



**European Cooperation
in the field of Scientific
and Technical Research
- COST -**

Secretariat

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COST 337/06

MEMORANDUM OF UNDERSTANDING

Subject : Memorandum of Understanding (MoU) for the implementation of a European
Concerted Research Action designated as COST Action IS0605: A
Telecommunications Economics COST Network - ECONTEL

Delegations will find attached the Memorandum of Understanding for COST Action IS0605 as approved by the COST Committee of Senior Officials (CSO) at its 166th meeting on 20/21 November 2006.

**MEMORANDUM OF UNDERSTANDING
FOR THE IMPLEMENTATION OF A EUROPEAN CONCERTED RESEARCH ACTION
DESIGNATED AS**

COST ACTION IS0605

A Telecommunications Economics COST Network - ECONTEL

The Signatories to this ‘Memorandum of Understanding’, declaring their common intention to participate in the concerted Action referred to above and described in the ‘Technical Annex to the Memorandum’, have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of document COST 299/06 ‘Rules and Procedures for Implementing COST Actions’, or in any new document amending or replacing it, the contents of which the Signatories are fully aware of.
2. The main objective of this Action is to increase and disseminate knowledge in the field of telecommunications economics which will help business partnering drive networking services and their sustainable provisioning for consumers and enterprises.
3. The economic dimension of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at approximately 7 million EUR in 2006 prices.
4. The Memorandum of Understanding will take effect on being signed by at least five Signatories.
5. The Memorandum of Understanding will remain in force for a period of 4 years, calculated from the date of the first meeting of the Management Committee, unless the duration of the Action is modified according to the provisions of the document referred to in Point 1 above.

COST ACTION IS0605

A Telecommunications Economics COST Network - ECONTEL

A. ABSTRACT AND KEYWORDS

The goal of ECONTEL is to develop a strategic research and training network linking key individuals and organizations in order to enhance Europe's competence in the field of telecommunications economics, to support related R&D-initiatives, and to provide guidelines and recommendations to European players (end-users, enterprises, operators, regulators, policy makers, content providers) concerning the provision to citizens and enterprises of new converged broadband and wireless content delivery networks. ECONTEL coordinates the development of research methodologies and tools from engineering, media and business research. Regulatory issues helping or hindering the adoption of economically efficient services are identified. ECONTEL mobilizes the "critical mass" and diversity of economists, business research experts, engineers, and scientists working in communications and content economics.

Keywords: Communications, Media; Economics, Business Models, Regulations and Tariffs.

B. BACKGROUND

Technological solutions for fixed broadband, 3G mobile networks, content distribution networks such as TV, and even converged services are maturing in the European economic area and beyond. However, a working technology is not enough. The extensive deployment of novel consumer services and, thus, new usage habits, as well as new business infrastructure and practices have turned out to be most challenging elements in achieving widespread user acceptance and technology penetration. In Europe these issues are further compounded by near-saturation penetration levels in basic services (2.5 G and fixed services), which change radically for the future business models and regulatory frameworks for most incumbent stakeholders. This state of the current situation needs to be overcome.

This deployment of new value-added or personalized services requires a socio-economic and business process-related initiative complementing the pure technology approach around basic services, and is urgently needed in the current European situation. Profitable business opportunities will require the addition to value chains of new types of stakeholders with own network configuration needs, so that the provisioning of such services will become a reality, and also so that products and services can be exported.

Determining the reality of such opportunities calls for techno-economic analysis, reliable business plans, and effective partnering models for potential players, integrated with optimal technology platforms and rollout plans to support the widespread service deployment. One illustrative example covers converged and mobile banking services, where already network infrastructures offer lower transaction costs than traditional inter-banking bank payment systems. Another example covers information repositories created by communications service users (e.g., enterprise data or private multimedia), where transmission operators will have to interact with information storage service suppliers. Likewise, using IT and 3G for remote e-Health and patient monitoring represents yet another interesting model, where exact cost-benefits and challenges, especially in developing

economies and transforming health systems of eastern Europe and CIS countries still have to be analyzed. Also the advent of new technologies driving personal area networking will drive the need for mutually beneficial use with other networks.

