

CRUMPET

CRreation of **U**ser-friendly **M**obile services **PE**rsonalised for **T**ourism

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More at <http://www.ist-crumpet.org>

Presentation Outline

- Introduction to CRUMPET
- FIPA NAS implementation
- Open source micro-FIPA platform
- Closing remarks

Project Objectives

CRUMPET is an EU IST 5th framework project
It has two main objectives:

- ◆ To implement and trial **context-aware tourism-related services** for nomadic users
 - ◆ **context-aware: location and personalisation**
 - ◆ across mobile & fixed networks
- ◆ To **evaluate agent technology** as a suitable approach for fast creation of robust, scalable, seamlessly accessible nomadic services

Project background

- Partners
 - ◆ QMUL (CO), Emorphia Ltd, Nortel Networks, EML, GMD, PTIN, Sonera Corporation, University of Helsinki
- Combines Tourism + IT to support user nomadicity
- Tourism
 - ◆ 2 phases of trials, real content from tourist boards
- IT: a fusion of several techniques
 - ◆ Personalised services, location-awareness, multi-media content over wireless
 - ◆ Agents are used to integrate all of these

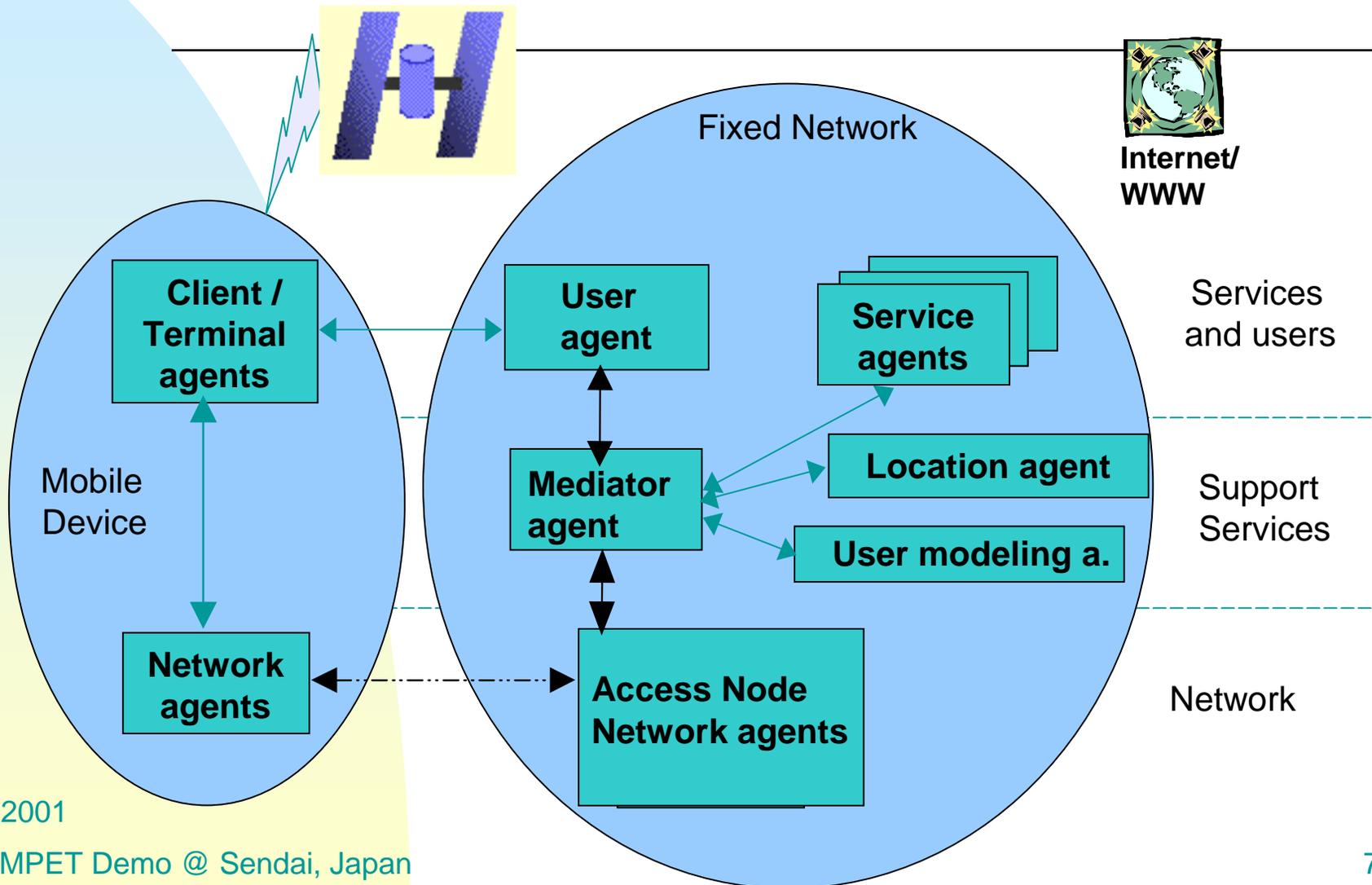
eTourism

- Multi-purpose trip – not just tourism, also business
- Reduced pre-planning – lack of time etc
- When information is accessed
 - ◆ pre-planned vs. destination-based vs. hybrid
- What information is accessed
 - ◆ about the destination
 - ◆ relation of the destination to the current location
- Individualised information
 - ◆ Relation of personal preferences to a location

Context-aware services

- ❑ Personalised information
 - ❑ Aids the information 'fit' to the terminal
 - ❑ Acquire the user info. by active, passive means
- ❑ Location information
 - ❑ Info: maps, routes, positions, service points, sites, events, assets, directories, demographics,
 - ❑ Applications: JIT info., find an asset, tourism
 - ❑ Available to anyone, anywhere, anytime, on any device
 - ❑ Standards: OpenGIS lower layer & value-added layer

