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Project Title:	Multiple-Access Space-Time Coding Testbed
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Nature:	R
Dissemination level:	PU
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Authors:	C.F. Mecklenbräuker, A.Hottinen, N. Khaled
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Abstract:

The dissemination plan for MASCOT is based on scientific publications in journals and conferences, special sessions at conferences and workshops, multiuser MIMO communications tutorials, and contributions to standardisation. The exploitation plan elaborates licensing the library of VHDL reference designs. A liaison between the two FP6–IST projects SURFACE and MASCOT was established during June 2006. This liaison aims (among other things) at close cooperation on dissemination issues. The MASCOT consortium wishes to update these plans depending on feedback of the scientific officer and/or anonymous reviewers within the next six months.

Contents

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Executive Summary

This deliverable describes the plans for disseminating MASCOT research results and for exploiting them.

The MASCOT consortium wishes to update these plans depending on feedback of the scientific officer and/or anonymous reviewers within the next 6 months. The MASCOT consortium wishes to deliver a revised version (D4.2r1) of this D4.2 by December 31, 2006.

The dissemination plan is based on

- scientific publications in journals and conferences,
- special sessions at conferences and workshops,
- tutorials and open house events,
- contributions to standardisation,
- on-line information on the project's web-site, and
- press releases.

The exploitation plan elaborates licensing the library of reference designs, implemented in the hardware design language VHDL[1].

[1]The VHDL acronym translates to *VHSIC Hardware Description Language* where VHSIC stands for *Very-High-Speed Integrated Circuits*

Chapter 1

Liaison between MASCOT and SURFACE

During June 2006, a liaison between the two FP6–IST projects SURFACE and MASCOT was established. Both projects participate in the Broadband Air Interfaces (BAI) cluster which is moderated by Sylvie Mayrargue (CEA–LETI) [1]. After the first BAI Cluster meeting in February 2006, it became clear that the SURFACE and MASCOT projects would mutually benefit from a closer cooperation than mere participation in the BAI Cluster would enable.

This liaison aims at coordinating the scientific scopes of both projects. It is believed by the participants that both projects will complement each other well because both projects attack challenges in multiuser MIMO communication systems (by theoretical investigations and numerical evaluation). Whereas SURFACE focusses on simulation and software tooling, MASCOT implements VHDL reference designs and validates them on a hardware testbed.

Further, the liaison aims at a close cooperation on dissemination and exploitation. It is planned to organise joint workshops and tutorials with participation from both projects.

Chapter 2

Dissemination activities

2.1 Raising public awareness

Throughout the MASCOT project, a public web-site is maintained with public announcements on events, tutorials, publications, deliverables, and achievements. This web-site serves as the main portal to MASCOT results. The web-site plays a central role in raising public awareness. The schedule and programme of tutorials and ETHZ and FTW open-house events will be announced by email and on this web-site.

Selected results will be made public through contributions to IST Mobile Summits, WWRF, 3GPP, IEEE 802.11 task group n, and related bodies.

2.1.1 Press releases

Press releases are used to make major announcements to the public, e.g. when a milestone is achieved. The start of the MASCOT project was announced by FTW and VUT in press releases (January 2006) [4, 5].

2.1.2 MASCOT web-site

During the first two months, a simple web-site was established. It is accessible through the following URL:

`http://www.ist-mascot.org`

MASCOT's external announcements (e.g. events, publications, deliverables) and internal file sharing are organised via the content management system *plone*[1]. MASCOT's plone server is accessible via the MASCOT web-site or directly through the following URL:

[1] http://plone.org

http://plone.ist-mascot.org

2.2 Publications

Publications are essential to present research results to the international community, therefore MASCOT strongly supports the publication activities within all workpackages. MASCOT researchers are encouraged to produce high-quality papers and to submit them to eminent international journals and conferences. This policy has resulted in the surpassing number of approximately 28 submitted manuscripts during the first six months.

MASCOT contributions have already been submitted to a number of important international journals during the first six months of the project:

- IEEE Journal on Selected Areas in Communications,
- IEEE Transactions on Information Theory,
- IEEE Communications Letters,
- European Transactions on Telecommunications.

