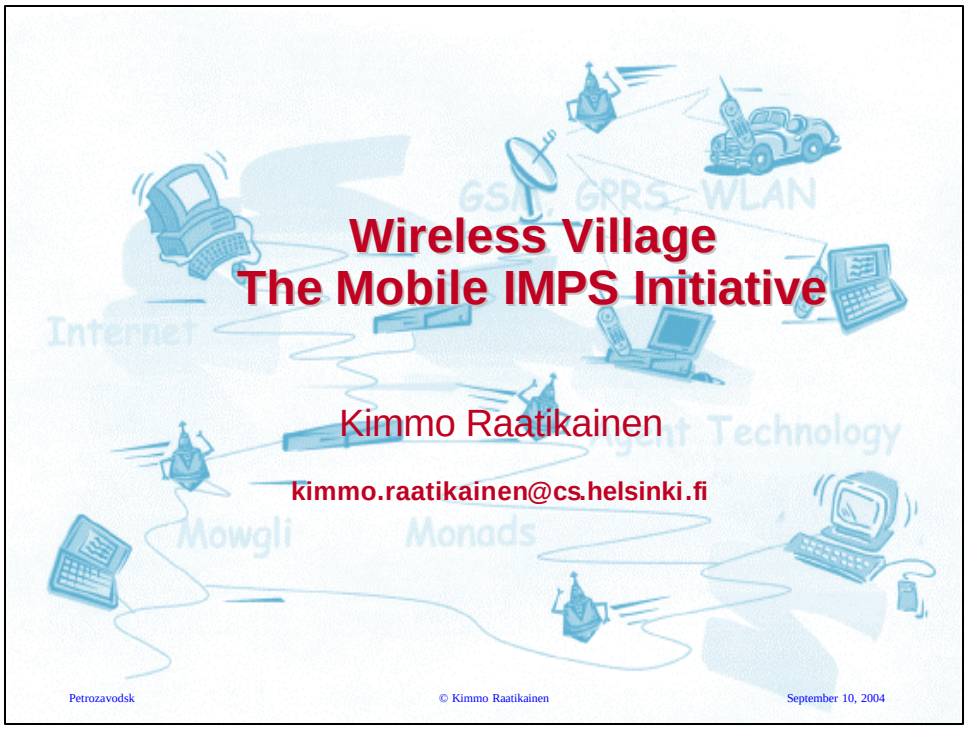

Wireless Village
The Mobile IMPS Initiative

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Lession Outline

- Background
- Overview of Wireless Village Solution
- System Architecture
  - Functional Description of Elements
- Interfaces and Protocols

Wireless Village Specifications

- **WV Architecture v1.1**
- **WV Features and Functions v1.1**
  - WV Client-Server Protocol v1.1
  - WV Client-Server Protocol XML DTDs v1.1
  - WV Client-Server Protocol Transport Bindings v1.1
  - WV Client-Server Protocol Data Types v1.1
  - WV Client-Server Binary Encodings v1.1
  - WV Client-Server Protocol SMS Bindings v1.1
  - WV Client-Server Protocol Static Conformance Requirements v1.1
- **WV Presence Attributes v1.1**
  - WV Presence Attributes DTD v1.1
- **WV Server-Server Protocol v1.1**
  - WV Server-Server Syntax Layer v1.1
  - WV Server-Server Transport Bindings v1.1
  - WV Server-Server Static Conformance Requirements v1.1
- **WV Command Line Protocol v1.1**

Presentation is based on Version 1.0

Wireless Village Interoperability Specifications

- Village Fest #1:
  - Wireless Village Compliance Definition v1.0 (draft final)
  - Wireless Village Interoperability Testing Process v1.0 (draft final)
  - Wireless Village Conformance Process v1.0 (draft final)

Background

- Premises
  - Internet and wireless domains are converging
  - Tremendous adoption rates of SMS and its lucrative business model
  - Mobile consumers and professionals are asking for new wireless applications
  - Operators need to leverage their investment in 3G spectrums
  - Operators are extending their brand to consumers via portals and new services
- Research Portal.com reports instant messaging is the Number Two requested application after voice.

