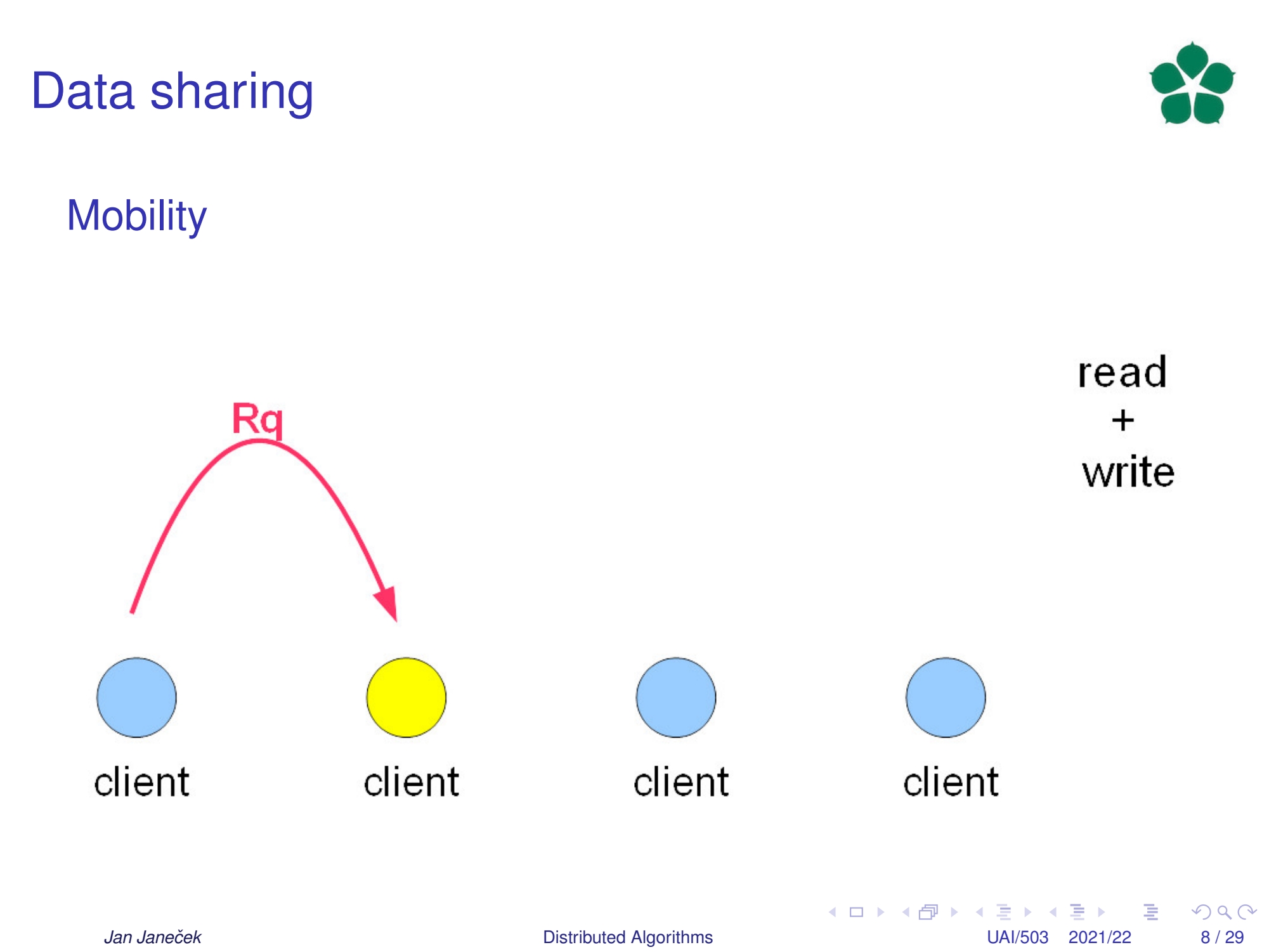


Data sharing

Cashing - Read-only mode

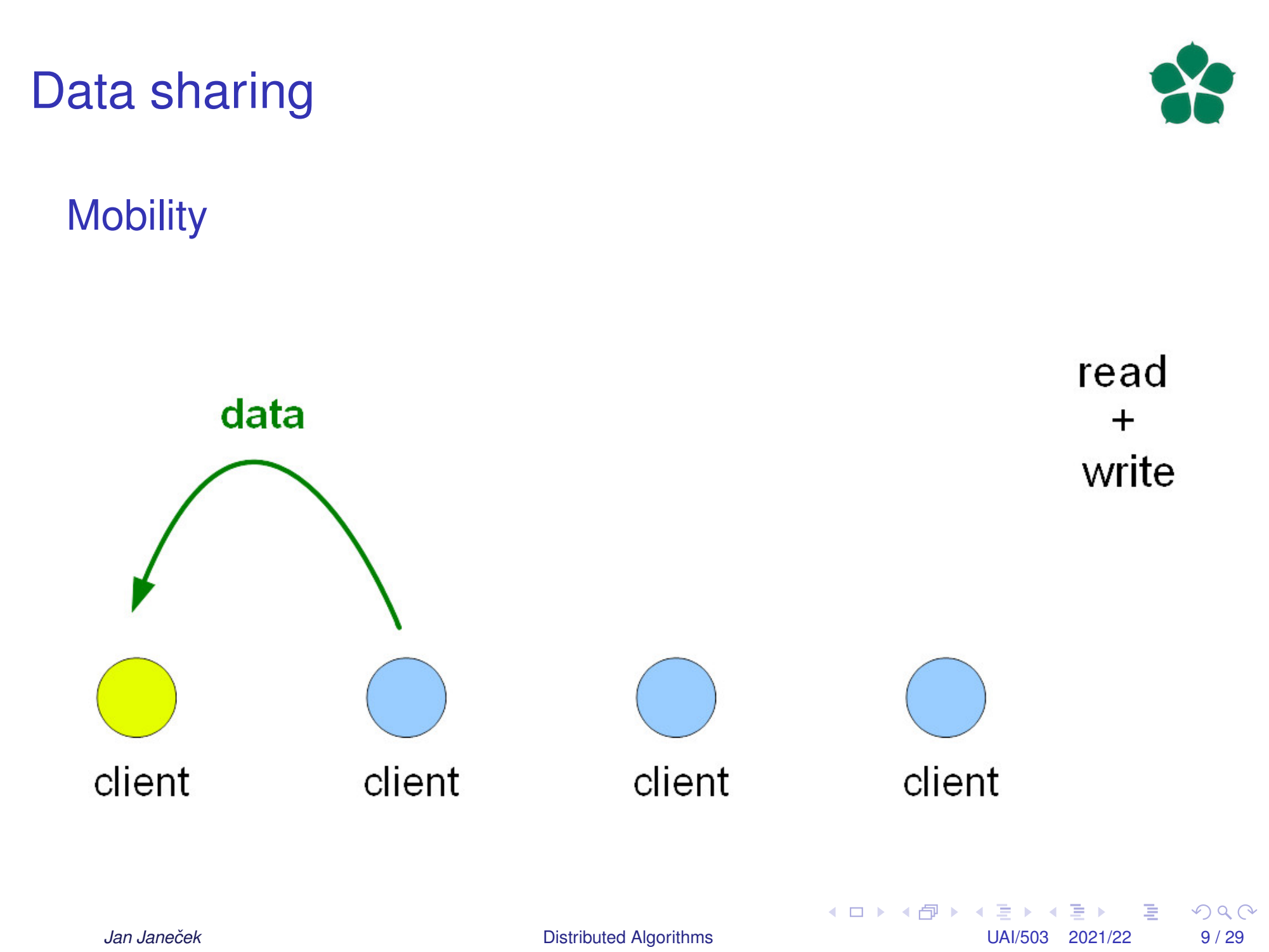


Data sharing



Mobility

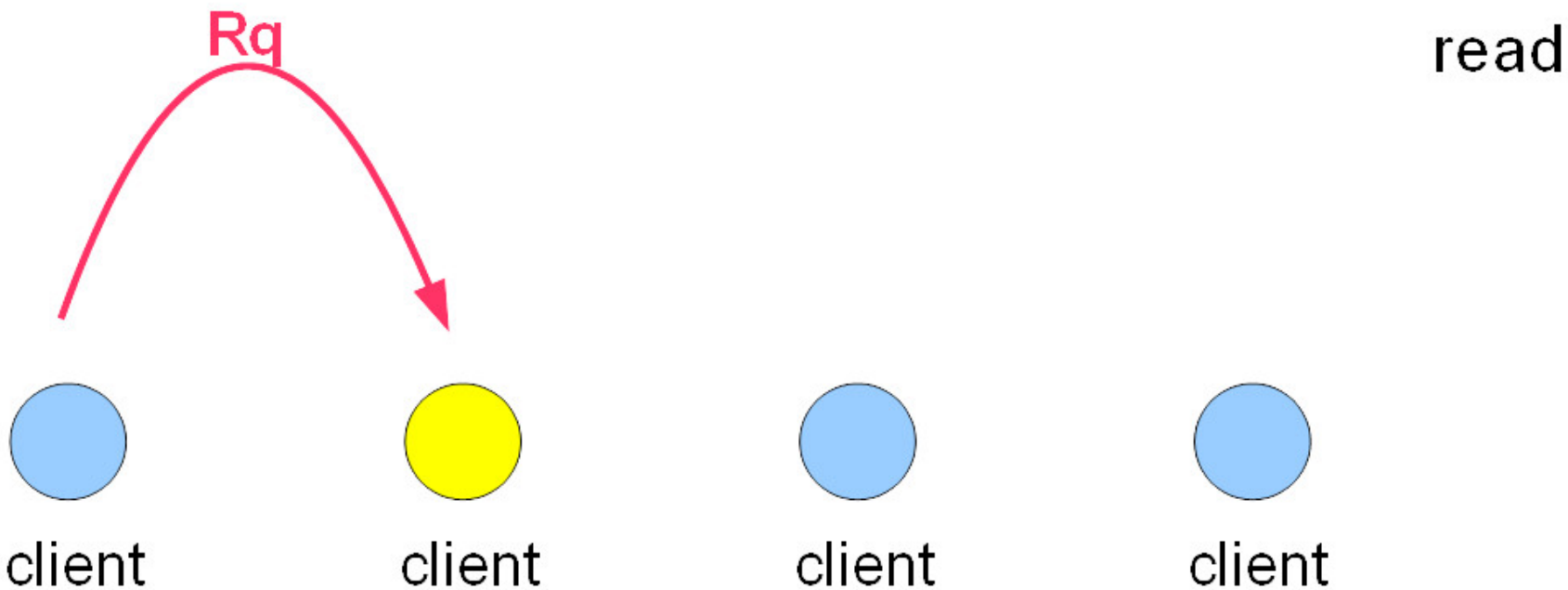
Data sharing



Mobility

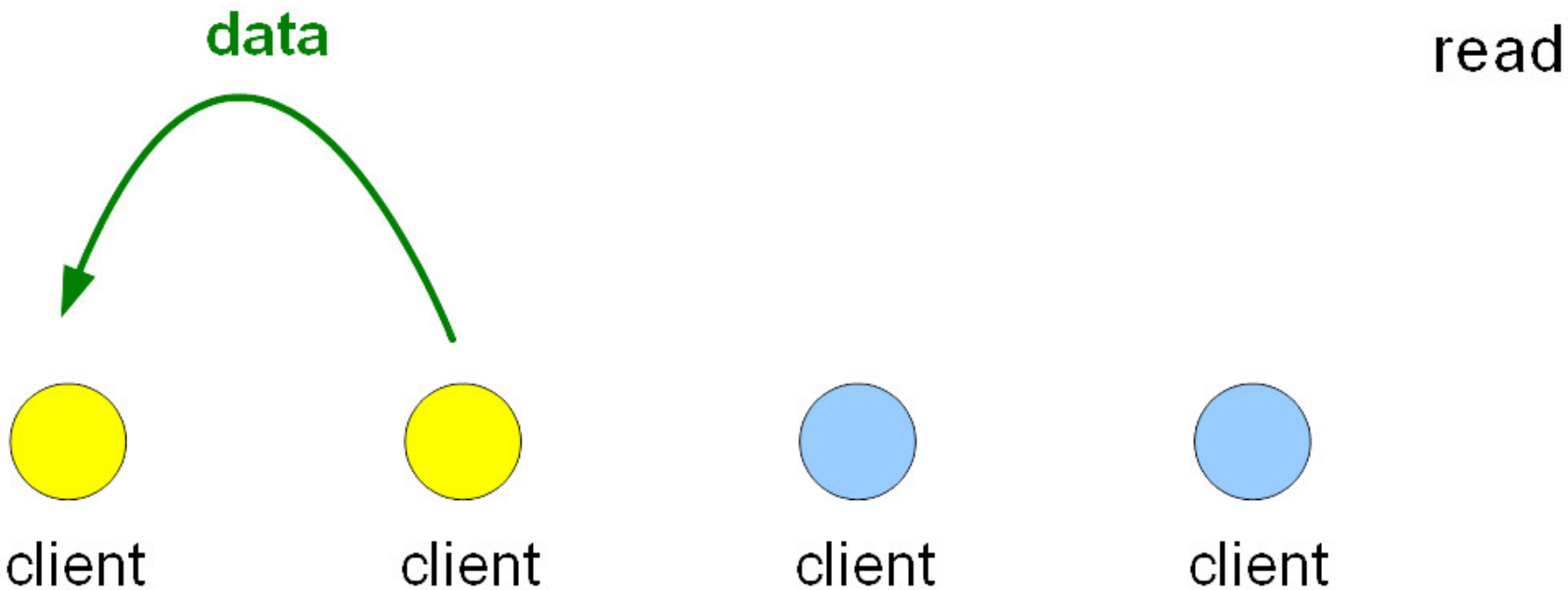
Data sharing

Mobility & replication

