

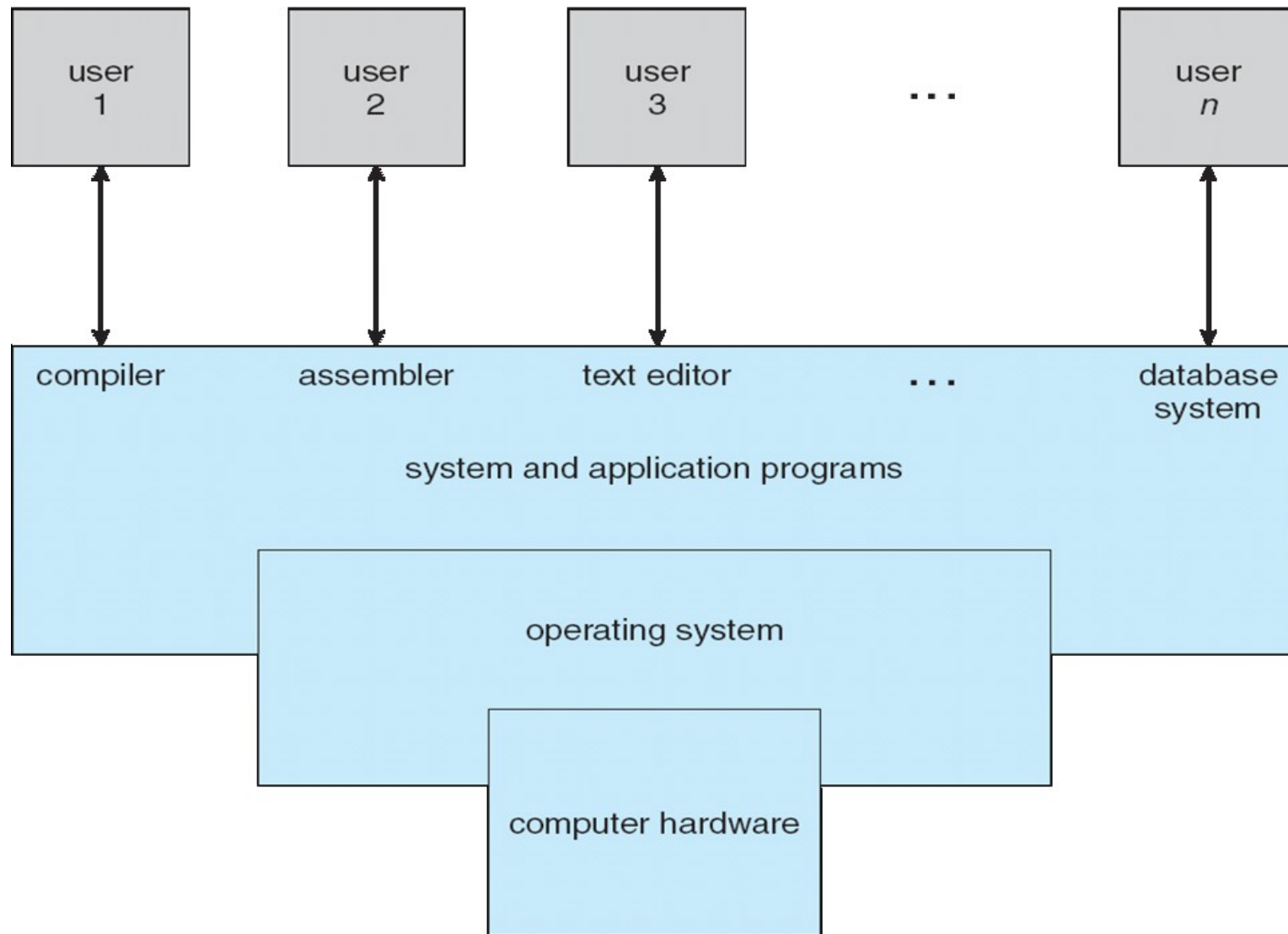
IT ARCHITECTURE

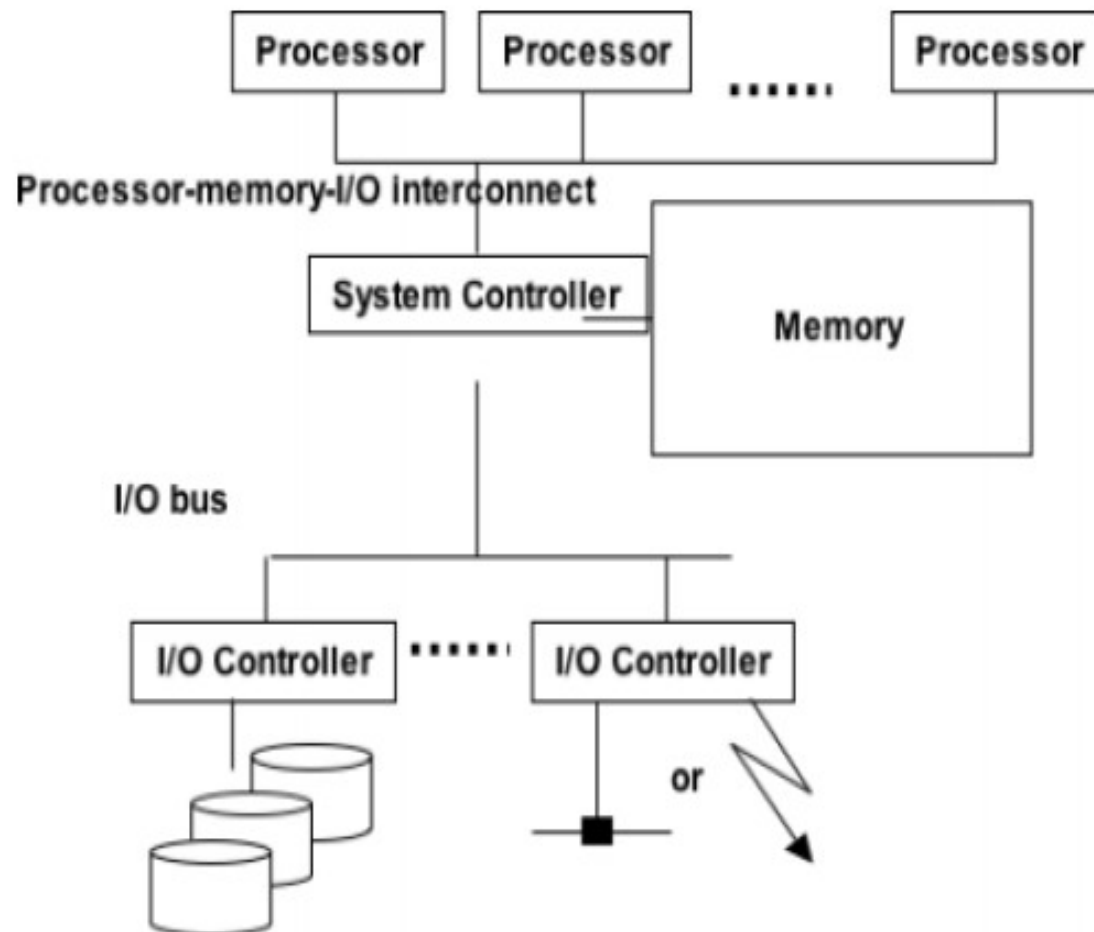
INTRODUCTION TO IT ARCHITECTURES

Willy Sudiarto Raharjo

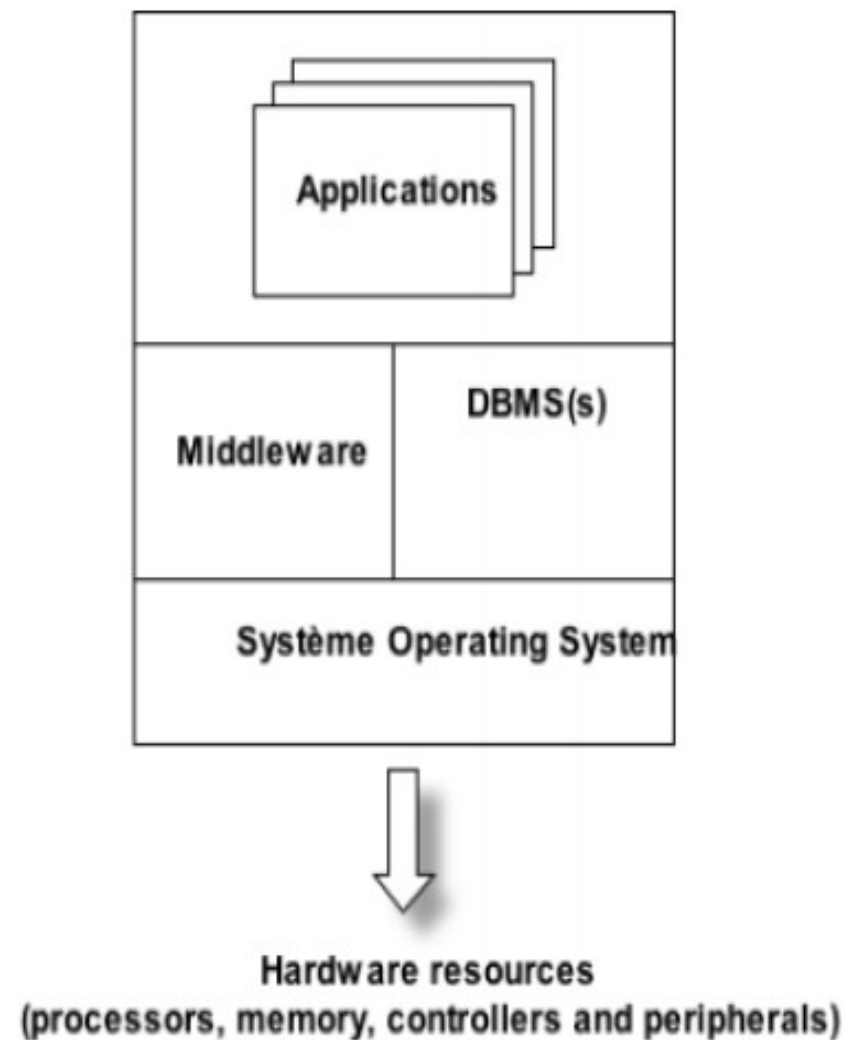
Teknik Informatika
Universitas Kristen Duta Wacana

