

 **N4C**

**Networking for Communications Challenged Communities:
Architecture, Test Beds and Innovative Alliances
Grant Agreement: 223994**

Coimbra Technical Meeting

Portugal, December 8-11 2008

Session: Animal Tracking. Ongoing activities
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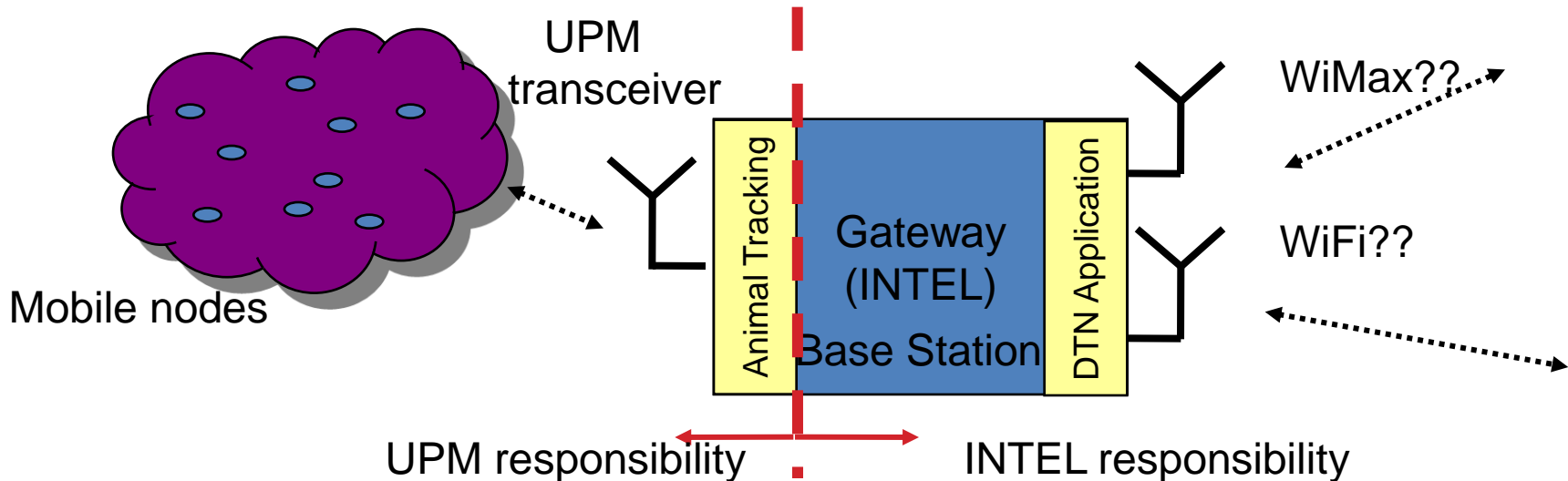
December 10th, 2008

Contents

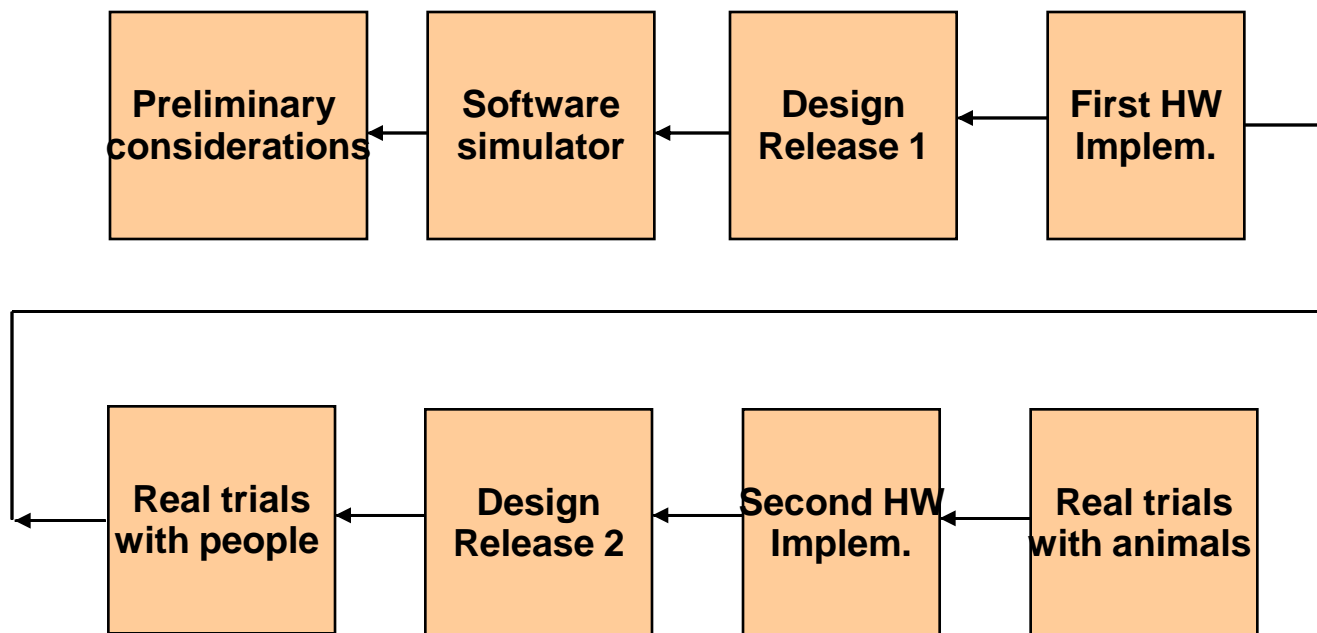
- Our contribution to the global picture
- Schedule of our contribution on this topic
- Activities
 - Simulator
 - First prototype of the secondary node
 - Design of the primary node
 - Real trials in February 2009
- Discussion