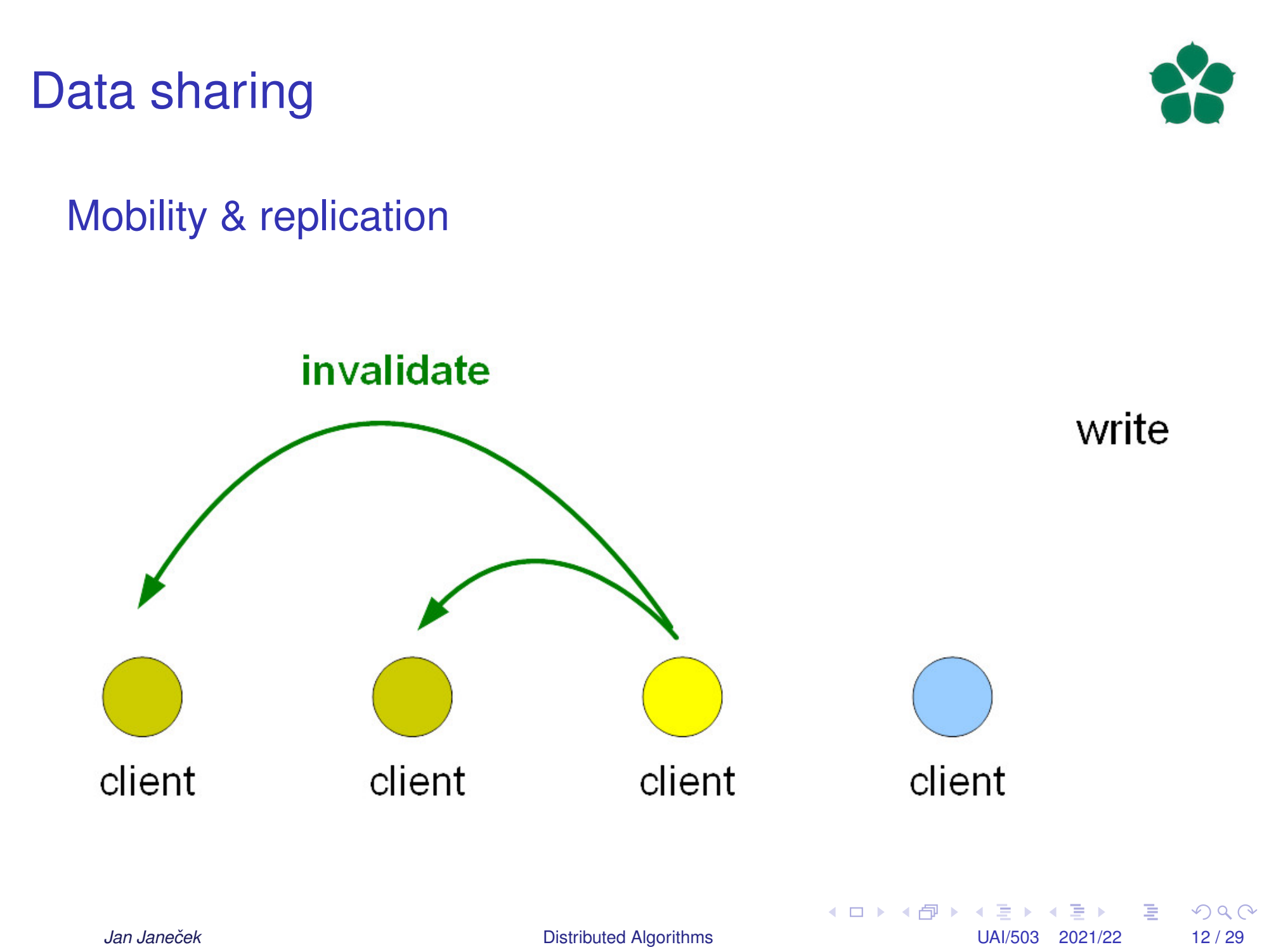


Data sharing

Mobility & replication



Data sharing



Mobility & replication

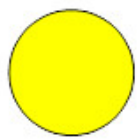
Data sharing

Mobility & replication

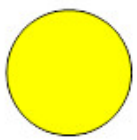
Data sharing

Full replication

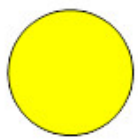
read
(local)



