

DSA / White Space Interoperability Work Group

Status Report for FCC 2nd Workshop
Wednesday, April 20, 2011



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About the White Space Work Group

Officers

- Chair: Jesse Caulfield (Key Bridge Global LLC)
- Vice-chair: Dave Gurvey (Motorola Solutions)

Two Group Deliverables

- Database Operating Guidelines Document
- Device Interoperability Specification Document

Two Phases of Development

- Phase I Draft to inform FCC March 10 meeting (*complete*)
- Phase II Version 1.0 for publication

Collaborations with Industry and Other Groups

- Test and Measurement Group
- Regulatory Committee
- Security Group
- TD-LTE Group
- IEEE 802.22 and IEEE 802.19
- IETF and others expected upon deliverable completion

Group Structure and Approach

Open Participation

- The Group is open to all interested parties (members and non-members alike) – basically a free trial of WINForum services

Voting and Decision Making

- By charter: only WINForum members may officially vote
- However most all decisions are the result of open debate and straw poles

Contributions

- Group deliverables are developed and build upon each participant's respective contributions, input, advice and guidance

Outreach and Participant Education

- Group has invited industry experts to brief participants on their experiences and observations with key technologies
 - Security Infrastructure by Fortinet Inc.
 - Status of FCC Spectrum Auctions by Bingham McCutchin
 - Internet Infrastructure by Equinix Inc.
 - Database Synchronization and Security by Oracle Corporation

Group Participation

47 Professionals across 36 Companies

WINN Forum Members

Industry Experts

Administrators

Manufacturers

Wireless
Operators

International
Regulatory Advisors

Other Interests

Administrators

Incumbents

Wireless
Operators

Manufacturers

Subject Matter
Experts

key bridge

MOTOROLA SOLUTIONS
ADAPTRUM

RADIO
SOFT

Telcordia. LS telcom

airity.
Suddenly, no limits.

CRT
Cognitive Radio Technologies
NICT

MSTV
MAXIMUM SERVICE TELEVISION

SHURE®

NEC

PRISMTECH
HUAWEI

symantec™

ORACLE®

HARRIS

VIS

TDK

MARVELL®

NOKIA

Rockwell
Collins

HYPRES

tecnalia

MARVELL®

WISPA®
NTA

ZTE中兴

SSC

MITRE

WIRELESS
INNOVATION
FORUM

FOX

BINGHAM

The Group has an open invitation policy – all are welcome to participate.

WIRELESS
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FORUM

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Slide 4

SDR
forum
version 2.0

1: Database Operating Guidelines



Concept of Operation

- Publish / Subscribe
- Party Responsibilities
- Use-case scenarios and Operational procedures



Communications

- Database to Database
- Database to FCC
- Entity registration procedures



Information Assurance

- Ecosystem security
- Data protection (identity and encryption)
- Use-case scenarios and Operational procedures



Other

- Synchronization frequency
- Transaction logging
- Records retention

2: Device Interoperability Specification



Concept of Operation

- Operating Modes
- Party Responsibilities
- Use-case scenarios and Operational procedures



Communications

- Device initialization
- Device-to-database transactions
- Internationalization



Information Assurance

- Identity management (authentication, authorization)
- Data protection (encryption)
- Use-case scenarios and Operational procedures

