ICT-601102 STP TUCAN3G

Wireless technologies for isolated rural communities in developing countries based on cellular 3G femtocell deployments

M712

Dissemination and standardisation plan

Contractual Date of Delivery to the CEC:	**1st Sep 2013**
Actual Date of Delivery to the CEC:	**14th Sep 2013**
Author(s):	**Álvaro Rendón (UCAU), Olga Muñoz (UPC), Andres Martinez (URJC), Özge Albaz (URJC), Juan Paco (PUCP), Ernesto Sánchez (FITEL), Kit Kilgour (IPA), Emerson Carbajal (TdP), Ignacio Prieto (EHAS), Mari Carmen Gómez (TIWS), Luz Stella Pemberthy (CREP), Konstatinos Fouskas (KINNO)**
Participant(s):	**UCAU, UPC, URJC, PUCP, FITEL, IPA, TdP, EHAS, TIWS, CREP, KINNO**
Workpackage:	**7**
Est. person months:	**1,2**
Security:	**Internal**
Dissemination Level:	**CO**
Version:	**c**
Total number of pages:	**31**

Abstract:

TUCAN3G achievements are of the interest of a wide range of stakeholders such as operators, manufacturers, regulators, researchers, local authorities and institutions as well as the rural communities. This document describes the plan to highlight the outcomes, benefits and possibilities of the project to these stakeholders and to the general public, through two main actions: dissemination and standardisation. The description of the dissemination plan includes the identification of the target groups and the definition of the dissemination strategy, which integrates several approaches considering the different profiles of target groups.
The standardisation plan comprises four fronts of work in respect to standardization bodies (3GPP, ETSI-BRAN, ITU and IEEE 802.11), whose agendas and discussion topics will be monitored in order to keep aligned the project goals with scientific advances and directions taken by the standards, and to look for opportunities for contributions. Activities are described in a preliminary way, as they will be updated and extended in the WP7 deliverables.

Keyword list: stakeholder, target group, web site, workshop, forum, exhibition, conference, mass media, standardisation body, working group

Document Revision History

DATE	ISSUE	AUTHOR	SUMMARY OF MAIN CHANGES
13 May 2013	a	Álvaro Rendón	The first draft
5 Sep 2013	b	A. Rendón, O. Muñoz, J. Vidal	The second draft
13 Sep 2013	c	A. Rendón, O. Muñoz, J. Vidal, A. Martinez, O. Albaz	The final version

Executive Summary

TUCAN3G aims to offer a solution to provide voice and data services to the communities in remote rural areas of underdeveloped countries, by using femtocells with backhaul of WiLD-WiMAX-VSAT networks. The results of the project are of the interest of a wide range of stakeholders such as operators, manufacturers, regulators, researchers, local authorities and institutions as well as the rural communities. This document describes the plan to highlight the outcomes, benefits and possibilities of the project to these stakeholders and the general public, through two main actions: dissemination and standardisation.

The dissemination activities are addressed to the following target groups of the project:
- Telco operators (including small regional ones)
- Manufacturers of telecommunication equipment
- Telecommunication regulators
- Local authorities, institutions and communities of remote rural areas in developing countries
- Research community
- General public

This dissemination strategy integrates the following approaches, taking into account the different profiles of target groups and the evolution of the project results:

- The project webpage will be used to serve as a gateway to the general public for the dissemination. In addition, another web-based tool is used to improve the coordination and cooperation between the project partners.
- A half-day technical workshop, putting the researchers, the manufacturers and the operators as the main interest, will be created to propose a space to discuss the technical achievements of the project, the developed business model, and the proof of concept results.
- Dissemination activities with local stakeholders (e.g. local authorities, small operators, and regional population) will be held through local presentations. Furthermore, informative articles will be published in ICT for development journals
- High quality articles will be published in the scientific prestigious journals, as the prevalent way for communication with the research community.
- Attendance will be realized to international forums and exhibitions focusing on manufacturers, and large and small operators.
- Cooperation with other projects has the aim to create synergies, as well as avoid duplications.
- Mass media, addressed to the general public, will be used in order to promote public awareness about the social benefits of research in general, and FP7 and TUCAN3G outcomes in particular.

The standardisation activities are another way of spreading the project results; TUCAN3G wants to impact on emerging standards, aiming the promotion of specific aspects related to rural scenarios. In addition, these activities also play an important role in aligning the project goals with scientific advances and directions taken by the standardisation bodies. In this context, four main work groups have been identified:

- 3GPP
- ETSI-BRAN
- ITU
- IEEE 802.11

The outcomes of the actions within this dissemination and standardisation plan will be reported in the WP7 deliverables D71 "First interim dissemination/standardisation report and plan", D72 "Second interim dissemination/standardisation report and plan" and D73 "Final dissemination/standardization report".

DISCLAIMER

The work associated with this report has been carried out in accordance with the highest technical standards and the TUCAN3G partners have endeavoured to achieve the degree of accuracy and reliability appropriate to the work in question. However since the partners have no control over the use to which the information contained within the report is to be put by any other party, any other such party shall be deemed to have satisfied itself as to the suitability and reliability of the information in relation to any particular use, purpose or application.

Under no circumstances will any of the partners, their servants, employees or agents accept any liability whatsoever arising out of any error or inaccuracy contained in this report (or any further consolidation, summary, publication or dissemination of the information contained within this report) and/or the connected work and disclaim all liability for any loss, damage, expenses, claims or infringement of third party rights.