Computer System Structure

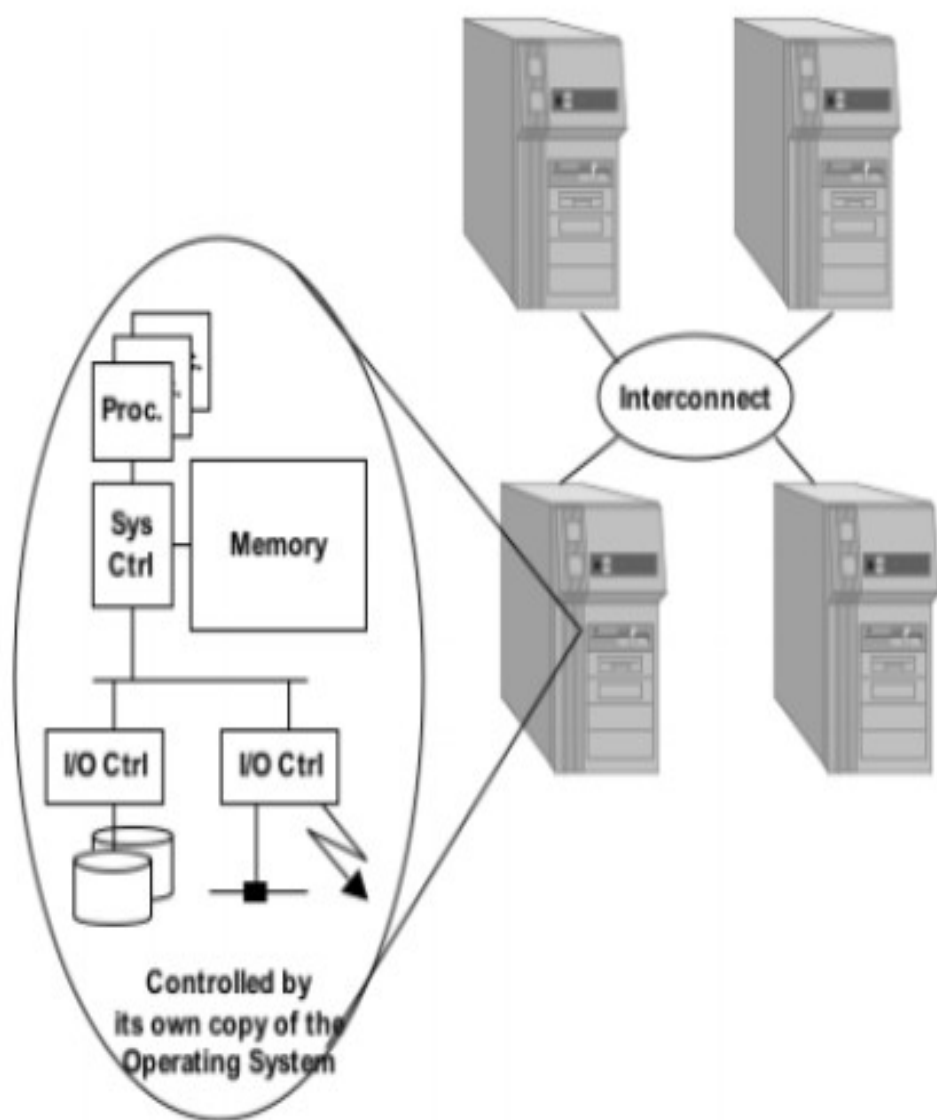




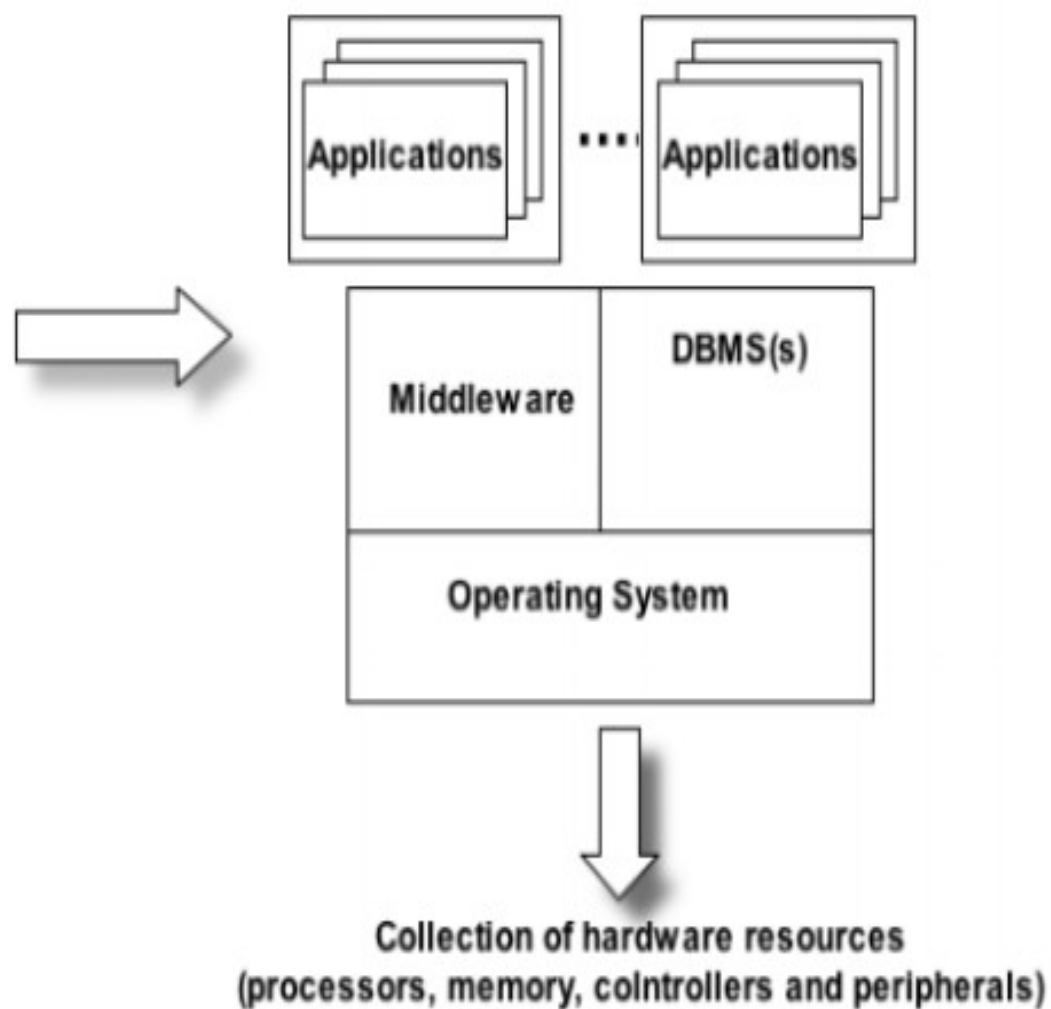
a) Hardware view of a Symmetrical Mutiprocessor