Contribution to the project

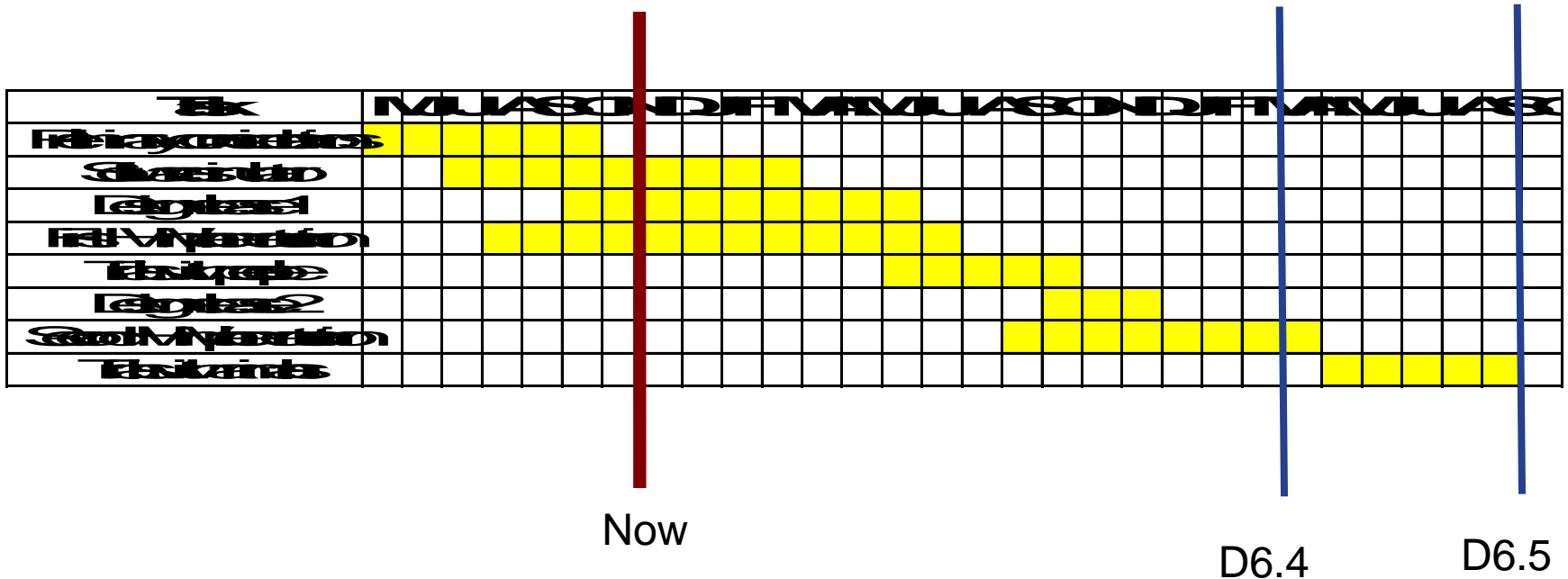
- Design the HW / SW for the animal tracking
 - Primary and secondary nodes designed following minimum consumption principles.
 - We design the interface of the BS with the animal tracking application connecting with the gateway via USB.
 - We behave as a information provider to the DTN network