Next generation network development will permit network openness and end-user driven customization, besides content and services development. These activities represent the major potential for new specialized players, in particular in outsourcing (e.g., ASP, MVNO, converged traffic and content billing, or network administration). This potential must be encouraged through favourable economic and regulatory conditions. We can also expect to see the emergence and growing role of trusted third parties (e.g., authentication, payment, kiosk, and portal services).

The modification of relations among players will make interconnection, revenue redistribution, and cross billing concerns increasingly sensitive. New economic and revenue distribution models will have to be found. The closed “no door”/portal model is foreseeable, but will it be sufficient? The applicability of open kiosk models will have to be evaluated with respect to the difficulty of pricing new services. Payments dependent on generated traffic would be the easiest model to understand, but operators strenuously avoid this subject. On the other end of the value chain, content owners, including end-users themselves in their new role as content creators, will no longer want to depend on operators to own the customer data bases, but will require end customer data and profiling.

The market will, therefore, likely evolve toward combined economic models. The impacts of these new partnerships on information systems (security, billing, provisioning, process automation, payments, repayments, trusted third parties, customer relations, partnership management, interconnection, and liability risk management) are a problem that is underestimated at the technical level (and dealt with very little in standardization) and that is underestimated at the economic and operational level as well.

Traditional players in the telecommunications and media markets (fixed or mobile network operators, broadcasters) are currently spending huge amounts of money in maintaining and improving their infrastructure. A very recent example of huge spending relates to the deployment of 3G mobile and broadband networks around Europe, with maybe WiMAX to follow. Another example is the digitalization of TV networks and introduction of DVB-T. Those investments have to be made, although it is still very unclear what kind of new services – enabled by the new infrastructure - consumers are really willing to pay for.

In parallel, a number of “disruptive” technologies are already here or emerging (e.g., WiFi/WiMax, VoIP, or smart items) challenging the feasibility of on-going investment decisions.

Finally, a new, highly competitive open market environment is developing, which creates high expectations from consumers that they might finally enjoy services at “commodity” prices. This makes it even more difficult for traditional operators to introduce new services at “premium” prices and telecom operators have to face the reality of an ARPU continuously shrinking. A combined and optimal network and economic efficiency needs to be reached. Enterprise needs cannot any longer just be aligned with consumer needs. They require highly dependable and configurable networks for their business processes to become both smart and agile.

Another issue for Europe is that that the “vertical” integration models, adopted in other areas of the world, seem to fail in Europe (due to different consumer mentality and market structure and dynamics). Therefore, it is increasingly accepted that no one single actor will be able to provide a complete solution and the new rule of success have to be sought in “co-opetition” (i.e. collaborations among sometimes collaborating and sometimes competing services providers). The two areas of networking and economics can bring insight about the way communities are producing new goods with different property rights schemes (e.g., open source, web 2.0).

Collaborative COST research on these issues is essential to new-entrants and the wider Europe, since stakeholders there will not want just to adopt with a delay old economic models, but will want to leap-frog from a different legacy base. As known today, there do not exist European projects today addressing such type of questions as a whole. Thus, the ECONTEL Action is not only complementing such projects, it fills an interdisciplinary gap seen today.

The two areas of economics and networking are traditionally separate due to a number of reasons, e.g., teaching principles methodologies, schools of thought, different funding models, and model views versus technology views.

This situation has so far lead to a lack of inter-subject and inter-area coordination: The work reported within one area had to be reformulated and repeated by the other area in its own language (engineering or economics or vice versa), since the exchange across disciplines does not really take place.

Thus and on the contrary, ECONTEL provides a framework for the long-term harmonization of selected economic models and traffic/content distribution models. Fundamentally, notions of competition and equilibrium, apply to information distribution across networks, which are no longer just “pipes” with access point charges; vice-versa, flow models, network linking, and service characterization also apply to the economics of the supply of personalized goods and services.

Concerning EU Framework 6 and 7 projects, ECONTEL does not show any intended overlap, since its focus is on cross-disciplinary telecommunication economics, rather than on engineering.

C. OBJECTIVES AND BENEFITS

The main objective of this Action is to increase and disseminate knowledge in the field of telecommunications economics which will help business partnering to drive networking services and their sustainable provisioning for consumers and enterprises alike.