b) Software View of a Symmetrical Multiprocessor

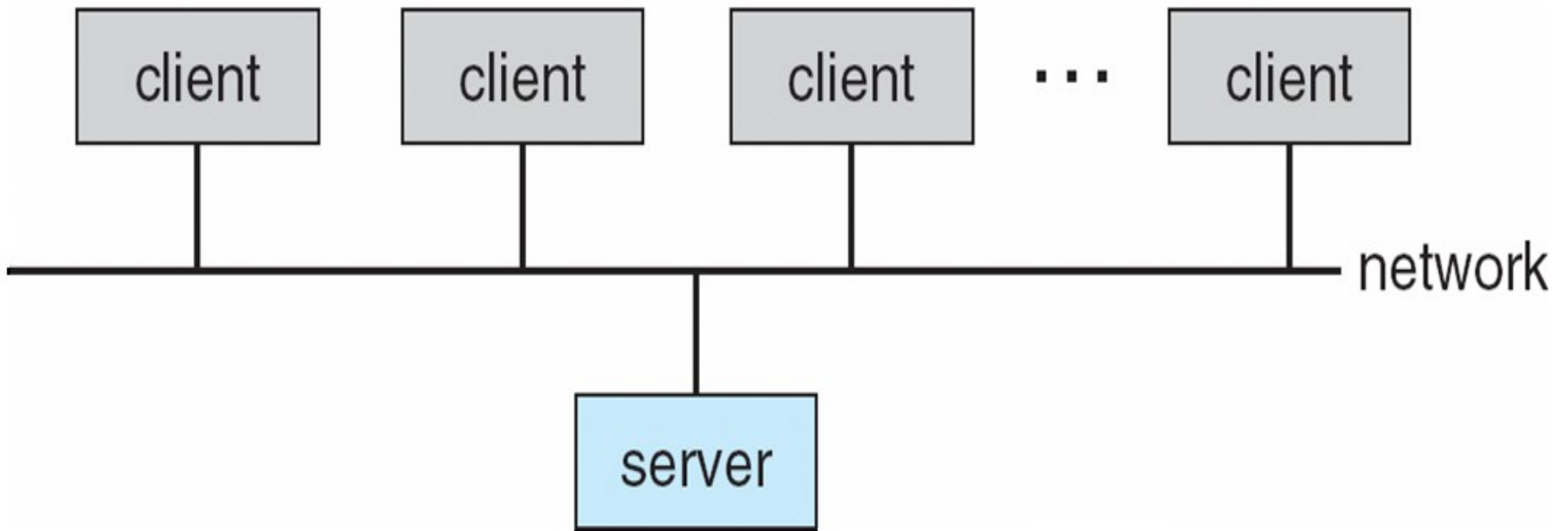


a) Loosely-coupled Architecture

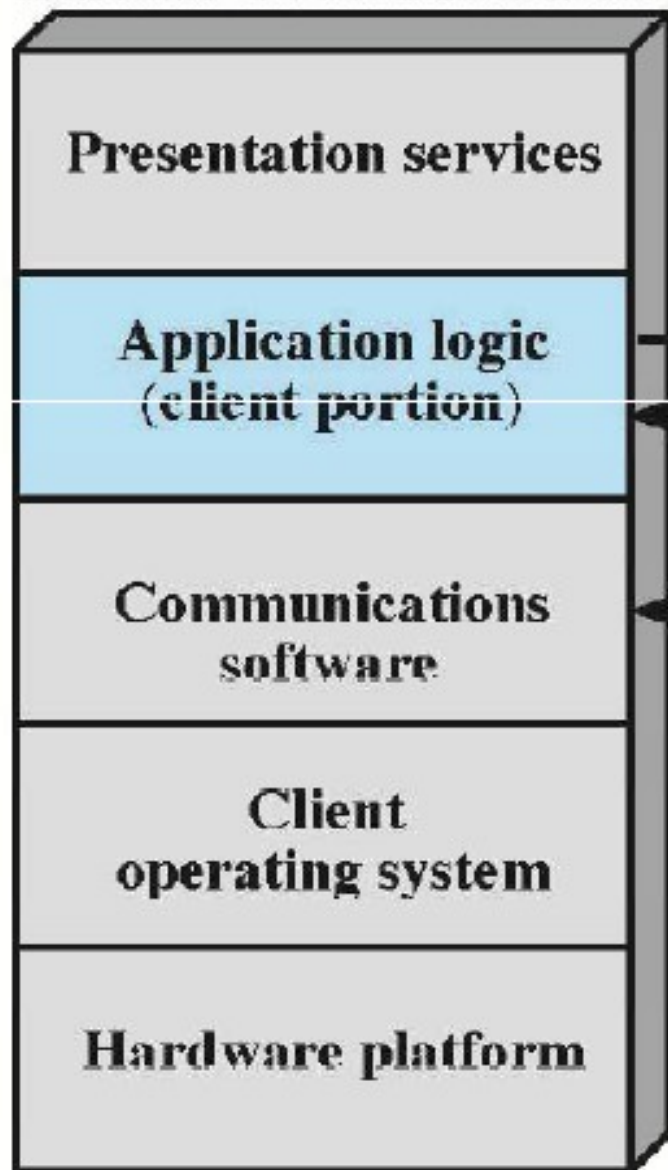


b) Idealized View of a Loosely-Coupled Architecture

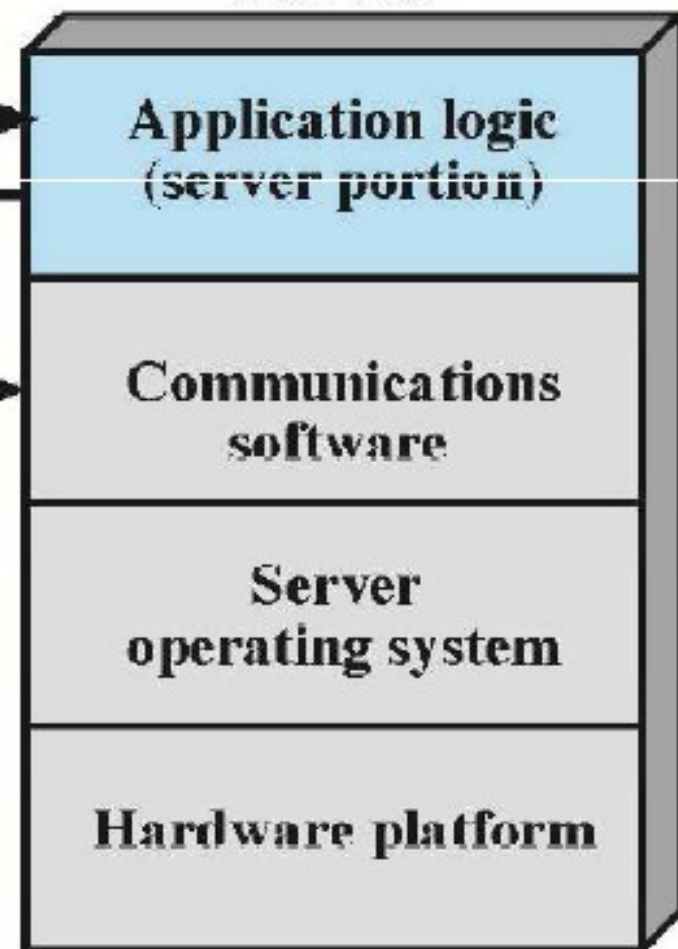
Client / Server Environment



Client Workstation



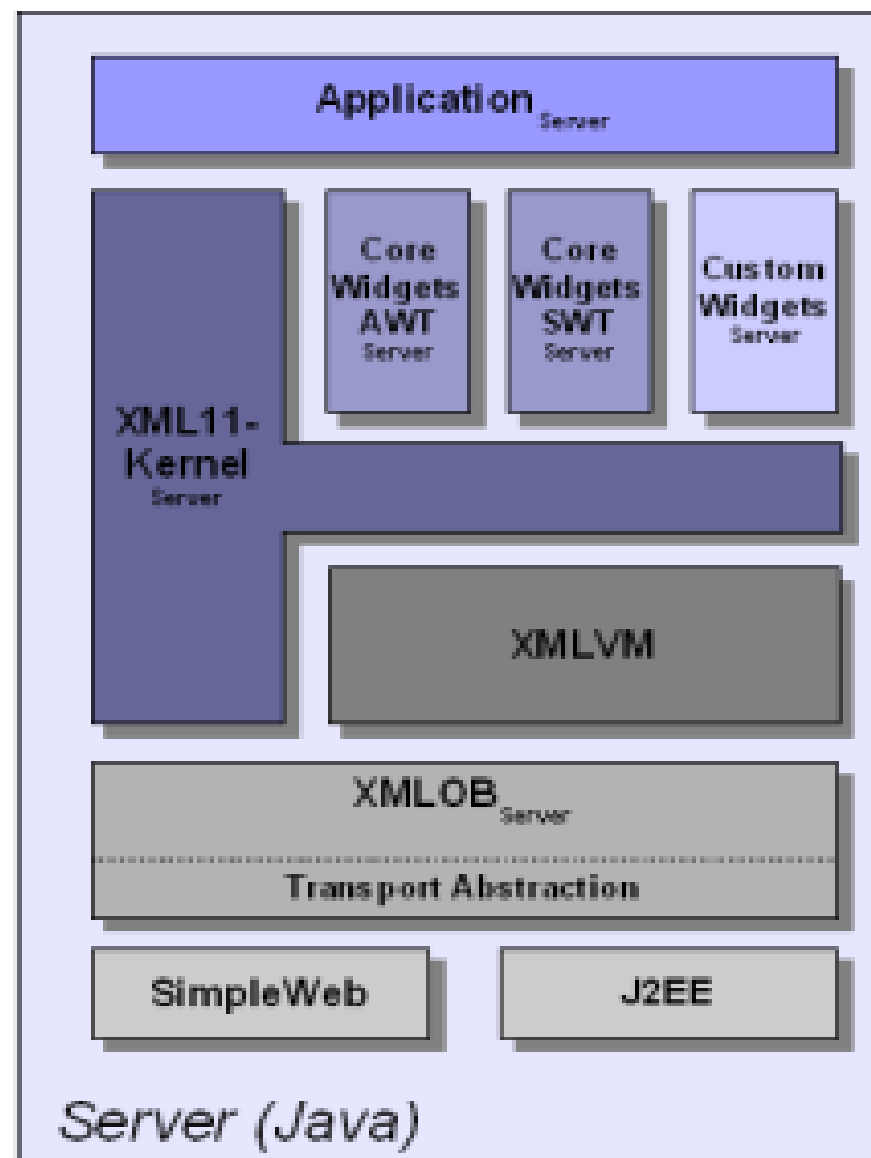
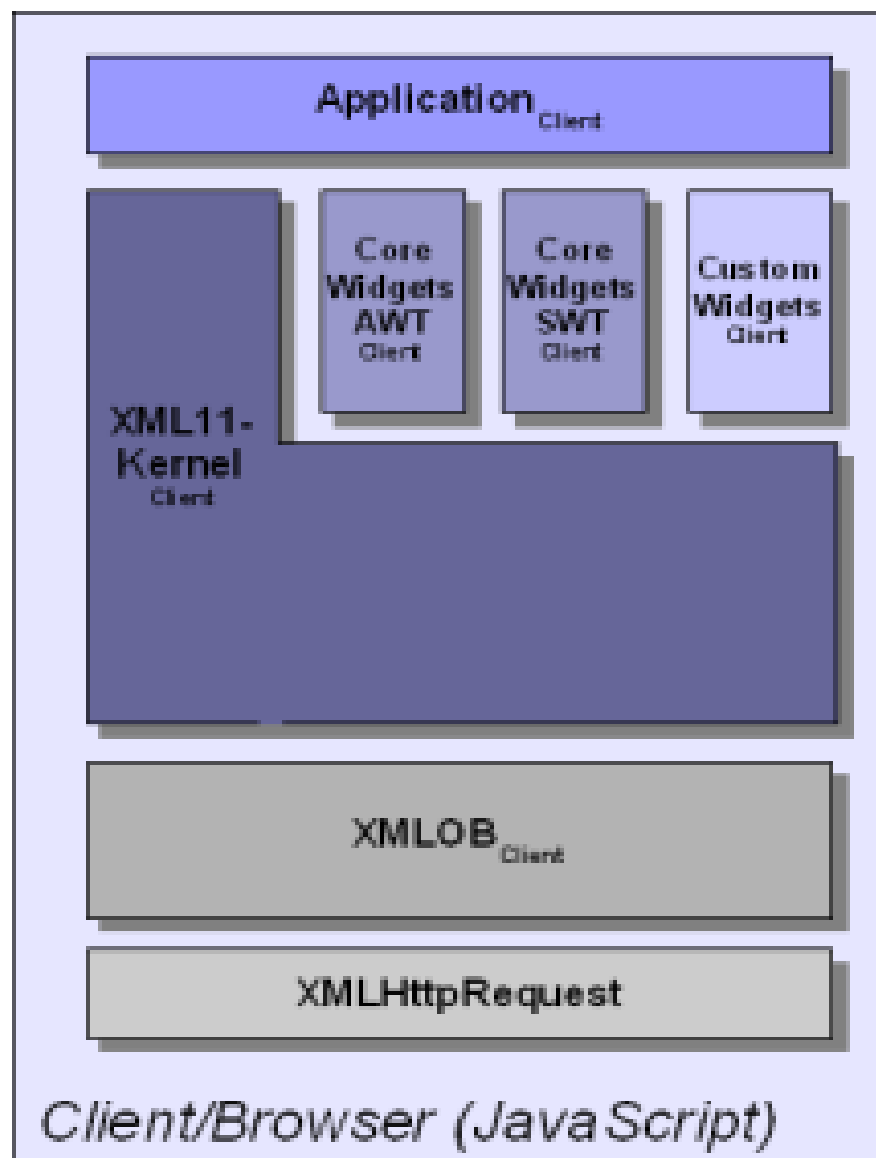
Server



