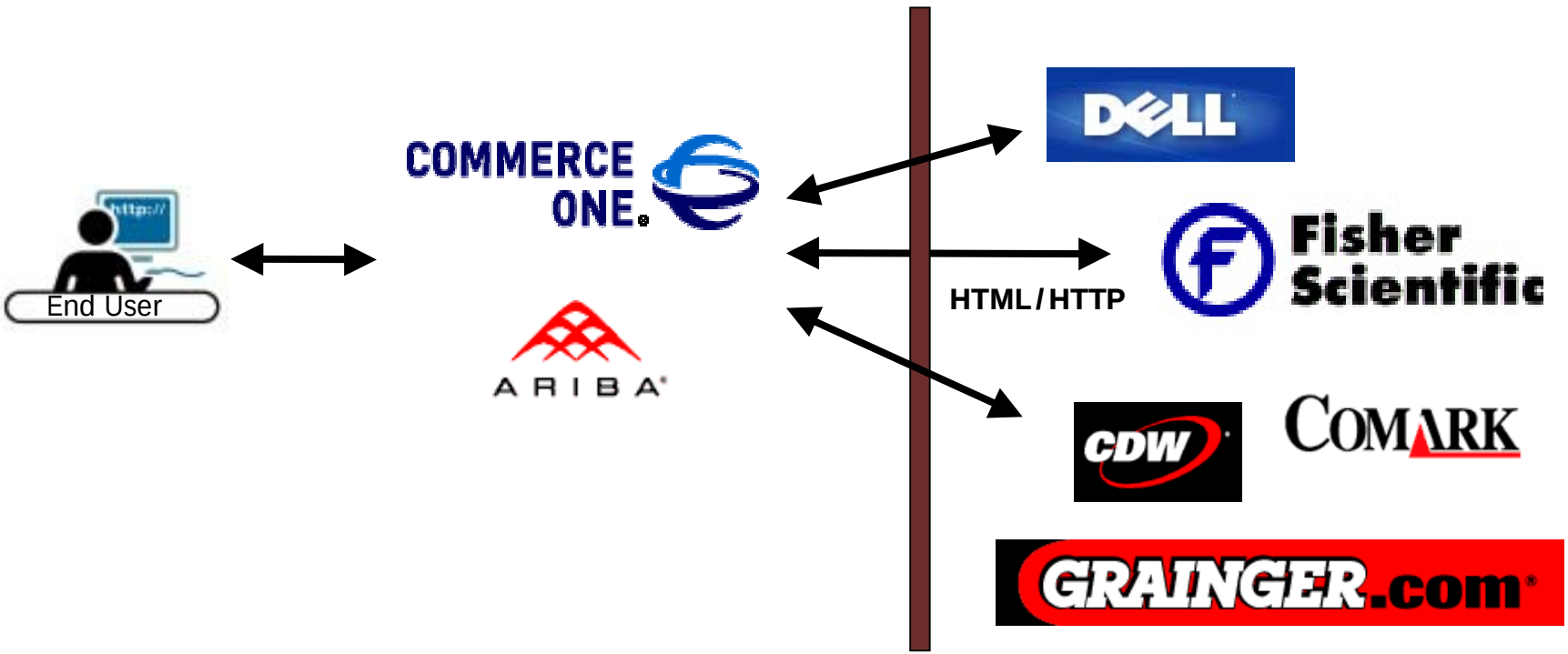
Composite Application Architecture

March, 2002

Adgenda

- Business Scenario
- Application Federation
- Service Delivery and Consumption
- Composite Application Architecture
- Standards and Summary

Business Scenario



Goal – combine sell side services with those of the buying organization to create a seamless procurement environment

Participants

- Buying Organization
  - Be able to do business with a large number of suppliers
  - Define how services are used
  - Alter services based on internal policies
  - Be insulated from choice of sell-side platform
- Product Supplier
  - Maintain product catalog
  - Publish services to assist buyer
  - Control how products are presented
  - Be insulated from choice of buying platform

