European Co-operation in the Field of Scientific and Technical Research

COST 259

Wireless Flexible Personalised Communications

Minutes of the 9th Meeting of the Management Committee,
held in Leidschendam (NL) on 23-24 September 1999

COST 259
Minutes of the 9th Meeting of the Management Committee, held at KPN Research, Leidschendam (NL), on 23-24 Sep. 1999, organised by KPN Research

1. Opening Formalities

The Chairman, Prof. Luis M. Correia formally opened the meeting. After that, Mr. Marc van den Homberg, the Local Organiser, addressed the plenary for a welcome message and details on the way the meeting was organised.

The Chairman acknowledged the attendance of Dr. Tricia Willink, from CRC, Canada.

2. Adoption of the Agenda

The Agenda, shown in Annex A, was approved by unanimity.

3. Approval of the Minutes of the 8th Meeting

The minutes were approved, without corrections, unanimously.

4. Status of the Action

The Chairman informed that the number of signatory countries (18) remains unchanged, as well as the numbers of participating institutions and delegates (80 and more than 200, respectively).

Following the decision of the last meeting, the Chairman applied for a 4 months extension to the TCT. The extension was approved, which means that the Action will run up to April 2000.

The Chairman also reported on the status of the papers submitted to VTC'99 Fall: from a total of 20 papers, 19 were accepted, from which 10 were grouped into 2 specific Sessions (COST 259 Indoor Propagation and COST 259 Outdoor Propagation); the remaining were presented as normal papers, since they were not enough to form a session on a specific technical topic.

5. Report from the TCT

The Chairman attended the TCT meeting, held in June at Visegrad (Budapest, Hungary), where the Annual Report of the Action was presented.

The process of evaluating the Actions, once they finish, continues, and a committee of 3 evaluators will be appointed by the TCT for each one; in our case, it will include Prof. Fazekas (Hungary) from the TCT. The Action will have to invite him to the last meeting (at the Action expenses), according to information given at the TCT meeting. It is very important to included in the Final Report a list of all the joint collaborations held within the project (papers in journals and conferences, exchange of data and models between institutions, joint proposal of projects to the IST framework, and so on). All delegates were asked to send this type of information to the Chairman until 1999/Oct/29 (Action Point 14). A copy of the COST 231 Final Report was personally given to the Chairman of the TCT, Prof. Fedi.

6. Action Final Report

The Chairman reminded the schedule approved at the last meeting:

- Apr. 1999: __ establish the first draft of contents
  __ appoint Chapters / Sections editors
- Sep. 1999: __ establish the detailed contents of each Chapter / Section
  __ identify contributors to the various Sections
- Jan. 2000: __ first draft of the report is distributed
  __ last contributions are made available
- Apr. 2000: __ final version of the report is distributed

Each Chapter editor presented the detailed list of Sections and respective editors, see Annex E. A first estimation of the number of pages for each Section was also given.

All contributions to Section editors have to be sent until 1999/Dec/15, so that there is enough time to prepare the first draft version of the Final Report for the next meeting in January (Action Point 14).

It was agreed that all Section editors will go through the whole list of Temporary Documents, and identify the ones that are relevant to the respective Sections. After that, they will have to circulate the list, via the general email reflector, until 1999/Oct/15, so that everyone can check if a paper has not been included or if there is a superposition (Action Point 15).

The Chairman, as general editor, will circulate a template file and a set of guidelines, by 1999/Oct/29, so that a uniform style is taken for all contributions. It was agreed that the general style of the COST 231 Final Report will be adopted.

According to information received from the COST Telecom Secretariat, the policy for printing the Final Reports has changed, and the whole procedure has now to be taken care by the Action Secretariat, including finding a printer and ISBN registration. An amount of 10 kEuro was foreseen in the budget for year 2000, for this purpose.

As a final remark on this item, everyone was asked to keep within schedule.

7. COST 231 Book

The Chairman reported that he had received 1 100 copies from the COST Telecom Secretariat in early June, a few days before the TCT meeting, hence just in time to give one copy to Prof. Fedi as previously mentioned. The Action Secretariat is distributing the book, and copies were already sent to Action participants as well as to TCT members and Chairmen of other COST Actions, on a total of 400; a list of all people receiving copies is being maintained. Since the contact list of COST 231 is 3 years old, many of the addresses are out of date, therefore copies were not sent yet to those that are not participating in COST 259; the Action Secretariat will circulate the list, via the email reflector, so that the addresses of those participants can be either confirmed or renewed. Many requests are being received via the COST Telecom Secretariat, besides others interested in having a copy of the book that address the Action Secretariat directly, and copies will be sent on a first come first serve basis, after all people related to the Actions have received their copies.