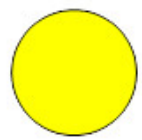
client



client



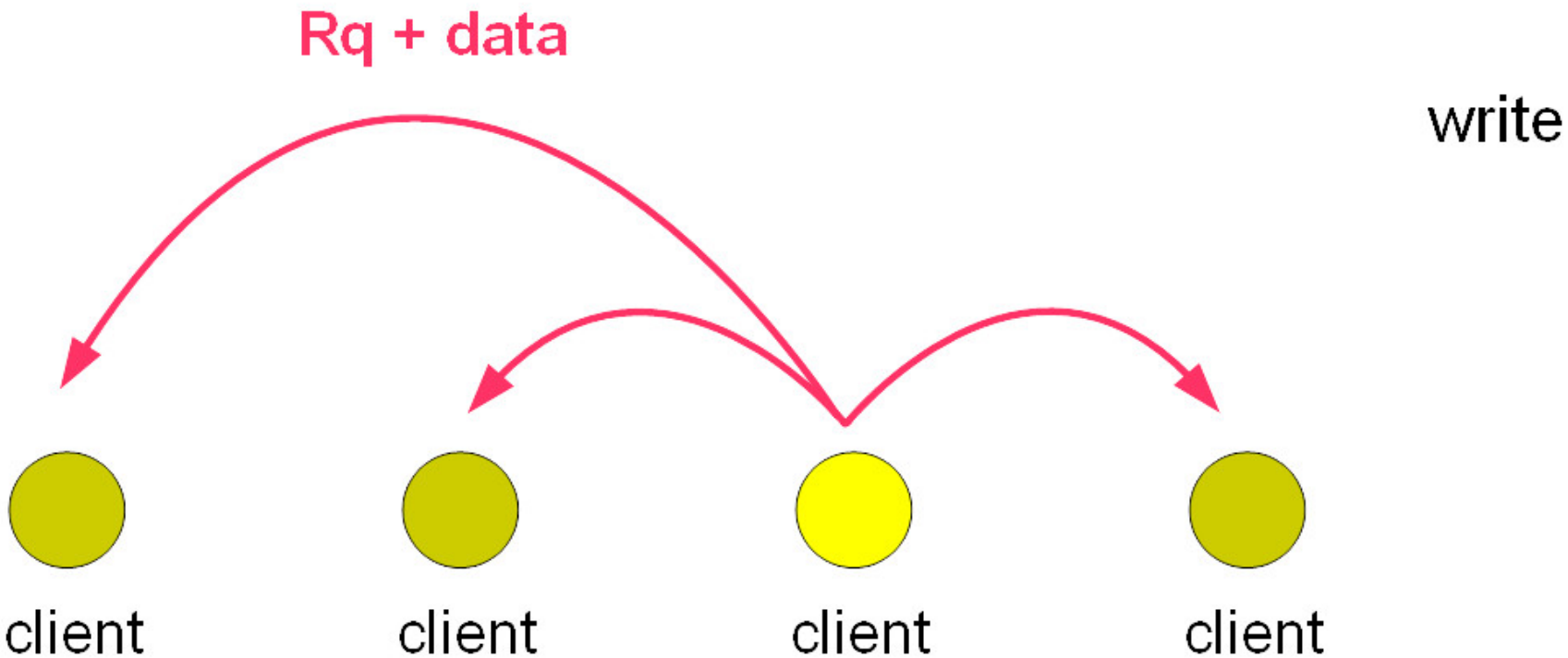
client



client

Data sharing

Full replication

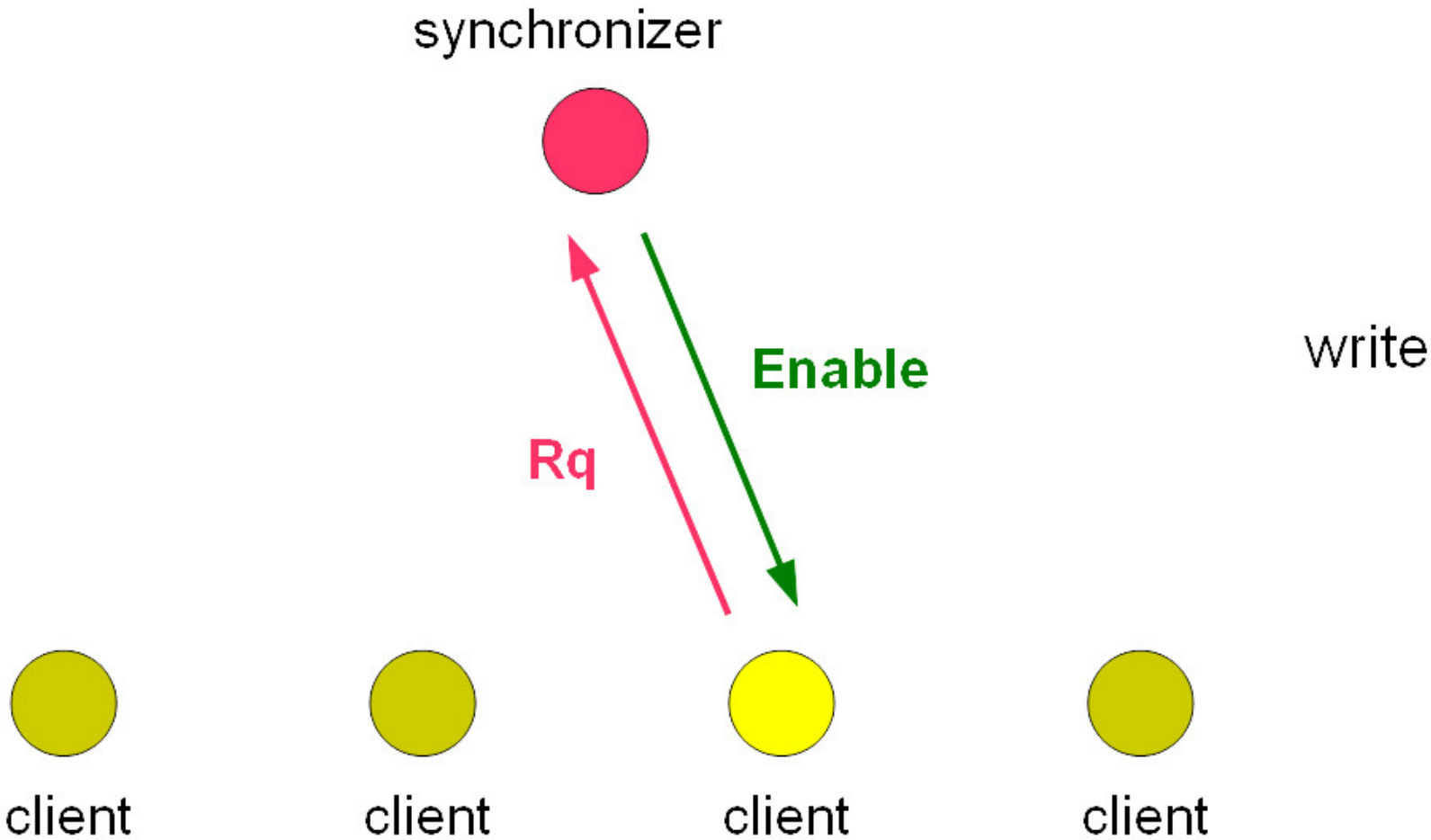


Data sharing

Full replication

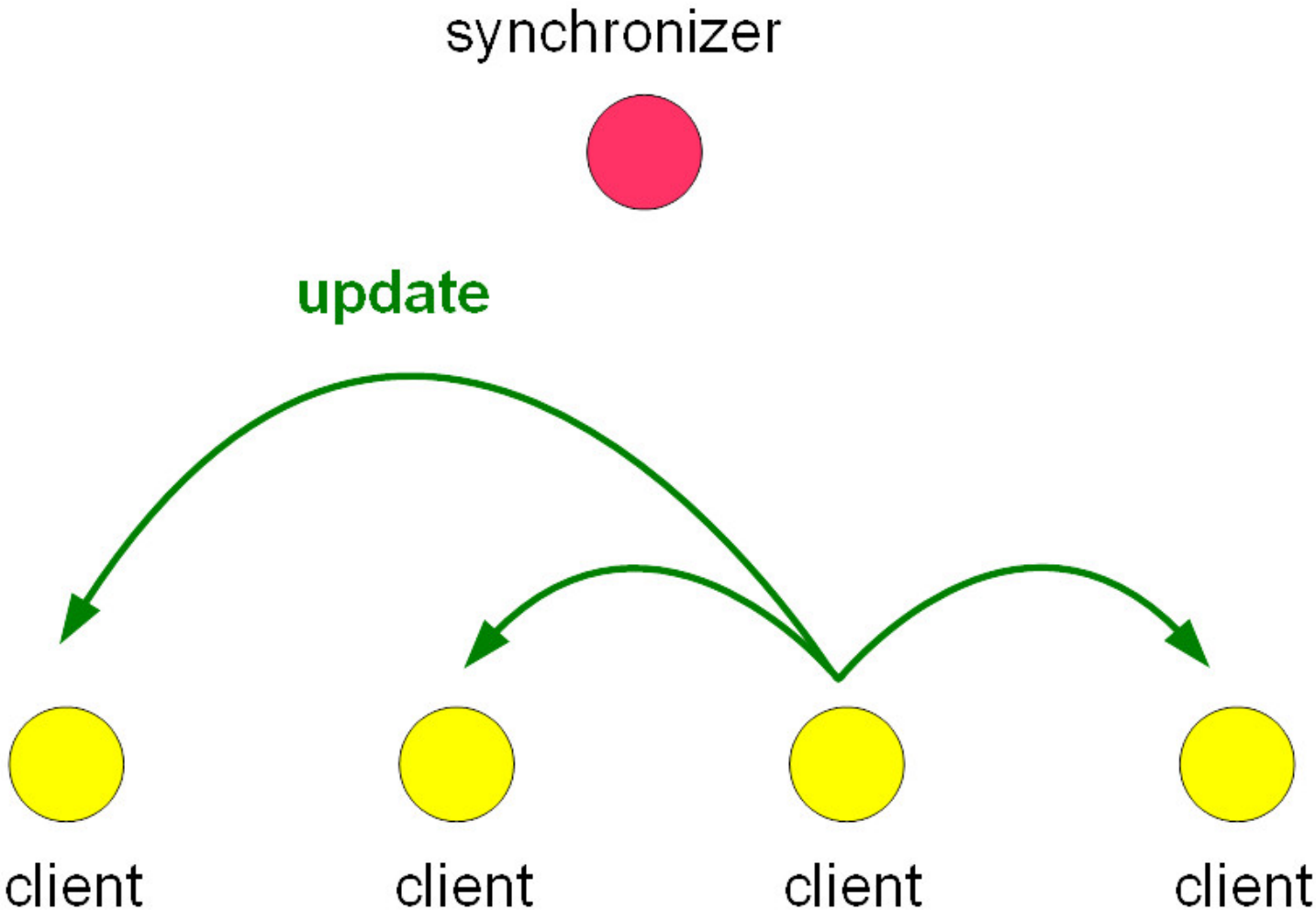
Data sharing

Full replication



Data sharing

Full replication



Distributed shared memory - Linda

tuple space

out

out("petr",31,true)