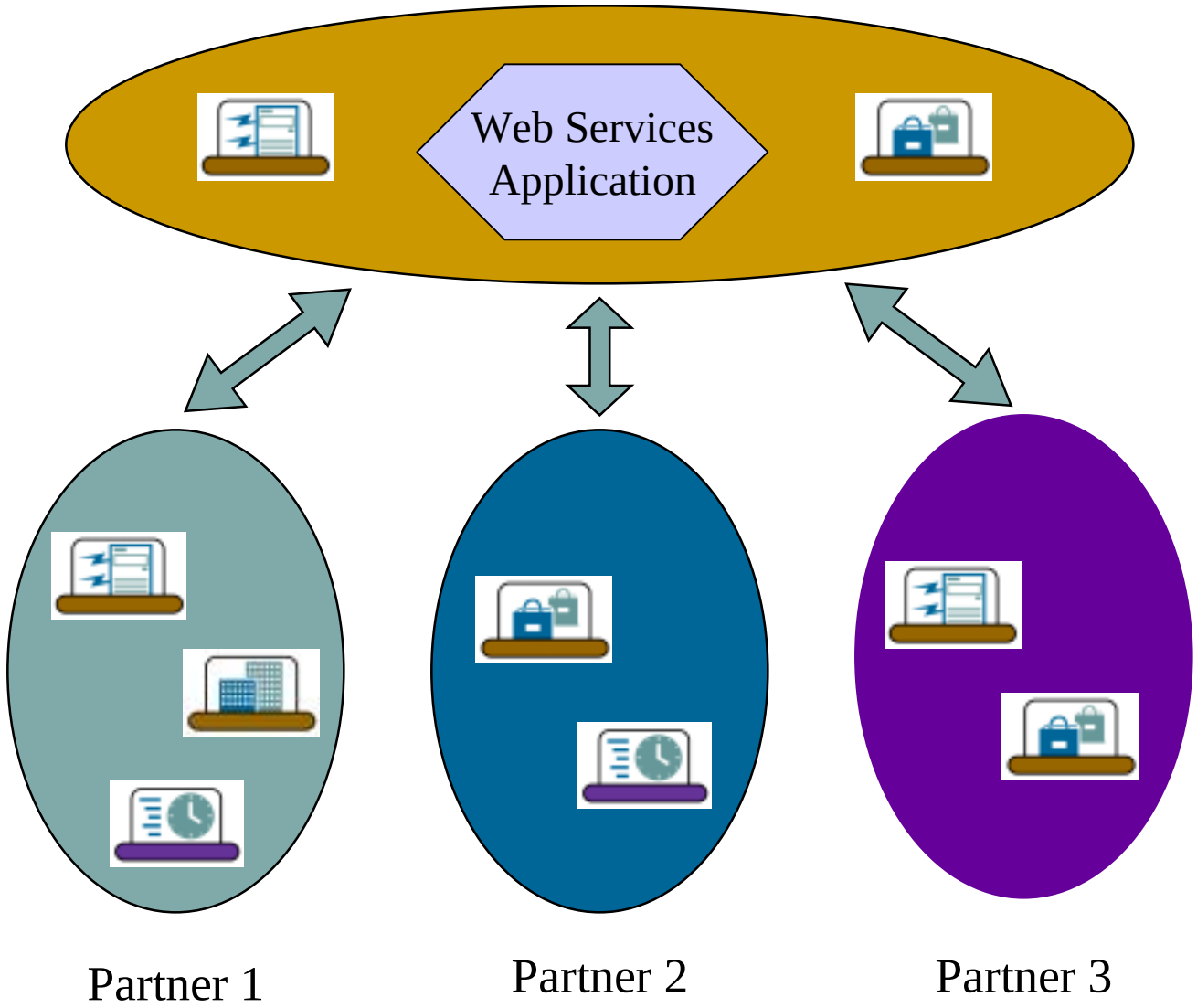
Federated Application Challenge

XML Web Services make it easy to access services in independent domains

Federation provides key source of power of Web Services

Each domain defines
- Authentication
- Transactions
- Management
- Service Definition

Goal – combine these services into cohesive applications



Areas of Federation

- Base Level
  - Authentication, User Domains
  - Session Management
  - Transactions
- Operations and Management
  - Maintenance and Versioning
  - Availability
  - Visibility
- Service Delivery and Consumption
  - Interface Definition
  - Granularity
  - Behavior and Sequencing