Since no additional funding was received for distributing the book, the Action Secretariat budget will be increased by an amount of 7 kEuro, to cover postage expenses. Following a suggestion from a delegate, which was approved by unanimity, the postage expenses will be asked to all that receive a copy and are not related to any of the Actions.

Following a question from Dr. David Bacon (Radiocommunications Agency, UK) on the matter of the existence of copyright, the Chairman informed that in fact the European Commission holds the copyright of the book. Hence, it has to be clarified if this prevents to put the files on a www server, as previously agreed. If there is no problem, the files will be put on a site specifically created for COST 231, since there was no www site for that Action.

8. Budget and reimbursements

The Chairman reported on the budget for 1998: the remaining 23 kEuro were already received, as well as 80 % of the 11.5 kEuro corresponding to the additional budget for Short-Term Missions. The former corresponds to the Secretariat expenses, plus some Short-Term Missions; the remaining of the latter will be received as soon as we send all the documents to Brussels.

As far as the budget for 1999 is concerned, the Chairman reminded that a provisional amount of 114 kEuro has been granted (which includes the advanced 30 kEuro). This budget enables full reimbursement of the travel expenses for the MC meetings, but only after this meeting it will be possible to estimate what is the remaining budget for Short-Term Missions. Still no funding was received from Brussels, and that is why reimbursements of the previous meeting were not processed yet. There is no idea at this moment when the funds will be made available.

Following the decision to join other Actions in the COST event at the AP2000 conference, two invited papers from the Action will be presented, on propagation (by Prof. Luis M. Correia) and antennas (by Prof. Ernst Bonek), besides the papers that have been submitted within the general call. As a consequence of the global application for additional funding submitted by Dr. Antoine Roederer (Chairman of COST 260), the Action was granted an additional budget of 15 kEuro, specifically for this event. The rules for spending this budget are already stipulated: half will be transferred to the Conference Secretariat, to pay for the participation of people from less developed countries, secretariat expenses, and 3 registration and banquet fees of persons from the Action; the other half will be managed by the Action, to pay the travel expenses of people from the Action whose papers are accepted for presentation. It was decided to set up a Student Best Paper Award, within the accepted papers from the Action, which, together with Profs. Luis M. Correia and Ernst Bonek, will have its registration and banquet fees as well as travel expenses paid by this additional funding; the procedure on how to spend the remaining budget will be decided in the next meeting. All those that have submitted papers to the conference should send the respective reference to the Chairman until 1999/Oct/15 (Action Point 16), so that a complete list is done.

9. Short-Term Missions

The Chairman informed that a total of 16 applications for Short-Term Missions were received and approved; 1 was cancelled, and the others took place as foreseen. Missions are being reimbursed upon receiving the full reports by the Action Secretariat, which already happened for some of them. Reports from the persons that went on the missions were presented to the plenary.

Since there is the possibility that there is still budget for a few more missions, applications should be sent to the Chairman until 1999/Oct/15 (Action Point 7).

10. Proposal of a Follow-on Action

The Chairman informed that only a very few proposals for topics to be included in the follow-on project were received, which can be due by either a lack of interest in continuing the work or just by the usual lack of time to respect deadlines; there was a general consensus that the case was the latter. Some discussion was held on the structure of the new project, and two alternative proposals were presented: to keep the present structure of 3 WGs; to “merge” the existing WGs 1 and 3 into a single one, hence having 2 WGs in the project, due to the typical unbalanced distribution of documents to be discussed in each meeting (WG 2 usually has more documents than the others). A vote was held, and 2/3 preferred to keep the existing 3 WGs structure.

It was agreed that all interest in joining the next project will send their proposals to the Chairman until 1999/Oct/01 (Action Point 12). The Chairman will prepare a draft version of the MoU and its Technical Annex, to be circulated within the Action, so that the final proposal is ready by 1999/Oct/22. This way, it is still in time to sent to the discussed by the TCT in its meeting of 1999/Oct/28-29.

11. Presentation and Discussion of Documents

A total of 36 Temporary Documents, which are listed in Annex B, were distributed, being discussed at the Plenary and at the three WGs, Annex C.

