

# Wireless City Project

Derry City Council  
Good Practice Transfer Document





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# 1 Executive Summary

## 1.1 Project Summary

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### **BRIEF DESCRIPTION OF WIRELESS CITY PROJECT**

The Wireless City project represents a consortium of partners including the University of Ulster (UU) Magee, North West Regional College (NWRC), Derry City Council (DCC) and ERNACT. It was a major initiative (the first of its kind in the UK and Ireland) aimed at stimulating the creation of a market for broadband services within the learning, government and visitor/tourism sectors in the Derry City Council area. The project was based upon the exploitation of the rapidly maturing wireless/mobile networking sector and end-user access device technologies and designed around the affordable unlicensed Wi-Fi networking standard. The project has three distinct elements – Wireless Council, Wireless Campus and Wireless Walls.

### **PROJECT COSTS**

The cost across the three project elements was £1.62M between 2003-5. These costs were broken down as follows

Wireless Council - £174,353  
Wireless Campus - £1,347,800  
Wireless Walls - £110,183

### **MAIN OBJECTIVES OF THE WIRELESS CITY PROJECT**

- Transformation of Derry into a high profile wireless centre of excellence
- Enhance the technological knowledge base of local business (Wireless Campus)
- Increased tourist activity and economic benefit through a publicly owned wireless network around the historic city core (Wireless Walls)
- Divert Council staff resource from admin duties to higher value activity to enhance effectiveness and value for money (Wireless Council)
- To increase the skills base in wireless technology and enhance learning through wireless technology (Wireless Campus)

### **OUTPUTS OF THE WIRELESS CITY PROJECT:**

1. **Infrastructure:** Council owned wireless mesh installed giving 100% coverage of the historic City Walls. Mesh extended into café venues and Central Library.
2. **Education:** Creation of enhanced wireless campus in both the UU and NWRC. Over 200 Tablet PCs have been issued to staff and students facilitating the investigation and implementation of new teaching and learning methodologies
3. **Civic:** Increasingly more council business is carried out electronically and frontline staff are using Wi-Fi devices to access councils back office functions. This has provided environmental efficiencies (through paperless meetings) and cost savings in terms of staff time.

4. **Business:** the establishment of a Wireless Technology Demonstration Centre at UU to boost uptake of new wireless and location-based services among the city's business community.
5. **Community Access:** Community access to broadband services has been improved (re. Internet Cafes and Student Tablet PC distribution)
6. **Visitor/Tourism Services:** Production of digitised cultural and heritage content and virtual tour for use by visitors, citizens and schools.

## 2 Good Practice Guide

### 2.1 Introduction

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The aim of this guide is to provide other local and regional authorities with much of the knowledge required to transfer Derry's Wireless City good practice to their own local contexts. This is not intended as a blueprint for replicating the project elsewhere, yet it will provide an insight into the context for the project in Derry. Some of the lessons learnt in delivery will be more applicable in some areas than others but it is intended to comment on the delivery of best practice in a holistic, detailed way, covering social, administrative, economic and technical aspects of the project. It will then provide the basis for the good practice transfer workshop where specific aspects of the project can be probed further by the receiving authorities.

### 2.2 Existing Transferring Authority Context

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#### *2.2.1 Background information about the transferring Authority*

Derry City Council was established under the Local Government Act (NI) 1972. It is a corporate body consisting of 30 Councilors. The Chief Executive heads the Council's workforce of approximately 550 staff to ensure the Council's functions are efficiently managed and executed. The mission of Derry City Council is: "Improving the quality of life in our district and region"

#### **THE COUNCIL HAS FOUR PRIMARY ROLES:**

- Local service provision including Economic Development, Environmental Health, Waste Management, Building Control, Festivals, Culture, Sport, Recreation and Leisure, City Marketing and City Treasurers etc
- Development Role – initiator and facilitator of social, economic and environmental initiatives
- Representative Role – Elected members represent the council on community and civic issues
- Consultative Role – members represent the electorate on Central Government responsibilities such as planning, roads, housing and water

**THE COUNCIL HAS 7 DEPARTMENTS:**

- Town Clerk & Chief Executives
- Development Department
- Building Control
- City Treasurers
- City Secretary & Solicitors
- City Engineers Department
- Environmental Health

***2.2.2 Context specifically related to the Good Practice and its development*****NORTHERN IRELAND**

In 2003 the Northern Ireland Programme for Government committed public authorities to “working with the private sector, to develop and begin to implement a strategy that will ensure that all of Northern Ireland has a world class telecommunications infrastructure in terms of broadband capacity, access and cost”. To advance that agenda the Department of Enterprise, Trade and Investment (DETI) implemented a range of complementary initiatives designed to progressively develop telecommunications infrastructure, stimulate demand for broadband, and develop broadband applications (to both support the knowledge based and driven economy) and to promote digital inclusion.

These initiatives included a major tender for broadband services across Northern Ireland; technology and company neutral pilot projects under the UK Broadband Fund; flagship projects addressing broadband applications, content and services; a public sector aggregation exercise and, via Invest Northern Ireland, a programme of demand side initiatives. This comprehensive package of measures complemented both the ‘e’ Europe Action Plan and the UK Broadband Strategy.

**VISION FOR BROADBAND IN NORTHERN IRELAND (NI)**

DETI launched a new vision for telecommunications in NI entitled “Broadband Northern Ireland – Fully Connected”. This vision, (which can be viewed at [www.detini.gov.uk/cgi-bin/downutildoc?id=201](http://www.detini.gov.uk/cgi-bin/downutildoc?id=201) ) was to have a fully connected NI with equitable access to cost effective broadband services for all. It also set challenging targets for NI:

- To be the leading broadband region in the UK;
- To be the first region in the UK to have 100% coverage of broadband services;
- 100% broadband access with a minimum of 512k for all households and businesses by end of 2005;
- 12% of households and 20% of business take-up of broadband by end of 2005; and
- 100% broadband at 2Mbps at cost competitive prices by end of 2006.

### **FLAGSHIP BROADBAND APPLICATIONS, CONTENT AND SERVICES CALL**

This call, with up to £2 million available, sought innovative broadband projects addressing applications, content or services that will directly impact on the effectiveness of the Northern Ireland economy. Of the 19 submissions received by Telecommunications Policy Unit, 3 submissions were selected to go to the Request for Proposals stage. Subsequently, in late 2003 an announcement of funding to the Wireless City proposal from Derry City Council addressing e-government, e-business and e-tourism applications over wireless technology was announced.

### ***2.2.3 Rationale for the Good Practice***

#### **THE RATIONALE FOR THE PROJECT IS SET OUT BELOW:**

- At the time of the project figures from the National Statistics office indicated that fewer UK households had Internet access than any other country in Europe. Worse still, in terms of broadband access, the UK lagged significantly behind other EU countries with the situation in Northern Ireland being worse again.
- There was reluctance and a slow pace of network implementation by existing service providers and telecommunications companies to deploy and implement broadband and wireless services. An investigation of a number of projects worldwide attempting to alleviate this problem was undertaken. From this a number of projects and schemes for improving broadband/wireless Internet services were identified (see [www.roamad.com](http://www.roamad.com) and [www.citylink.co.nz](http://www.citylink.co.nz)) both schemes were relevant to the Wireless City project as they covered areas similar in scale to Derry with populations of the same magnitude.
- Many small technology companies in the North West suffered from restricted access to technical support services such as those offered by the engineering and computing departments in a university. The provision of a Wireless Technology and Demonstration Centre, which would enable easier access to research and development facilities and assist technology transfer would have many beneficial effects in assisting the profitability of such small companies, and thus contribute to the maintenance of employment in areas traditionally disadvantaged by extensive unemployment.
- A major aspect of the Wireless City initiative sought to ensure that all elements of society benefit from access to broadband Internet and computing resources, particularly in the case of low income families with children of school or university age. Over the years a number of initiatives of this nature have been implemented both on a local, national and international level. These included the Wired up Communities (UK) initiative, Computers In Homes (New Zealand), Computers for Homebound and Isolated Persons (CHIPS) (Knoxville USA), Reach For The Clouds, (Melbourne, Australia), Hope VI (Baltimore, USA) and the Information Age Town in Ennis in the Republic of Ireland. The Wireless City project sought to address this issue by facilitating free Internet access in the historic city core and café venues and access to a high specification network and computing resources in UU and NWRC.

## 2.3 Good Practice

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### 2.3.1 Case Study

In late 2003 Derry was designated by DETI as Northern Ireland's Flagship Project for the demonstration of wireless broadband technology. Derry City Council (DCC), the University of Ulster (UU) and North West Regional College (NWRC) have worked in partnership to deliver initiatives to create a wireless-enabled working environment in the City for students, lecturers, tourists, city councillors and local government officers.

#### **THERE ARE THREE DISTINCT STRANDS TO THE PROJECT:**

##### **WIRELESS CAMPUS**

The UU and NWRC aspect of Wireless City Project focused on the creation of an educational precinct in the Strand Road area of the City, which is serviced by a wireless network covering large areas of both campuses. This initiative also served to improve the teaching environment of a number of lecture halls, which were equipped as SMART classrooms including wireless connectivity, interactive white boards, and a range of multimedia audio and video systems.

Another aspect of this element of this project has seen the creation of a Wireless Technology and Demonstration Centre (WTDC) in UU. The Wireless Technology and Demonstration Centre exists to provide independent consultancy to businesses on wireless broadband applications and content. The centre has a number of objectives, which include:

- Facilitating the research, development, prototyping and manufacture of cutting edge innovative wireless hardware/ software solutions for integration into existing or new products for businesses
- Developing of novel, innovative and localised applications/ content for delivery over the extensive wireless infrastructure provided by the project. This includes innovative e-learning and e-University applications to accelerate the utilisation of the Tablet PCs provided by the project.
- Developing innovative embedded wireless sensor technology solutions to a range of emerging applications and problems.

The WTDC also develops innovative demonstrations of applications which use wireless technologies, with a specific focus on the following application areas within the medical, industrial, commercial and educational domains: wireless sensory networks, supply chain management, location based services, positioning systems and gaming. These demonstrations utilise technologies such as RFid, Zigbee, Bluetooth, WiFi and GPS.

The primary functions of the WTDC have included: Consultancy on wireless technologies Development of innovative wireless applications Demonstrations of applications to interested parties on request Seminars and half-day workshops on various technologies Ongoing technology watch, training and advice services

The demos which are currently available in the WTDC include: Consumer RFid & NFC, Wireless Campus e-Tour, Smartphone location based services, Bluetooth location based services, Wireless Health & Fitness, Wireless Security & Surveillance, Bluetrack -Bluetooth tracking, Long range RFid tracking, Remote sensor monitoring using Zigbee, RFid & Zigbee internal location based services, RFid supply chain management, Ember Zigbee demo, Patient id using RFid, and Cold chain management with RFid.