Coarse-grained Services

- Current XML Services Fairly Low Level
  - GetStockQuote
  - CheckInventoryLevel
  - TemperatureConversion
- Large Grained Services Required
  - Analyze a portfolio
  - Configure a product
  - Provision a telephone switch
- Service Characteristics
  - Stateful/Transactional
  - Asynchronous
  - Interactive

Interactive Services

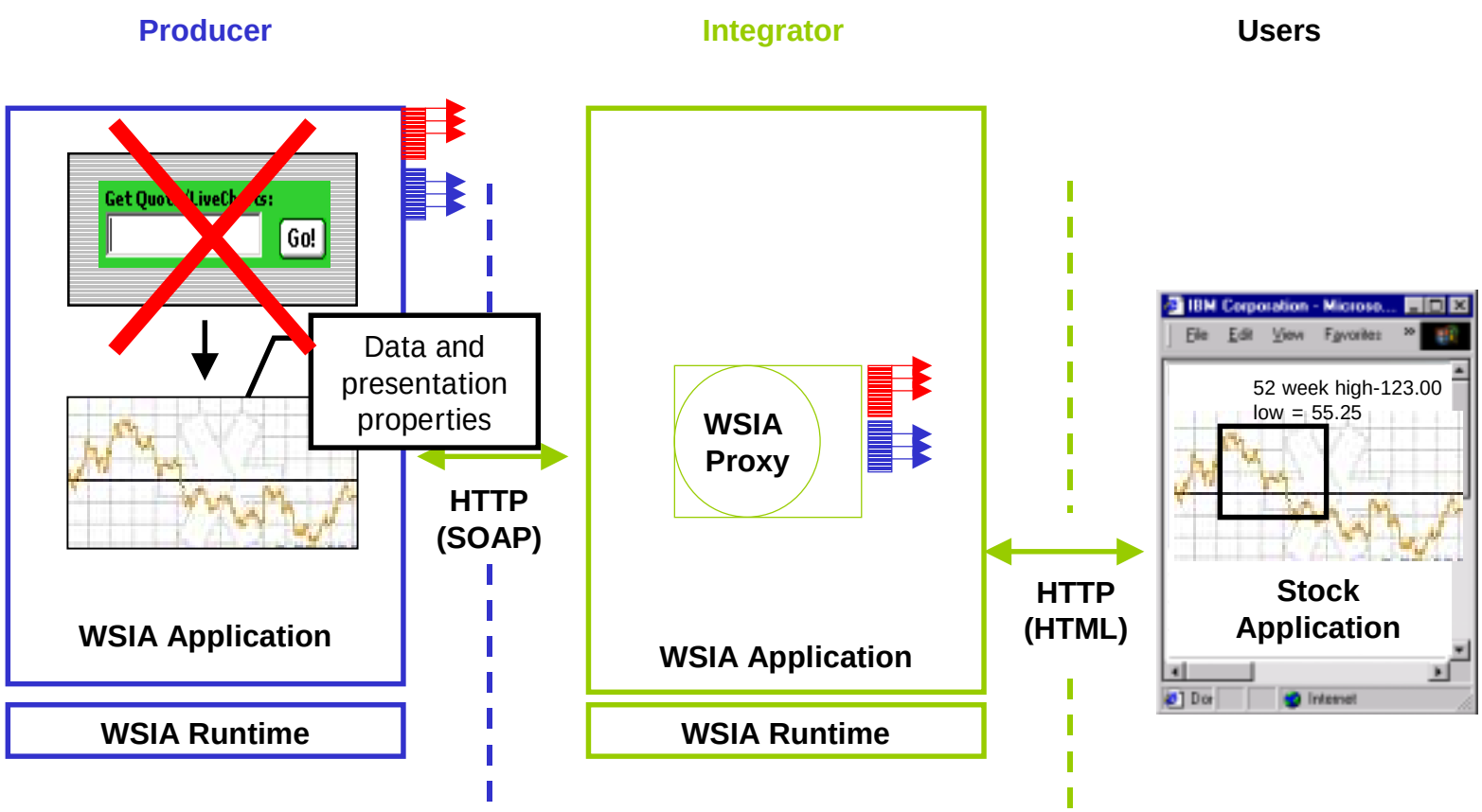
- Computational Service – purely machine to machine, calling application responsible for user interaction