The publication guidelines as outlined in the Description of Work aim at guaranteeing the release of sound scientific and technical results that are of high quality, originality, timeliness and clarity of presentation. The MASCOT publication policy is designed to promote the scientific and technical accuracy of MASCOT publications and ensure that fair credit is given to the authors and to other contributing parties.

Simultaneously, it is ensured that at no time interests of MASCOT partners are violated: partners have potential interest in filing patents, etc.

2.2.1 Publication policy

Publications serve to communicate research results to the international scientific and industrial communities, and thus they constitute an essential dissemination instrument [2]. All partners in the MASCOT consortium are encouraged to produce high-quality papers for international top journals and conferences.

The publication policy is designed to promote high scientific and technical accuracy of MASCOT publications, to ensure that fair credit is given to the authors and to other contributing parties, and to prevent violation of any

[2] The publication policy was outlined in the Technical Annex [3], Section 6.2.1, page 17.

of the partners' interests in MASCOT research results with respect to filing patents and licensing of VHDL code.

2.2.2 Formal requirements and regulation

The PSC has to be informed about every publication at least 3 weeks in advance of the intended submission of the publication, and may veto within 10 days of receipt of such information. Publications written in the framework of MASCOT shall contain the following acknowledgement (or equivalent formulation):

> This work is supported by the STREP project No. IST-026905 (MASCOT) within the sixth framework programme of the European Commission.

Electronic online archives of MASCOT publications shall contain the following copyright statement:

> The publications on the following pages originate from the MASCOT project sponsored by the EC. Personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution to servers or lists, or to reuse any copyrighted component of this work in other works must be obtained from the MASCOT consortium.

The publication of jointly developed results within MASCOT is regulated as follows: Given that each party involved in the publication is aware of its content; academic and industrial parties are co-authors of publications relevant to jointly developed activities; the confidentiality rules detailed in the Consortium Agreement are met, an abstract of the planned publication shall be supplied to the PSC at least 3 weeks before the intended submission. Within 10 days, either clearance of or opposition to the planned publication has to be provided by the PSC specifying reasons and/or amendments. With no reply within the 10-day time frame, the publication is automatically permitted. When there is opposition, the involved parties shall discuss how to overcome the justified grounds of opposition and the opposing party shall not unreasonably continue its opposition if appropriate actions are performed following the discussion. The justified grounds of opposition are for business or protection reasons concerning the inclusion of the opposing party's know-how. In these cases: The parties shall cooperate to achieve such protection

of know-how. Provided it does not significantly adversely affect the timing or content of the publication, the publishing party shall delay for an agreed period and/or modify the publication to enable the opposing party to take prompt action to avoid the proposed publication prejudicing the protection of the opposing party's know-how. The opposing party shall use all reasonable endeavours to overcome such barrier to publication as quickly as possible. The publishing party shall postpone the publication of such material until such barrier has been overcome. However, the maximum time of postponement shall be 3 months from the date of the opposition unless (exceptionally) the parties involved agree (or are required by law or enforceable regulation) to extend the postponement.

2.2.3 List of targeted journals

The scope of the following journals matches the research in MASCOT very closely. Other journals might address certain specialised aspects.

All ComSoc journals. All journals published by the IEEE Communications Society (ComSoc). The following ComSoc journals are particularly relevant to the scope of MASCOT.
see http://http://www.comsoc.org/pubs/journals.html

- IEEE Communications Letters
- IEEE Transactions on Communications
- IEEE Journal on Selected Areas in Communications
- IEEE Transactions on Wireless Communications

IEEE Signal Processing Society Journals. e.g.

- IEEE Transactions on Signal Processing
- IEEE Signal Processing Letters
- IEEE Signal Processing Magazine

IEEE Transactions on Information Theory. published by the IEEE Information Theory Society,
see http://www.itsoc.org/publications/journals.htm

EURASIP Journals. Selected journals from the European Association for Signal Processing (EURASIP), especially the following.
see http://www.eurasip.org/

- Applied Signal Processing

- Signal Processing
- Wireless Communications and Networking

European Transactions on Telecommunications.

IEE Electronics Letters.

Computer Networks.

Wireless Communications and Mobile Computing, Wiley.

2.2.4 List of targeted conferences

The following list of preferential conferences is targeted for MASCOT paper submissions.

