

Ametza: a Generic Home Control System based on UPnP

Maria-Teresa Segarra
GET -- ENST Bretagne
France

Outline

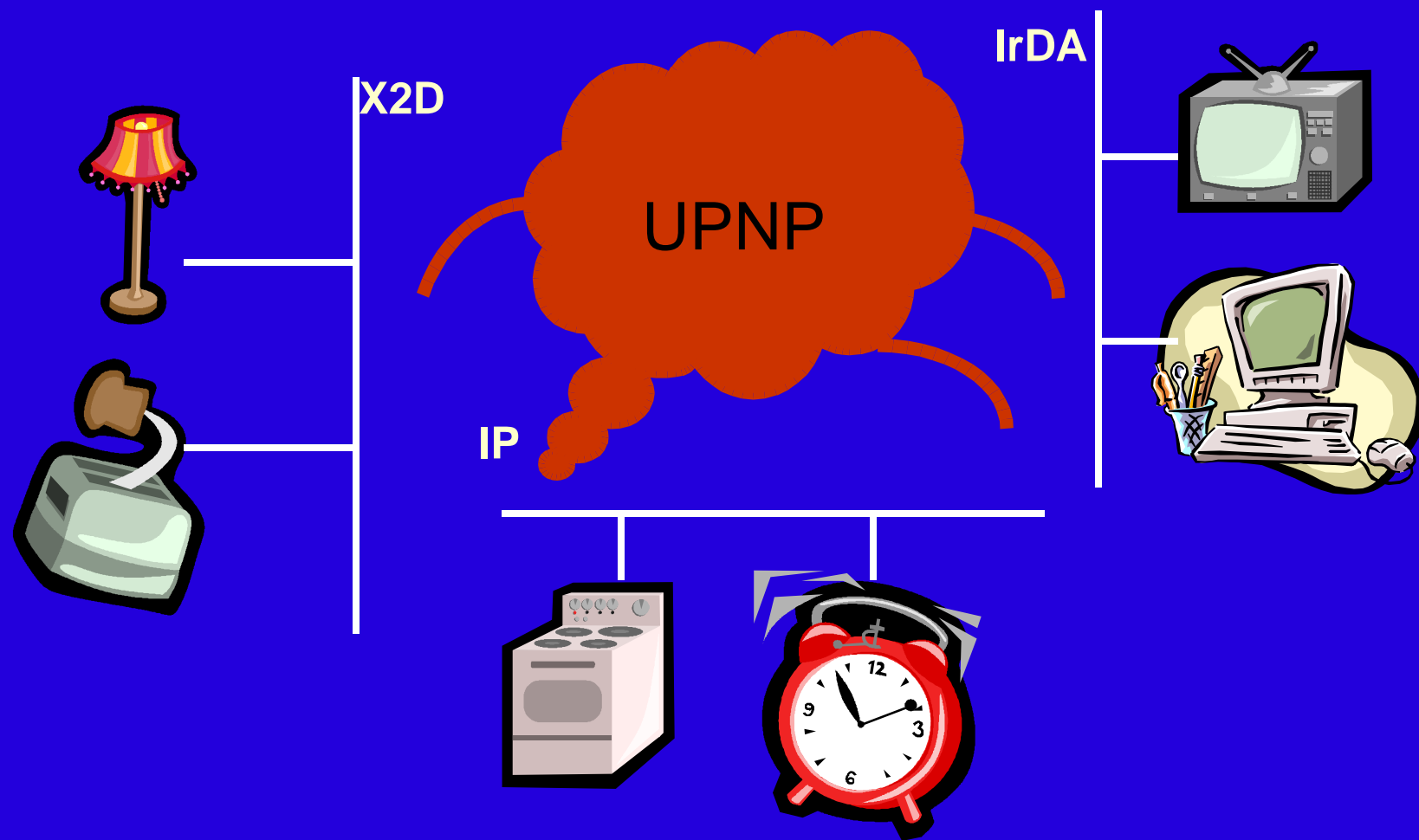
- x "Maison Intelligente" Project
- x UPnP Technology
- x Ametsa Control Point
- x UPnP-X2D/X10 Gateways
- x Conclusion and Future Work