Agent Architecture Overview



25.7.2001

CRUMPET Demo @ Sendai, Japan

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CRUMPET and FIPA NAS

Nomadic Application Support Implementation

Mikko Laukkanen

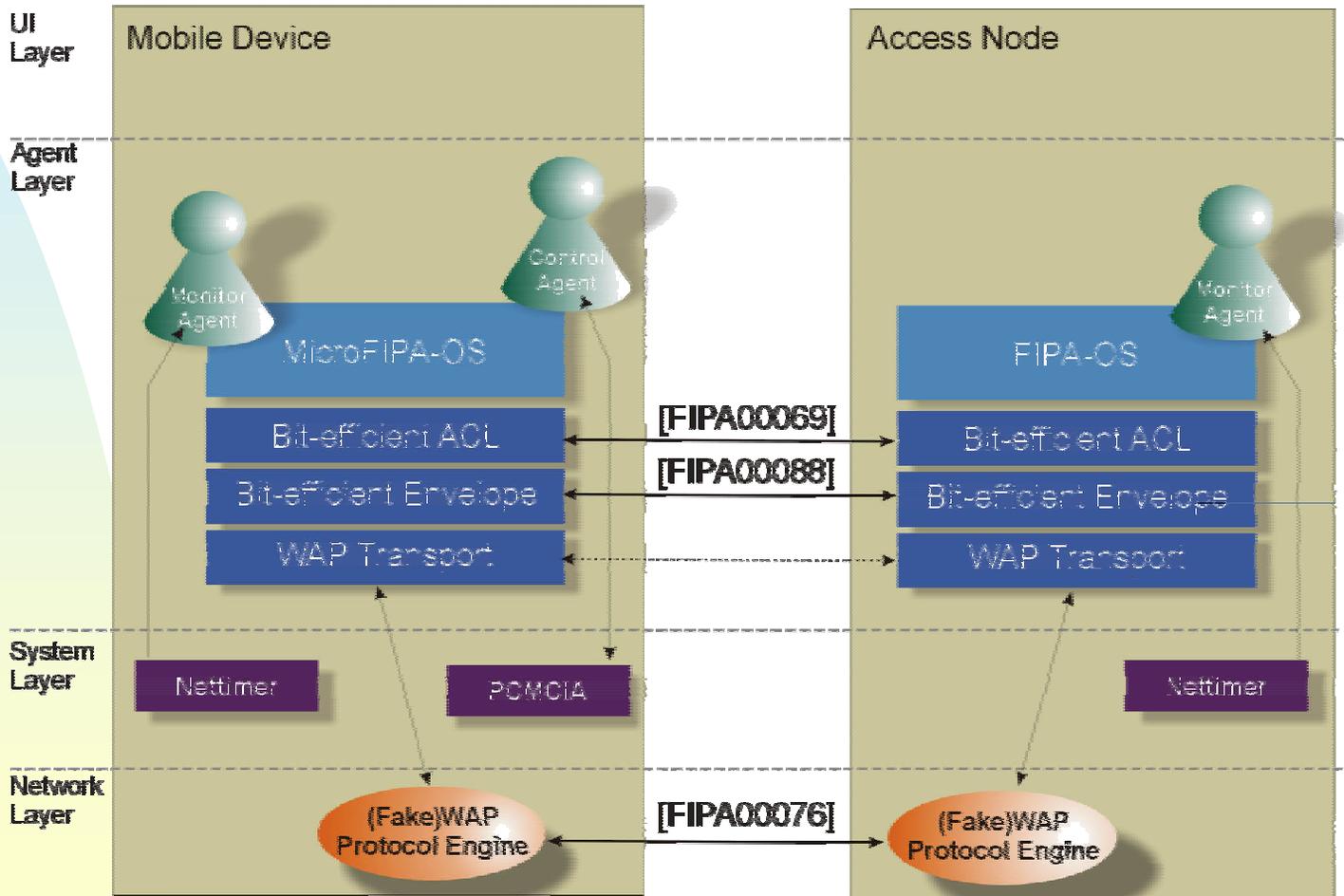
Heikki Helin

Heimo Laamanen

Implementation Topics

- Architectural overview
- NAS ontology
- Monitor Agent and Control Agent
- WAP transport
- Bit-efficient communication

