JOHNS HOPKINS
APPLIED PHYSICS LABORATORY




Decision Support Moving to the Mobile Edge*

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Dr. Jim Gump
Jim.gump@jhuapl.edu

*Additional details available in the full journal article


Research Paper

An Architecture for Agile Systems Engineering of Secure Commercial Off-the-Shelf Mobile Communications

Introduction:
Government Developed vs COTS

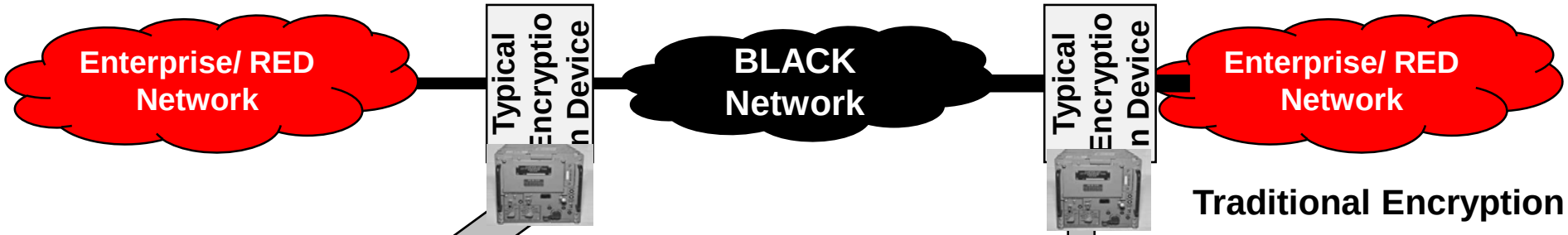
Secure Mobile Environment Portable Electronic Device (SME PED)

Latest Commercial Tech (Secured with Commercial Encryption)

Years to Develop, Obsolete when fielded …

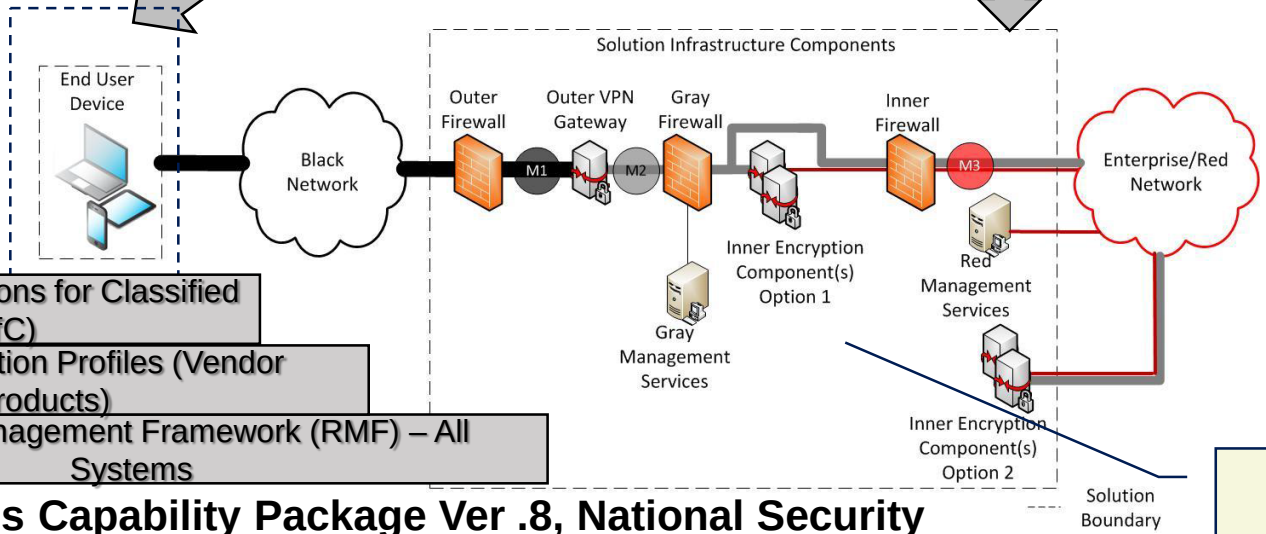
Introduction

New Paradigm for Encryption "Devices" (derived from NSA MACP)



