

Introducing UMSIC Middleware Services

Jussi Laakkonen, Tommi Kallonen, Kari Heikkinen,
Jari Porras

Lappeenranta University of Technology

Outline

- UMSIC project
- JamMo application and scenarios
- PeerHood
- UMSIC services
- Conclusions

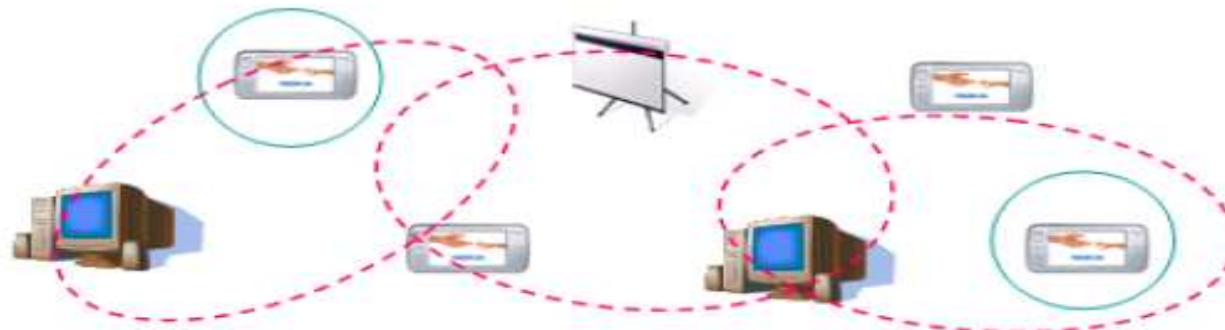
Introduction - UMSIC project

- Usability of Music for Social Inclusion of Children
- European Union FP7 funded project
- Aims to increase the social inclusion of children
- Social inclusion is achieved by:
 - Music making and musical interaction
 - Singing, composing, playing.
 - Modern mobile technology
 - Social tools
- Different scenarios to describe usage
 - Source for deriving requirements
 - Guidelines for User Interface design

High level system overview

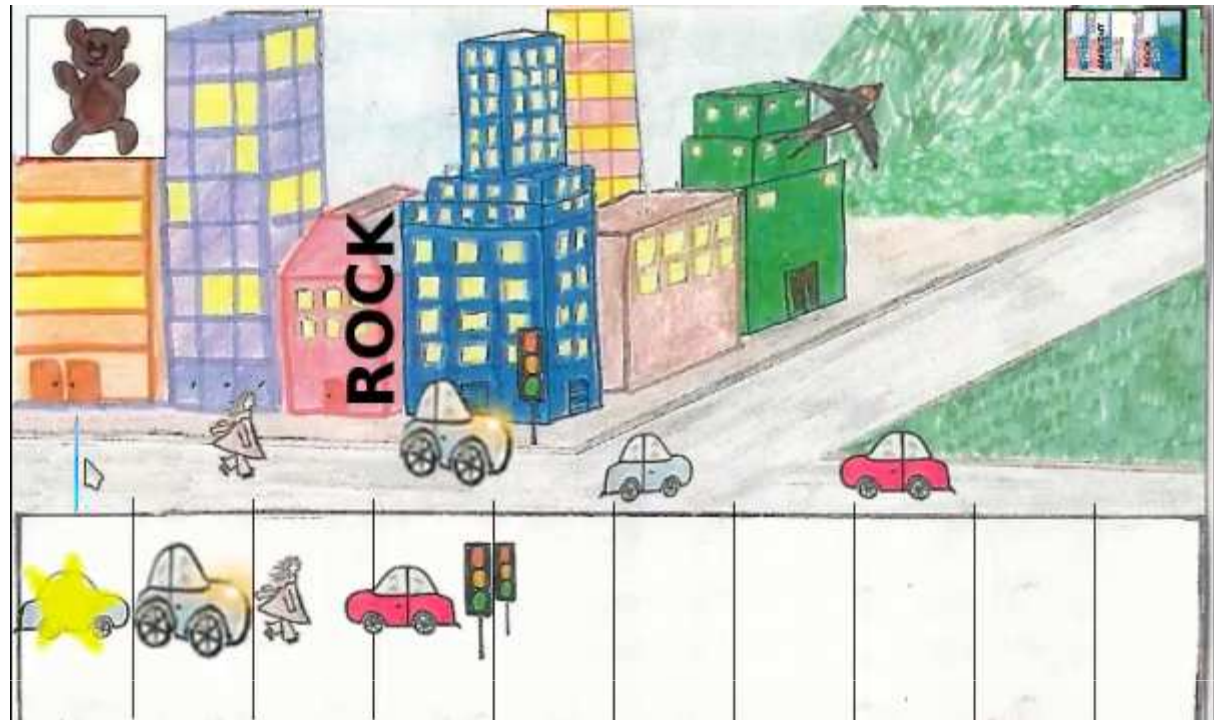
Scenarios	Stand-alone	Network	Ad hoc	Public
Applications	Karaoke	Improvisation	Composition ...	
UMSIC middleware	GEMS	CEM	MEAM	CHUM
Environment management	PeerHood	{ Device Discovery Service Discovery Connection Establishment		Service Sharing Active Monitoring Seamless Connectivity
Connectivity	Bluetooth	WIFI		