Table of Contents

References

[EC04] European Commission. "European Research - A guide to successful communication". Luxembourg: Office for Official Publications of the European Communities, 2004. Retrieved the 9th of July 2013 from http://ec.europa.eu/research/conferences/2004/cer2004/pdf/rtd_2004_guide_success_communication.pdf

[EDD13] European Development Days, 2013. http://eudevdays.eu/

[ExtremeCom13] 5th Extreme Conference on Communication – The Volcanic Expedition, ExtremeCom 2013. http://www.extremecom.org/

[ICTD13] International Conference on Information and Communication Technologies and Development, ICTD, 2013. http://www.ictd2013.info/

[McNerney09] O. Mc Nerney, E. Philpott, D. Kolman, K. Řípová, A. Stachowicz, P. Czupryński, E. Herrmann, D. Martín, R. Simón, R. Bratskas. "Guide to the Successful Use & Dissemination of Research Results". FP7 USEandDIFFUSE Project, 2009. Retrieved the 9th of July 2013 from http://ec.europa.eu/research/sme-techweb/pdf/use_diffuse.pdf

[WCC10] World Computer Congress – Brisbane 2010. "About". http://www.ifip.or.at/wcc2010/about/index.html

List of abbreviations & symbols

3GPP	Third Generation Partnership Project
COMNET	Computer Networks (Elsevier journal)
eNB	E-UTRAN Node B
ETSI	European Telecommunications Standards Institute
ETSI-BRAN	European Telecommunications Standards Institute. Broadband Radio Access Networks
EURASIP	European Association for Signal Processing
E-UTRAN	Evolved UTRAN
FP7	Seventh Framework Programme
HSPA	High Speed Packet Access
ICASSP	International Conference on Acoustics, Speech and Signal Processing
ICC	International Conference on Communications
ICT	Information and Communication Technology
ICTD	International Conference on Information and Communication Technologies and Development
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IFIP	International Federation for Information Processing
ITU	International Telecommunication Union
ITU-D	International Telecommunication Union. Telecommunication Development Sector
ITU-T	International Telecommunication Union. Telecommunication Standardization Sector
LIPA	Local IP Access
LTE	Long Term Evolution
QoS	Quality of Service
RAN	Radio Access Network
RTD	Research and Technology Development
S1	LTE interface between eNB and the Evolved Packet Core (EPC)
SG	Special Group
SIG	Special Interest Group
SIPTO	Selected IP Traffic Offload
SME	Small and Medium sized Enterprise
UMTS	Universal Mobile Telecommunications System
UTRAN	UMTS Terrestrial Radio Access Network
VSAT	Very Small Aperture Terminals
WG	Work Group
WiFi	Wireless Fidelity (IEEE 802.11)
WiLD	WiFi over Long Distances or WiFi-based Long Distance
WiMAX	Worldwide Interoperability for Microwave Access (IEEE 802.16)
WLAN	Wireless Local Area Network
WP	Work package
X2	LTE interface between eNBs

1 INTRODUCTION

1.1 The role of dissemination and standardisation

TUCAN3G aims to develop the technologies and business models that enable the provision of mobile voice and data services (3G/4G) to the communities in remote rural areas of developing countries, by using the concept of femtocells with heterogeneous backhauling to give connectivity to general population and also institutions with basic social services (health, education, government, etc.). This solution can significantly improve the standard of living of those communities, contribute to the sustainability of the telecommunication deployments and its support to social services, and also open a new market line for telco operators and manufacturers.

All these benefits and possibilities have to be extensively disseminated in order to attract the interest of local authorities and institutions, operators, manufacturers, regulators, researchers, and rural communities. To do that, TUCAN3G has devised several approaches taking into account the profiles of a differentiated target public. This includes the dissemination of project achievements through presentations in events aimed to regional operators and authorities, white papers and oral presentations at international forums, participation in exhibitions, scientific publications in the most relevant international journals and conferences, organization of a technical workshop, presence on printed and online media, and the own web site; it has been also considered the establishment of links between TUCAN3G with other projects, mainly from FP7, with overlapping RTD domains.

Another way of spreading the project results will be the standardisation activities. TUCAN3G will define new ways for progress in LTE-Advanced and Beyond, through new concepts in areas such as network architecture, network management and self-organization. These technical developments, as well as its application in the provision of ICT services to rural and remote areas, are of interest to standard organisations as 3GPP (HSPA, LTE), ETSI (Broadband Radio Access Networks), IEEE (Wireless LANs and Wireless Regional Area Networks) and ITU-D (Study Group 2: Development and management of telecommunication services and networks and ICT applications).

Those activities of dissemination and standardisation will be fed in principle by the results of WP3 (Business case), WP4 (Access network) and WP5 (Transport network); however, WP6 (Demonstration) will provide the more conclusive results validating the research work and giving the evidence to participate in exhibitions where to show the proof of concept.

The next paragraphs in this Section describe the objectives, roles and responsibilities, and deliverables and milestones related to the dissemination and standardisation activities.

Section 2 describes the dissemination plan. This description includes an explanation of the dissemination strategy designed and the target groups that have been identified; how the project web site will be used and the disseminations material to be produced; the organisation of the own technical workshop and an outline of the external events and scientific journals where project results can be published; the participation in the activities and cooperation with other projects sponsored by the European Commission; the actions envisaged to guarantee a timely and effective appearance in written and online media; and the dissemination strategy designed by each partner.

Section 3 depicts the standardisation plan, explaining the strategy regarding selected standardisation committees belonging to 3GPP, ITU, ETSI and IEEE, whose work is related to the areas covered by the project.

1.2 WP7 objectives related to M712

The following are the objectives of WP7 “Dissemination and knowledge utilisation” which are related to M712:

- Create and maintain the project web site

- Disseminate results in international journals, conferences, and through direct contacts with regional operators and authorities.
- Promote the project outcomes at industrial level through the presence in standardisation committees.

1.3 Roles and responsibilities

The dissemination of TUCAN3G results is very important for all of the project partners, and all of them are committed in making the major effort to achieve this goal. On the other hand, the objectives of WP7 require inputs from the other WPs with a close coordination between all.

WP7, which is led by UCAU, has defined three main activities of which two of them concern to this document: 7A1 "Dissemination", led by UCAU, and 7A2 "Standardisation", led by UPC. Furthermore, these activities have been decomposed in the following group of tasks (a detailed description of all tasks can be found in D22 section 5.7 "WP7 work plan").

7A1. Dissemination:
- Creation and maintenance of the project web site (7A1.1-7A1.2): UPC.
- Coordination of the half-day technical workshop (7A1.3-7A1.5): Led by EHAS.
- Elaboration of the dissemination and standardisation plan (7A1.6): Led by UCAU
- Deployment of a strategy to disseminate the project results in Latin America (LA) and beyond Europe (7A1.7): Led by UCAU
- Publication in scientific journals, and academic and industrial events (7A1.8): led by URJC

7A2. Standardisation:
- Keep track of activities and contribute to 3GPP/ETSI-BRAN (7A2.1-7A2.2bis): Led by UPC.
- Keep track of activities and contribute to 802.11 (7A2.3): Led by UCAU.
- Keep track of activities and contribute to ITU-D SG2 (7A2.4-7A2.5): Led by UPC.

