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Pervasive Computing (PvC)

...and Its Impact on Next Generation Army Systems

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Agenda



- ❖ Pervasive Computing (PvC)
- ❖ PvC: It's Role in the Enterprise
- ❖ Convergence: A PvC Enabler
- ❖ Open Services Gateway Initiative (OSGi)
- ❖ Pervasive Device Software Architecture
- ❖ Back-End PvC Architecture
- ❖ Current Army Enterprise IT Architecture
- ❖ Middleware – A Foundation Upon Which to Build
- ❖ Enterprise IT – Its Impact on the Army

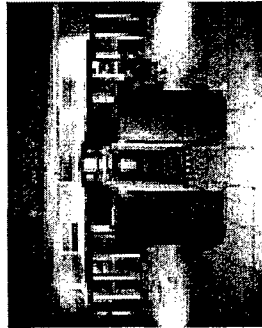


Pervasive Computing (PvC)

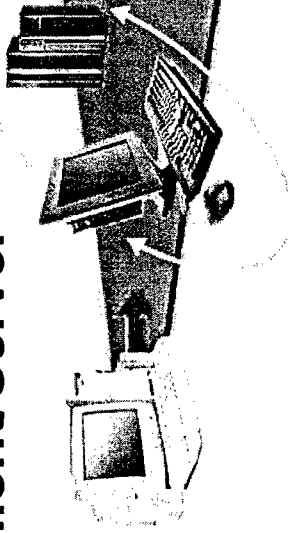
UNITED STATES ARMY
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A Natural Progression...

Isolated
Mainframes



Network
Computing
Client/Server

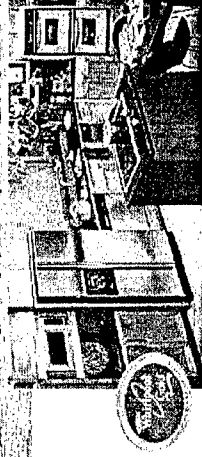


e-business



**Enterprise IT is
Moving Outward to
Embrace a New Class
of Devices**

REFLECTIONS OF PERFECTION





Pervasive Computing is...



Convenient access,

through a new class of device,

to *relevant* cross-enterprise information

with the ability to *easily* take action on it
when and where required.



*"...a billion people interacting with a million
e-businesses with a trillion intelligent devices
interconnected ..."* (L.V. Gerstner)



What's an IDE*?



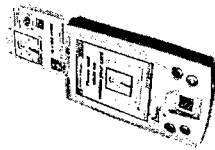
It's Enterprise Computing & E-Business!

- ❖ Enterprise Middleware
 - ✓ Enterprise Application Integration (EAI)
 - ✓ Pervasive Computing (PvC),
 - ✓ Foundation for Net-Centric Application Development
- ❖ Business Process Integration/Management (BPI/M),
- ❖ Knowledge Management (KM),
- ❖ Enterprise Content Management (ECM)
- ❖ Supply Chain Management (SCM),
- ❖ Customer Relationship Management (CRM),
- ❖ Product Life-Cycle Management (PLM),
- ❖ Enterprise Resource Planning (ERP),
- ❖ Legacy Software, etc.

*: *Integrated Data Environment*

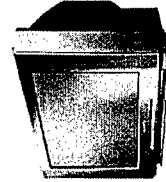
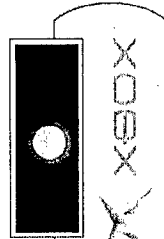
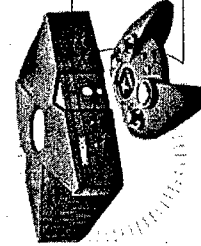
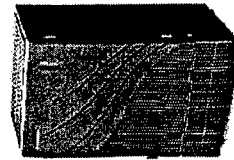
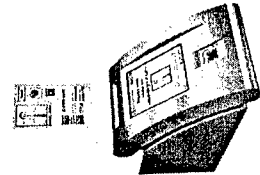
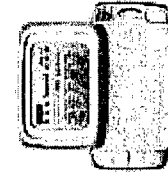
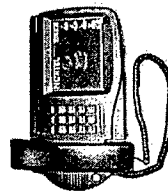
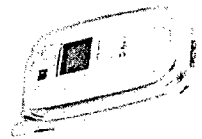
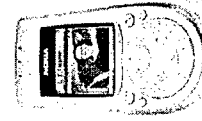
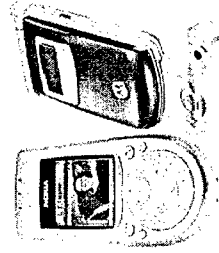
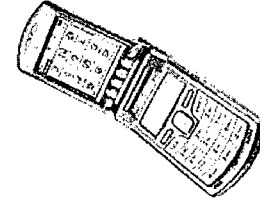
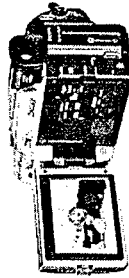
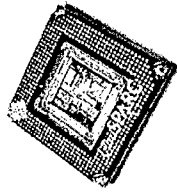


