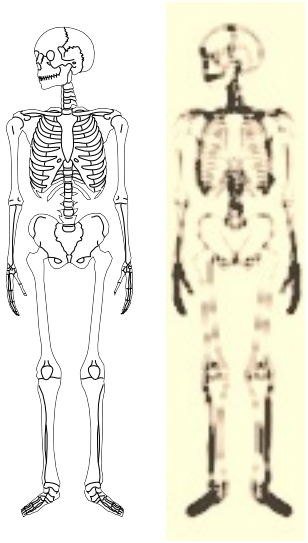
Architecture des Systèmes d'Information

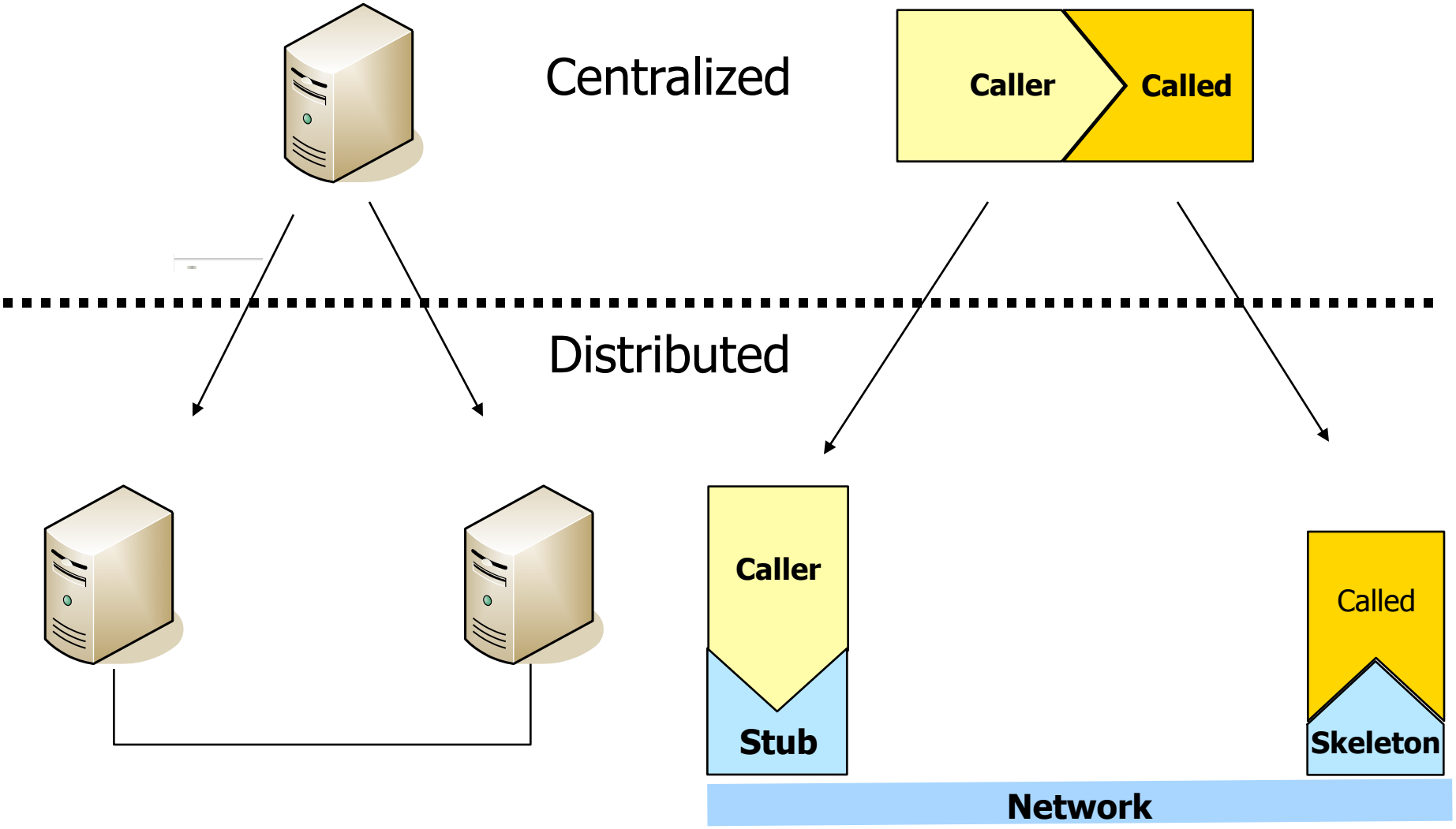


Remote Method Invocation

RMI

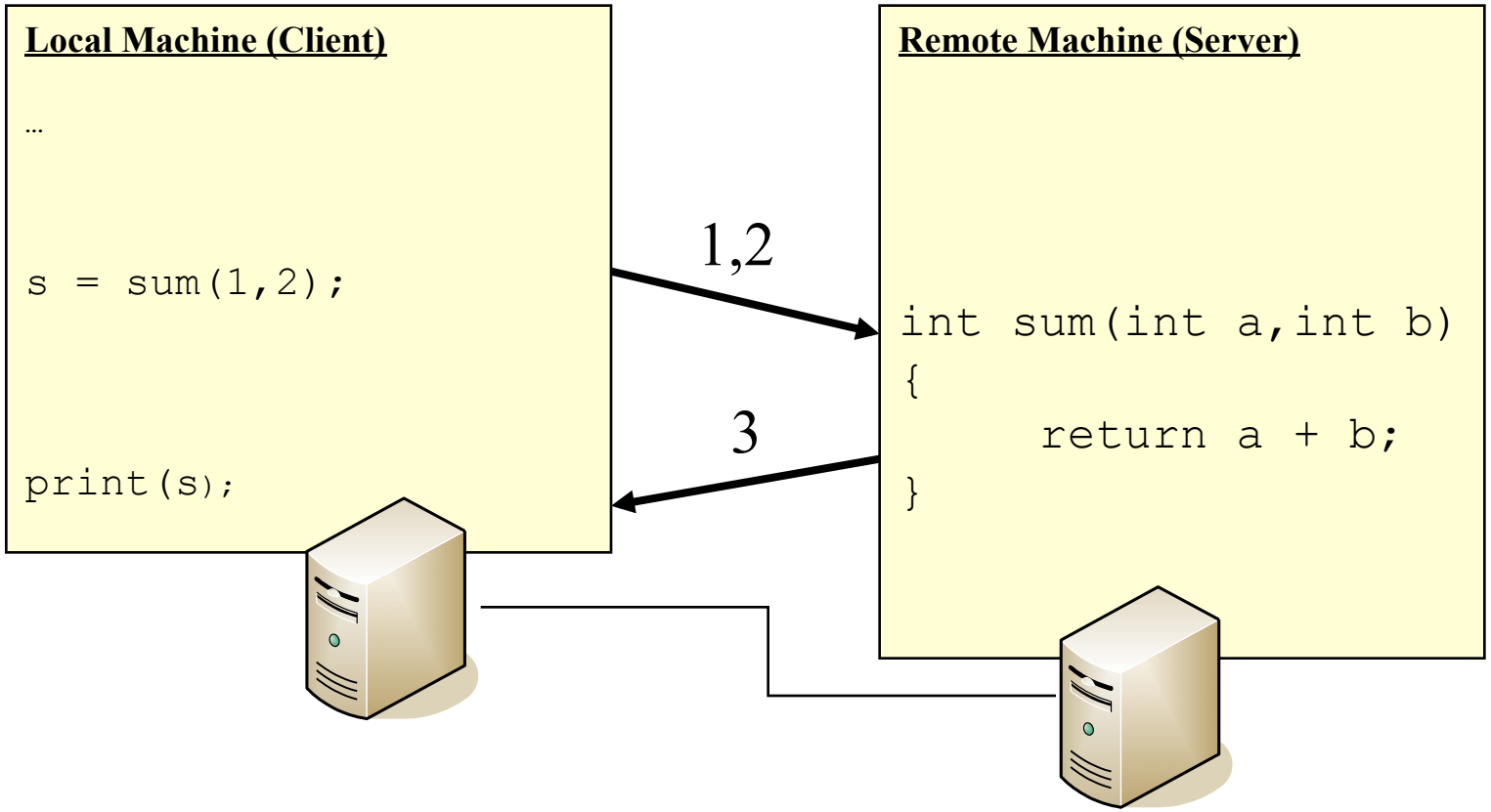
Traduction en cours

Distributed Programming

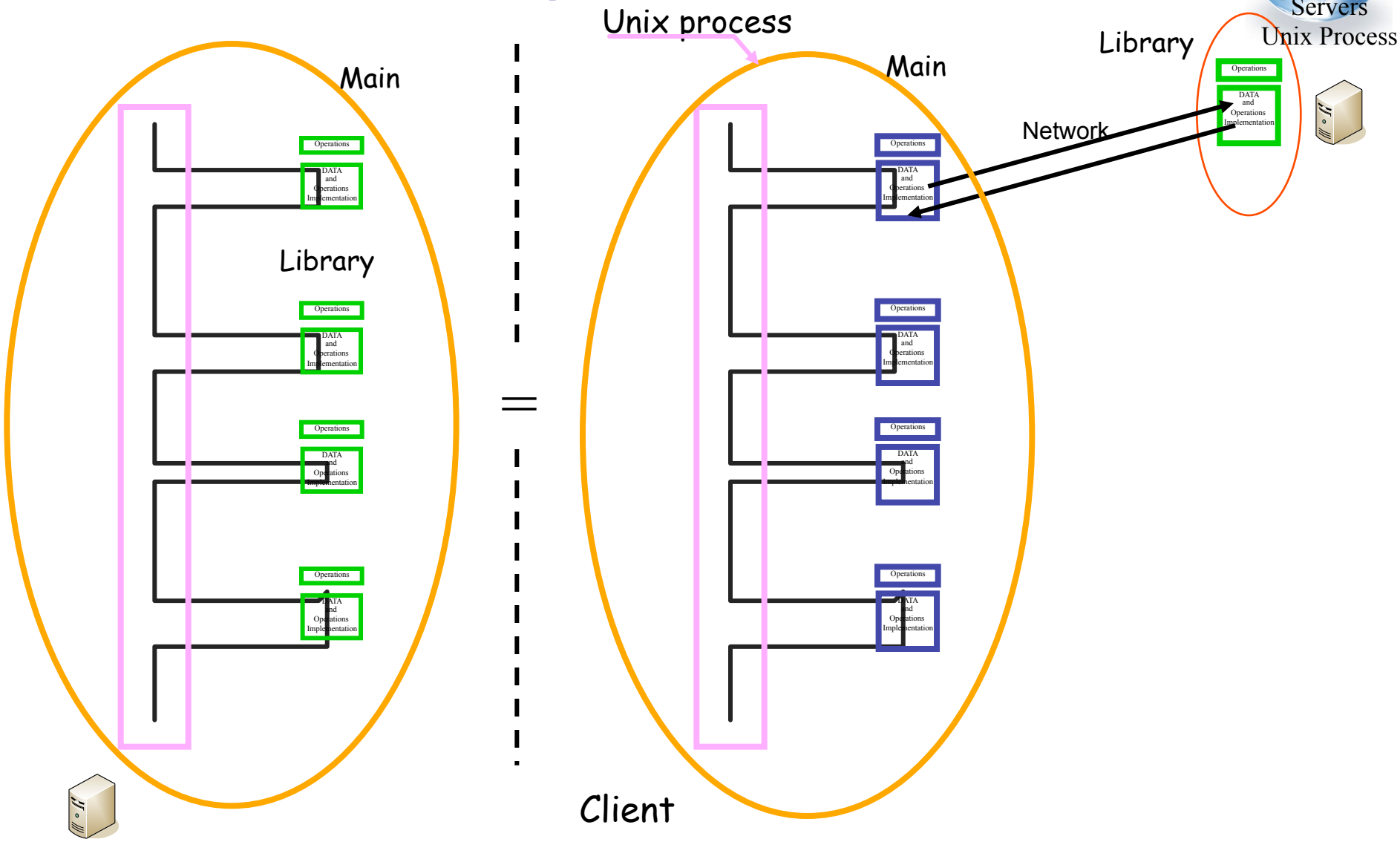


Remote Procedure Call (RPC) paradigm

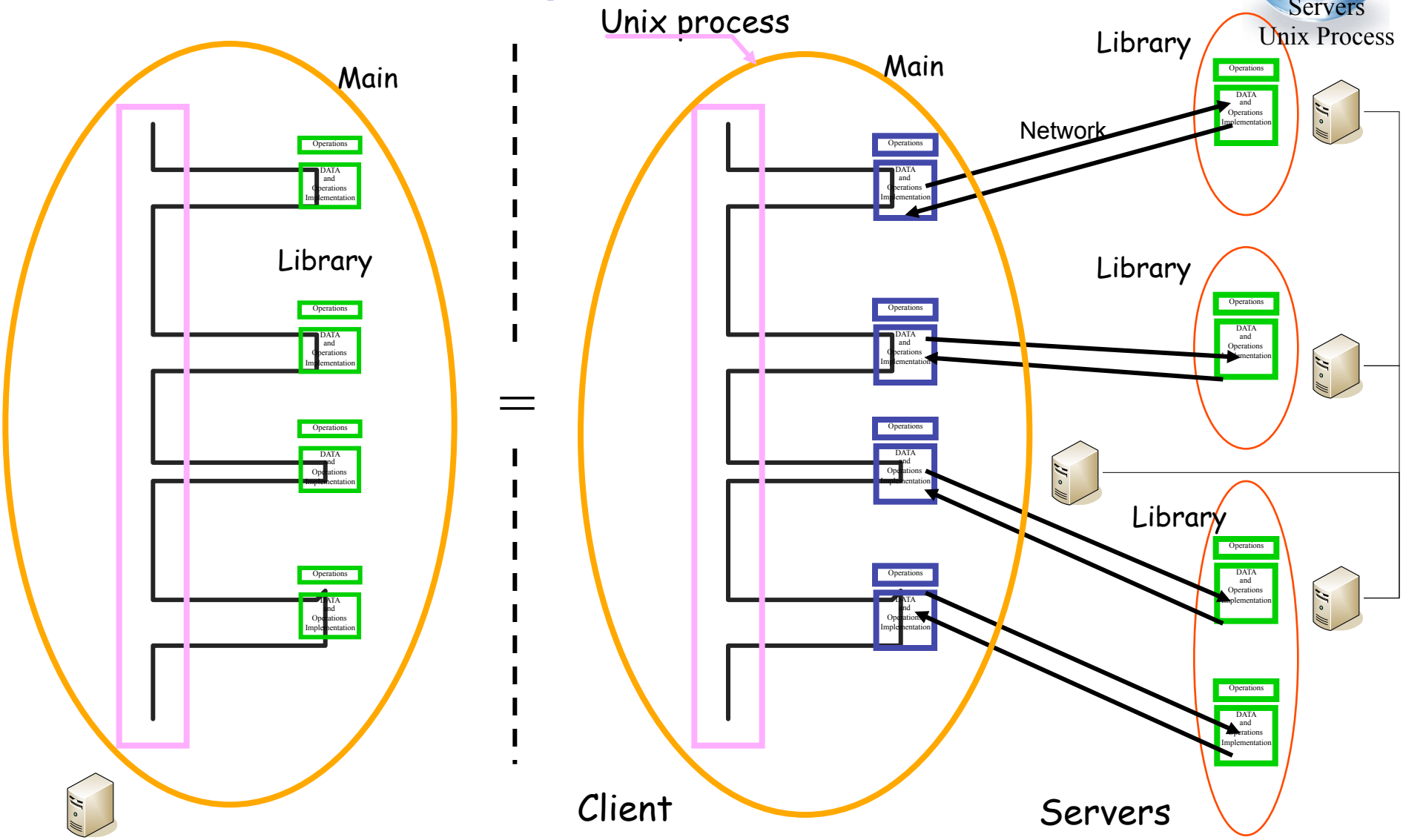
- RPC allowed programmer to execute remote function using the same semantics as local functions calls.