### **WIRELESS COUNCIL**

The Wireless Council strand of the project has built on and developed existing e-government services from both the Council Offices on the Strand Road and the Council Chamber in Guildhall Street. In practical terms this has involved the provision of wireless infrastructure on both sites. As the Council offices are located adjacent to both the UU and NWRC campuses this, in effect, provides a seamless wireless network between the civic quarter on the riverside and the city's 'knowledge corridor' extending from the riverside towards the border.

DCC has provided all senior management and elected members with laptop computers enabling council business to be carried out electronically. The objective here is to allow enhanced, more flexible access to computing resources and the Internet in designated areas. As a result more council business being carried out electronically there has been environmental improvements (in terms of paper wastage) and cost savings in terms of staff time.

As part of this element of the project DCC piloted an Electronic Records and Document Management Systems (ERDMS) in the City Secretary and Solicitors Department (TRIM Software). Management Team, Council and Committee minutes are now available for access over wireless connections.

Under the Wireless Council element of the project equipment including Blackberry-type devices, Pocket PCs and Wireless enabled video cameras have been purchased for demonstration, training and testing purposes.

### WIRELESS WALLS

This strand of the Wireless City project has implemented a wireless/mobile network based upon a Wi-Fi networking standard in the historic walled area of Derry. The walled city is approximately one mile in circumference.

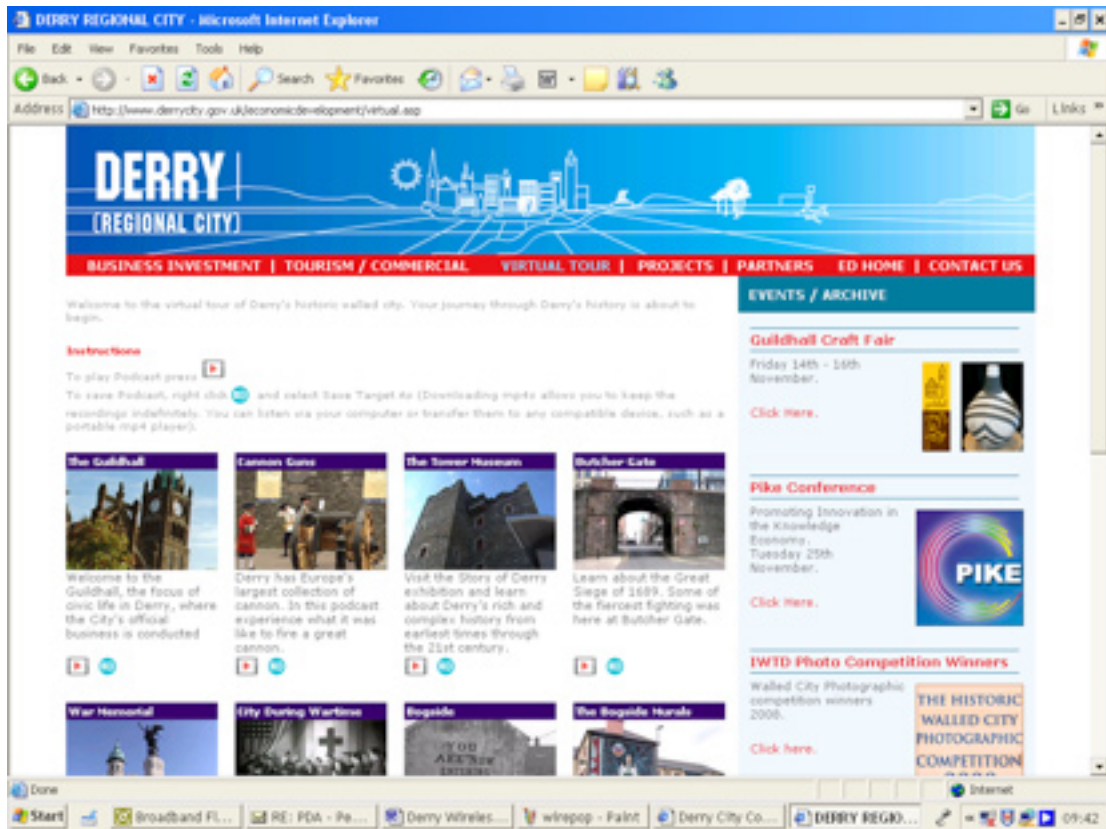
### OUTPUTS OF THIS ELEMENT OF THE PROJECT INCLUDE:

- A wireless mesh has been installed providing 100% coverage of the Historic City Walls. The Mesh has recently been extended to cover Shipquay Street, Waterloo Place, Bogside and Foyle Street. The wireless network has also been extended into café venues and the Central Library (Foyle Street)



(Figure1 - Map illustrating area of coverage of Wireless City mesh)

- Multi-media cultural and heritage content developed in partnership with the Nerve Centre and Council's Heritage and Museum Service. The content produced is location sensitive and is delivered through six zones and twenty-six discreet pieces of content. The content has also been converted into podcasts that are available to download at [www.derrycity.gov.uk/economicdevelopment](http://www.derrycity.gov.uk/economicdevelopment).



(Figure 2 – Screen print of podcasts on ED website)

- Thirteen 'node' PDA devices are now available for hire from Derry Visitor and Convention Bureau. The "Wireless City Digital Tour" is a state of the art multimedia guide that provides a location aware interactive experience for visitors. You simply hire the device at the Tourist Information Centre, Foyle Street and enjoy an audio/ visual trail around the historic Walled City at your leisure. The trail lasts approx 1 hour and 30 minutes, however, as it is a digital tour you can start and finish when you like and even stop off for a coffee.



(Figure 3 – Wireless City Digital Tour)

## **2.3.2 Scope (original -> expanded)**

### **2.3.2.1 Requirements/Business Need(s)**

#### **TOURISTS/ VISITORS – WIRELESS WALLS**

Tourism is a thriving industry in the North of Ireland and extremely important to Derry City. It is the strength of the tourist industry that made visitors to Derry a key market segment for this project. Derry is an attractive holiday and short break destination for many travellers in that there is a wide range of attractions in a relatively small geographical area. Most are linked to the historic city core and its heritage or the rich vein of cultural tradition that is found in the North West. The majority of visitors to Derry are facilitated by Derry Visitor and Convention Bureau (DVCB) who recognised that the technological proposals of the Wireless City project could address needs of both business and recreational visitors in a number of ways including:

- Increased relevant information available on demand
- Access to online services and mobile information
- Cater more effectively for independent travellers – re. Digital Tour
- Capture customer information for more effective service delivery

#### **CITIZENS- WIRELESS WALLS**

This project is specifically targeted at social inclusion and the acceleration and enhancement of social and community adoption of emerging information technologies. The wireless walls strand of the project aims to close the gap between those citizens with access to computing and Internet resources and those without. This was facilitated by the creation of free Internet access within the historic city core.

#### **STUDENTS- WIRELESS CAMPUS**

Students are increasingly expecting and demanding a more fulfilling, interactive and engaging learning environment. The usage levels of the proposed new technology on both UU and NWRC campuses was limited by the current penetration of laptops amongst the student population (at the time of project submission for funding in 2003 this was estimated to be approx 10%). The Tablet PC mandate of the project sought specifically to address this issue.

#### **DERRY SMALL TO MEDIUM ENTERPRISES (SMES)- WIRELESS CAMPUS**

It is vital for local SMEs to keep apace with the ever-changing modern pressures and demands being placed on them. With the build up of competition in every aspect of business and the resultant squeezing of margins there are certain requirements for small businesses to be able to grow. The ability to adopt the Internet and automated services is going to play a huge role in this and will be vital for success for many Derry SMEs. The benefits of broadband Internet access for business are the ability to access much larger, even global markets and it enables cost cutting and efficiency improvements through e-commerce and data management. With this in mind it was anticipated that demand for the services of the Wireless Technology and Demonstration Centre would be adopted quickly by the Derry SME population.

### 2.3.2.2 Stakeholders/who benefits?

Beneficiaries	Contribution to Project Outputs
Citizens and mobile workers (walls element)	Availability of time-limited free internet access through the wireless mesh
Tourist/visitors (Walls element)	Availability of heritage/cultural virtual tour of the historic city centre and access through the mesh to internet access.
Council officers and elected members (Council element)	Access to the council IT system through the wireless mesh.
Cafes and restaurants located in the city centre (Walls element)	Installation of boosters in cafes and restaurants (seven) and in central library. This allows customers to access the wireless walls network from these locations.
Schools (Walls and campus elements)	The content developed by the Nerve Centre on behalf of Council is of use for local schools specifically in relation to the GCSE history curriculum.
Council Officers and Elected Members (Council element)	Access to the Council IT Systems via the wireless network and the ability to hotdesk in a number of locations.
Conference Delegates/ Supplier Presentations (Council element)	Ability to access the Internet in a number of locations using guest logon facilities, which have been pre-configured for limited time, bound access.

<p>University / NWRC Staff and Students (Campus Element)</p>	<p>Staff and students of the University and NWRC have benefited from the availability of extensive wireless access on campus, the opportunity to study and learn in an enhanced learning environment that incorporates extensive smart classrooms and the provision of wireless enabled Tablet PCs for flexible, mobile learning and networking.</p> <p>It has encouraged students to work outside of scheduled classroom sessions and removed the traditional restriction of classes in wired PC labs.</p> <p>It has encouraged students to work outside of scheduled classroom sessions and removed the traditional restriction of classes in wired PC labs.</p> <p>Increased the use of technology for non-learning activities</p> <p>Allowed better access to course material</p> <p>Increased the communication and interaction between students and lecturing staff.</p> <p>Increased the perceived possibility of students achieving course requirements.</p> <p>Enabled the use of more innovative teaching and learning materials.</p>
<p>Industry and Commerce (Campus element)</p>	<p>Industry and Commerce has benefited from the expertise provided by the Wireless Technology and Demonstration Centre, the provision of advice, seminars and knowledge club activities in a range of topics related to wireless technologies.</p>

### 2.3.3 Costs & Breakdown

The level of expenditure over the two-year period is summarised in the following tables. Further, more detailed breakdown of budgets is provided in the appendices;

#### WIRELESS WALLS AND WIRELESS COUNCIL ELEMENT

Budget	Spend	Variance	Other sources of funding including Council
£110,210 (Wireless Walls)	£110,183 (Wireless Walls)		£15,000 DCC Corporate IT Services
£174,353 (Wireless Council)	£174,355 (Wireless Council)		£13,500 ERNACT re. Podcasts