"Maison Intelligente" Project

x Goals

- ✓ Improve autonomy of impaired people by proposing a universal home control device
 - Devices manufacturer independent

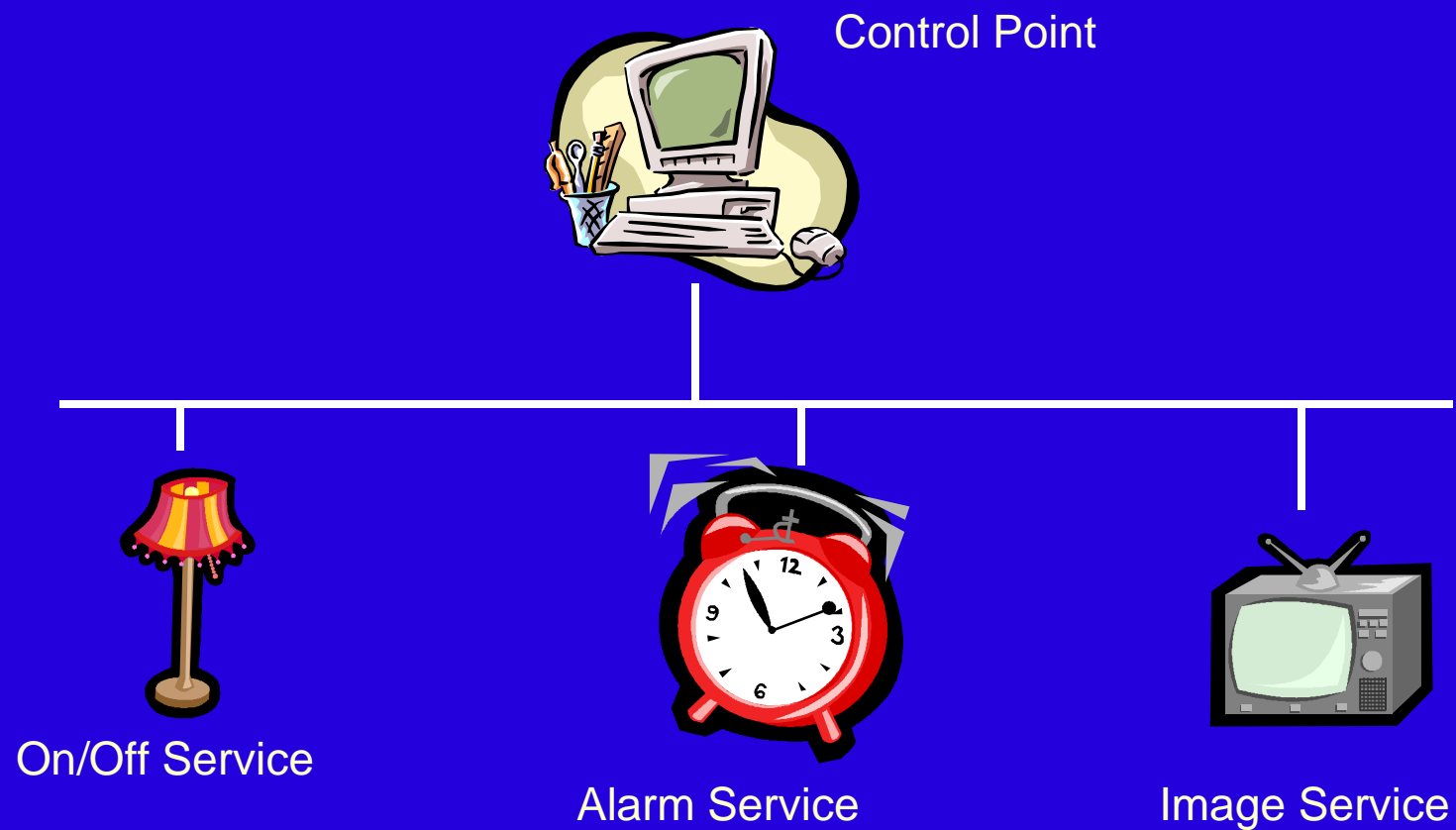
"Maison Intelligente" Project (2)



