WAP Forum

Welcome and Introduction

Chuck Parrish, WAP Forum Chairman

Executive Vice President

Unwired Planet

Agenda and plan for the day

1:00	Welcome
1.05	General Overview - Chuck Parrish
1.40	Architecture Overview - Hans Hansen
2.00	WAE Technical Overview - Bruce Martin
2.40	WPG Technical Overview - Steve Upp
3.00	Break
3.10	WSP Technical Overview - Espen Kristensen
3.30	Interoperability Testing - Raimo Jarvenpaa
3.50	Carrier Expert Group - Christophe François
4.10	Marketing Overview - Bo Pyskir
4.30	Discussion / Q&A - chaired by Chuck Parrish
5:10	Reception and dinner

An Introduction to WAP

- **What is WAP?**
- **WAP Forum Objectives & Principles**
- **The WAP Solution to Wireless Internet**
- **Facts about WAP**
- **Membership benefits**

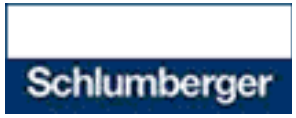
What is WAP?

The Wireless Industry has chosen the WAP Standard because it is:

- **An open industry-established world standard**
- **Based on Internet standards including XML and IP**
- **Committed to by handset manufacturers representing over 90% of the world market across all technologies**
- **Supported by network operators representing 100 Million subscribers**

WAP Wireless Operators

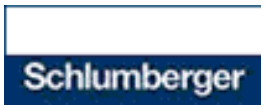
WAP Device Manufacturers



WAP Software Companies

SOFTLINE

WAP Infrastructure Companies



Objectives of the WAP Forum

- **Bring Internet content and advanced services to wireless handsets and other wireless terminals**
- **Create a global wireless protocol specification to work across differing wireless network technologies**
- **Submit specifications for adoption by appropriate industry and standards bodies**
- **Enable applications to scale across a variety of transport options and device types**

WAP Membership -- Nov. '98

70+ companies committed to Wireless Internet Standards

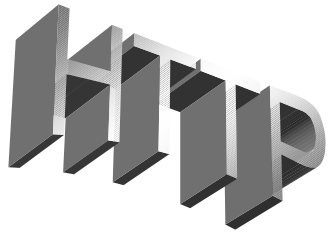
WAP Principles

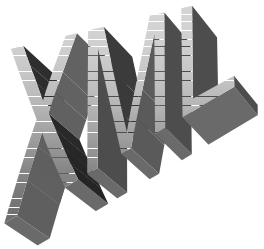
A complete Wireless Internet Solution must:

- **Use existing standards**
- **Promote new open standards**
- **Provide Air Interface Independence**
- **Provide Device Independence**

Open Standards

- **Assure interoperability**
- **Encourage innovation**
- **Foster competition**





Benefit the carrier by creating multiple suppliers of interoperable components and valuable applications

Bearer Independence

- **Allows Applications developed once to work across all networks -- today and tomorrow**
- **Protects the Carrier's investment in wireless data as networks evolve**
- **Enables Handset Manufacturers to use common code across product lines**

Device Independence

- **Allows Applications developed once to work across many devices from small handsets to powerful PDA's**
- **Promotes consistent user experience across all of a carrier's handset offerings**
- **Encourages wealth of applications for handset manufacturers that implement the standard**

Wireless Internet Requires Solutions tailored to Wireless

As compared to the traditional Internet:

- **The Market is Different**
- **The Network is Different**
- **The Device is Different**

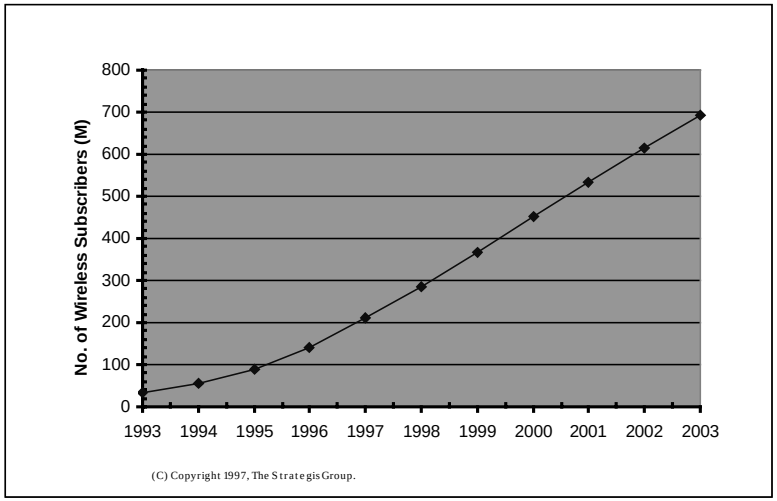
Challenge: The Market is Different

- **Applications must be as easy as a phone to use -- therefore *much* easier to use than a PC.**
- **Solution must provide significant value at low incremental cost.**
- **Needs at the handset are not the same as at the desktop.**

Implication:
Inferior applications and services will lose to those optimized for wireless phones.

WAP Solution: Enable the Market

- **WAP applications are developed *for* the handset to produce the best user experience.**
- **The WAP microbrowser has low impact on handset costs.**
- **WAP protocols and development environment enable focused content for the subscriber**



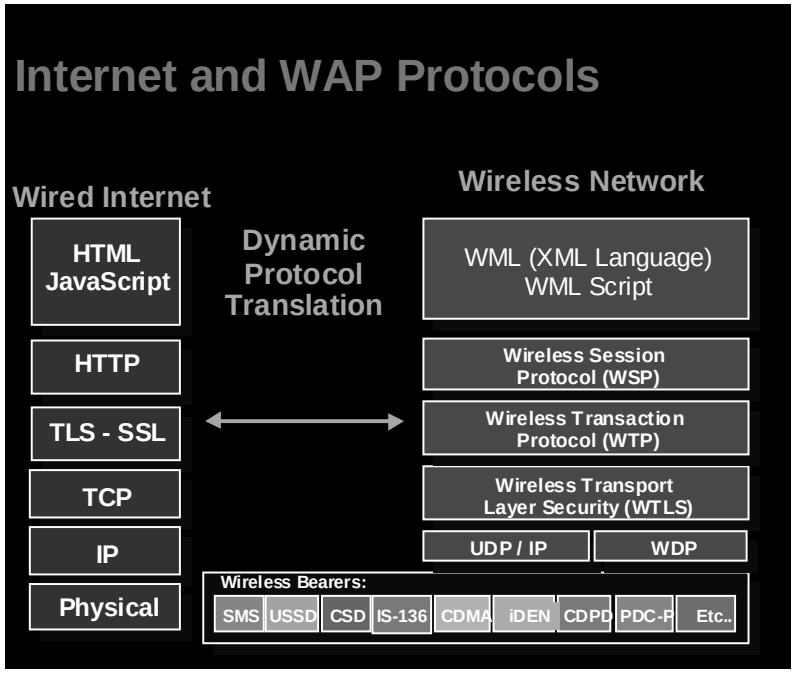
Challenge: The Network is Different

- **Power and spectrum limitations mean low bandwidth relative to wireline.**
  - **Higher bandwidth comes at economic expense**
  - **Trend towards packet means shared channels**
- **Latency is an issue**
  - **Transactions very small, so users perceive latency**
- **Reliability varies widely, and fails differently from the Internet.**
  - **I.e, Out-of-coverage is a common occurrence.**

Implication:
There is value in protocol optimization.

WAP Solution: Wireless-optimized Protocols

- **WAP runs only on the wireless portion**
- **WAP Protocol stack is optimized for wireless**
- **WAP runs on all networks, including IP networks**
- **WAP even works over SMS**



- **WAP is working with W3C to merge into HTTP-NG (Next Generation) work**

Challenge: The Device is Different

- **Form-factor limited to comfort in the human hand**
- **Device has extremely limited CPU power, memory (RAM & ROM) space, and display size**
- **Consumers demand long battery life, and therefore low power consumption**
- **Increasing bandwidth requires more power**

Implications:

- **Screen size and input mechanisms will always be limited.**
- **Consumer desire for longer battery life will always limit available bandwidth, CPU, memory and display.**
- **Consumer-class applications must be handset-aware.**

WAP Solution: Microbrowser optimized for the consumer handset

- Requires minimal RAM, ROM, Display, CPU and keys
- Provides carrier with consistent service UI across devices
- Provides Internet compatibility
- Enables wide array of available content and applications

FACTS about WAP

- **WML is XML**
- **WAP is working with W3C on HTTP-NG**
  - **much interest in WAP's work with WSP**
  - **joint WAP/W3C whitepaper coming soon**
- **WAP supports IP on suitable bearers**
  - **uses UDP/IP where possible**
  - **targetting wireless TCP for connection protocol**
  - **WAP is working with IETF on wireless TCP**
  - **Uses a socket interface to higher layers**
- **WAP can also use bearers where IP cannot work**
  - **e.g. SMS, USSD**
- **WAP is truly open**
  - **diverse Board of Directors with 13 members**

The WAP Board of Directors

• Chuck Parrish (chair)	Unwired Planet
• Gregory Williams (vice chair)	SBC
• Alain Briancon	Motorola
• Christophe Francois	CEGETEL
• Ajei Gopal	IBM
• Skip Bryan	Ericsson
• Noritake Okada,	Matsushita
• Francis Pinault	Alcatel
• Hiroshi Sakai	DDI
• Paul Schofield	Telstra
• Shuichi Shindo	NTT DoCoMo
• Mikko Terho	Nokia
• Terry Yu,	Sprint PCS

WAP Membership benefits

- Participate in driving future evolution of WAP
  - provide comments on spec. drafts to technical chairmen
  - provide input for consideration
  - attend technical briefings
  - participate directly in future working groups
- Participate in the formation of WAP's Marketing Message
- Network with other industry participants
- Guaranteed access to Essential IP
  - held by any other Member on fair, reasonable and non-discriminatory terms
- Nominate and elect directors to the WAP Forum board

Conclusion

The Wireless Industry has chosen the WAP Standard because it is:

- **An open industry-established world standard**
- **Based on Internet standards including XML and IP**
- **Committed to by handset manufacturers representing over 90% of the world market across all technologies**
- **Supported by network operators representing 100 Million subscribers**

Join the WAP Forum Today!