#### WIRELESS CAMPUS ELEMENT: UNIVERSITY OF ULSTER

Budget	Spend	Variance	Other sources of funding including University
£1,095,800	£1,131,800	£36,000	<p>The University contributed substantial extra permanent staff time over and above the amount originally anticipated so as to complete the project successfully.</p> <p>In addition £21,056 was donated to the project by the Faculty of Engineering for capital purchases.</p>

#### WIRELESS CAMPUS: NWRC

Budget	Spend	Variance	Other sources of funding including Council
£216,000	£216,011		<p>The college contributed a substantial amount of additional time to the project from lecturing staff and technical support. It funded the Wireless Support Officer for an additional six months beyond the allocated budget afforded by the project. Additional wireless access points were procured by the college to expand the area covered by the network.</p>

### **2.3.4 Critical success factors**

- Achieving Broadband Flagship Status (succeeding in a lengthy competitive application process)
- Organisational commitment from senior management and elected representatives and teaching staff
- Staff/ student commitment to adoption of new teaching and learning methodologies
- Staff commitment from City Secretary and Solicitors department re. adoption of EDRMS
- Co-operation of building owners and City Centre Initiative re. access to buildings and power source for nodes
- Planning approval for locating wireless nodes on buildings and CCTV camera poles
- Access to power points re. students charging laptops
- Emergency maintenance of nodes in instances of damage re. vandalism
- Availability of software to prevent access to undesirable websites (re. child protection issues)
- Secure authentication to DCC network
- Development of a method for secure authentication to the UU and NWRC network from the Tablet PCs (in essence this means that users can log-on to the UU and NWRC network wirelessly and receive the same level and style of access that previously required the use of a fixed laboratory-based machine)

### **2.3.5 Steps to Implementation**

This section outlines, using stepwise refinement, how the transferring authority achieved the Good Practice implementation.

#### **2.3.5.1 Planning**

Each of the partners was responsible for their own element of the budget i.e. DCC managed the budget for the Wireless Council and Wireless Walls element of the project while the UU and NWRC managed the Wireless Campus element of the initiative. Although the project was made up of three elements an integrated approach was taken by the partners to ensure that the initiative was delivered in a cohesive manner.

To achieve this, monthly Steering Group meetings were facilitated by Derry City Council and attended by all the partners: DCC, UU, NWRC, ERNACT and DETI Telecommunications Branch (as funding body). Updates in relation to financial and operational progress, were provided by each of the partners. Financial management and control in respect of procurement, tendering and quoting was agreed with DETI at the outset of the project and advice and direction was received from DETI on an ongoing basis

#### **2.3.5.2 Development**

A number of third party agents were involved in the delivery of this project, involving a procurement and management of a number of suppliers. All partners needed to Communicate and collaborate on tender documents to ensure systems and equipment were compatible. It

is advised to ensure your partnership's management board sign off on tender documentation to avoid problems. Details of the main suppliers are below and terms of reference documents can be made available to interested parties.

- **Evolution Systems** were contracted to provide, install and test the wireless mesh in the historic city walls (Evolution Systems Ltd., Finance House, 92-94 Nantwich House, Crewe, Cheshire. CW2 6AT)
- **The Nerve Centre** was contracted to deliver the multi-media content for the virtual tour (The Nerve Centre, 7-8 Magazine Street, Derry. BT48 6HJ)
- **Telindus** were contracted to supply, install and test the Wireless Council & Campus networks (Telindus Limited Hatchwood Place, Farnham Road, Odiham, Hampshire, RG29 1AB)
- **O2** were contracted to provide install and configure the Blackberries to Northern Ireland Civil Service security standards (O2, 260 Bath Road, Slough, Berkshire, SI1 4DX)
- **Tower Software** were contracted to provide the EDRMS (TRIM software) with BT acting as their agent to install and configure the software and transfer the existing data onto the system (TOWER Software Ltd, Regus House, 33 Clarendon Dock, Laganside, Belfast, BT1 3BG)
- **Intertech Ireland** were contracted to carry out the Citrix Presentation Server 4 upgrade and supply and configure the Citrix Secure Access Gateway to provide secure external VPN connections. Intertech have since then been involved in a merger and are now part of Maxima Ireland (Maxima Ireland, Stradbrook House, Stradbrook Road, Blackrock, Co. Dublin)

### **2.3.5.3 Deployment**

The project management structure for this project included:

**Project Board:** project board members (representatives from each of the partner organisations) who had the specific remit to assist in decision-making and on-going progress of the project.

**Senior Project Officer (SPO)** – The SPO took executive responsibility for decisions relating to the project and for providing approvals and decisions affecting project progress and delivery throughout the project. Specific responsibilities included:

- Providing overall strategic guidance for the project
- Signing off the Project Brief and Project Initiation Document, agreeing all major plans and authorising any major deviations from the agreed stage plans
- Signing off the completion of each stage, including the deliverables, and giving approval to start the subsequent stage
- Communicating information about the project to the organisation(s) and stakeholder groups as necessary
- Ensuring that the required resources are available

- Conflict resolution
- Ensuring that a post implementation review (or post project review) takes place.

**Project Manager (PM):** The PM was responsible for leading, managing and coordinating the project and project team on a day-to-day basis. Specific responsibilities included:

- Ensuring an appropriate project management framework was in place, including the preparation of the project brief and business case
- Securing resources and expertise as required (e.g. appointing professional advisers to support the project)
- Determining and managing risks to the project and managing the project budget
- Acting as sole point of contact ensuring s/he receives departmental decisions on time and assisting him/her in the resolution of problems
- Establishing a common approach to risks and issues
- Defining criteria for management and control of the project, including the establishment on formal reporting arrangements on project progress
- Receiving and reviewing detailed reports on the project

#### **2.3.5.4 Acceptance**

- A project website was established in April 2005
- The Wireless City project was formally launched in June 2005
- 1,000 promotional DVDs were produced and disseminated to key stakeholders and European partners
- Presentations on the project have been made to the BRISE (Boosting Regional Information Society Expertise) consortium – San Sebastian[ESP], Bologna [ITA], Treviso [ITA], Olomouc [CZE], Wirral [UK], Kainnu [FIN], Donegal [IRE]
- Presentation on the project made to the Wireless Cities Consortium – Stuttgart [GER], San Sebastian [ESP], ERNACT [IRE], Oulu [FIN], Emile Romanga [ITA] and Dabrowca Gornicza [POL]
- Project featured in the Irish Times ‘Derry’ supplement
- Project featured in the Business First Magazine
- The Wireless Campus element of the project has been specifically disseminated via a number of conference and journal publications and workshops, including:

A.J. Solon, M.J. Callaghan, J. Harkin and T.M. McGinnity (2006) Case Study on the Bluetooth Vulnerabilities in Mobile Devices, International Journal of Computer Science and Network Security (IJCSNS), Vol.6, No.4, (ISSN : 1738-7906), April, 125-129. [www.IJCSNS.org](http://www.IJCSNS.org)

M.J. Callaghan, P. Gormley, M. McBride, J. Harkin and T.M. McGinnity (2006) Internal Location Based Services using Wireless Sensor Networks and RFID Technology, International Journal of Computer Science and Network Security (IJCSNS), Vol.6, No.4, (ISSN : 1738-7906), April. [www.IJCSNS.org](http://www.IJCSNS.org)

P. Gormley, J. Harkin, M.J. Callaghan, T.M. McGinnity & A.J. Solon (2006) Integrating ZigBee and RFID Technology to Facilitate Internal Location-Based Services, in proceedings of the Information Technology and Telecommunications (IT&T) conference, Carlow IT, Ireland, October, 2003-2004.

Lorraine Fisher, Callaghan MJ, Harkin J, McGinnity TM, (Jul 2007) Using situated learning theory to explore Tablet Pc use in academic work: perceptions of staff and students , Proceedings of IADIS International Conference Mobile Learning , Lisbon, Portugal, 3 - 8 July 2007

Callaghan MJ, Harkin J, McGinnity TM, Woods DN, (Nov 2006) Evaluation of Technology Supported Pedagogy, Proceedings of APRU Distance Learning and the Internet 2006 Conference, Yayoi Auditorium, University of Tokyo, Japan , November 8-10, 2006

Harkin J, Woods DN, Callaghan MJ, McGinnity TM, (Sep 2006) Using Pervasive Technologies to Enhance Student Learning Experiences, Proceedings of Challenge & Change in the HE Learning Environment: Process & Practice, University of Ulster, Magee, Northern Ireland , 4 September - 6 September, 2006

- The Wireless Technology and Demonstration Centre has been marketed extensively. The WTDC website ([www.wtrc.infm.ulst.ac.uk/](http://www.wtrc.infm.ulst.ac.uk/)), which has been online since the beginning of 2006, holds extensive information and details on the demo centre including: available demos and associated posters, information on wireless workshops and seminars, up to date technology watch and links, publications related to the available demos, group member details, and WTDC contact information. Over 20 companies have been assisted to date.

### ***2.3.5.5 Recognition***

The initiative has been nominated for and won a number of prestigious national awards including the Goldeneye T Awards and the Communication in Business award. The University partners were also the recipients of the Distinguished Learning Support Teamwork Fellowships for their work in developing a new enhanced interactive learning environment.

### ***2.3.5.6 Opportunities***

- Extension of the Wireless Council initiative to include increased home working, more paperless meetings, e-democracy and increased usage of Geographic Information Systems
- Rollout of Smart classroom environment to all campus facilities around NWRC and UU.
- Expansion of the existing wireless network to include the whole of the city/region
- Development of more applications that can be delivered over the network
- Promotion of the city/region as a fully wireless enabled centre of excellence

- Promotion of the uses of wireless mesh to other potential users such as emergency services, planners, roads service, business community etc
- Continued dissemination of best practice in wireless networks through European partnerships

### **2.3.6 Technical specification**

The Wireless City project utilises a wide array of technologies, the specification of which is beyond the confines of this document however, DCC is happy to share any documentation regarding technical specification of equipment upon specific requests.