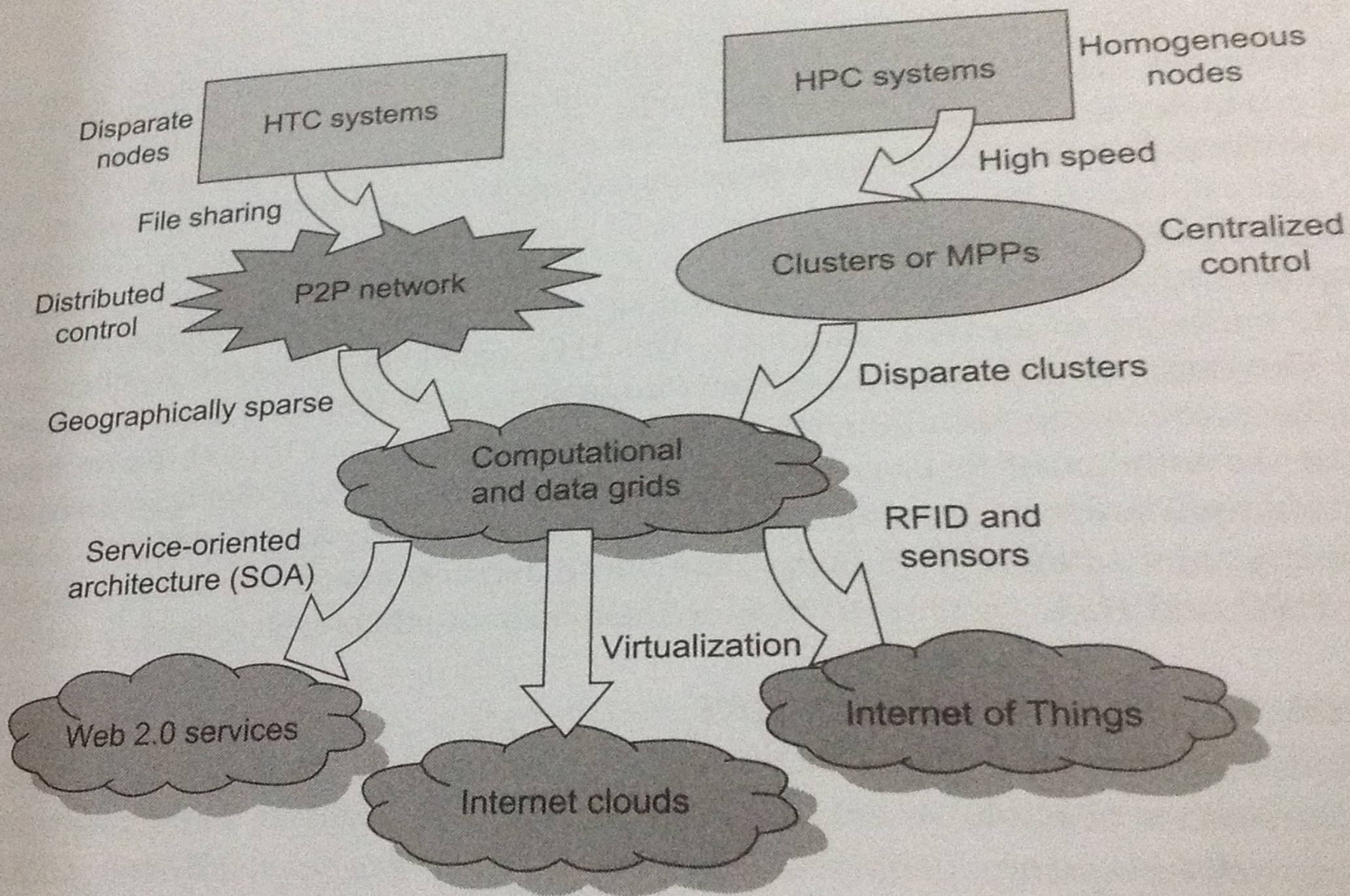
request

response

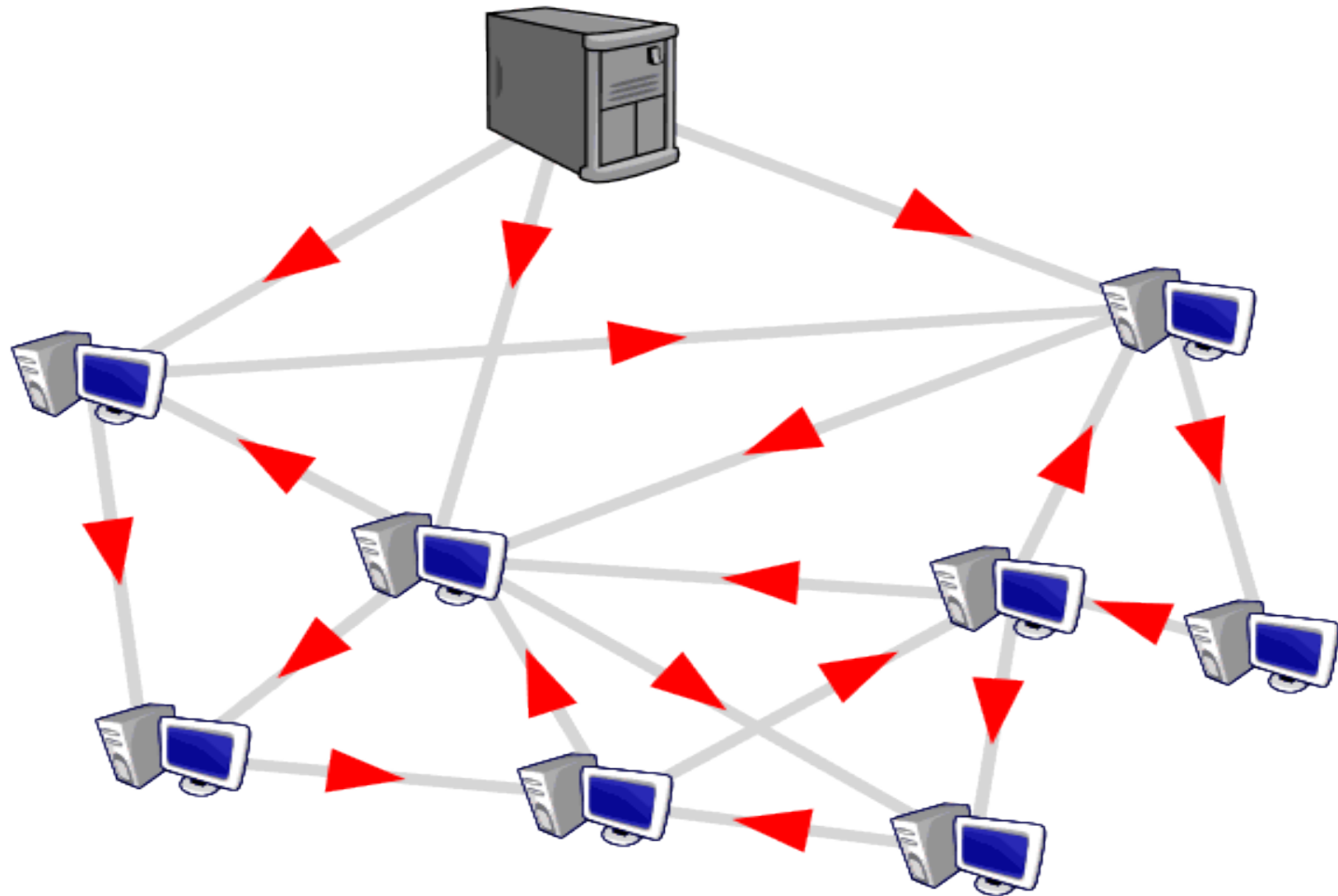
protocol
interaction



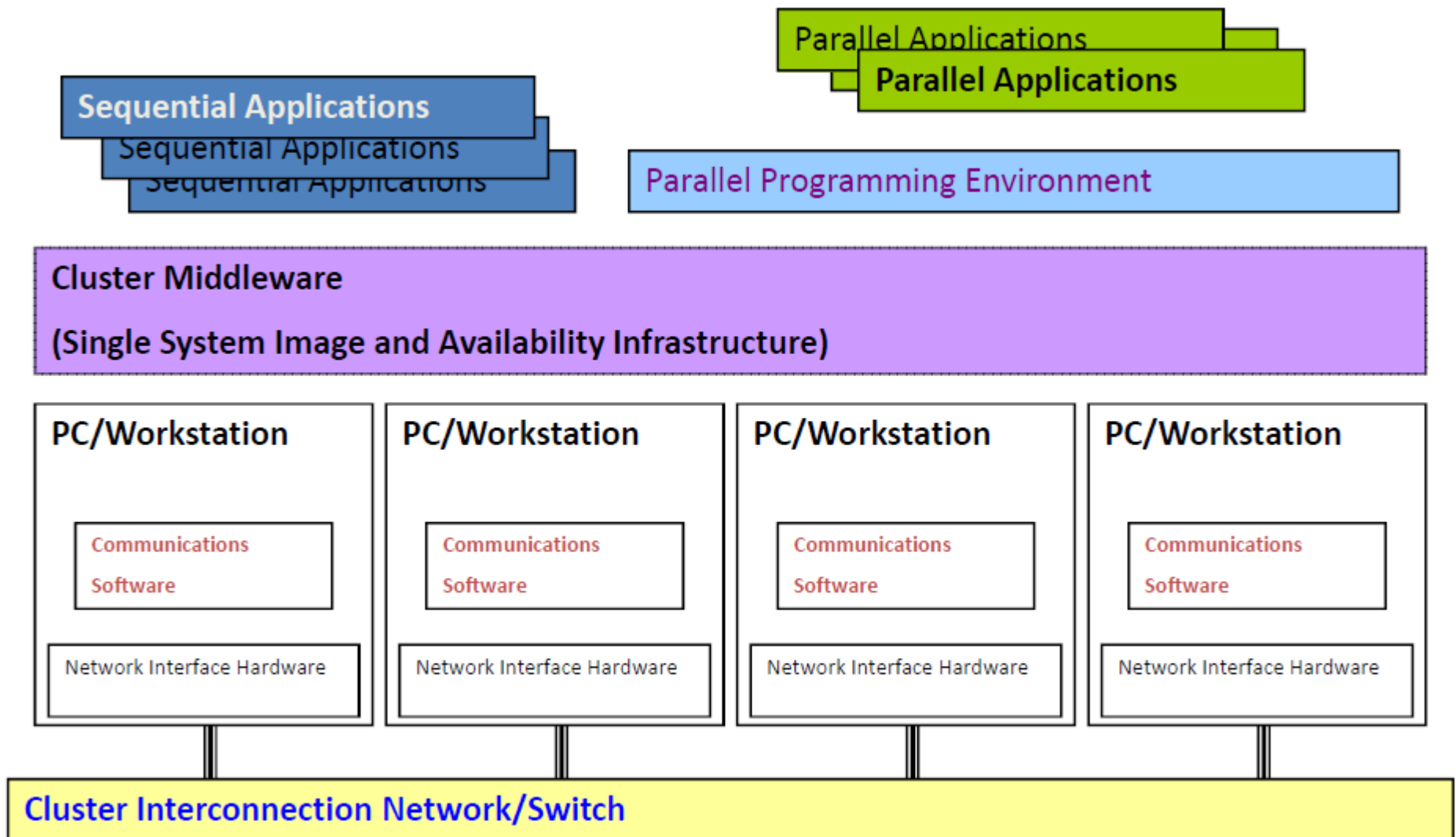
HTTP



P2P Architecture

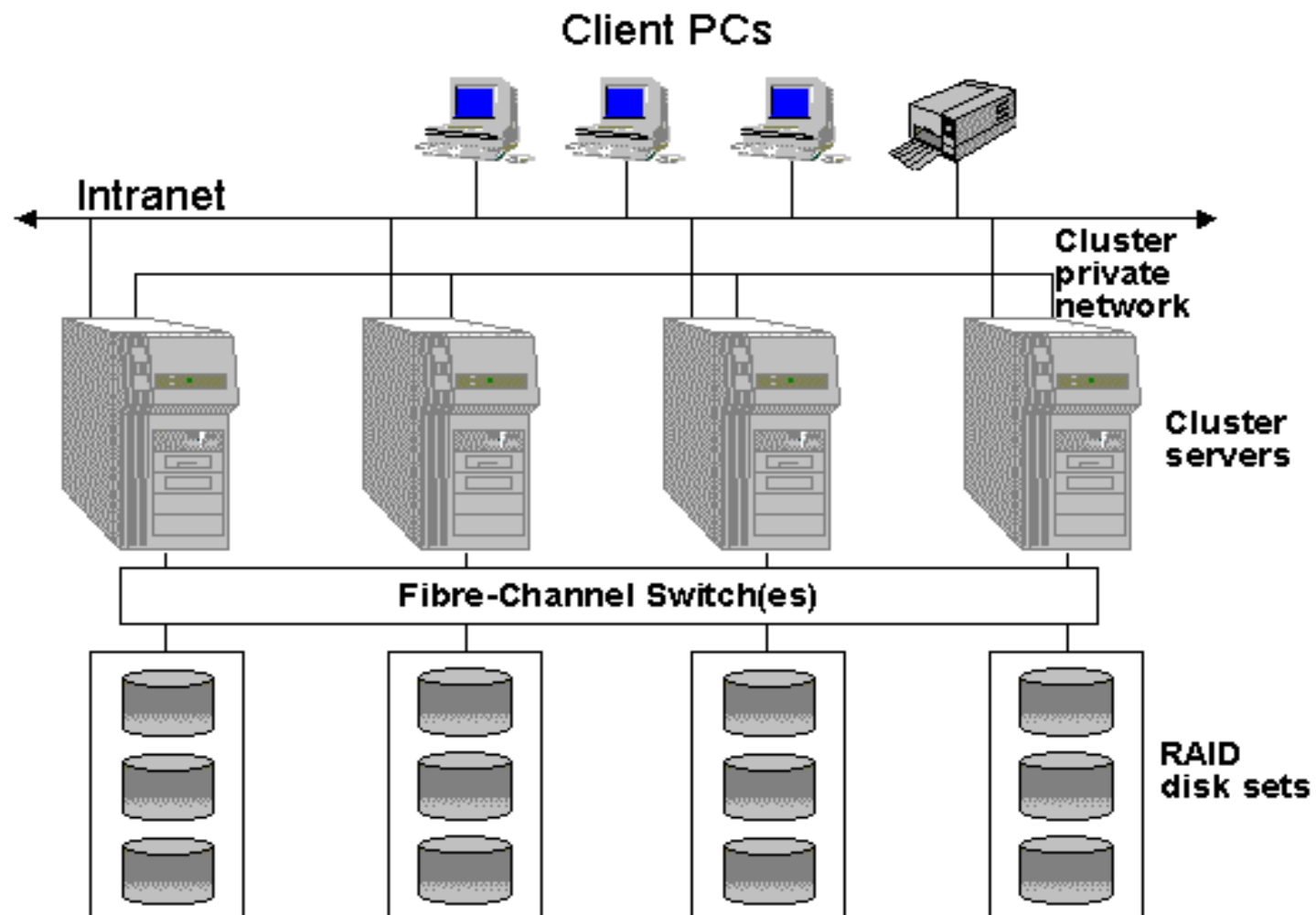


Clusters Architecture



Clusters Architecture

4-Node MSCS Cluster



Grid Computing

What is all about Grid ?

- 1) Sharing, Selecting, aggregation of resources with a policy universally agreed.
- 2) Distributive supercomputing for a better future



Grid Architecture

Applications

High
Energy
Physics

Cosmology

Chemical
Engineering

Climate

Combustion

Astrophysics

... Business

Applications Toolkits

Data
Grid

Remote
Computation

Remote
Visualization

Collaboratories

Portals

... Remote
Sensors

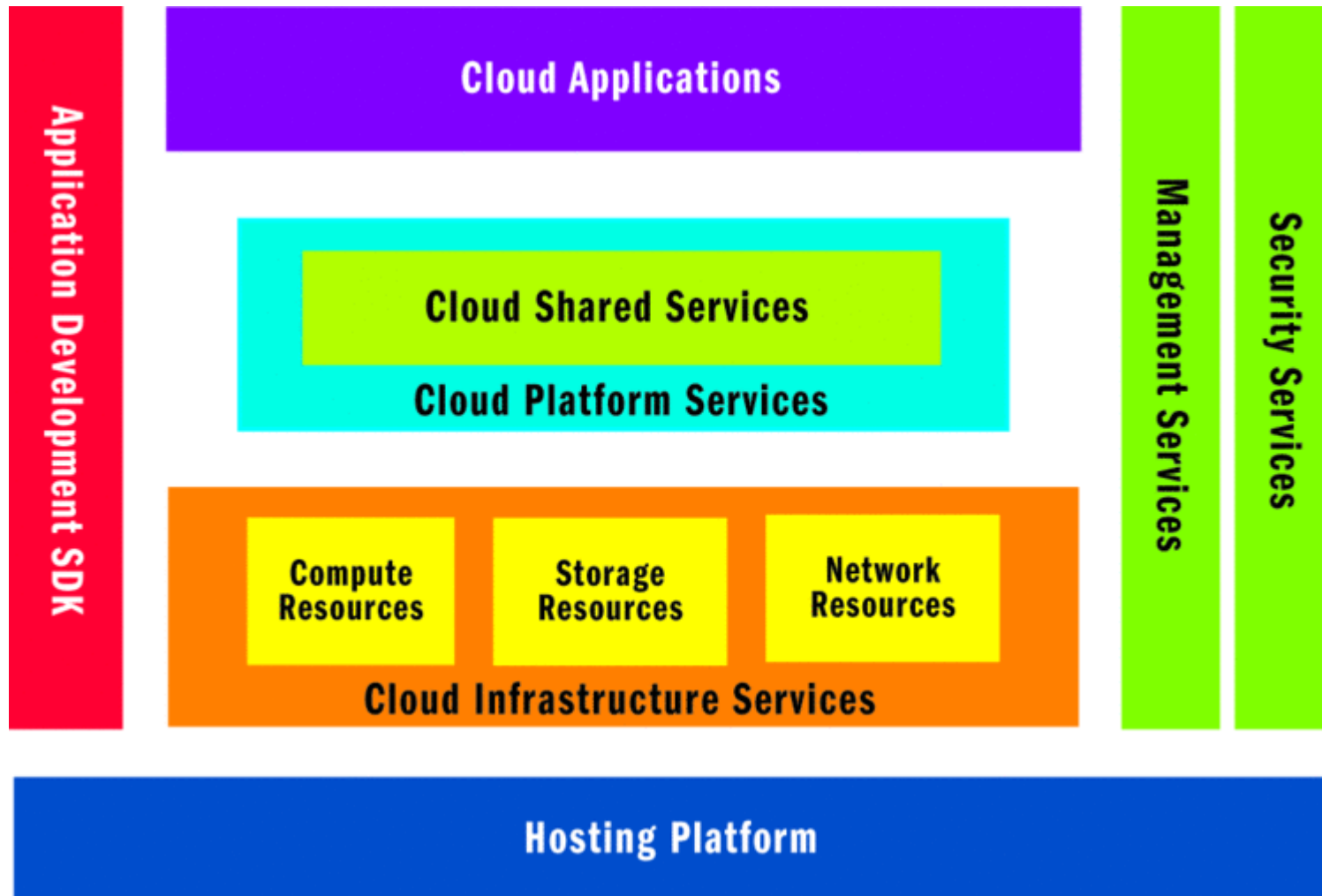
Grid Services

Protocols, authentication, policy, instrumentation, resource management,
discovery, events, etc.

Grid Fabric

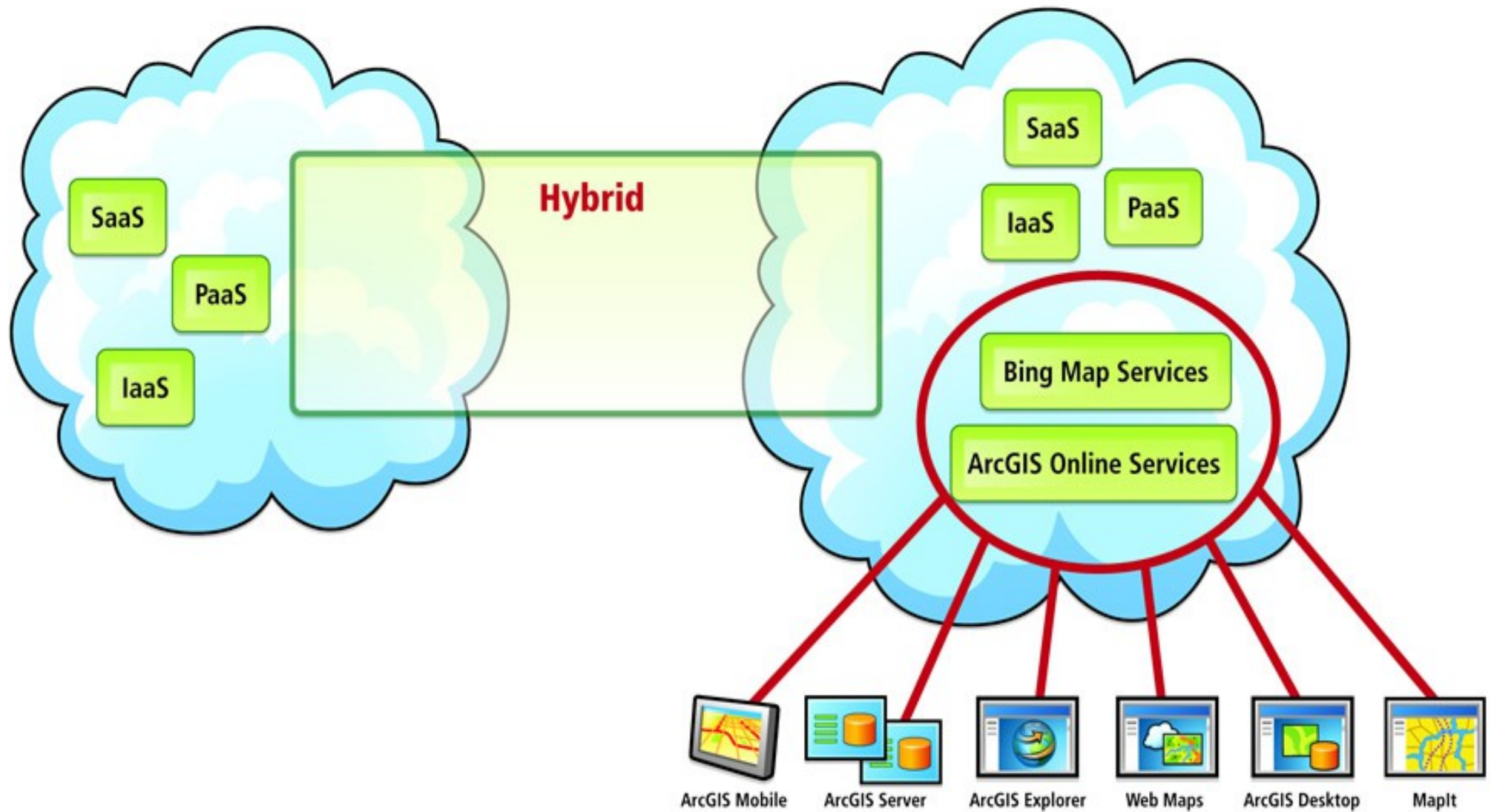
Storage, networks, computers, display devices, etc.
And their associated local services