Traditional Encryption

CSfC Approach



Standards Hierarchy

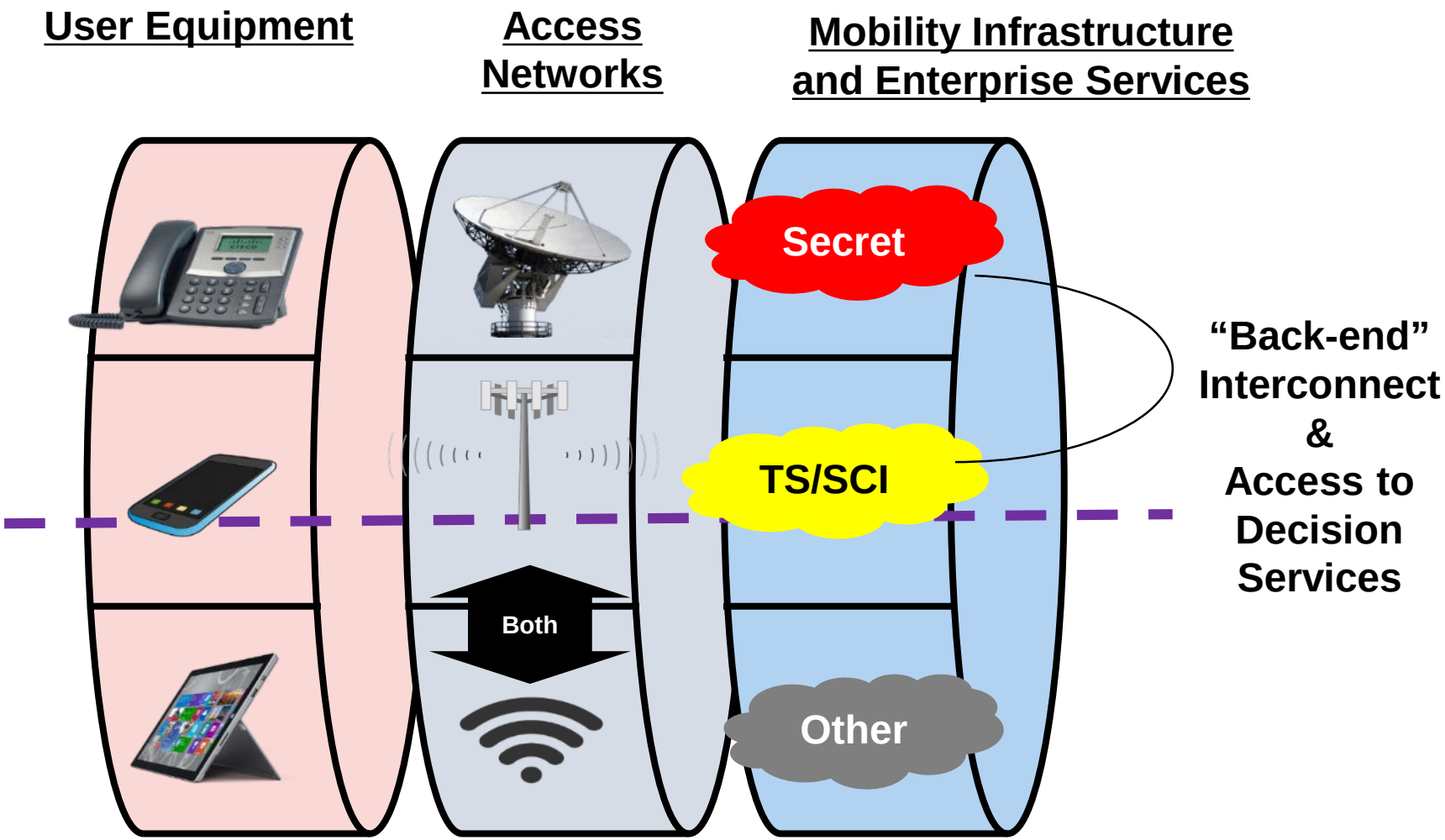
- Commercial Solutions for Classified (CSfC)
- NIAPP Protection Profiles (Vendor Products)
- NIST Risk Management Framework (RMF) – All Systems