The core technology is detailed in the table below:

#### **WIRELESS WALLS**

##### **INFRASTRUCTURE**

The Wireless City mesh was installed by Evolution Systems ([www.evosys.co.uk](http://www.evosys.co.uk)), the equipment used was produced by Tropos Networks([www.tropos.com](http://www.tropos.com)) and included the following:

- 15 Tropos 5210 Outdoor Router including antennas and power cables (See technical specification at Appendix 1)
- 3 Indoor Router – Tropos 3210 – (See technical specification at Appendix 2)
- Hewlett Packard Proliant ML330, 36 GB hard disc, 512 RAM
- Network card, windows 2003 server operating system
- 1 Hewlett Packard Proliant ML330, 1GB RAM, 4 off 36GB SCSI disks
- Smart Array 641 PCI-X controller, internal DAT tape, redundant power supply, network card, Windows 2003 Server Operating system
- 2 Off Snapgear 550 firewalls
- 2Off VLAN switches
- Motorola PTP100 lite including antennas, power supply and poe
- Pepwave Surf mesh network access point (to extend the mesh into café venues)
- Pepwave Surf AP wireless/ mesh access point (to extend the mesh into café venues)

##### **EQUIPMENT RE. DIGITAL TOUR**

- Node Explore ([www.nodeexplore.com](http://www.nodeexplore.com)) supplied thirteen PDA devices for the project

#### **WIRELESS CAMPUS/ WIRELESS COUNCIL**

##### **INFRASTRUCTURE**

The Wireless Council and Wireless Campus network was installed by Telindus ([www.telindus.co.uk](http://www.telindus.co.uk)) using Trapeze Networks technology ([www.trapezenetworks.com](http://www.trapezenetworks.com))

- Over 75 Trapeze transmitters have been deployed over DCC, UU and NWRC
- Ringmaster Switch – to control transmitters and provide security
- Radius servers – for authentication on the network
- Power Injectors for each transmitter

#### **WIRELESS CAMPUS – SMART CLASSROOM EQUIPMENT**

- Panasonic PTLB30NTEA Wireless Projectors • Promethean PRESENTA M 64” Interactive Whiteboard • Nvolve – Student Response System • Blackboard VLE – Delivery • Video and Audio Pod Casts – Via iTunes / Juice 2 & VLE Tablet PC Pilot (Campus and Council)
- Tablet PC’s – Windows Enabled
- Toshiba Portege M200’s
- 1.5GHz tablet PC with a 12.1in screen, 60GB HDD, 1 GB RAM
- Wireless Enabled
- Students studying HND Interactive Media
- Three intakes of students have received the tablet PC’s (75 Tablets in total)
- UU – School of Computing and Intelligent Systems staff and year 1 students over 2 academic years (300+ PC’s)

**Wireless Council EDRMS** – Tower Software were contracted to provide the EDRMS (TRIM software) with BT acting as their agent to install and configure the software and transfer the existing data onto the system. A SQL Server is used to store all records for the ERDMS system.

### ***2.3.7 Metrics and benchmarks (quantitative and qualitative)***

#### ***2.3.7.1 E.g. Measurement***

**Wireless Walls** - Since it’s launch, the use of the wireless mesh has grown steadily. Even since the start of summer 2008 the network has seen a 50% increase in the number of users on a Saturday, telling us that leisure users are showing a growing demand for the service. Saturday use is now as high as Monday - Friday with the number of users on a Sunday increasing by 25% and in the working week 11%.

Average users per day:  
 Mon-Sat        140-175  
 Sundays        75-100

The use remains relatively consistent between 9am and 10pm with the peak period of use now extending from 9am to 6pm. Interestingly, the system tells us that someone, somewhere in the Wireless City network is browsing the Internet at any given time of the day. In line with the increased number of users, the network as a whole is now processing 97GB of data on a daily basis, an increase of nearly 50% since May 2008.

**Wireless Campus** – To date 20 companies have undertaken consultancy with the Wireless Technology Demonstration Centre. In terms of the NWRC wireless network, the following statistics apply

NWRC	Mon-Fri users	30
	Monthly browser traffic	300 Mb
	Network data traffic per month	120 Gb

**Wireless Council** – The initial rollout of paperless meetings through Management Team is estimated to have saved up to 50,000 pieces of paper per annum, with the scope to increase this figure dramatically through Council Committee meetings. Moreover the Electronic Document & Record Management System can save up to 10 minutes per search, potentially a very significant impact in any organisation.

### **2.3.7.2 E.g. Cost benefit**

Successful implementation of this project will derive significant economic benefits for the whole region which include:

- The transformation of Derry City into a wireless centre of excellence where new services and applications are being developed, piloted and tested, will act as a catalyst for attracting high technology enterprises to the area, not to mention leading the way in innovative broadband application and service development and enhancing the investment capacity of the area and the region.
- Enhanced technological knowledge base of local businesses through the sharing of expertise gained from the development of the project
- Consulting revenue from the Wireless Technology and Demonstration Centre
- Increased tourist activity and derivation of subsequent economic benefit
- Release of council resource away from administrative duties, towards more value-added activities.

### **2.3.8 Lessons learned (some of the information detailed in this section is also relevant to section 2.3.9)**

- Wireless Walls- The planning application process for locating nodes on buildings and CCTV cameras took much longer than was anticipated. The planning process should have been considered in much more detail at the outset of the project as this impacted negatively on the delivery date of the Wireless Walls element of the initiative.
- Wireless Walls - State aids and EU competition laws should be considered to ensure that there is no distortion of the market. Only time limited free access could be provided in Derry to leave space for private services to make profit.
- Wireless Walls - It is essential to have some spare nodes to replace damaged or vandalised nodes, this ensures that the defective equipment can be replaced immediately and disruption to service provision minimised

- Wireless Walls - Inspection of external nodes on an ongoing basis to ensure that water tight seal is maintained – DCC experienced two instances of node damage due to water penetrating the internal workings of the device
- Wireless Walls - Ongoing marketing is essential to ensure uptake of services developed
- Wireless Council – Does legislation in your region allow full implementation of paperless meetings? There is a legal requirement for paper documentation to be provided for political meetings in the UK. Full implementation of paperless meetings is not yet possible
- Wireless Council – Ensure relevant staff are informed and trained to use new technology or take up may be poor.
- Wireless Campus – A period of testing (including coverage analysis), optimisation and network stabilization was necessary before the wireless campus was officially launched
- Wireless Campus - An increase in rogue access point activity in NWRC prompted more monitoring and action through the Ringmaster interface to prevent interference and connection issues.
- Wireless Campus - Technical staff at UU investigated and implemented the Preboot Execution Environment (PXE) protocol to automatically update (install/remove) software on the Tablet PCs remotely over the wireless network.
- Wireless Campus - The NWRC carried out surveys on both staff and students throughout the period of the project. Results of the surveys identified the impact of the technology on the way students and staff worked, highlighted issues and the findings used to inform development
- Project as a whole - If one partner is tasked with procuring goods/services on behalf of the consortium it is essential that all partners are equally involved in the procurement process. This will ensure that the goods/ services procured adequately address the needs of all concerned (suggest Service Delivery Agreements are put in place)
- Project as a whole - Budgetary provisions should be made for maintenance required outside normal maintenance contract (for example in instances of damage/vandalism of nodes)

### **2.3.9 Recommendations**

- Plan, Plan, Plan – establish the goals and objectives of the project; develop a strategy to achieve the goals and objectives by dividing the project into major stages and allocating activities to these stages; estimate the resources (time, budget, people and equipment) to be allocated to each stage and determine the quality (performance) standard for each phase.
- Please view Terms and Conditions of use of the Wireless network in the Appendices. Users must accept these conditions before using the network and this will need to be adapted to your own legal/compliance requirements
- Ensure a full needs and market trends analysis is done as part of the project development and funding process. This will support your business case for funding
- Utilise project management tools such as Gantt and Pert Charts to manage relationships between project activities that are necessary to complete the project and their order

- Ensure that Service Delivery Agreements are in place with project partners
- Agree all changes to budget or project activity in conjunction with funding body
- Progress reviews - hold regular meetings to update/ inform project partners on status of deadlines re. key milestones – particularly those milestones that have a knock on effect to delivery of other activities
- Ensure that senior management and staff have bought into project
- Hold staff workshops for induction to new technologies

### **2.3.10 Sustainability and Transferability**

In order to keep pace with technological advancements DCC are initiating measures, which will increase the speed and geographical coverage of the wireless mesh, whilst also developing new applications to benefit visitor, resident and business. Most importantly, DCC is currently in negotiations with a major Telco's company to increase the speed of the wireless mesh (this represents an innovative public private partnership where the private company will double the bandwidth of the current system) in exchange DCC will let this company 'guest' on the Council owned network. This public/private relationship will be piloted for six months, and if successful, other ISP's will be invited to participate. Any income generated from these activities will be re-invested into improving the publicly owned network infrastructure. Also, once the mesh is geographically expanded, there will be an audit of requirements for additional digital heritage content.

It will be important that any relationship does not impact on the public ownership as the network aims to promote social inclusion and reduce the gap between those with technology and those without. Some free access will need to remain, whilst also simulating the market promoting choice for the consumer. In addition, different models of sustainability will be explored with Bologna Municipality, who controls a long-running free civic network. This will include economic models and the exploration of useful content.

In terms of application development, DCC is also talking with investors who may wish to pilot applications on the network. An area of particular interest is tracking technology, which may enable retail, tourism and leisure businesses to better target customers with up-to-date information on what cultural events are on and retail offers etc. Also, once the mesh is geographically expanded, there will be an audit of requirements for additional digital heritage content.

In addition, DCC is working through ERNACT and the Connected Mobile Communities Project to audit existing applications and potentially develop new applications, which can be utilised on the existing infrastructure.

## 3 Transferring Good Practice

### 1.1 Table of Contacts

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Name	Title	Tel.	Email
Louise Breslin	Project Officer	44 28 71376506	louise.breslin@derrycity.gov.uk
Paul Jackson	Wireless Officer	44 28 71376506	paul.Jackson@derrycity.gov.uk
Matt Peachey	Investment Officer	44 2871376506	matt.peachey@derrycity.gov.uk

### 1.2 Getting Started

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At local level, the following will be important:

- Undertake an analysis of local needs and market trends, these differ in transferring locations
  - Explore and develop relationships with partners
  - Work to gain buy-in from management and stakeholders
  - Ideas and know how; find suppliers and partners with the required expertise
- It is important at regional and national level to have the following conditions in place
- Supporting Policy
  - Funding Opportunities

### 1.3 Monitoring/Measuring Progress

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- Inspection: observe and report
- Tests: conduct tests to ensure that quality standards are maintained
- Progress review: for example between project manager and staff involved in delivery of activities
- Questionnaires: to review performance of equipment and highlight suggestions for improvement e.g. PDAs
- Schedule control: compare planned schedule to actual schedule, this allows deviations to be detected

- Cost control: compare actual costs of project activities to planned budget
- Utilise network statistics to monitor use

## 4 Appendices

Appendix 1 – Tropos 5210 data sheet

Appendix 2 – Tropos 3210 data sheet

Appendix 3 – Wireless Council and Walls Budget Breakdown

Appendix 4 – Wireless Campus Budget Breakdown

Appendix 5 – Terms of Use Guidelines for the Wireless Mesh

Appendix 6 – Wireless Walls Tender Invitation Document

Appendix 7 – Wireless City DVD Tender Invitation Document

## Appendix 1

# Tropos 5210 Outdoor MetroMesh™ Router

The patented Tropos® MetroMesh™ architecture delivers the maximum scalability, high capacity at low cost and great user experience demanded by carriers, municipalities and network users. The MetroMesh architecture combines the innovative and patented Tropos MetroMesh OS, the industry's most sophisticated metroscale mesh routing intelligence, with the Tropos MetroMesh operation and optimization tools, which provide centralized visibility, analysis and control, and purpose-built MetroMesh routers with peerless Wi-Fi radio performance. MetroMesh enables carriers, municipalities and public safety agencies to deliver city-wide fixed and mobile multimegabit connectivity for IP-based voice, video and data applications.