read

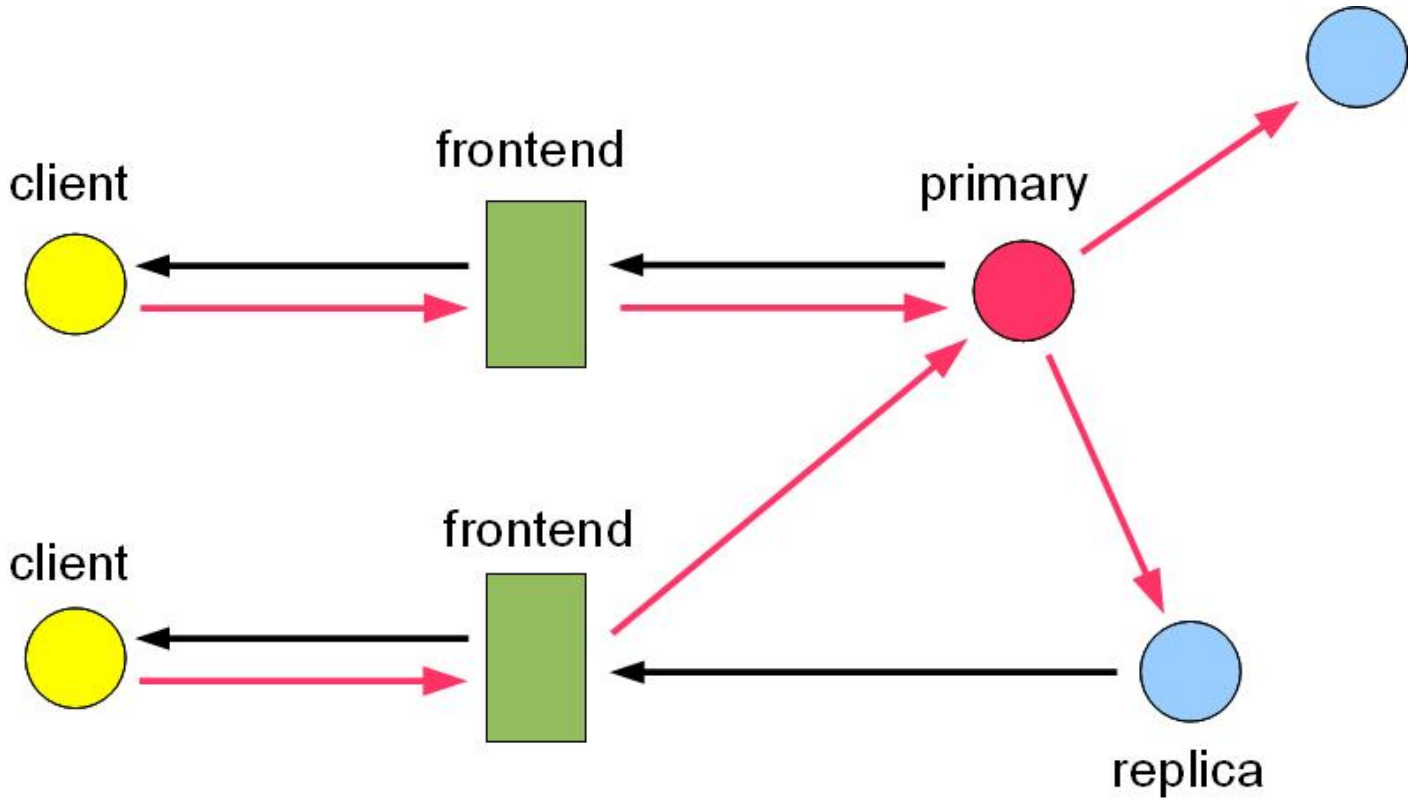
read("petr",var age,var married)

in

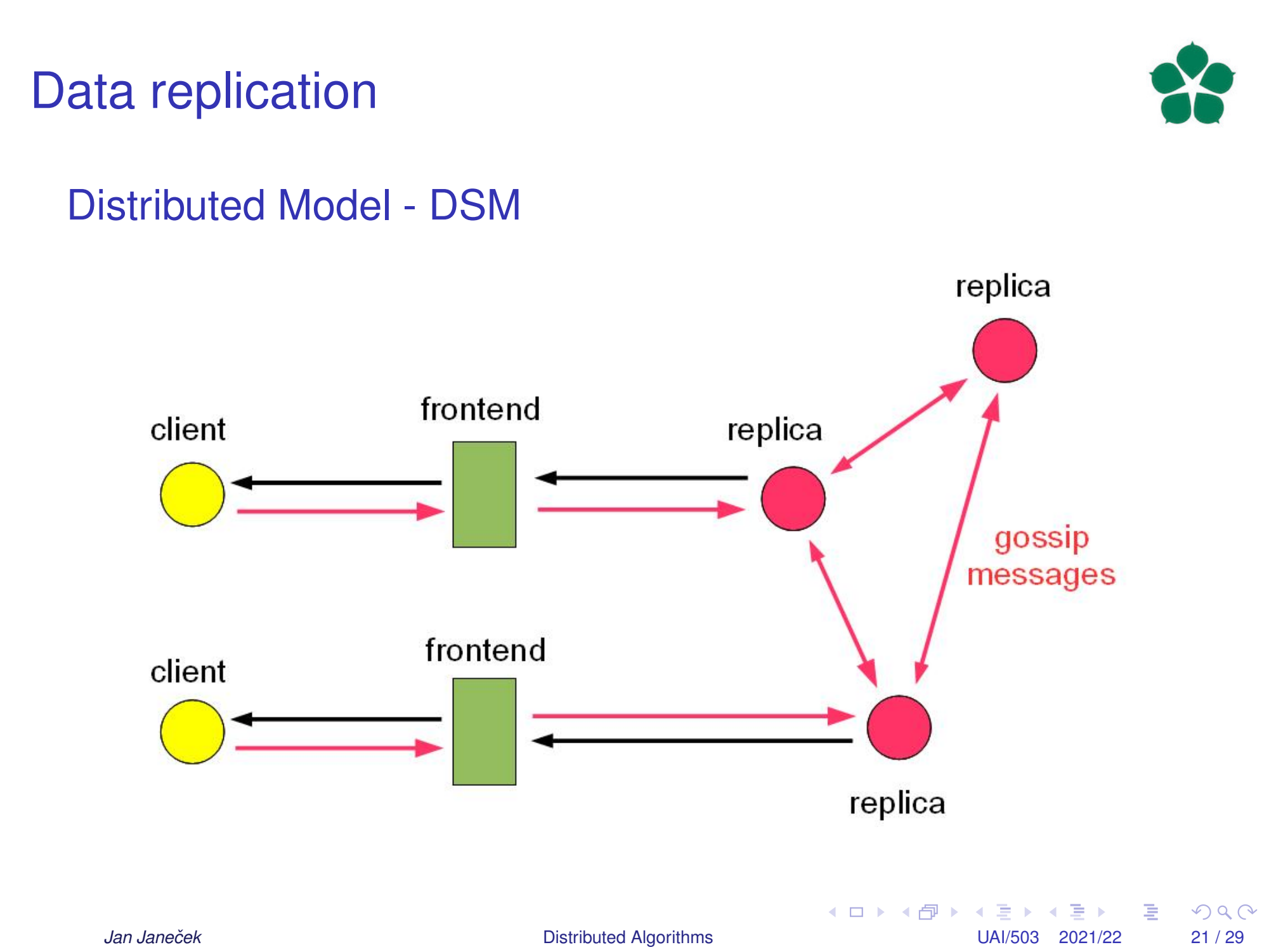
in("petr",var age,true)