Thank You !

WAP Architecture

Introduction and Overview

Hans H H Hansen

Chairman WAP Architecture Group

Alternate WAP Director

Business Development Manager

Nokia

Role of the Architecture Group

WAP technical architecture owner

- **Maintaining/monitoring architectural consistency**
- **Advising the Board on technical decisions**

Expert technical consultation

- **Expert knowledge of WAP architecture**

Track unresolved and future WG work items

- **Collecting unsolicited input to WAP work**
- **Following/communicating technology trends**
- **Assuring that no work items “fall between the cracks” of other Working Groups**

Specifications

- **WAP Architecture Overview Specification**
- **WAP Conformance Specification**

Presentation Topics

The WAP Forum

- History
- Technical Motivation

The WAP Architecture

- What is currently contained in the WAP Specification Suite published at www.wapforum.org ?

The WAP Architecture Road Map

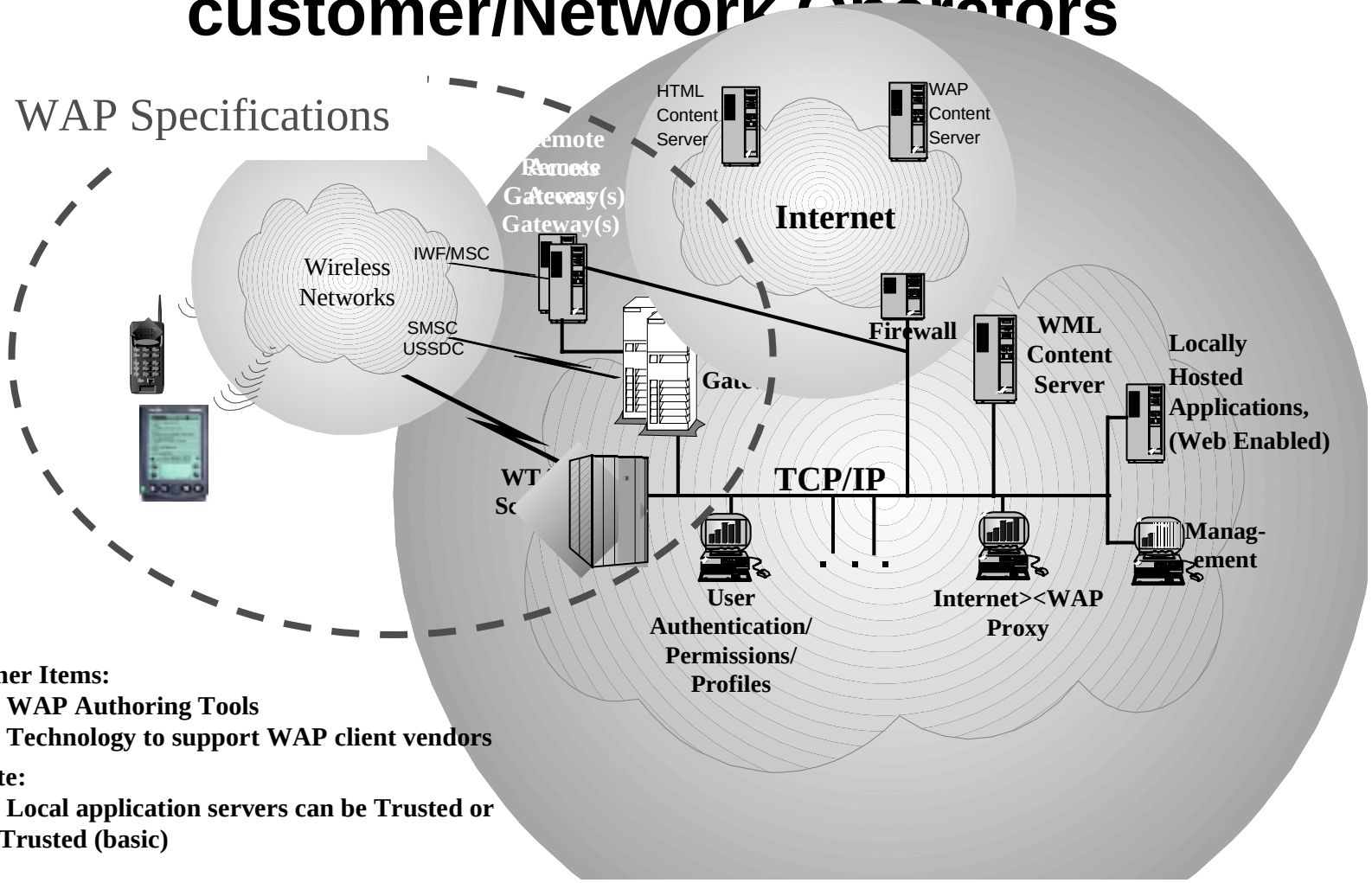
- On-going and planned work in the Architecture Group
- Future co-operation with other industry fora and standards bodies

WAP Forum history

15 Sep 1997	**WAP architecture published, www.wapforum.org website established**
30 Dec 1997	**WAP Forum Limited legally registered**
30 Jan 1998	**Draft spec available for members to review**
12 Feb 1998	**Draft WAP specifications publicly available**
13 Feb 1998	**1st members' review & briefing - London**
13 Mar 1998	**2nd members review & briefing - Miami**
30 April 1998	**v1.0 of WAP specs published**
3 June 1998	**New working groups for future evolution - Vancouver**
July 1998	**Expanded board with 8 new directors**
Oct 1998	**Extraordinary Annual Meeting**
	- Expanded board with additional operator

WAP End-to-end Solution

Potential WAP Solution for large customer/Network Operators



Other Items:

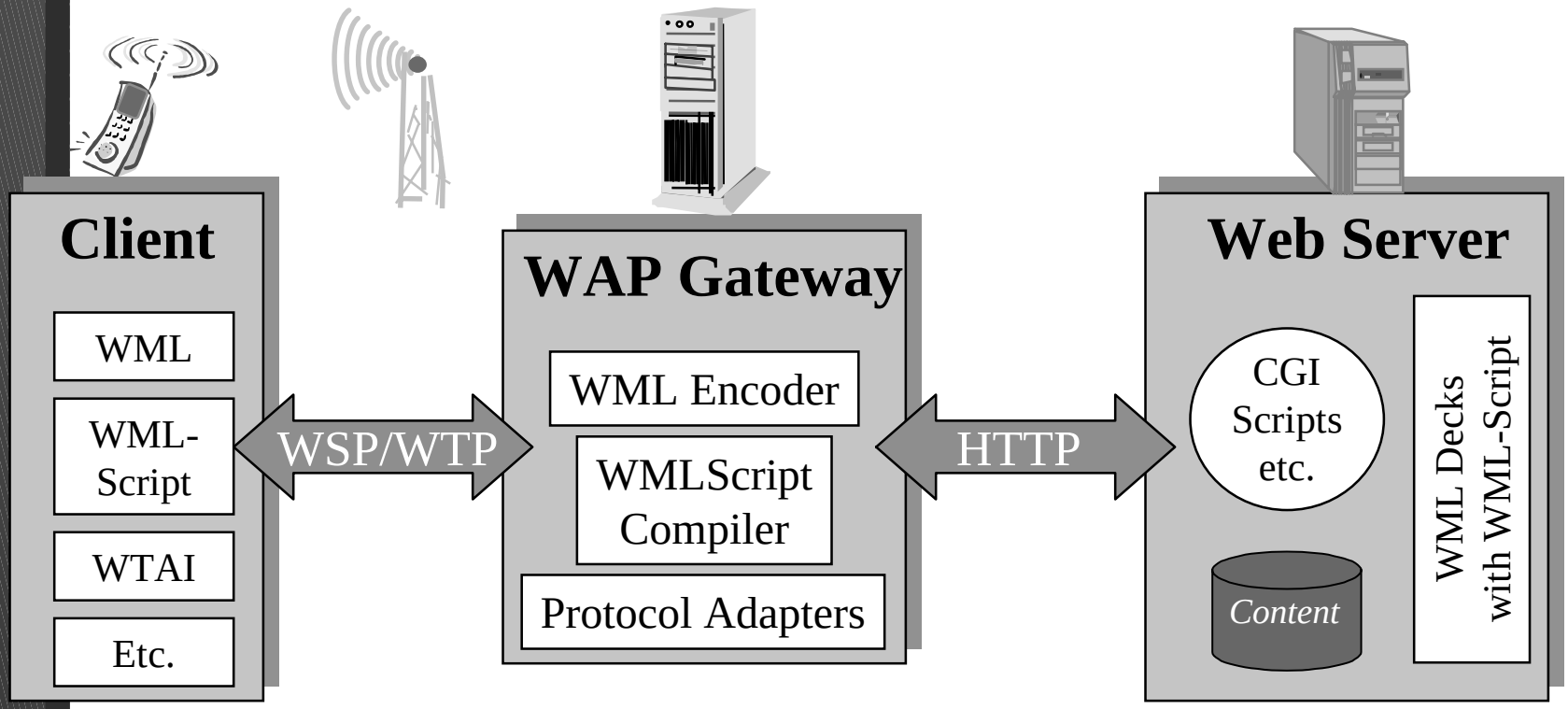
WAP Authoring Tools

Technology to support WAP client vendors

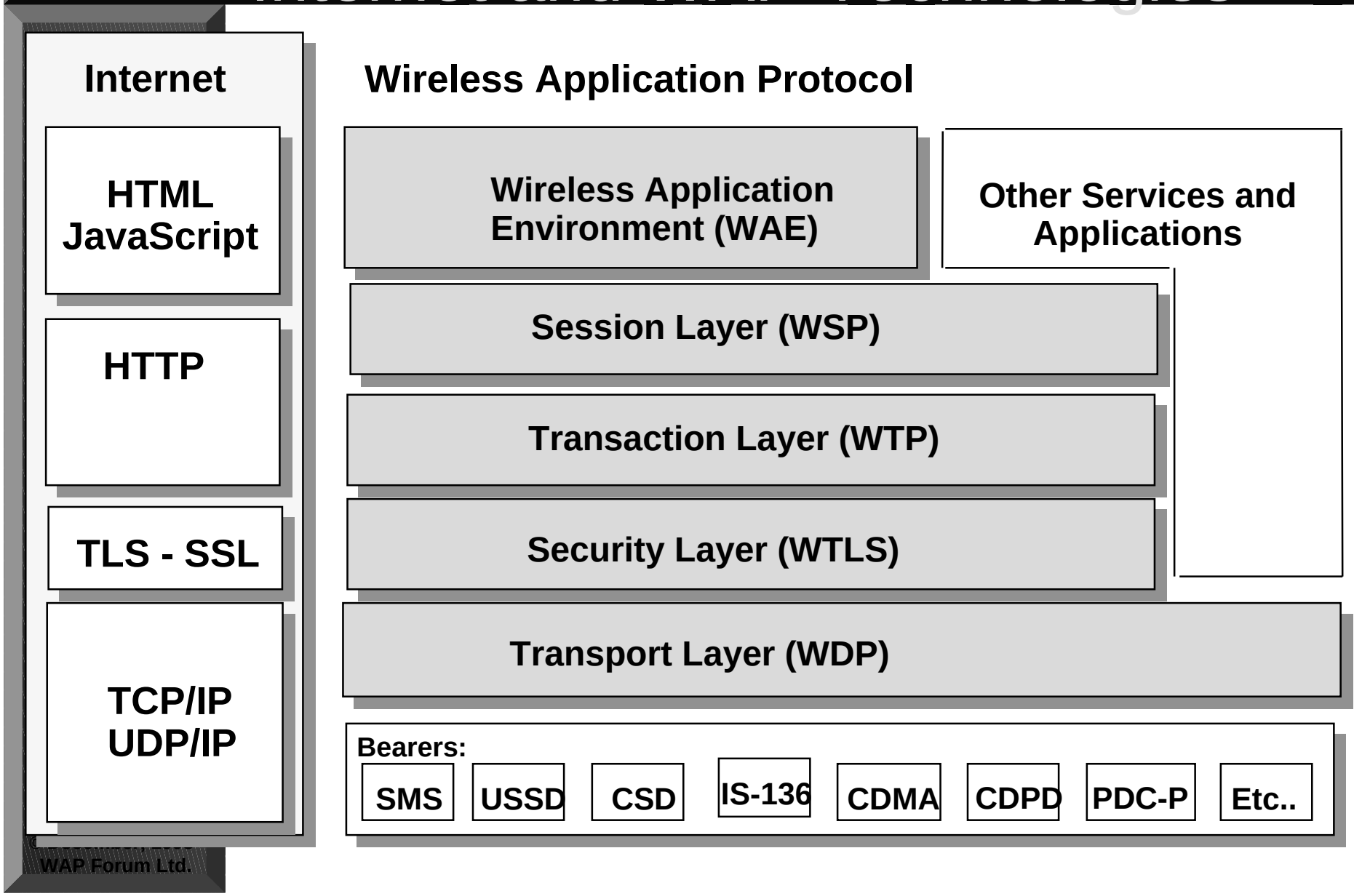
Note:

Local application servers can be Trusted or UnTrusted (basic)

The WAP Architecture



Comparison between Internet and WAP Technologies



WAP v1.0

WAP 1.0 Specifications

- **April 30th:** Published at www.wapforum.org

Wireless Application Environment

- WML Microbrowser
- WMLScript Virtual Machine
- WMLScript Standard Library
- Wireless Telephony Application Interface
- WAP Content Types

Wireless Protocols

- Wireless Session Protocol (WSP)
- Wireless Transport Layer Security (WTLS)
- Wireless Transaction Protocol (WTP)
- Wireless Datagram Protocol (WDP)
- Wireless network interface definitions

WHY WAP ?

Wireless networks and phones

- have specific needs and requirements
- not addressed by existing Internet technologies.

Only be met by participation from entire industry.

WAP enables any data transport

- TCP/IP, UDP/IP, GUTS (IS-135/6), SMS, or USSD.

The WAP architecture

- several modular entities
- together form a fully compliant Internet entity
- all WML content is accessed via HTTP 1.1 requests.

WHY WAP ?

WAP utilize standard Internet markup language technology (XML)

Optimizing the content and airlink protocols

The WML UI components map well onto existing mobile phone user interfaces

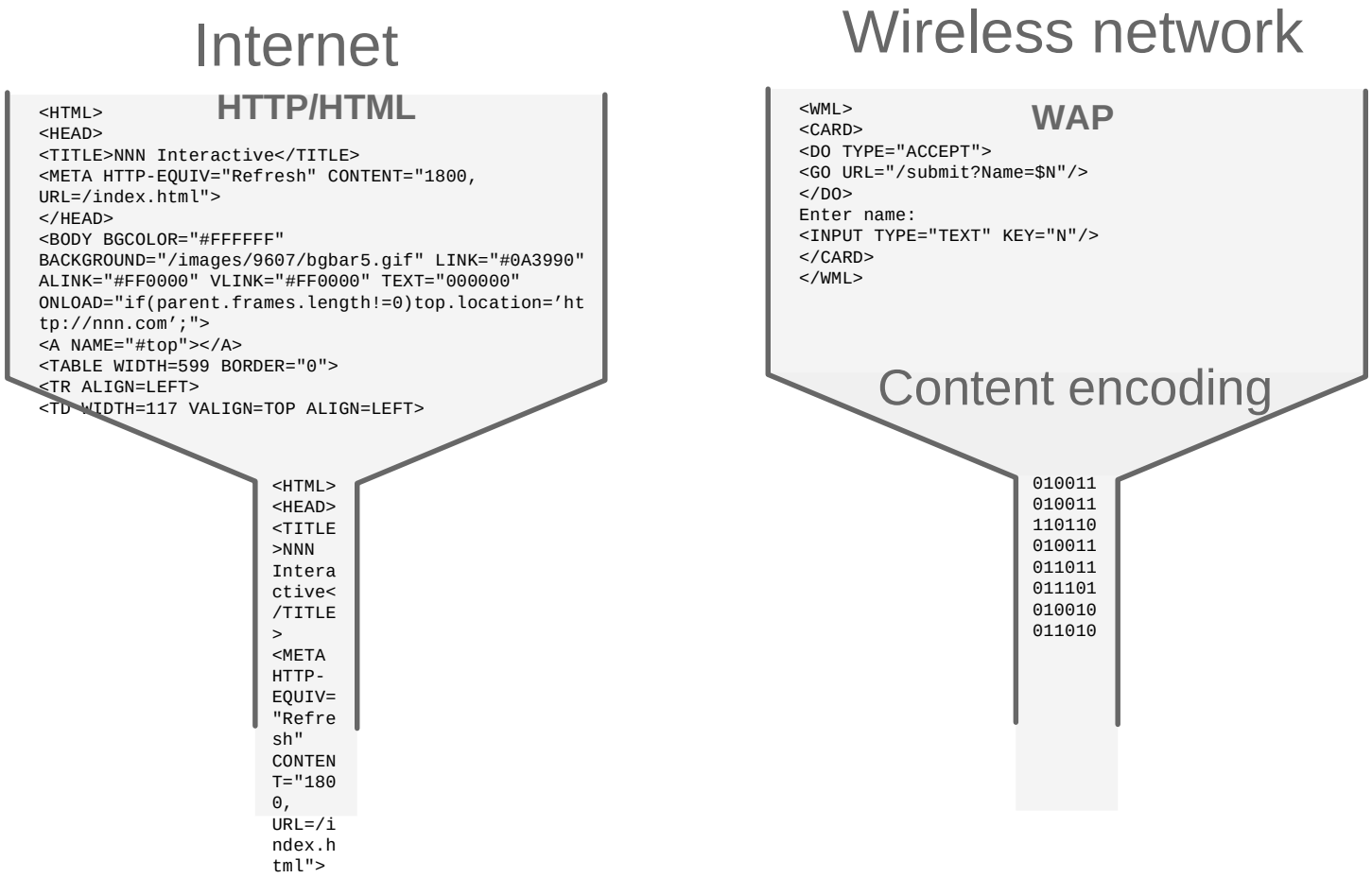
- no re-education of the end-users
- leveraging market penetration of mobile devices