ICASSP 2007. IEEE International Conference on Acoustics, Speech, and Signal Processing, April 15–20, 2007, Honolulu (Hawaii), USA.
http://www.icassp2007.org

ICASSP 2008. IEEE International Conference on Acoustics, Speech, and Signal Processing, Las Vegas (Nevada), USA.
http://www.icassp2008.org

ISIT 2006. IEEE International Symposium on Information Theory, July 9–14, 2006, Seattle (Washington), USA.
http://www.isit2006.org

ISIT 2007. IEEE International Symposium on Information Theory, June 24–29, 2007, Nice, France.
http://www.isit2007.org

ISIT 2008. IEEE International Symposium on Information Theory, July 6–11, 2008, Toronto (Ontario), Canada.
http://www.isit2008.org

IST Mobile Summit 2007. 16th IST Mobile & Wireless Communications Summit, Budapest, Hungary, July 1–5, 2007.
http://www.mobilesummit2007.org

IST Mobile Summit 2008. location, date, t.b.d.

IEEE GLOBECOM 2006. IEEE Global Communications Conference, Nov. 27 — Dec. 01, 2006, San Francisco (CA), USA,
http://www.ieee-globecom.org/2006/

IEEE GLOBECOM 2007. IEEE Global Communications Conference, Nov. 26–30, 2007, Washington DC, USA,
http://www.comsoc.org/confs/globecom/2007/

IEEE GLOBECOM 2008. IEEE Global Communications Conference, date t.b.d., 2008, New Orleans, USA,
http://www.comsoc.org/confs/globecom/2008/

IEEE ICC 2006. IEEE International Conference on Communications, Itanbul, Turkey, July 11–15, 2006.
http://www.ieee-icc.org/2006/

IEEE ICC 2007. IEEE International Conference on Communications, Glasgow, Scotland, June 24–28, 2006.
http://www.ieee-icc.org/2007/

IEEE ICC 2008. IEEE International Conference on Communications, location, date, t.b.d.

European Wireless 2007. Paris, France, April 1–4, 2007
http://uei.ensta.fr/EW2007/

European Signal Processing Conference 2006. Firenze, Italy, September 4–8, 2006.
http://www.eusipco2006.org

European Signal Processing Conference 2007. Poznan, Poland, September 3–7, 2007.
http://www.eusipco2007.org

European Signal Processing Conference 2008. Lausanne, Switzerland September *nn–mm*, 2008.
http://www.eusipco2007.org

ISCAS 2007. International Symposium on Circuits and Systems, New Orleans, USA, May 27–30, 2007.
www.iscas2007.org

ESSCIRC 2007. European Solid State Circuits Conference, München, Germany, September 11–13, 2007.
www.essderc.org/en/page/ess07.aspx

GLSVLSI 2007. Great Lakes Symposium on VLSI, Stresa, Italy, March 2007.
http://www.sigda.org/glsvlsi/

ICECS 2007. International Conference on Electronics, Circuits, and Systems, Malta, December 2007.

MWSCAS 2007. Midwest Symposium on Circuits and Systems, location, date, t.b.d.

In addition, MASCOT partners are encouraged to send contributions e.g. to

CISS 2006. 40^{th} Annual Conference on Information Sciences and Systems, March 22–24, 2006, Princeton, NJ, USA.
http://conf.ee.princeton.edu/ciss

CISS 2007. 41^{st} Annual Conference on Information Sciences and Systems, March 14–16, 2007, Baltimore (MD), USA.
http://ciss.jhu.edu/

CISS 2008. 42^{nd} Annual Conference on Information Sciences and Systems, date t.b.d., 2008, Princeton, NJ, USA.
http://conf.ee.princeton.edu/ciss

Allerton 2006. 44^{th} Annual Allerton Conference on Communication, Control, and Computing, Sep 27–29, 2006
http://www.csl.uiuc.edu/allerton/

Allerton 2007. 45^{th} Annual Allerton Conference on Communication, Control, and Computing, date t.b.d., 2007
http://www.csl.uiuc.edu/allerton/

Allerton 2008. 46^{th} Annual Allerton Conference on Communication, Control, and Computing, date t.b.d., 2008
http://www.csl.uiuc.edu/allerton/

Asilomar 2006. 40^{th} Annual Asilomar Conference on Signals, Systems, and Computing, Pacific Grove (CA), USA, Oct. 29—Nov. 01, 2006.
http://www.asilomarssc.org.