Stages



Schedule



D6.4 (Month 24): Mesh Networking for mobile ultra low power radio links

D6.5 (Month 30): Update of D6.4 based on experience from field tests

M6.4 (Month 24): Prototype of the lower layers of the ultra low power radio system

Simulator

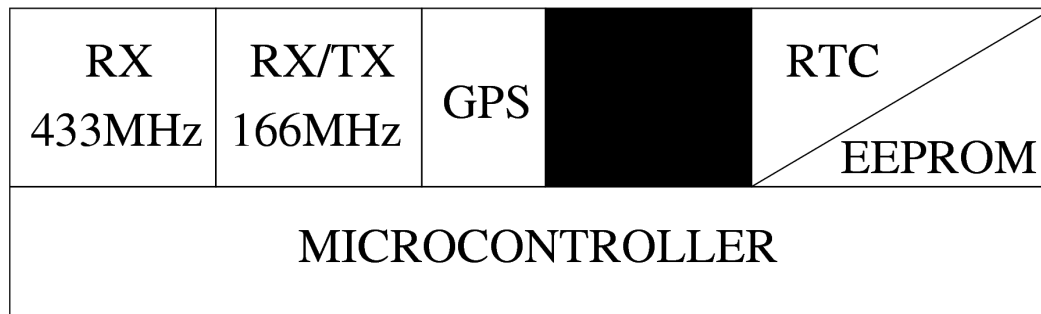
- On going work
 - Almost finished
 - First design results expected in March 2009
 - Reasons for this own design in front of other licensed products
 - Focused on this specific problem to improve efficiency
 - Our own protocols
 - Several types of nodes (primary / secondary / Access points)
 - Standard products are free just for non commercial issues

Primary node. To be finished in March 2009

RX 433MHz	RX/TX 166MHz	GPS	USB	RTC
			UART	EEPROM
MICROCONTROLLER				

- One sole electronic design
 - ○ Controller: Brain of the node
 - Radio interfaces:
 - 433MHz (Secondary node)
 - 166MHz (Base Station node)
 - GPS: To locate the node
 - USB Interface: To communicate inside the base station

Primary node. Reindeer node



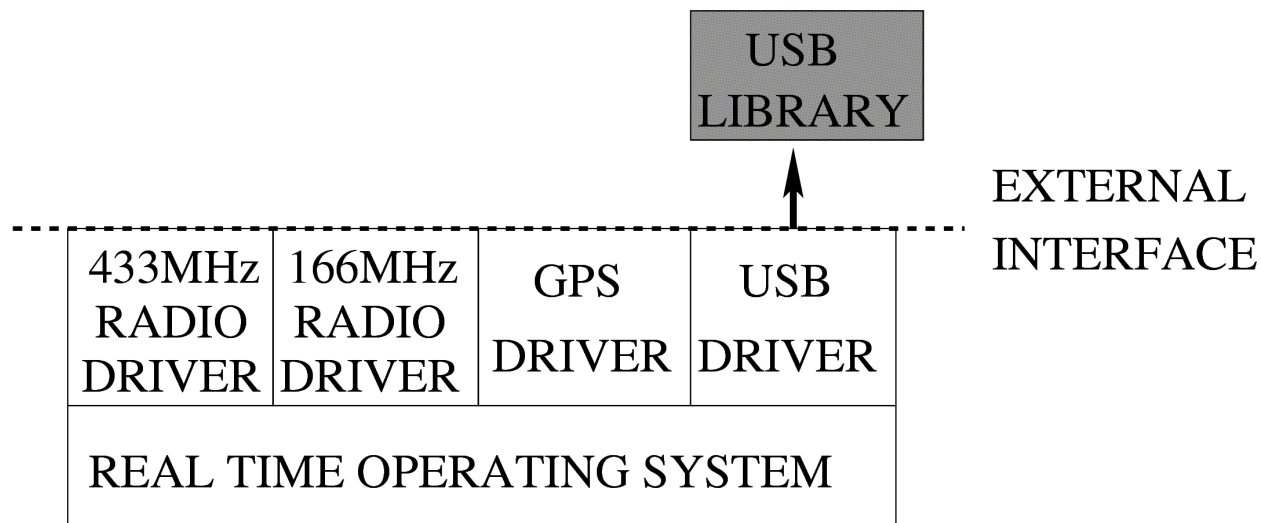
- USB interface is not needed
- RTC: Gets Real Time
- EEPROM: Stores secondary nodes information