12. Liaisons with other International Bodies

Reports from the following liaisons were given:

- COST 260 – Prof. Emanuel Van Lil
  Miniprojects over the different worksgroups have been created on "Multifrequency dual polarisation antennas" (co-ordinated by EPFL, CH) and on "Conformal arrays (co-ordinated by University of Karlsruhe, D). The purpose of those miniprojects is to enhance the collaboration between industry and universities. A workshop on "Conformal Array" will be held at the University of Karlsruhe on 1999/Oct/29. The next meeting will be on 1999/Nov/3-5 in Aveiro, P. Their plans after the Davos meeting are to meet in Greece (no details fixed yet) in the fall of 2000. They are also working on standardisation and handset antenna issues.
- ACTS/MEDIAN – Mr. Jörg Pamp
  The project is about to be finalised. After the successful demonstration of the system at the ACTS Mobile Summit in Sorrento this summer currently some finishing touches are put on the hardware at TNO in the Netherlands. A follow-up proposal for the 5th Framework Programme of the EC has not been accepted so far.

13. Future Meetings and Workshop

An invitation was received from ETHZ, CH, to host a meeting next February, together with IZS'2000. It could not be accepted since meetings for 2000 are already scheduled, but the invitation was appreciated, and a similar event was scheduled for future meetings of the new project.

The next meetings will be held according to the following:

- 10th MCM, hosted by Univ. Valencia, in Valencia, Spain, from Monday - 2000/Jan/24 - 9:00 to Wednesday - 2000/Jan/26 - 12:00 (due to local restrictions, it was necessary to change the dates previously agreed)
- 11th MCM and Final Workshop, hosted by Telenor, in Bergen, Norway, from Wednesday - 2000/Apr/26 - 9:00 to Friday - 2000/Apr/28 - 17:00

It was decided to have the Workshop dedicated to the problem of the mutual influence between the user's head and the mobile phone's antenna. An invitation will be sent to COST 244, which deals with the biomedical effects, while SWG 2.2 will present the antenna aspects of the problem. The Chairman of SWG 2.2, not present at the meeting, will be contacted for this purpose, since it was his initial suggestion to have the workshop on this theme.

14. Any Other Business

The Action Points from this meeting are as follows:

No.	Action	Who	Deadline
1	Send information on www address to the *Webmaster*	Those who still have not done it.	ASAP
2	Send files with abstracts of TDs to the *Webmaster*	Those who still have not done it.	ASAP
5	Send reports from Liaisons to the *Chairman*	Liaisons Raporteur	1999/Oct/18
7	Send proposals for Short-Term Missions to the *Chairman*	All	1999/Oct/15
8	Check information contained on the www site, and send corrections to the *Webmaster*	All	ASAP
11	Send contributions to the Final Report to *Section editors*	All	1999/Dec/15
12	Send areas of work, as well as proposals for a name, for the follow-up Action to the *Chairman*	All	1999/Oct/01
14	Send list of joint collaboration results within the project to the *Chairman*	All	1999/Oct/29

15	Circulate list of TDs to be included in each Section of the Final Report via the general email reflector	Section Editors	1999/Oct/15
16	Send refrences of papers submitted to AP2000 to *Chairman*	Those who submitted papers to AP 2000	1999/Oct/15

15. Close of the Meeting

The meeting was attended by a total of 94 people, Annex D. The Chairman thanked the Local Organiser for hosting the meeting, and all delegates for their participation, and formally closed it.

Annex A

Agenda

1. Opening formalities
2. Adoption of the Agenda
3. Approval of the Minutes of the 8th Meeting in Vienna
4. Status of the Action
5. Report from the TCT Meeting
6. Action Final Report
7. COST 231 book
8. Budget and reimbursements
9. Short Term Missions
10. Proposal of the follow up Action
11. Presentation and discussion of documents
12. Liaisons with other international bodies
13. Future meetings and workshop
14. Any other business
15. Close of Meeting