Asilomar 2007. 41^{st} Annual Asilomar Conference on Signals, Systems, and Computing, Pacific Grove (CA), USA, date t.b.d., 2007.
http://www.asilomarssc.org.

Asilomar 2008. 42^{nd} Annual Asilomar Conference on Signals, Systems, and Computing, Pacific Grove (CA), USA, date t.b.d., 2008.
http://www.asilomarssc.org.

SPAWC 2006. 7^{th} IEEE International Workshop on Signal Processing Advances in Wireless Communications, Cannes, France, July 2–5, 2006.
http://spawc2006.eurecom.fr/

SPAWC 2007. 8^{th} IEEE International Workshop on Signal Processing Advances in Wireless Communications, Helsinki, Finland, June 17–20, 2007.

SPAWC 2008. 9^{th} IEEE International Workshop on Signal Processing Advances in Wireless Communications, location, date t.b.d., 2008.

WSA 2007. ITG/IEEE Workshop on Smart Antennas 2007, Vienna, Austria, February 26–27, 2007.
http://www.ist-mascot.org/wsa2007/

WSA 2008. ITG/IEEE Workshop on Smart Antennas 2008, location t.b.d., date t.b.d. 2008.

PIMRC 2007. 18^{th} Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, Athens, Greece.

PIMRC 2008. 19^{th} Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, date, location t.b.d.

SSP 2007. IEEE Workshop on Statistical Signal Processing 2007.

CAMSAP 2007. IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing, Mexico, 2007.

SAM 2008. IEEE Workshop on Sensor Array and Multichannel Signal Processing 2008.

WCNC 2007. IEEE Wireless Communications & Networking Conference, Hongkong, China, March 11–15, 2007.
www.ieee-wcnc.org

WCNC 2008. Las Vegas, USA.

and to many other high quality conferences that are suitable for MASCOT research topics.

2.2.5 Special sessions

The following special sessions related to MASCOT topics are in planning:

EUSIPCO 2006. A two part special session on multiuser MIMO communications, (Parts I and II), chair: Christoph Mecklenbräuker, Firenze, Italy.

Asilomar 2006. Special session on MIMO equalisation, chair: Christoph Mecklenbräuker, Pacific Grove (CA), USA.

IEEE ICASSP 2007. Two special sessions on research topics in the SURFACE and MASCOT projects, Honolulu, Hawaii, USA. (to be agreed with organisers)

SPAWC 2007. Helsinki, Finland, June 2007 (to be agreed with organisers)

2.2.6 Details on special session at EUSIPCO 2006

During the upcoming European Signal Processing Conference (EUSIPCO 2006) in Firenze, Italy, September 4–8, 2006. A two part special session on MU-MIMO will be held on Friday September 8. The session will be chaired by Christoph Mecklenbräuker.

The following MASCOT researchers plan to attend EUSIPCO 2006: Ari Hottinen (NOKIA), Martin Schubert (FhG-HHI), Franz Hlawatsch (VUT), Gerald Matz (VUT), Christoph Mecklenbräuker (FTW), Andy Burg (ETHZ).

The scope of the sesssion is defined along the objectives of MASCOT:

> Wireless networks cannot be regarded solely as a set of concurrent point-to-point links. More appropriate models are many-to-one links where many users transmit to a single base station and one-to-many links where a single base station transmits to many users. The wireless industry has started to integrate single-user MIMO techniques into existing multi-user cellular standards and to define new cellular standards based on MIMO. Currently, little is published about how to optimally leverage the new degrees of freedom resulting from MIMO terminals in a multi-user context.
>
> The goal of this special session is to highlight concepts and techniques for multi-user MIMO communications both in cellular networks and in ad-hoc mode. This session will highlight recent advances in multi-user MIMO techniques on the physical–, medium access–, and radio link control layers

The following contributions from MASCOT participants will be presented:

1. Ezio Biglieri and Marco Lops: *Multiuser detection using random set theory*, Fundacio Barcelona Media Universitat Pompeu Fabra.