UPnP: Universal Plug and Play

- ✗ Peer-to-Peer local network connectivity of intelligent appliances, wireless devices and PCs
- ✗ Standard-based connectivity to ad-hoc or unmanaged networks
- ✗ Uses IP, TCP, UDP, HTTP, and XML

UPnP Components



UPnP (2)

- x UPnP devices
 - ✓ Auto IP configuration
 - ✓ Convey their capabilities
 - ✓ Leave the network smoothly
- x UPnP control points
 - ✓ Learn about the presence and capabilities of devices
 - ✓ Use those capabilities

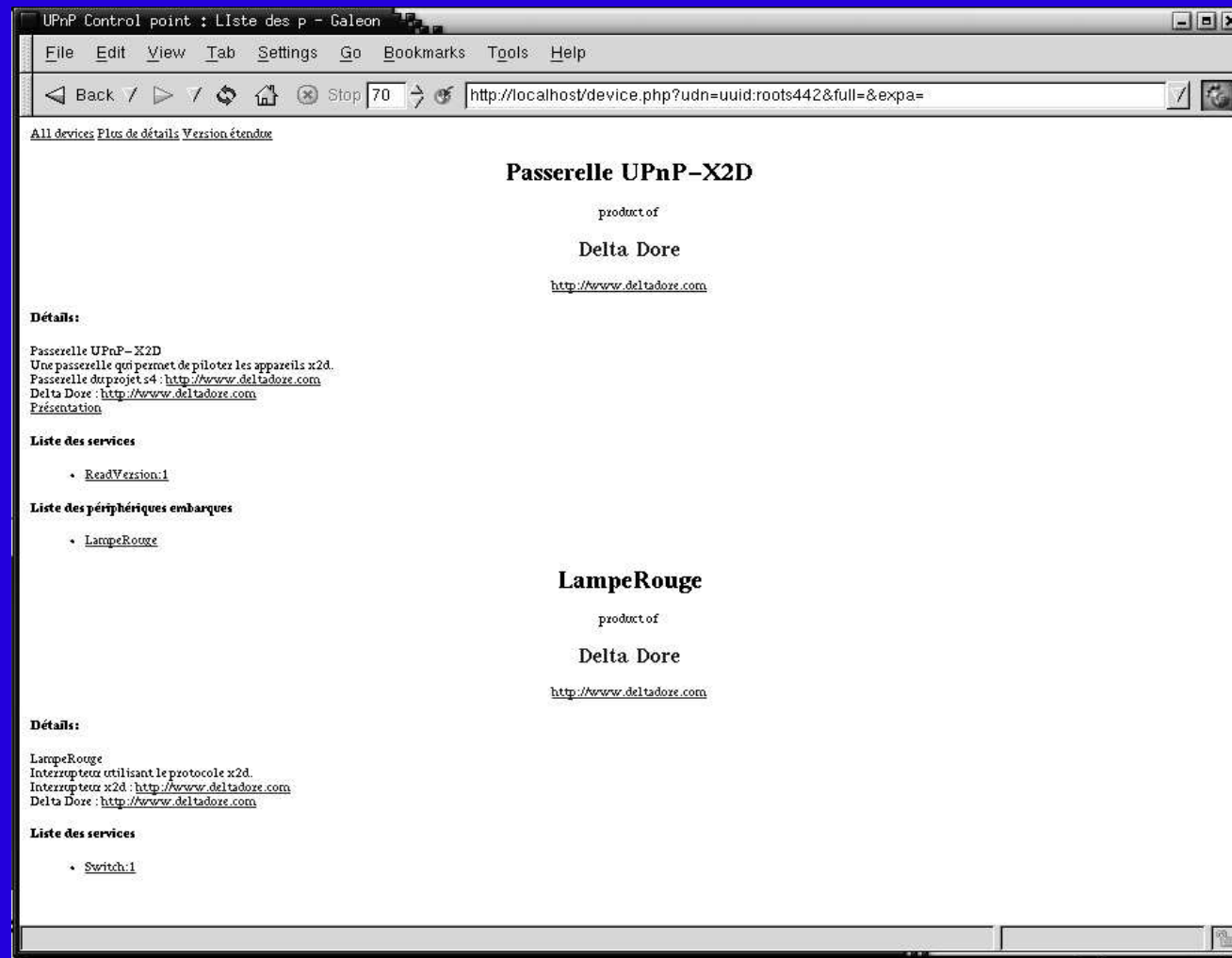
UPnP Protocols

- x Address configuration
 - ✓ Auto-IP, DHCP
- x Discovery and search
 - ✓ SSDP, MSEARCH
- x Control
 - ✓ SOAP
- x Events
 - ✓ GENA