The total effort of each partner in these two activities is represented in the following chart:

UPC	URJC	PUCP	UCAU	FITEL	IPA	TdP	EHAS	TIWS	CREPIC	KiNNO	TOTAL
4,0	1,5	1,5	4,0	0,5	0,5	0,5	2,0	0,5	1,5	0,5	17,0

1.4 Related deliverables and milestones

The Table 1 shows the deliverables and Table 2 the milestones related with this deliverable as defined by WP7 "Dissemination and knowledge utilisation".

Del. no.	Deliverable name	WP no.	Lead participant	Nature	Dissemination level	Delivery date
D71	First interim dissemination/standardisation report and plan	7	UCAU	R	CO	M12
D72	Second interim dissemination/standardisation report and plan	7	UCAU	R	CO	M24
D73	Final dissemination/standardization report	7	UCAU	R	PU	M30
D74	Plan of use of knowledge	7	UCAU	R	CO	M30

Table 1. Related deliverables

Milestone no.	Milestone name	WPs no.	Lead participant	Delivery date	Means of verification
M711	TUCAN3G public WEB site	7	UPC	M1	WEB site for TUCAN3G set up, and contents continuously updated and reported to the EC.
M712	Dissemination and standardisation plan	7	UCAU	M6	Internal document identifying the routes for the dissemination and scheduling of the standardization bodies as well as requirements and specifications that are candidates to be standardized. It describes the initial activity plans for 7A1 and 7A2.
M713	Half day technical workshop	7	EHAS	M24	Organization of an international workshop on rural communications.

Table 2. Related milestones

2 DISSEMINATION PLAN

2.1 Dissemination strategy and target groups

Even dissemination is a contractual obligation in FP7 projects (Article II.30 of Grant Agreement), it gives direct benefits to the participants themselves. An appropriate management of communications can help by [EC04]:

- "Drawing the attention of national governments, regional authorities and other public and private funding sources to the needs and eventual benefits of the research;
- Attracting the interest of potential partners and/or correspondents;
- Encouraging talented students and scientists to join the partner institutes and enterprises;
- Enhancing the reputation of participants, at local, national and international level;
- Where appropriate, aiding the search for financial backers, licensees or industrial implementers to exploit the results; and
- Generating market demand for the developed products or services."

TUCAN3G has defined a dissemination strategy addressed to the following target groups of the project:

- Telco operators (including small regional ones)
- Manufacturers of telecommunication equipment
- Telecommunication regulators
- Local authorities, institutions and communities of remote rural areas in developing countries
- Research community
- General public

This dissemination strategy integrates several approaches taking into account the different profiles of target groups and the evolution of the project itself from requirements and specifications to the demonstration of the network deployment. Below those approaches are briefly described.

- **The project web site**: will serve as a primary cooperation tool between project partners, as well as a gateway to the general public for dissemination. For the latter purpose, public materials such as project flyer, posters, public deliverables, publications, etc. will be available in this webpage.

- **Half-day technical workshop**: Will be organized within an international conference and addressed to the researchers, the manufacturers and the operators. This is a threefold event: it will be a space to present the technical achievements of the project, to discuss the developed business model, and to show the results of the proof of concept.

- **Dissemination to stakeholders related to remote rural areas**: Aligned with the target outcome of the FP7-ICT-2011-9 call "Enable Partnership building in low and middle income countries" and its own goals, TUCAN3G will pay special attention to dissemination activities addressed to local authorities and institutions, small operators, regional telco organizations, as well as the regional communities, mainly in Peru, Colombia and other countries where the partners have business. This approach concerns primary to those partners with knowledge and experience in these regions. It includes presentations in selected events in Latin America and publications in journals about ICT for development.

- **Scientific publications**: As the prevalent way of communication with the research community, the main objective of this dissemination strategy is to publish the project results in the most relevant international journals and conferences.

- **International forums and exhibitions**: Focusing on the manufacturers, and large and small operators, these types of forums and exhibitions are ideal to demonstrate the proof of concept, prototypes developed in WP6 and the technological possibilities with new business opportunities.

- **Cooperation with other projects**: Creating cross-links between the other projects in similar domains, primarily at FP7 level, intends to identify similarities and create synergy, as well as avoid effort duplication.

- **Mass media**: TV, newspapers, magazines, radio and the Internet are the main communication media to reach the general public, in order to promote the public awareness about social benefits of the research in general, and FP7 and TUCAN3G outcomes in particular.

The Table 3 presents the main relationships between target groups and the devised dissemination approaches. Actions implementing these dissemination approaches are described in this section briefly and will be updated and extended in the WP7 deliverables.

Dissemination approach / Target group	Project web site	Half-day technical workshop	Dissemination to stakeholders related to remote rural areas	Scientific publications	International forums and exhibitions	Cooperation with other projects	Mass media
Operators	X	X	X		X	X	
Manufacturers	X	X	X	X	X	X	
Regulators	X		X				
Stakeholders of remote rural areas	X		X	X	X		
Researchers	X	X	X	X		X	
General public	X						X

Table 3. Dissemination approaches and target groups

2.2 Means of dissemination

2.2.1 Project web site

A web site has been established (see Figure 1). The website is a platform to disseminate the progress and the outcomes of the project [http://llocs.upc.edu/www-icttucan3g/]. The website also includes an RSS channel to facilitate the tracking of the project. Several public materials (e.g. project flyer, posters, public deliverables, publications, etc.) are available on the webpage to promote the public interest.

The webpage also has a private space to be used by the partners for close collaboration during the project, in relation with the WP1 (Management), including a document repository to facilitate collaborative work between the partners.

Figure 1. TUCAN3G website main page

The milestone M711 was fulfilled with the setting up the webpage, but the maintenance activities will be carried on through the project period and beyond.

In addition, it is planned to add a blog for a multimedia gallery with pictures, video clips, interviews, etc.

2.2.2 Dissemination materials

Dissemination activities require digital and printed promotion materials with basic information about the project. Some of them have been designed already and others will be created along the project progress. Furthermore, considering branding as a key point for dissemination activities, a logo and standard templates have been provided to the partners to produce their own material. The following describes these materials, which are available at the project web site:

- **Logo**: Represents the acronym of the project and its application domain (Figure 2).

Figure 2. TUCAN3G logo

- **PowerPoint template**: Title page and content page for presentations (Figure 3).

