



PSC Meeting

*Feb 22, 2008
ETH Zurich*

www.ist-mascot.org



1. Next PSC Meeting



Will be organised as a phone conference on

Mon May 26, 2008 at 10am

Issues on the agenda:

- Budget and Distribution of the EC Grant for the 3rd Reporting Period (=2008).
- Discussion and interpretation of the received feedback from the Technical Review.

2. Assessment of project progress



- Gerald WP1
 - D131 delivered Dec. 2007, use a basis for a MASCOT book?
- Helmut WP2
 - Four algorithms have been selected for inclusion into the VHDL reference designs. Will be made available without liability and with only minimal support.
- Giorgio WP3
 - Ari volunteers to lead Task 3.2
 - Editing of D3.2.1 is well underway, due date 31.03.2008
- cfm WP4
 - Draft report on tracking of new knowledge generation
 - Special Session EUSIPCO 2008
 - 2nd MU-MIMO Industry Course at EUSIPCO 2008
- Christoph WP5
 - Preparation of technical review March 4, 2008.
 - Needed: Preliminary answers to most of these ten MASCOT research questions (SOFT ANSWERS PER WP)

3. Budget and reporting



- Current balance on trust account 250kEUR
- Proposal to distribute 214kEUR immediately
- Keeping 36kEUR as an emergency reserve

3. Budget and reporting



4th Prefinancing				
	Basis for 4th Prefinancing	thereof 16% Prefinancing	PreFinancing received M25-M30	4th Prefinancing
	RP3 (14)	RP3 (15)	(16)	(17)
ftw	200.703,98	32.112,64	-	32.112,64
NOK	124.343,68	19.894,99	-	19.894,99
FhG-HHI	137.608,97	22.017,44	-	22.017,44
PoliTo	64.235,10	10.277,62	-	10.277,62
VUT	241.063,93	38.570,23	-	38.570,23
ETHZ	497.443,31	79.590,93	-	79.590,93
FBM-UPF	77.371,36	12.379,42	-	12.379,42
UNICAL	34.383,76	5.501,40	30.000,00	-
	1.377.154,09	220.344,65	30.000,00	214.843,25

4. MASCOT related event planning

- D4.6 Second MU-MIMO Industry Course
 - Planned as a tutorial at EUSIPCO 2008
 - Proposal submitted by Erwin Riegler
- EUSIPCO 2008 special session „Complexity Reduction in Multiuser MIMO Systems“
- D4.7 Second ETHZ Open House Event (Dec. 08)
- Final MASCOT Closing Event during WSA 2009 in Berlin, February 2009.
 - One extra day aligned with WSA 2009.

Next Deliverable



- D3.2.1 Performance tradeoffs in Ad-hoc MIMO networks
 - Edited by Ari
 - Due date: End of March 2008
 - Contents taken from 4 published papers
 - Internal deadline mid March? One review round?

Preparation of successor project



- 5 page short (anonymous) proposal
- Proposed focus "Cooperation, cognition and competition (**CO³**) in wireless networks"
- Targeted date of submission: May 6, 2008

Short proposal structure



- Section 1: Scientific and/or technical quality, relevant to the topics addressed by the call
 - Sec. 1.1 Concept and objectives
 - Sec. 1.2 Progress beyond the state-of-the-art
 - Sec. 1.3 S/T methodology and associated work plan
- Section 2: Implementation
 - Sec. 2.1 Resources to be committed
- Section 3. Impact
 - 3.1 Expected impacts listed in the work programme
 - 3.2 Positioning with respect to the realisation of a long term vision in the ICT domain

CO CO CO = CO³



Helmut: Cooperation, cognition and competition (**CO³**)
in wireless networks

- What is the value of **CO³** in terms of increasing system capacity (cellular, WLAN, and WiMax systems)?
- Review of existing and draft standards that could benefit from **CO³**.
- (information-)theoretic analyses as well as system level simulations (on a rather simple level, but will probably still need a major effort).
 - Do we have a partner for the system level simulations?
- Major effort on communication and SP issues revolving around **CO³** techniques (coding and receiver design).

Note: ETHZ is not excited about building a testbed for **CO³**

Collected research questions



Martin:

- How can (e.g. unlicensed) systems co-exist with acceptable interference?
- How can cooperation help, and how much cooperation is really needed?
- Is it possible to provide operators with rules/guidelines, which help to organize such systems?

FhG-HHI would like to address these issues within the framework of game theory and interference functions.

We need expertise on topology management/routing



Gerald and Emanuele:

- Ultimate performance limits and behaviors of distributed algorithms can depend strongly on network topology.
- This relates the PHY to the network layer and dynamic resource allocation.
- Can (distributed) topology control adapt to favor PHY mechanisms?

- Are we going for cognition and cooperation
 - on an infrastructure level (e.g. concurring/cooperating base stations and relays) or rather
 - within Ad Hoc setups
 - (or both)?

- Helmut proposed Prof. Leandros Tassiulas to join the project.
<http://inf-server.inf.uth.gr/~leandros/>

New partner proposed by Ezio



Kwang-Cheng Chen, *Distinguished Professor and Irving T. Ho Chair*, National Taiwan University, IEEE Fellow

- Cross-layer design of dynamic spectrum access, and control to adaptive physical layer communications
- Multi-channel energy efficient medium access control and hidden terminal problem
- Cooperative network selection algorithms and queuing network modeling for
- heterogeneous wireless networks,
- Self-organization routing, and network coding for CRN and cooperative networks.
- Many other topics in CDMA and OFDM

Performance of large random nets

Maxime, Erwin, Petros, Christoph:

- Robustness/Throughput depending on connectivity coefficients, node distributions, and # of gateway nodes.
- When is there a k -connected overlay graph with high probability?
- Distributed algorithms for synchronization
- Combine hierarchical cooperation schemes (virtual MIMO) with hierarchical synchronization algorithms.
- Asynchronous cooperative networks, and networks with unreliable nodes/links.
- Exploiting channel reciprocity
- Find bounds on the capacity of relays with imperfect CSI
- Extend and compare existing cooperation schemes (decode/compress and forward) to relays with imperfect channel knowledges.

Cross-Layer Routing Protocols



Emanuele:

- Is a Reactive or a Proactive protocol better suited?
- Static or Dynamic physical routing approach?
- Is it feasible to use an existing routing protocol by exploiting physical dynamics (parameters) for the selection of paths or is it necessary to develop an ad hoc routing protocol?
- Which are the physical parameters that have to be considered in a cross-layer routing protocol?
- What is the impact of a similar routing protocol on the behavior of the network in terms of “classical” parameters for performance evaluation, such as: throughput, average end-to-end data packet delay, etc.
- What kind of devices should be envisaged for such cross-layer approach?
 - Are they closer to relaying devices or router devices?

Demonstrator vs. Simulator



- ftw.: S
- NOK: S
- FhG-HHI: S
- VUT: S (D)
- PoliTo: S
- ETHZ: S (D)
- UNICAL: ?

Unique Selling Point ?



We are all invited to think about the USP for CO³

- Do we see this factor of 2 throughput gains?