CRUMPET NAS Architecture



25.7.2001

CRUMPET Demo @ Sendai, Japan

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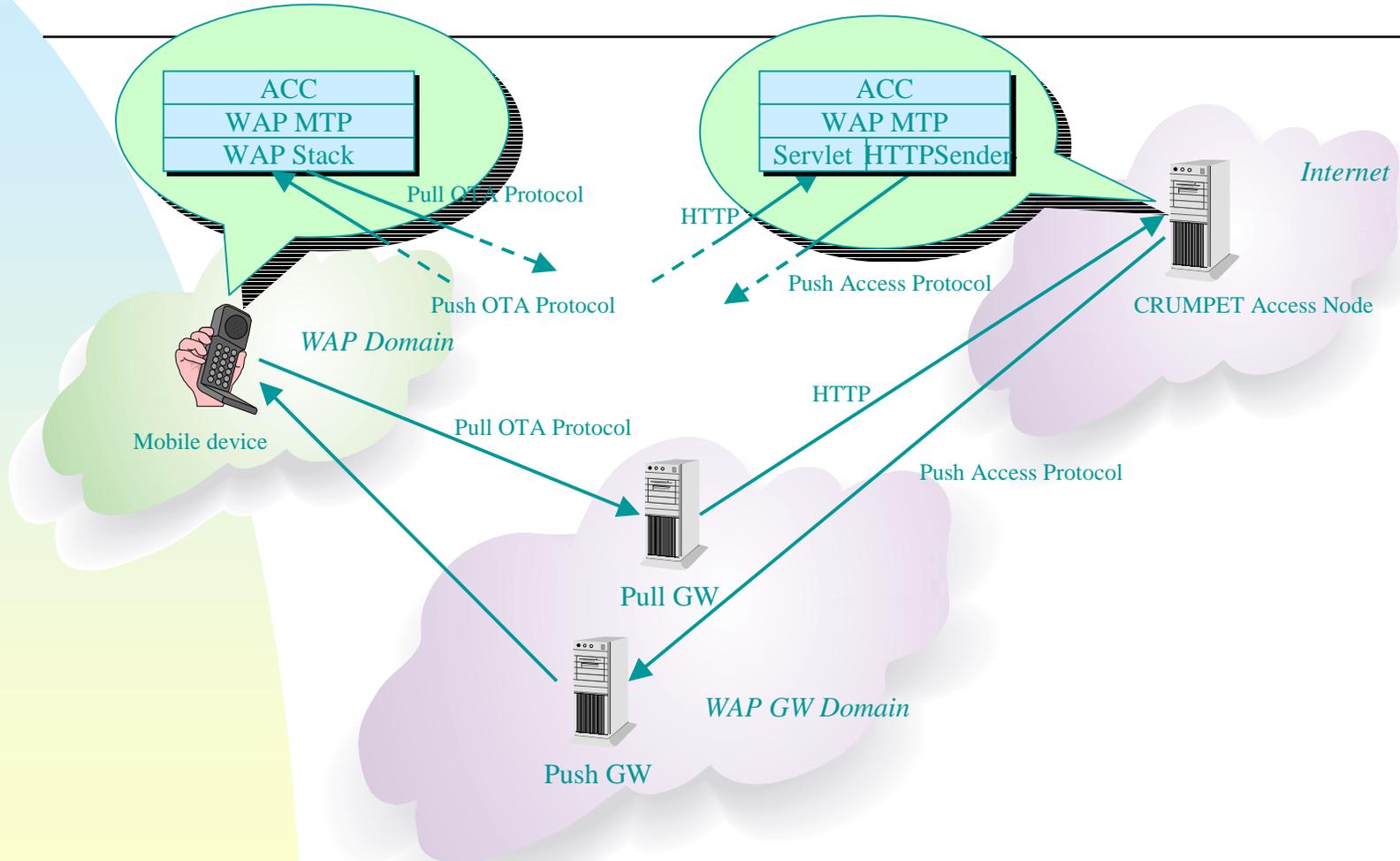
NAS Ontology

- QoS
- All functions implemented
 - ◆ Subscribe protocol problems
 - ✦ Problems with cancel
 - ✦ 'Proprietary' solution
 - ✦ To be specified in the updated NAS
 - ◆ SL2 needed for QoS queries?
 - ✦ New methods needed
 - watermarks

Control & Monitor Agent

- Monitor Agent Functions
 - ◆ Query and Subscription
- Control Agent Functions
 - ◆ Open / close-communication-channel.
 - ◆ Activate / deactivate MTP.
 - ◆ Internal functionality:
 - ◆ Device Handler.
 - ◆ Connection Manager.
 - ◆ Profiles.

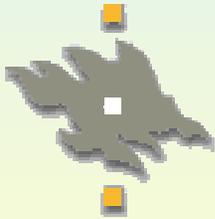
WAP transport



Bit-efficient Communication

- Both envelopes and ACL messages are covered.
- Bit-efficient Service is integrated with MicroFIPA-OS.
- Code table can be optionally used.