Title page Content page

Figure 3. PowerPoint template

- **Project flyer**: The first brochure of the project outlining the main objectives, the technical approach, key issues and expected impact (Figure 4). It is distributed through the project web site and partners' networks of contacts.

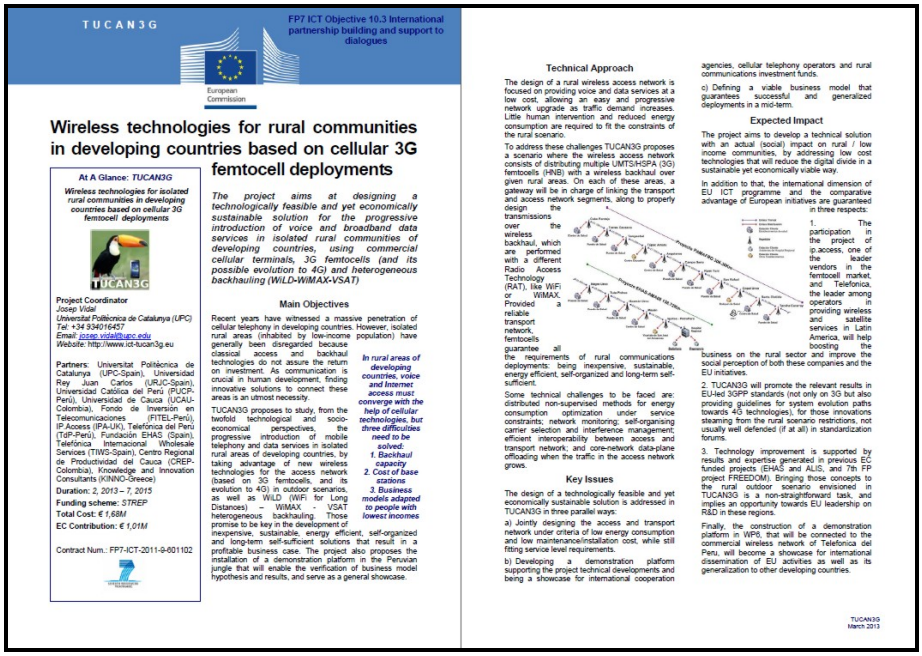

Figure 4. Project flyer

2.3 Events and journals

2.3.1 Half-day technical workshop

A specific half-day technical workshop will be organized in order to spread the results of this project. It will be focused on European and Latin American stakeholders, such as researchers, manufacturers and operators. The plan is to organize it within an international conference, in order to maximize the impact and facilitate participations. We believe that people attending a conference related with ICT and development will be very interested in this project. It will be important to consider the location

before selecting the event, in order to facilitate participations of stakeholders from Latin America and Europe for 2014.

Following these criteria, three possible conferences have been pre-selected as candidates to set the workshop with. These three conferences are:

- ICTD (International Conference on Information and Communication Technologies and Development), which is collocated with the ACM-DEV (Annual Symposium on Computing for *Development*). ICTD examines "the role of ICT in social, economic and political development" [ICTD13]. It is an annual conference, and this year (2013) it will be held on December in South Africa.

- Extremecom (Extreme Conference on Communication), that "brings together researchers and practitioners in areas related to communications in rural, remote or other extreme environments, in order to gain experience and insight into the challenges that such environments pose for the network and the users" [ExtremeCom13]. It is an annual conference, and this year (2013) it will be held on August in Sweden.

- IFIP WCC (International Federation for Information Processing World Computer Congress) is a multi-sectorial conference that "combines content from commercial, industry, association and research sectors offering an opportunity to showcase and discover innovative ideas" [WCC10]. It is held biannually. Last one have place on September 2012 in Amsterdam.

The next editions of these conferences have not been announced yet. Thus, the plan is to contact to the organizers in the next months (until the end of 2013) in order to find out the location and the dates of next editions, and to arrange our participation.

The proposal for this workshop will focus on three main aspects. First, **TUCAN3G technologies** will be explained focusing on the optimized parameters, used interoperability techniques between different technologies, and the technological problems faced up along the project timeline (information from D42, D43, D51 and D52 will be disseminated). Secondly, **the business model** will be discussed in details of the offered services, the target customers, the cost structure and the revenue streams (information from D34 and D34 will be disseminated). Finally, the analysis of **the proof of concept** results will be explained depending on both used technologies and business model (information from D65 will be disseminated). These three aspects will allow us to present all perspectives used to develop TUCAN3G, and cover the interests of the different targets, from researchers, operators to public institutions.

2.3.2 External events

According to [McNerney09], the three most popular channels for dissemination among SMEs and RTD stakeholders are personal contacts, presentations and conferences. Therefore, the appearance in the relevant congresses, workshops, technical fairs, etc., will be one of the main activities of TUCAN3G partners aimed to share the project results, exchange ideas and experiences regarding the subjects of WPs. Likewise, participation in exhibitions will be an opportunity to give visibility to the innovative implementations of the project.

This kind of activities facilitates the contact with large and small regional telco operators, national regulators, local authorities and institutions, and even end users, especially in developing countries. Section 4.1 shows an extensive list of related events, from international flagship conferences as ICC and Globecom, to regional ones as LATINCOM and ANDICOM, and from those devoted to the more technical issues as ICASSP, to those considering the impact of the technology in social, political, and economic development as ICTD.

2.3.3 Scientific journals

While workshops and conferences are a valid way to reach also the academic community, there is no doubt about that the refereed journals are the best dissemination media in this context. Considering the high level background of most of the partners and the outstanding scientific results expected from TUCAN3G, it is anticipated that high quality papers will be published in the key international journals.

Similar to the events, the diversity of issues faced in TUCAN3G as well as its specific target audience requires a serious consideration on a wide range of possible journals as those listed in section 4.2. Results from WP4 are in the scope of the IEEE Trans on Signal Processing or the International Journal of Mobile Communications; those from WP5 are in the scope of the IEEE Trans on Wireless Communications or COMNET; and contributions from WP3 are in the scope of IEEE Technology in Society Magazine or the International Journal of Innovation and Sustainable Development. Even the final results obtained in the pilot demonstration (WP6), which verifies the results of other WPs, are of the interest of less academic journals but addressed to operators and industrial community, such as Wireless Magazine or Global Telecoms Business.