The MetroMesh OS, including the Predictive Wireless Routing Protocol (PWRP®), the Spectrum and Application Based Routing Engine (SABRE™), the Adaptive Mesh Connectivity Engine (AMCE™) and Mesh Edge Service Management (MESM™), is the industry's most scalable mesh routing algorithm. The Tropos 5210 outdoor MetroMesh router, utilizing the embedded PWRP, creates a self-organizing and selfhealing wireless mesh, and intelligently selects the most optimum data path to the wired network. Because the MetroMesh OS and PWRP never require more than 5% of available bandwidth, networks can be easily scaled to many thousand nodes without any client throughput or network capacity degradation.

The MetroMesh architecture is key to maximizing network economics, as the software, management, and hardware combine to enable the operation of multiple independent networks on a single metroscale Wi-Fi mesh infrastructure. Individual user communities can operate independently on the MetroMesh, segregating information access, billing, and access levels.

Tropos MetroMesh routers require only power and can be deployed anywhere it is available. Each MetroMesh router provides wireless connectivity to standard 802.11b/g clients and extends the coverage area of the metroscale Wi-Fi network. The ruggedized and weatherized Tropos 5210 is NRTL certified for outdoor installation. It can be mounted on external structures such as buildings or lampposts to quickly implement citywide applications such as police data communications or public wireless access.

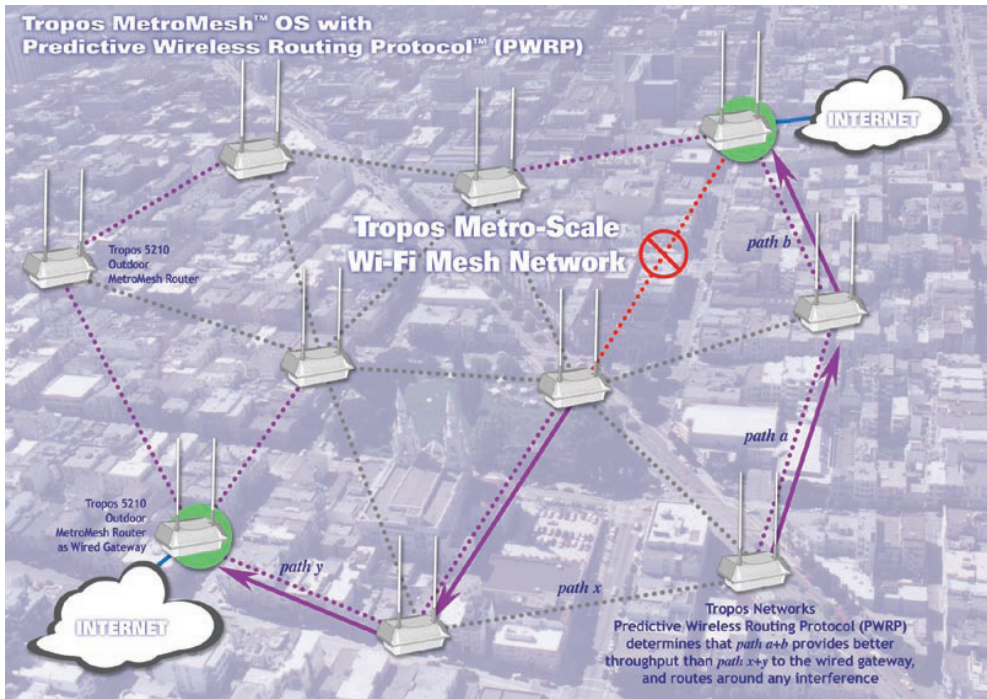


Photo courtesy of NASA Image eXchange. Image use in no way implies endorsement by NASA of any of the products, services, or materials offered by Tropos Networks, Inc.

## Technical Specifications

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### WIRELESS

- IEEE 802.11b/g
- Frequency band: 2.4-2.483 GHz
- Modulation: 802.11g - OFDM (64-QAM, 16-QAM, QPSK, BPSK)  
802.11b - DSSS (DBPSK, DQPSK, CCK)
- TX Power: ETSI/EU 20dBm (EIRP)  
FCC/IC 36dBm (EIRP)
- 7.4dBi Omnidirectional antennas
- Media Access Protocol: CSMA/CA with ACK
- RX Sensitivity: -100dBm @ 1 Mbps -92dBm @ 12 Mbps  
-95dBm @ 2 Mbps -89dBm @ 18 Mbps  
-93dBm @ 5.5 Mbps -86dBm @ 24 Mbps  
-91dBm @ 11 Mbps -83dBm @ 36 Mbps  
-94dBm @ 6 Mbps -78dBm @ 48 Mbps  
-93dBm @ 9 Mbps -76dBm @ 54 Mbps
- Transmit and receive diversity

### NETWORKING

- TCP and VPN session persistent roaming
- Full 802.11b/g client compatibility
- NAT support
- Layer 2 and Layer 3 support
- DHCP Server and Relay
- Sub-interface support
- Ethernet port

### MANAGEMENT

- HTTPS to on-board configuration management tools
- Secure local and remote configuration via HTTPS
- SNMP V2c
- Tropos MIB
- Browser-based management tool
- Simple configuration save and restore
- Network & client monitoring and statistical capture features

**SECURITY**

- Authentication: 802.11i, 802.1x (including EAP-TLS/TTLS/SIM/PEAP)
- Encryption: WEP, TKIP, AES
- AES encryption of mesh and control traffic
- Multiple BSSIDs & ESSIDs (ESSID suppression)
- Full VPN compatibility (VPN filtering—rejects non-VPN traffic)
- MAC address access control lists
- HTTPS only to on-board management tools
- Packet filtering

**ENVIRONMENTAL SPECIFICATIONS**

- Operating temperature range: -40°C to 55°C
- Storage temperature range: -40°C to 85°C
- Weather rating: IP67 weathertight
- Wind survivability: >165 mph
- Wind loading (165 mph): <300 Newtons
- MIL-STD-810F 509.4 Salt Fog rust resistance compliant
- Shock & vibration: ETSI 300-19-2-4 spec T41.E class 4M3
- Transportation: ISTA 2A

**OPTIONAL BATTERY BACK-UP**

- AC models only
- Factory Installed Li-Ion battery
- Back-up power 4-12 hours typical

**OPTIONAL ACCESSORIES**

- Power Cables
  - Street light NEMA photo-electric control power tap 90-480 VAC, 2 wire 4 ft. power cable
  - Street light NEMA photo-electric control power tap 90-480 VAC, 2 wire 20 ft. power cable
  - Electrical power cord, US/Canada 120 VAC, 15 A, 3 prong 6 ft. or 30 ft.
- CAT5 building entrance data protection; network protection unit

### **PACKAGE CONTENTS**

- Tropos 5210
- Mounting bracket and accessories
- Hardware Installation and Quick Start Guides

### **APPROVALS**

- FCC CFR 47 Part 15, Class B
- Industry Canada RSS 210
- Taiwan DGT LP0001/LP0002
- VCCI class B
- ARIB STD-T66
- EN 301 489-17
- EN 300 328
- EN 60 950
- IEC 950
- UL 60950-1
- CSA 22.2 No. 950
- UL 579/IEC 60529 IP67 rated for outdoor use
- UL 1449/IEC 60 664-1
- CE!

### **HARDWARE SPECIFICATIONS**

- Autosensing 10/100BaseT Ethernet
- Power input (AC models): 100-480VAC 50/60Hz single and split-phase ANSI/IEEE C62.41 category C3 integrated branch circuit protection
- Power input (DC models): 12-60VDC
- Power consumption: 18W typical
- Power over Ethernet sourcing (AC models only): 30W output @ 12, 24 and 48VDC
- Power-on and network status lamp: Green/Red
- Dimensions (w/o mounting brackets or antennas): 13.00 in (33.02 cm) wide x 8.00 in (20.32 cm) deep x 5.3 in (13.50 cm) high
- Weight: 14 lbs (6.40 kg) max., with mounting brackets,

### **PROTECTION CIRCUITS**

- Antenna Protection:  $\leq 0.5\mu\text{J}$  for 6kV/3kA @ 8/20 $\mu\text{S}$  Waveform

- Electrical Protection:
  - ANSI/IEEE C62.41, UL 1449-2nd ed., 10kA @ 8/20  $\mu$ S Wave form, 36kA per phase, L-L, L-N, L-PE
  - EN61000-4-5 Level 4 AC Surge Immunity
  - EN61000-4-4 Level 4 Electrical Fast Transient Burst Immunity
  - EN61000-4-3 EMC Field Immunity
- Data Protection:
  - EN61000-4-2 Level 4 ESD Immunity

#### **WARRANTY**

- One (1) year on parts and labor; return to point of purchase
- Optional standard and premium support packages available

### **Ordering Information:**

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#### **PART NUMBER: 52102531**

Tropos 5210 MetroMesh router, ETSI/EU; two 7.4 dBi omni antennas; pole mount

#### **PART NUMBER: 52102631**

Tropos 5210 MetroMesh router, ETSI/EU; battery backup; two 7.4 dBi omni antennas; pole mount

#### **PART NUMBER: 52103030**

Tropos 5210 MetroMesh router, FCC/IC; two 7.4 dBi omni antennas; pole mount

#### **PART NUMBER: 52103130**

Tropos 5210 MetroMesh router, FCC/IC; battery backup; two 7.4 dBi omni antennas; pole mount

#### **PART NUMBER: 52106000**

Tropos 5210 MetroMesh router, FCC/IC; DC; two 7.4 dBi omni antennas; pole mount

#### **PART NUMBER: 52106060**

Tropos 5210 MetroMesh router, ETSI/EU; DC; two 7.4 dBi omni antennas; pole mount

For additional configuration options please contact your Tropos Representative



## Features

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### **METROMESH OS**

- Layer 3 mesh routing intelligence
- PWRP dynamically employs links across multiple frequency bands for high throughput
- Supports multiple virtual networks on a single wireless infrastructure
- High-speed, session-persistent roaming
- Dynamic channel assignment, automatic power control and data rate selection provide efficient use of RF spectrum
- AMCE compensates for WiFi client variation
- SABRE policy-based routing carries traffic for different applications on different spectrum while supporting dynamic fault tolerance
- MESM exercises control, detects threats and enforces policies at the edge of the mesh network