MicroFIPA-OS



University of Helsinki
Department of Computer Science

Jani Leinonen

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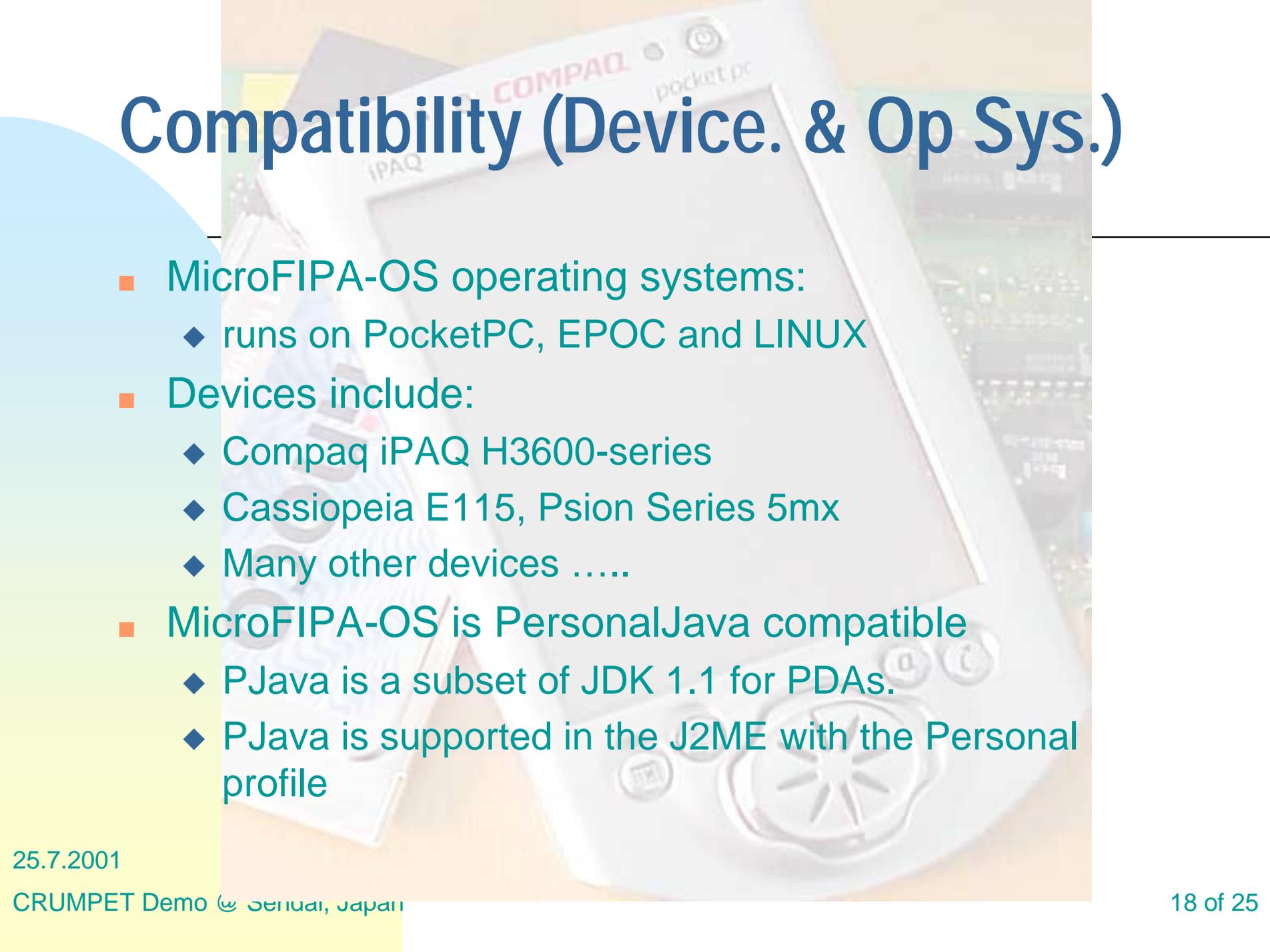
MicroFIPA-OS