2.4 European Commission Level

2.4.1 FP7 events, concertation and cluster meetings

The strategy of TUCAN3G regarding the Programme's activities is:

- Attending to the concertation and opening meetings in Brussels organized by the Programme and follow the EC announcements.
- Assisting the project officers for the dissemination task within the Programme and at a wider international scope.
- Pushing forward the offspring ideas that appear in TUCAN3G to conform to new proposals that will be submitted in the periodic calls.

2.4.2 Cooperation with other projects

TUCAN3G's objective is actively participating in the RAS cluster activities including the attendance to meetings, oral presentations, sessions chairing, participation in white papers and submissions to specific workshops (such as the workshop "Wireless Network in Rural Areas" organized by one of the partners of TUCAN3G in European Development Days 2013).

2.5 Appearance in the media

Dissemination plans should point not only to direct stakeholders such as those mentioned in above sections, but also to the public in general. The Eurobarometer on Science and Technology, cited in [EC04], indicates that the main sources of scientific information for the general public are TV, the press and radio. Also Internet has an important role as a *mass media* taking into account its recent expansion. The following paragraphs describe how project partners have shared the media usage in order to reach wider audience to inform about the progress and obtained results.

UPC will promote the appearance of TUCAN3G in the media through the press releases and the internal *Informacions* journal (http://www.upc.edu/saladepremsa/informacio/revista-informacions). Also contribution of the Department of Institutional Communication is expected in the same context.

URJC will promote the appearance of TUCAN3G in the media through press release and internal journal of URJC (http://www.ucci.urjc.es/) and web-page of Madrid I+D (http://www.madrimasd.org/informacionidi/notiweb/default.asp). URJC will also try to promote the project in at least one of the national newspapers in the Science and Society sections (http://elpais.com/ and http://www.elmundo.es/)

PUCP will collaborate with both internal and public media access. Press releases, summaries of the activities and on-going and/or completed results will be published periodically. The accessible media (university newspaper, PUCP Facebook and Twitter, newsletters, magazines) will be used and press notes will be published in at least one national newspaper (El Comercio) and one regional newspaper in Loreto (Diario La Región). Additionally, interest mailing lists related to PUCP and institutional media of other organizations (Peruvian universities, regional governments, research centers, etc.) will be created.

UCAU will spread TUCAN3G achievements in mass media through its Communications Division with a press office, a radio station and a TV producer. All the mass media channels are part of the national news network such as ZOOM, the Colombian university TV channel. Additionally, it is planned to use regional, national and international dissemination channels such as the web portal of Universia, an Ibero-american network of universities.

FITEL will promote the appearance of TUCAN3G in the media through its institutional website (http://www.fitel.gob.pe) and in participated events.

IPA will principally promote TUCAN3G by seeking to produce a case study once the trial deployment has commenced, and then using this as basis for presentation at various events to be determined, possibly including those of the Small Cell Forum and the Cambridge Wireless Small Cell Special Interest Group (SIG). It can also be used as a basis for submission of articles in selected publications.

TdP will disseminate project outcomes through its official communication channels (Intranet, digital magazine “Somos”, magazine “La Cartelera”) and conferences such as the "Telecommunications Congress UNI TELCON 2014". The effective deployment and commissioning of 3G cells in the Peruvian localities will be broadly publicized on external media such as Gestión (http://gestion.pe) y El Comercio (http://elcomercio.pe). The company's Direction of Communication, Image and Corporate Responsibility will be in charge of all press releases.

EHAS will try to disseminate the project achievements in newspapers and radio programs, as well as promote the appearance of TUCAN3G in the internal journals of the Polytechnic University of Madrid (UPM) to reach his community of researchers.

TIWS will promote the appearance of TUCAN3G in the media through press releases and the internal communication tools (Newsletter, Intranet, “El Diario de Telefónica”, etc.). All this appearance in the media is under control of its Communications Department.

CREPIC will highlight the achievements of the project through the updates published in the institutional website (http://www.crepic.org). Similarly, newsletters with content about the project milestones, meetings, and progress reports in each WP that CREPIC is involved, will be sent periodically through massive emails.

2.6 Per-partner dissemination strategy

2.6.1 UPC

UPC strategy includes advising three Master theses in the area of distributed radio resource management and network planning to be defended within three years from the project start. Additionally, knowledge gained in TUCAN3G is being brought to academic activities through four main lines:

- To enrich undergraduate and graduate courses offered in Information and Communication Theory at the Signal Theory and Communications Department;
- To diffuse the project activities in seminars and Master thesis openings at the Telecommunication Engineering School at UPC;
- To generate internal publications at the university level as well as at the National level;

- The activities in the project are orienting internally the activities of an increasing number of researchers, which attracts industrial contracts and launches initiatives for National research projects.
- To publish high quality papers in international conferences and highly ranked journals.
- To promote the diffusion of TUCAN3G activities in international forums like European Development Days, ICT and International Telecommunications Union.

2.6.2 URJC

URJC mainly participates on WP4 and WP5. Considering its participation, URJC's intention will be:

- Publish and present 2 to 5 papers for WP4 and 2 to 3 papers for WP5 in high-quality conferences in the field of communications. Year based plan is given in Table 4. Main targets are conferences and technical workshops organized by the IEEE Communications, Signal Processing and Vehicular Technology societies. Prestigious European conferences (such as the EURASIP, European Wireless Conference) will also be considered.

	2013	**2014**	**2015**
WP4	0 to 1	1 to 2	2 to 3
WP5	0 to 1	1 to 2	1 to 2

Table 4. Planned number of articles to publish in each year per WP

- Prepare possible special issue in a magazine such as Springer.
- Contribute to standardization groups in local switching (LIPA and SIPTO) and interactions with access network backhauling and 3GPP or WiFi for WP4.
- Additionally technical coordination team will promote the contribution of URJC to the social impact of the project in the conferences such as ICTD or articles in the magazines such as IEEE Technology and Society Magazine.

2.6.3 PUCP

PUCP strategy is aimed to disseminate activities and results of the TUCAN3G project, updating the information according to the progress and obtained goals, using the accessible media of PUCP that have been identified in section 2.5.

The target audiences of this strategy are: project partners, academic community of PUCP, possible partners with ICT business in rural areas (companies and the government), and regional population with potential benefits of the project.