“Convergence:” Blurring of the Lines Between Products, Industries & Organizations



- ❖ Standards, Technologies & Products are Crossing Vertical Industries (IT, Telecom, CEs & CPs), &

- ❖ Creating a Seamless IT Infrastructure From the Enterprise Down to Legions of Embedded Systems



2



Convergence...

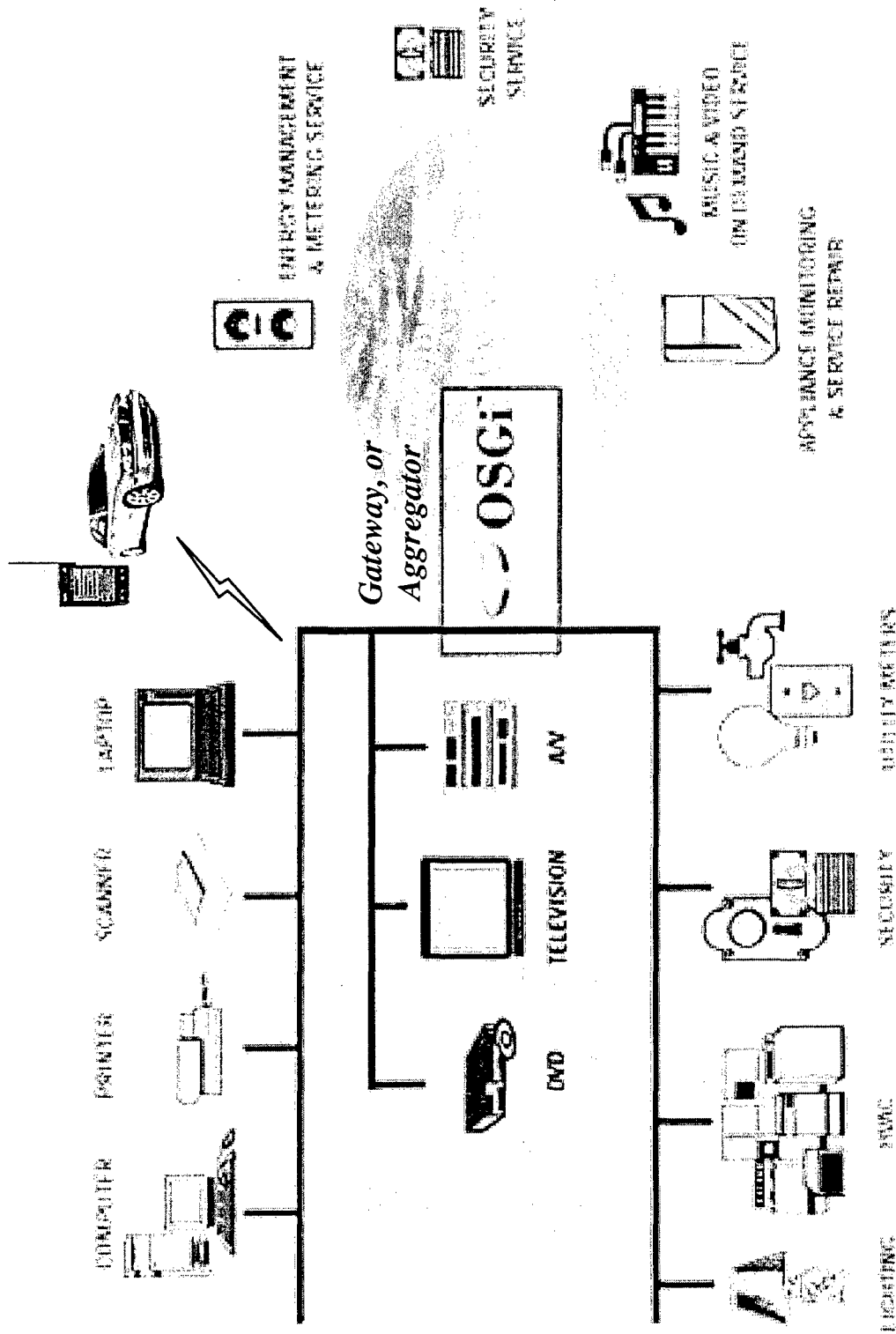


- ❖ Blurring the Lines between:
 - Devices (Hardware/Services)
 - Information (It's all reduced to IP Packets)
 - Applications (Software/Services)
 - Organizations (Forcing Reorganizations & Cooperation)
- ❖ Forcing Integration & the Seamless Flow of Information Between Processes & People

It's Changing the World

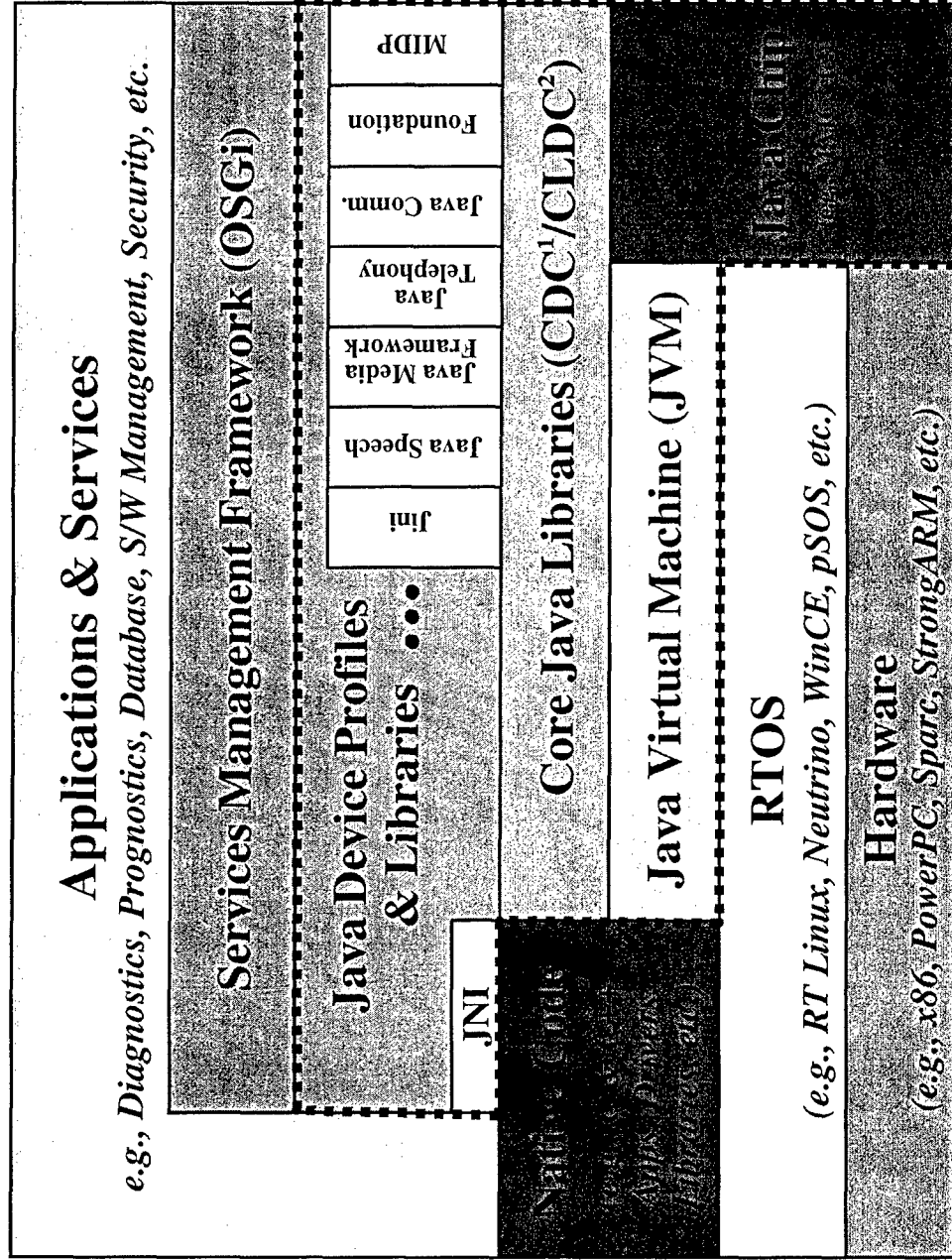


The Open Services Gateway Initiative (OSGi)