Data replication

Primary-copy model



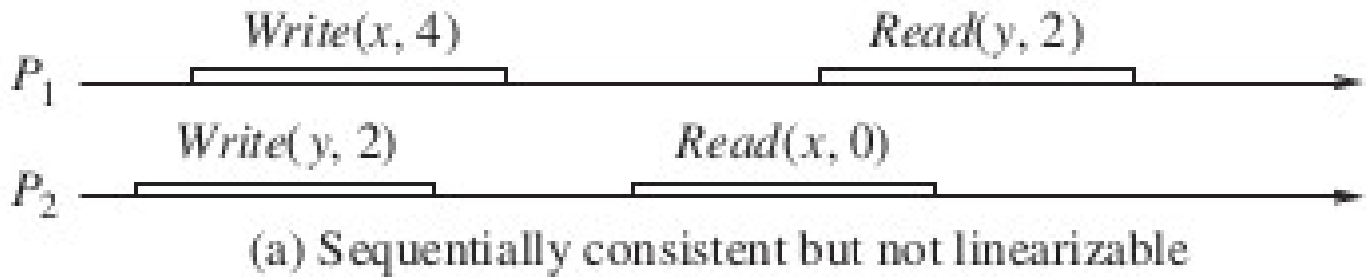
Data replication



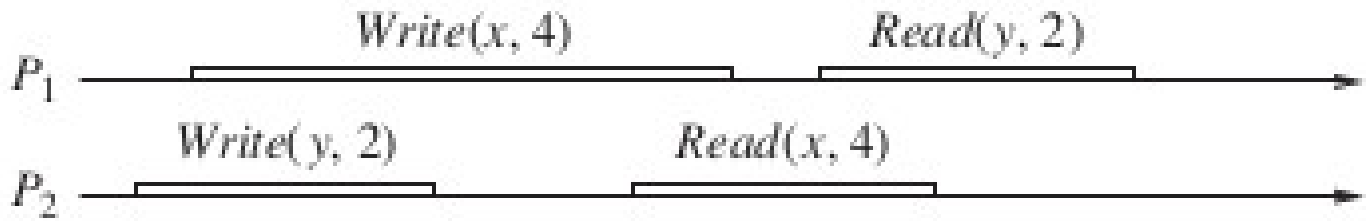
Distributed Model - DSM

Distributed Shared Memory

Strict consistency, linearizability



(a) Sequentially consistent but not linearizable

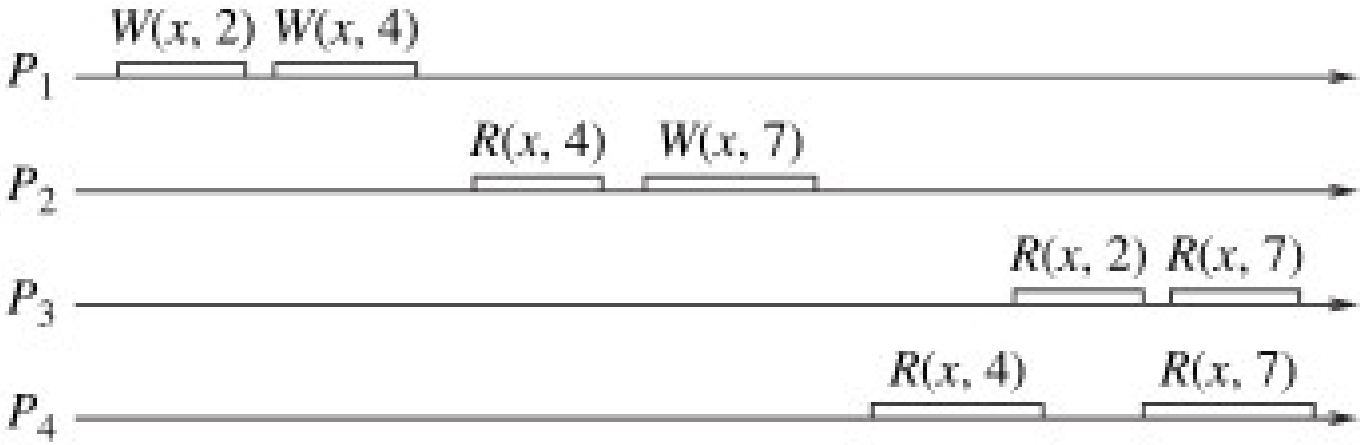


(b) Sequentially consistent and linearizable

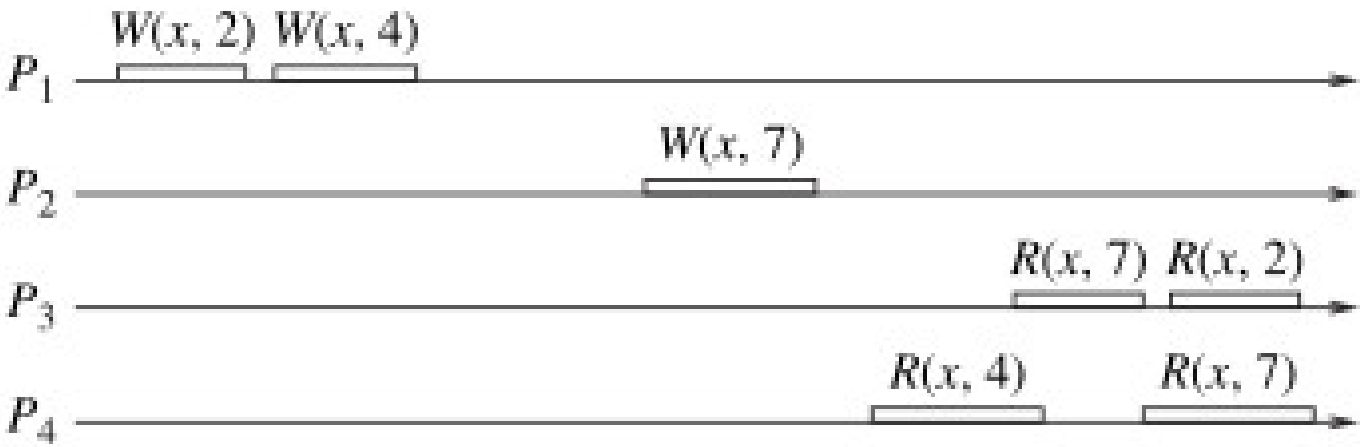
(c) Not sequentially consistent (and hence not linearizable)