WAP utilizes plain Web HTTP 1.1 servers

- leveraging existing development methodologies
- CGI, ASP, NSAPI, JAVA, Servlets, etc.

Why is HTTP/HTML not enough?

Big pipe - small pipe syndrome



WHY WAP ?

Good relationships with standards

- Several Liaisons with ETSI
- ETSI / WAP compliance profile for GSM and UMTS.
- CTIA official Liaison Officer to the WAP Forum
- WAP is actively working with the W3C and IETF
  - HTML-NG (HTML Next Generation)
  - HTTP-NG (HTML Next Generation)
- All but one of the Bluetooth initiative members are members of the WAP Forum
- Liaisons to some 14 standardization bodies discussed

Architecture Group
Current Work

End-to-end security

- Key Management
- Evaluate architectures
  - SIM/smartcard
  - Secure across Proxy (WPP)
  - Crypto API
- Relationship between WAP & other security standards (e.g., WTLS to TLS proxy)
- E-Commerce Support
- Intranet Data access

Billing

- What is billed?
- Architecture for billing/charging
- Look at other solutions/sources of info:
  - UMTS
- Billing across boundaries
  - Countries
  - Currency - use currency from Origin Server locale or user's locale?
- Informing the user of Cost of Service

Architecture Group
Current Work

Bearer Selection

- Where is the choice made (symmetric versus asymmetric)
- Dynamic Bearer switching
- What should trigger bearer changes?
  - Availability of data bearer
  - User or operator preference

Smartcard and SIM Interface

- SIM ATK
- Security
- Overall Architecture

Provisioning

- Provisioning Architecture
  - Services
  - Customers/users
  - Terminal
  - Gateway
- Relationship to Billing

Architecture Group
Current Work

Assigned names & numbers

- Evaluate solution for managing names & numbers
- Inventory of name & number spaces

Server-side Push Interface

- Unified Logical Device Addressing
  - Required for Push (but good for pull as well)
  - Liaison to WPG for network issues

Location-based Applications

WAP Functional Scalability

- Content
- Protocols
- Future bearers

Architecture Group
Planned Work

Access to Internet Content

- Transcoding
- Content authoring guidelines
- Enhancements to WAE to support more Internet rendering

Externalized interfaces

- using WAP as micro-proxy for other devices
- APIs to external devices

QOS Framework

Java APIs for WAP SAPs

- Should WAP defined Java APIs for WAP Stack?
- Need discussion about applicability to WAP
- What are the APIs?

Person-to-person Messaging

WAP Integration with Intelligent Networks

Thank You !

WAP Forum

WAP Application Environment

Bruce Martin, Chairman

WAP Application Working Group

Director of Technology

Unwired Planet

WAE Overview

Application framework

- For network applications;
- On small, narrowband devices

Developed by

- Wireless Applications Group (WAG);
- A WAP technical working group.

WAE Goals

Network-neutral application environment;

For narrowband wireless devices;

With an Internet/WWW programming model;

And a high degree of interoperability.

WAE Requirements

- Leverage WSP and WTP
- Leverage Internet standard technology
- Device Independent
- Network Independent
- International Support

Requirements (cont.)

Vendor-controlled MMI

Initial focus on phones

- **Slow bearers**
- **Small memory**
- **Limited CPU**
- **Small screen**
- **Limited input model**

