Data/Analysis Challenges in the Electronic Business Environment

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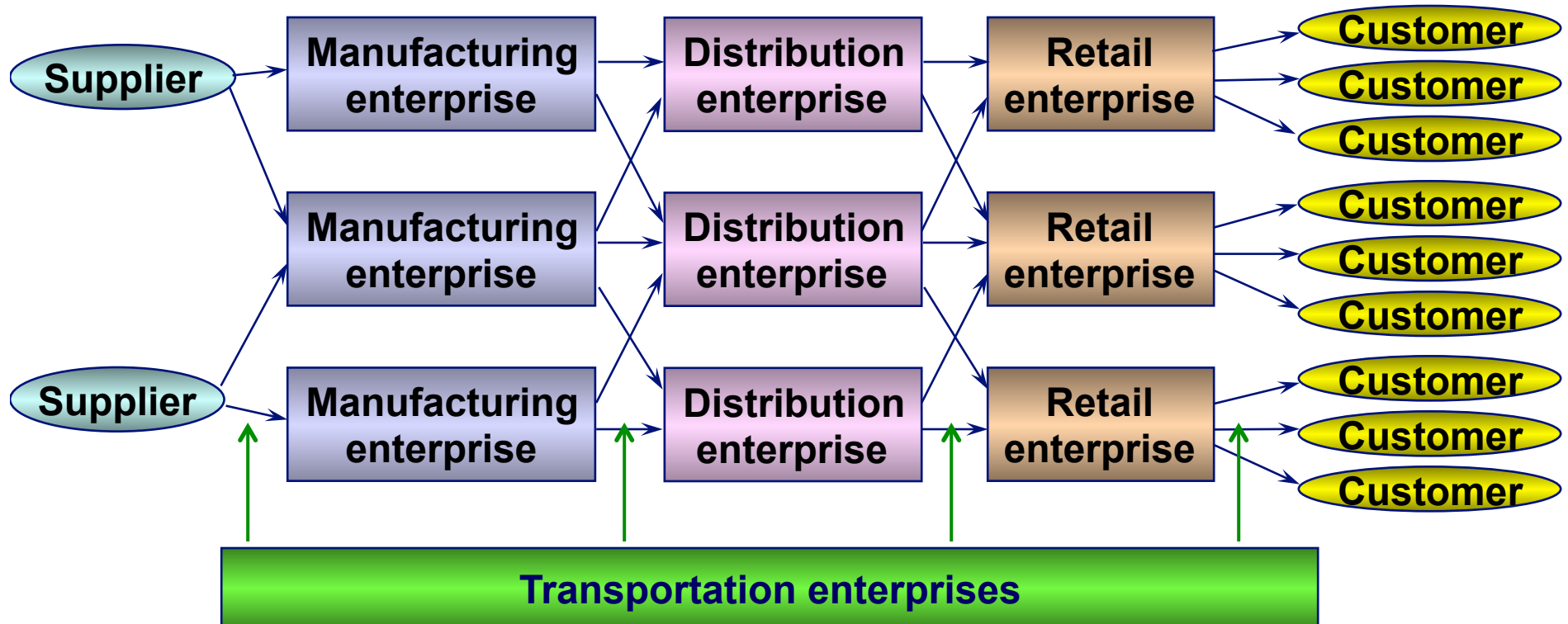College Park, Md.