Pervasive Device Software Architecture



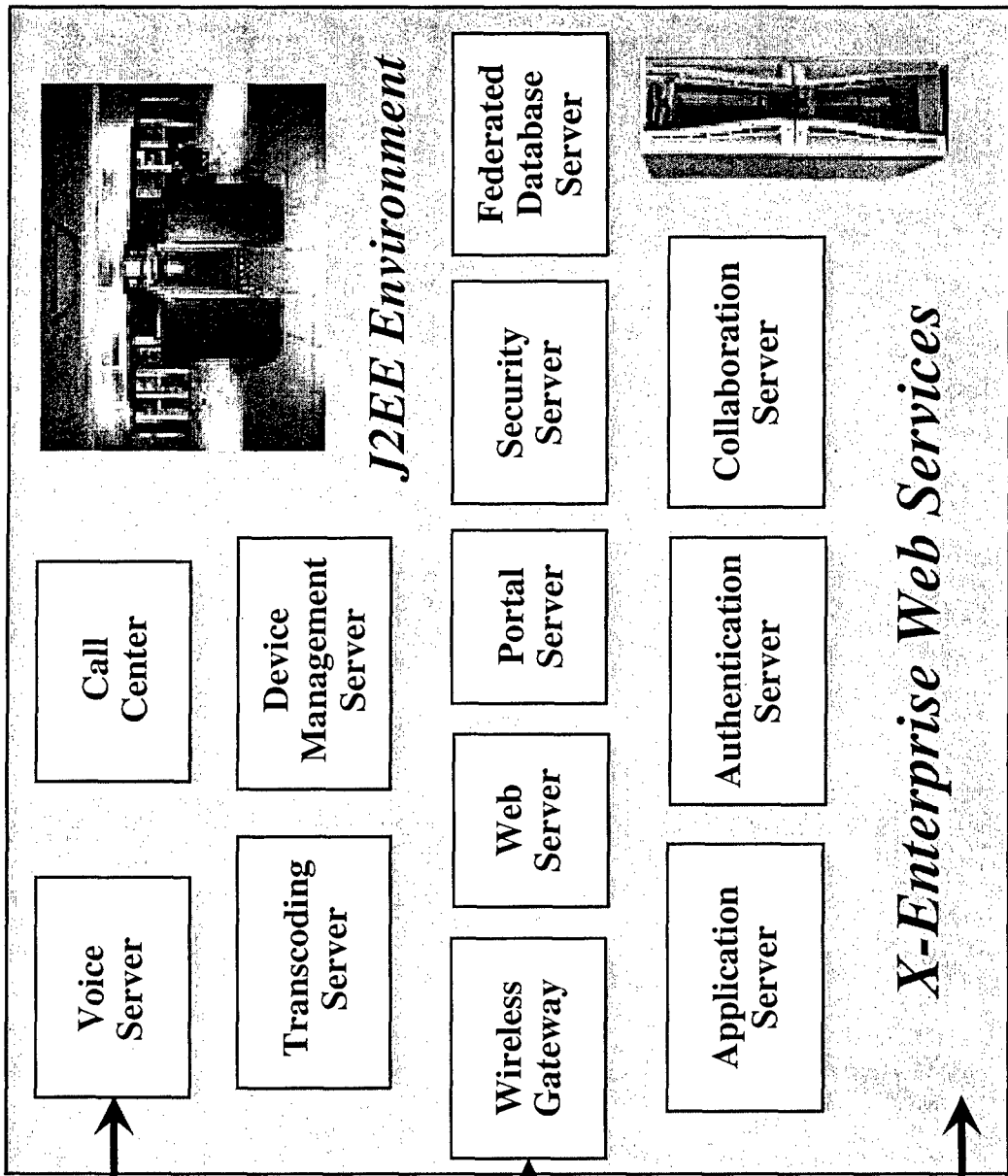
¹: CDC: Connected Device Configuration

²: CLDC: Connected Limited Device Configuration



Back-End Pvc Architecture

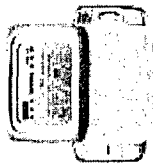
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Voice