- An open-source agent execution environment for small and wireless devices by the University of Helsinki
- The small foot-print platform is based upon the current version of FIPA-OS
 - ◆ Deployment of FIPA-OS agents on small devices
- Runs on most of today's middle/high-level PDAs with PersonalJava support

Features

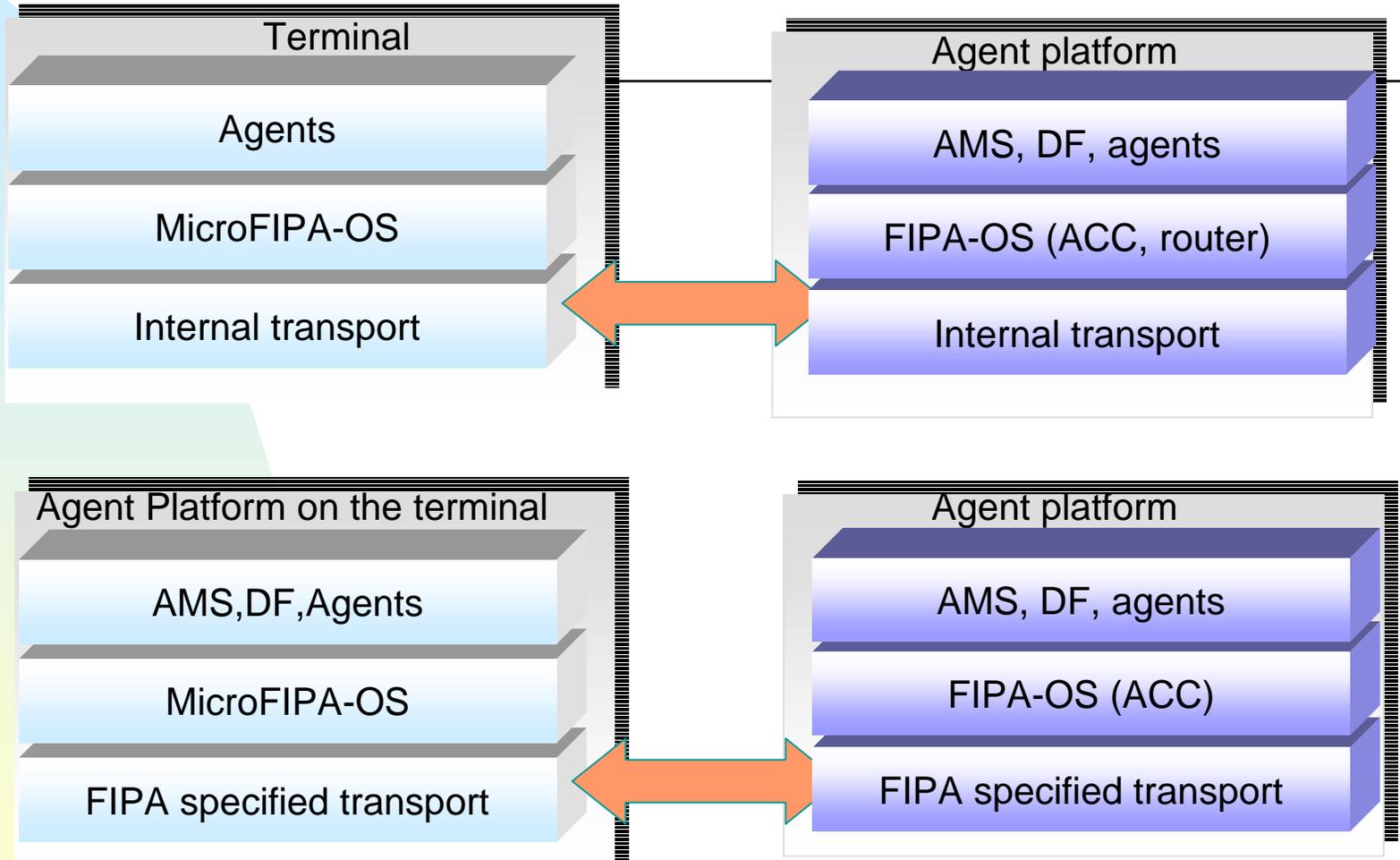
- MicroFIPA-OS supports a number of agents on the small device
 - ◆ It is able to host a full FIPA platform and execute AMS and DF on the terminal
 - ◆ Support for FIPA-OS tasks and conversations
- Transport architecture
 - ◆ Optimized and enhanced for local (within terminal) agent communication

Compatibility (Device. & Op Sys.)