Physical resources and Sensors



Mobile devices
Servers
Public screens
Sensors?
Other?

JamMo



- An application for music making and sharing for 3-6 and 7-12 year olds.
- Simple composing - 1-2 editable tracks for music loops
- Advanced composing - More tracks, virtual instruments for music creation. Midi editor for editing the played songs. Sound recorder for singing tracks.

Scenarios

- *Stand-alone: Singing and composition games of 3-6-year-old children*
- *Ad hoc: Composition pair game of 3-6 year-old children*
- *Public: Inclusive music classroom of 7-12 year-old children*
- *Networked: Informal on-line community of 10-12-year old children*

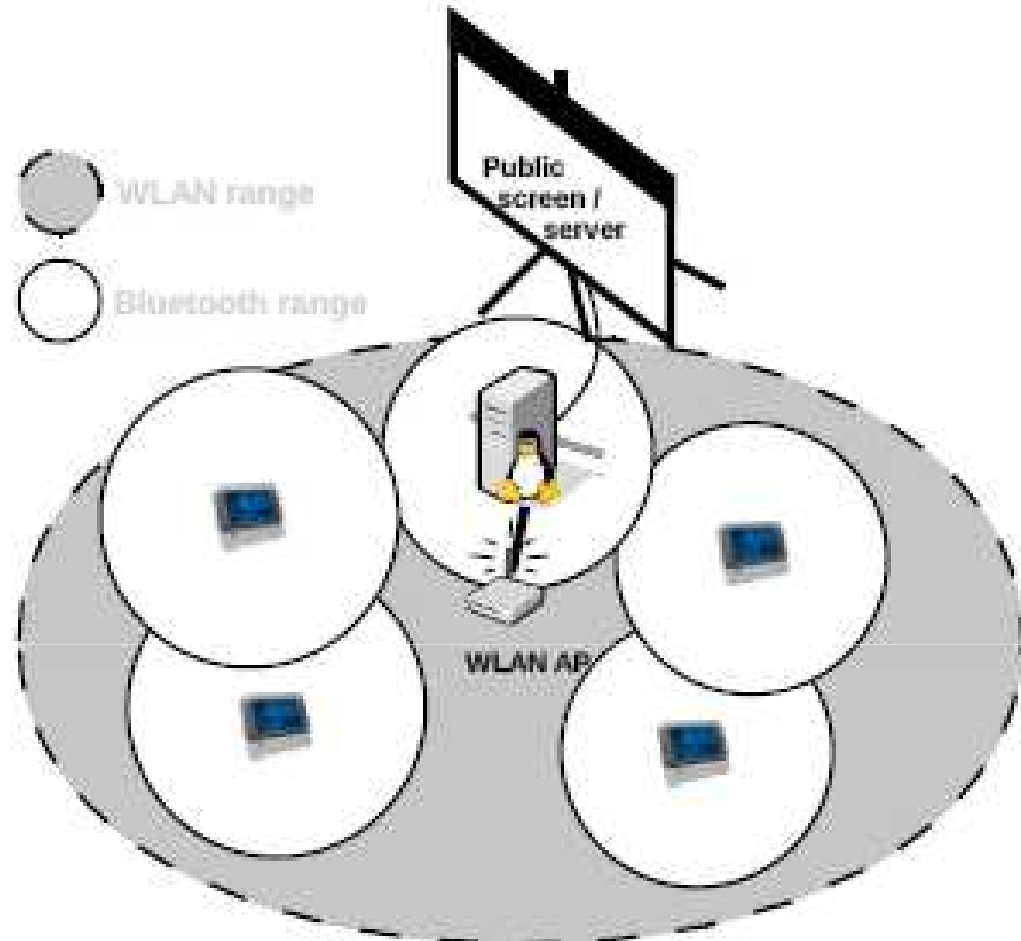
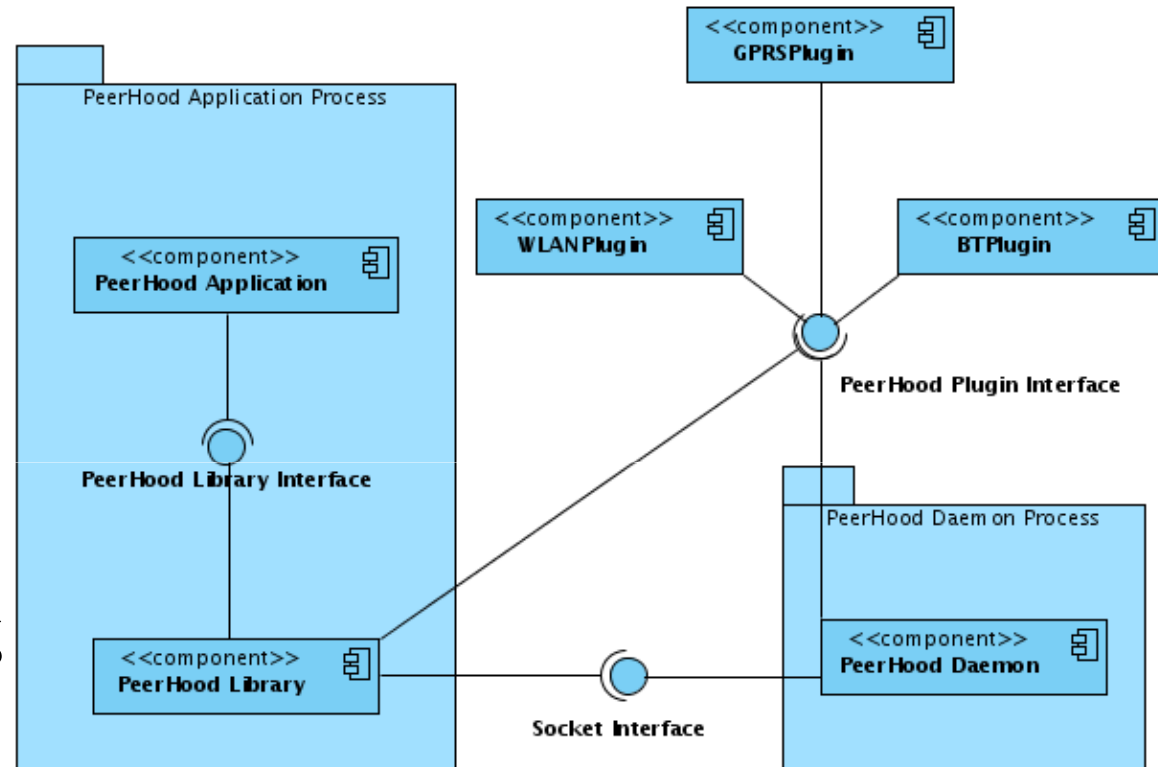