Cloud Computing

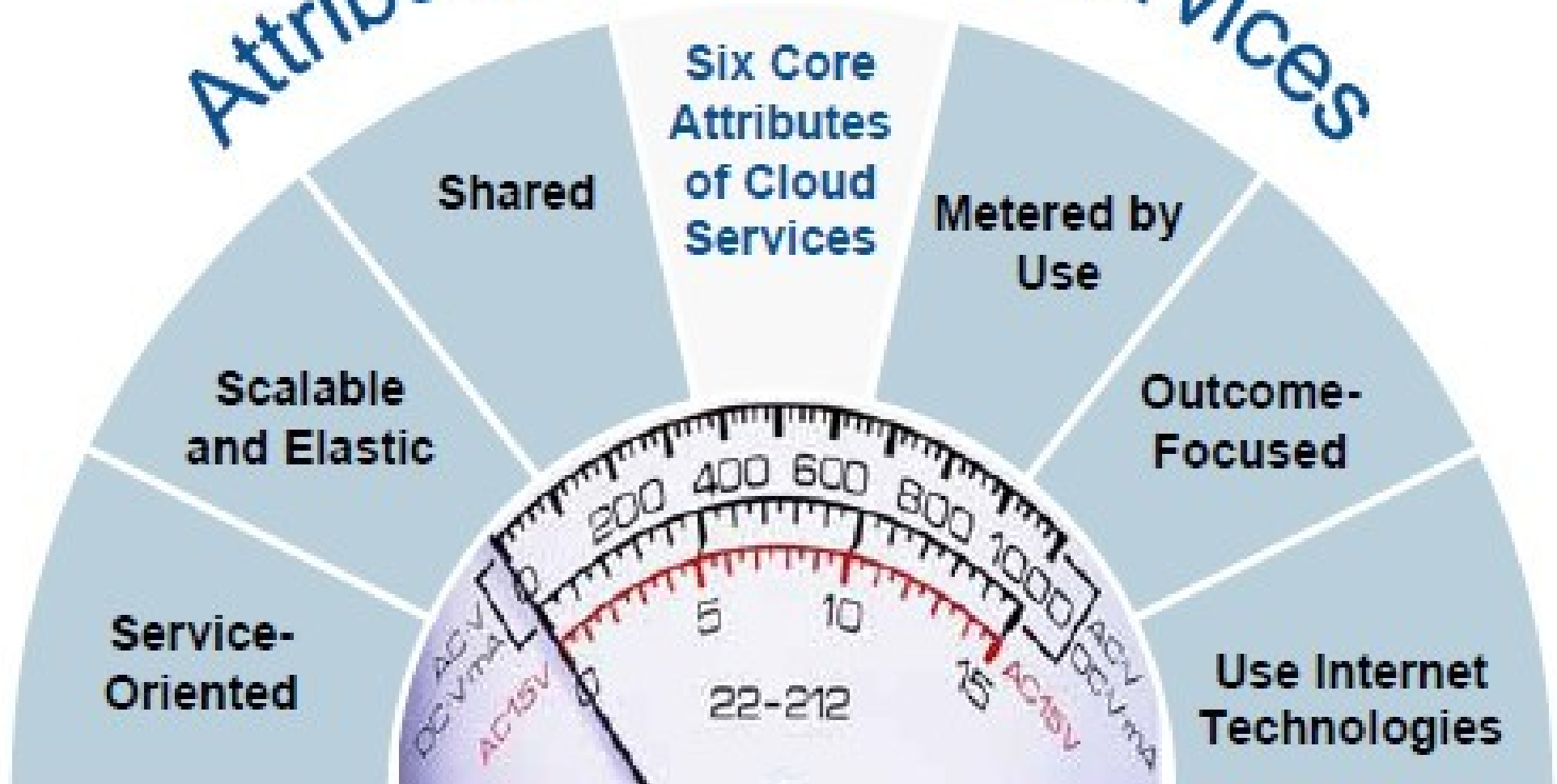


Private Cloud
On-Premises/Internal

Public Cloud
Off-Premises/External

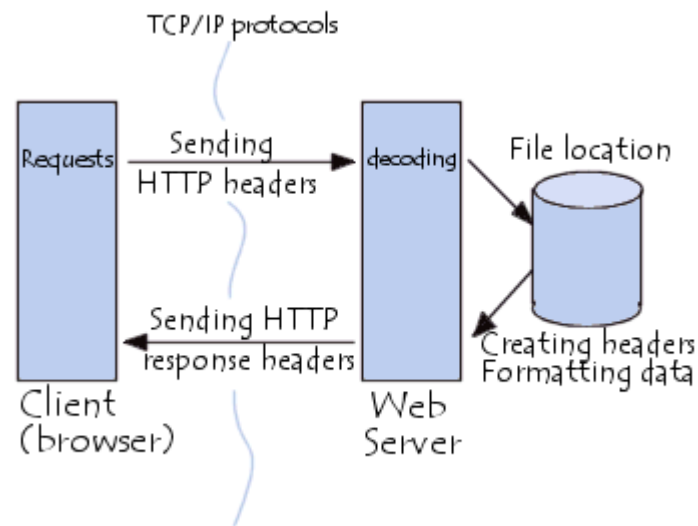


Attributes of Cloud Services

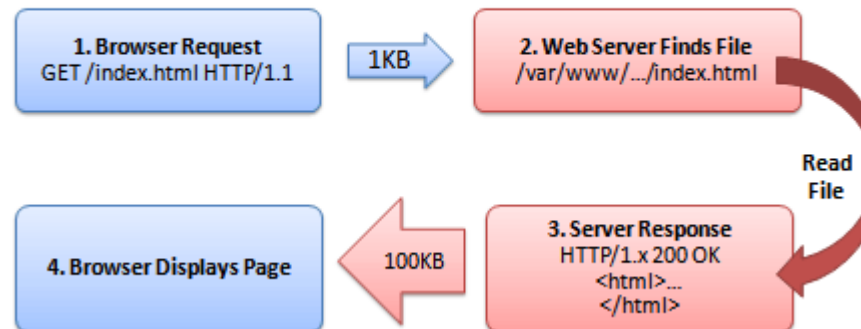


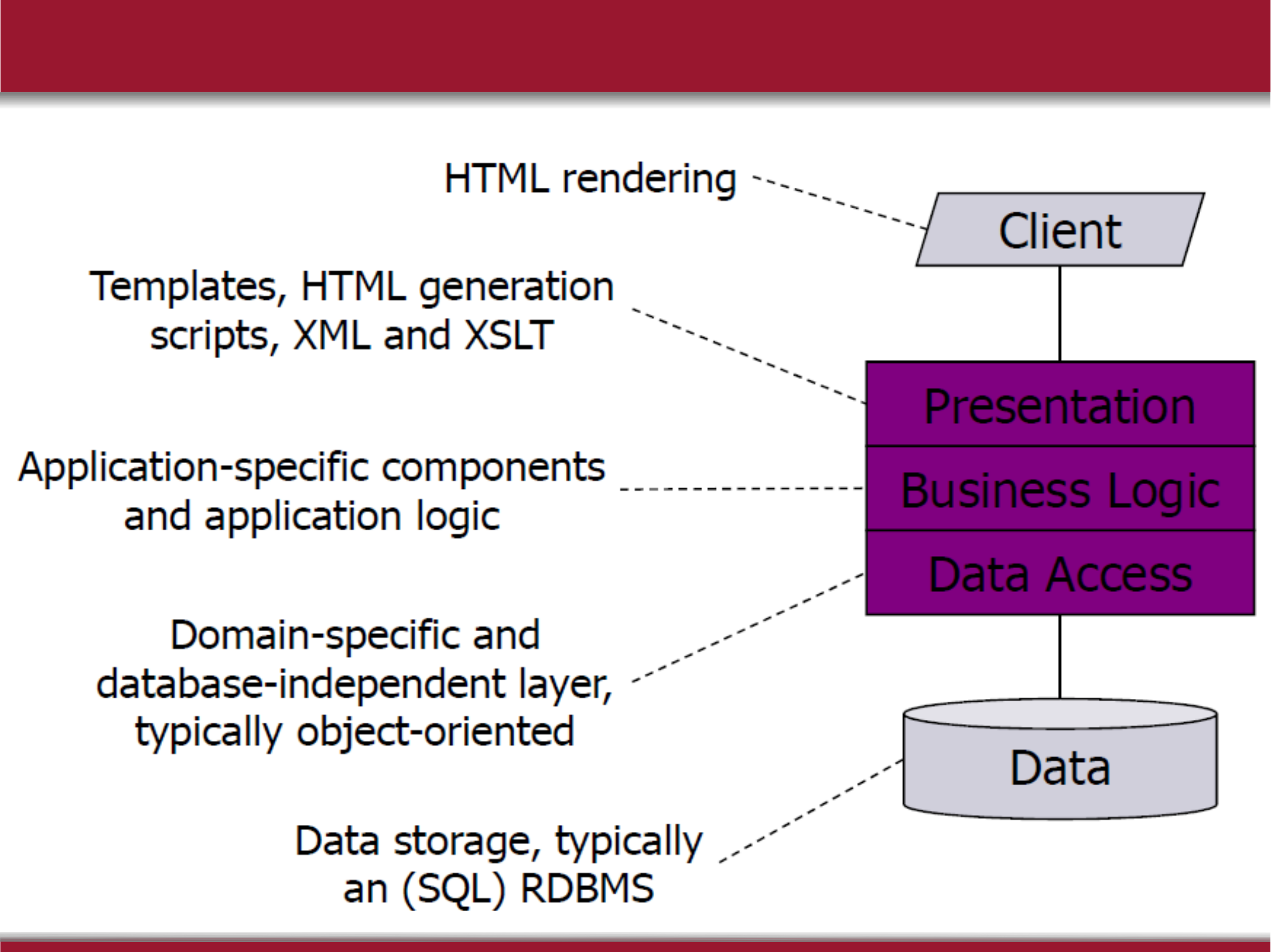
Internet & Web Architecture

■ HTTP Protocol



HTTP Request and Response





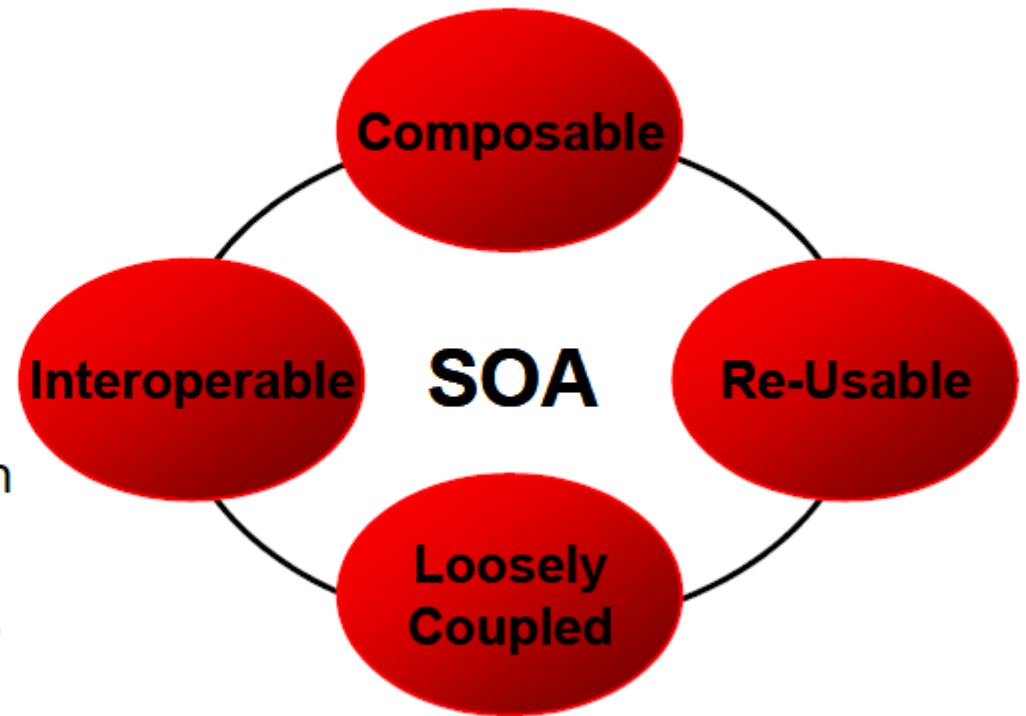
Service Oriented Architecture



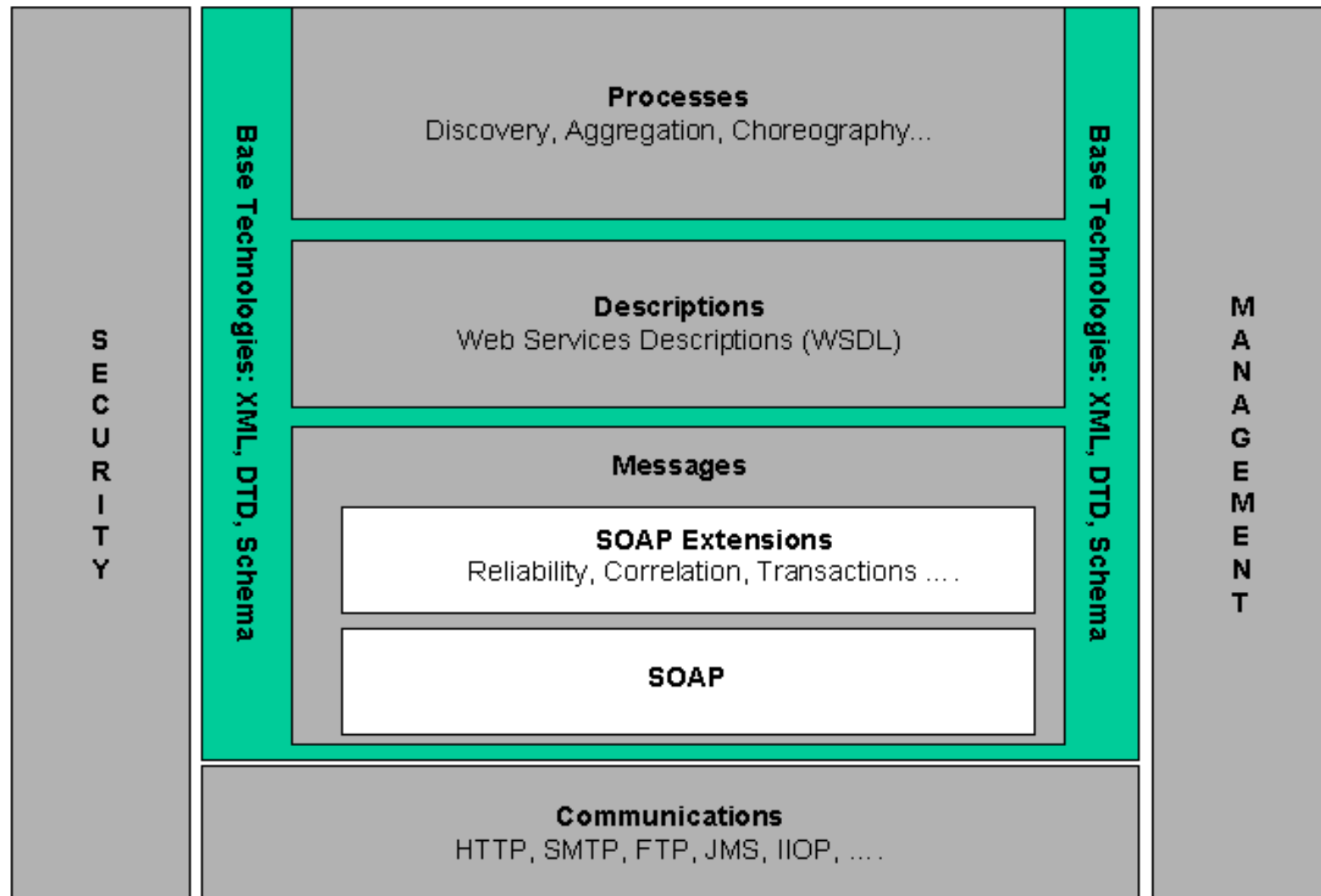
The core components which make up an SOA implementation