Annex B

List of Documents

TD(99)	Title	Author(s)	Affiliation(s)	Country(ies)	WG
070	WG1 8th meeting Chairman's Report	Stephen K. Barton	University of Leeds	United Kingdom	Pl
071	WG2 8th meeting Chairman's Report	Ernst Bonek	Tech. Univ. Vienna	Austria	Pl
072	WG3 8th meeting Chairman's Report	Thomas Kürner	E-Plus Mobilfunk	Germany	Pl
079	The performance of N-MSK signals in non-linear channel	Gorazd Kandus, Toma• Javornik	Jo• ef Stefan Institute	Slovenia	1
080	Time dispersion measurements at NMT 450 Frequency band	Mikael Larsson, Bo Olsson, Tommy Arkner, Sven Nordin	Telia Research	Sweden	2
081	A UTD-based Model of the Time-Variant Indoor Radio Channel in the Vicinity of a Human	Frank Layer, Henning Früchting	University of Kassel	Germany	2
082	Influence of Mobility from Handover in Cellular Planning	Dragana Kristic, Luis M. Correia	IST - Technical University of Lisbon	Portugal	3
083	Results of Indoor Wideband Delay-Azimuth-Elevation Measurements for Stochastic Radio Channel Modeling	Ralf Heddergott, Pascal Truffer	Swiss Federal Institute of Technology Zürich	Switzerland	2
084	Preliminary planar signal strength measurements on handhelds with helix, dipole or patch antennas	Marc van den Homberg, Hans Schmidt	KPN Research	The Netherlands	2
085	An Update to a new Protocol and a new Approach towards Analysing the Performance of Medium Access Control Protocols for Wireless LANs	Ashley R. Phillips, John Orriss, Stephen K. Barton	University of Leeds	United Kingdom	1, 3
086	Calls Segregation Techniques for GSM	J. Jiménez, E. Alonso, H. Gonzalez, I. Berberana	Telefónica	Spain	3
087	Test of the Electromagnetic Distribution Properties for Scattered field Handset Antenna Measurements	Bo Olsson	Telia Research	Sweden	2
088	A Novel Ray-Optical Approach to model Wave Propagation in Curved Tunnels	Dirk Didascalou	University of Karlsruhe	Germany	2
089	The impact of base station diversity on CDMA system capacity	Andrew H. Kemp, John Orriss, Stephen K. Barton	University of Leeds	United Kingdom	1,3

TD(99)	Title	Author(s)	Affiliation(s)	Country(ies)	WG
090	Seamless Multimedia Service for Third Generation Mobile Radio Networks	Mirko Ferracioli, Roberto Verdone	University of Bologna	Italy	1,3
091	Short-term Scientific Mission Report	Gorazd Kandus	Jo• ef Stefan Institute	Slovenia	1
092	Directional Wideband 3-D Measurements of Mobile Radio Channel in Urban Environment	Juha Laurila, Klaus Hugl, Martin Toeltsch, Ernst Bonek,, Kimmo Kalliola, Pertti Vainikainen	Tech. Univ. Vienna, Helsinki Univ. of Technology	Austria, Finland	1,2
093	Implementation of antenna patterns in EPICS	I. De Coster, E. Van Lil	Katholieke Universiteit Leuven	Belgium	1,3
094	A statistical Model for Connectivity Between Mobiles and Base Stations	J. Orriss, Stephen K. Barton	University of Leeds	United Kingdom	1,3
095	Optimising Spectrum Efficiency	Thomas Kürner	E-Plus Mobilfunk	Germany	Pl
096	Structure and relevant Information for chapter 'Network Aspects' of COST 259 Final Report	Thomas Kürner	E-Plus Mobilfunk	Germany	3
097	Penetration Loss and Spatial Propagation Characteristics in the 5 GHz Band	Christian Bergljung, Peter Karlsson, Henrik Börjeson	Telia Research	Sweden	2
098	On intended use positions for wireless terminals	Christian Braun, Olle Edvardsson	Allgon Mobile Communications AB	Sweden	2
099	Cell Coverage for MBS Environments	José Fernandes, José Garcia	University of Aveiro	Portugal	2,3
100	A Comparison of Indoor Pathloss Measurements at 2GHz, 5GHz, 17GHz and 60GHz	Philip Nobles	Cranfield University	United Kingdom	2
101	Spatial Filtering in UTRA	António Morgado	University of Aveiro	Portugal	Pl
102	Performance of 16-QAM and STARQAM on a Non-Linear Channel	Alister Burr	University of York	United Kingdom	1
103	Report on Short Term Mission to Institut Josef Stephan, Ljubljana	Alister Burr	University of York	United Kingdom	1
104	A New Statistical Approach for Propagation Modelling in Urban Environments	M. Barbiroli, C. Carciofi, M. Frullone, P. Grazioso	University of Bologna, Fondazione Ugo Bordoni	Italy	2
105	Type II Hybrid ARQ Protocol for Wireless ATM	Ch.V. Verikoukis, J.J. Olmos	U.P.C.	Spain	1,3
106	The SAMBA Trial Platform in the Field	Manuel Dinis, José Fernandes, Max Prögler, Wolfgang Herzig	University of Aveiro	Portugal	1