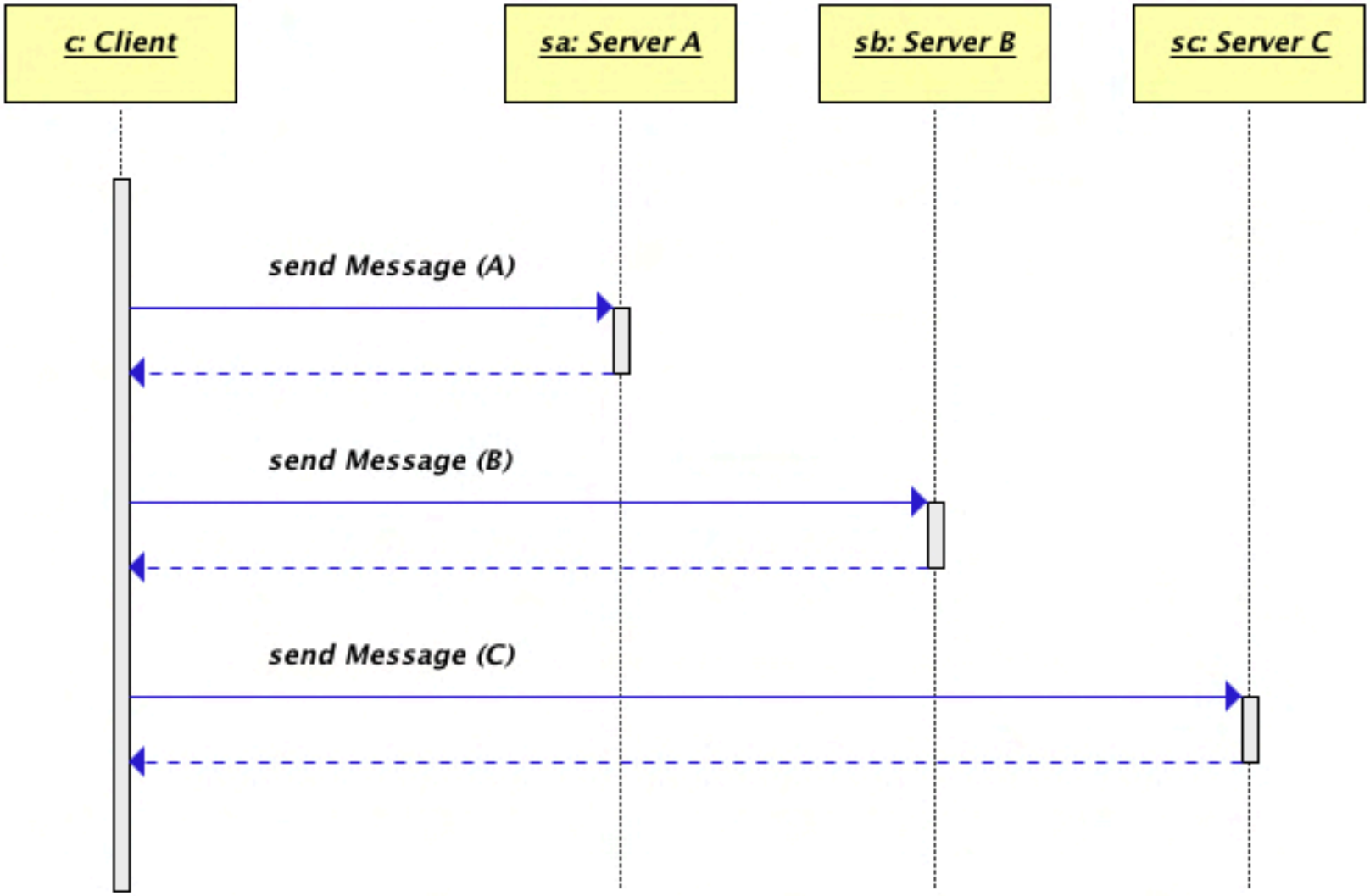
RPC Distributed System



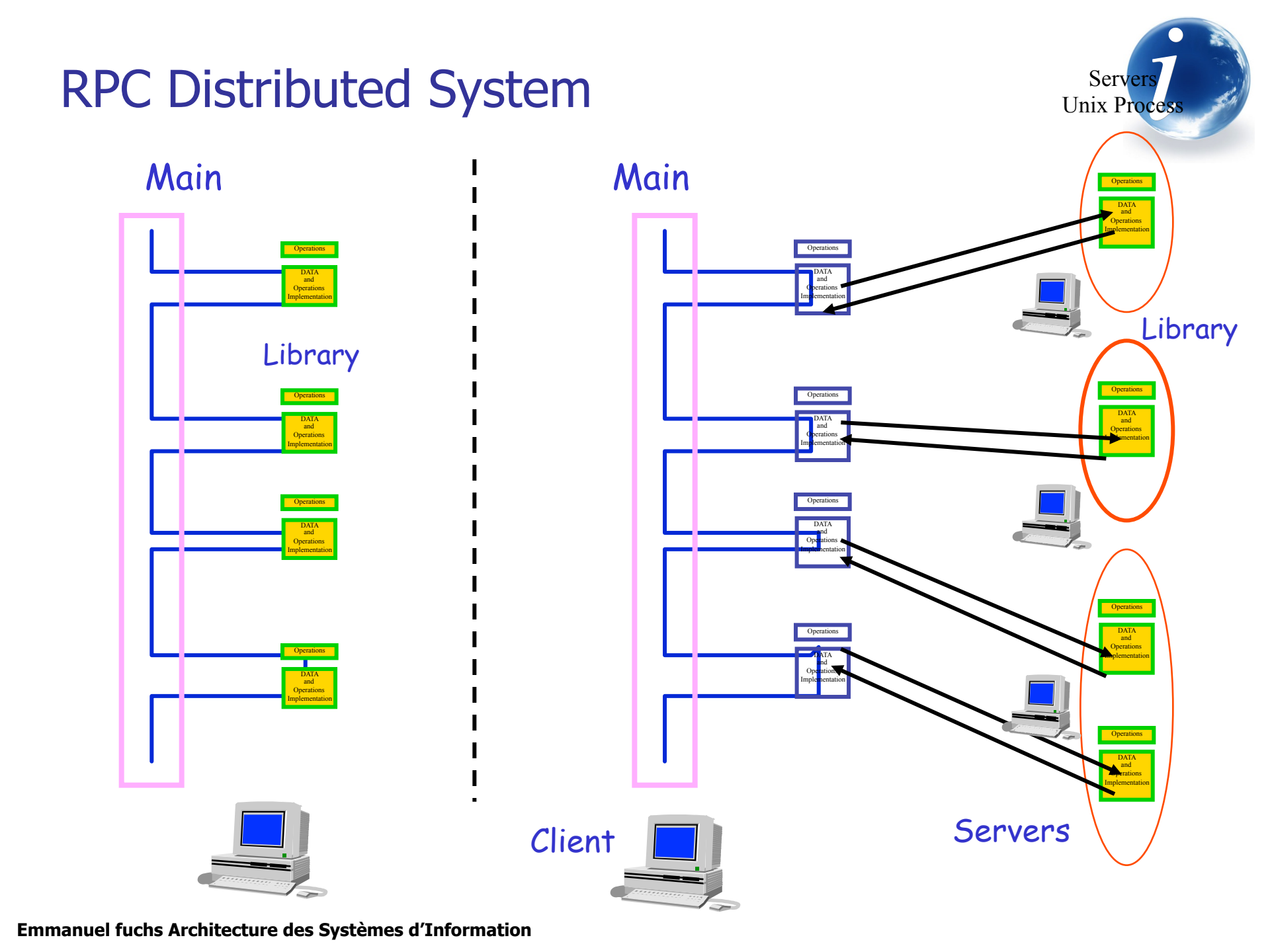
RPC Distributed System



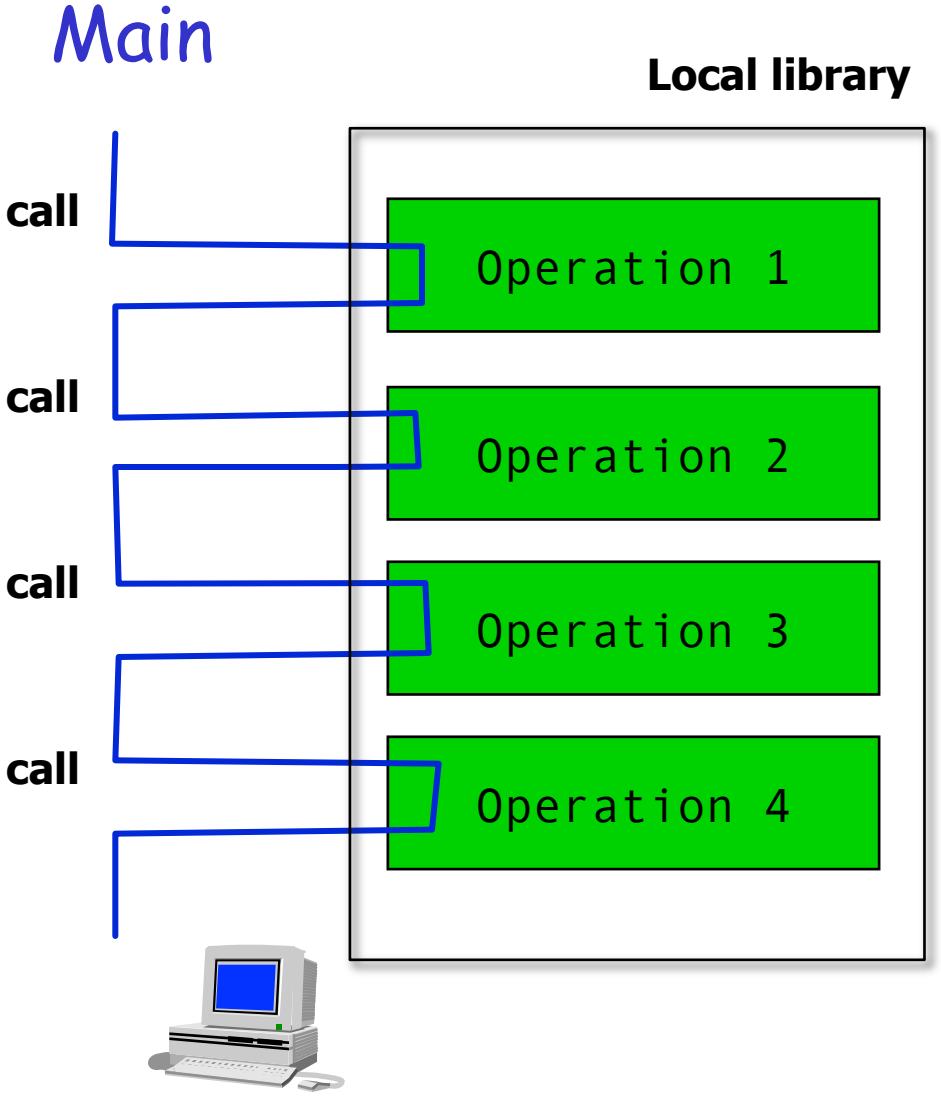
Distributed Processing



RPC Distributed System



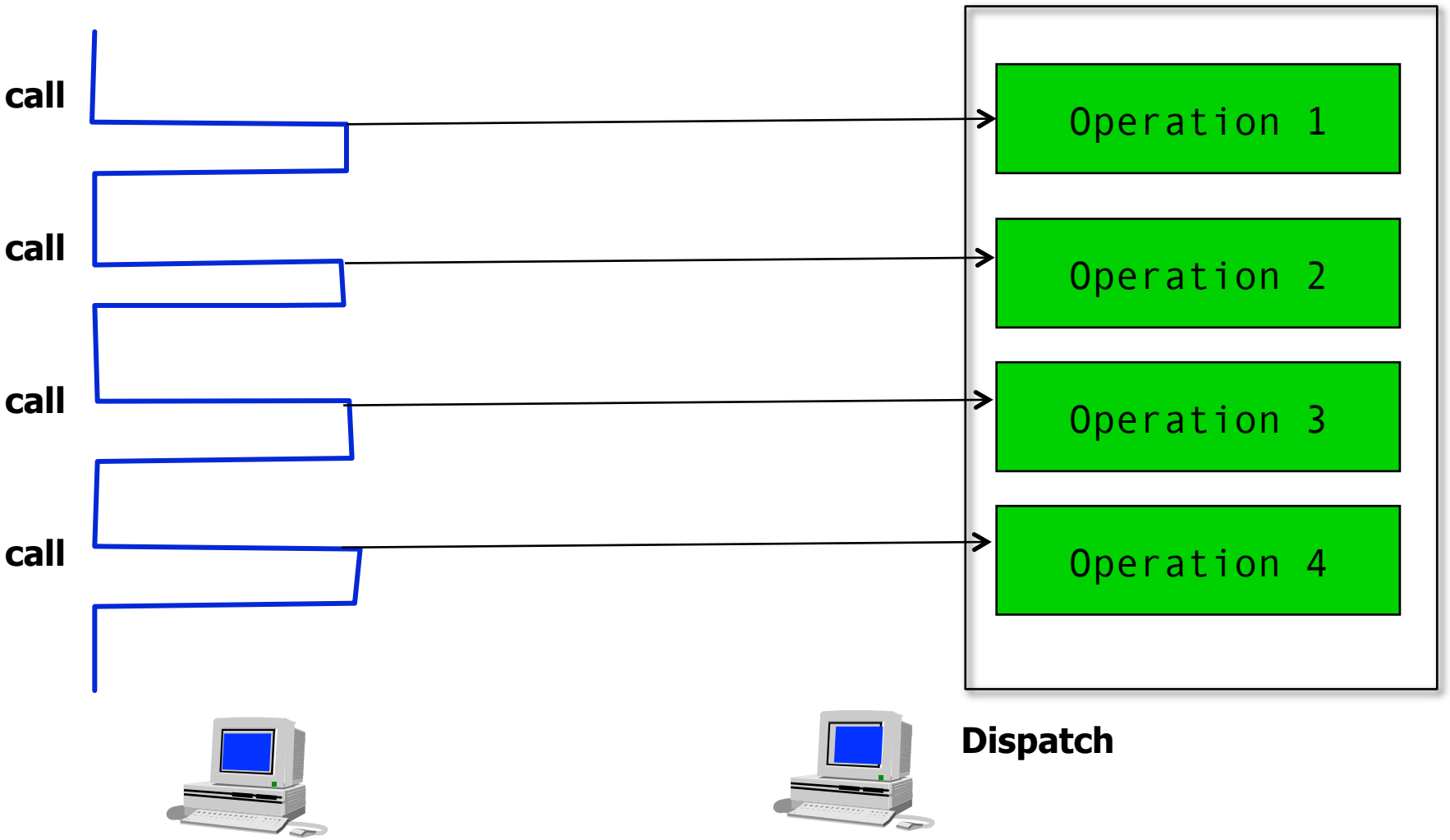
Local Library



Remote Libray