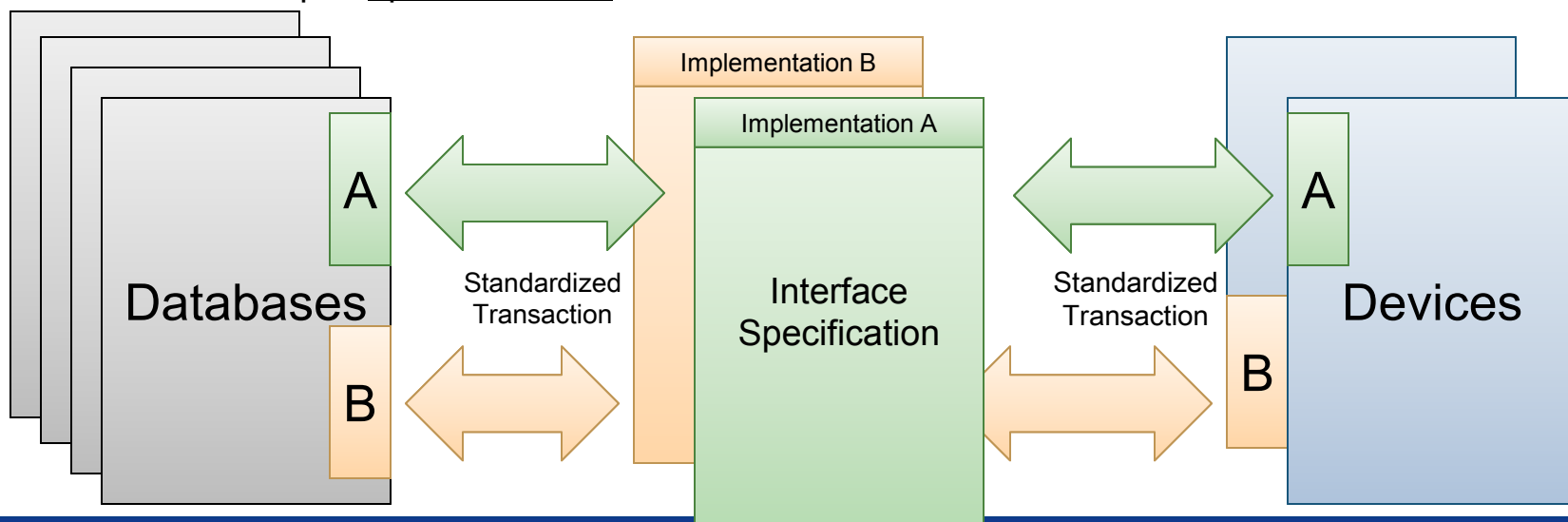


Other

- Enumerated and defined data fields
- Reference implementation
- Test and verification plan

Interoperability Concept of Operations

- Devices may communicate with databases via any number of messaging specifications.
- Databases and devices may implement one or more specification as their needs require.
- WINNForum will define and specify a transaction specification that may be implemented according to several encoding and framing schemes.
- The WINNForum specification will:
 - Establish a baseline for interoperability through standardized message encapsulation, data encoding, security profile, identity management, etc.
 - Support extensibility to accommodate future requirements and proprietary features.
 - Build upon open standards.



Building a Standard White Space Message



Identify Required Transactions



Communications Protocol



Message Architecture



Required Data Fields



Data Encoding Scheme

Transaction Strategy Selection

Connection-oriented	Message-oriented
Synchronous, session based communication – client establishes and maintains a connection with server.	Asynchronous, message based communication – client does not maintain session with server.
DSA Work Group deliverables will address connection-oriented communication.	Message-oriented communication may be addressed after completion of connection-oriented standards as time and group interest allow.

Defined Message Transactions

Device Registration

- ✓ Request
- ✓ Response



Device Verification

- ✓ Request
- ✓ Response
















Available Frequencies

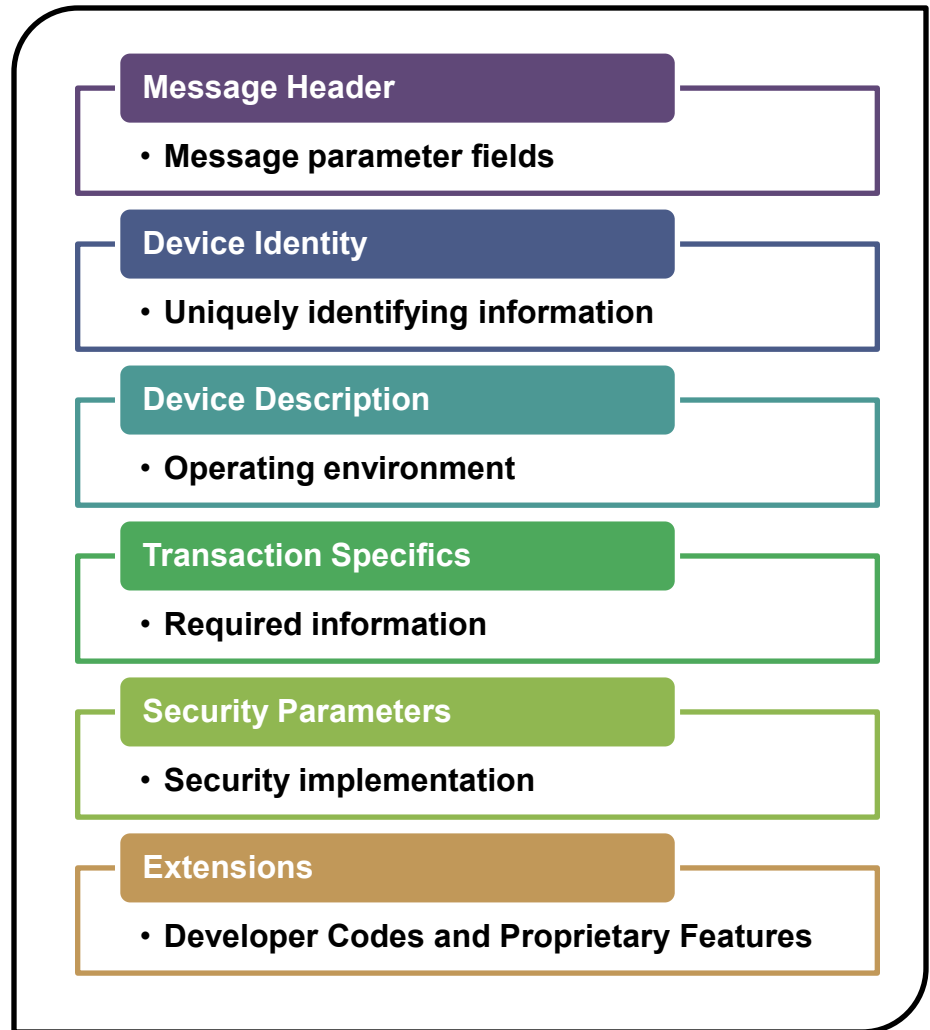
- ✓ Request
- ✓ Response



Consensus Communications Protocol

OSI Layer	White Space Messaging Protocol	Notes
3 Network	 Database must support IPv4 and IPv6 Device must support IPv4, optional IPv6	IPV4 and IPV6 support mandatory on databases; IPV6 optional on devices
	 Optional IPSEC	Optional IPSEC
4 Transport	 TCP/IP for transactions	
5 Session	 Not specified (handled by TCP)	TCP sockets
6 Presentation	 TLS	TLS or IPSEC mandatory
7 Application	 HTTP(s)	HTTP default
Message Format	 SOAP  REST  TLV	3 format classes
Message Encapsulation	 XML  XML  JSON  Byte encoded	4 options