Mobile Access Capability Package Ver .8, National Security Agency (NSA)

COTS Monitoring (Cyber tools)

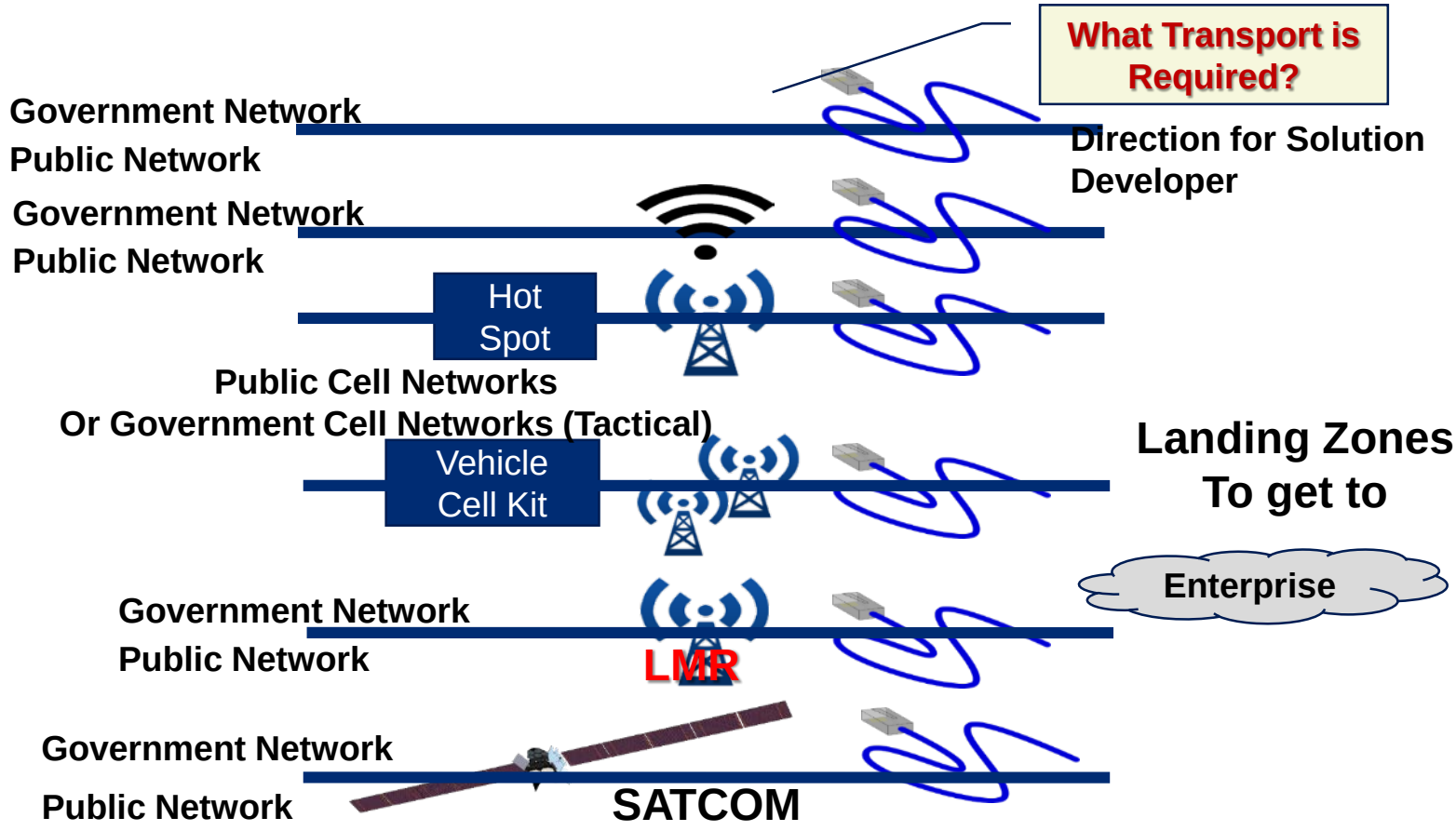
Typical Government (NSA) Developed Encryption (mil spec. box) Replaced by Commercial IT – VPN Tunnel inside another Tunnel