TD(99)	Title	Author(s)	Affiliation(s)	Country(ies)	WG
107	An Empirical Model for the Probability of Line of Sight in an Urban Macrocell	Henrik Asplund, Jan-Erik Berg	Ericsson Research	Sweden	2,3
108	Parameter Distributions for the COST 259 Directional Channel Model	Henrik Asplund, Jan-Erik Berg	Ericsson Research	Sweden	2
109	Parameter Validation for a Space – Time Channel Model	Nadja Lohse	Technical University of Dresden	Germany	1,2
110	Radiowave Propagation and Coverage in a Construction Site	Silvia Ruiz, Yvan Samper, Ramón Agustí	Politechnical Univ. of Catalonia	Spain	1,2
111	A Decentralised Channel Load Sensing Protocol for Wide-Band CDMA Systems	David Covarrubias, Silvia Ruiz, Alfredo Fernández	Politechnical Univ. of Catalonia	Spain	3
112	Statistical Modeling of Short-Term Fading Effects for Directional Radio Channels	Ralf Kattenbach	University of Kassel	Germany	2
113	Uplink Spectrum Efficiency and Capacity of TD-CDMA with Adaptive Antennas	Apostolos Papathanassiou, Christian Hartmann, Tobias Weber	University of Kaiserslautern, Technical University of Munich	Germany	1,3
114	Dominant Ray Paths for the Planning of Urban Radio Networks	Thomas Binzer	University of Stuttgart	Germany	2,3

Annex C

Sessions Schedule

	Thursday	Friday
9:00 / 10:30	**Plenary**	**WGs 1, 2+3**
10:30 / 12:30	**WGs 1+2, 3**	**WGs 1+3, 2**
14:00 / 15:30	**WGs 1+3, 2**	**Plenary**
16:00 / 17:30	**WGs 1, 2, 3**	**Plenary**

Annex D

Attendance List

Country	Name	Institution
Austria	Ernst Bonek	TU Wien
	Juha Laurila	TU Wien
	Andreas Molisch	TU Wien
	Thomas Neubauer	TU Wien
	Martin Steinbauer	TU Wien
Belgium	Iris De Coster	KU Leuven
	Emmanuel Van Lil	KU Leuven
	Laurent Schumacher	Université Catholic de Louvain
Canada	Tricia Willink	Communications Research Centre
Denmark	Istvan Zsolt Kovacs	Center for PersonKommunikation
	Klaus Ingeman Pedersen	Center for PersonKommunication
Finland	Jaakko Talvitie	Elektrobit
	Kimmo Kalliola	Helsinki University of Technology
	Jarmo Kivinen	Helsinki University of Technology
	Pertti Vainikainen	Helsinki University of Technology
France	José Baro	Alcatel
	Patricia Cornu	Alcatel
	Cyril Delemazure	TDF-C2R
	Sylvie Tiertant	TDF-C2R
	Bertrand Foulonneau	France Telecom
	Arnaud Saveaux	France Telecom CNET
	Pierre Degauque	Université de Lille
	Martine Lienard	Université de Lille
Germany	Peter Seidenberg	Aachen University of Technology
	Thomas Kürner	E-Plus Mobilfunk
	Matthias Schneider	IMST
	Jörg Pamp	IMST
	Hans Heller	Siemens
	Martin Weinberger	Siemens
	Andreas Czylwik	T-Nova
	Jan Steuer	University of Hannover
	Apostolos Papathanassiou	University of Kaiserslautern
	Dirk Didascalou	University Karlsruhe
	Thomas Binzer	University Karlsruhe
	Jürgen Maurer	University Karlsruhe
	Thomas Zwick	University Karlsruhe
	Ralf Kattenbach	University of Kassel
	Frank Layer	University of Kassel
	Andreas Schmidbauer	University of München
	Werner Teich	University of Ulm
	Andreas Eisenblätter	ZIB