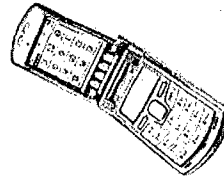
PDA



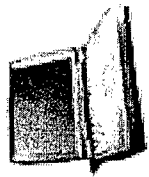
Automotive



WAP



Traditional



J2EE Environment

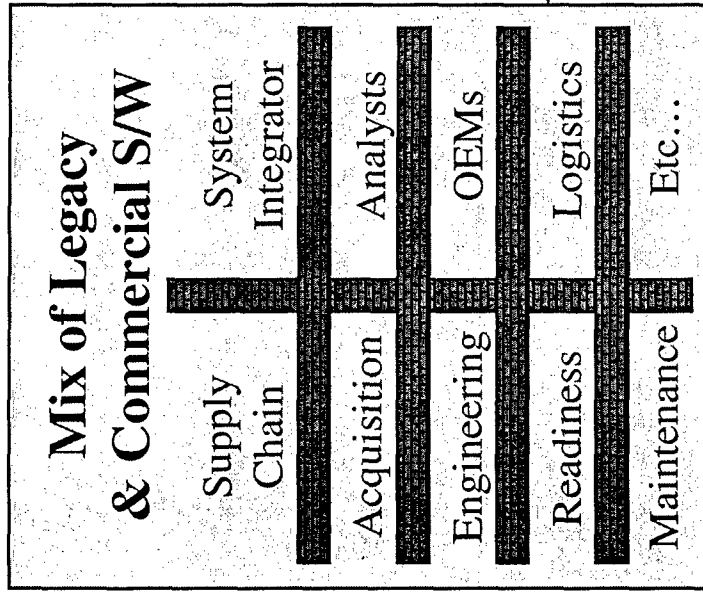
X-Enterprise Web Services



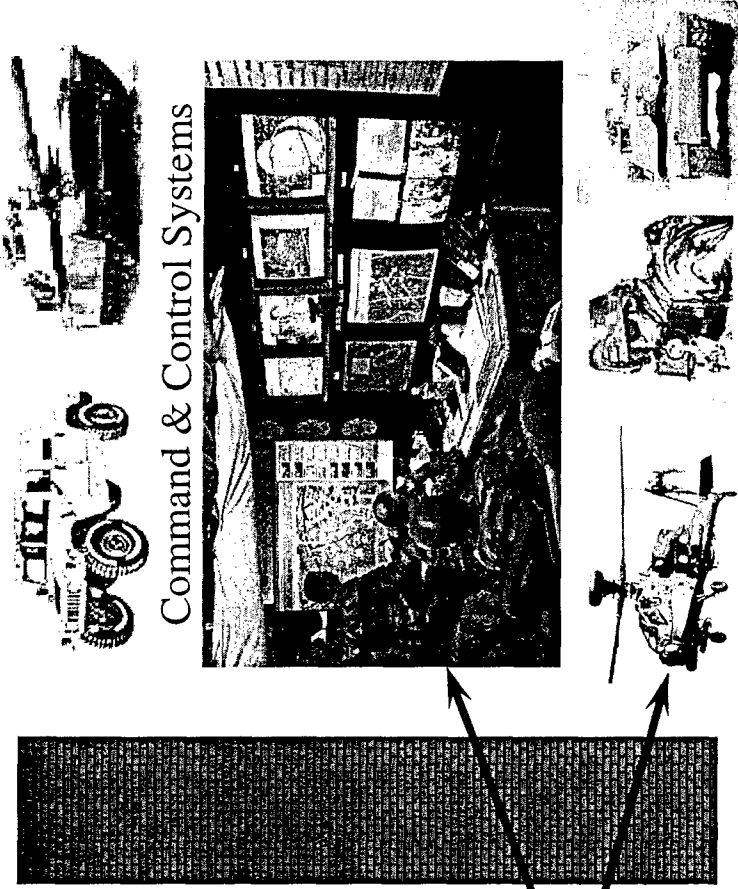