Combination Lock Analogy ("Dial" a Configuration)



Operational Viewpoint

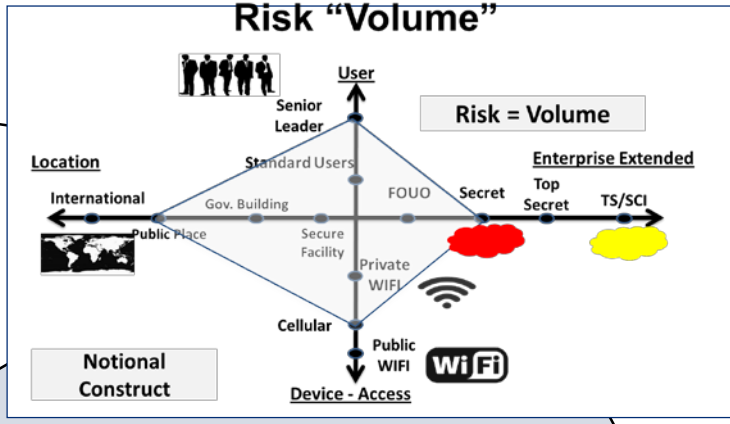
A Sampling of Transport Alternatives



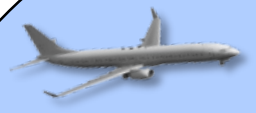
Don't forget the Threat – Signal Intercept, Cyber, etc (Risk)

Explore all the Alternatives and Consider Risk to Each and Locations Required will Drive the Transport Options

Architecture Foundation
High Level Requirements & Associated Risk



1. User(s) & Required Applications
- Senior Leader, Comms Officers, etc
- Voice, Video, Email, C2, BA, etc



4. Location(s)
- Aircraft, Vehicle, on foot, etc
- Government and/or Commercial
- US and/or OCONUS

Composed Solutions

2. Enterprise Extended
- Enterprise unclass, Secret, TS/SCI, etc
- Services available

3. Device(s) & Transport
- Phone, Tablets, Laptops, etc
- w/ WIFI, Cellular, etc

Using the High Level Requirements the Risk can be Illustrated as "Volume"

Operational Viewpoint - End User Capabilities

Required EUDs?

Direction for Solution Developer

- and/or -

Required Aps?

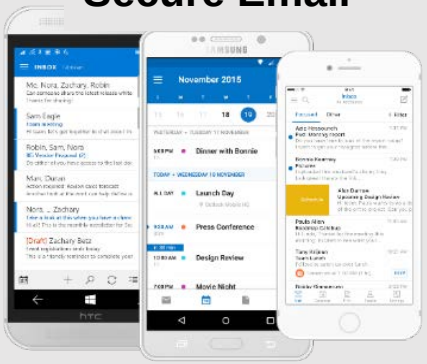
@ Classification Level?