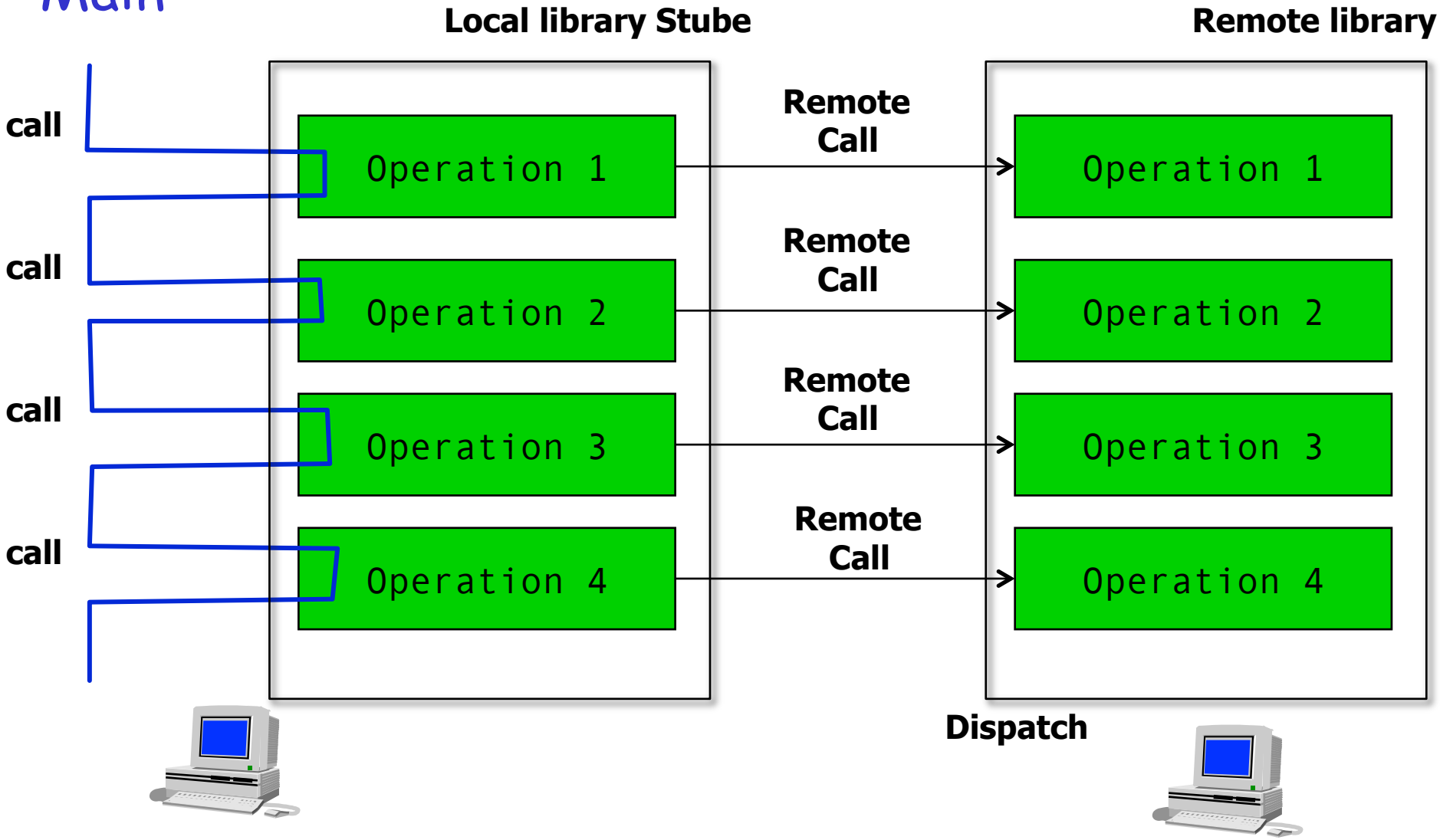
Server

Main Client

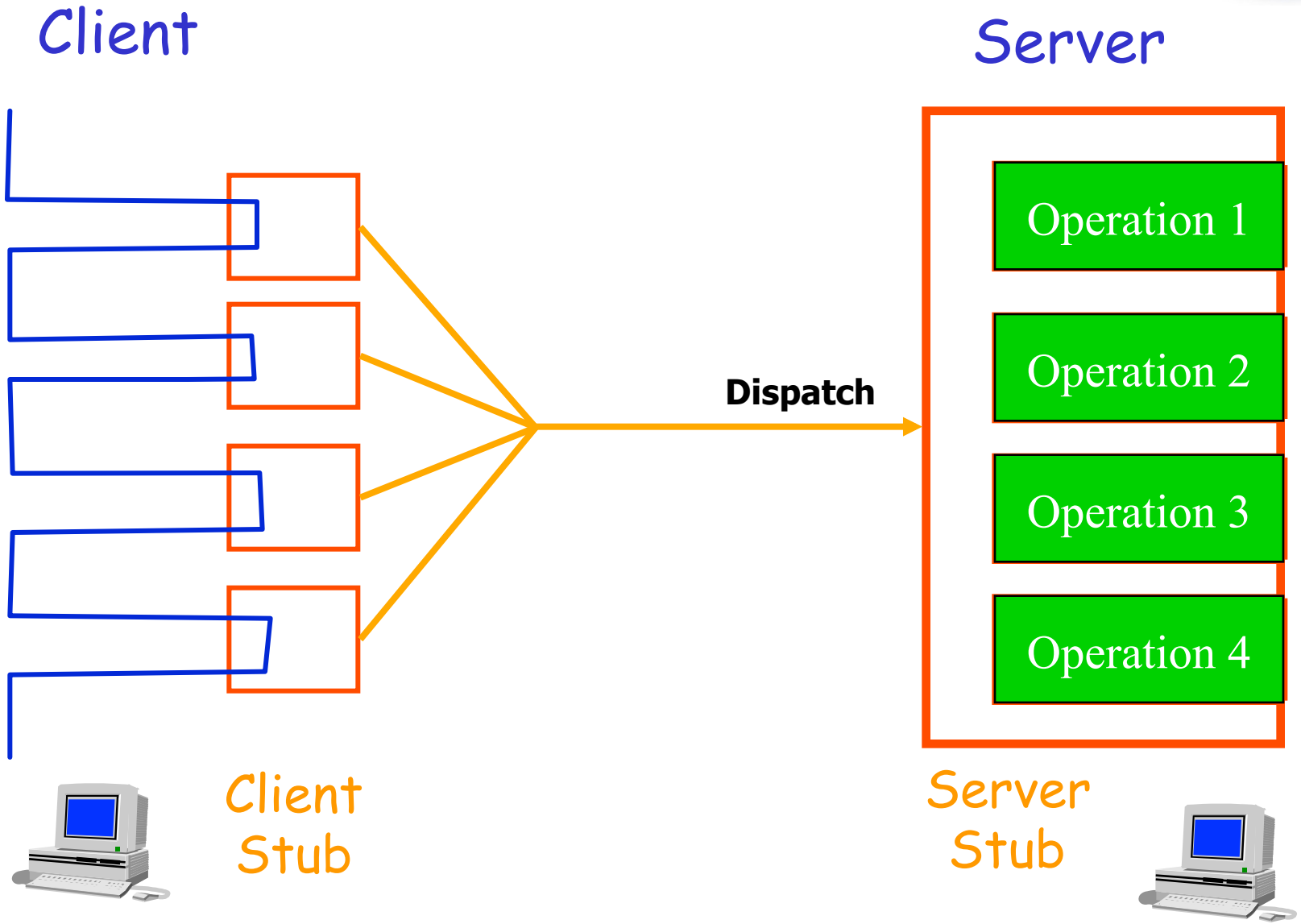


Remote Libray

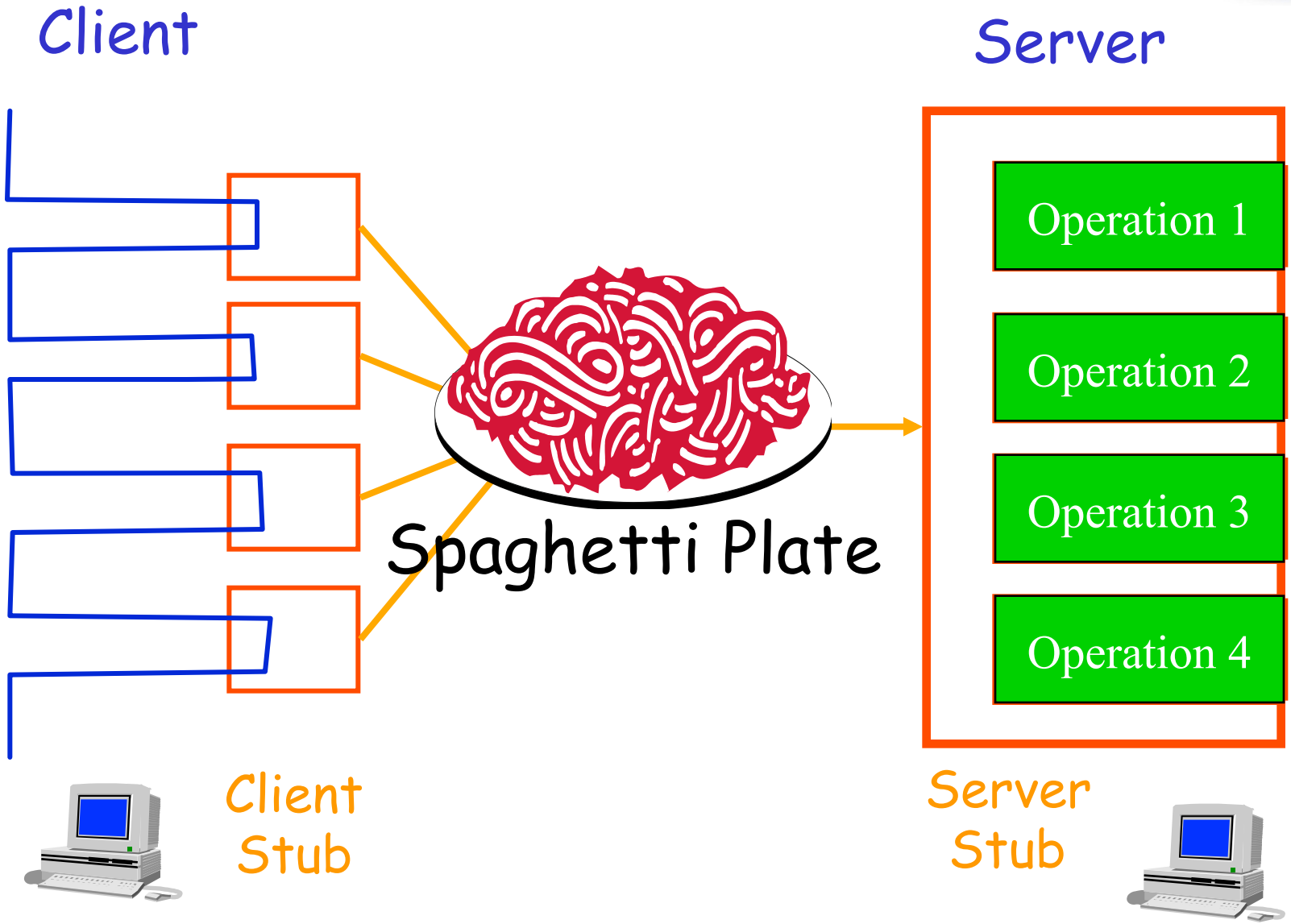
Main



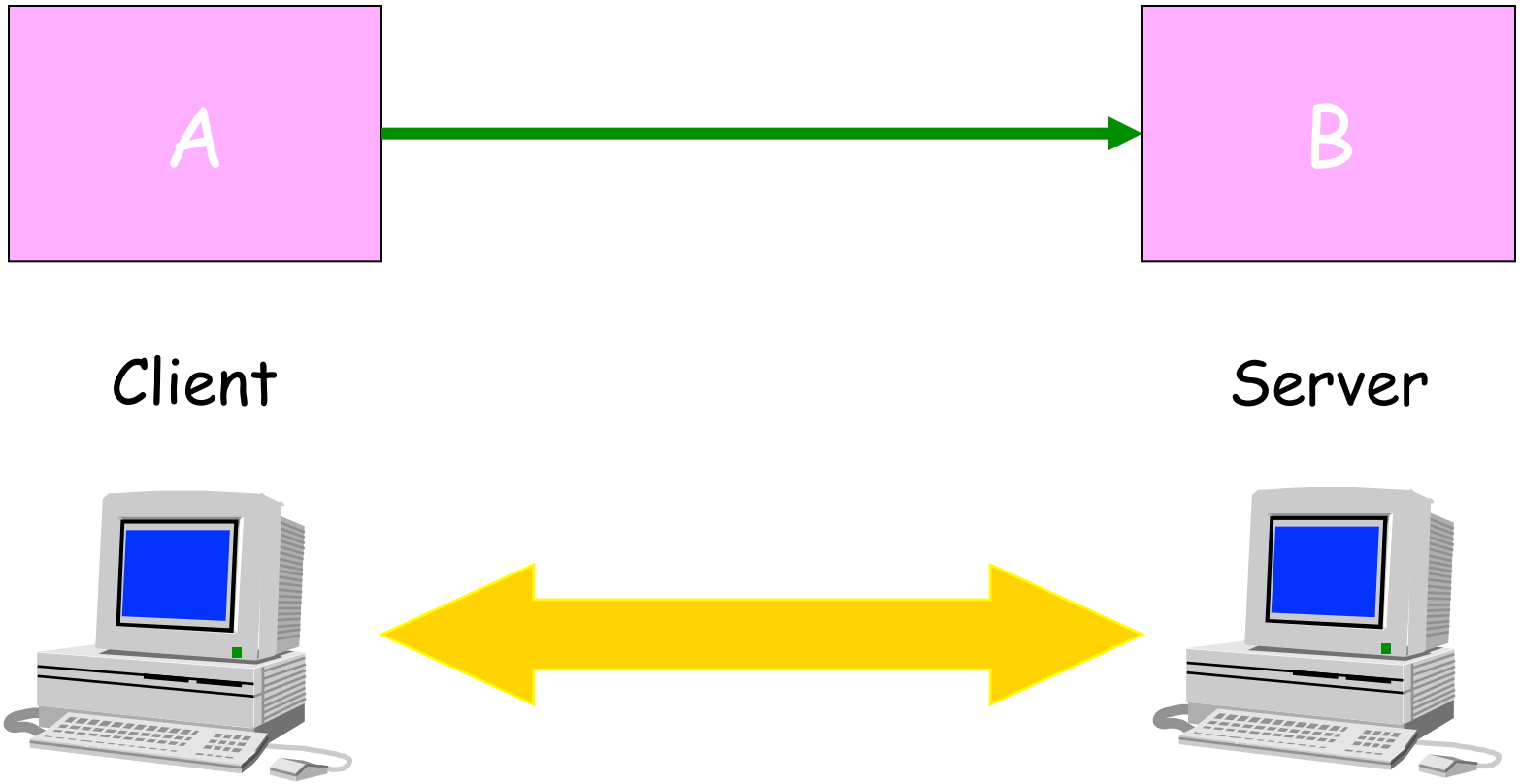
RPC Stub


Client
Server
Operation 1
Operation 2
Operation 3
Operation 4
Dispatch
Client
Stub
Server
Stub