### **SECURE MANAGEMENT**

- User-defined traffic filters
- 802.1x/802.11i
- MAC address access control lists
- AES encryption of mesh data and control traffic

## **PLATFORM**

- High-performance 54 Mbps Wi-Fi
- Best-in-class link budget for superior RF propagation
- Ruggedized and weatherized for extreme outdoor conditions

### **Tropos Networks**

555 Del Rey Avenue • Sunnyvale, CA 94085

phone 408.331.6800 • fax 408.331.6801

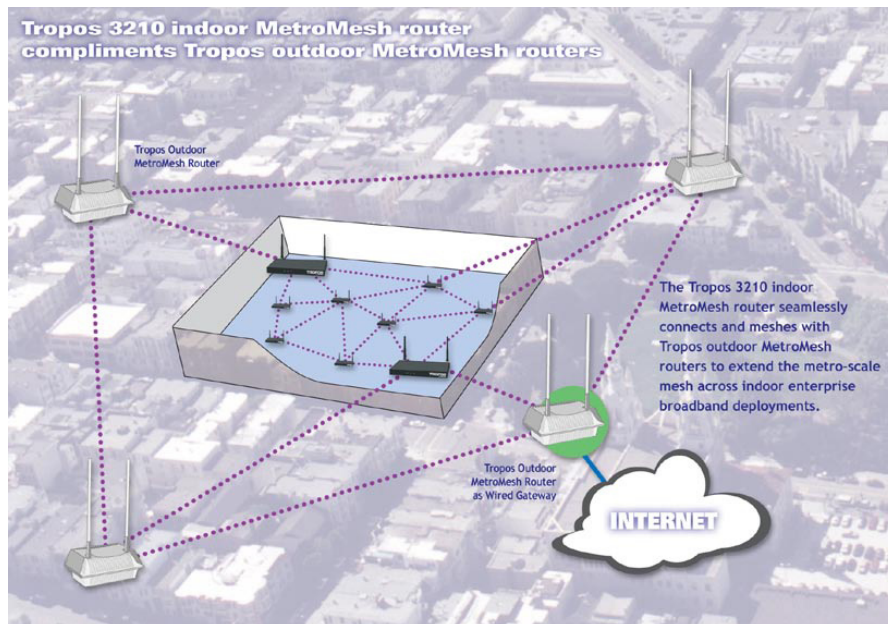
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## Appendix 2

# Tropos 3210 Indoor MetroMesh™ Router

The patented Tropos® MetroMesh™ architecture delivers the maximum scalability, high capacity at low cost and great user experience demanded by carriers, municipalities and network users. The MetroMesh architecture combines the innovative and patented Tropos MetroMesh OS, the industry's most sophisticated metroscale mesh routing intelligence, with the Tropos MetroMesh operation and optimization tools, which provide centralized visibility, analysis and control, and purpose-built MetroMesh routers with peerless Wi-Fi radio performance. MetroMesh enables carriers, municipalities and public safety agencies to deliver city-wide fixed and mobile multimegabit connectivity for IP-based voice, video and data applications. The MetroMesh OS, including the Tropos Predictive Wireless Routing Protocol (PWRP™), is the industry's most scalable mesh routing algorithm. The Tropos 3210 indoor MetroMesh router, utilizing the embedded PWRP, creates a self-organizing and self-healing wireless mesh, and intelligently selects the most optimum data path to the wired network. Because the MetroMesh OS and PWRP never require more than 5% of available bandwidth, networks can be easily scaled to many thousand nodes without any client throughput or network capacity degradation. The MetroMesh architecture is key to maximizing network economics, as the software, management, and hardware combine to enable the operation of multiple independent networks on a single metroscale Wi-Fi mesh infrastructure. Individual user communities can operate independently on the MetroMesh, segregating information access, billing, and access levels. Tropos MetroMesh routers require only power and can be deployed anywhere it is available. Each Tropos 3210 indoor MetroMesh router provides wireless connectivity to standard 802.11b/g clients and seamlessly meshes with Tropos outdoor MetroMesh routers to extend the coverage.



## Technical Specifications

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### WIRELESS

- IEEE 802.11b/g
- Frequency band: 2.4-2.483 GHz
- Modulation: 802.11g - OFDM (64-QAM, 16-QAM, QPSK, BPSK)  
802.11b - DSSS (DBPSK, DQPSK, CCK)
- TX Power: 20 dBm (Average)
- Media Access Protocol: CSMA/CA with ACK
- RX Sensitivity: -93 dBm @ 1 Mbps -90 dBm @ 12 Mbps  
-91 dBm @ 2 Mbps -88 dBm @ 18 Mbps  
-90 dBm @ 5.5 Mbps -85 dBm @ 24 Mbps  
-88 dBm @ 11 Mbps -81 dBm @ 36 Mbps  
-92 dBm @ 6 Mbps -76 dBm @ 48 Mbps  
-91 dBm @ 9 Mbps -74 dBm @ 54 Mbps
- Transmit and receive Diversity
- Impedance: 50 ohms
- 2 female SMA connectors

### NETWORKING

- NAT support
- Layer 2 and Layer 3 support
- DHCP Server and Relay
- TCP and VPN session persistent roaming
- Full 802.11b/g client compatibility
- Sub-interface support

### MANAGEMENT

- SNMP V2c
- Tropos MIB
- HTTPS to on-board management tools
- Secure local and remote configuration via HTTPS
- Web-based management tool
- Simple configuration save and restore
- Network & client monitoring and statistical capture features

**SECURITY**

- Authentication: 802.11i, WPA, WPA2, 802.1x (including EAP-TLS/ TTLS/SIM/PEAP)
- Encryption: WEP, TKIP, AES
- AES encryption of mesh and control traffic
- Multiple BSSIDs & ESSIDs (ESSID suppression)
- Full VPN compatibility (VPN filtering—rejects non-VPN traffic)
- MAC address access control lists
- HTTPS only to on-board management tools
- Packet filtering

**ENVIRONMENTAL SPECIFICATIONS**

- Operating temperature range: -10 °C to 50 °C
- Humidity: 95% (non-condensing)

**APPROVALS**

- FCC CFR 47 Part 15, Class A
- Industry Canada RSS 210
- EN 60 950
- UL 60950-1
- CSA 22.2 No. 950
- UL 2043 Plenum Rated

**HARDWARE SPECIFICATIONS**

- Autosensing 10/100BaseT Ethernet
- Power input:
  - External wall plug-in AC power supply: 90 - 265VAC 50/60Hz
  - 802.3af Power over Ethernet with optional accessory\*
- Power Consumption: 7 W typical
- Dimensions: 10.25 in (26.04 cm) wide x 6.00 in (15.24 cm) deep x 1 in (2.54 cm) high
- Weight: 3 lbs (1.4 kg), w/o antennas
- Four LEDs: Power, Signal Strength, Activity, Disk

**WARRANTY**

- One (1) year on parts and labor; return to point of purchase
- Optional standard and premium support packages available

## PACKAGE CONTENTS

- Tropos 3210
- Mounting accessories
- Hardware Installation Guide
- Quick Start Guide
- Antennas and power supply ordered separately

## Ordering Information:

---

### **PART NUMBER: 32101000**

Tropos 3210 indoor MetroMesh router; two SMA connectors

### **PART NUMBER: PS012001**

Domestic wall plug AC/DC power adapter, 120VAC to 12VDC

### **PART NUMBER: PS011002**

One 12V automotive power adapter

### **PART NUMBER: PS078001**

3210 indoor Power over Ethernet kit (Ethernet cable not included)

### **PART NUMBER: AN015004**

(1) 3210 1.5dBi unit mount omni antenna; SMA connector

\* 802.3af Power over Ethernet requires optional external PoE injector, sold separately



## Features

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### **METROMESH OS**

- Patented, purpose-built layer 3 mesh routing intelligence
- Predictive Wireless Routing Protocol dynamically employs links across multiple frequency bands to form the highest throughput, lowest latency end-to-end path
- Dynamic channel assignment, automatic power control and automated data rate selection provide the most efficient use of RF spectrum
- Redundant, self-configuring and selfhealing network architecture
- Adaptive Mesh Connectivity Engine compensates for Wi-Fi client variations, improving connection reliability
- Ability to configure and operate multiple virtual networks on a single wireless infrastructure
- High-speed, session-persistent roaming

### **SECURE MANAGEMENT**

- User-defined traffic filters
- 802.1x/802.11i/WPA2
- MAC address access control lists
- AES encryption of mesh data and control traffic
- Secure local and remote configuration via HTTPS
- SNMP-based element management system

### **PLATFORM**

- High-performance 54 Mbps Wi-Fi
- Best-in-class link budget for superior RF propagation
- Extends outdoor MetroMesh networks to indoor areas

#### **Tropos Networks**

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www.tropos.com • sales@tropos.com

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## Appendix 3 Wireless Council and Walls Budget Breakdown

### WIRELESS COUNCIL FS02

		Claim 1 Actual Expend.	Claim 2 Actual Expend.	Claim 3 Actual Expend.	Claim 4 Actual Expend.
	Total Budget	Jan-March 05	Apr-June 05	July-Sep 05	Oct-Dec 05
Wireless Infrastructure	15 000	520	18 608,99	0	1 270,5
Wireless Officer	62 353	2 494	12 134,16	12 366,67	12 920,21
ERDMS/ VPN	75 000	16 225	0	5 464,86	1 590
Demo/ Testing Equip.	12 000	4 592	430,49	0	2850
VPN Consult./Config.	10 000	0	0	0	0
	174 353	23 831	31 173,64	17 831,53	18 630,71

Claim 5 Actual Expend.	Claim 6 Actual Expend.	Claim 7 Actual Expend.	Claim 8 Actual Expend.	Claim 9 Projected Expend.		
Jan-Mar 06	Apr-June 06	July-Sept 06	Oct-Dec 06	Jan-Mar 07	Total Expend.	Budget Remaining
0	0	0	0	2 125	22 524,49	-7 524,49
11 948,25	7 080,51	7 139,03	7 108,38	8 100,51	81 291,72	-18 938,72
14 495		0	0	8 917,34	46 692,2	28 307,8
0	0	0	0	6 200	14 072,49	-2 072,49
0	0	0	0	9 775	9 775	225
26 443,25	7 080,51	7 139,03	7 108,38	35 117,85	17 4355,9	-2,9