Thus, in closer detail, ECONTEL aims to:

- Mobilize the critical mass of scientists working in telecommunications and media economics across Europe, and enhance European R&D competence in these fields.
- Improve European competitiveness by enhancing the economic and social viability of new services and business models by letting these drive technology selections.
- Develop a new wave of researchers working in telecommunications and media economics.
- Allow European and partner country suppliers of services and products to reduce the time possibly to be spent on identifying suitable partnering and business models and derived functionality.
- Support European strategy and policy development in telecommunications and media economics.
- Investigate proper pricing tariffing and revenue distribution approaches for customized and new services.
- Understand better social networks, their impacts on "classical economy" and their heterogeneity

ECONTEL will:

- support the European engineering leadership gained in mobile, broadband, digital TV, and fixed communications, and selected media fields, by new sustainable business models in a fully

deregulated and diversified demand framework. New fixed and mobile technologies, as well as digital broadcast, self-organizing ad-hoc network technologies will be modelled from technical assumptions in view of a balanced deployment and adoption by all stakeholders including new ones (users, suppliers, enterprises, and operators).

- enhance the competitive positioning in global markets of the telecom vendors, operators, and other service providers by creating new value adding business chains, service tariffing and revenue distribution concepts, leading to opportunities for all European players.
- study and identify business opportunities throughout the value chain, especially for enterprises, content, and specialized services.
- contribute to the European strategy relative to socio-economic needs by increasing the motivation for deployment of cost effective and flexible solutions using networks and content.
- support the e-Europe initiative by identifying the customer needs, the social value, and the institutional value of improved communications solutions, especially by helping these parties select viable technical options for their special needs.
- provide guidelines and recommendations for utilizing different types of technologies and quantify necessary actions. ECONTEL will potentially supply the regulators and standardization bodies with analysis and guidelines for creating conditions for fast growing competitive mobile, broadband, and content markets while speeding up business.

Last but not least, the main output of ECONTEL will be people and expertise. The diffusion of young researchers inspired or generated by this project in a pan-European context is the key to harmonization and European competitiveness. This will be achieved by giving preference to engaging as far as possible selected end user organizations, regulators, operators, infrastructure or content providers, as well as standardization bodies, in the specific ECONTEL working groups.

In brief, ECONTEL shall help vendors to design product and services from the socio-economic and business perspectives, and not put them in the position of first waiting for customers to adopt their technologies.

The major gains and benefits from the Action are primarily (i) in the identification of roles of new stakeholders, (ii) in new business models, (iii) in new policy recommendations, and (iv) in studies of impact and acceptability. The Action will perform its coordinating role via a continuous aggregation, filtering, evaluation, and dissemination of the above stated activities, cooperation work, and events. This will result in publications and in the dissemination activities described in Part I, Section E, Organization and Part I, Section H, Dissemination, amongst academic groups but also to industry and regulators.

D. SCIENTIFIC PROGRAMME

The telecommunications sector has become a dynamic key area for the economic development of industrialized nations in the European Union (EU) and in constant evolution. Because of intense competition, telecommunications companies are forced to diversify their offers and thus to propose an increasing number of services. However, economic analysis often ignores important technical aspects of telecommunications and is not aware of new developments. Engineering models often ignore economic factors. Thus, the design and deployment of future networks that incorporate new services are subject to uncertainties such as equipment and capacity prices (due to technological innovation), and demand and supply for services (due to competition). ECONTEL intends to bring together leading researchers with various backgrounds, all working on innovative aspects of

techno-economic, social, and regulatory issues. Therefore, the following four main areas will be tackled by this COST Action in an integrated manner:

- Architectural side,
- Social side,
- Economic and business side, and
- Regulatory side.

The Action will foster interaction and collaboration among these areas. Research and training are likely to benefit tremendously from this, as a more informed and integrated view on communications solution will be developed.

With respect to the **architectural side**, IP (Internet Protocol)-enabled Next Generation Networks (NGNs) have gradually become reality creating numerous challenges for all ICT (Information and Communication Technology) sector stakeholders. Traditional network operators, attracted by many advantages offered through NGN solutions, have decided to migrate to unified networks that enable future electronic communication based on IP. Many stakeholders, already realizing the economic potential of the NGNs, have begun implementing necessary multi-million dollar investment programs, even when the potential business models and future regulatory framework are still under discussion. The variety of architectures, e.g., all-IP networks, and technology, e.g., fixed networks, wireless access networks, and mobile user support, need to be determined and analyzed.