- Interactive Service – purely machine to machine to human, called service handles user interaction, calling application can influence this interaction

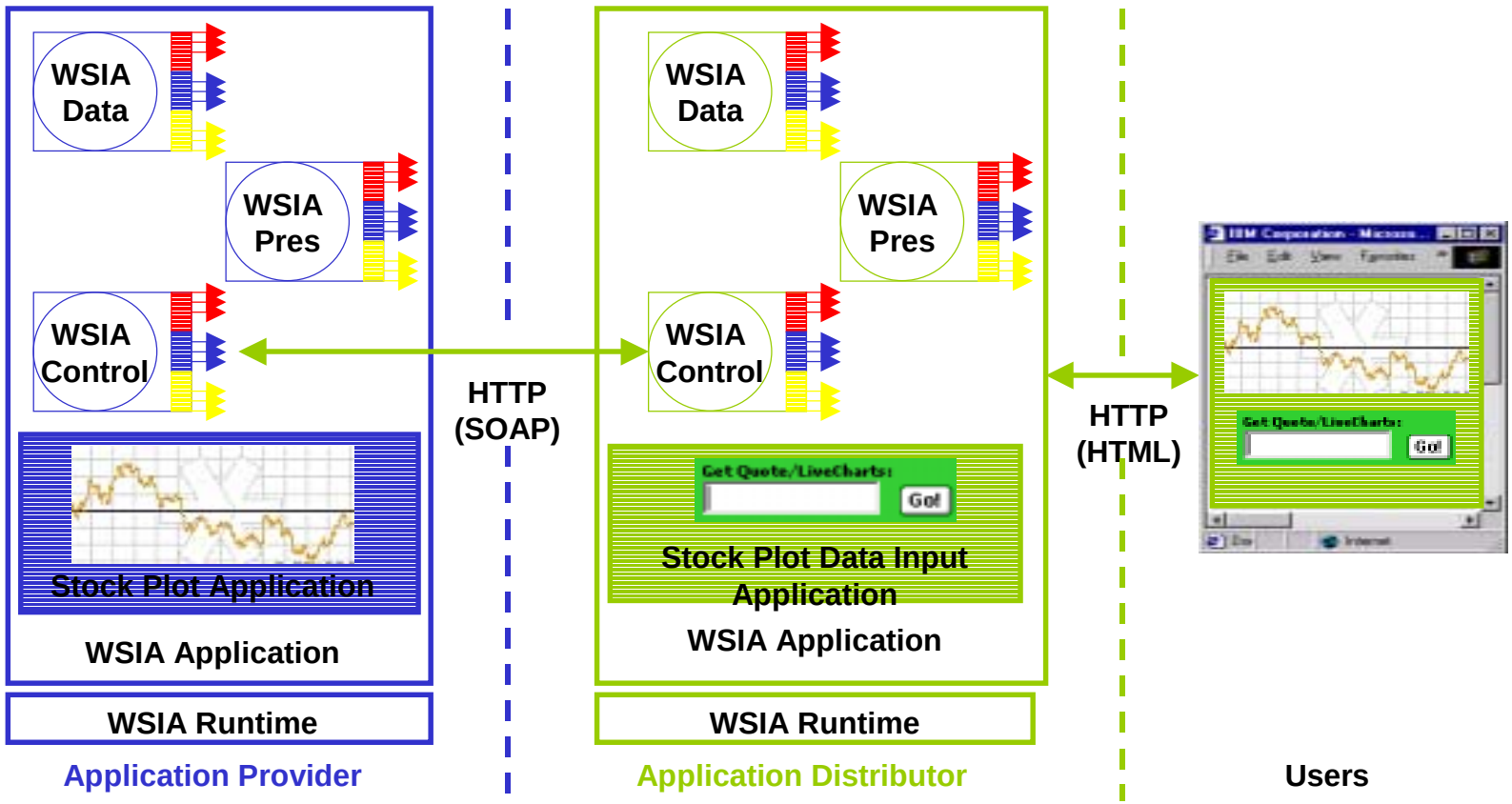
Service Adaptation

- Adaptation needed to reuse large grained services
  - Without adaptation, services too monolithic
  - Regain flexibility of fine-grained services
  - Consumer determines relevant adaptations
- Adaptation points
  - Service API – returned document
  - Service behavior and flow
  - Service UI