## Appendix 4

# Wireless Campus Budget Breakdown

### BUDGET BREAKDOWN, WIRELESS CAMPUS RE. UNIVERSITY OF ULSTER AND NWRC

Contributor	£	% of project costs
DETI	821,850	75.00
University	219,950	20.07
NWIFHE	54,000	4.93
<b>Total Project Cost</b>	<b>1,095,800</b>	<b>100</b>

## UNIVERSITY OF ULSTER BREAKDOWN OF COSTS

	Equipment	Installation	£ Total
Wireless Campus	28,200	20,000	48,200
Smart Classroom	91,250	11,750	103,000
Tablet mandate (Staff)	30,000		30,000
Tablet mandate (Student)	260,000		260,000
Wireless Demo Centre (Equipment)	90,000		90,000
Demo Centre Consultant 1	62,353		62,353
Demo Centre Consultant 2	62,353		62,353
Marketing	10,000		10,000
Travel	7,500		7,500
Training (Currently joint with DCC)	5,000		5,000
Consumables (Currently joint with DCC)	2,500		2,500
Existing staff time	26,509		26,509
Overheads	172,385		172,385
<b>Totals</b>	<b>848,050</b>	<b>31,750</b>	<b>879,800</b>

**BROADBAND FLAGSHIP PROJECT: 'DIGITAL DERRY FRAMEWORK'**

	NWRC Project Costs	YEAR 1			
		Equipment	Installation	£ Total Year 1	£ Total Year 2
1	Wireless Campus	10 500	1 500	12 000	1 500
2	Smart Classroom (L.T.)	20 000	5 000	25 000	6 000
	* Wireless Enabled				
	* Electronic Whiteboard				
	* Bluetooth Projection Kit.				
3	Tablet mandate (Staff)	10 000	0	10 000	0
4	Tablet mandate (Student)	50 000	0	50 000	0
5	Staffing	46 000	0	46 000	45 000
	* Project Coordination				
	* Administration				
	* Technical Support				
	* Content Creation				
6	Promotion and publicity	2 500	0	2 500	2 000
7	Overheads	8 500	0	8 500	7 500
	* Audit				
	* Insurance				

	* Travel				
	* Training				
	* Consumables				
8	Yearly Totals	147 500	6 500	154 000	62 000
	NWRC Project Total				216 000
	DETI Funding				162 000
	NWRC Funding				54 000

# Appendix 5

## Terms of Use Guidelines for the Wireless Mesh

### *Terms of Acceptable Use for Derry City Councils External Internet Services*

#### **1. Introduction**

---

Please read these terms and conditions carefully as they are applicable to your use of Derry City Councils (DCC) External Internet Service and explain what you can and cannot do with the Internet Service provided.

These terms are legally binding and form part of the terms and conditions you must agree to before Internet access can be granted.

Customer support is available 9am till 5pm Monday to Friday

We may change or update the terms of our Acceptable Use Policy at any time and such updated policy shall be displayed on the DCC website. We recommend that you visit our website regularly to ensure that you are aware of any changes.

#### **2. Compliance with Applicable Laws and Licences**

---

The Network utilised in offering Internet Services may be used only for lawful purposes. Transmission, distribution or storage of any material in violation of any applicable law or regulation is prohibited. This includes, without limitation, all software licensing rules, material protected by copyright, trademark, trade secret or intellectual property right used without proper authorisation, and material that is obscene, defamatory, constitutes an illegal threat, or violates export control laws.

#### **3. Disclaimer of Liability**

---

The Council will not be responsible for any damages direct or indirect including losses related to any business, including but not limited to lost data, lost profits or business interruption. We are also not responsible for any losses which you may incur which we could not foresee when you entered into this agreement. Any liability remains with the individual user.

#### **4. Waiver of Privacy**

---

The Council has the right, but not the duty, to monitor any and all aspects of its computer system including, but not limited to, monitoring sites users visit on the Internet, monitoring chat groups and newsgroups, reviewing material download or uploaded by users.

## **5. User Agreement – Terms & Conditions**

---

5.1 You agree that you will only use the Internet Service in a way which is consistent with these terms and conditions and which is not in violation of any law or regulation which is enforceable in the United Kingdom . In particular, you agree that you will not use the Internet Service:

5.1.1 for any commercial or business purpose whatsoever, including to advertise or offer to sell any goods or services not permissible under current UK legislation; or

5.1.2 allow others to use it other than at the address at which the Internet Service is installed; or

5.1.3 to send, receive, encourage the receipt of, upload, download, use or reuse any material which is offensive, abusive, defamatory, obscene or menacing or a breach of the copyright, trade mark, confidential; or

5.1.4 in a manner which is invasive of another's privacy, causes annoyance, inconvenience or needless anxiety to any person; or

5.1.5 to upload or send unsolicited e-mail or otherwise transmit any unsolicited advertising or promotional materials; or

5.1.6 to upload or send any material which contains software viruses or other codes, files or programs designed to interrupt, destroy or limit the functionality of any computer software, hardware or telecommunications equipment; or

5.1.7 to conduct or forward unsolicited pyramid selling schemes or chain letters; or

5.1.8 in any manner which would interfere with or disrupt the proposed Internet Service or contravenes any instructions which we may give to you in connection with the Internet Service from time to time; or

5.1.9 in any manner which would contravene the Computers Misuse Act 1990; or

5.1.10 in any manner which infringes or breaches any third party intellectual property rights (which shall include but not be limited to copyrights, trade marks, design rights, trade secrets, patents, moral rights and performance rights). For the avoidance of doubt, the installation or distribution of "pirated" software or other software products that are not appropriately licensed to you will constitute a violation of intellectual property rights.

5.3 You acknowledge that the Internet is designed to appeal to a broad audience. It is your responsibility to determine whether any of the content accessed via the Internet Service by you is appropriate.

5.4 You acknowledge that the Internet Service and any information or goods, which you obtain from the Internet Service, are provided for your personal and/or internal business use only and may not be used for any commercial purposes or distributed commercially using Derry City

Council as an advertising or transactional medium without our prior written permission.

5.5 Given the global nature of the Internet, you agree to comply with all local rules and applicable UK legislation regarding online conduct and acceptable content. You also agree to comply with any applicable rules regarding the export of technical data from any country - including but without limitation the United States.

5.6 You acknowledge that we are not obliged to monitor your use of the Internet Service but that we and our agents reserve the right to refuse or to remove any material which you upload or send using the Internet Service without notice to you if we believe, in our absolute discretion, that such material breaches these terms and conditions.

5.7 If we believe that the Internet Service is being used in contravention of these terms and conditions we are entitled to disconnect the Internet Service without prior notice to you. Prior to restoring the Internet Service, (which shall be at our absolute discretion), we may require an assurance from you in a form we deem acceptable that there will be no further breach of these terms and conditions.

## **6. Provision of the Internet Service and Our Liability**

6.1 We will use commercially reasonable endeavours to ensure that the Internet Service is fully operational at all times. However we cannot guarantee that the Internet Service will be fault free or that your access to the Internet will be uninterrupted and we will not be liable to you if your access to the Internet Service is interrupted or restricted at any time for reasons beyond our reasonable control.

6.2 We cannot guarantee specific levels of service performance

6.3 We reserve the right to restrict access to the Internet Service and to impose data traffic restrictions at our discretion, in order to provide upgrades, implement new facilities, allow data retrieval and maintain service levels and for any other purpose. Where practicable all such work shall be undertaken outside of normal business hours (nominally 08.00-18.00 hours) and we shall endeavour to advise you of any such measures in advance via our website within a reasonable timeframe.

6.4 At its sole discretion, Derry City Council may offer such supplemental services outside of the scope of this agreement as it may from time to time determine.

6.5 We do not guarantee that use of the Internet Service will be compatible with all hardware and software which you may use to access it.

6.6 We are not liable to you for any damage or loss arising from the consequences of viruses received by you via the Internet Service or for any losses related to any business, including but not limited to lost data, lost profits, business interruption or wasted expenditure.

6.7 If you become aware of a fault occurring with the Internet Service you should telephone us on. We will endeavour to rectify the fault as soon as reasonably practicable.

## 7. Suspension and Modification of Internet Service

Your access to the Internet Service may occasionally be interrupted or restricted to allow for repairs or maintenance to be carried out or the introduction of new facilities or services. We will endeavour to restore the Internet Service as soon as possible. We may modify the Internet Service at any time with or without notice.

## **8. Termination**

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We may restrict, suspend or terminate your use of the Internet Service if we believe, in our absolute discretion, that you have breached these terms and conditions.

## **9. Links**

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9.1 The Internet Service may provide links to Web sites operated by third parties. Such links are provided for your convenience only. We have no control over these sites and are not responsible for their availability or content. Our inclusion of links to such sites does not imply any endorsement of the material on such sites or any association with their operators unless expressly described in writing.

9.2 We will not be responsible for any charges you may incur as a result of any dealings you may have with any third party whilst using the Internet Service.

## **10. THE NETWORK**

---

10.1 You acknowledge that Derry City Council is unable to exercise control over the content of the information passing over the network utilised by Derry City Council services. Therefore, Derry City Council is not responsible for the content of any message whether or not the posting was made by a Derry City Council customer.

10.2 The Network utilised by Derry City Council services may be used to link into other networks worldwide and you agree to conform to the acceptable use policies of these networks.

10.3 In addition you undertake to conform to the Internet protocols and standards.

10.4 You may not circumvent user authentication or security of any host, network, or account (referred to as "cracking" or "hacking"), nor interfere with service to any user, host, or network (referred to as "denial of service attacks").

10.5 Without prejudice to the foregoing, Derry City Council considers that any application that overloads the Network utilised by Derry City Council services by whatever means will be considered as making profligate use of the Network utilised by Derry City Council services and is as such NOT allowed. Use of IP multicast other than by means provided and co-ordinated by Derry City Council is likewise prohibited.

10.6 Users who violate systems or network security may incur criminal or civil liability. Derry City Council will fully co-operate with investigations of suspected criminal violations, violation of systems or network security under the leadership of law enforcement or relevant authorities.

## **11. System and network Security**

---

11.1 Violations of system or network security are prohibited, and may result in criminal and civil liability. Derry City Council will investigate incidents involving such violations and will involve and will co-operate with law enforcement if a criminal violation is suspected. Examples of system or network security violations include, without limitation, the following:

11.1.1 Unauthorised access to or use of data, systems or networks, including any attempt to probe, scan or test the vulnerability of a system or network or to breach security or authentication measures without express authorisation of the owner of the system or network;

11.1.2 Unauthorised monitoring of data or traffic on any network or system without express authorisation of the owner of the system or network;

11.1.3 Interference with service to any user, host or network including, without limitation, mail-bombing, flooding, deliberate attempts to overload a system and broadcast attacks;

11.1.4 Forging of any TCP-IP packet header or any part of the header information in an email or a newsgroup posting.

11.1.5 If approached with complaints relating to any of the above violations, Derry City Council will co-operate and assist law enforcing bodies with their investigations in order to bring such mis-use and violations to an end.