Background

- One of the challenges in bringing IM to the wireless market is to enable a standards-based approach that supports the goals of
  - interoperability and roaming,
  - ensuring the success of an application that will be as popular as email.
- The goal is to ensure interoperability of mobile instant messaging and presence services

Background

- The Wireless Village solution enables the operator
  - to leverage their existing customer base, SMS usage patterns and business models
  - attracting new customers
  - enabling partnerships with existing IM providers,
  - providing new value-add services,
  - building their own IMPS communities.

Wireless Village Solution

- The Wireless Village IMPS includes four primary features:
  - Presence
  - Instant Messaging
  - Groups
  - Shared Content

Presence

- client device availability
  - my phone is on/off, in a call,
- user status
  - available, unavailable, in a meeting,
- location,
- client device capabilities
  - voice, text, GPRS, multimedia
- searchable personal statuses
  - mood (happy, angry)
  - hobbies (football, fishing, computing, dancing).

Presence

- Since presence information is personal, it is only made available according to the user's wishes.
- Access control features put the control of the user presence information in the users' hands.

Instant Messaging

- Wireless Village will enable interoperable mobile IM in concert with other innovative features to provide an enhanced user experience.

Groups or Chat

- The Wireless Village initiative enables both operators and end-users to create and manage groups.
- Users can invite their friends and family to chat in group discussions.
- Operators can build common interest groups where end-users can meet each other online.

Shared Content

- allows users and operators to setup their own storage area where they can post pictures, music and other multimedia content while enabling the sharing with other individuals and groups in an IM or chat session

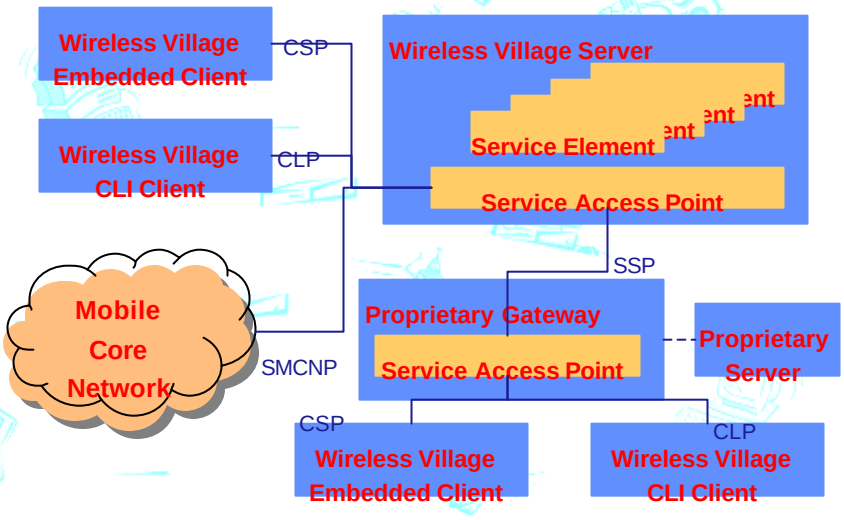
Characteristics of the Wireless Village Solution

- An open industry specification to ensure interoperability
- Enabling the operators to build persistent communities
- Open interfaces to support partnerships
- Built upon existing internet and web technologies
  - XML, IETF CPIM, MIME

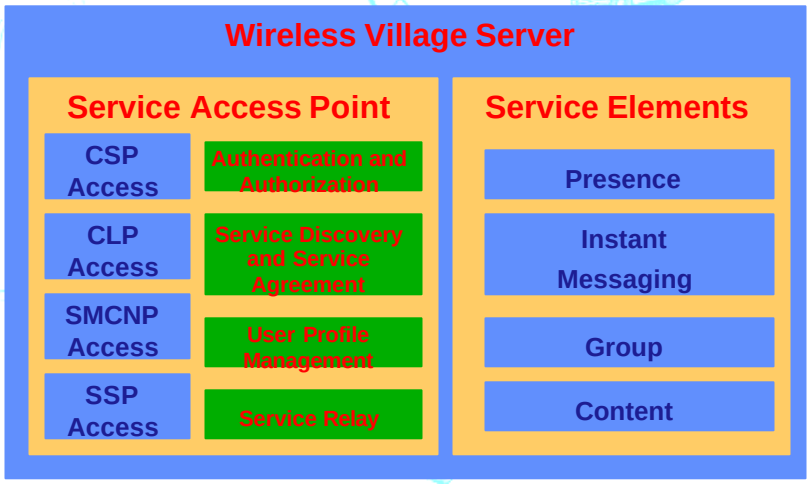
System Architecture

- Client-server-based system
  - the server is the IMPS server
  - clients can be either mobile terminals, or other services/applications, or fixed PC-clients.
- For interoperability, the IMPS servers and Gateways are connected with a Server-to-Server Protocol (SSP).
- The architecture gives implementers more choices in WV Servers or Gateways, but with WV brand and technology.