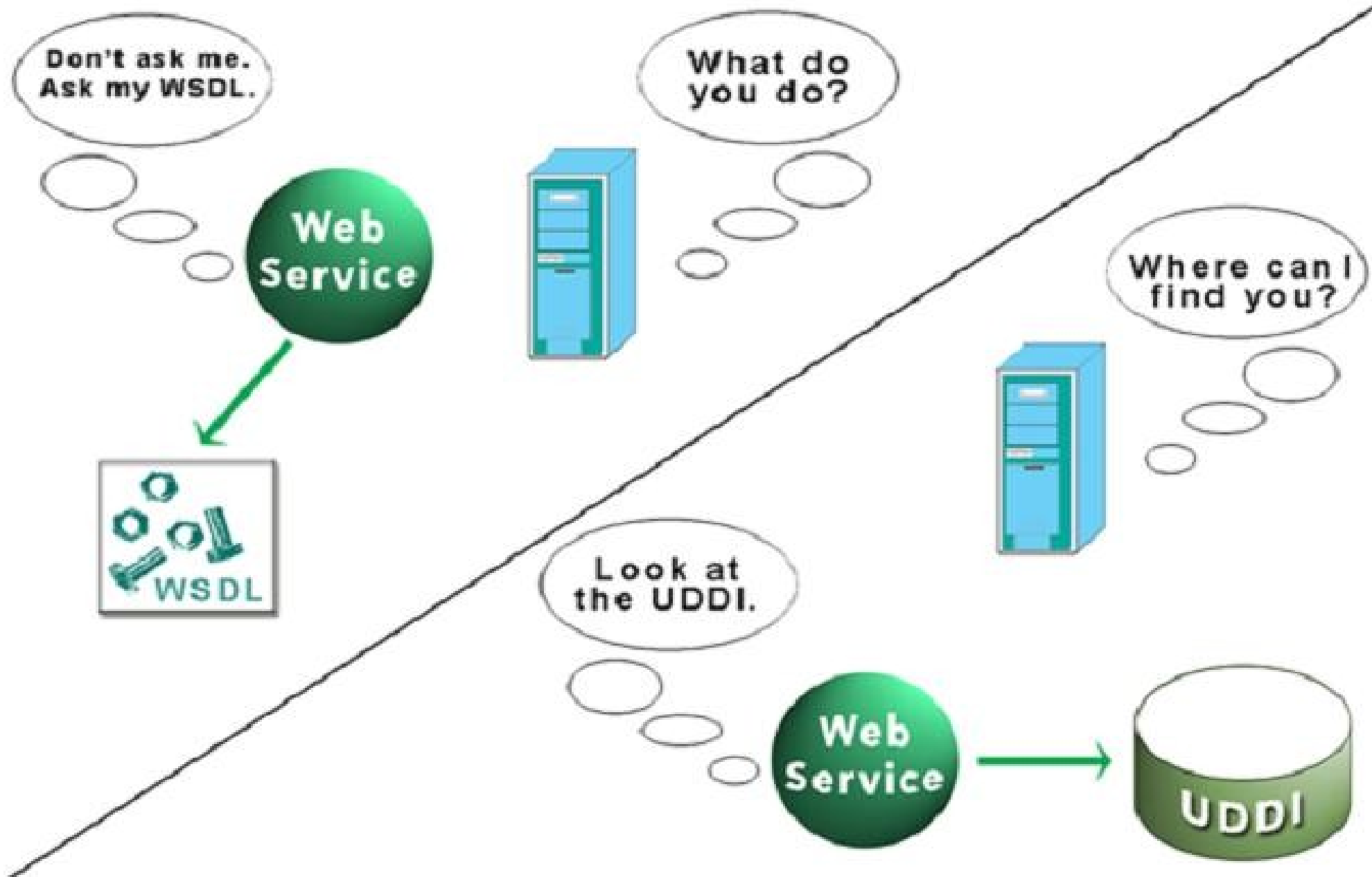
SOA Characteristics

- Services have **platform independent**, self describing interfaces (XML)
- Messages are **formally defined**
- Services **can be discovered**
- Services have **quality of service characteristics** defined in policies
- Services can be **provided on any platform**



Web Service Layer

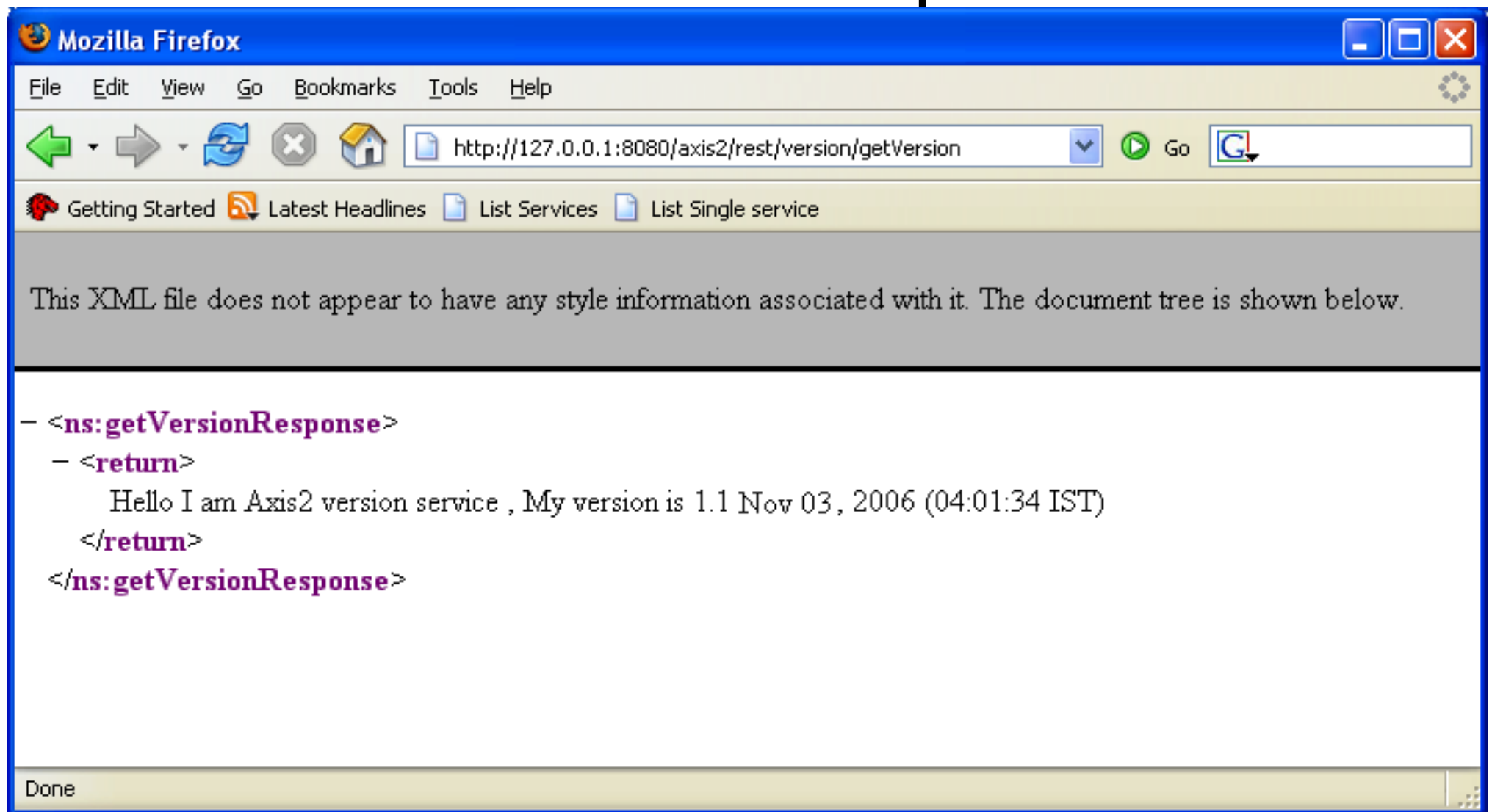




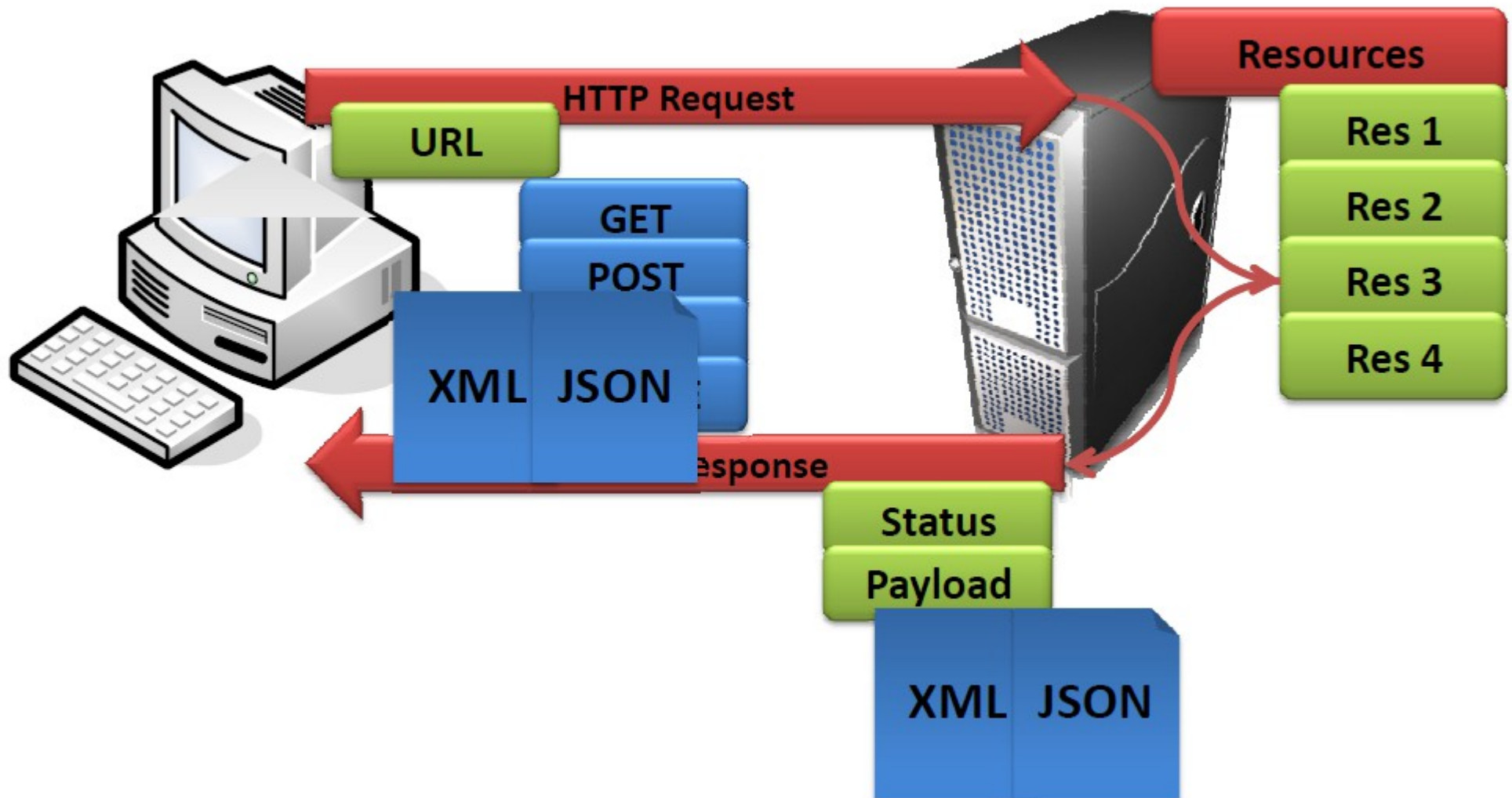
SOAP Example

```
<?xml version="1.0" encoding="UTF-8" ?>
<!-- This XML document was generated by RCCOBXML -->
- <env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope"
  xmlns:apph="http://www.redversconsulting.com/schema/apphead"
  xmlns:appb="http://www.redversconsulting.com/schema/appbody">
- <env:Header>
- < apph:reservation env:mustUnderstand="true" >
  <apph:refNo>1234567</apph:refNo>
  <apph:timestamp>2010-11-30T14:26:59.125</apph:timestamp>
</apph:reservation>
</env:Header>
- <env:Body>
- < appb:resDetails>
  - < appb:train>
    <appb:date>12/24/2010</appb:date>
    <appb:time>09:30</appb:time>
    <appb:from>New York</appb:from>
    <appb:to>Chicago</appb:to>
    <appb:seat>57B</appb:seat>
  </appb:train>
  - < appb:passenger>
    <appb:name>John Smith</appb:name>
  </appb:passenger>
  - < appb:price>
    <appb:amount>$1,234.25</appb:amount>
    <appb:comments>Includes lunch & dinner.</appb:comments>
    <appb:comments>"Have a nice day!"</appb:comments>
  </appb:price>
</appb:resDetails>
</env:Body>
</env:Envelope>
```