Company Infrastructure

Marketing & Sales

Program Management

Logistics

Service

Operations

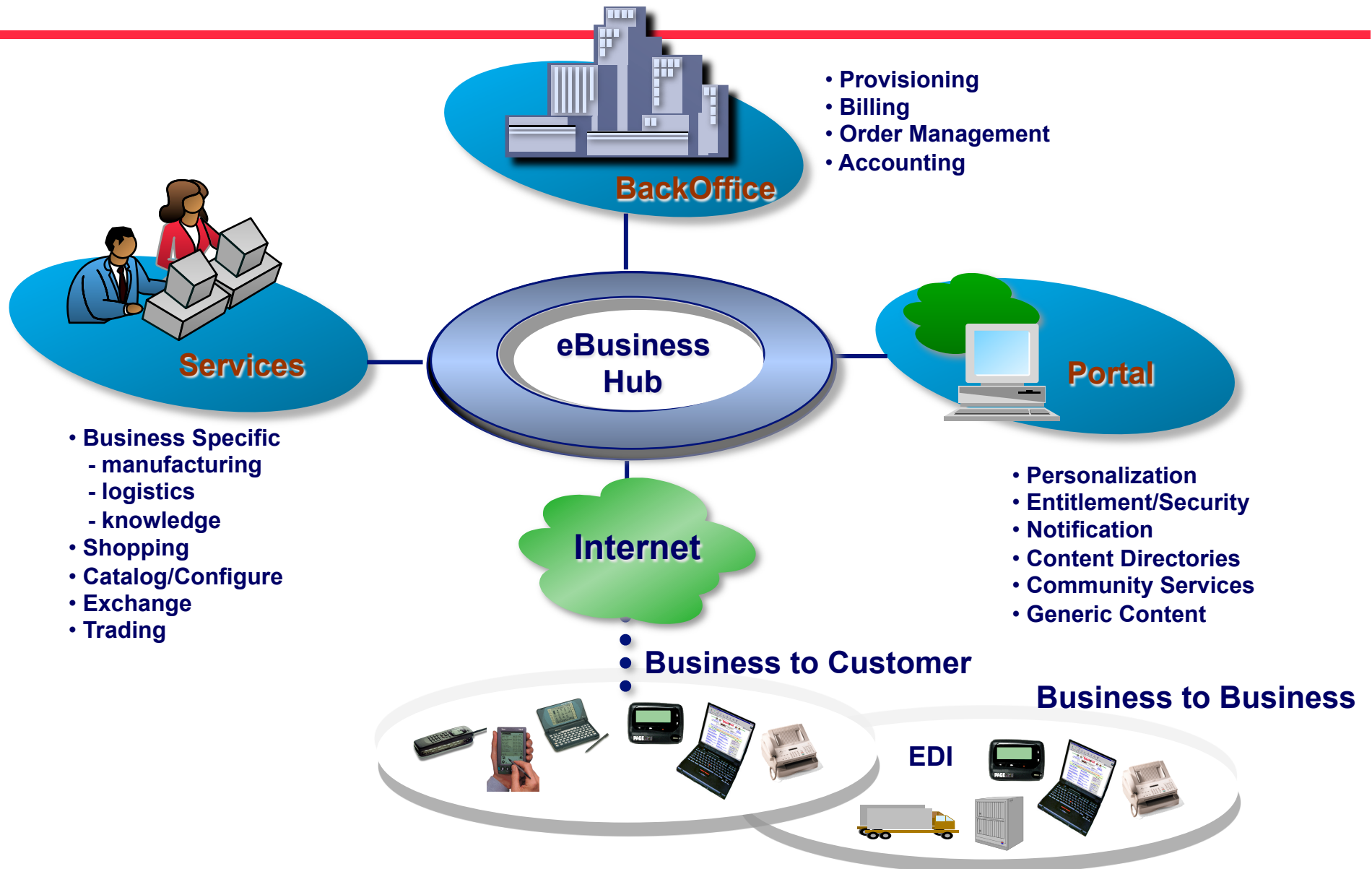# An Integrated Future

- ◆ Supply Chain
- ◆ Electronic Commerce
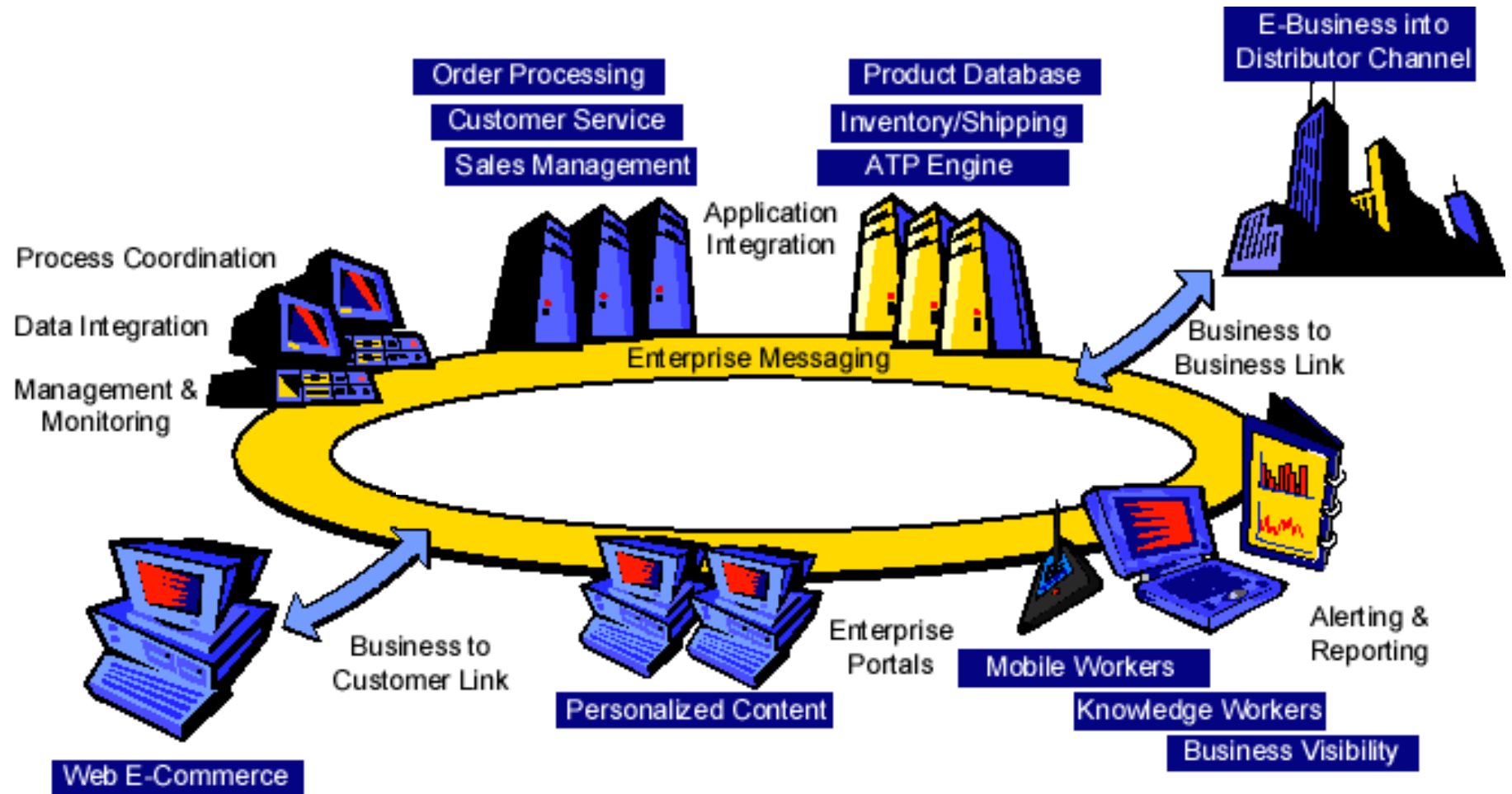- ◆ Retail Trading
- ◆ Auctions
- ◆ Financial Trading
- ◆ …

Electronic Business Architecture

Robert H. Smith
SCHOOL OF BUSINESS

BackOffice
- **Provisioning**
- **Billing**
- **Order Management**
- **Accounting**

Services
- **Business Specific**
  - manufacturing
  - logistics
  - knowledge
- **Shopping**
- **Catalog/Configure**
- **Exchange**
- **Trading**

eBusiness Hub

Portal
- **Personalization**
- **Entitlement/Security**
- **Notification**
- **Content Directories**
- **Community Services**
- **Generic Content**