- MicroFIPA-OS operating systems:
 - ◆ runs on PocketPC, EPOC and LINUX
- Devices include:
 - ◆ Compaq iPAQ H3600-series
 - ◆ Cassiopeia E115, Psion Series 5mx
 - ◆ Many other devices
- MicroFIPA-OS is PersonalJava compatible
 - ◆ PJava is a subset of JDK 1.1 for PDAs.
 - ◆ PJava is supported in the J2ME with the Personal profile

Deployment scenarios

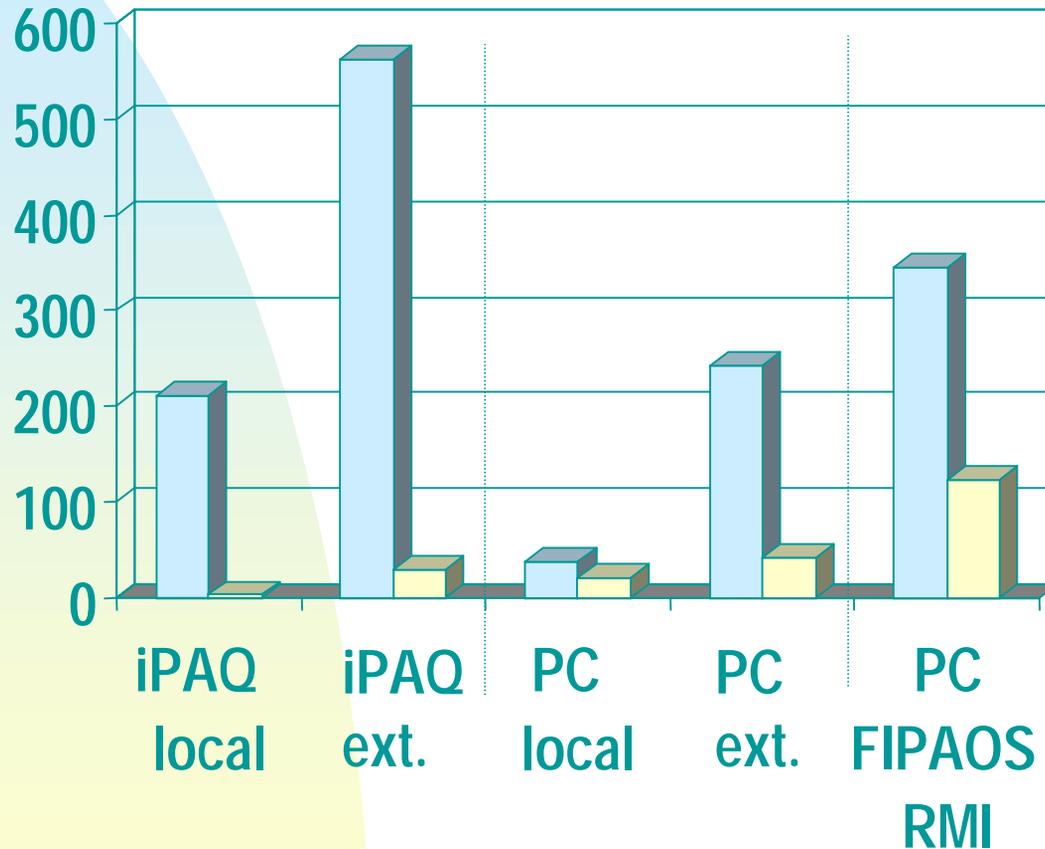


Memory and performance

- Currently takes maximum of 470KB (full FIPA-OS functionality).
 - ◆ Size can be reduced by removing parsers and other components.
- Runtime memory requirement depends on the runtime environment
 - ◆ For example: 3.5 MB on JRE1.1.8 on iPAQ (VM+MFOS+agent)
- Local message delivery approx. 30ms on iPAQ with JDK 1.1.8