Distributed Shared Memory

Sequential consistency, causal consistency



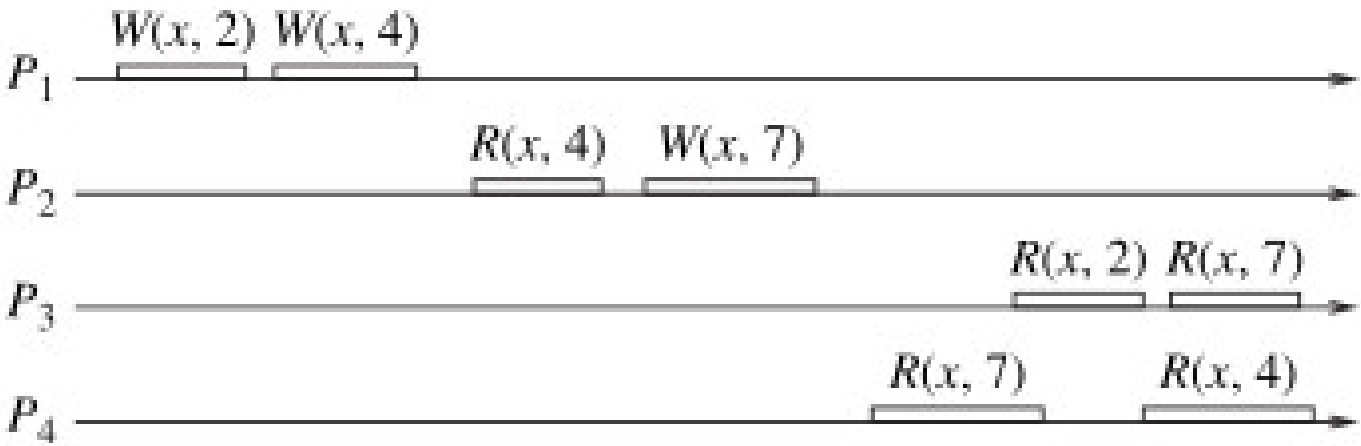
(a) Sequentially consistent and causally consistent