Standard Message Structure



Schedule 1: Database Operating Guidelines



Concept of Operation



Communications



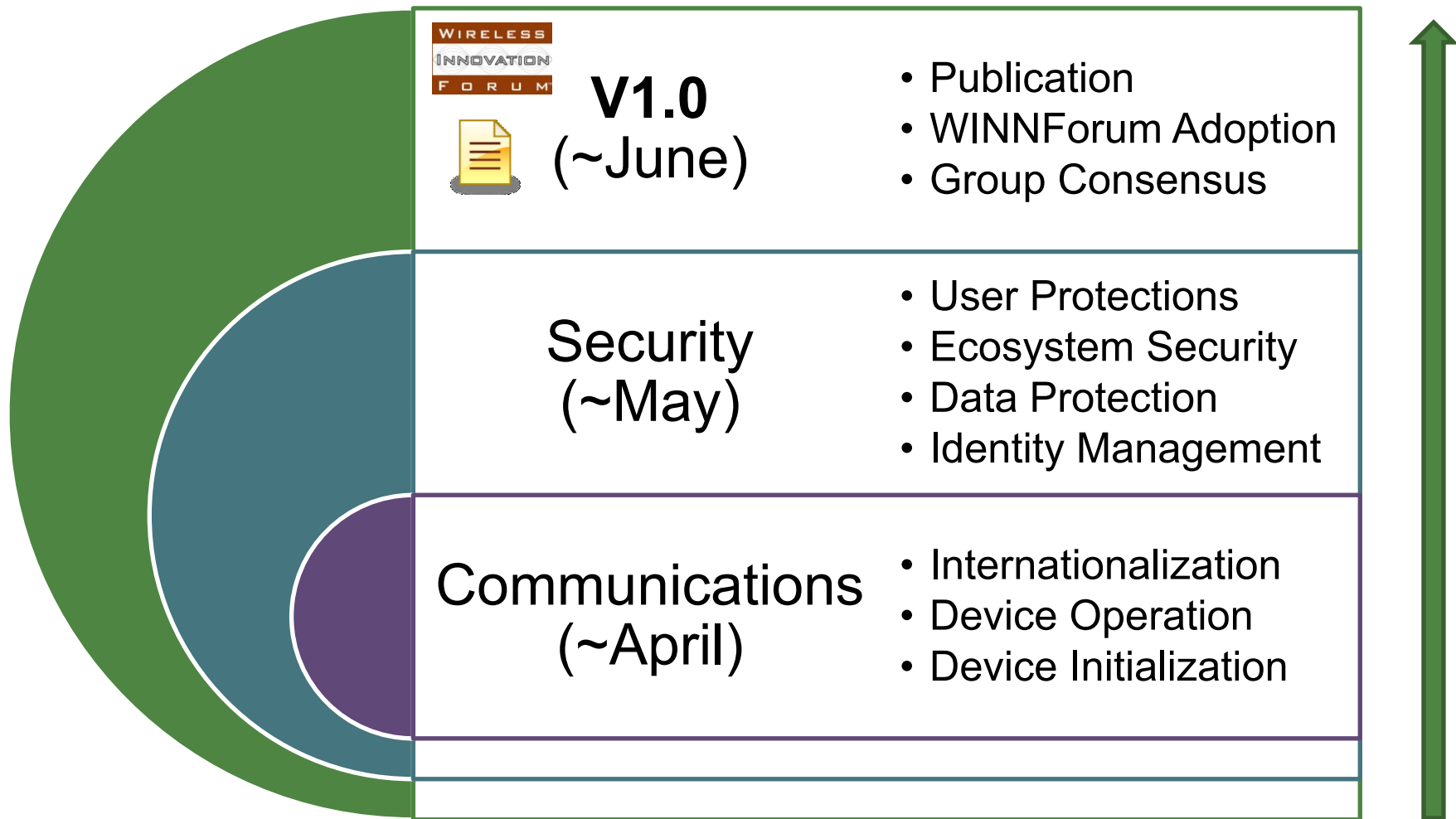
Information Assurance



Other

- ✓ **First Draft March 09**
- **Attention focused on Device Interoperability in March and April**
- **Renewed expressions of interest and commitments from group members for contributions and editorial support**
- **Targeting June for V1.0**

Schedule 2: Device Interoperability



DSA / White Space Interoperability Work Group

Join at

<http://www.WirelessInnovation.org>



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