Furthermore, very much discussion, large investments, and many service offerings go into Voice-over-IP (VoIP) technologies and their management, mostly via broadband and fixed networks already gaining market share over fixed circuit-switched voice providers. However, much less open analysis goes into the impact of end-to-end wireless enabled VOIP, when a number of specific technical challenges will have been overcome, which can only be within the timeframe of this COST project.

Finally, determining the general link into the economic and business side, at this stage of the development it is still difficult to predict business models – based on the economics of information and communication infrastructures – that will certainly set new standards and revolutionize the communication sector in the future. The efficiency and effectiveness of such models can only be verified through market mechanisms that will be substantially changed in the new converged environment.

On the **social side**, end users mandate the capability to establish and develop their people's interests and content networks, driven by personal fulfilment and without affordability constraints. They may want to set own price and service configurations and to join community networks, all leading to complex agreement structures with all involved suppliers.

With respect to an emerging application of content delivery most content providers, typically allied sometimes with network providers, prosper on what is essentially a pure “push” model fuelled eventually by advertisements or subscriptions. This mass distribution concept is also a very powerful tool to uniform the culture and gives excessive power to these centralized information distribution players. Thus, the social side becomes highly relevant. Research is needed into the socio-economic implications of the reverse “pull” model, also fuelled eventually by advertisements, subscriptions, and the supply of personalized content.

In another important application domain of social studies, e-health or health telematics, the social aspects of society's development need to be perfectly accounted for and IT as well as research networks deployment has to be extremely cost-effective in a mid-term scenario. Namely by using ICT support for tele-medicine, distance learning for healthcare service providers, and access to

medical data, social questions arise. Amongst others, the following issues require a socio-economic elaboration: a disaster management network with exact planning and monitoring, a quality control network and monitoring tools, and electronic patient records and e-Health cards for European citizens. Additionally, the co-opetition foreseen, mainly between the various players in the sample application area of e-health, will be able to show the interactions of different stakeholders.

Concerning the **economic and business side**, for most businesses and public sector entities communications services are purchased for several years based on traditional competitive bidding. This is far from companies' real desire to use networks in their business strategies, with fast connect/fast disconnect schemes to temporary partners, which has been researched in the field of smart business networks. Companies want also to assemble dynamically network hardware and software components to serve and control multi-party business processes. Much research is still needed into multi-party Service Level Agreements (SLA), authentication, signalling, and privacy with an integral focus also on those related legal aspects and liabilities. Business processes, such as Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), payments, or service fulfilment, require companies themselves to set up not just traffic models, but information models also. Additionally trust and customer identification are highly essential.

In service science and business research, pricing no longer is fixed by static tariffs and demand only, but derived by information flows such as advertising or branding, and by many different dynamic auction-based negotiation schemes. The combination of those dynamic pricing models with efficient technology, being embedded into the technical architecture, becomes a critical success factor for future ICT-based applications. While low cost infrastructure becomes available by innovation, rationalization, and/or competitive forces, it can serve as a completely new class of advanced clients – covering the technology as well as the human user –, which may encompass enterprises or communities, even including public agencies.

Finally, business models of advanced communications networks (covering mobile data transfer as well as wired network data transport) addressing the variety of services (such as IP-TV, grid computing and knowledge grids, low cost converged and mobile payment services, pricing and negotiation of personalized service bundles, or gaming) determine the key success factors for future multi-provider scenarios. These areas will provide viable and emerging use cases in an applied architecture with related economic models. This needs to be backed by innovation system studies of emerging communication applications and services.

On the **regulatory side**, technology neutrality is an established principle, but business roles are still a major issue. The separation or overlap of deposit banks and network operators is no longer justified. Just like sooner or later utilities will want to play a role in the last mile access. However, research is needed, including on the legal side, to see how public interest is best served in such initiatives. Furthermore, prospects for telecommunication regulation based on dynamic economic theory become essential, since the business models develop further and rapidly changing alternatives and choices need to be addressed and adapted in a legal framework. Thus, a comparative analysis of regulatory models, originating in EU regulatory guidelines and country-specific guidelines, is important to provide for a clear and concise basis, which can be used by providers of telecommunication services, data services, and content services as well as by customers in the EU.