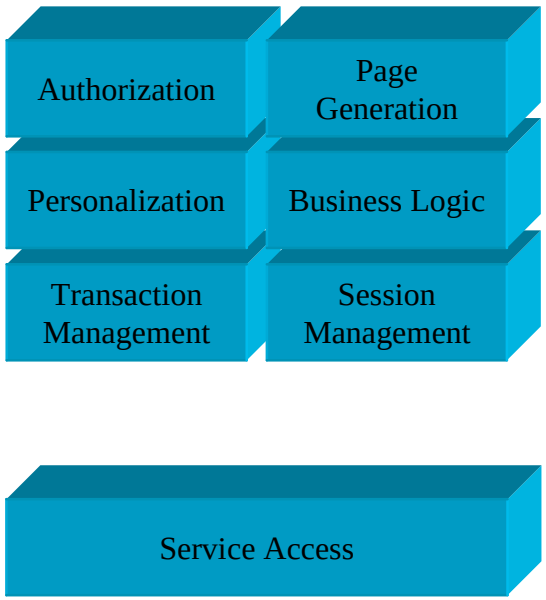
Coarse-grained Adaptation



Fine-grained Adaptation



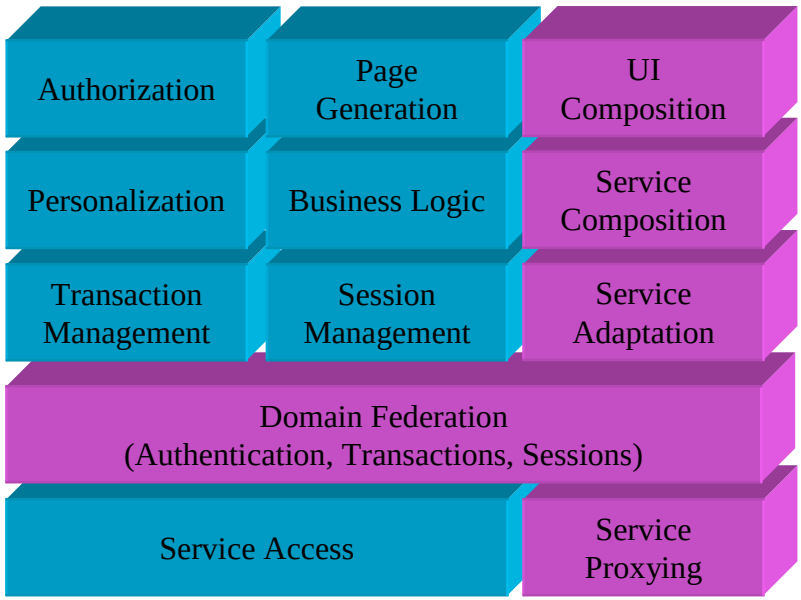
Simple Application Architecture

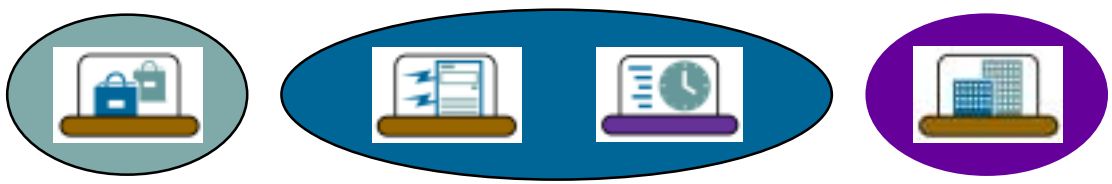


- Computational
- Stateless
- Non-transactional

Simple Web Services

Composite Application Architecture





Domain 1 Domain 2 Domain 3

- Interactive
- Stateful
- Transactional
- Federated

Real World Web Services

Relevant Standards

- Messaging Standards
  - SOAP(W3C), BTP (OASIS), Routing, Security, …
- Workflow Driven Standards
  - WSFL (IBM), XLANG (Microsoft)
- User Driven Standards
  - Web Services for Interactive Applications (OASIS)
  - Goals:
    - XML and web services centric model for interactive web applications.
    - Enable businesses to distribute web applications through multiple revenue channels, and
    - Enable new services or applications to be created by leveraging existing applications across the Web

Q&A