Primary node. Base station node

RX 433MHz	RX/TX 166MHz	GPS	USB	RTC
			UART	EEPROM
MICROCONTROLLER				

- USB interface: Communication embedded PC
- Radio 433 MHz: Probably not needed
 - Depending on the simulation results
- GPS: Needed if base stations are mobile

Primary node. Software implementation



- A Linux/Windows library will be provided to communicate with the embedded computer
- The other drivers are for internal usage

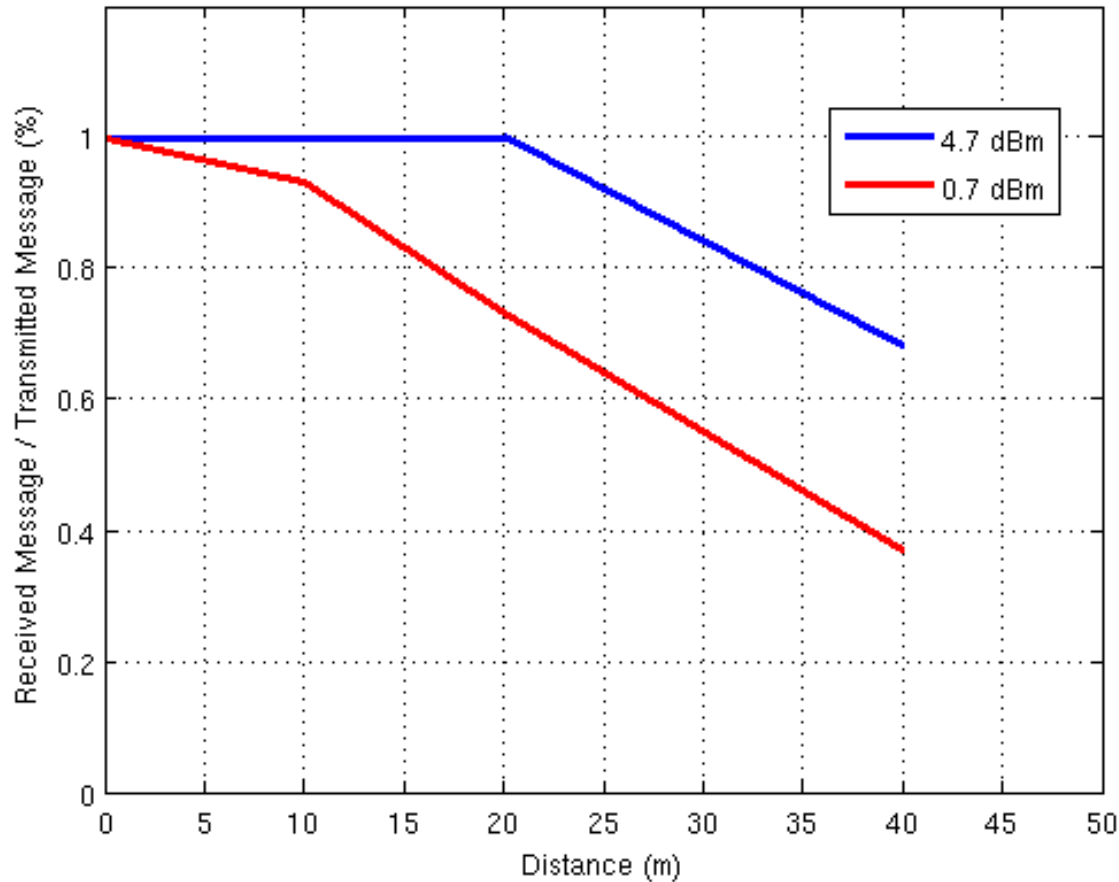
Primary node. Asked questions in Slovenia

- Frequency Selection:
 - 433 MHz for primary-secondary communications
 - 166 MHz for primary-Base-Station communications
- Embedded Computer Communication:
 - A Linux/Windows library will be provided
- Boards Power Supply:
 - Reindeer Nodes: Li batteries
 - Base Station Nodes: External power provided by the base station itself.

Secondary node

- First design ready to be tested.
- Preliminary tests
 - Outdoor test (live demo and video).
 - Analysis of Coverage
 - Test with a dog

Secondary node. Analysis of coverage



Secondary node

- First design ready to be tested.
- Preliminary tests
 - Outdoor test
 - Analysis of Coverage
 - Test with a dog (video)

First real tests in Lapland, February 2009

- Evaluate the coverage of the system
- Check the suitability of the design of the kinetic generator regarding the movement of the animal.
- Evaluate the effect of the temperature
- Study of the collar design