WAE First Generation

Architecture

- **Application model**
- **Browser, Gateway, Content Server**

WML

- **Display language**

WMLScript

- **Scripting language**

WTA

- **Telephony services API and architecture**

Content Formats

- **Data exchange**

WML Second Generation

Extensions and enhancements

- Currently under development

User Agent Profiling

- Content customized for device

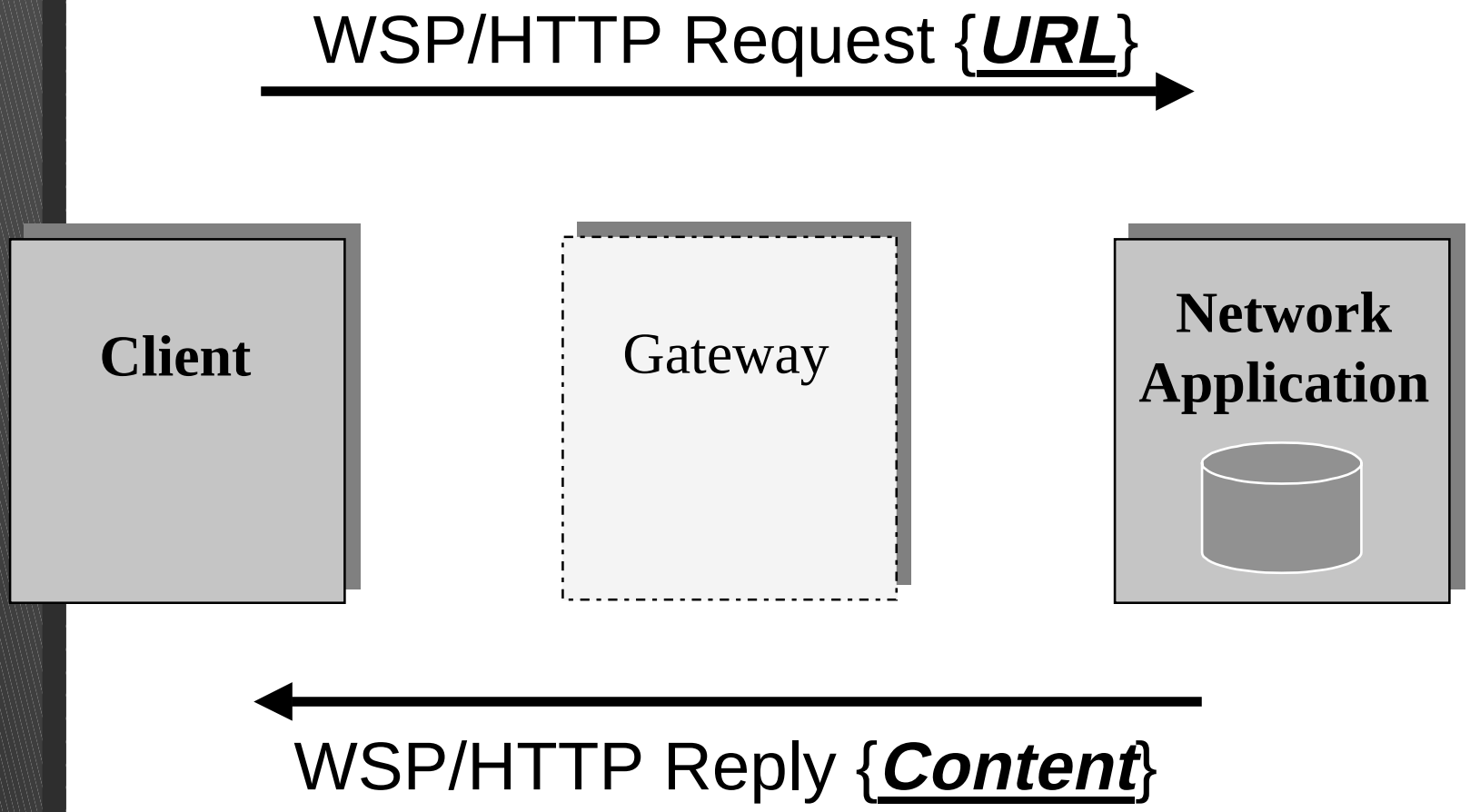
Push Model

- Network-initiated content delivery

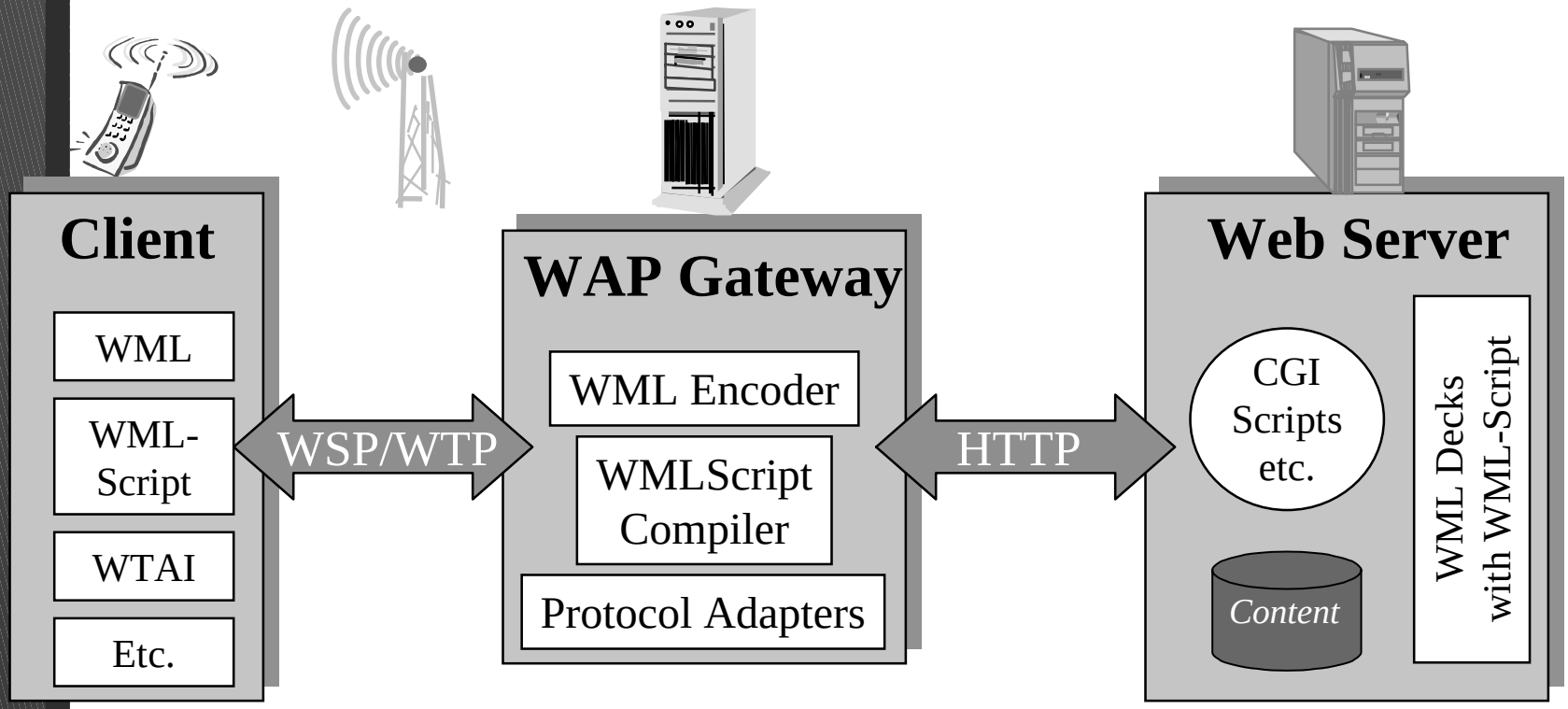
Performance Enhancements

- Caching, etc.

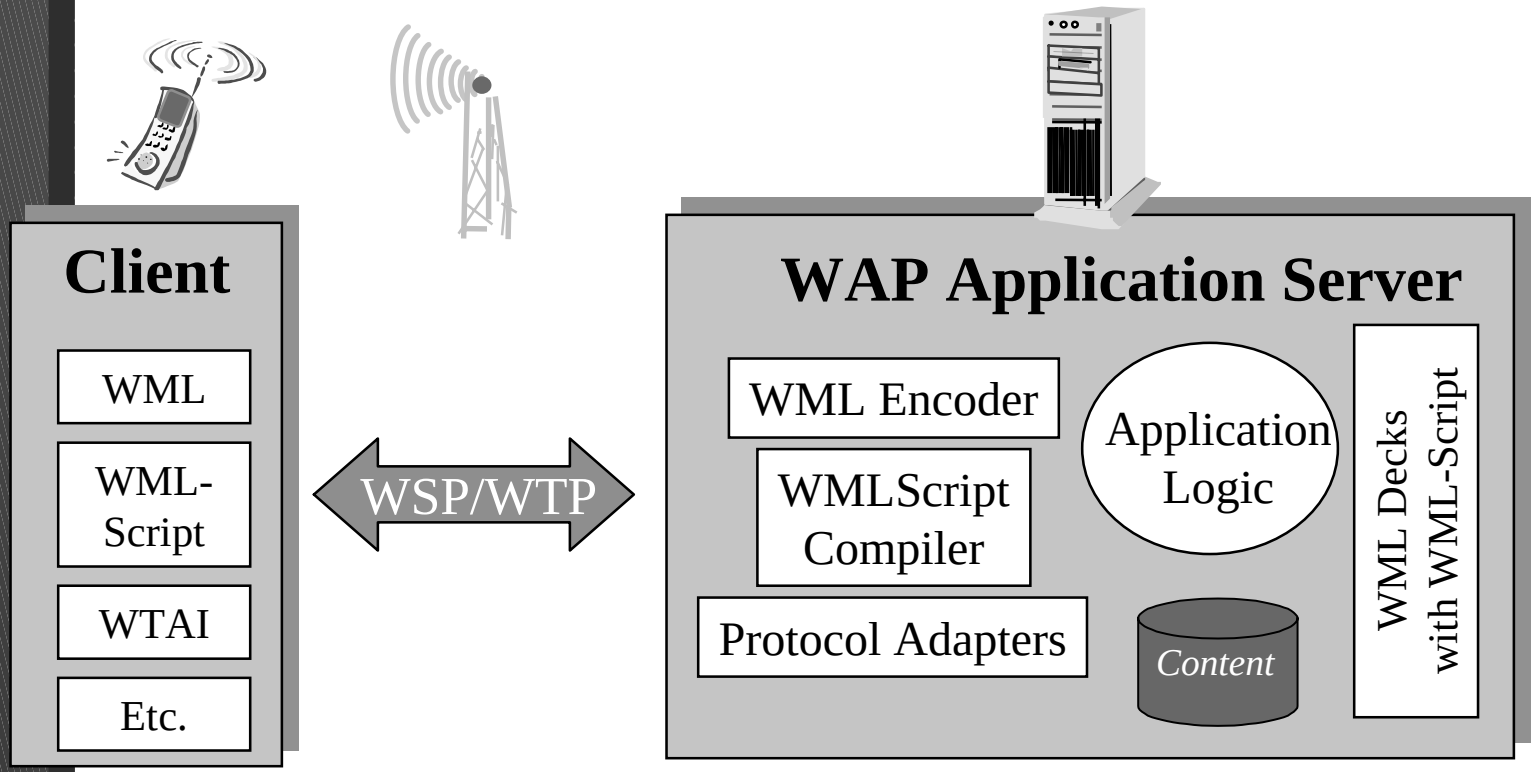
WAE Abstract Network Architecture



Network Example #1: WAP Gateway



Network Example #2: WAP Application Server



WML

Tag-based browsing language:

- Screen management (text, images)
- Data input (text, selection lists, etc.)
- Hyperlinks & navigation support

W3C XML-based language

Inherits technology from HDML and HTML

WML (cont.)