Current Army Enterprise IT Architecture



Enterprise Side



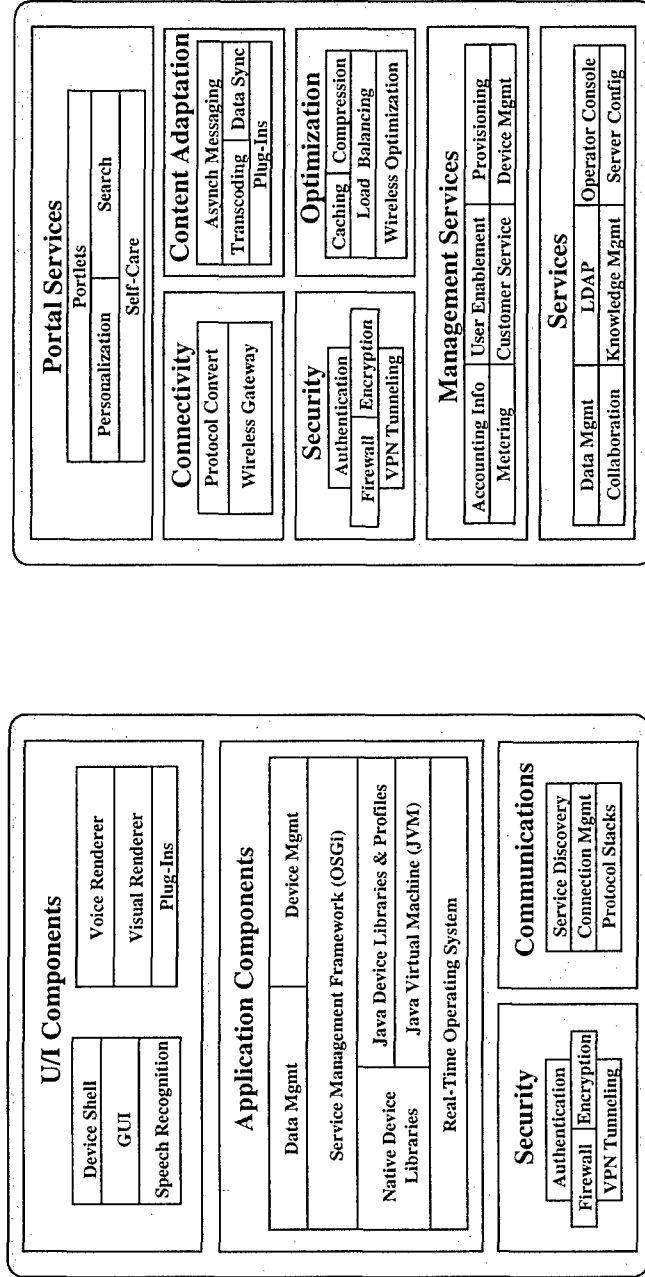
Operational Side



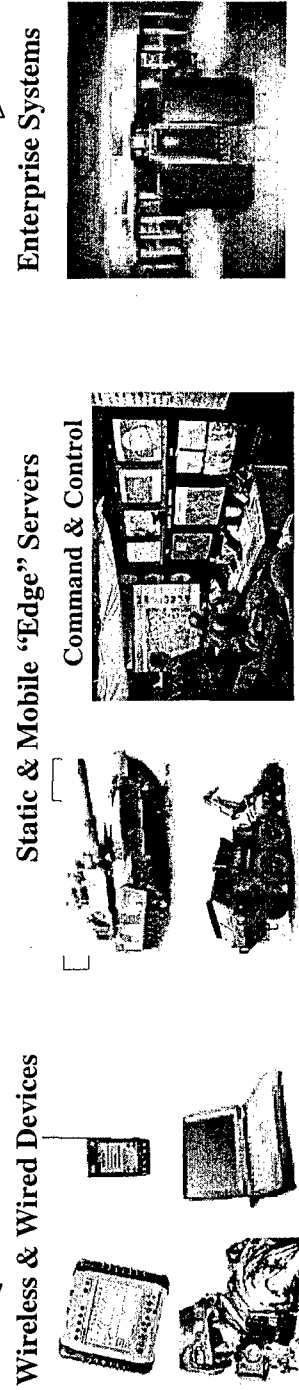
Need a Single Commercially-Based X-Enterprise IT Architecture



Middleware: A Powerful Foundation Upon Which to Build!

