



Defense Information Systems Agency
Department of Defense

GIG Technologies

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- **Vision**
- **Technology**
- **Convergence – Unified Communications**
- **Innovation Engineering**

Today's technologically advanced student is the Warfighter of 2016 and will test the limits for tomorrow's defense infrastructure

Student of 2008

Available Technologies

- VoIP, Internet TV, On Demand Media
- Virtual Worlds, Online Games
- Web 2.0, Chat, Email, Interactive Web/Apps
- Integrated GPS Hardware
- High Speed Wireless
- HDTV and Interactive TV
- Mobile Computing
- P2P Music and Videos

Warfighter of 2016

- Adaptive Planning
- Predictive Battlespace Awareness
- Data Fusion
- Modeling and Simulation
- Early Warning
- Knowledge Management
- Dynamic Targeting
- Time Sensitive Strike
- Persistent ISR
- Automated Threat Detection
- Battle Damage Assessment
- Multi-Dimensional Data
- Data Sharing Environments
- Distance Learning
- Wargaming
- Reduced Footprint
- Power Projection
- Force Protection
- Virtual Medicine
- Enhanced Stealth
- CBRN/Biohazard Detection

Services/ Infrastructure Requirements

- High Availability Networks
- Standards and interoperability of systems
- Community of Interest Network Integration
- Infrastructure Consolidation
- Low Latency
- Large Data Transfer Capabilities
- Priority-based policies (QoS)
- Redundancy and Failover
- Wireless and Mesh connectivity
- Low Jitter networking SLAs
- Interoperability of Systems
- Edge connectivity
- Standards and interoperability of systems
- Sensor Networking