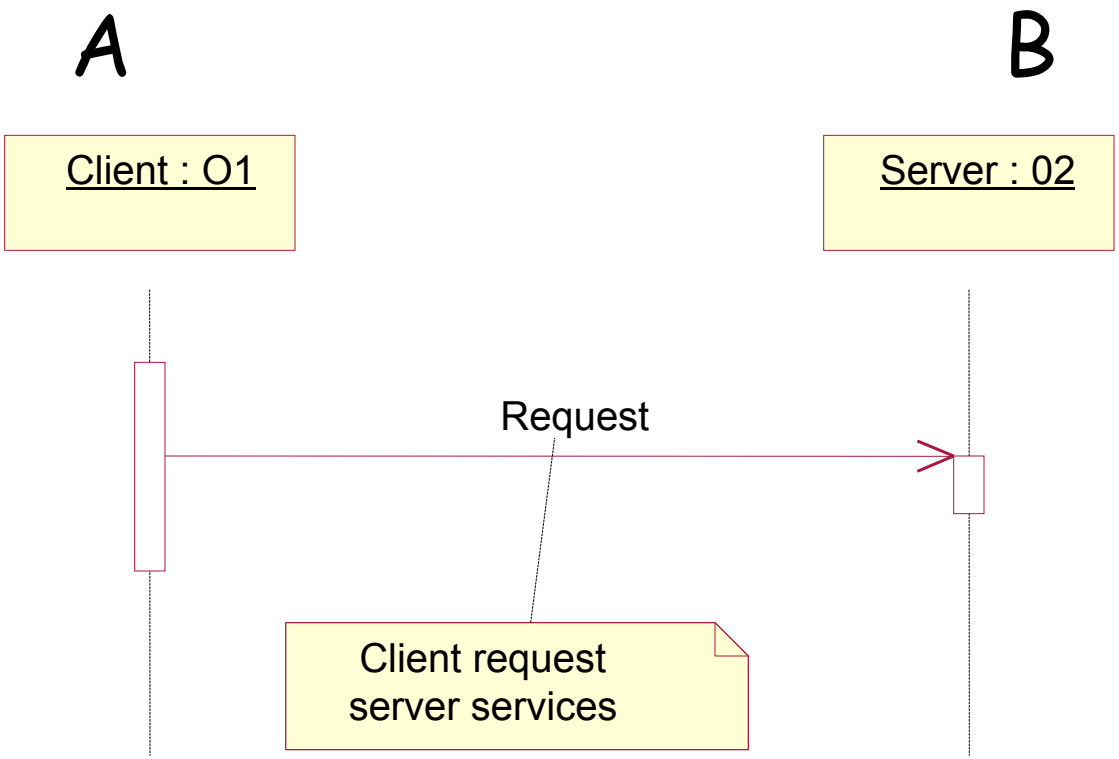
RPC Stub


Client
Server
Operation 1
Operation 2
Operation 3
Operation 4
Spaghetti Plate
Client Stub
Server Stub

Remote Procedure Call



Client/Server : procedural invocation



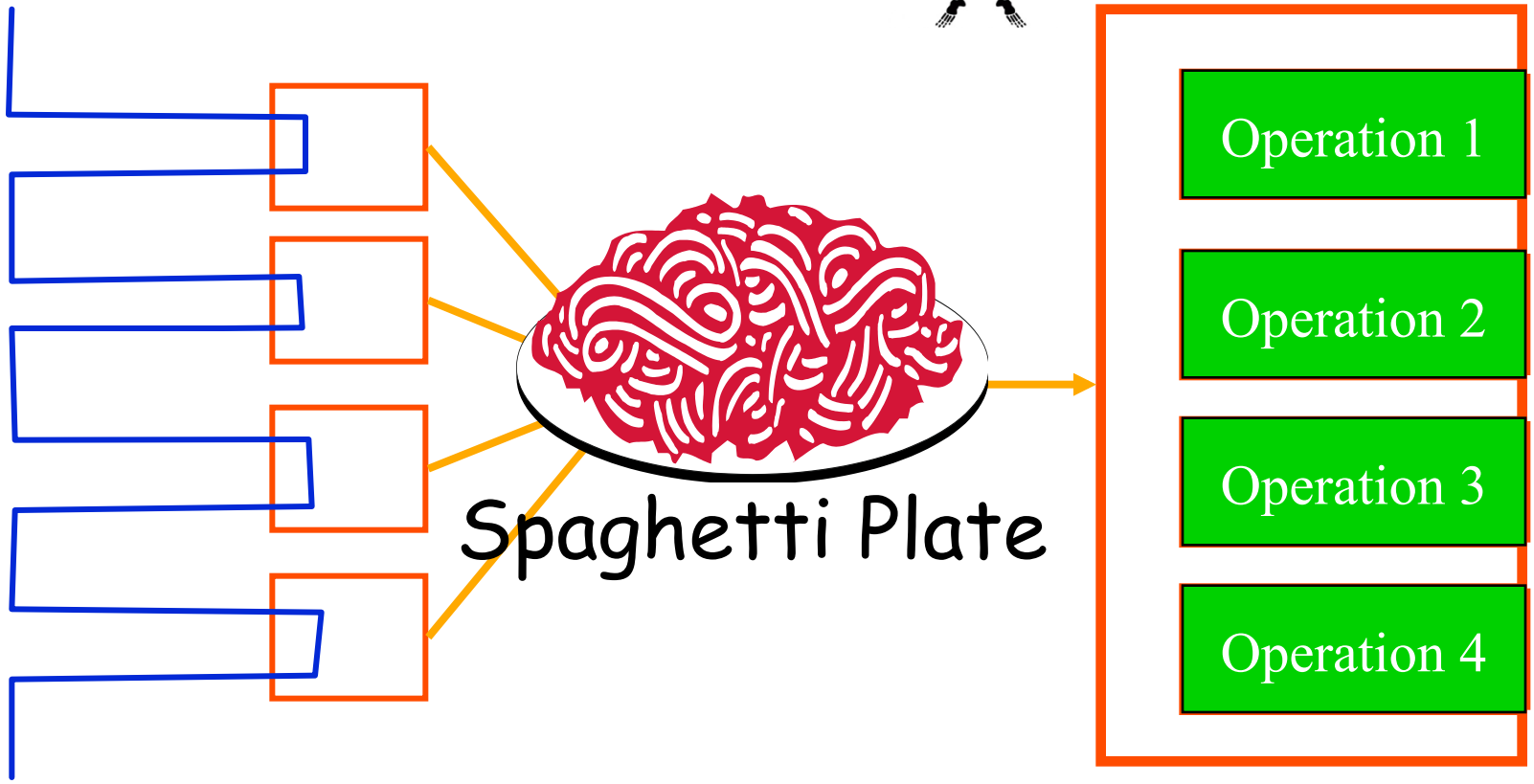
Client is active (actor) initiating **request** to server