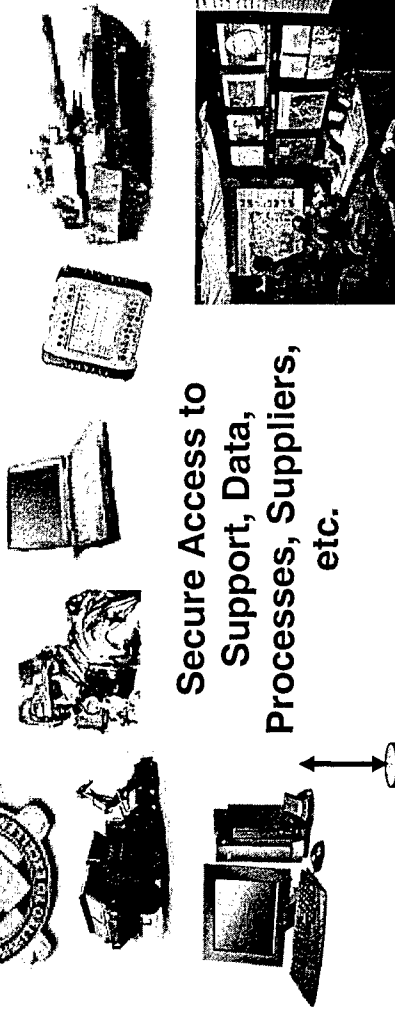


An Increasing Spectrum of Compute Platforms & Services

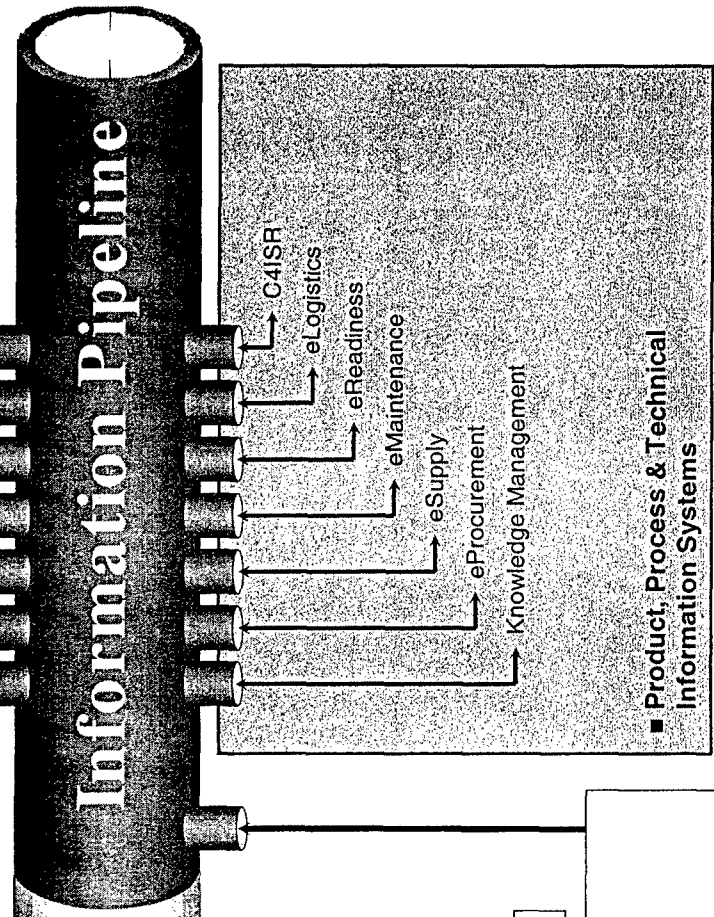




A Middleware Foundation



Secure Access to Support, Data, Processes, Suppliers, etc.



■ **Distributed Information Systems & Data**

- Logistics Modernization Program (LMP)
- Product Life-Cycle Management System
- Supply Chain Management (SCM)
- Customer Resource Planning
- Program Management Services
- Legacy Data
- Legacy Processes

■ **Product, Process & Technical Information Systems**

- C4ISR
- eLogistics
- eReadiness
- eMaintenance
- eSupply
- eProcurement
- Knowledge Management

Integration, Collaboration & Workflow Services

Core Services (Voice, Video, Data)

Security Services

- User & Process Authentication, Authorization, VPN, Encryption, Certificates, etc.,
- Middleware Services (e.g., Messaging, Transaction, etc.)
- "Everything Over IP," Plug-Ins & Compression Services, etc.