System Architecture



Architectural Elements



WV Server

- Service Access Point
- Four Application Service Elements
  - Presence Service Element
  - Instant Messaging Service Element
  - Group Service Element
  - Content Service Element

Presence Service Element

- Presence information management:
  - update, retrieve, set and store presence and location information
  - Presence information can be manipulated implicitly by the system, or explicitly by the user.
- A user can subscribe to receive the presence information of other users, as specified in a contact list.
- Contact List Management is also a part of the presence service.

Presence Service Element

- Presence information can be fetched from different internal and external sources.
- Through the Service Access Point the Presence Service Element can connect to the Mobile Core Network to access network presence and service information.
- Network presence defines the properties of the mobile devices, as well as the underlying network functionality.
- The Network service features define the properties related to the wireless devices on the wireless network, and determine the ability to communicate with a particular wireless device.

Instant Messaging Service Element

- Sending and receiving instant messages
- An instant message may be sent to, or received from, a specific WV-user, or users of other instant messaging systems.
- It is also possible to send instant messages to a group of WV-users.
- WV supports several messages types:
  - plain text,
  - video,
  - picture,
  - sound, …

Group Service Element

- Use and management of groups.
- The groups can be private or public.
- A common usage of the Group Service is a chat room.
- It is also possible to bind content to the Groups.

Content Service Element

- Sharing content such as images and documents between Wireless Village users
- The shared content feature allows the IMPS users to share content, while
  - sending messages or
  - chatting in a group.

Service Acces Point

- The Service Access Point (SAP) serves as the interface between the WV server and its environment.
- It has interfaces to
  - the WV clients,
  - other WV servers,
  - the Mobile Core Network and
  - Proprietary Gateways to non-WV servers.
- The functionality of the Service Access Point is:
  - Authentication and Authorization
  - Service Discovery and Service Agreement
  - User Profile Management
  - Service Relay

Service Access Point

- Some potentially useful functions,
  - such as a service administration and monitoring interface, a provisioning interface, and a billing interface, etc.,

  are subject to the implementation in the real world.
- Those functions are outside of the scope of the Wireless Village

Authentication and Authorization

- Authentication is used to verify the identity of an entity (user, network, or application).
- Authorization is the activity of determining what an authenticated entity (user, network, or application) is allowed to do.
- Several types of mechanisms for authentication and authorization:
  - Application-Network Authentication / Authorization.
  - User-Application Authentication / Authorization.
  - Application-Application Authentication / Authorization
  - User-Network Authentication (only for Authentication)