Greece	Panayotis Mathiopoulos	National Observatory of Athens
	Nektarios Moraitis	NTUA
	George Pantos	NTUA
Italy	Eleni Brisku	CSELT
	Daniele Disco	CSELT
	Roberto Verdone	CSITE-CNR
	Cristina Severini	Ericsson Telecomunicazioni
	Claudia Carciofi	Fondazione Ugo Bordoni
	Daniele Tortora	Italtel
	Guido Tartara	Politecnico di Milano
	Carlo Mannino	University of Rome
Netherlands	Marc van den Homberg	KPN Research
	Wim Kotterman	KPN Research
	Hans Schmidt	KPN Research
	Hein van den Bos	KPN Telecom
	Robert Bultitude	Eindhoven University of Technology
	F.M. Auriemma	Eindhoven University of Technology
	Klaus Witrisal	Delft University of Technology
Norway	Josef Noll	Telenor
	Olaf Rostbakken	Telenor
Poland	Marcin Ney	PTK Centertel
Portugal	Ana Claro	Instituto Superior Técnico
	Luis Correia	Instituto Superior Técnico
	Carlos Pardelinha	TMN
	Antonio Rodrigues	Instituto Superior Técnico
	Ana Domingues	Optimus
	José Queijo	Optimus
	Sandra Almeida	Telecel
	José Fernandes	University of Aveiro
	Antonio Morgado	University of Aveiro
Slovenia	Gorazd Kandus	IJS
Spain	José Jimenez	Telefónica
	Silvia Ruiz Boque	Universidad Politécnica de Catalunya
	Juan Olmos	Universidad Politécnica de Catalunya
	Narcis Cardona	Universidad Politécnica de Valencia
Sweden	Christian Braun	Allgon
	Olle Edvardsson	Allgon
	Henrik Asplund	Ericsson Radio Systems
	Henrik Börjeson	Lund University
	Anders Sunesson	Moteco
	Christian Bergljung	Telia Research
	Peter Karlsson	Telia Research
	Bo Olsson	Telia Research
Switzerland	Ralf Heddergott	ETHZ
	Jan Hansen	ETHZ
	Jean-Frédéric Wagen	Swisscom
	Karim Rizk	Wavecall Wireless Consulting

United Kingdom	Vladimir Stoiljkovic	Centurion International
	Philip Nobles	Cranfield University
	Stephen Barton	Leeds University
	Andy Kemp	Leeds University
	John Orriss	Leeds University
	Ashley Phillips	Leeds University
	Bhavin Khatri	Philips Research
	David Bacon	UK Government
	Alister Burr	University of York

Annex E

Draft structure of the Final Report

1. Introduction
   (Luis M. Correia)
2. Radio System Aspects
   (Alister Burr)

   2.1. OFDM and Frequency Domain Techniques
   (António Rodrigues/Andreas Czylwik)

   2.2. CDMA
   (Kimmo Kansanen/Laurent Schumacher)

   2.3.Modulation and Coding
   (Alister Burr/Goradz Kandus)

   2.4. DECT and Optimum Sampling
   (Andreas Molisch)

   2.5. Signal Processing for Smart Antennas
   (Andreas Czylwik)

   2.6. Multiple Access
   (Alister Burr/Stephen Barton)
3. Antennas and Propagation
   (Ernst Bonek)

   3.1. Propagation Modelling for 6 GHz
   (Ralf Kattenbach)

      3.1.1. Statistical and Empirical Modelling
      (Ralf Kattenbach)

         3.1.1.1. Path-Loss-Models

         3.1.1.2. Large-scale Fading

         3.1.1.3. Small-scale Fading

         3.1.1.4. WSSUS

         3.1.1.5. Polarization
         (Patrick Eggers)

         3.1.1.6. Miscellaneous

      3.1.2. Measurements Campaigns / Channel Sounder
      (Jörg Pamp)

      3.1.3. Deterministic Modelling
      (Conor Brennan / Peter Cullen)

         3.1.3.1. Introduction

         3.1.3.2. Integral Equation Formulation

(Andreas Eisenbläter)

4.3. Cellular Aspects
(Narcis Cardona)

4.3.1. Cell Modelling
(Thomas Kürner)

4.3.2. Teletraffic Engineering
(Luis M. Correia)

4.3.3. Hot Spot Location
(Jose Jimenez)

4.3.4. Mobility Models
(Narcis Cardona)

4.4. Network Optimization
(Jean-Frederic Wagen)

4.4.1. Handover Algorithms
(Roberto Verdone)

4.4.2. Frequency Hopping for Capacity Enhancement
(Jose Jimenez/Marco Chiani)

4.4.3. Other Quality and Capacity Enhancement Techniques
(Jean-Frederic Wagen)

4.5. Advanced Systematic Planning Methods
(Tomas Kürner)

4.5.1. Input Data
(Thomas Kürner)

4.5.2. Methodology
(Paolo Grazioso)

4.6. Efficient Protocols for High Data Rates
(Silvia Ruiz Boque)

4.6.1. Wireless Mobile ATM
(M. Teughels/Emmanuel Van Lil)

4.6.2. Packet Reservation Multiple Access
(Paolo Grazioso)