Performance

AMS registration (ms)



Benchmarking
on iPAQ
and AMD 800MHz
on JDK 1.1.8.



Closing remarks

- Market being addressed by CRUMPET is location-aware, personalised tourism services for nomadic users – this is potentially a huge market
- Agents provide universal rich communication mechanism coupled with adaptivity and proactivity to support this

Project Status

- Project Status (July 2001 ~ 1/3)
 - ◆ Micro-FIPA-OS: pre-release, May 2001; full release in August 2001
 - ◆ fixed network agents, service agents and terminal agents in alpha testing
- First trials (Heidelberg) September 2001
- NAS CRUMPET development complete November 2001, we will then maintain it w.r.t any FIPA NAS changes
- Second set of (multi-city) trials in 2002

The CRUMPET Demo

Map components:

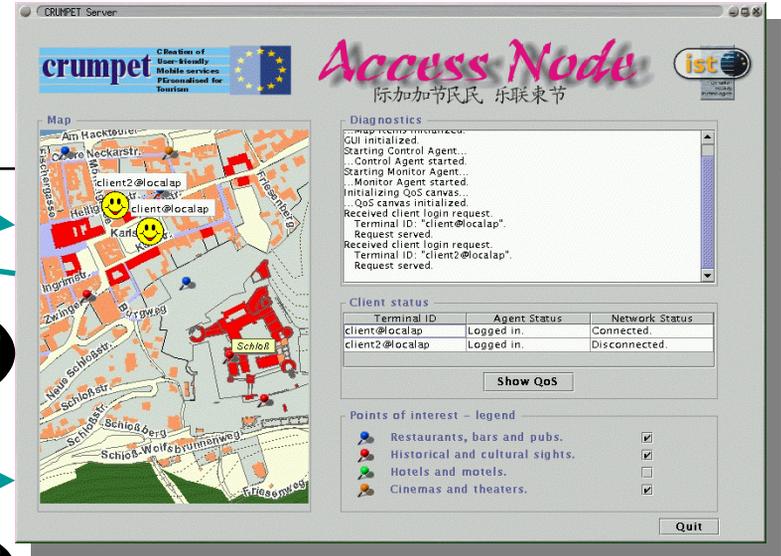
- Map of the nearby “world”
- Start/Edit tour
- Status bar with proactive “bulb”



My IP address and port are...

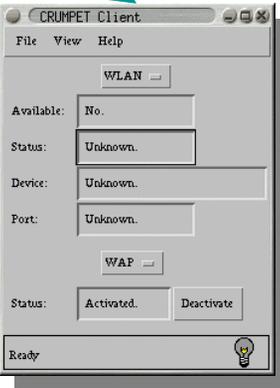
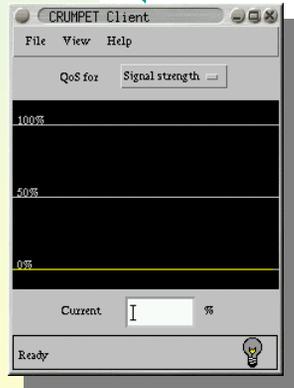
Ok, here are your nearby points of interests.

Here is my new location.



Components:

- Map of the “world”
- Diagnostics information
- Client status (Agent and network status)
- Points of interests



Thank you

<http://www.ist-crumpet.org>

<http://fipa-os.sf.net>

<http://www.cs.helsinki.fi/group/crumpet>