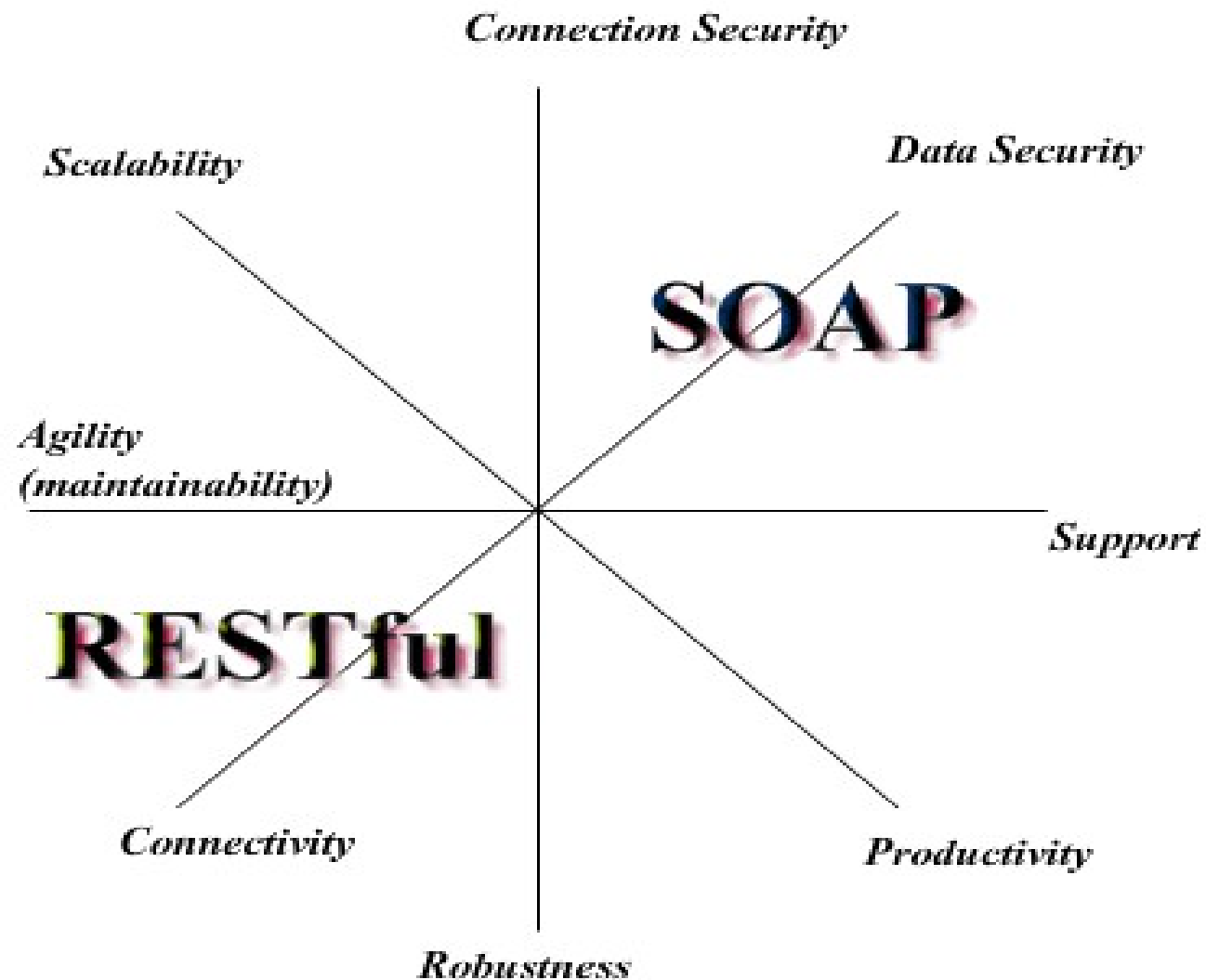
REST Example



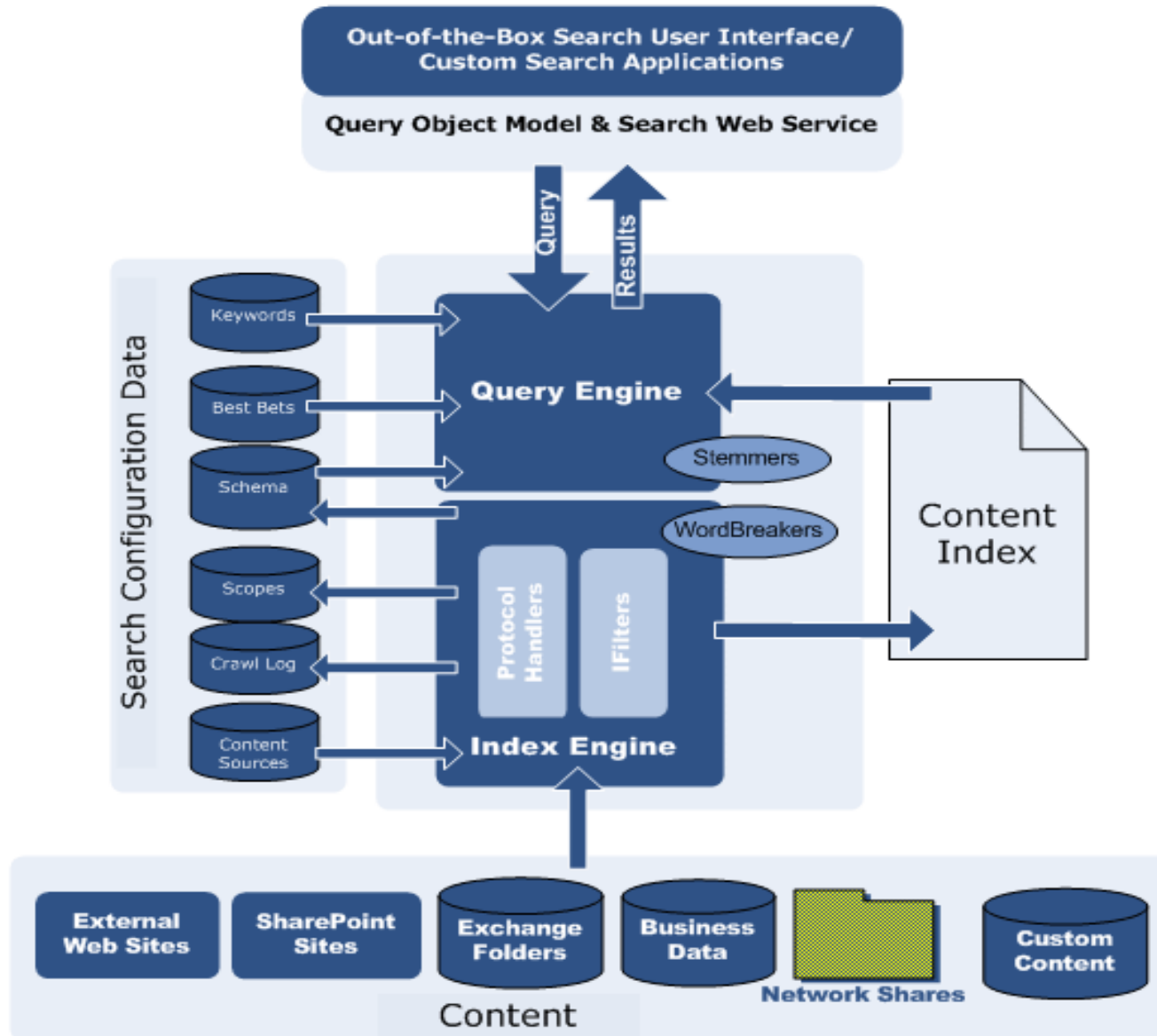
RESTful Web Service



SOAP / REST

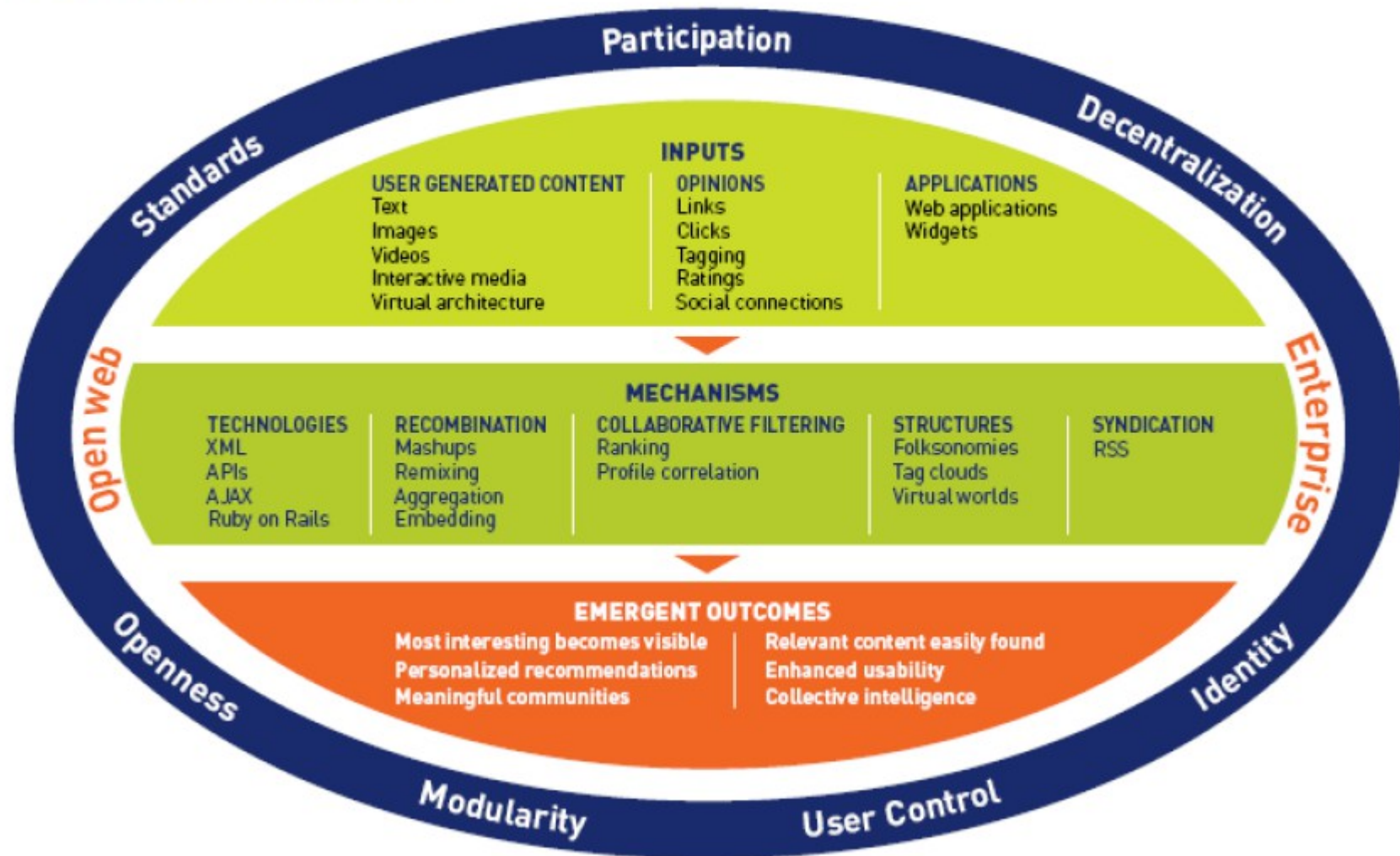


Search Engine Architecture

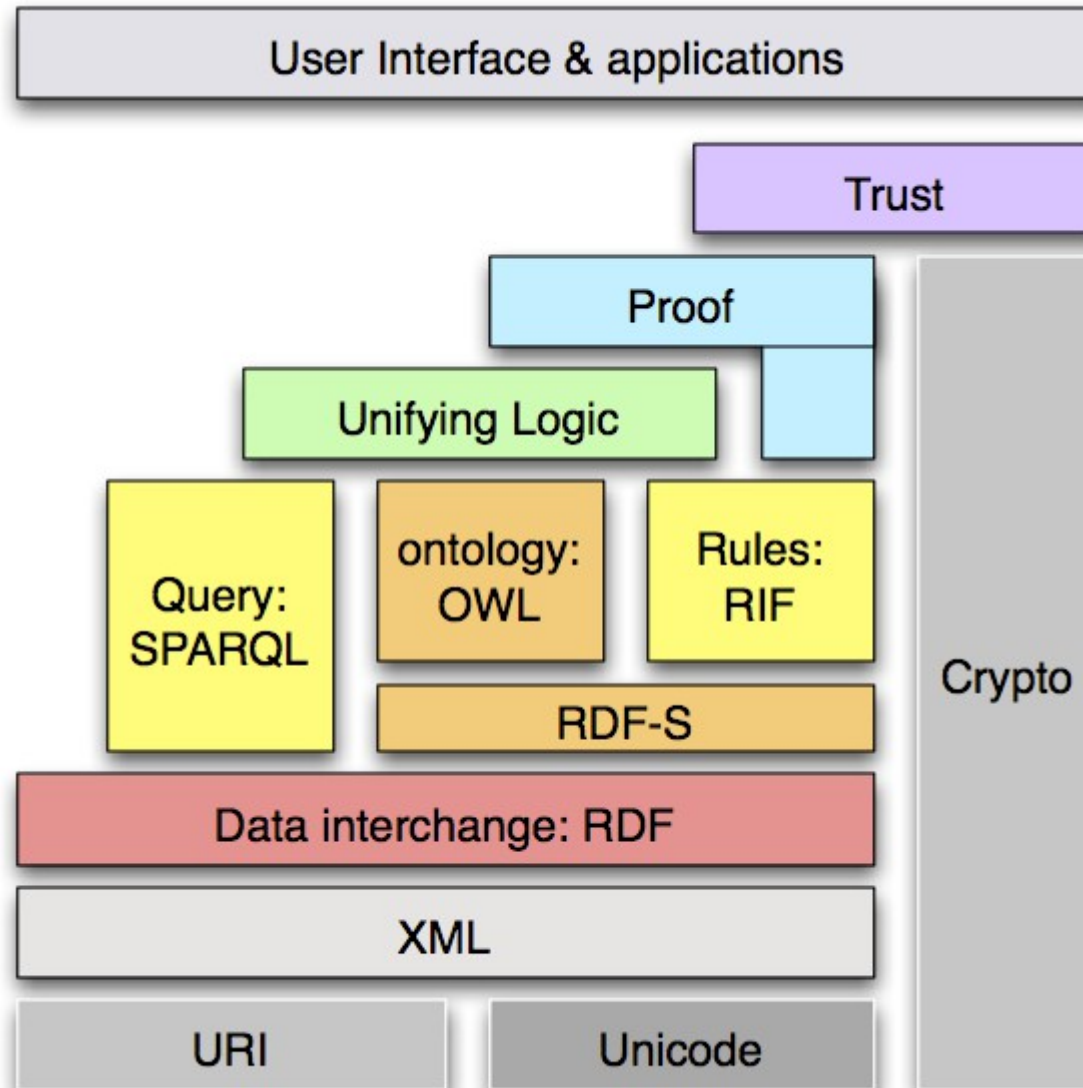


Web 2.0

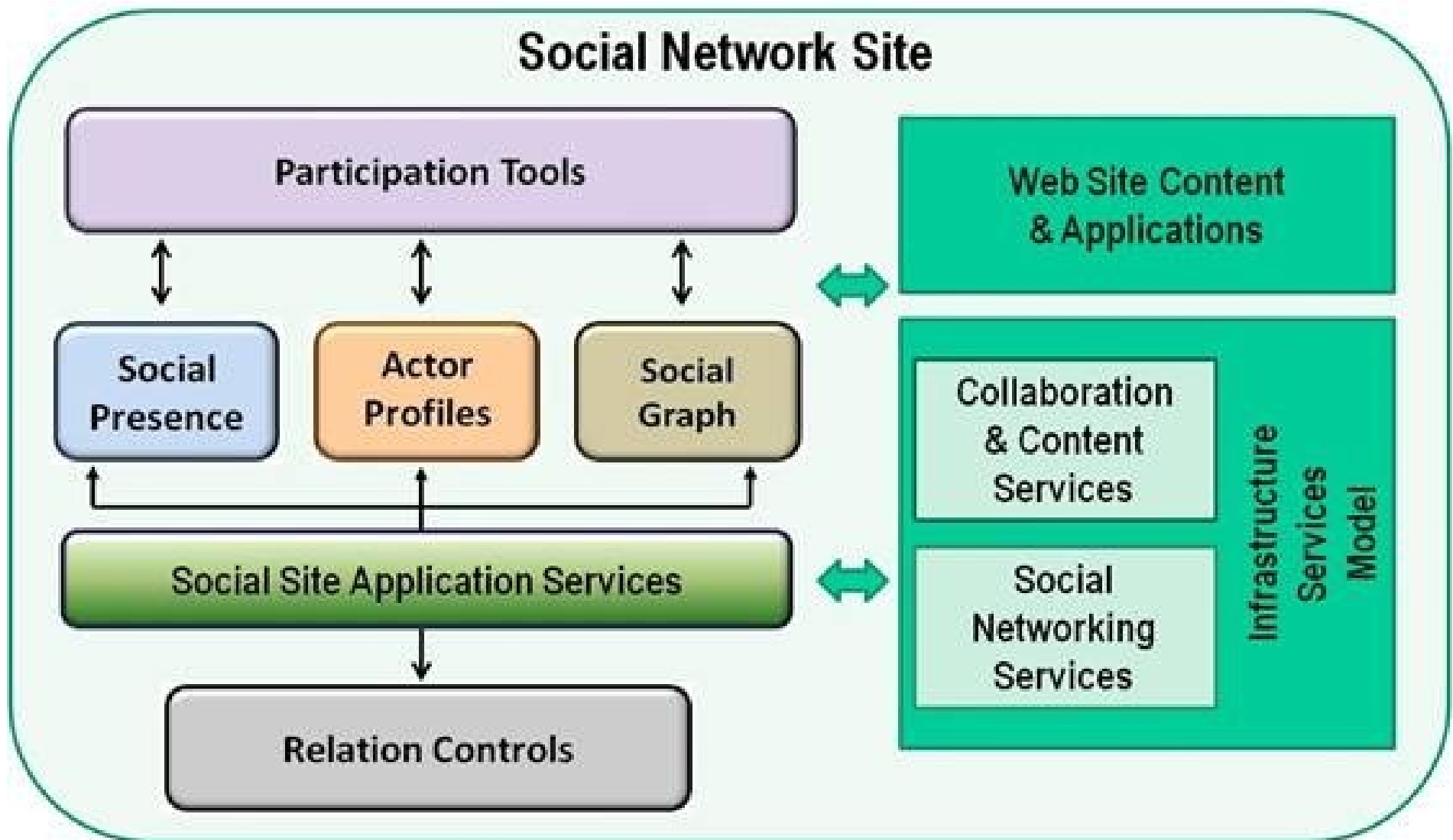
WEB 2.0 Framework



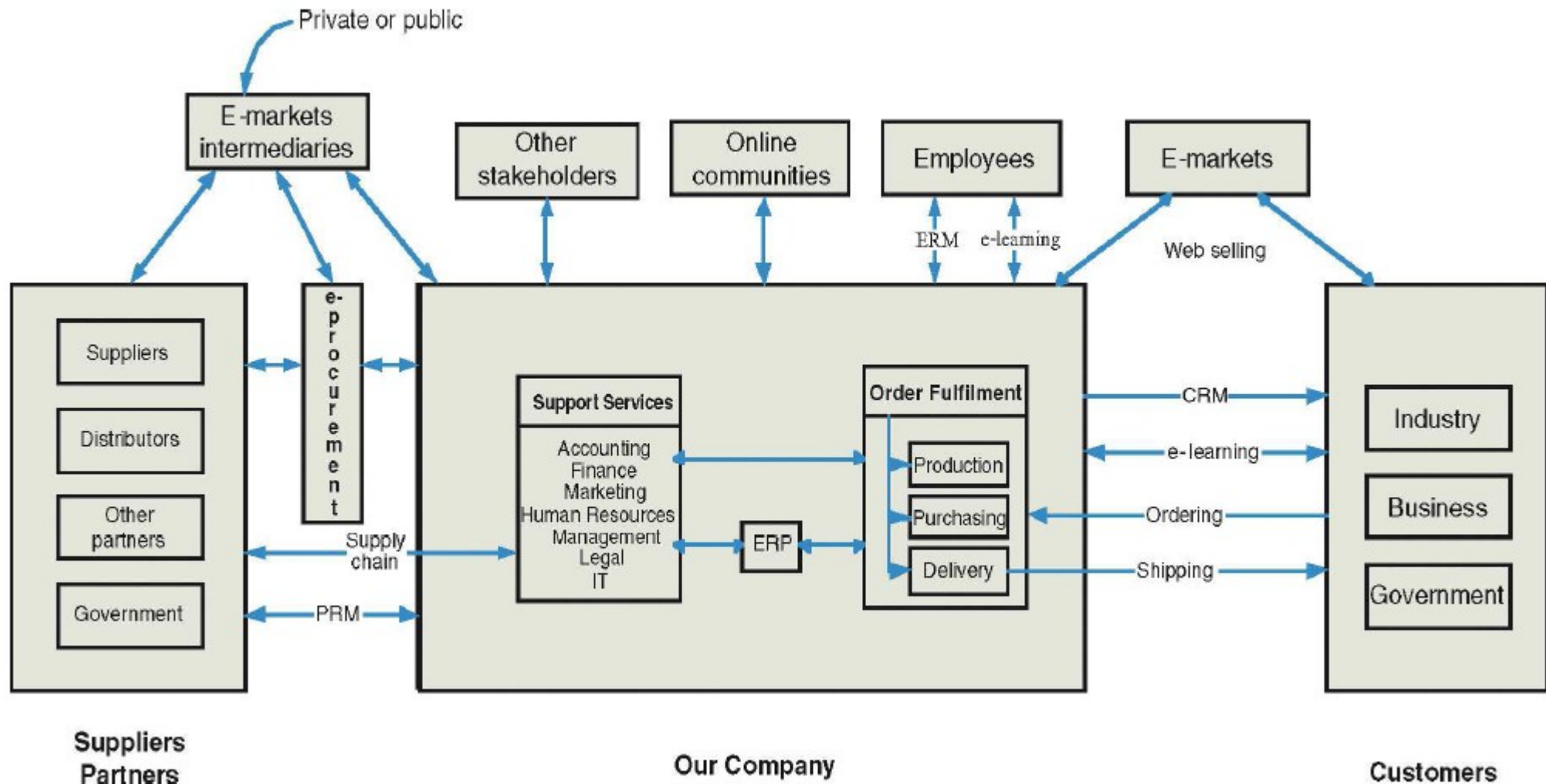
Web 3.0