Server is passive waiting for client **request**

RPC Stub

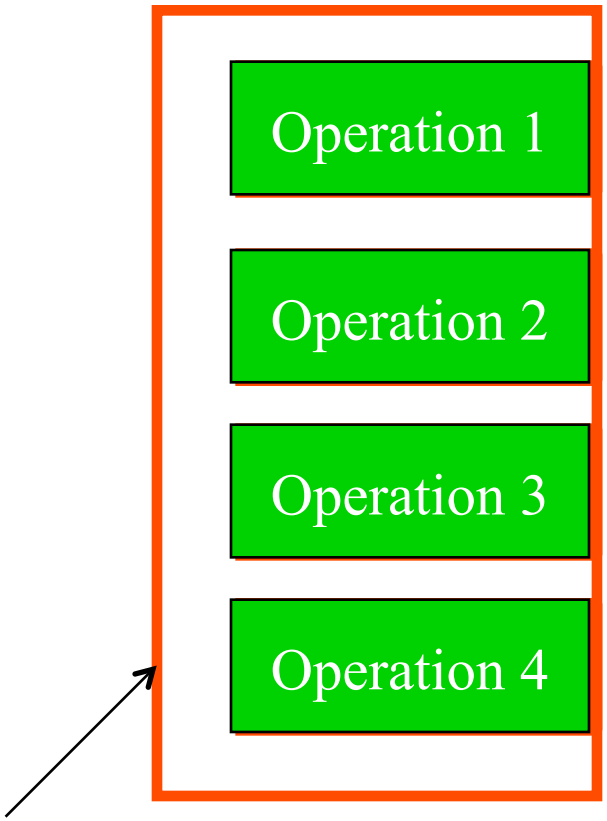
Client

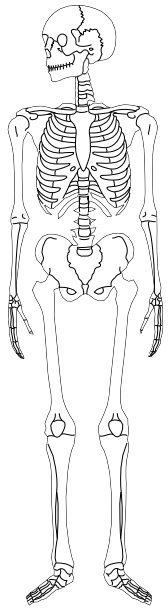
Server



RPC Server Framework : Skeleton

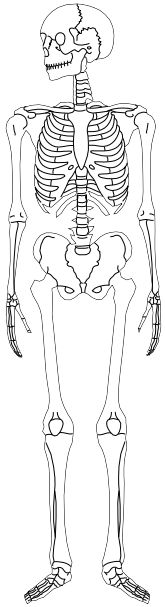
Dispatch





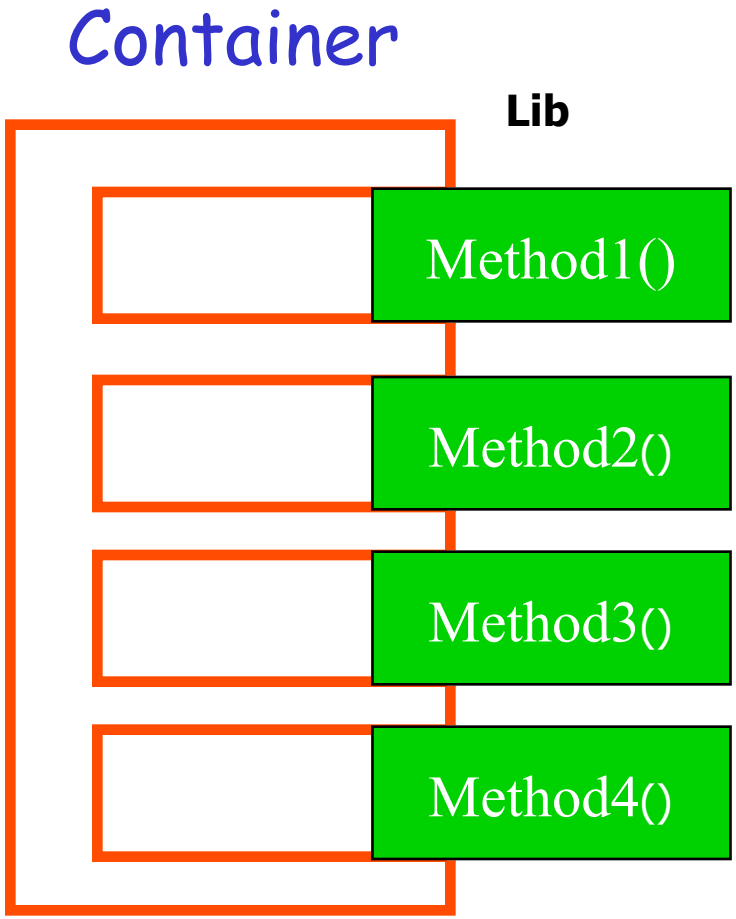
Container

Server Side Calls back

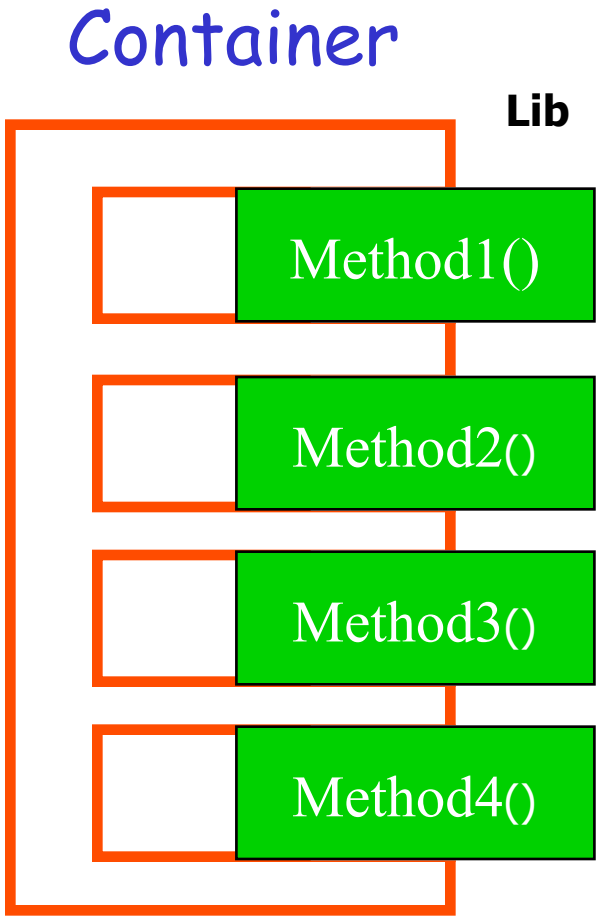


We will call you back

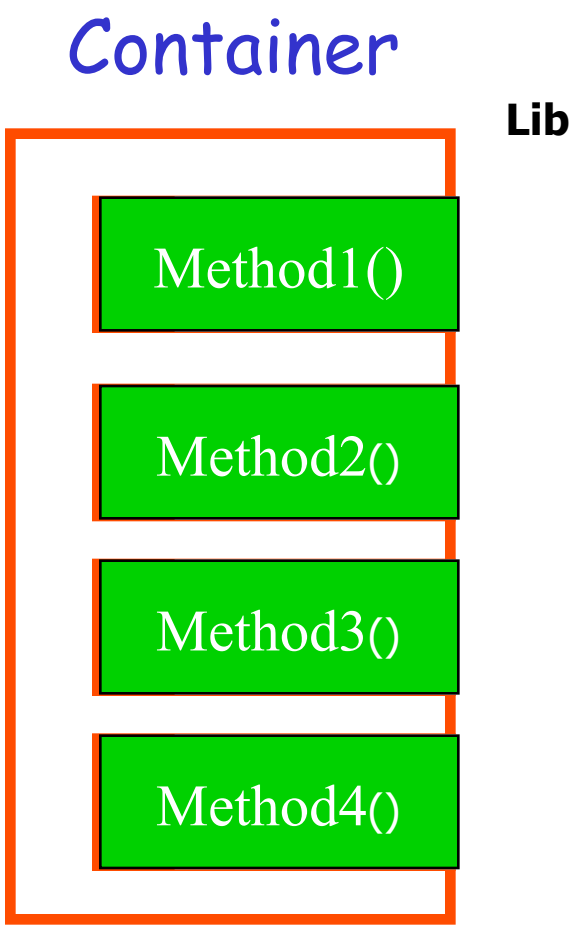
Call back (Hollywood pattern)



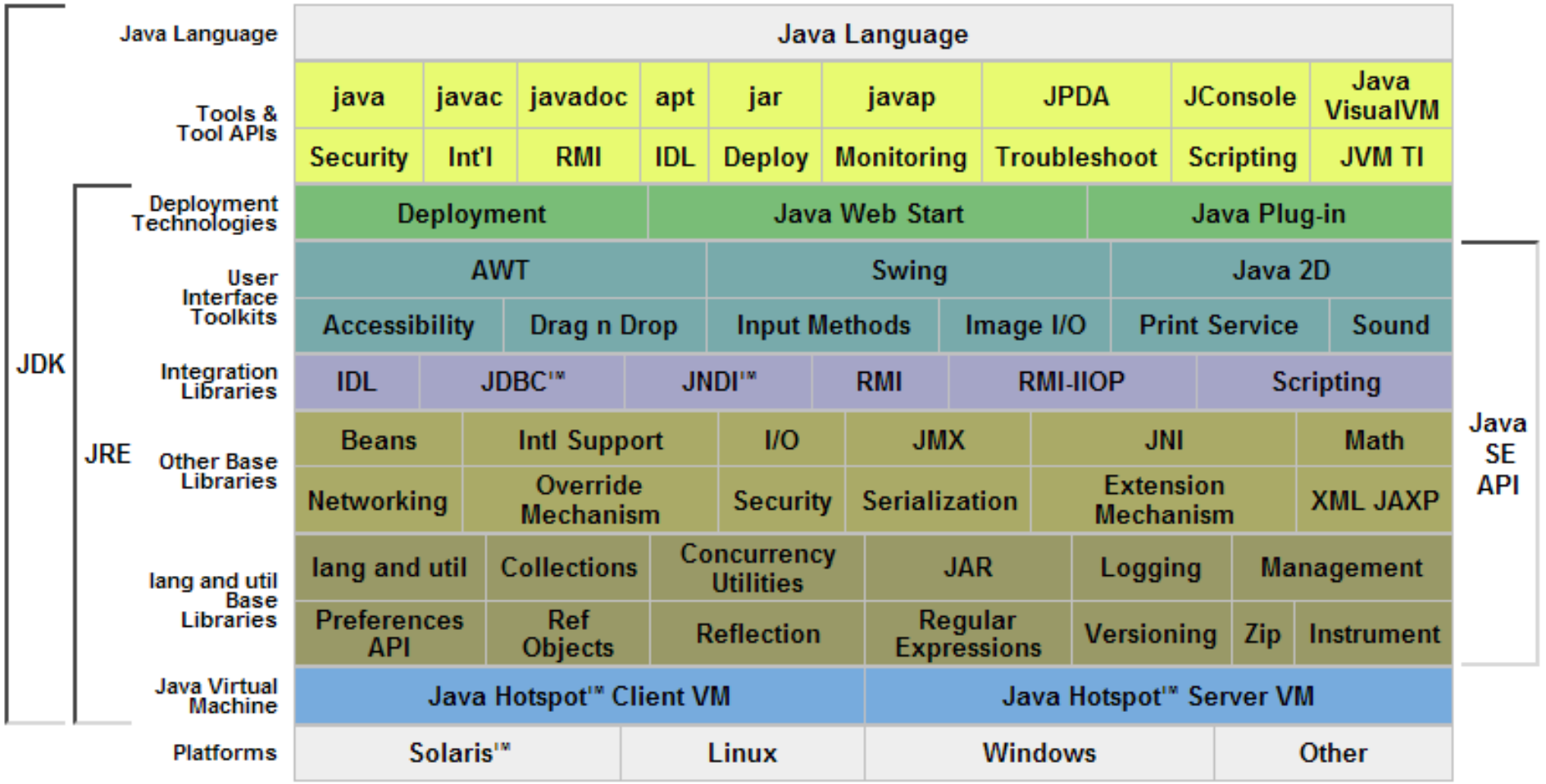
Call back (Hollywood pattern)