The main activities are:

- For partners:
  - Elaboration of monitoring reports about the demonstration platform once installed.
- For academic community of PUCP:
  - Elaboration of press releases and press notes to publish in the PUPC's website and other available media.
  - Organization of events such as forums and discussions to highlight of project progress and results. These events will be disseminated also through e-mailing list and other available media.
- For possible partners with ICT business in rural areas and regional population with potential benefits of the project:
  - Publication of press notes in national and regional newspapers including the main results of the project.

- Use of e-mailing list to disseminate the progress and results of the project to our contact lists including other Peruvian universities, Peruvian College of Engineers (multiple cities), and Regional Governments.
- Appearance in national and international ICT events.
- Collaboration in the preparation of papers and other scientific publications.

2.6.4 UCAU

University of Cauca takes hold a twofold role in the project with participating in both technological and user-centred activities. As a result, its dissemination strategy will include joint publications in high impact journals and international scientific events, as well as presentations in academic and commercial exhibitions and events targeting local authorities, communities and small telecom operators.

The academic community dissemination will be focused on the results on the business model (WP3) and the wireless transport networks (WP5). In this context, possible journals and events are listed in sections 4.1 and 4.2.

On the other hand, it is also very important to promote the project achievements among the operators and the institutions that have the possibility to take advantage of such results to deploy mobile voice and data services to the communities in remote rural areas. In this case, specific events such as ICTD and LATINCOM, as well as other media sources such as the web pages will be used.

2.6.5 FITEL

The FITEL will show the obtained results through its institutional web page (http://www.fitel.gob.pe).

Also, due to its responsibilities in Peru, FITEL participates in various events related to the implementation of telecommunications services in rural areas and preferential social interest, where it will disseminate the obtained results and project progress.

2.6.6 IPA

The strategy of IPA is to create a case study on the project and the use of IPA small cells in rural deployment once the deployment is under way and then using this as a basis for subsequent dissemination in forums or publications with a focus on small cell or rural wireless. A number of options are under consideration but these include

- Presenting the case study at events such as meetings of the Small Cell Forum or the Small Cells Special Interest Group of Cambridge Wireless, or other events that have a rural focus.
- Running a pre-conference workshop
- Awards submission

Publication is considered by writing an article on the benefits of Small Cells in Rural areas – connecting the unconnected and considering seeking its inclusion in publications such as:

- Wireless magazine – www.wireless-mag.com
- Telecom Review – www.telecomreview.com
- Global Telecoms Business – www.globaltelecomsbusiness.com
- The Mobile Network – www.the-mobile-network.com

The ip.access marketing department is also considering hosting a webinar on the business case & case study.

2.6.7 TdP

The development phase of the project will be communicated internally to the Company at its official channels of communication (Intranet, digital magazine "Somos", magazine "En Cartelera"); also in technological events (conferences, workshops) that TdP participates.

After the effective deployment and commissioning of 3G cells, TdP will communicate project outcomes externally in economic and technological media in order to explain the impact and promote the spread of such facilities in rural areas.

The internal and external communications will be under control of the Direction of Communication, Image and Corporate Responsibility of TdP.

2.6.8 EHAS

Together with an organization known as Fair World, EHAS has submitted a proposal to organize a lab in the EDD2013 (European Development Days), which is “Europe's premier forum on development cooperation committed to eradicating poverty and ensuring a sustainable development by engaging international organisations, business, political, academic and civil society leaders to shape a new development agenda.” [EDD13]. The proposed lab, whose title is “Science and Innovation for Development”, would raise awareness on how developmental challenges can be tackled through the contribution of research and innovation, focusing specially in ICT solutions. TUCAN3G project will be used as example in this lab.

EHAS will also promote TUCAN3G through its channels, where usually news and issues related to ICT and development are spread due to his professional experience with technologies in regions with few resources. Its webpage and social media will update the state of TUCAN3G study, targeting specially Latin America researches and development organizations that are closed professionally to EHAS. Besides, TUCAN3G banner is already placed on EHAS home page.

EHAS uses to participate in dissemination conferences at universities and development forums, where TUCAN3G initiative can be disseminated at national and international level as well.

2.6.9 TIWS

TIWS has a presence in many international conferences related with the satellite usage in telecommunications services all around the world (for example: COMSYS Global VSAT Conference in London and Expo Satellite in Washington D.C.), and sometimes it is invited as speaker to present its own activities. Also, TIWS gets important contacts among the other members (telecommunications operators, customers, manufacturers of satellite platform, vendors of equipment, etc.) in the satellite world in all these events. By being in contact with all the international players in the Satellite Business, TIWS plans to disseminate the results of the project in all these environments.

2.6.10 CREP

CREPIC will perform the following actions:

- Publications with a “colloquial” language, which will allow to get the target audience of the project in such a way that social appropriation of knowledge be generated.
- Publications in journals.
- The project’s lessons-learnt will allow to strengthen the courses about the management of technology that are given in undergraduate programs.

2.6.11 KINNO

KiNNO will pursue the dissemination of the results in the TUCAN3G project in national and international related magazines focused on topics of innovation and rural development. This will be done through periodic press releases on projects' progress.

It will also exploit the results of the project through periodic news in its web site (www.kinno.eu) and portals that it administrates.

Finally it will give related presentation on national and international events, such as the Beijing TII's 2013 annual conference 'Globalization of Technology Transfer' held on May 14, 2013, in which it made a presentation about technology transfer in developing countries.

3 STANDARDISATION PLAN

3.1 3GPP

New concepts about coverage enhancement, interference management, energy saving and self-organization proposed by the project are in the scope of working groups such as RAN1 (Radio layer 1), RAN3 (Iu, Iur, Iub, S1 and X2 interfaces and the overall UTRAN/E-UTRAN architecture) and SA1 (Services). The recent activities of these WG will be closely watched and relevant contributions will be checked. Additionally, the project will contribute with technical activities, especially from WP4.

3GPP produces Technical Specifications, to be transposed by relevant Standardization Bodies (Organizational Partners) into appropriate deliverables (e.g., standards). The six 3GPP Organizational Partners are ARIB from Japan, CESA from China, TTA (Korea), ATIS from USA, ETSI from Europe and TTC from Japan. Any enterprise or academic body should be a member of one of the above organisations to be allowed to contribute in 3GPP projects. In 3GPP, every participant has a one vote. Additionally, 4 Technical Specification Groups (TSG) in 3GPP are: Radio Access Networks (RAN), Service & Systems Aspects (SA), Core Network & Terminals (CT) and GSM EDGE Radio Access Networks (GERAN). Each of the four TSGs has a set of Working Groups, which meet regularly four to six times a year.