Based on these four areas of concern (architectural, social, economic and business, and regulatory) four Working Groups (cf. Part I, Section E) have been defined. These Working Groups will address a number of specific research issues often at the intersection of these four areas. The Working Group for each issue will be established in the kick-off meeting of the project and reviewed mid-term. Examples of such specific research issues include:

Interconnection and Bill-and-Keep: A number of European National Regulatory Authorities (NRAs) are re-examining inter-carrier compensation arrangements in light of the evolution to Next Generation Networks (NGN). The NGN represents a fusion of the traditional PSTN with the Internet – two different worlds, with two very different traditions of inter-carrier compensation. What should happen when Calling Party Network Pays (CPNP) arrangements and bilateral commercial arrangements worlds collide? Could a Bill-and-Keep system, borrowing selectively from U.S. practices, provide Europe with an alternative solution that would entail less regulatory overhead?

Privacy and Trust: The understanding of user communities, the trust at their heart and their production (like open source software or tagging), and the relevant technology hidden behind such models is very relevant. Those form the important basis for an open and interactive market place for electronic services in a broader scale. The investigations on appropriate mechanisms as well as social effects will be the driver for a large service deployment and acceptance for European citizens.

Co-opetition Models: To address this highly relevant approach on a combination of cooperation and competition in certain cases, the following questions need to be addressed: How can network of different qualities interconnect? How will the end to end created value be redistributed among players? What is the impact of the network neutrality regulatory concept? What are the respective roles of traditional actors of services industries (e.g., broadcasters, channel editors, teachers) and telecommunication service providers? How can we mix modularity and vertical integration in order to achieve open innovation and a high rate of investment in Europe?

New Business Models of Wireless Internet Access: Mobile users want to have the best and fastest available wireless pipe to Internet in all day situations. As well, it seems that new radio technologies and spectrum allocations (licensed and license-free bands) will create a complex access environment. Consumer's willingness to pay for the best alternative works as an incentive to stakeholders to overcome related technical and business challenges. This is likely to lead to modified or new business models.

Regulatory Evolution: Migration to the IP-enabled NGNs is inevitably affecting the nature of regulation, making it indispensable to conduct a thorough re-examination of the existing regulatory paradigm. A comprehensive investigation of economic regulation mechanisms in the new converged IP-environment is of great importance for shaping future regulatory paradigms. What is the heterogeneous value of quality among network users (households and businesses) and what kind of differentiation is sustainable? How can risks be modelled and redistributed and how can opportunities (such as law and business) among players been taken with different time scales in their agendas, e.g., politics, business, or end users?

Network Neutrality: There is an intense debate taking place both in Europe and in the US Congress regarding “network neutrality” regulation. One of the central issues is whether providers of “last mile” Internet access services (typically a local telephone company offering DSL service or a cable company offering cable modem service) should be allowed to offer more than one grade of service. Their fear is that a two-tier Internet may result, one for the haves who can pay the price, and one for the have cannot. Research is needed to assess these claims.

Uncertainty Modelling: As shown above, the design and deployment of future networks and services is subject to many uncertainties, such equipment and capacity prices or demand and supply due to competition. Therefore, uncertainty needs to be modelled using stochastic programming aided by scenario trees and worst-case analysis. Scenario trees describe the evolution of future uncertainties as a multi-stage process and are generated using simulation, clustering or optimization based computational tools.

Optimization and Agent Models: A complementary approach using optimization and auction-based agent models explores pricing strategies, tariffs and network resources. The imposition of tariffs may well affect the overall efficiency (optimality) of the system. Thus, the effect of tariffs under uncertainty needs to be evaluated. Each provider also needs to evaluate its service performance by evaluating the overall operation in view of competitor or collaborator strategies.

Relationships between Regulation, Competition, and Investment Strategies: In terms of public policy, those relationships should be scrutinized. Indeed, the telecommunications industry is the most dynamic industry among those subject to sector specific regulation. Dynamic industries are characterized by high speed of innovation and the importance of investment strategies. Regulatory policies should consider these dynamic aspects. To the extent that technological changes alter industry's organization, speed of innovation - particularly in the new markets - should be reflected on any regulatory intervention.