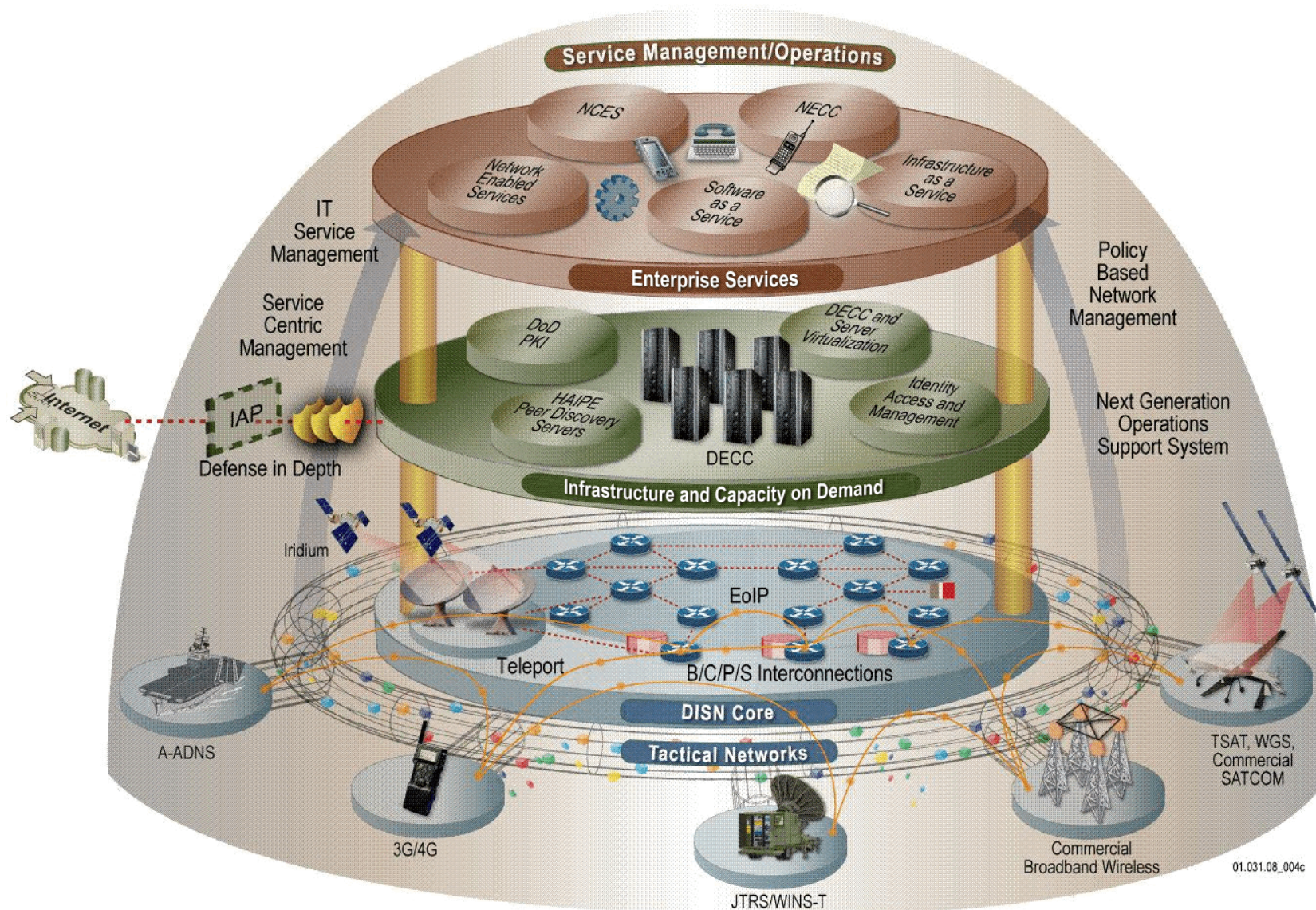


Examples of Technology Areas

- **Possible Bins for Technology Research**
 - **Reduce operations cost of the GIG Core segment**
 - Automated management
 - “Always on”
 - Automated defense
 - **Management of the GIG Intermediate/Edge segments**
 - “Always on”
 - SOA based planning
 - Policy Based Enterprise Management (PBEM)
 - Core- Intermediate/ Edge integration
 - intelligent routing
 - Includes aerial elements
 - **New services via Unified Communications**
 - Extension of unified communications (UC) to wireless/mobile
 - **Improved “Speed” of deployment**
 - GIG FDCE
 - Innovation engineering via CRADA’s, Acquisition Challenge Program and JCTD’s

Some “Other” Areas

- **Advanced network encryption and routing**
- **Thin client/stateless client**
- **Broadband COTM**
- **Distributed C2**
- **Smart caching**
- **GIIG as a sensor**
- **Cyber SA/defense**
- **Cross Domain Information Sharing**
- **Multi-Level Security solutions**
- **Enterprise Service Bus (ESB)**

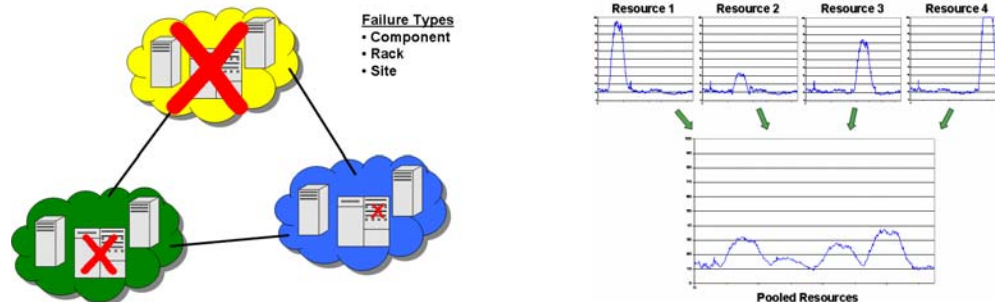


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Cloud Computing Infrastructure

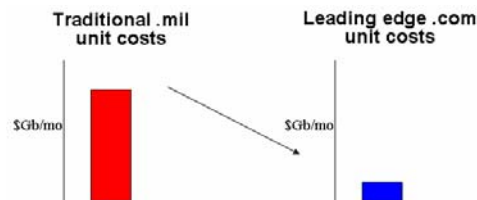
Dynamically Scalable Infrastructure with High Resiliency

*Can pivot shared resources to focus on highest priority mission +
Infrastructure designed to accommodate regular component failure = "baked-in" resiliency*



Disruptively Low Unit Costs (Processing & Storage)

Enables global aggregation of data + pre-formatting of data for optimum dissemination



- DISA has multiple capacity on demand contracts to pay for computing capacity on a usage basis
- Piloting a service (based initially on our capacity on demand contract with HP) called RACE (Rapid Access Computing Environment)
- In the future expand these capabilities and leverage technology to provide advanced cloud computing services to provide fault tolerant computing that adds computing capacity automatically as demand on a particular service grows