Ametza Control Point

- x Devellopped upon the Intel's UPnP implementation
- x Learns about the state of the UPnP network
 - ✓ Available UPnP devices
 - ✓ State of their services represented by a (set of) variable (e.g. *Control* variable for the On/Off service of a lamp)
- x Sends actions to devices
- x Accessible via a shell and SOAP interfaces

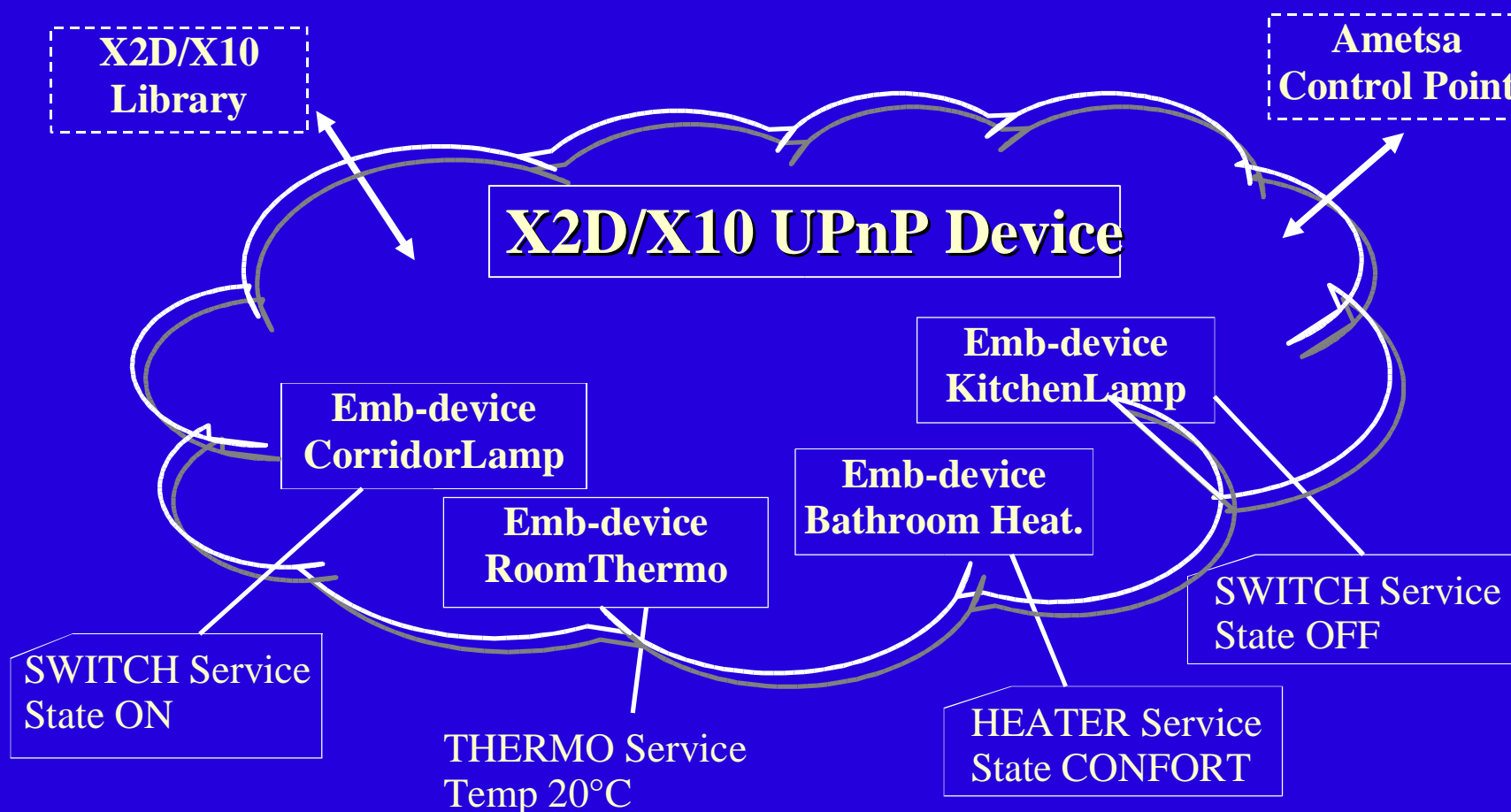