Industry Evolution Resulting from Mobile VoIP: Much discussion, a lot of investments and many service offerings go into Voice over IP technologies (VOIP) and their management, mostly via broadband and fixed networks already gaining market share over fixed circuit-switched voice providers. Much less open analysis goes into the impact of end-to-end wireless enabled VOIP, when a number of specific technical challenges will have been overcome, which can only be within the timeframe of this COST Action.

Smart Business Networks: For most businesses and public sector entities, communication services are purchased for several years based on traditional competitive bidding. This is far from companies' real desire to use networks in their business strategies, with fast connect-fast disconnect to temporary partners, as researched in the field of smart business networks. They want also to assemble dynamically network hardware and software components to serve and control multi-party business processes. Much research is still needed into multi-party SLAs, authentication, signalling, and privacy, but also on legal aspects and liabilities, to reach that goal.

User-centred Service Pull: Most content providers, allied sometimes with network providers, prosper on what is essentially a pure "push" model, fuelled eventually by advertisements or subscriptions. This mass distribution concept also is a powerful tool for unifying the culture, and it gives excessive power to these centralized information distribution players. Research is needed for socio-economic implications of the reverse "pull" model, also fuelled eventually by advertisements, subscriptions, and supply of personalized content. The open issue in economic and social terms is which of "push" and "pull" is sustainable and respects freedom.

IP-Based Telephony and Market Convergence: Voice-over-IP (VoIP) enables telephony calls to be routed over data networks, such as the Internet, and allows for a wide variety of new voice services and applications that can be developed. VoIP is the most important IP-based innovation since the introduction of the New Regulatory Framework in the EU in 2003. Regulators must be careful not to distort or hamper its growth and innovative potential through regulatory interventions. In particular, applying and modifying regulatory policies designed for traditional voice telephony to an emerging market is not straightforward.

Fixed-Mobile Substitution and Market Convergence: The degree of substitution and, therefore, convergence between fixed-line and mobile telecommunications markets varies heavily between Europe. So far there has been little research, neither theoretical nor empirical, into both the causes and the consequences of fixed-mobile convergence in Europe. There is virtually no economic research on fixed-mobile convergence in the European Union.

Economic Network and Service Management: In support of a technically feasible approach of operating a network for numerous commercial services in an efficient manner, technology-wise and economically, advanced network and service management functionality is required. This does cover

a clear identification of stakeholder roles and responsibilities, technology-wise and legally. Additionally, the integration and handling of dynamic pricing and tariffing models into current network and service technology becomes crucial in terms of an operational perspective.

Tariffing: It will be of high importance for customers and providers to deal with pricing issues and price regulation in the context of price affordability of IT services. Thus, it has to be investigated in the telecommunications rich service environment. The relationship between price level and penetration/distribution of the services across the population will show one major focus.

None of the four themes (architectural, social, economic and business, and regulatory) nor any specific research issues can be addressed by a mono-disciplinary research methodology nor by one single research group. Thus, this Action's proposal highlights again the need for close collaboration.

In summary, this COST Action's scientific results will determine the basis for next generation services and technology, which will be in use soon. In view of the scientific goals for all of those three different and important aspects will be tackled:

- Defined methodologies and tools
- Worked out use cases and case solutions
- Investigated policy/regulatory and business implications

In support of the Action's scientific results the output dimension covers the exchange and integration of data sets for research, the sharing of specific specifications, such as SLAs and contracts, tools, and algorithms will foster the collaboration between ECTEL partners. In support of external partners, executive briefings on findings, mechanisms, algorithms, and tools will address the input dimension. While addressing regulators, operator associations, and end user associations on main new business models as investigated or developed, policy/regulatory and business issues will be identified to ensure that their requirements will be heard, collected, and considered in further iterations of work.

E. ORGANISATION

ECTEL is organized in cross-discipline Working Groups (WG) aiming to bring together people working in telecommunications, economics, business, and regulation/policy scientific areas and aiming to consolidate and to develop structured scientific and practical applicable results. Thus, those deliverables described below are to be produced at the level of each WG *and* between WGs.