2. Ari Hottinen and Tiina Heikkinen: Subcarrier allocation in a multiuser MIMO channel using linear programming, Nokia Research Centre, Helsinki and MTT Research, Finland.

3. Dominik Seethaler and Gerald Matz: *Efficient Precoding for Multiuser Multiantenna Systems*, Vienna University of Technology.

4. Martin Schubert, Shuying Shi, and Holger Boche: *Iterative Transceiver Optimization for Linear Multiuser MIMO Channels with Per-User MMSE Requirements*, Fraunhofer Gesellschaft Heinrich-Hertz Institut, Berlin.

5. Alessandro Nordio and Giorgio Taricco: *Linear receiver interfaces for multiuser MIMO communications*, Politecnico di Torino.

Further, the following (non-MASCOT) contributions are presented during this special session:

1. Nizar Zorba, Ana Pérez, Miguel A. Lagunas: *A reduced complexity MIMO Broadcast scheme: a way between opportunistic and dirty paper implementation*, CTTC, Barcelona

2. Marios Kountouris, David Gesbert, Lars Pittman: *Using reciprocal channel information in multiuser MIMO scheduling*, Institút Eurecom, Sophia-Antipolis, France.

3. Laura Cottatellucci, Ralf Müller, and Mérouane Debbah: *Linear Detectors for multi-user MIMO systems with correlated spatial diversity*, INRIA, Sophia-Antipolis, France, Institút Eurecom, Sophia-Antipolis, France, and Norwegian University of Science and Technology, Trondheim.

4. Mirette Sadek, Alireza Tarighat, and Ali Sayed: *A Selective Beamforming Strategy for Multi-User MIMO Communications*, University of California, Los Angeles (UCLA), USA.

5. Andreas Wilzeck, Patrick Pan, and Thomas Kaiser: *Transmit and Receive Antenna Subset Selection for MIMO SC-FDE in Frequency Selective Channels*, University Duisburg–Essen, Germany.

6. Luca Sanguinetti and Michele Morelli: *Non-Linear Precoding for MIMO Multi-User Downlink Transmissions with different QoS requirements*, University of Pisa, Italy.

7. Dimitri Nion and Lieven de Lathauwer: *Levenberg-Marquardt Computation of the Block Factor Model for Blind Multi-User Access in Wireless Communications*, CNRS, ENSEA, UCP, France and SCD-SISTA, Belgium.

2.2.7 Details on special session at Asilomar 2006

During the upcoming 40^{th} Annual Asilomar Conference on Signals, Systems, and Computing (Pacific Grove (CA), USA, Oct. 29—Nov. 01, 2006), a special session on

MIMO equalisation: methods and implementation

will be held. The session will be chaired by Christoph Mecklenbräuker.

The following MASCOT researchers plan to attend Asilomar 2006: Martin Schubert (FhG-HHI), Peter Fertl (VUT), Dominik Seethaler (VUT), Andy Burg (ETHZ), Helmut Bölcskei (ETHZ), Christoph Mecklenbräuker (FTW).

The following contributions from MASCOT participants will be presented:

1. Christoph Studer, Markus Wenk, Andy Burg, and Helmut Bölcskei: *Soft-Output MIMO Detection Algorithms: Performance and Implementation Aspects.* ETH Zürich, Switzerland.

2. Johannes Maurer, Gerald Matz, Dominik Seethaler: *On the Diversity-Complexity Tradeoff in MIMO Spatial Multiplexing Systems.* Vienna University of Technology, Vienna, Austria

3. Yi Hong, Emanuele Viterbo, Jean-Claude Belfiore: *High rate Golden Space-Time Trellis Coded Modulation.* Inst. f. Telecommunications Research, University of South Australia, Dipartimento di Elettronica, Politecnico di Torino, Torino, Italy, and ENST, Paris, France

Further, the following (non-MASCOT) contributions are presented during this special session:

1. Joakim Jaldén, Björn Ottersten: *Maximum-Likelihood Decoding in MIMO Systems.* KTH, Stockholm, Sweden

2. David Schmidt, Michael Joham, Raphael Hunger, and Wolfgang Utschick: *Near Maximum Sum-Rate Linear Precoding with Successive User Selection.* Technische Universität München (TUM), Munich, Germany.