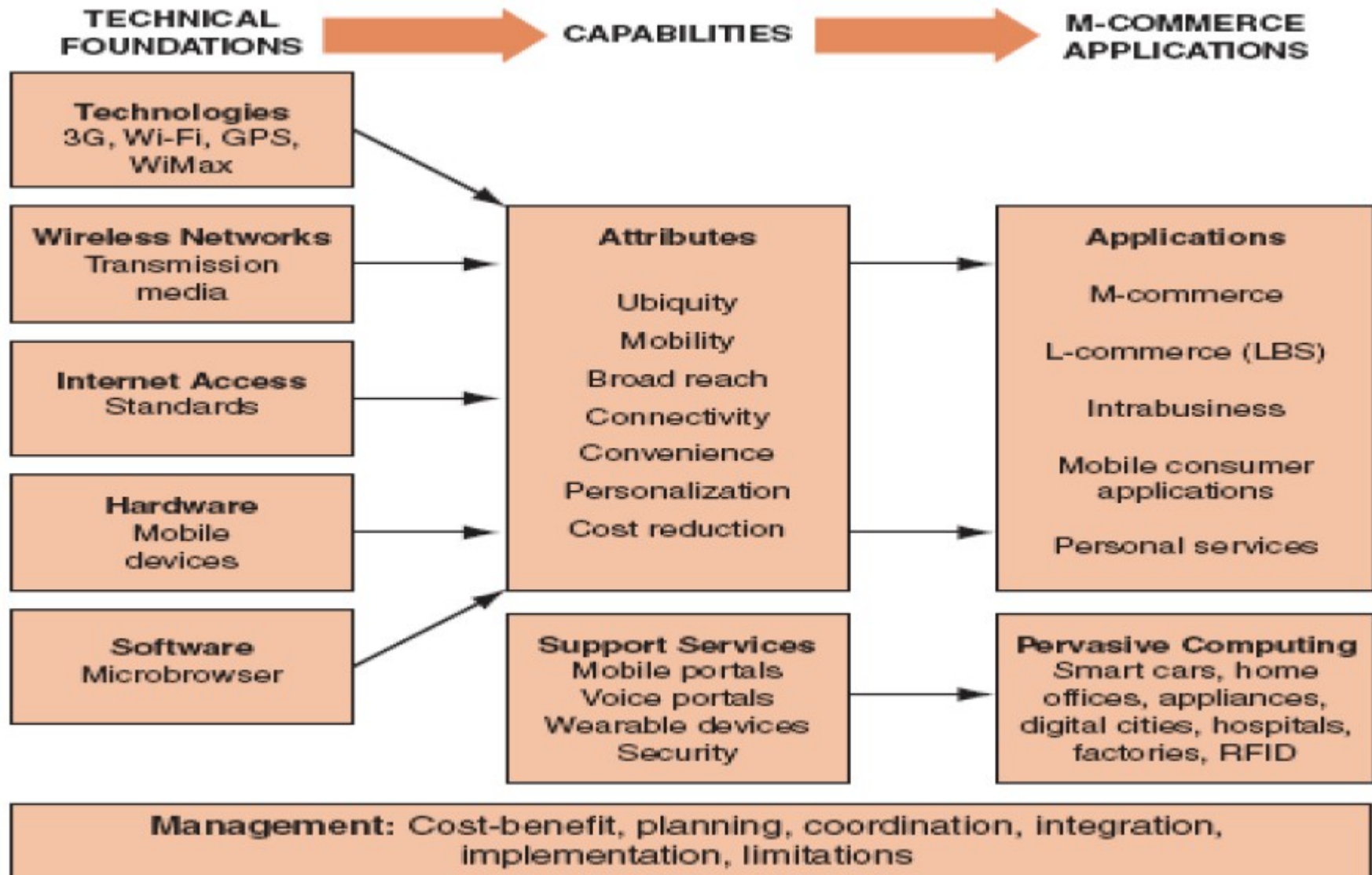
Social Networking Architecture



E-Commerce



Mobile Architectures



Location-Based Services & Solutions

Find Location

Geocoding

Visualize

Mapping

Directions

Routing

Intelligence

Content

- Enhanced Billing
 - Personalized Portals
- Buddy Finder
 - Emergency Assistance
- Service Call Routing
 - Find Nearest Services



Pervasive Computing Architecture