Internet

Business to Customer

Business to Business

EDI

The Electronic Business Model: yourCompany.com

Principal Methodologies

People: Survey and Therapy

Procedures, Processes and Organization: Survey

Applications: Test

System Software and Protocols: Test and Simulation

Physical Devices and Systems: Analysis, Test & Simulation

Challenges in the New Environment

eBusiness Challenges

- **Attracting & keeping customers**
    - **Eyeballs, user experience, branding, stickiness**
    - **Business to Consumer & Business to Business**
- **(Internet) Time to Market**
    - **Rapid implementation of new services**
    - **Lots of competition**
- **Backend Integration: Single Biggest Problem**
    - **Content Sources, Legacy Systems**
    - **ERP, Customer Service, Sales Force Automation, Tax, Data Warehouse, Logistics**
- **Quality of Service**
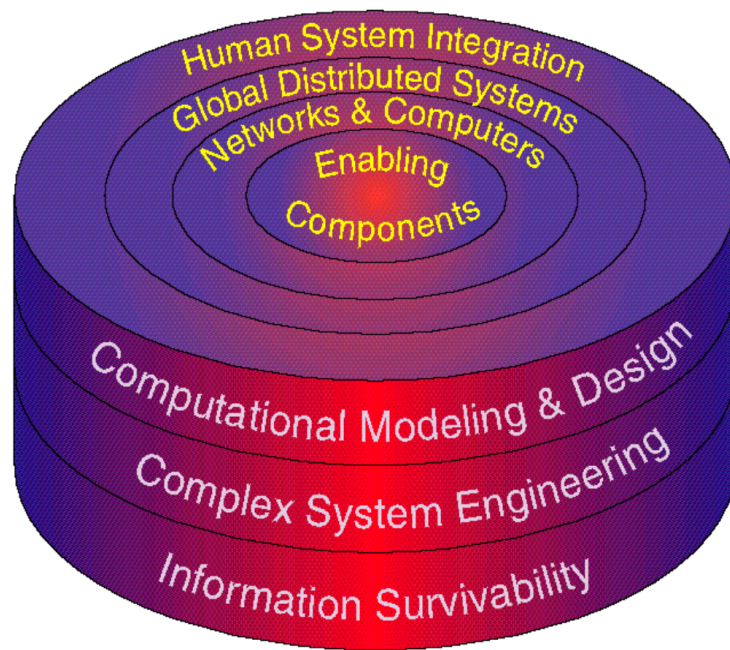   - **real-time, transactions, availability, performance, scalability**
- **Lack of experienced resources**
    - **management, domain, architects, development**

DARPA/ITO Model: Cross Cutting Technologies

- **Computational prototyping**
- **Simulation**
- **Behavior prediction**

- **System integration technologies**
- **Design environments for evolvable systems**
- **Composition of non-functional attributes**

- **Failure and vulnerability models**
- **Assessment tools and metrics**
- **Large-scale simulations**
- **Formal system models**