■ **Open Systems Architecture Provides**

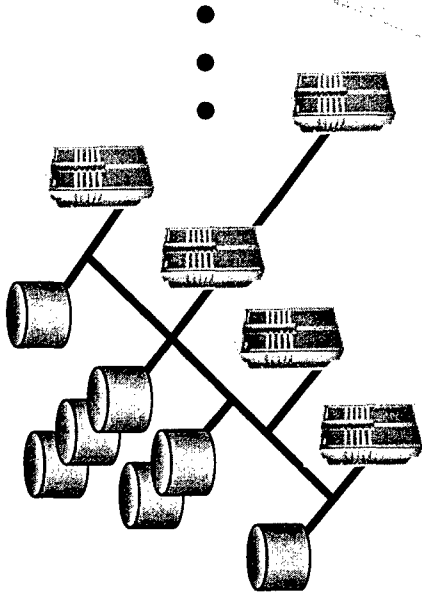
- Foundation for Application Development & IDE Tools
- Enterprise Application Integration Adaptors & Integration Tools
- Common Communications Gateways (Non-IP Tunnels)
- Distributed Process, Software and Data Management Services



Middleware Services



Web Services Aggregators



- ❖ *eProcurement*
- ❖ *eLogistics*
- ❖ *eMaintenance*
- ❖ *eReadiness*
- ❖ *eSupply*
- ❖ *eC4ISR, etc.*

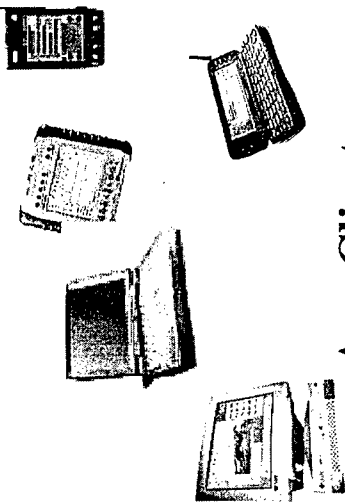
Enterprise Software Stack:

- ❖ Middleware Services (Portal, App, etc.),
- ❖ Message Queuing (TP),
- ❖ Network/Process Security & Management)
- ❖ Wireless Gateway (Transport Abstraction)
- ❖ Grid & Autonomic Computing
- ❖ Storage Area Networks (SANs)
- ❖ Web Services
- ❖ Linux

Internet/Intranet

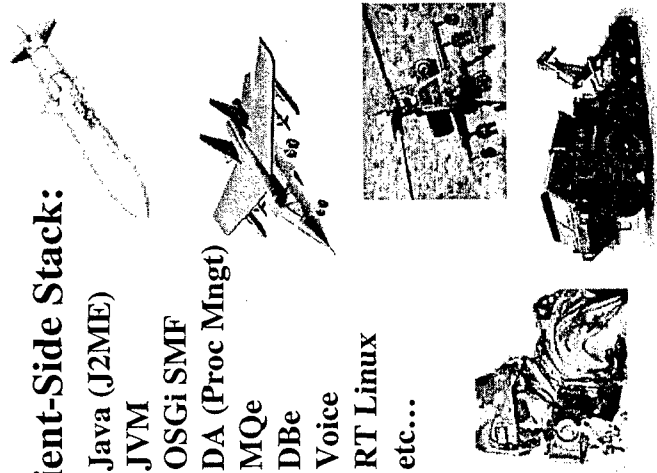
- Security/Authentication
- Software Management
- Data/Voice/Services

Any Client



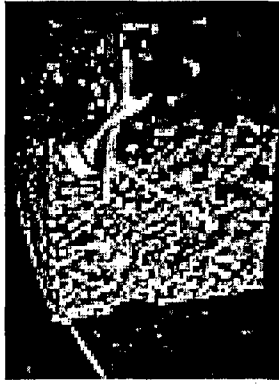
Client-Side Stack:

- ❖ Java (J2ME)
- ❖ JVM
- ❖ OSGi SMF
- ❖ DA (Proc Mngt)
- ❖ MQe
- ❖ DBe
- ❖ Voice
- ❖ RT Linux
- ❖ etc...





Enterprise IT



Like the Borg it will:

- ❖ Expand, Assimilate and Irrevocably Transform Information and Electronic Devices at all Levels and across all Army Organizations.

*Your Devices & Data Will be Assimilated....
Resistance is Futile!*