The following **Working Groups** (WG) are foreseen:

WG 1: Economics of Telecommunications and Content Distribution Technologies

- Tariffing and billing issues as well as business models for communications and content distribution technologies
- Privacy and security issues
- Macroeconomic and universal service issues
- Econometrics for ICT: Single and multiple function models for telecommunications and price indexes for telecommunications products and services

WG 2: Communications Business

- Digital convergence
- Strategic alliances
- Inter-Business networks and SLA economics
- Converged and mobile payment systems
- Mobile marketing
- User Terminal enhancements required to support new business models
- Operator finance

WG 3: Regulation and Public Policies

- Relationship between regulation and competition policy
- Alternative modes of resource allocation
- Institutional determinants of industry performance
- Interfacing regulatory and technology guidelines, including security
- Public policy for newly emerging and developing markets
- Impact of disruptive technologies on regulation

WG 4: Network Management Architectures and Economics

- Role model investigation of IP-related and telecommunication service's provisioning
- Advanced network and service management functionality derived from new business models
- Effective technology support for efficient pricing and tariffing models

The following **deliverables** are foreseen:

1. Internal deliverables

Internal deliverables include:

- a) A planned sequence of focused workshops, each of them in three parts which are: (i) methodologies and tools (for review and spreading), (ii) worked out case solutions and (iii) polic, regulatory and business implications. Topics include, among others: IP-TV business models, low cost converged and mobile payment services, pricing and negotiation of personalized service bundles; the typical frequency is every six months.
- b) An exchange and possible integration of data sets for research
- c) A sharing of specific specifications (like SLAs), tools, or algorithms
- d) Receiving comments and reviews by external parties (regulators, operators, specific companies and user-groups) on the above deliverables
- e) Summer schools for young and new researchers with teaching by COST partners and use of methodologies developed in common
- f) Short term scientific missions fostering young researchers' integration to support a full-fledged cross-partner work

2. External deliverables

External deliverables include:

- a) A once per year one-day executive briefing to regulators, operator associations, and end user associations on main new business models as identified, and on the policy/regulatory and business issues identified in the internal workshops
- b) White papers, research papers, scientific reports, tutorials, surveys, questionnaires and technical reports
- c) A set of project news (newsletters) and list of relevant open COST partner publications on a public COST project portal (web portal)
- d) Organization of special sessions at selected international conferences, to distribute more widely COST partner results as well as contributions by others to the same issues

In addition, a dedicated Conference on Telecommunications Techno-Economics (CTTE 2007) will be hosted in June 2007 in Helsinki by the Helsinki University of Technology together with the University of Athens.

Those deliverables to be completed will be supported by short-term scientific missions as well.

External deliverables and results will be made available on-line, by setting-up a web site with ECONTEL-specific data and information.

F. TIMETABLE

Taking into account the overall planning of COST Actions, the ECONTEL Action's duration has been set to four years. This duration allows for the implementation of two research and collaboration cycles, each of which will last approximately two-years and each ending with a respective Public Workshop. At those as well as at two additional events external contacts will be invited to play an active role in providing requirements and in prioritizing research questions as to their industry relevance.

The project starts with a Two-part Kick-off Meeting at Project Month 0 (PM0) and PM4. The first part is internal to the project and devoted to a presentation by each partner of its proposed research questions. In the second part partners will present a refined task list to external invited parties in order to receive feedback on the relevance of selected items, to identify related third party work, and in some exceptional cases to identify potential additional partner candidates. This two-step approach will strengthen openness to industry and to the scientific community, as well as the flexibility to enhance the task list to be worked at to achieve the Action's overall objectives.

Four Working Groups will continue through meetings on a regular basis to ensure that the work will be coordinated. All activities in WGs are divided generally into four phases:

- a) Development of models and methods for the areas under consideration;
- b) Set-up of simulations, measurements, questionnaires, and experiments;
- c) Assessment and validation of models, approaches, and methods;
- d) Summarizing key results and contribution to the Final Report.

Management Committee Meetings (MCM) will be held about twice per year with two representatives from each country.

Mid-project (after two years) and its final stage (after four years) Internal Working Group Meetings (IWGM) will be held for them to report progress and results of the joint work. These two meetings will include in-depth presentations and possibly demonstrations. In conjunction with each of these two meetings, one of the above mentioned Public workshops will be held, mainly to present key external deliverables to external stakeholders (in particular user groups via INTUG, industry, contractors, standardization bodies, and regulators).

Thus, all activities of this ECONTEL Action are distributed into four years (cf. Table 1), which provides the picture of the overall timeline of the ECONTEL proposal.