The Distributed Future
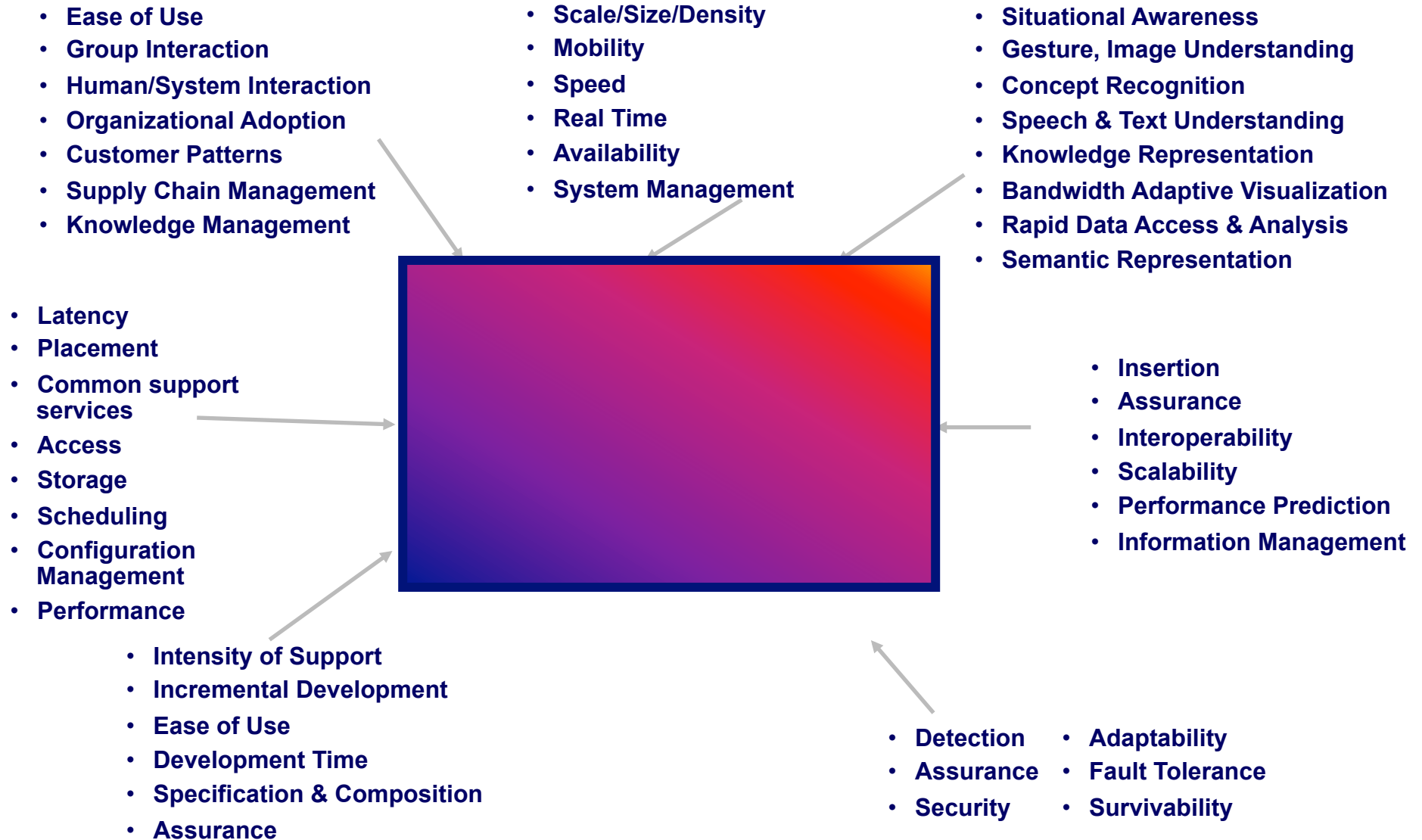
- **Distributed Heterogeneous Resources**
- **Seamless Distributed Computing Environment**
- **Integrated Human/Computer Interaction**
- **Assured Dynamic Response**
- **Adaptable Computing and Network Elements**
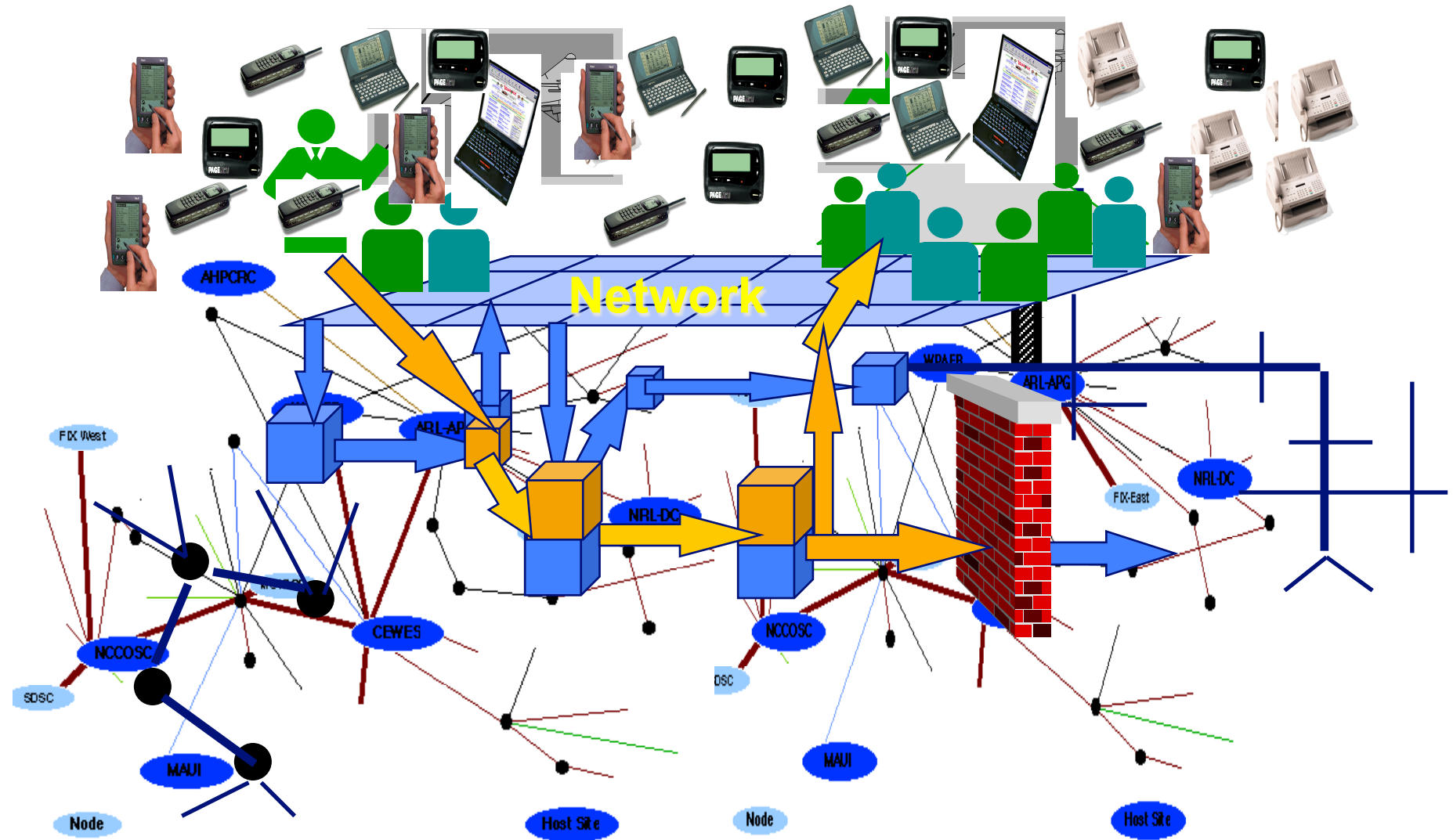- **Robust Performance and Survivability**
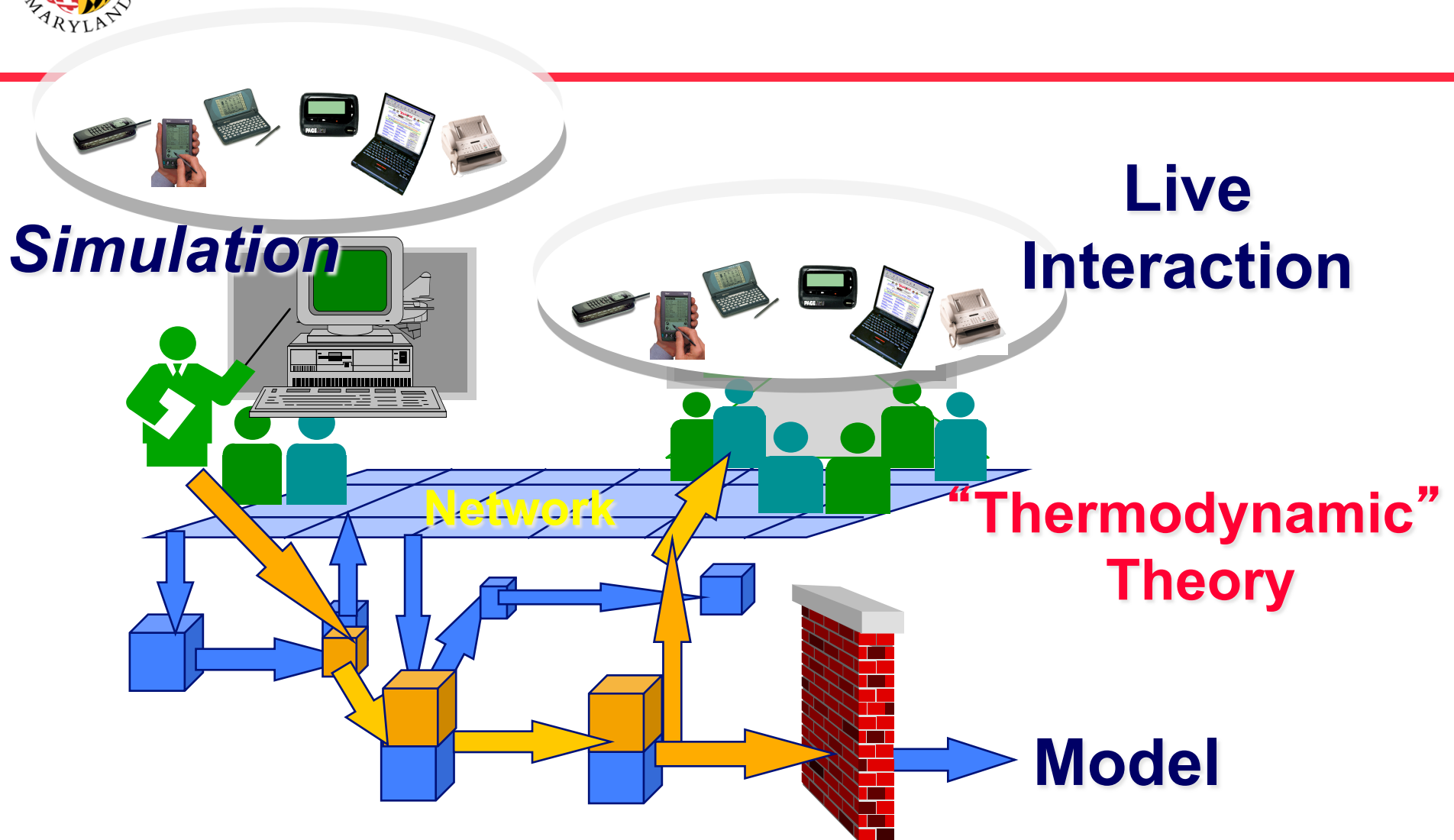
Integrated Research Challenges

- Ease of Use
- Group Interaction
- Human/System Interaction
- Organizational Adoption
- Customer Patterns
- Supply Chain Management
- Knowledge Management

- Scale/Size/Density
- Mobility
- Speed
- Real Time
- Availability
- System Management

- Situational Awareness
- Gesture, Image Understanding
- Concept Recognition
- Speech & Text Understanding
- Knowledge Representation
- Bandwidth Adaptive Visualization
- Rapid Data Access & Analysis
- Semantic Representation

- Latency
- Placement
- Common support services
- Access
- Storage
- Scheduling
- Configuration Management
- Performance

- Insertion
- Assurance
- Interoperability
- Scalability
- Performance Prediction
- Information Management

- Intensity of Support
- Incremental Development
- Ease of Use
- Development Time
- Specification & Composition
- Assurance

- Detection
- Assurance
- Security
- Adaptability
- Fault Tolerance
- Survivability

The Real Challenge

Shielding the Mechanics