(b) Causally consistent but not sequentially consistent

Distributed Shared Memory

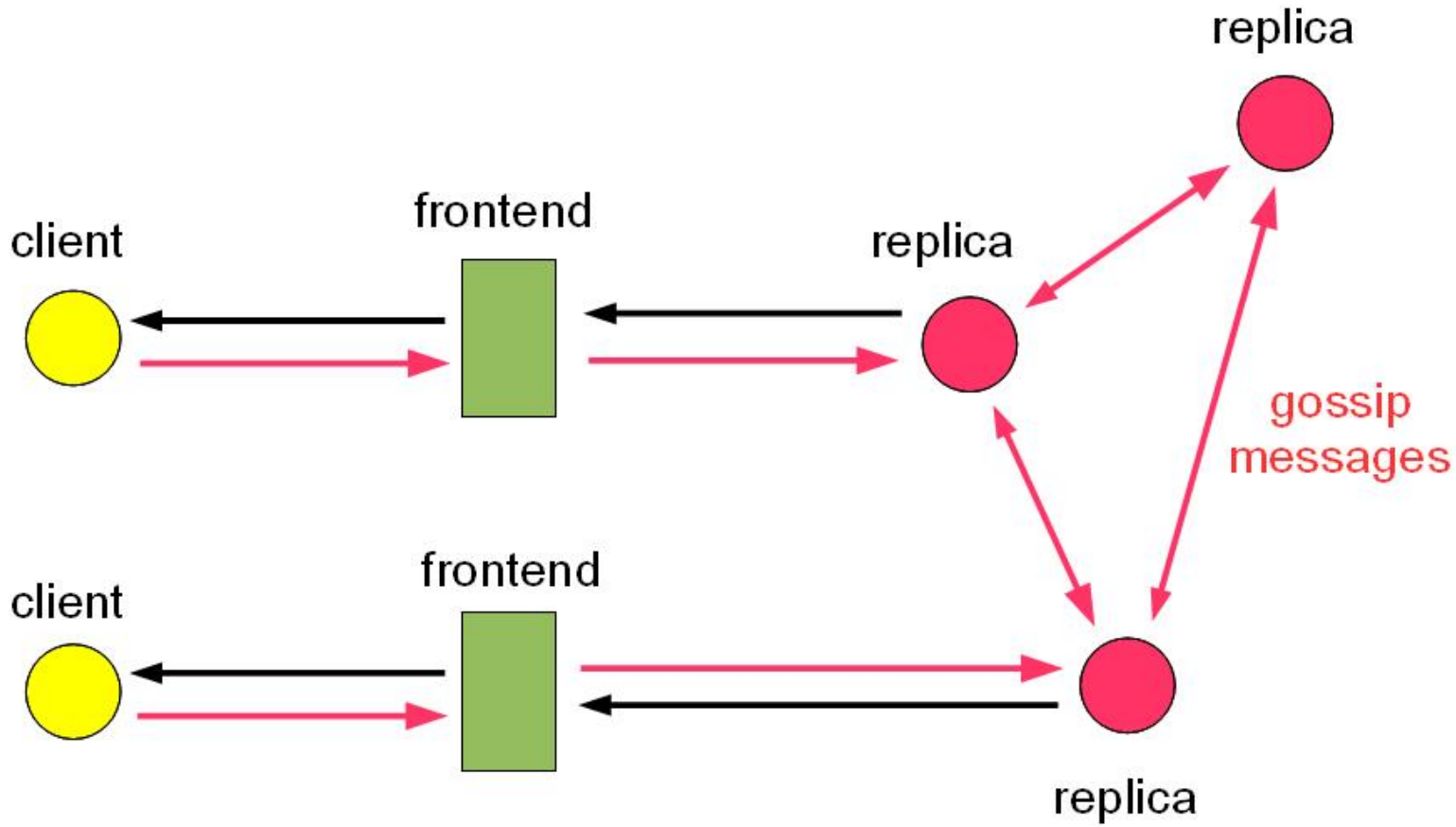
PRAM consistency



(c) Not causally consistent but PRAM consistent

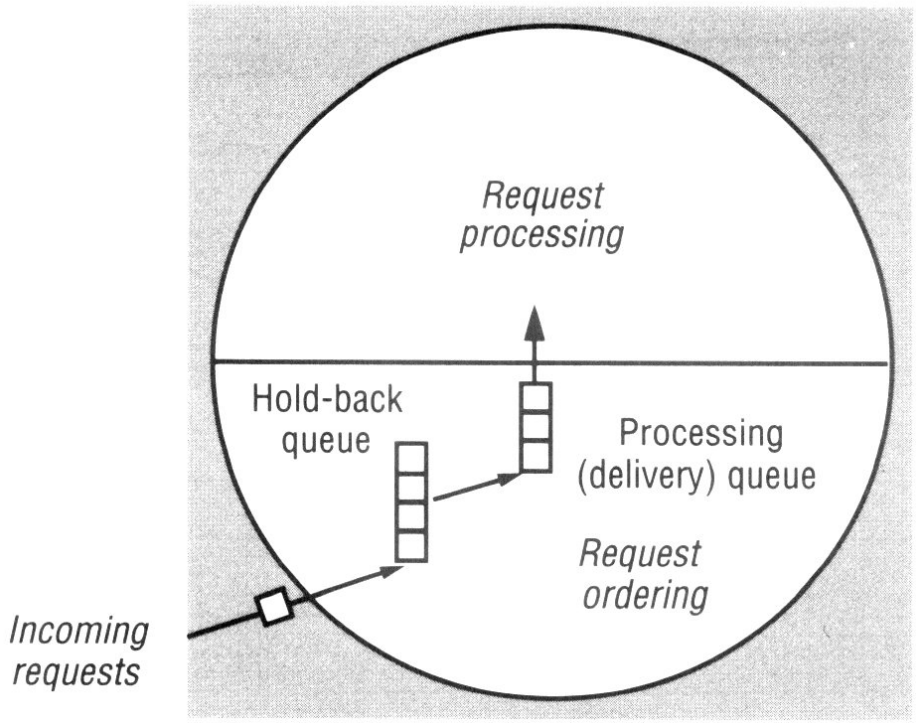
Data replication