Figure 12: Example of deployment of devices in public scenario

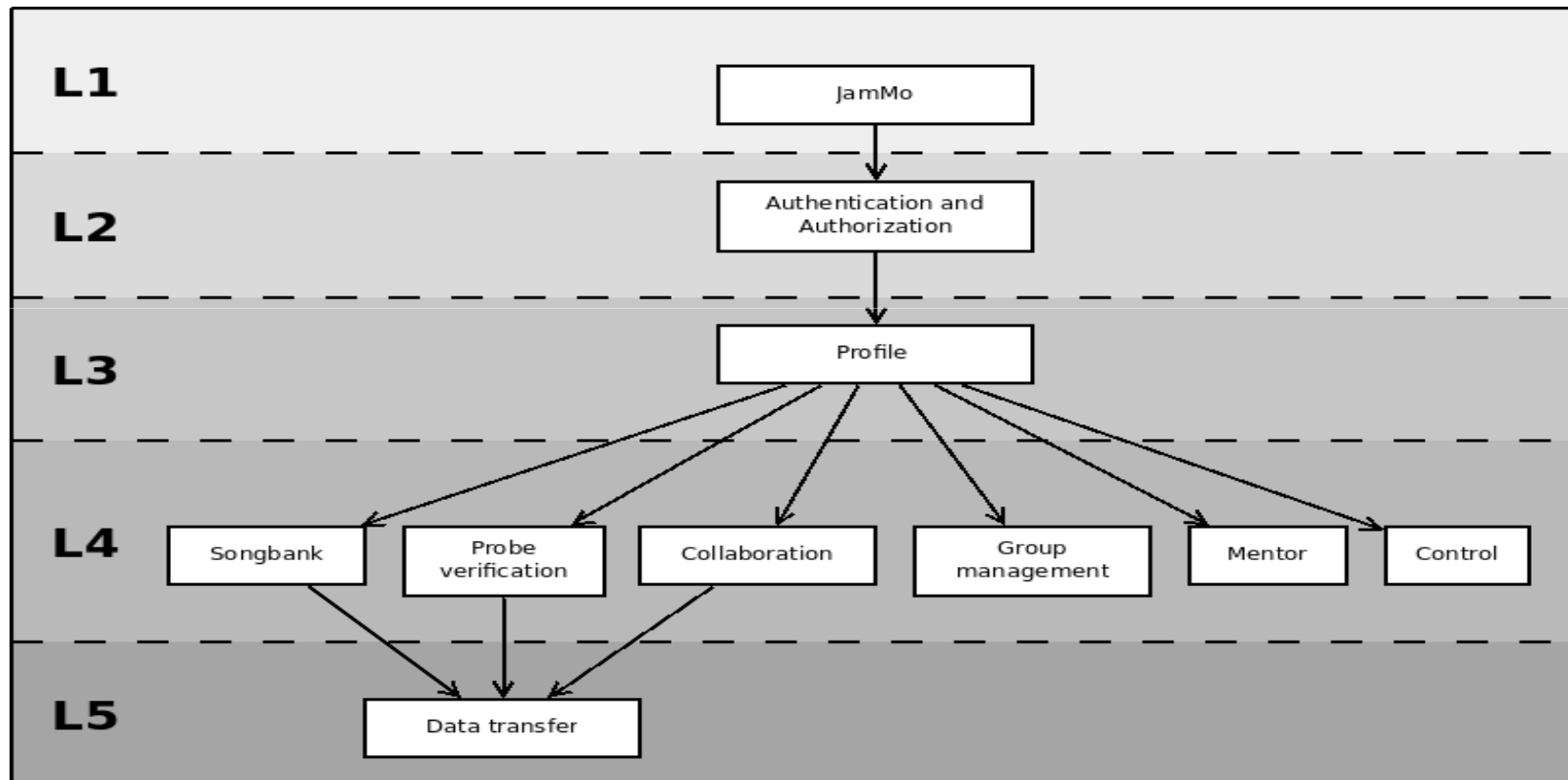
PeerHood

Software for:

- Device discovery
- Service discovery
- Device monitoring
- Service advertising
- Connectivity
- Data transfer
- Seamless connectivity



UMSIC middleware services (1/3)



UMSIC middleware services (2/3)

- *Jammo service*
 - Detect running JamMo application and it's version.
- *Authentication and Authorization service*
 - *Authenticate the user and grant access to other services.*
- *Profile service*
 - *Manages user profile (public and private)*
- *Songbank service*
 - *Sharing of file-based data - ready songs, work-in-progress, sound loops.*
- *Probe verification service*
 - *Verification of self-recorded audio. Permission to share.*

UMSIC middleware services (3/3)

- *Collaboration service*
 - *Synchronizing of data during group work*
- *Group management service*
 - *Manages group membership data. Create and join groups.*
- *Mentor service*
 - *Monitors the student and informs teacher of status or problems.*
- *Control service*
 - *Controlling of client device in classroom.*
- *Data transfer service*
 - *Generic file transfer service used by other services.*

Conclusion

- A design of service structure for mobile music creation and sharing
 - Music creation
 - Sharing
 - Collaboration
 - Controlled or uncontrolled environment
- PeerHood offers the basic functions needed to monitor the environment and create services
- Currently the implementation has started, simple stand-alone demo ready and the software will evolve during next year.

Links

www.umsic.org

jammo.garage.maemo.org