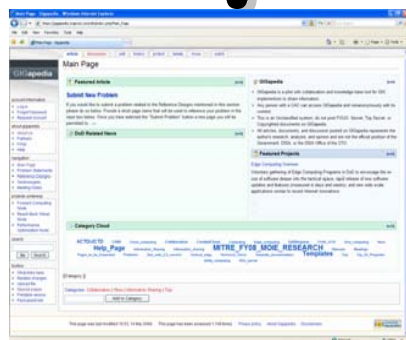
DISA Web 2.0 Leadership — OCTO Objectives

Community Publishing

GIGapedia:

https://gigapedia.srapr.od.com/wiki/index.php/Main_Page

(Harnessing Collective Intelligence)



Relationship Building

DoD Social Networking Service (SNS):

Work in Progress

<https://www.us.army.mil/suite/page/386542>

(Harnessing Collective Intelligence)



DISA Web 2.0 Collaborative Community

CTO Research Mashup:

http://pipes.yahoo.com/cto_research_mashup/start

(Rich User Experience)



Tech Early Bird:

Early implementation of some Web 2.0 capabilities



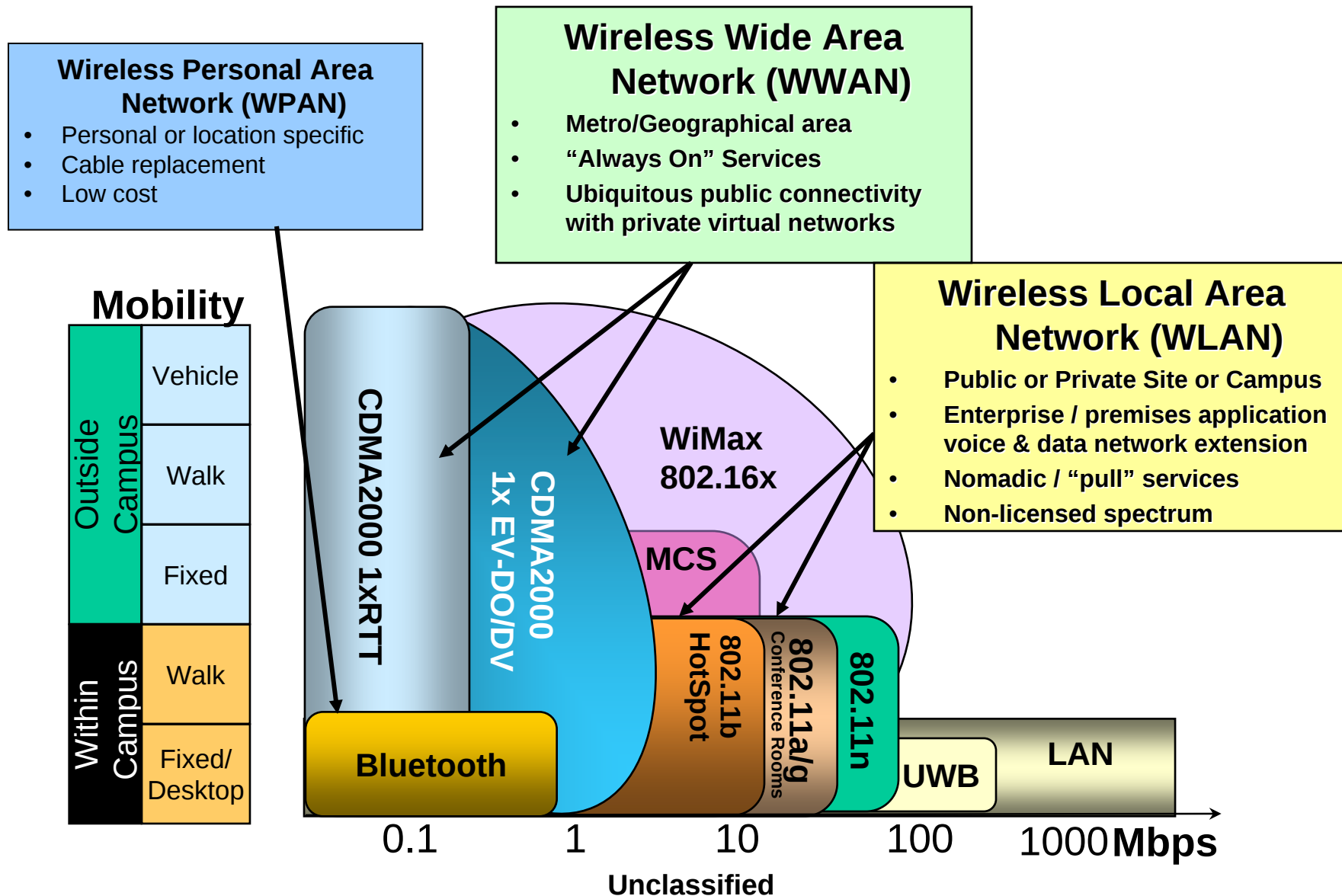
DISA CTO Blog:

<https://ctoblog.disa.mil>
(Harnessing Collective Intelligence)

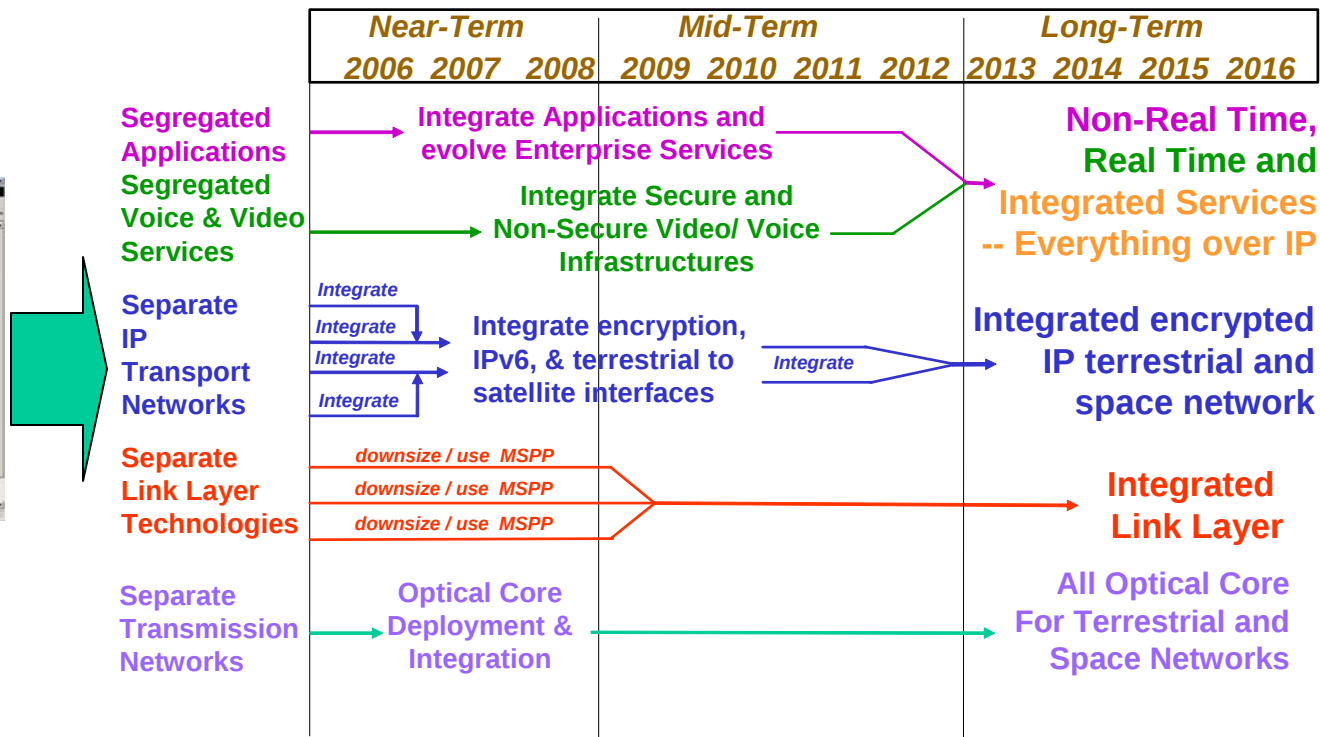
Information Integration

Community Discussions 8

Wireless Landscape

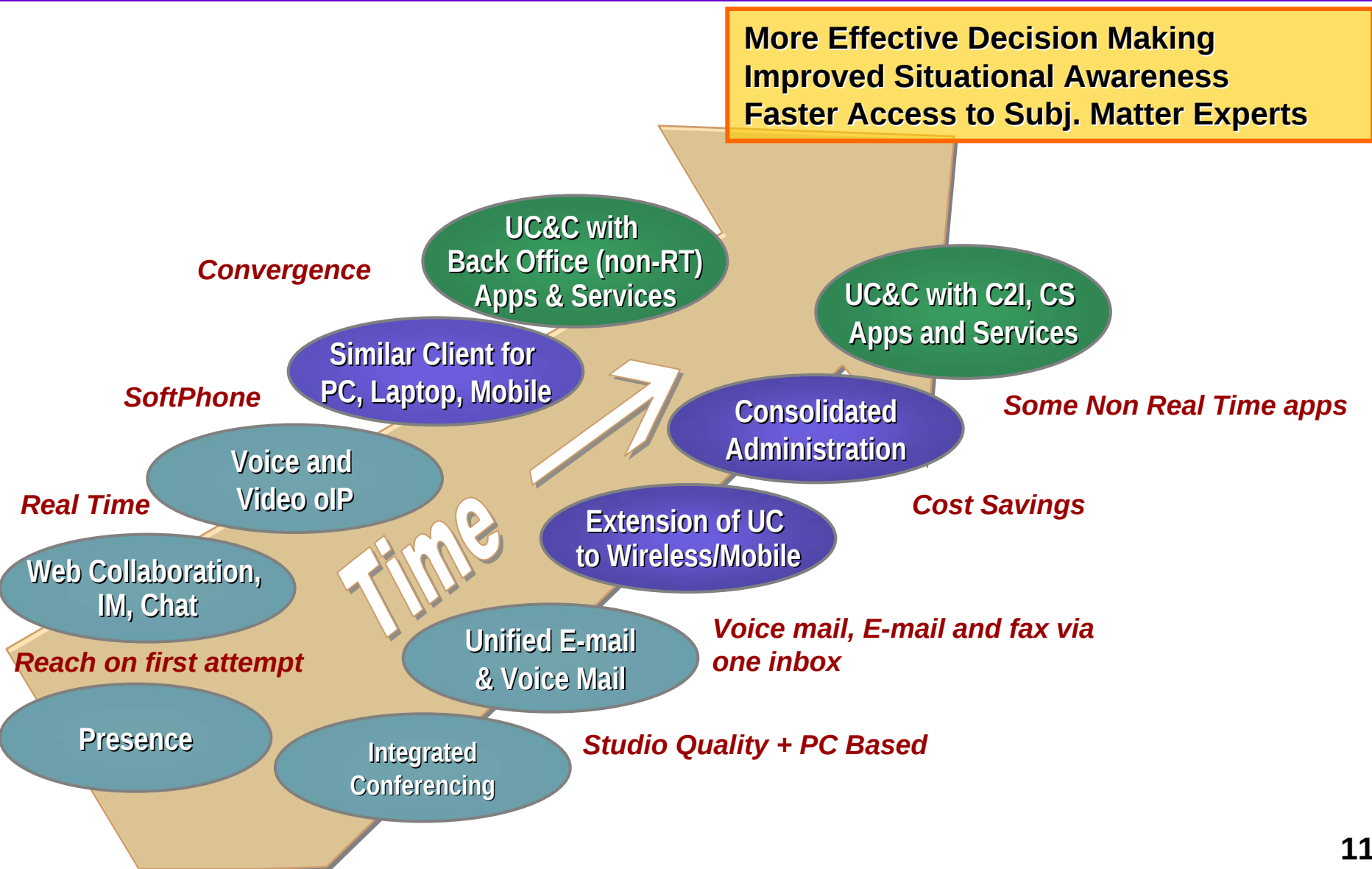


Standards Enable Convergence



IP Convergence focused on Layers 1-3. The new model is Unified Communications which includes all 7 layers of the OSI reference model.

UC&C Capability Evolution



Innovation Engineering

- **Joint Capability Technology Demonstrations (JCTD's)/ Coalition Warrior Interoperability Demonstration (CWID)**
 - Balance of C2, apps and Network topics
- **Creative Research and Development Agreement (CRADA)**
 - Just getting started in this area
- **Liaison with DARPA**
 - Recently established liaison officer with DARPA
- **GIG FDCE**
 - Build off the success of the NECC FDCE
 - OTA's observations of 6 June 08

FDCE Infrastructure

Development Enclaves

FDCE Infrastructure

Operational Enclaves



Enterprise collaboration and information sharing tools tailored to support an agile development process

- **Focused technology for:**
 - Reduce operations cost of the GIG Core segment
 - Management of the GIG Intermediate/Edge segments
 - New services via Unified Communications
 - Speed of deployment
- **DISA is actively looking to industry to explore new technologies and concepts via JCTD's CRADA's and other partnerships**