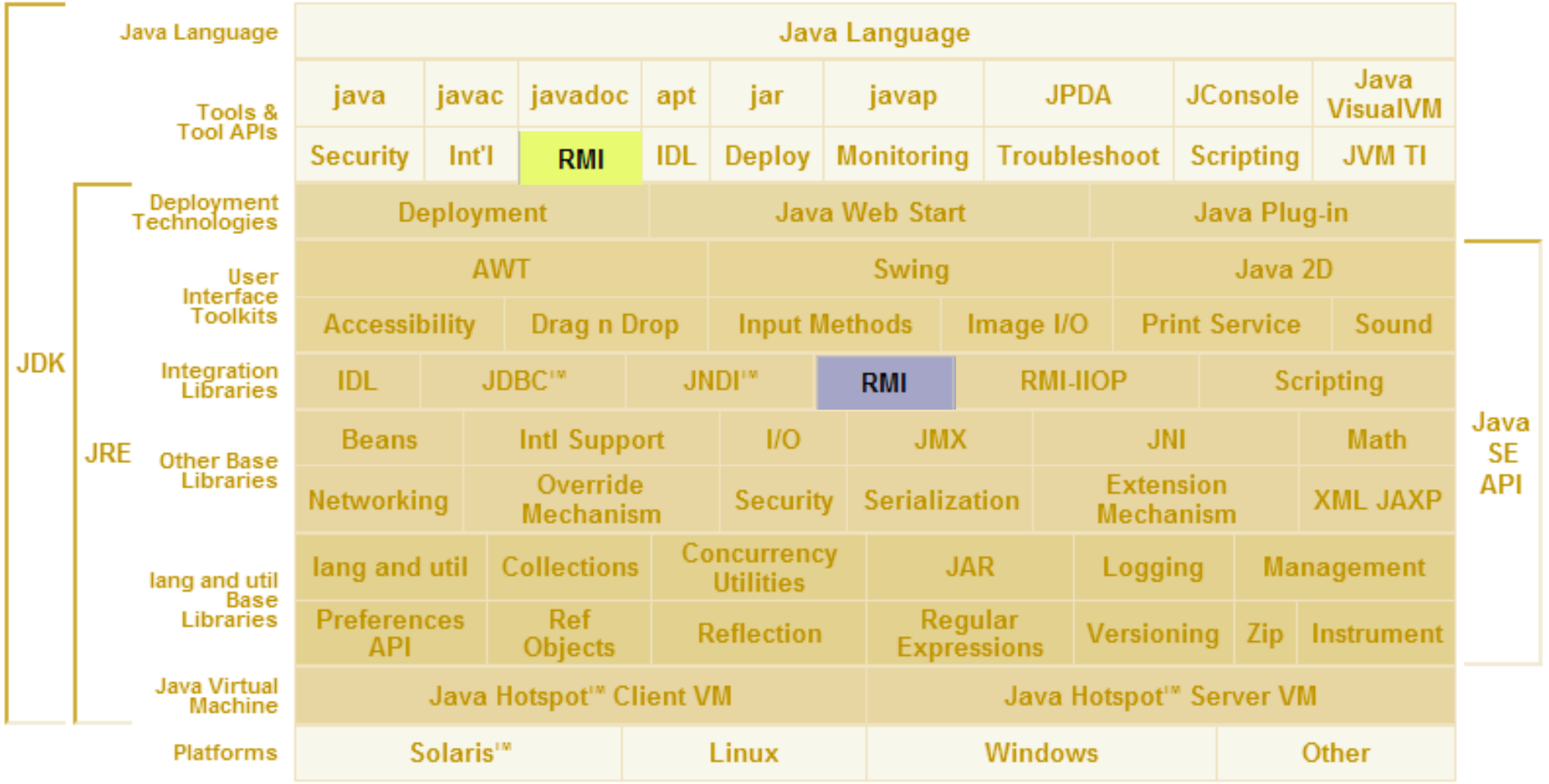
Call back (Hollywood pattern)



