Device Management Module

Responsible partner: USAAR

1. Device functionalities are described in a semantic format formalized in OWL and are dynamically integrated into the KR and used for the presentation planning.

2. Device integration, access and retrieval of sensor data functionalities are provided using the OSGi API of Eclipse Equinox.

When a device is integrated into the environment it’s necessary to communicate with the same on a standardized layer:

- Subcomponent Device Input Interpretation cares for interpretation of the sensor data.
- Subcomponent Device Access enables presentation orchestration of content items on presentation devices.
- Both subcomponents care for the device access on the technical level by accessing the native device libraries but provide access on the context level → Broadcasting a message to present a specific content item to a specific user is enough information for context-aware presentation.

3. Integration and removal of devices at runtime → available devices can be used by all modules for the presentation of content items.

4. Conceptual layer for devices, which brings device input interpretation and access on a contextual level.

5. Technically oriented questions, as drivers, configuration, device capabilities are managed internally to provide a high-level access which intensively reduces the complexity of the device management in intelligent environments.

UPnP-based device discovery realized using the Cling framework: Using UPnP and dynamic device detection and integration at runtime maximizes the adaption of the bathroom environment on the devices currently available. After a device has been discovered using UPnP it is integrated in the system on two levels:

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- Subcomponent Device Access enables presentation orchestration of content items on presentation devices.

Both subcomponents care for the device access on the technical level by accessing the native device libraries but provide access on the context level → Broadcasting a message to present a specific content items to a specific user is enough information for context-aware presentation.

The subcomponent Device Access provides services to access the currently integrated devices. All sensor information lifted on a contextual level is broadcasted by the Device Input Interpretation subcomponent using messages.

Task lead:
Saarland University
Sabine Janzen, sabine.janzen@iss.uni-saarland.de
Contact:
Andreas Filler, andreas.filler@iss.uni-saarland.de
http://www.iks-project.eu/