2.2.8 Details on special sessions at ICASSP 2007

During the upcoming IEEE International Conference on Acoustics, Speech, and Signal Processing (April 15–20, 2007, Honolulu, USA), two special sessions are currently being planned. One session will be chaired by Javier Fonollosa who co-ordinates the SURFACE project and one session will be chaired by Christoph Mecklenbräuker. Both sessions will consist of six contributions and mix contributions from SURFACE and MASCOT researchers and potentially others. It is estimated that a total of six (6) contributions from MASCOT will be solicited for these special sessions. The planning is still very preliminary and the call for special sesssions at ICASSP 2007 is still open until August 04, 2006.

The following MASCOT researchers plan to attend ICASSP 2007: Ari Hottinen (NOKIA), Christoph Mecklenbräuker, Peter Fertl (VUT), Johannes Maurer (VUT), partial funding for Clemens Novak (VUT) and Gerald Matz (VUT).

2.3 Training and courses

2.3.1 Open house events

We plan to organize two *open house events* at the end of project years 2 and 3 to demonstrate the key results of MASCOT on the Eidgenössische Technische Hochschule Zürich (ETHZ) testbed to European wireless communications companies. see Technical Annex [3], Section 6.3, page 19.
These open house events are listed in the Technical Annex as MASCOT Deliverables D4.5 and D4.7 (see [3], Section 7.5, pages 25–26).

The ETHZ open-house events (1 day each) will consist of

- a workshop on multiuser MIMO (MU-MIMO) with
- tutorial and
- in-depth presentations by MASCOT partners and 2—3 additional invited talks by experts from industry and academia,
- a panel discussion on MIMO wireless technology, and
- a demonstration of the ETHZ MIMO MIMO testbed.

Throughout the workshop particular emphasis will be placed on results obtained in the course of MASCOT. We plan to invite 5 experts outside the consortium to give talks and/or participate in the panel discussion. The

events will be broadly announced in industry and academia in Europe with a maximum of 40 participants. These events constitute a good opportunity to invite the MASCOT project evaluators and demonstrate the MASCOT project results.

2.3.2 WSA 2007 with full-week tutorial

FTW and VUT organise the ITG/IEEE Workshop on Smart Antennas (WSA 2007) in Vienna, Austria during the last week of February 2007. MASCOT Deliverable D4.3 is a *Full-week tutorial on MU-MIMO* and it is due in M13 (January 2007)[3].

We propose to delay the delivery of D4.3 by one month: This will enable organising the full-week tutorial on MU-MIMO in connection with WSA 2007 in Vienna. (In the week from February 26, 2007 to March 02, 2007).

Further, it is planned to organise the tutorial jointly with the FP6-IST project SURFACE. The liaison between MASCOT and SURFACE will enable a tighter planning of the tutorial's contents. Further details on the tutorial will be available during the last quarter of 2006 at the WSA 2007 web-site `www.ist-mascot.org/wsa2007` .

2.4 Standardisation

Participation in standardization is expected to be beneficial to the research in MASCOT. Such participation strongly supports the dissemination and upgrading of project results, it widens the exploitation potential of project output, and it provides the project with access to a large pool of external expertise [2].

Moreover, developing new standards helps building a competitive advantage and it can create the ability to test according to industrially agreed principles. Participating in standardization processes brings the project higher international visibility and new opportunities for collaboration. It will also help in identifying interested parties for licensing of the VHDL reference designs.

Standards bodies and industry consortia welcome contributions from IST research projects, as they provide them with information on the latest developments in technology, and help them to co-ordinate their resources in a more effective way, avoiding overlap.

In accordance with the Technical Annex (Description of Work), [3], Section 5.1, page 13, relevant results obtained in MASCOT will be disseminated

[3] see Technical Annex [3], Section 7.5 on page 25.

in the form of contributions to standards. The contributions that are made by MASCOT need to be approved by all MASCOT partners through the MASCOT project steering committee (PSC).

MASCOT research results can potentially be contributed to numerous systems, including 3G, 4G wireless systems, and IEEE 802.11 (WiFi), IEEE 802.15 (UWB), and IEEE 802.16 (WiMax), IEEE 802.20. Contributions are directed to those "most suitable" standards, depending on current standardization status and the desires of MASCOT participants. Contributions may be either suggestions of new features to standard, discussion papers (that highlight the benefit of MASCOT technology) or general information (e.g. channel modelling). The number of contributions need not be large, but the main importance is the effect they cause in standardization bodies.