Card metaphor

- User interactions are split into *cards*
- Navigation occurs between cards

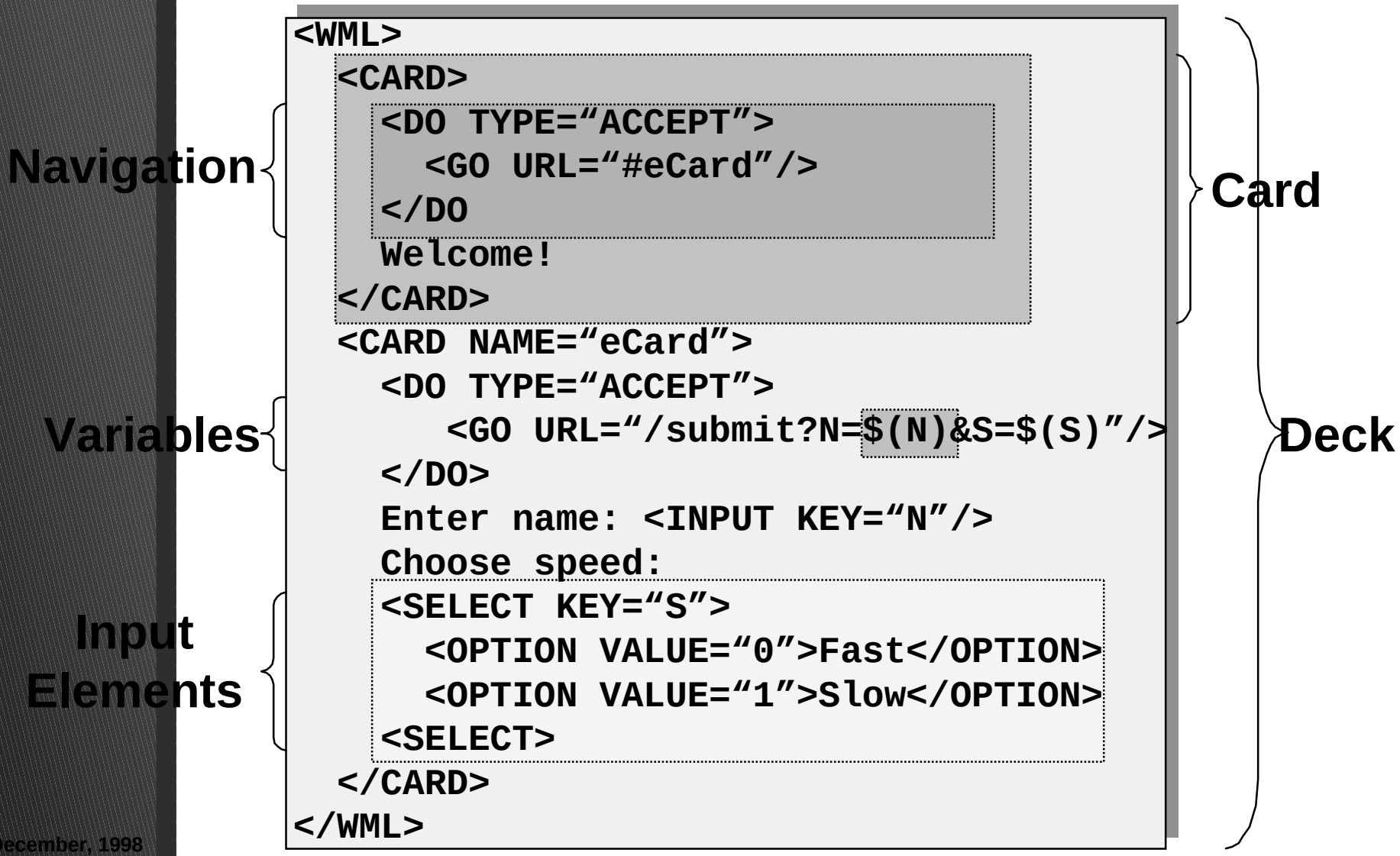
Explicit inter-card navigation model

- Hyperlinks
- UI Event handling
- History

State management and variables

- Reduce network traffic
- Results in better caching

WML Example



WMLScript

Scripting language:

- **Procedural logic, loops, conditionals, etc.**
- **Optimized for small-memory, small-cpu devices**

Derived from JavaScript™

Integrated with WML

- **Powerful extension mechanism**
- **Reduces overall network traffic**

WMLScript (cont.)

Bytecode-based virtual machine

- Stack-oriented design
- ROM-able
- Designed for simple, low-impact implementation

Compiler in network

- Better network bandwidth use
- Better use of terminal memory/cpu.

WMLScript Standard Libraries

Lang **- VM constants, general-purpose math functionality, etc.**

String **- string processing functions**

URL **- URL processing**

Browser **- WML browser interface**

Dialog **- simple user interface**

Float **- floating point functions**

WMLScript Example Uses

Reduce network round-trips and enhance functionality.

Field validation

- ***Check for formatting, input ranges, etc.***

Device extensions

- ***Access device or vendor-specific API***

Conditional logic

- ***Download intelligence into the device***

WMLScript Example

WMLScript is very similar to JavaScript™

Functions

Variables

Programming Constructs

```
function currencyConvertor(currency, exchRate) {
    return currency*exchangeRate;
}

function myDay(sunShines) {
    var myDay;
    if (sunShines) {
        myDay = “Good”;
    } else {
        myDay = “Not so good”;
    };
    return myDay;
}
```

WTA

Tools for building telephony applications

Designed primarily for:

- **Network Operators / Carriers**
- **Equipment Vendors**

Network security and reliability a major consideration

WTA (cont.)

WTA Browser

- Extensions added to standard WML/WMLScript browser
- Exposes additional API (WTAI)

WTAI includes:

- Call control
- Network text messaging
- Phone book interface
- Indicator control
- Event processing

WTA (cont.)

- **Network model for client/server interaction**
  - **Event signaling**
  - **Client requests to server**
- **Security model: segregation**
  - **Separate WTA browser**
  - **Separate WTA port**
- **WTAI available in WML & WMLScript**

WTA Example

Placing an outgoing call with WTAI:

WTAI Call

Input Element

```
<WML>
<CARD>
  <DO TYPE="ACCEPT">
    <GO URL="wtai:cc/mc;$(N)"/>
  </DO>
    Enter phone number:
    <INPUT TYPE="TEXT" KEY="N"/>
</CARD>
</WML>
```

WTA Example

Placing an outgoing call with WTAI:

WTAI Call

```
function checkNumber(N) {
   if (Lang.isInt(N))
      WTAI.makeCall(N);
   else
      Dialog.alert("Bad phone number");
}
```

Content Formats

Common interchange formats

Promoting *interoperability*

Formats:

- Business cards: IMC **vCard** standard
- Calendar: IMC **vCalendar** standard
- Images: WBMP (Wireless BitMaP)
- Compiled WML, WMLScript

New WAP Content Formats

Newly defined formats:

- **WML text and tokenized format**
- **WMLScript text and bytecode format**
- **WBMP image format**

Binary format for size reduction

- **Bytecodes/tokens for common values and operators**
- **Compressed headers**
- **Data compression (e.g. images)**

General-purpose transport compression can still be applied

Content Format Example

Example Use of an Image:

Image Element

```
<WML>
<CARD>
  Hello World!<BR/>
  <IMG SRC="/world.wbmp"
       ALT="[Globe]" />
</CARD>
</WML>
```

Push

Push is under development

Network-push of content

- **Alerts or service indications**
- **Pre-caching of data**

Goals:

- **Extensibility and simplicity**
- **Build upon WAP 1.0**
- **End-to-end solution**
- **Security**
- **User friendly**

User Agent Profiles (UAProf)

- UAProf is under development
- Goal: content personalization, based upon:
  - Device characteristics, user preferences
  - Other profile information
- Working with W3C on CC/PP
  - RDF-based content format
  - Describes “capability and profile” info
- Efficient transport over wireless links, caching, etc.

WAE Technical Collaboration

W3C

- **White paper published**
- **Technical collaboration**
  - **CC/PP**
  - **HTML-NG**
  - **HTTP-NG**
  - **Etc.**

ETSI/MExE

Others coming soon

Summary: WAE Status

First generation released

- Implementations are in progress
- Specifications include:
  - WAE, WML, WMLScript
  - WBMP, WTA, WTAI, etc.

Second generation in development

- Focusing on:
  - Push, Interoperability, UAProf
  - Telephony, Internationalization, etc.

Thank You !