Enterprise Services

Secure Phone

Secure VTC

Secure Email



Classified is “Secure”

Command and Control Applications

Streaming Video

C2 Applications available in fixed Locations

Other C2 Aps – Tracking Phones etc

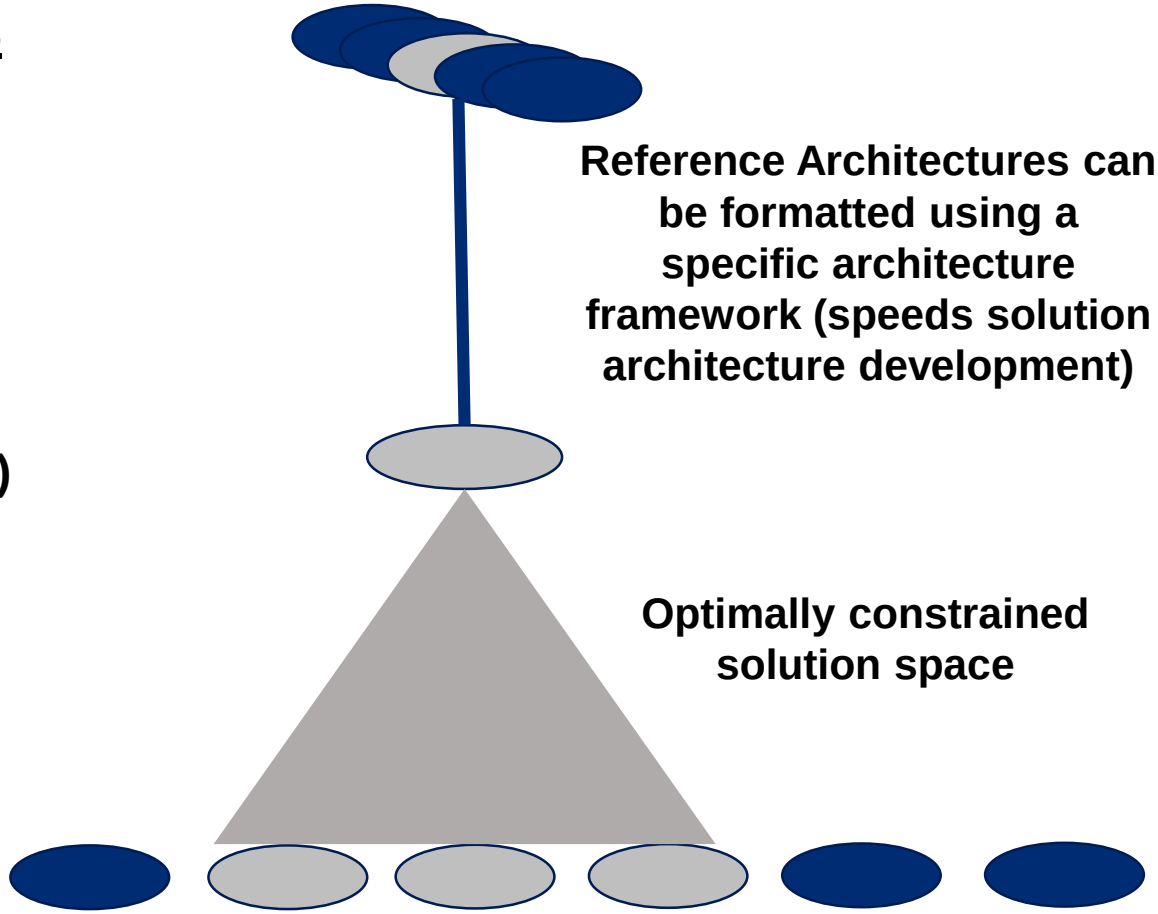
Bringing Secure/Classified Communications to the end user on-the-move (all locations) using all commercial Technology

Reference Architecture or Technical Patterns (for family of solutions)

Architecture Frameworks
(DODAF, etc)

Reference Architecture
Or Technical Pattern
(for a specific application)

Solution Architecture/
Solution Space
(for specific application)



Reference Architectures can be formatted using a specific architecture framework (speeds solution architecture development)

Optimally constrained solution space

All Architectures are not the same – Use Framework, Solution, Reference, Enterprise Arch. with Caution – Each are Defined and Use will Vary

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