TUCAN3G's Working Group of interest is the RAN Working Group 3 (WG3), which is responsible for the Overall UTRAN/E-UTRAN architecture, and the specification of protocols for the Iu, Iur, Iub, S1 and X2 interfaces.

3.1.1 Strategy in HSPA

The standardisation scope is to provide contributions to 3GPP for enhancing the Iur interface, which would enhance self-organising capabilities. The contributions will be based on the UPC research, which aims to enhance the coexistence of rural-deployed femtocells based on HSPA technology. The plan is to attend to at least three 3GPP meetings depending on the budget.

3.1.2 Strategy in LTE

TUCAN3G will keep track of 3GPP LTE activities with RAN WG3, in particular, the Study Item on next generation Self-Optimizing Network (SON) for UTRAN and E-UTRAN, which will address SON for small cells in pre-release 12. The goal of this Study Item is:

- Identify any gaps between existing SON and further enhancements specifically for Small Cells
- Reduce network planning efforts for small cells

3.1.3 Schedule of meetings

The first target meeting is 11-15 November 2013. The timeline for future meetings is listed below:

Date	Meeting	Title	Location
11-15 Nov, 2013	R3-82	3GPPRAN3#82	San Francisco
10-14 Feb, 2014	R3-83	3GPPRAN3#83	Prague
31 Mar-4 Apr, 2014	R3-83b	3GPPRAN3#83-BIS	San Jose del Cabo
19-23 May, 2014	R3-84	3GPPRAN3#84	Seoul
18-22 Aug, 2014	R3-85	3GPPRAN3#85	Dresden
6-10 Oct, 2014	R3-85b	3GPPRAN3#85-BIS	
17-21 Nov, 2014	R3-86	3GPPRAN3#86	

Table 5. The timeline for future meetings of 3GPP

3.2 ITU

ITU (International Telecommunication Union) is the United Nations specialized agency for information and communication technologies – ICTs. ITU has three main areas of activity organized in **'Sectors'** (Radiocommunications (ITU-R), Standardization (ITU-T), and Development (ITU-D)). Sectors work through conferences and meetings splitting into "Study Groups". The most relevant study group to TUCAN3G is ITU-D Study Group 2 that covers many aspects of rural communications.

There are several ITU Study Groups whose activities are of the interest of the project and will be followed. Project results could make contributions to Questions (the scope of the work) of ITU-T SG13 (future networks), but mostly to those of ITU-D SG2, which deals with technologies for rural communications and developing countries, such as Question 10-3/2 or Question 25/2.

3.2.1 Strategy in ITU-D SG2

Within ITU-D study group, the following questions have been found relevant as they are well aligned with the activities of TUCAN3G:

- Q10-3/2: Telecommunications/ICT for rural and remote areas
- Q14-3/2: Information and telecommunications/ICTs for e-Health
- Q25/2: Access technology for broadband telecommunications including IMT, for developing countries contribution plans

ITU-D Study Group 2 holds a yearly meeting in September. UPC has been invited by the Spanish Ministerio de Industria, Energía y Turismo to join to the Spanish delegation. The plan for this year is:

- Getting acquainted with other international delegates and key actors,
- Explore areas where TUCAN3G experience can be presented,
- Obtain key information through a contribution that will be prepared for the ITU-D meeting in September 2014

3.2.2 Schedule of meetings

- Fourth Meeting of ITU-D Study Group 2, 16-20 September 2013, Geneva
- Fifth Meeting of ITU-D Study Group 2, September 2014, Geneva

3.3 ETSI-BRAN

Based on its achievements on the access network (WP4) and transport network (WP5), the project is tentatively considering also making contributions to the ETSI BRAN Project, by opening a Work Item and participating in a technical report.

ETSI (European Telecommunications Standardisation Institute) produces and performs the maintenance of the technical standards and other deliverables which are required by its members. Most of this work is carried out with committees and working groups composed with technical experts from the Institute's member companies and organizations. These committees are often referred as 'Technical Bodies' (TB), and typically meet between two to six times a year. ETSI recognizes three different types of Technical Body (TB):

- Technical Committee (TC)
- ETSI Project (EP)
- ETSI Partnership Project (EPP)

In response to growing market demand for low-cost, high capacity radio links, ETSI established a standardization project for Broadband Radio Access Networks (BRAN) in the spring of 1997, which was turned into an ETSI Technical Committee later on.

3.3.1 Strategy and contribution plans

Only if the contribution to 3GPP is not possible, ETSI-BRAN contribution is set as a back-up plan to open a work item (4 endorsing members needed) and contribute to a technical report as a main goal.

3.3.2 Schedule of meetings

Next meetings are listed below:

Date	Meeting	Location
01-02 Oct 2013	M493#19	Torino IT
07-08 Oct 2013	BRAN#76	Sophia Antipolis FR
12-14 Nov 2013	BRAN#77	Las Palmas de Gran Canaria tbc ES
20-23 Jan 2014	BRAN#78	Sophia Antipolis FR

Table 6. Scheduled meetings of ETSI-BRAN

3.4 IEEE 802.11

One of the key technologies considered in TUCAN3G for backhaul of the femtocell network is WiLD (WiFi over Long Distances or WiFi-based Long Distance), which is the adaptation of IEEE 802.11 to long distances. This is an interesting approach with respect to its low operational costs, but current constraints as the limited QoS support have to be first overcome.

The project has to keep close track of the activities of the IEEE Working Group for WLAN Standards in order to have a permanent monitoring of their plans and progress of the standards. Thus, the project goals can be timely adjusted if required. Furthermore, there is also a possibility of making contributions to the standards based on WP5 results on adapting WiLD for the transport network. Therefore, the knowledge of topics and timelines of WG meetings allows evaluating the relevance of possible contributions.