WAP Forum

Wireless Protocols Group

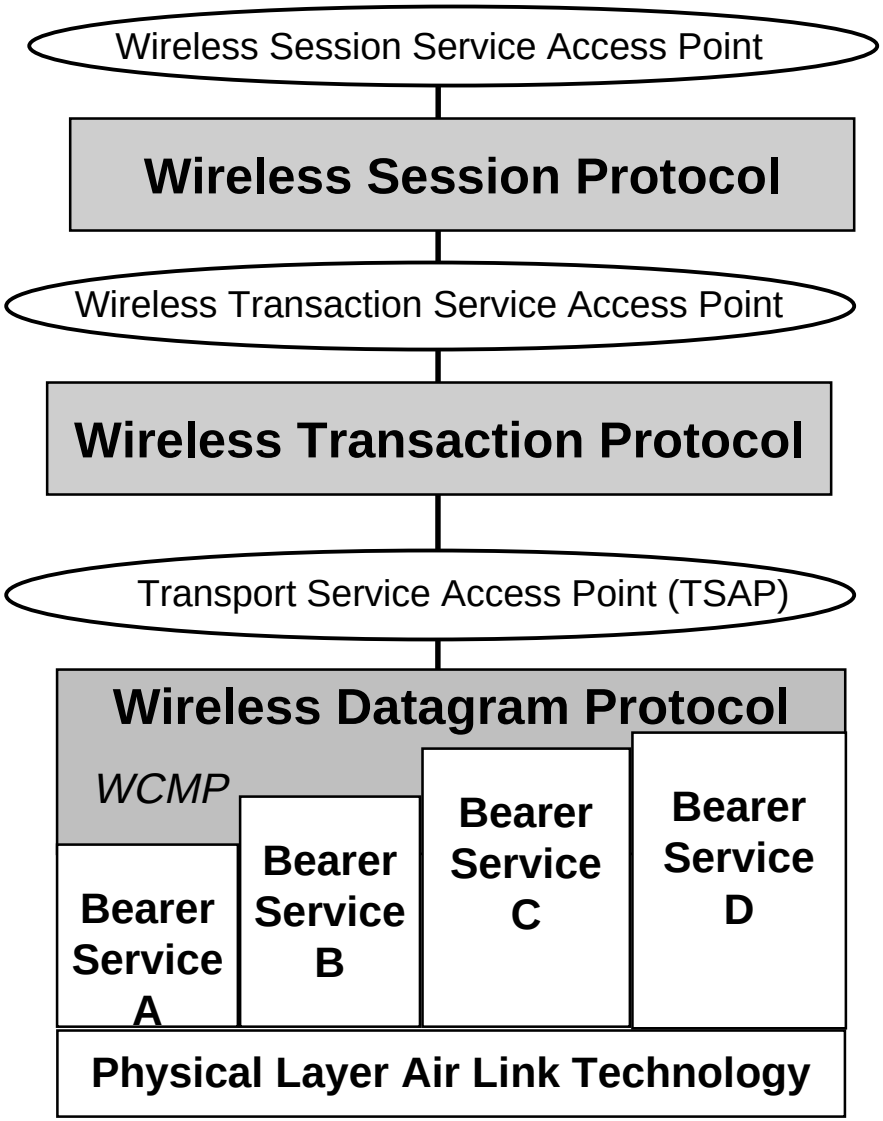
Working Group Summary

Steve Upp, Substitute WPG WG Chair

Senior Staff Engineer

Motorola, Network Solutions Sector

Protocol Layers in WPG



WSP Overview

Provides shared state between client and server used to optimize content transfer

Provides semantics and mechanisms based on HTTP 1.1

Enhancements for WAE, wireless networks and “low-end” devices

HTTP 1.1 Basis

Extensible request/reply methods

Extensible request/reply headers

Content typing

Composite objects

Asynchronous requests

Enhancements Beyond HTTP

Binary header encoding

Session headers

Confirmed and non-confirmed data push

Capability negotiation

Suspend and resume

Fully asynchronous requests

Connectionless service

Why Not HTTP?

Encoding not compact enough

No push facility

Inefficient capability negotiation

Header Encoding

Defined compact binary encoding of headers, content type identifiers and other well-known textual or structured values

- Reduces the data actually sent over the network

Capabilities

Capabilities are defined for:

- Message Size, client and server
- Protocol Options: Confirmed Push Facility, Push Facility, Session Suspend Facility, Acknowledgement headers
- Maximum Outstanding Requests
- Extended Methods
- Header Code Pages

Suspend and Resume

Server knows when client can accept a push

Multi-bearer devices

Dynamic addressing

Allows the release of underlying bearer resources

Session Context and Push

Push can take advantage of session headers

Server knows when client can accept a push

Connection And Connectionless Modes

Connection-mode

- Long-lived communication
- Benefits of the session state
- Reliability

Connectionless

- Stateless applications
- No session creation overhead
- No reliability overhead

WSP Work items

Support for Quality of Service parameters

Multicast data

Ordered pipelining

Chunked data transfer

WSP Management entities

Support for isochronous multimedia objects

Other extended functionality that is not a part of the first public version

Wireless Transaction Protocol

Purpose:

Provide efficient request/reply based transport mechanism suitable for devices with limited resources over networks with low to medium bandwidth.

Advantages:

- **Operator Perspective - Load more subscribers on the same network due to reduced bandwidth utilization.**
- **Individual User - Performance is improved and cost is reduced.**

WTP Overview

A common interface to physical transport mechanisms

Allow applications designed independent from specific transports

Provide a port-based abstract interface to upper layer protocols

Extensible to a variety of digital wireless networks and future transport options

Supports transaction, and datagram modes

Optimized for narrow to medium bandwidth channels

Ensure multi-vendor interoperability

Allow peer-to-peer, client/server, and one-to-many applications

To be capable of implementation in a low memory footprint, suitable for “standard” or “low-IQ” handsets

Services and Protocols

Provide reliable data transfer based on request/reply paradigm

No explicit connection setup or tear down

Data carried in first packet of protocol exchange

Seeks to reduce 3-way handshake on initial request

Supports port number addressing

Message oriented (not stream)

Supports an Abort function for outstanding requests

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WTP Ongoing Work Items

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- **Define a connection oriented protocol (IETF)**
- **Bearer selection/switching**
- **Management entity definition (functions and interface)**
- **Protocol verification (reference implementation)**
- **Quality of service definitions**

Wireless Datagram Protocol

Purpose:

Provide consistent interface to a fundamental transport service across all wireless bearer networks.

Provides a connectionless, unreliable datagram service.

WDP is adapted to each particular wireless network to provide the generic datagram transport.

The basic datagram service is fundamental to all wireless networks and makes it possible to utilize WAP everywhere.

WDP Continued

- **Supports port number addressing**

- **WDP was initially specified for the following networks**
  - **IS-136 (GUTS, R-Data, CSD, Packet Data)**
  - **GSM (SMS, USSD, GPRS, CSD)**
  - **CDPD**
  - **iDEN**
  - **Flex and ReFLEX**
- **WPG has since promoted specs for the following networks**
  - **PHS**
  - **PDC**
  - **CDMA**

Example: WDP is UDP when used over an IP network layer.

Thank You !

WAP Forum

Wireless Security Group

Espen Kristensen

Chair Wireless Security Group

Ericsson

WSG Work Area

- Provide mechanisms for secure transfer of content, to allow for applictions needing privacy, identification, verified message integrity and non-repudiation
- Transport level security is WTLS, based on SSL and TLS from the Internet community
- Working on various mechanisms for improved end-to-end security and application-level security

WTLS Services and Characteristics

- **Specifies a framework for secure connections, using protocol elements from common Internet security protocols like SSL and TLS.**
- **Provides security facilities for encryption, strong authentication, integrity, and key management**
- **Compliance with regulations on the use of cryptographic algorithms and key lengths in different countries**
- **Provides end-to-end security between protocol end points**