Table 1: ECONTEL Action’s Schedule

Activity	Year 1			Year 2			Year 3			Year 4		
For all: WG1 WG2 WG3 WG4 (WGs correspond to Section E)	Modelling and Methods											
				Simulations, Measurements, Questionnaires, Experiments								
							Assessment and Validation					
										Contribution Final Report		
Kick-off Meeting	X	X										
MC Meeting	X	X	X	X	X	X	X	X	X	X	X	X
WG Meeting			X	X	X	X	X	X	X	X		
Public Workshop						X						X
External Contact		X				X			X			X
White Paper			X			X			X			X
Annual Report			X			X			X			X
Final Report										(1)	(2)	(3)

G. ECONOMIC DIMENSION

The following COST countries have actively participated in the preparation of the Action or have indicated interest otherwise:

- | | | | | |
|------------|------------|----------------|-----------------|--------------------|
| 1. Finland | 4. Georgia | 7. Netherlands | 10. Switzerland | 12. United Kingdom |
| 2. France | 5. Greece | 8. Norway | 11. Sweden | |
| 3. Germany | 6. Hungary | 9. Poland | | |

On the basis of national estimates, the economic dimension of the activity to be carried out under the Action has been estimated at 7 million € for the total duration of four years of this Action. This estimate is valid under the assumption that all countries mentioned above but no other countries will participate in the Action. Any departure from this will change the total cost accordingly.

H. DISSEMINATION PLAN

Researchers from all participating countries and institutions will work in a close and collaborative manner with an ongoing and mutual exchange of information, ideas, and results. Results will be disseminated as a Technical Documentation (via means of Technical Reports, Workshop/Conference/Journal Papers, Presentation, and Questionnaire), Project Documentation (Annual Reports, White Papers), the Web Site, and Tutorials.

The **Technical Documentation** will largely depend on the output of **Workshops**, the organization of which will benefit the Action in multiple dimensions. Open and moderated panels of experts will foster the discussion of orthogonal and complementary views in economics, policies, and technologies in use or planned. These workshops' goals are to increase the Action's visibility as well as to bring together experts from outside the Action close to experts from within the Action. In turn, these stronger links between those experts will foster all researchers' experiences, within and outside the Action.

The **Project Documentation** includes the Annual Reports, White Papers, and the Final Report. At the end of each Action year of twelve months an **Annual Report** will be compiled. It will be complemented by a **White Paper**, which summarizes the technical documentation achieved in the respective year and may include other outcomes as they appear.

The Action's end is envisioned for the end of year four. Thus, the **Final Report** will be, probably, structured in multiple parts, which reflect major areas of work undertaken within ECONSTEL. This report serves as a main reference point for ECONSTEL's results.

The ECONSTEL's Action **Web Site** will be set-up and maintained to document in a public manner its outcomes. Major results will be highlighted publicly and the Action's Working Groups' descriptions, institutional descriptions, and respective contact persons for Working Groups as well as institutions will be published. Action-internal management details and intermediate results are password-protected to ensure a consolidation of insights and results, before they will be openly available. It is assumed that the web site and e-mail lists support the collaboration of working groups and their tasks in an effective and efficient manner. If required Voice-over-IP (VoIP), telephone calls, or conferences are scheduled to solve inter- and intra-work group questions.

From the mid of the second year, or possibly earlier (at the initiative of the Working Groups), the COST Action will create the content of, and offer short **Tutorials** as well as **Executive Training Sessions**. Those tutorials will usually be in connection with Workshops and conferences with COST partner's involvement. They will foster young researchers' training. They will be organized and co-financed by external participants as specified by the event organizers and COST rules. In this way full openness will be granted to the outside world. These executive training sessions will be organized by COST partners alone or in groups. They will target decision makers at the organizing partner and may be either open or closed. **Short-term Scientific Missions** complement the exchange of young researchers across countries, partners, and fields of research for collaboration purposes.

The Action will liaise with **Standardization Bodies** and **Regulation Bodies**. Policy makers as well as technology scouting interests will be considered highly useful. Depending on the particular opportunities of those areas of work shown above, consolidated contributions will make their way into those two bodies. A focus on the European level of bodies involved will be given, however, depending on the special situation of those institutions involved, an international view may be considered useful.