Ametsa User Interface



UPnP-X2D/X10 Gateways

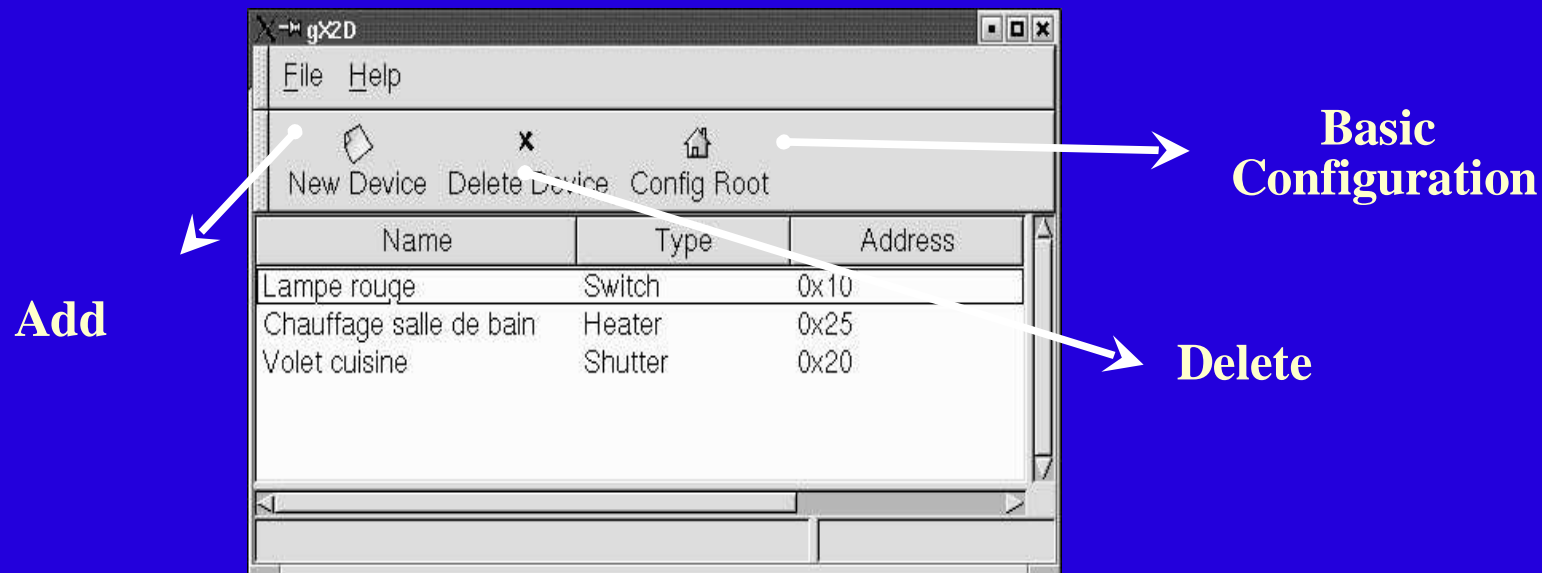
- ✗ X2D, X10
 - ✓ Powerline and radio communication protocols
 - ✓ Frequently used to control home devices
- ✗ Need for a gateway to the UPnP network
 - ✓ Implemented as an UPnP device giving access to X2D/X10 physical devices (lamps, shutters, heating)

UPnP-X2D/X10 Gateways (2)