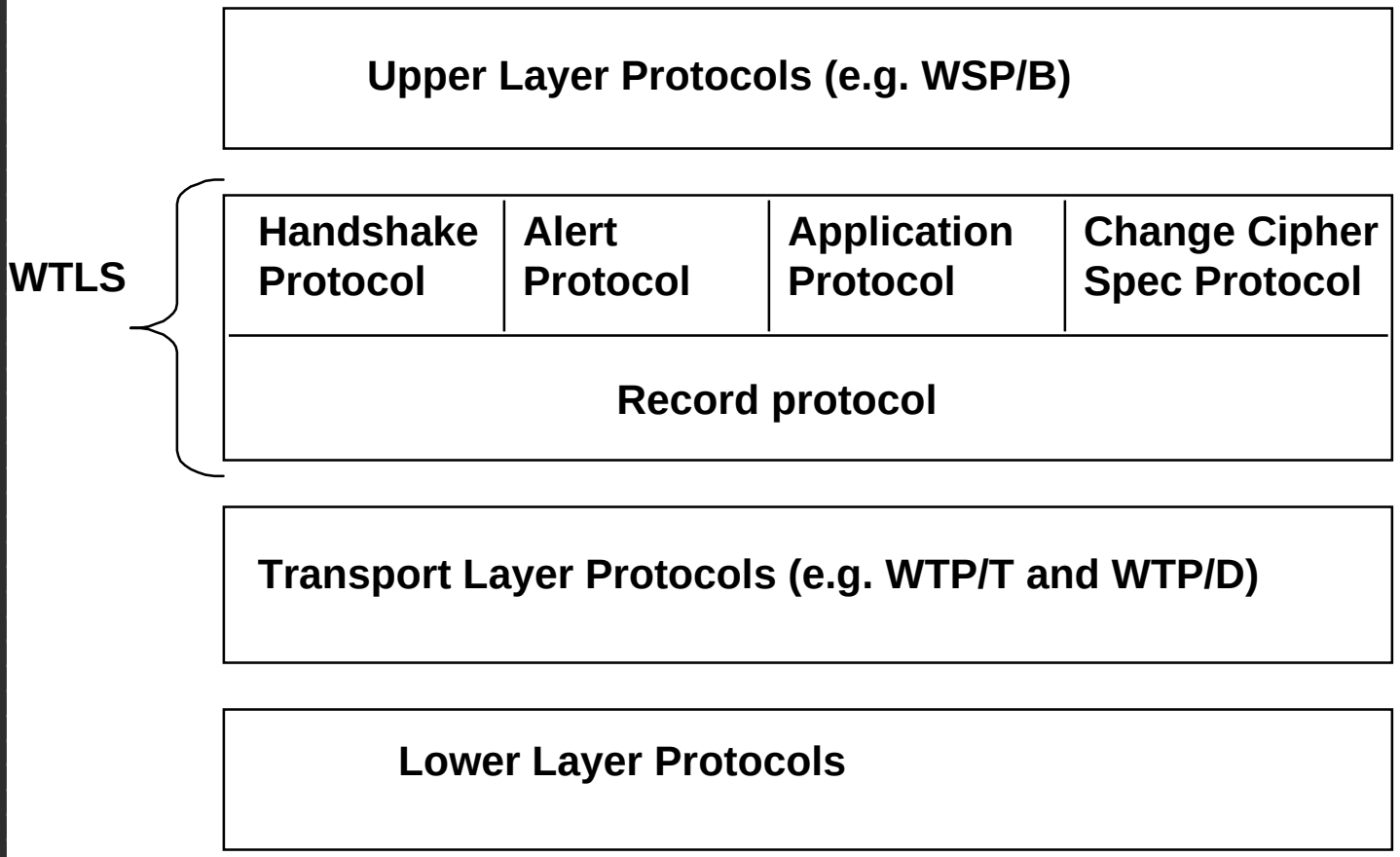
WTLS Services and Characteristics

- Provides connection security for two communicating applications
  - privacy (encryption)
  - data integrity (MACs)
  - authentication (public-key and symmetric)
- Lightweight and efficient protocol with respect to bandwidth, memory and processing power
- Employs special adapted mechanisms for wireless usage
  - Long lived secure sessions
  - Optimised handshake procedures
  - Provides simple data reliability for operation over datagram bearers

Goals and Requirements for WTLS

- **Interoperable protocols**
- **Scalability to allow large scale application deployment**
- **First class security level**
- **Support for public-key certificates**
- **Support for WAP transport protocols**

WTLS Internal Architecture



Current Work Items

- **Improved support for end-to-end security, providing solutions both on transport level and application level**
- **Integrating SmartCards for security functions**
- **Providing a scalable framework for Client Identification, including Public Key Infrastructure for provisioning and management of certificates, as well as simpler mechanisms for clients that do not support certificates**

Services and Protocols

- **Provide reliable data transfer based on request/reply paradigm**
- **No explicit connection setup or tear down**
- **Data carried in first packet of protocol exchange**
- **Seeks to reduce 3-way handshake on initial request**
- **Supports port number addressing**
- **Message oriented (not stream)**
- **Supports an Abort function for outstanding requests**
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Thank You !

WAP Forum

Wireless Interoperability Group

Raimo Järvenpää

Chair Wireless Interoperability Group

Nokia

WIG History

Kickoff at Helsinki Meeting, Interoperability Testing Workshop (unofficial meeting in Vancouver)

- Common activity proposal
- Activity proposal aproved by WAP board

Official workgroup established, first meeting in Malmö

WIG structure

- chair Raimo Järvenpää / Nokia
- wide range of representatives

WIG Mission statement

“To ensure that WAP products are conformant to WAP specs and interwork with each other.”

WIG Scope

Create test documentation for

- **static conformance**
- **dynamic conformance**
- **interoperability**

Define product certification process

- **labeling**
- **testhouse - type of process**

WIG Status

Static conformance

- PICS (Protocol Implementation Conformance Statement) defines check lists for a particular device class

Dynamic conformance testing

- Short term
  - Testsuites for interoperability testing
- Long term
  - Testsuites and tools for conformance testing
  - Testhouse-like process

Thank You !

WAP Forum

Carrier Expert Group

Christophe François

Chairman Carrier Expert Group

SFR

Carrier Expert Group

Scope and Objectives

Deliverables

Membership

Organisation

Working Process

Group Scope and Objectives (1)

Bring to the WAP Forum operators/carriers contributions and requirements focused on market needs

Contribute to the prioritization of developments in the specifications working groups, on the basis of key services and end user requirements, as they appears to Carriers from a marketing and service development perspective.

Liaise with existing carrier groups in other industry initiatives : GSM MoU SERG, UMTS Forum Marketing Aspects Group, · UWCC,· CdmaOne service group· ...

Group Scope and Objectives (2)

Promote the potential of WAP technology towards telecommunication industry (operators, manufacturers, standard institutes), internet society, service and content providers as a key enabling platform for developing a wide scope of value added services

Share marketing experience and maintain a service review developed by carriers based upon WAP activities for roaming purposes and promotion of WAP service capabilities

Carrier Expert Group Deliverables

Service requirements and priorities for WAP specification

Information and commercial experience about existing service portfolios

Carrier Expert Group Membership

Membership is open to all carriers and service providers members of the WAP Forum

Industry vendors are not eligible for CEG membership or attendance to CEG meeting / discussion, but can be invited to discuss / present specific subject to the group

Current membership include 29 carriers from all technologies / geographical areas represented within the WAP Forum

Carrier Expert Group Organisation

- **Chairperson :** **Cegetel** **C. François**
- **Vice Chairperson :** **Tbd**
- **Secretary :** **Cegetel** **S. Frey**

- **CEG Executive Team :**
  - **European GSM** **Sonera**
  - **North American GSM** **SBC**
  - **Other GSM** **Telstra**
  - **North American CDMA** **Tbd**
  - **Other CDMA** **IDO**
  - **TDMA** **BellSouth**
  - **PDC / PHS** **NTT DoCoMo**
  - **Paging / Data Only** **Tbd**

Carrier Expert Group
Working Process : Feature Funnel

- **The Feature Funnel process aims to contribute to development and prioritization of new features and specifications update**

- **The working process is the following :**

  - **Inputs into the CEG feature funnel include submissions from CEG members as well as existing requirements in the WAP Forum roadmap**
  - **CEG members are invited to comment and contribute to submitted feature requests**
  - **A prioritized feature funnel list is made available prior to every WAP forum meeting for review and approval by members before CEG plenary**
  - **The ratified feature funnel priorities is then submitted to the Specification Committee and WAP Board for inclusion in the prioritization work**

Thank You !

WAP Forum

Marketing Expert Group

Bo Pysker

Chairman Education and Communication Committee

Motorola

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- **Umbrella Messages**
- **Industry Visibility Campaign**
- **Developers' Conferences**

1999 Objectives

- **Inter-operable Products Available by July 1999**
- **Position WAP as the choice for “internet on the go” in Q3**
- **Strong end to end WAP solutions available by July**
- **Effectively engage targeted new members by Q2**

ECC OBJECTIVES

Secure membership from key industry segments in 1H99

- **Two Internet portals**
- **Two Internet content providers in the these categories**

  ***News *Weather *Sports *Stock *Entertainment**
- **Four software tool manufacturers**
- **Two major LDAP providers**
- **Two major e-commerce providers**

Motivate sales of WAP-enabled products and services in 2H99

PR OBJECTIVES

- **Influence prospective members to join**
- **Generate positive coverage of WAP in technology and business media**
- **Secure WAP support from key industry analysts who influence the wireless market**
- **Produce preference for WAP-enabled devices and services with businesses and consumers in 2H99**

UMBRELLA MESSAGES

WAP is the de-facto world standard for wireless information and telephony services on digital mobile phones, pagers, PDAs and other wireless terminals.

WAP is air interface independent, device independent and fully interoperable.

WAP is working in close cooperation with the W3C and other international standards bodies.

The WAP solution leverages the tremendous investment in Web servers, development tools, programmers and applications while solving the unique problems of the wireless domain:

- Limited CPU, memory and battery life
- Low bandwidth and high latency
- Unpredictable availability and stability
- Simple user interface

UMBRELLA MESSAGES

The WAP specification enables industry participants to offer compatible products and secure services on all devices and networks, resulting in greater economies of scale and universal access to information.

Because WAP is an open and public standard, handset manufacturers can integrate microbrowsers at minimal cost. Manufacturers representing over 75% of the world's handset and pager market have committed to shipping WAP-enabled devices.

Developers can use existing tools to produce applications with an easy to use, yet rich user experience.

WAP allows carriers to strengthen their service offerings by providing subscribers with the information they want and need while on the go. Subscribers gain real anytime, anywhere information access available on a variety of networks/devices.

INDUSTRY VISIBILITY CAMPAIGN

Build strong relationships with key technology/business media and analysts

Use announcements and media materials to produce a constant stream of WAP Forum news to keep top of mind and create excitement in marketplace

Develop memorable logo and tagline that clearly communicates the WAP Forum mission and benefits to generate interest and understanding

Maintain strong WAP Forum presence at key industry conferences and trade shows

Use CyberPR to reach key WAP Forum prospects on the Internet, where they spend a large part of their time

MEMBERSHIP EXTENSION CAMPAIGN

Developers Conferences

Create supporting tool kits for WAP Forum members to enable them to "spread the word" about WAP progress and benefits

Conduct joint marketing communications involving WAP Forum members to increase credibility and impact

Conduct HQ-market visibility campaigns and engage in community and civic programs to spread awareness of the WAP and encourage market adoption and membership

Developers Conferences

Key to WAP's Success

- Leverage Forum Meetings
- June in San Francisco
- September in Munich
- Investigating a Second Membership Tier

Thank You !

Discussion and Q&A

Chuck Parrish, Moderator

Thank You !