3.5 Contribution plans

The table below presents the actual capability of partners to monitor, contribute and support the contribution in standardisation. The definition of monitor, contribute and support are given as below:

- **Monitor**: A partner monitoring a standard is able to report to the project progress status of the standard, open topics which can accept contributions, calendar for contributions and all information (administrative, context, trend etc.) that could help writing the contribution. Although not mandatory, it is helpful to attend regularly to the meeting.
- **Contribute**: A partner contributing to a standard produces the technical content that could fit into a standard contribution. This material should be aligned with the information obtained through monitoring (e.g. open calls, context, study items, etc.).
- **Support**: A partner supporting a contribution presents the contribution during the standard meeting on behalf of the Contributors. The support partner should thus regularly attend the meetings and be in good relations with other attendees.

		UPC	UCAU
3GPP	Monitor	Y	N
	Contribute	Y	N
	Support	N	N
ITU	Monitor	Y	N
	Contribute	Y	N
	Support	Y	N
IEEE	Monitor	N	Y
ETSI-BRAN	Monitor	TBD	N
	Contribute	TBD	N
	Support	TBD	N

Table 7. Summary of partners' capability to monitor and contribute to standards

4 RELEVANT EVENTS AND JOURNALS

4.1 Related events

Name	URL
IEEE International Conference on Communications, ICC	http://www.ieee-icc.org/
IEEE Globecom	http://www.ieee-globecom.org/
IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP	http://www.icassp2013.com/
IEEE Workshop on Signal Processing Advances in Wireless Communications, SPAWC	http://www.spawc2013.org
IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC	http://www.ieee-pimrc.org/
EURASIP European Signal Processing Conference, EUSIPCO	http://www.eusipco2013.org/
Future Networks and Mobile Summit	http://www.futurenetworksummit.eu
European Development Days	http://eudevdays.eu/
European Wireless Conference, EW	http://www.ew2013.org/
COMSYS Global VSAT Conference	http://vsatevent.com/
SATELLITE 2014 Exhibition	http://www.satellite2014.com/
ACM Annual Symposium on Computing for Development (DEV)	http://dev2.acmdev.org/
IADIS International Conference e-Society	http://www.esociety-conf.org/
IFIP World Computer Conference (WCC)	http://www.wcc-2012.org/
IFIP World Information Technology Forum, WITFOR	http://www.witfor.org/
ITU World Summit on the Information Society, WSIS	http://www.itu.int/wsis/
ACM Workshop on Networked Systems for Developing Regions, NSDR	https://www.usenix.org/conference/nsdr12
IEEE Latin-American Conference on Communications, LATINCOM	http://www.ieee-latincom.org/
International Conference on Information and Communication Technologies and Development, ICTD	http://www.ictd2013.info/
International Conference on Advances in ICT for Emerging Regions (ICTer)	http://www.icter.org/conference/
Extreme Conference on Communication (ExtremeCom)	http://www.extremecom.org
Annual International Conference on Innovation and Entrepreneurship (IE)	http://www.innov-entrepreneur.org/
Technology Innovation International Conferences, TII	http://www.tii.org/
European Development Days	http://eudevdays.eu/
Greek Innovation Expo	http://greekinnovationexpo.gr/
Congreso Internacional de TIC, ANDICOM (International ICT Congress)	http://andicom.org.co/
ALTEC Congreso Latino-Iberoamericano de Gestión Tecnológica (Latin Ibero-American Conference on Management of Technology)	http://www.altec2013.org/
Congreso Internacional de Gestión Tecnológica e Innovación, COGESTEC (International Conference on Technology Management and Innovation)	http://www.cogestec.info/

Table 8. Related events

4.2 Related journals

Name	URL
IEEE Trans on Signal Processing	http://www.signalprocessingsociety.org/publications/periodicals/tsp/
IEEE Trans on Wireless Communications	http://www.comsoc.org/twc
IEEE Trans on Communications	http://www.comsoc.org/TC
IEEE Trans on Mobile Computing	http://www.computer.org/portal/web/tmc
IEEE Trans on Vehicular Technologies	http://winet.ece.ufl.edu/tvt/
IEEE Wireless Communications	http://www.comsoc.org/wirelessmag
IEEE Technology and Society Magazine	http://www.ieeessit.org/technology_and_society/
Elsevier Computer Networks, COMNET	http://www.journals.elsevier.com/computer-networks/
Elsevier Technology in Society	http://www.journals.elsevier.com/technology-in-society/
EURASIP Journal on Wireless Communications and Networking	http://jwcn.eurasipjournals.com/
International Journal of Mobile Communications	http://www.inderscience.com/jhome.php?jcode=ijmc
International Journal of Innovation and Sustainable Development	http://www.inderscience.com/jhome.php?jcode=ijisd
International Journal of Innovation and Regional Development	http://www.inderscience.com/jhome.php?jcode=ijird
Innovation and Development	http://www.tandfonline.com/toc/riad20/current
Knowledge Management for Development Journal (KM4D Journal)	http://journal.km4dev.org/index.php/km4dj
Ide@s CONCYTEG	http://www.concyteg.gob.mx/index.php?web=ideas.php
Enl@ce: Revista Venezolana de Información, Tecnología y Conocimiento (Venezuelan Journal of Information, Technology and Knowledge)	http://rvitc.blogspot.com/
Wireless Magazine	http://www.wireless-mag.com
Telecom Review	http://www.telecomreview.com
Global Telecoms Business	http://www.globaltelecomsbusiness.com
The Mobile Network	http://www.the-mobile-network.com

Table 9. Related journals

5 ACTUAL DISSEMINATION ACTIVITIES

All published papers are available at the TUCAN3G website (www.ict-tucan3g.eu). These tables are to be filled for D71, D72 and D73.

5.1 Journal papers

References	Related to activity
[1]	

Table 10: Publications in journals

5.2 Conference papers

Reference	Related to activity
[1]	

Table 11: Publications in conferences

5.3 Book chapters

Reference	Related to activity
[1]	

Table 12: Publication in books

5.4 Filed patents

References	Related to activity

Table 13: Filed patents

5.5 Presentations

Reference	Related to activity
[1]	

Table 14: Presentations

5.6 Publications in the media

Event		Publication title / Programme	Dates		Topic Addressed	Relation to WP
Type[1]	Media name		Submission	Acceptance		

[1] Newspaper, magazine, conference, radio, TV

Event		Publication title / Programme	Dates		Topic Addressed	Relation to WP
Type[1]	Media name		Submission	Acceptance		

Table 15: Publications in the media

5.7 Contributions to standardization bodies

Reference	Title and date	Standardisation meeting
[1]		

Table 16: Standards contributions