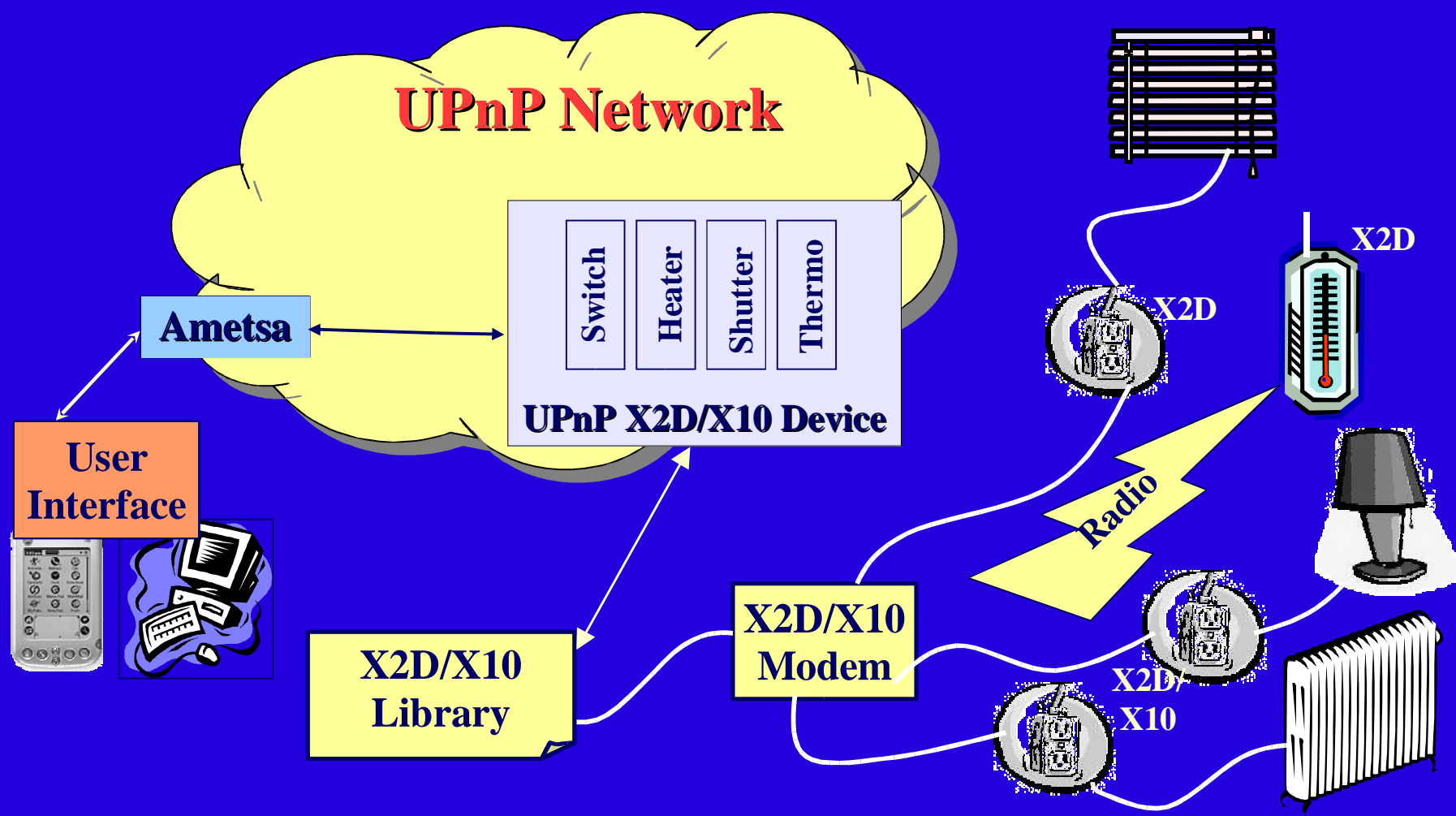


Gateways Administration Interface

- ✗ Add/delete a X2D/X10 device



Experimentation Platform



Conclusion and Future Work

- ✗ Generic home control system
 - ✓ Based on a standard technology
 - ✓ Devices manufacturers independent
- ✗ Work in progress
 - ✓ Python-based UPnP implementation
 - ✓ Ametsa v2: CORBA interface+python UPnP
 - ✓ Adaptation to blind people
 - ✓ Programming a list of actions to be performed