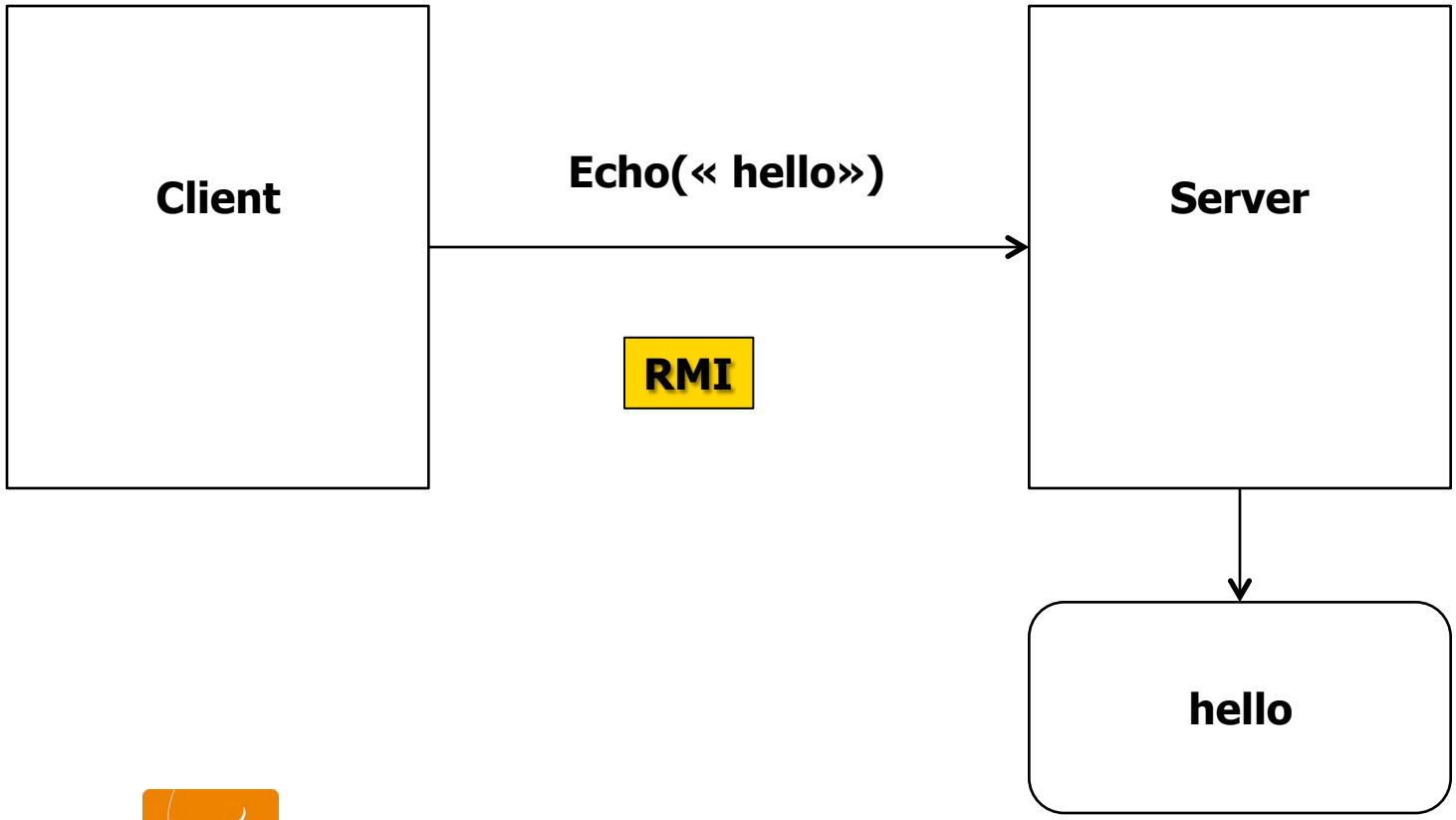
Java Technologies Layered View



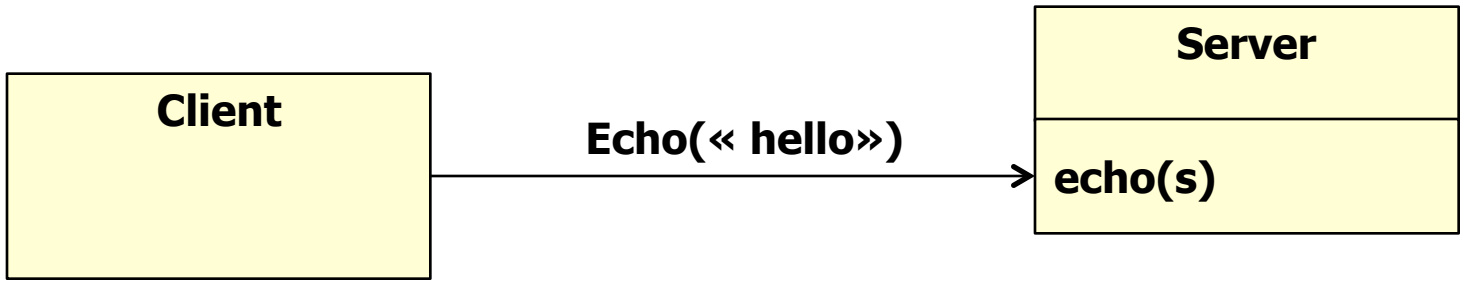
Java Technologies Layered View

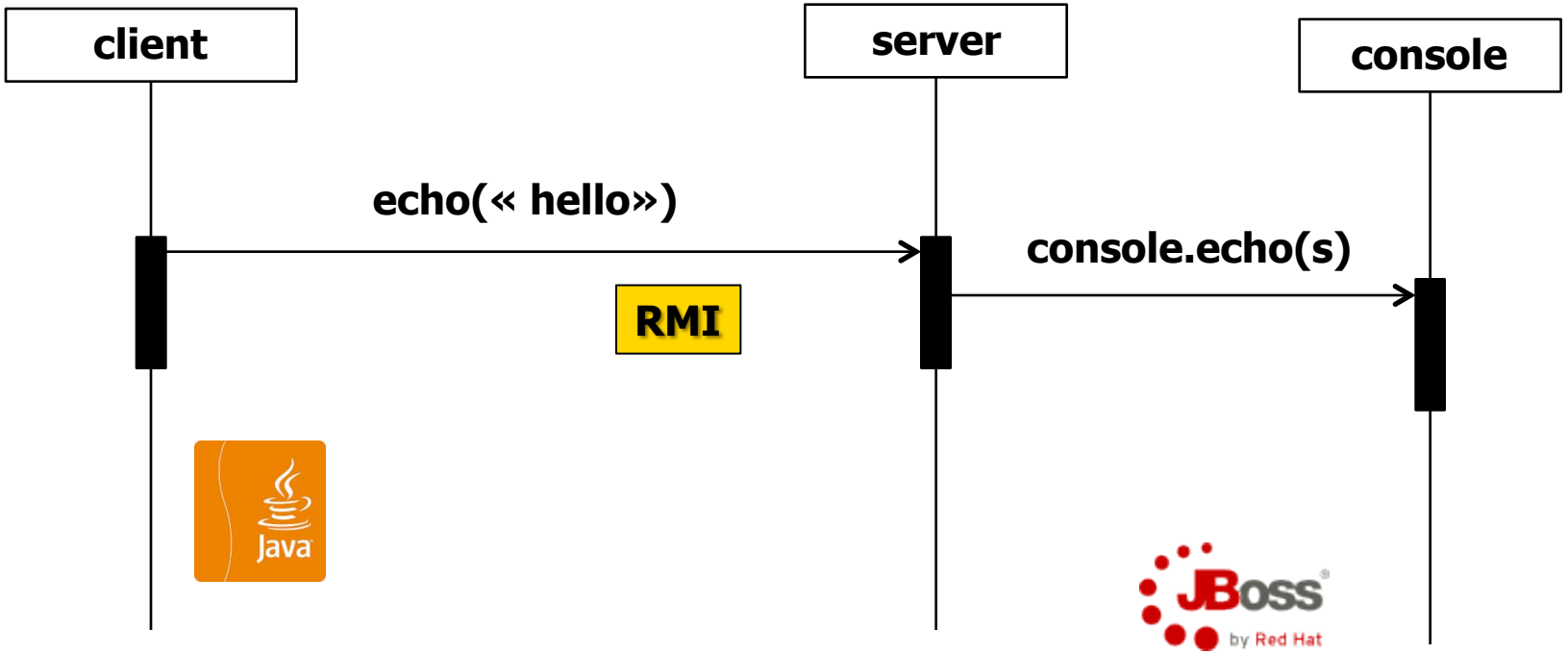


Client Server

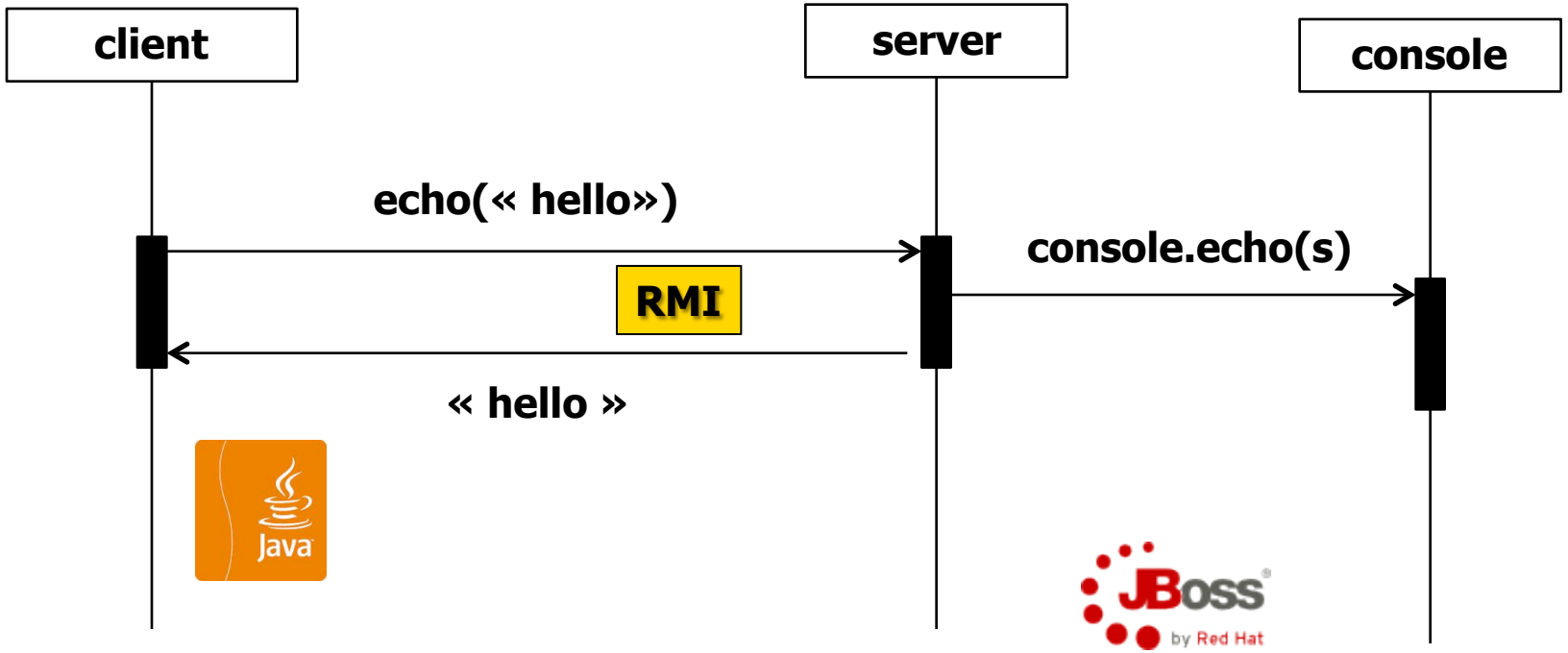


Client Server

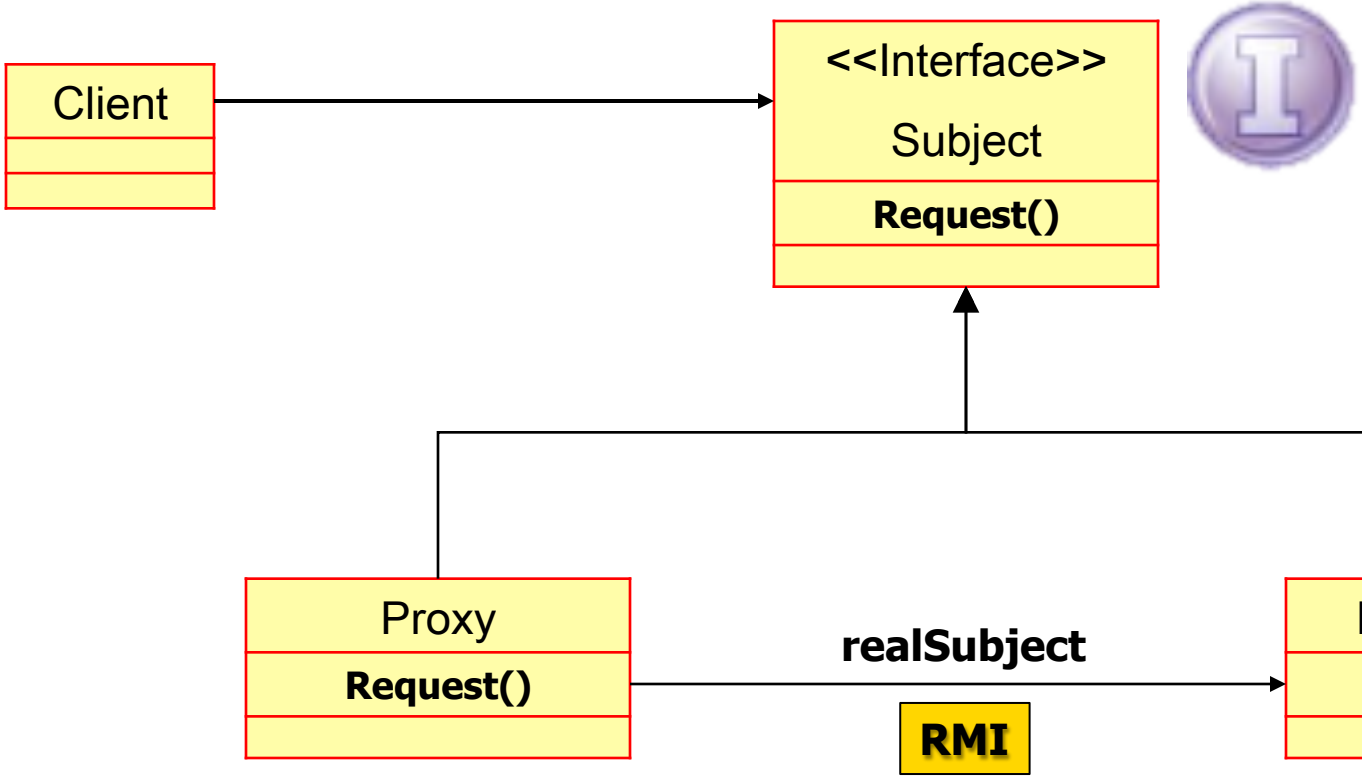


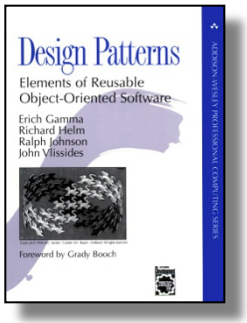


Client Server

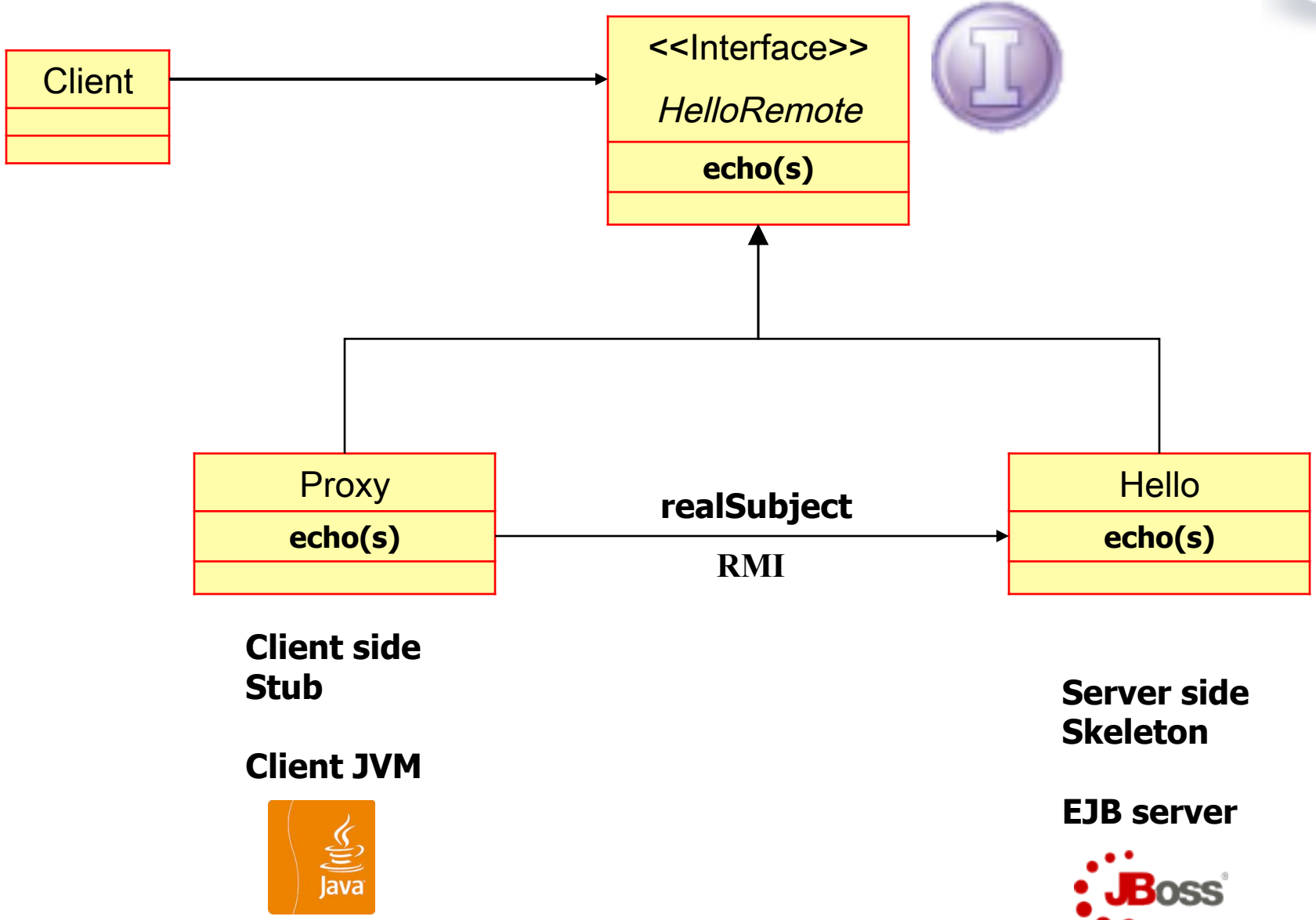


Proxy (UML)

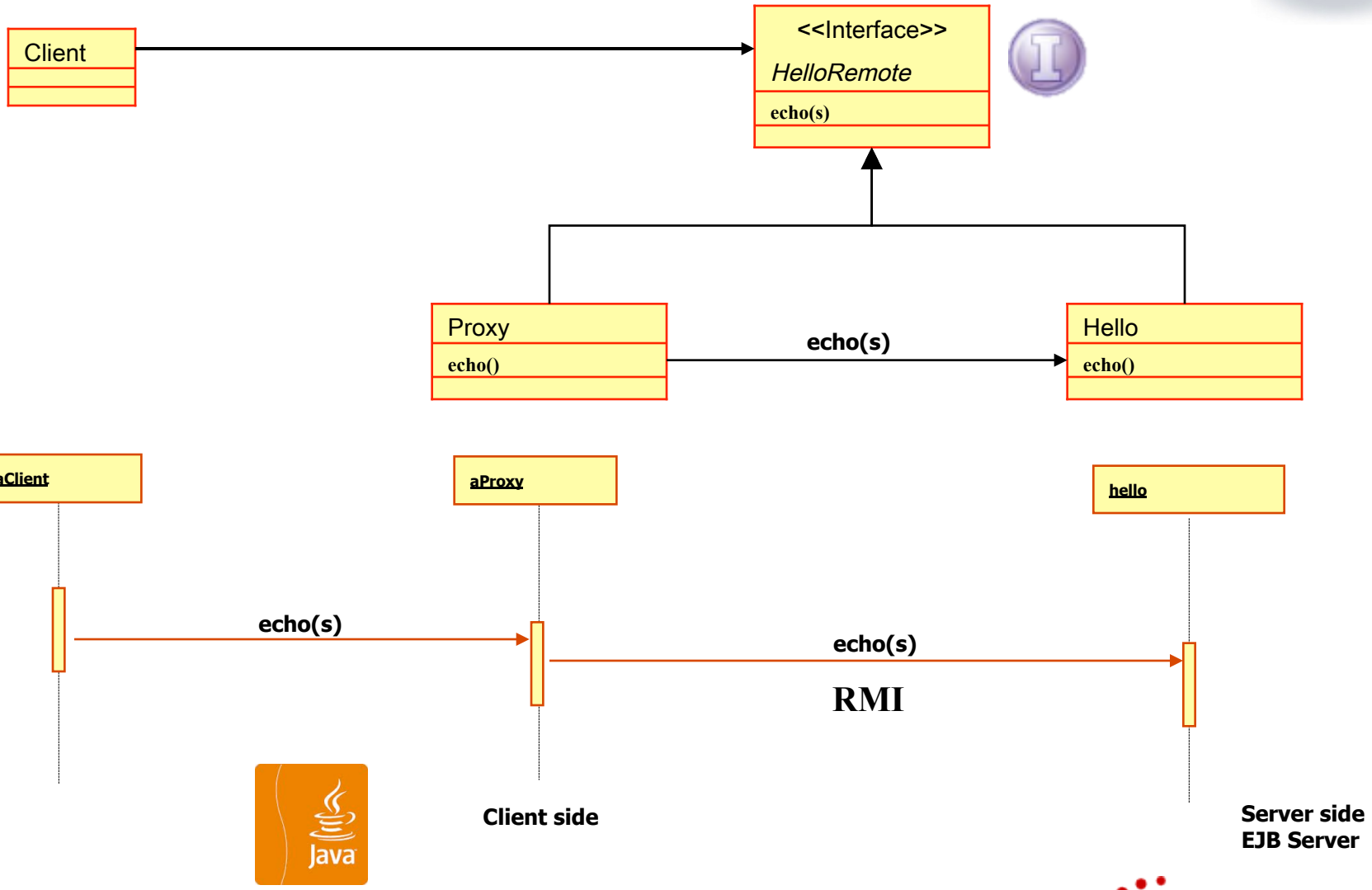

Client
<<Interface>>
Subject
Request()
Proxy
Request()
realSubject
RMI
RealSubject
Request()
client
Bean
instance


Design Patterns
Elements of Reusable
Object-Oriented Software
Erich Gamma
Richard Helm
Ralph Johnson
John Vlissides
Foreword by Grady Booch