Gossip architecture



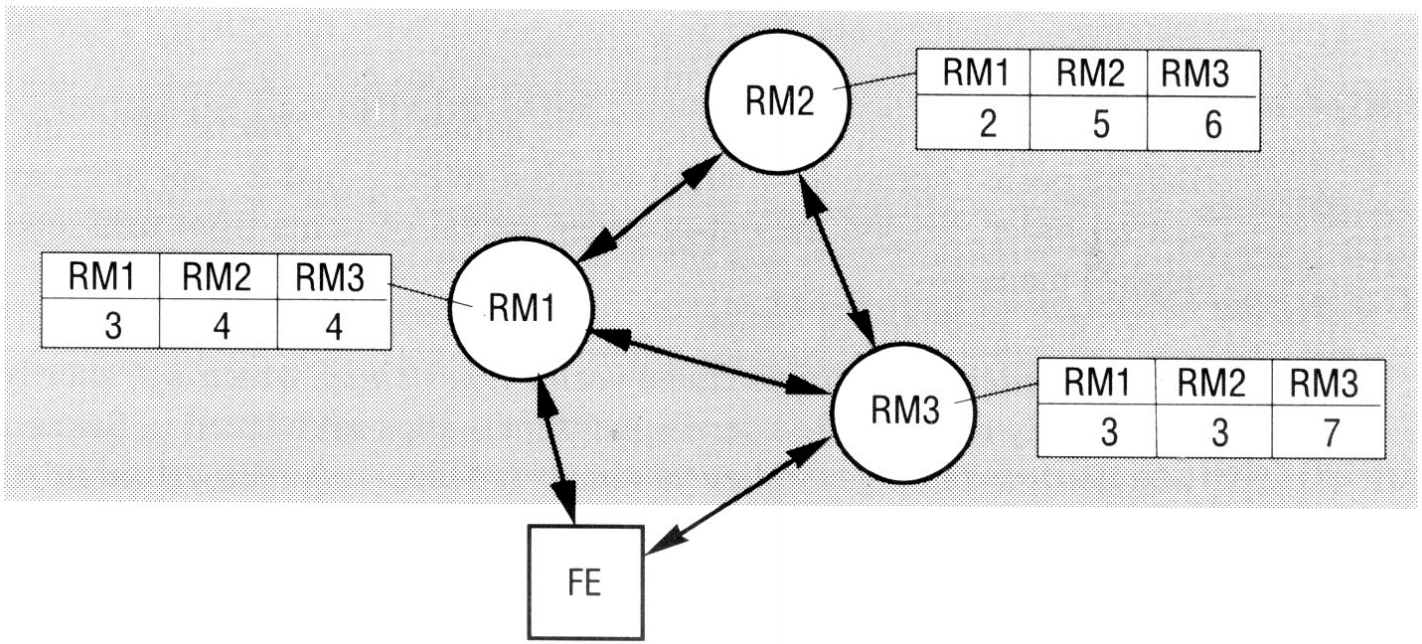
Data replication

Data ordering



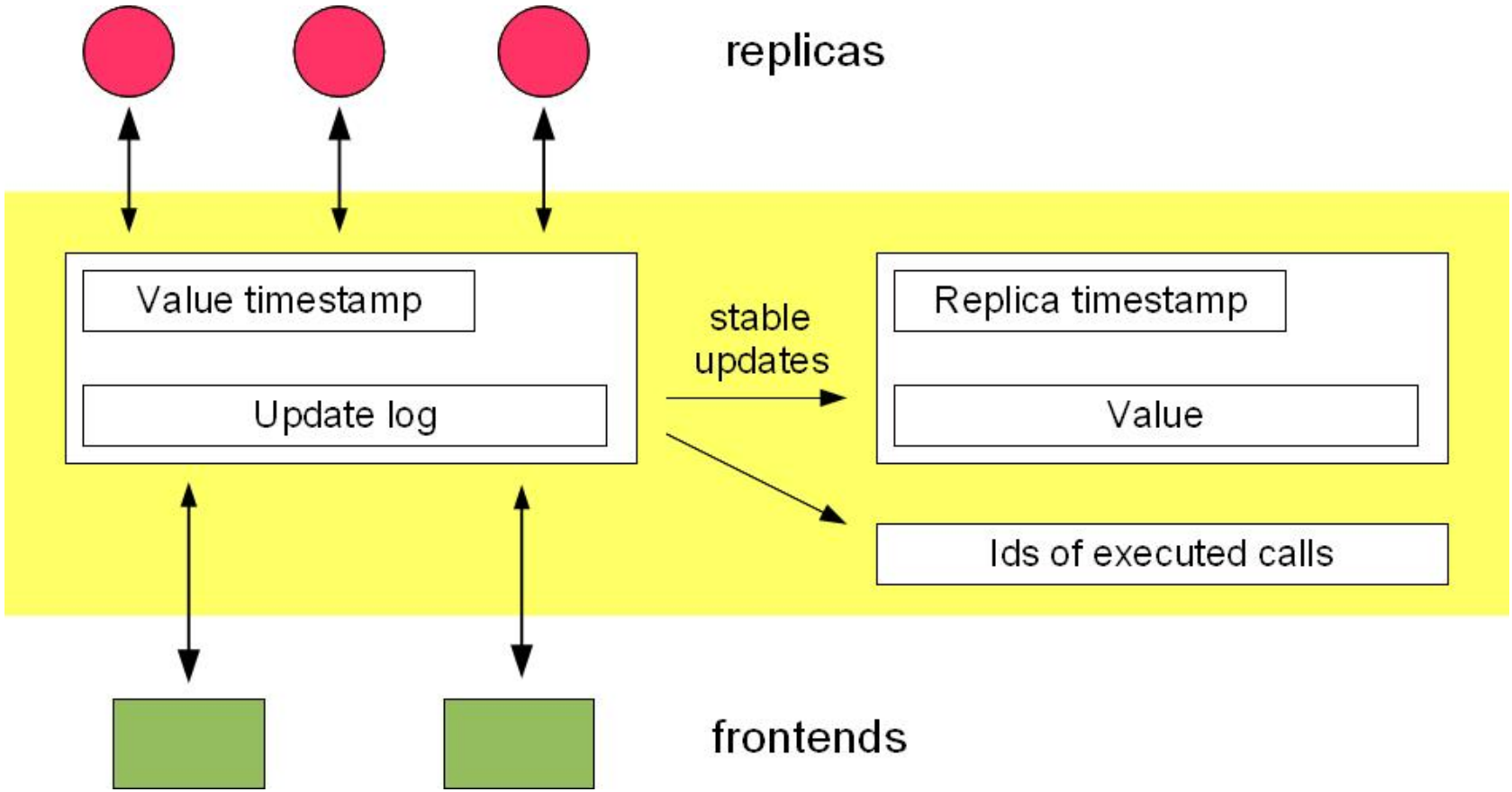
Data replication

Data ordering



Data replication

Gossip architecture



Data replication

Gossip architecture