Some possible areas for standardization include

- Space-time code designs (e.g. high rate code for MIMO -OFDM systems)
- Transceiver algorithms (transmitter)
- Resource allocation and signal processing for (MIMO) relay networks.

Some particular standards developing venues that have MASCOT-related topics include

- UMTS Long Term Evolution, 3GPP Release 7
  (see http://www.3gpp.org)
- IEEE 802.11 (especially High Throughput Improvements in TGn)
- IEEE 802.16, e.g. the Relay Task Group
  (see http://www.ieee802.org/16/relay/index.html)

In practice, within MASCOT, Forschungszentrum Telekommunikation Wien (FTW) and NOKIA are the likely drivers for standards contributions, as they have participated in numerous standardization efforts in the past and will make use of their experience to help achieve this goal. Some participation in standardisation meetings is also expected to provide valuable feedback which will allow to fine-tune the MASCOT research work towards increased practical relevance. The preferred mode of operation is to obtain explicit support of the only MASCOT industrial partner (NOKIA) for all envisaged contributions.

Chapter 3

Exploitation activities

3.1 Intellectual Property Right management

Relevant inventions will be patented by the MASCOT partners.

The project partners will establish an IPR Policy Committee consisting of technical experts and legal experts by September 30, 2006[1]. This committee will define rules and guidelines for the reuse of existing knowledge (PEKH, Pre-Existing Know-How, Background) and the tracking of new knowledge generation (Knowledge, Foreground) in the project. The tracking of the background and foreground IPRs will be based on an actively managed list of IPRs with the definition of the ownership and the rules for reuse and exploitation. The management of this list is strongly dependent on the inputs from the technical WPs in the project. The IPRs generated by the project will be evaluated by the IPR Policy Committee for patent filing[2] or for exploitation. The actual patent filing itself will be performed by the partners involved. The ultimate goal of this activity is to build up and maintain a MASCOT IPR portfolio[3].

3.2 Licensing plan

A VHDL library of 4—6 selected MU-MIMO transceiver algorithms will be developed within WP2. Under the lead of ETH Zurich, and subject to a mutually acceptable agreement with the other involved MASCOT partners,

[1] see Technical Annex (Description of Work): [3], Section 6.2.2, page 19.

[2] Note: Some MASCOT partners may refuse to send invention reports to external bodies as a matter of policy.

[3] The MASCOT IPR portfolio is understood as a list of IPRs filed within MASCOT to be handled according to the MASCOT Consortium Agreement

1	FTW	internal responsible: Dr. C.F. Mecklenbräuker
2	NOKIA	internal
3	FhG-HHI	Dept. B9 – Patents and Licensing Dr. Michael Groß
4	PoliTo	regional technology transfer office for the three universities of Piemont.
5	VUT	Außeninstitut http://www.ai.tuwien.ac.at
6	ETHZ	ETH Transfer http://www.vpf.ethz.ch/transfer/index_EN
7	FBM-UPF	Business innovation & development responsible: Ms. Marta Ysern

Table 3.1: Technology transfer institutions which will aid in exploitation, especially concerning the licensing of the VHDL reference designs.

components from this library may be commercially licensed to the European industry[4]. The legal support of ETH Transfer, the technology transfer department of ETH Zurich, will then be solicited in questions relating to invention protection and exploitation, as well as preparation and negotiation of relevant contracts with potential industrial partners. Similar services will be provided by corresponding units at FhG-HHI, PoliTo, and VUT (see Table 3.1) on a per partner basis.

PoliTo has an office dealing with IPR management, also dealing with patents. There is a new regional technology transfer office, in which PoliTo participates, that acts as an industrial liaison office (ILO) for the three universities of Piemont. The target of this ILO is to provide a coordinated system for the management of IPR.

At VUT, the Technology Transfer Unit of the Department of External Relations (Außeninstitut) assists with the protection of IPR, filing of patents, and exploitation activities.

[4]see Technical Annex [3], WP4 Summary, page 66.

Bibliography

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