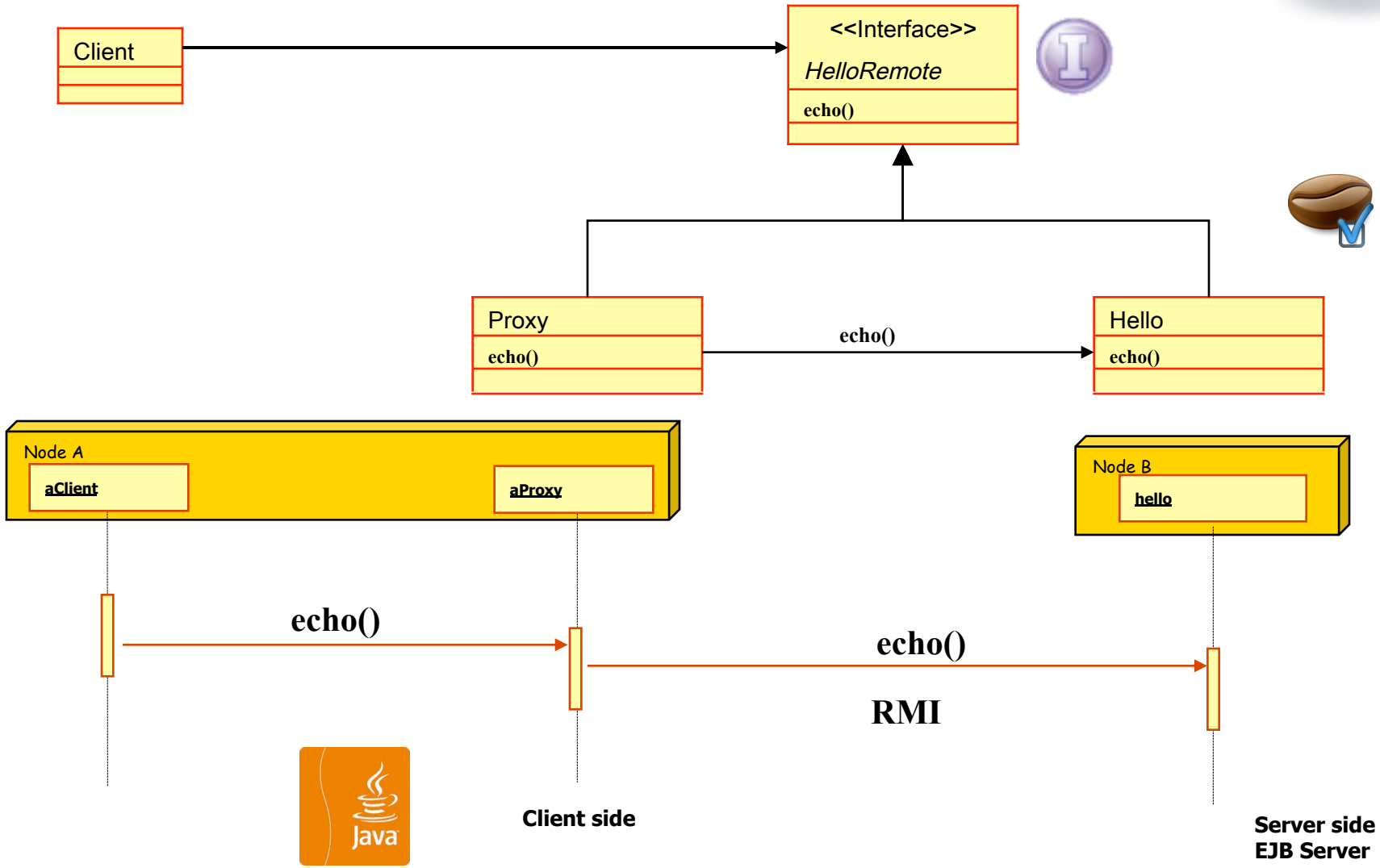
Hello (UML)


Client
<<Interface>>
HelloRemote
echo(s)
Proxy
echo(s)
realSubject
RMI
Hello
echo(s)
Client side
Stub
Client JVM
Server side
Skeleton
EJB server

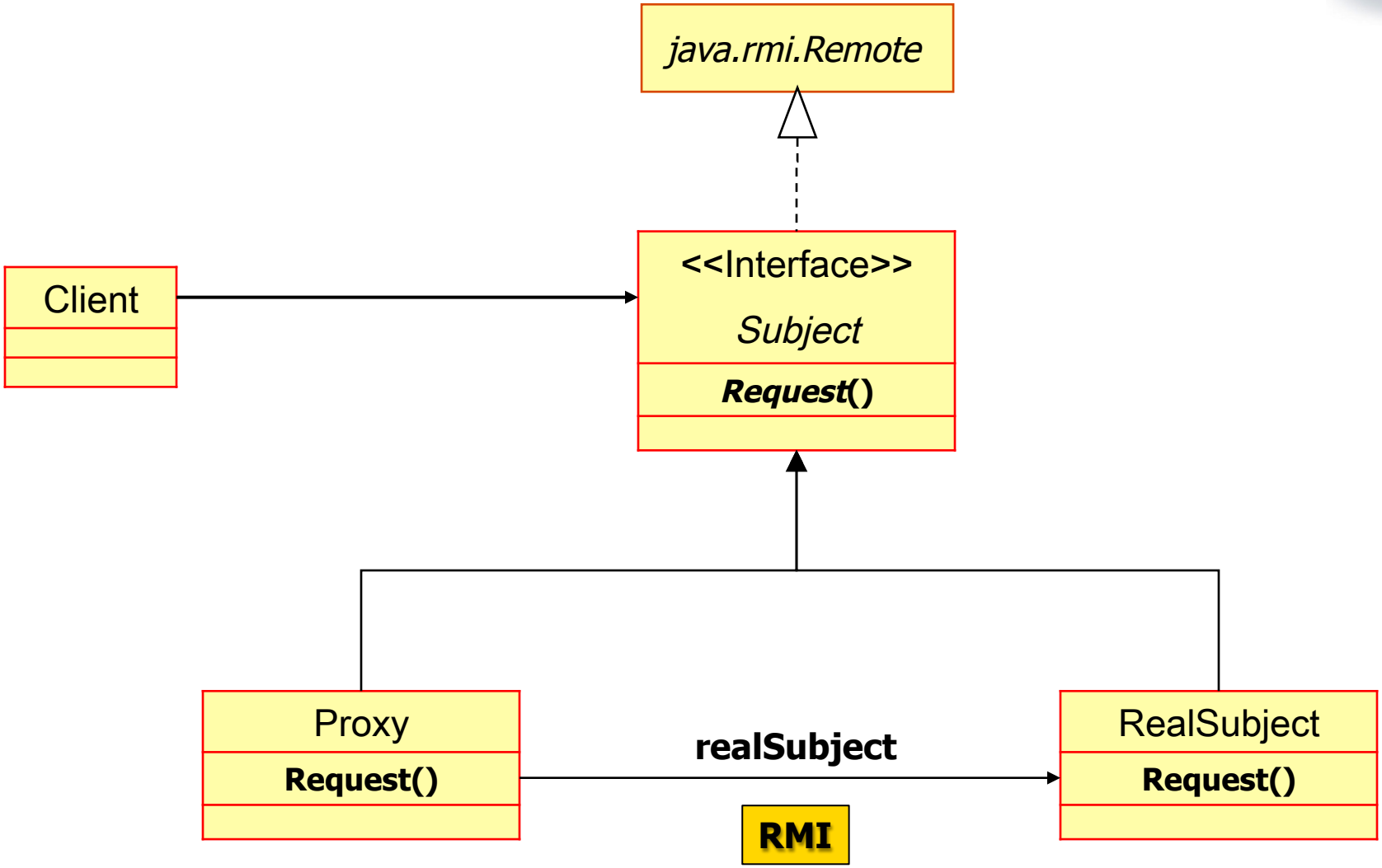
Hello (UML)


Client
<<Interface>>
HelloRemote
echo(s)
Proxy
echo()
echo(s)
Hello
echo()
aClient
aProxy
hello
echo(s)
echo(s)
RMI
Java
Client side
Server side
EJB Server

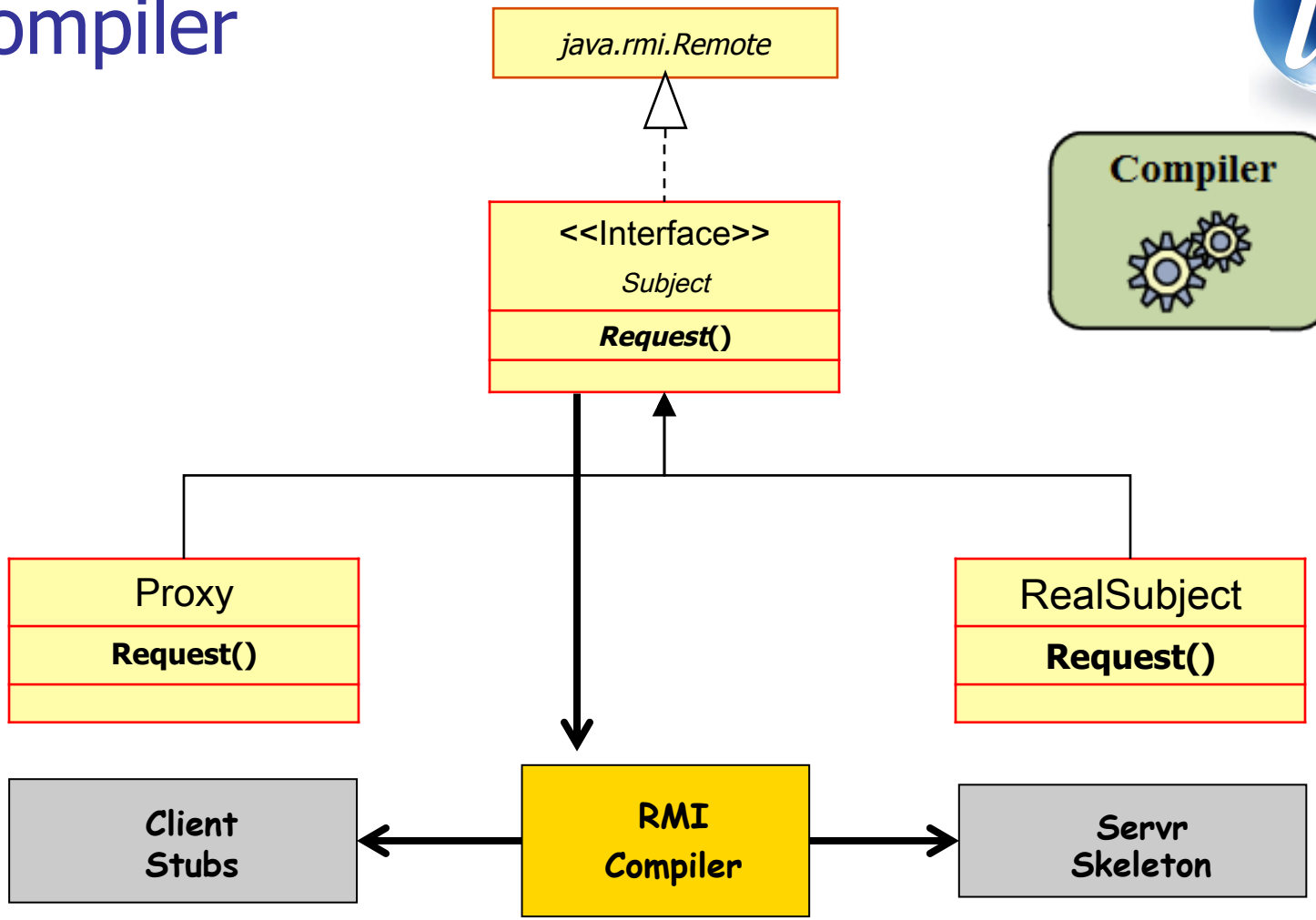
Hello (UML)


Client
<<Interface>>
HelloRemote
echo()
Proxy
echo()
echo()
Hello
echo()
Node A
aClient
aProxy
Node B
hello
echo()
echo()
RMI
Java
Client side
Server side
EJB Server

RMI


java.rmi.Remote
Client
<<Interface>>
Subject
Request()
Proxy
Request()
realSubject
RMI
RealSubject
Request()

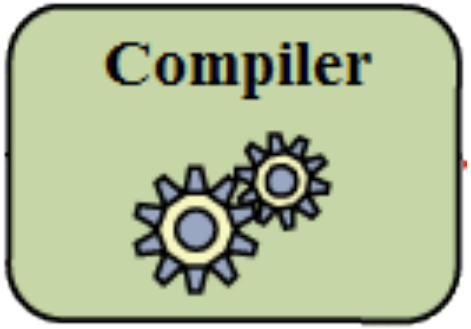
RMI compiler



RMI Compiler

- JDK1.4 or prior to 1.4
  - Manually generated stub and skeleton using RMIC.

- JDK 1.5 or later has internally implemented RMI compiler.



RMI Registry

- Registry Service:
  - A Registry Service is an application that provides the facility of registration & lookup of Remote stub.

- A Registry Service provides location transparency of Remote Object to RMI Client