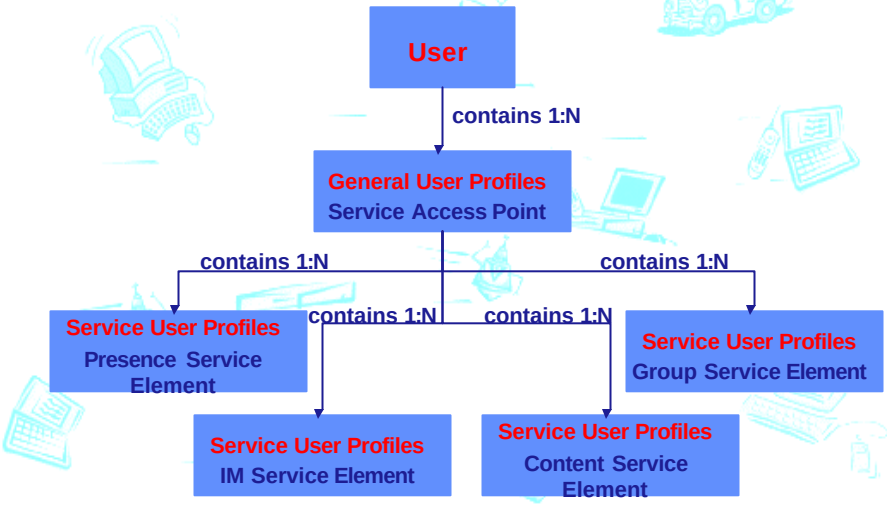
Service Discovery and Service Agreement

- Service Discovery enables the application to identify the total collection of service capability features that it can use.
  - The service discovery process includes service capability registration and service capability notification.
  - This is done both between Client–Server and Server–Server.
- A Service Agreement must be established before the server can interact with the Network Service Capability or other servers' service capabilities, and provides the client with the services.

User Profile Management

- One or more User Profile(s) describe(s) how the user wishes to manage and interact with their communication services.
- The User Profile information consists of various user interfaces and service related information
  - the list of services to which the end-user is subscribed,
  - preferences associated with those services,
  - service status (active / inactive),
  - privacy status with regards to network service capabilities (e.g. user location, user interaction),
  - terminal capabilities and terminal interface preferences etc.
- User Profile Management allows the application to retrieve and update the user profile.

User Profile



Service Relay

- The Service Access Point must provide the Service Relay function to route all service requests and responses among the servers through the Server-to-Server Protocol (SSP).
- The protocol conversion from CSP to SSP and message codec may be needed when performing Service Relay.

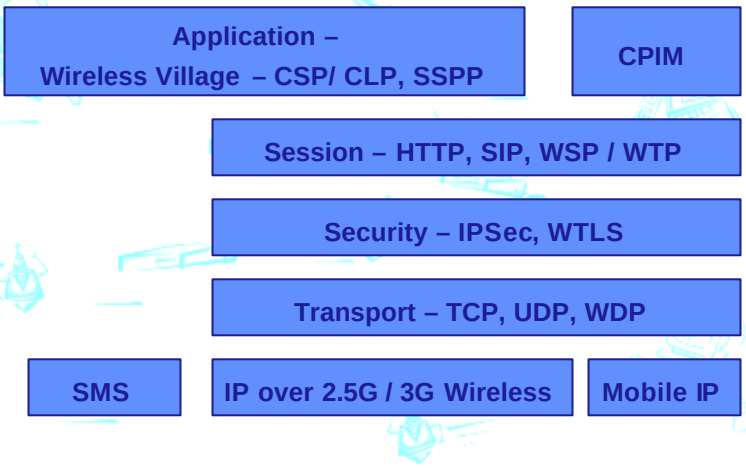
WV Embedded Client

- The Wireless Village Embedded Client is an embedded client within a mobile terminal.
- The clients from different vendors will have a different look, and they will not have the exact same functionality.
- It is possible to take the functions from the Wireless Village system and combined them with the functions from the mobile terminal, e.g. the phonebook.
- The benefit with the Wireless Village embedded client is that despite the difference in the clients, they will be fully interoperable with each other through the Client Server Protocol.

CLI Client

- The Command Line Interface Client uses text messages to communicate with the Wireless Village server.
- The functionality provided might be a subset of the functionality provided by an Embedded Client.
- An Example of a CLI Client is a mobile terminal that uses SMS to communicate with the Wireless Village server.

Interfaces and Protocols



Client Server Protocol (CSP)

- The Client-Server Protocol provides access for Embedded Clients within mobile terminals and desktop clients to access the Wireless Village Server.
- The protocol can use different bearers depending on the capability of the client.

Command Line Protocol (CLP)

- The Command Line Protocol makes it possible to provide access for legacy terminals via a command line client to the Wireless Village server.

Server Server Protocol (SSP)

- The Server-Server Protocol connects Wireless Village servers.
- This can be used within one service provider domain or between different service providers.
- In this way the system will be interoperable so that a user that subscribes to Wireless Village services at Service Provider A can communicate with a user that is a customer of Service Provider B.
- The SSP is also used when connecting a Wireless Village server to Proprietary IMPS service via a Proprietary Gateway.

Server Mobile Core Network Protocol (SMCNP)

- The Server Mobile Core Network Protocol gives access to the Mobile Core Network so that the Wireless Village server can get presence information and service capability information from the network.
- The SMCNP can also be used for authentication and authorization of users, clients and servers.