## **12. E-mail**

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It is explicitly prohibited to send unsolicited bulk mail messages ("junk mail" or "spam") of any kind (commercial advertising, political tracts, announcements) etc.

It is also explicitly prohibited to allow others to send unsolicited bulk mail messages either directly or by relaying through the Users systems. For the avoidance of doubt, users must ensure that their systems cannot be relayed through. Users may not forward or propagate chain letters nor malicious e-mail.

A user may not solicit mail for any other address other than that of the user, except with full consent of the owner of the referred address.

Complaints regarding Illegal Use or System or Network Security issues, Email abuse, or spamming should be sent via our website or you may contact our Customer Care Line on Tel:

INDIRECT OR ATTEMPTED VIOLATIONS OF THIS POLICY, AND ACTUAL OR ATTEMPTED VIOLATIONS BY A THIRD PARTY ON BEHALF OF A DERRY CITY COUNCIL CUSTOMER OR A CUSTOMER'S END USER, SHALL BE CONSIDERED VIOLATIONS OF THIS POLICY BY SUCH CUSTOMER OR END USER.

# Appendix 6

## Wireless Walls Tender Invitation Document

*Economic Development. Partnership Proposal for the Design, Installation and Maintenance of Wireless Network Infrastructure for the Northern Ireland Broadband Flagship Project*

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# 1 Introduction & Scope of Works

Derry has been designated by DETI as Northern Ireland's Flagship Project for the demonstration of wireless broadband technology. Derry City Council, the University of Ulster and North West Institute of Further and Higher Education (NWIFHE) are working in partnership to implement initiatives that will create a wireless-enabled working environment in the City for students, lecturers, tourists, City Councillors and local government officers.

The Northern Ireland Broadband Flagship Project, "Walled City to Wireless City" aims to provide a leading edge wireless network within the City's Historic Walls, Council Chamber and Offices, a SMART Classroom environment within the University of Ulster and NWIFHE and the provision of specific electronic services for tourists including historic and cultural information, eating guides and shopping opportunities through wireless devices such as PDAs.

This Wireless Walls element of the NI Broadband Flagship Project will focus on the creation of a wireless enabled tourist trail centred on the City's Historic Walls but extending into the adjacent areas. This strand will implement an external wireless network in the walled area of the City and focus on provision of specific electronic services for visitors and tourists to include historic and cultural information, eating guides and shopping opportunities through wireless-enabled PDAs

The other two strands of the NI Broadband Flagship Project are:

## **WIRELESS CAMPUS:**

This strand will involve provision of wireless networking services on and off campus, development of SMART Classrooms and piloting a tablet PC mandate initiative

## **WIRELESS COUNCIL:**

This strand will involve the provision of wireless infrastructure in the Council offices on the Strand road and Council Chamber on Guildhall Street.

Derry City Council now wish to invite partnership proposals from competent organisations for the design, installation and maintenance of a wireless network infrastructure to support the Wireless Walls element of the NI Broadband Flagship Project.

## 2. Services Required

---

The Wireless Walls strand of the Northern Ireland Broadband Flagship Project will provide wireless network coverage to the area defined by the Walled City Signature Tourism Project.

Derry City Council wishes to partner with a supplier that has vision and leadership in the telecommunications industry to provide a world-class wireless network in the identified areas.

The primary purpose of the wireless network is to provide a delivery mechanism for a visitor

orientation/information system. The visitor information will contain multimedia content (provided by Derry City Council) and will be accessed primarily through PDA's (but accessible through other platforms) using a GPS based application (provided through the University of Ulster at Magee).

The multimedia content will be held on a server provided by the proposer but located in one of the Council premises, independent of the Council network. The proposer will be required to provide a firewall connection between the wireless network and the server.

### **2.1 Services Required**

The services that are required are detailed below:

1. Design, install and maintain a wireless network in the defined geographical area as outlined above.
2. Provide all necessary maintenance and configuration for the term of the contract specifying maintenance response times.
3. Provide technical advice to the project partners during the development phase of the project to ensure synergy and compatibility between all aspects of the Wireless Walls element from content through to application.
4. Provision of training to key staff.
5. Any other additional expertise/added value (technical or, other projects or additional investment in the project) that can be brought to the project in terms of a telecommunications partnership.

### **2.2 Objectives of Wireless Network Provision**

The objectives of the provision of a wireless network centred on the Historic City Walls are as follows:

- Provision of electronic tourist and visitor services through a wireless medium centred on the Historic City Walls.
- Provision of location based services for tourists and visitors to the Historic City Centre.
- Provision of a wireless environment needed for the pilot of the wireless-enabled visitor orientation/information service.
- Promotion of Derry as a wireless enabled tourist/visitor destination.
- Dissemination of the 'Story of Derry' (from monastic settlement to the development of the 'peace process') through the utilisation of wireless infrastructure and wireless enabled equipment.
- Increase the choice available to tourists and visitors to the city by providing a complimentary service to the existing tour guides.
- Provision of free, unlimited access for 25-40 Council PDA's during the pilot phase.

## **2.3 Target Audience**

The target audience for this element of the Broadband Flagship Project includes:

- Visitors/ Tourists: Provision of a complimentary electronic visitor service that will ensure that Derry becomes a must see tourist destination.
- Investors: To visualise and communicate the cultural and historic proposition that Derry has to offer
- Businesses: To demonstrate the benefits of using new technology in general and wireless broadband technology in particular and to see an increase in the level of usage of wireless broadband.
- Peer Local Authorities and European partners: To be an informational resource for peer local authorities and other European regions and to promote Derry as a model of best practice in the use of broadband wireless technologies.

## **2.4 Outputs**

- To have trailed Location Based Services with 750 individuals over the broadband wireless network in the Historic City Centre
- To have secured 36 subscribing businesses to the Location Based Services Platform
- To have secured visits from 10 peer local authorities to the City to profile the wireless network
- To have secured visits from 10 European Regions to profile the region as an exemplar of wireless broadband best practice.

## **3. Format of the Wireless Network Infrastructure**

---

This element of the Northern Ireland Broadband Flagship Project will implement a wireless/mobile network based upon a Wi-Fi networking standard in the Walled City Signature Tourism Project Area.'

The Walled City itself is approximately one mile in circumference and within this and adjoining areas it is proposed to deliver total coverage of Wi-Fi services. Network access will be provided to visitors and tourists through the rental (from the Tourist Information Centre and Council approved outlets) of handheld electronic devices e.g. PDA's

### **3.1 Potential Location Based Services to be offered by the network include:**

- Information on nearby hotels, restaurants, amenities, shopping and entertainment centres including event listings, current/special offers and daily menus.
- Guides to locating nearby attractions, landmarks or historic monuments with downloadable maps to identify routes.
- Updatable listing of local events, museum information, historical/cultural information and sporting events.
- Medical assistance guide accompanied by location of medical services in the area.

- Information on safety and security and up to date parking availability.
- Information on basic travel requirements including public transport timetables (airport, train and bus services) as well as taxi and car rental locations.

### **3.2 Other services to be offered over the network include:**

- Ability to access the internet, including the ability to access, send and receive e-mails
- Ability to access historical and cultural content to enable to visitor to experience a virtual tour of the historic city centre.

## **4 Requirements for Submission of Partnership Proposals**

### **4.1 Format of Partnership Proposal**

Those interested in this project should submit a partnership proposal document of no more than twenty A4 pages (exclusive of CVs) under the following headings:

#### **UNDERSTANDING OF BRIEF**

Proposed methodology and general approach to assignment and earliest start date and expected time frame for delivery.

#### **DETAILED SPECIFICATION**

Detail of the technical specification proposed including; (a) site survey for wireless network detailing proposed locations of access points and geographic coverage area of these points (taking account of the conservation buildings within the area), (b) other proposed equipment including servers and connection to network, (c) installation costs, (d) network security, (e) maintenance programme (including remedial and preventative, guaranteed response time), (f) ability to deliver the service over a multiple platforms, outline of any public safety implications, (g) training provision and (h) Wi-Fi standards being utilised.

Proposals should also identify (i) what added value can be brought to the partnership

#### **EXPERTISE**

Composition of proposed project team to include CVs, relevant qualifications and any other relevant information. The appointed organisation/consortia should possess extensive expertise in design, installation and maintenance of external wireless networks in an urban environment for the provision of customer-based services especially location based visitor orientation/information services.

#### **EXPERIENCE**

Evidence, including references of a track record of similar type projects

#### **BUSINESS MODEL**

Outline of how the potential partner plans to continue and/or expand the network/service post funding. This should identify ongoing maintenance costs, future proofing of the network, compatibility with existing networks and scalability of the network/service. The business model

should clearly identify how the visitor orientation/information can be sustained beyond the pilot project phase.

#### **COST**

A breakdown of cost of the proposal as per Form of Tender based on cost per service required, number of days allocated to each element of project, cost per day, breakdown of team costs, equipment costs broken down per item. Costs should be exclusive of VAT but inclusive of all anticipated expenses. Interim payments will be made in accordance with work stages set out for the delivery of the assignment.

An additional proposal is also required for the ongoing maintenance of all hardware and software after the project period.

Tenderers should note that a maximum budget of £50,000 exc VAT has been set for this assignment.

Please note the ongoing maintenance quotation (after this assignment) will be over and above the maximum budget figure of £50,000 exc VAT.

## **Instructions to Applicants**

### **1. Invitation To Submit Partnership Proposal**

1.1 Derry City Council principally invites detailed and costed submissions for the partnership proposal brief defined in Introduction.

### **2 Explanation of Documents / queries during the proposal period / registration of intent to submit partnership proposal**

2.1 It is the responsibility of prospective facility/service providers (hereafter referred to as partnership proposer) or parties submitting 'expressions of interest' to obtain for themselves at their own expense any additional information necessary for the preparation of their proposals (hereafter referred to as partnership proposals) or 'expressions of interest'.

2.2 Partnership proposers are advised to ensure that they are fully familiar with the nature and extent of the obligations to be accepted by them if their proposal is accepted, including the Council's Standing Orders, a copy of which may be seen by arrangement.

2.3 Should any applicant be in doubt as to the interpretation of any part of the contract documents, the Senior Economic Development Officer shall endeavour to answer written enquiries. All queries must be submitted in writing to arrive with the Senior Economic Development Officer

not later than 3 weeks before the date of return of tenders, i.e., 15th April 2005, by post, fax or email to:

Senior Economic Development Officer, Derry City Council, Council Offices, 98 Strand Road, Derry, Northern Ireland, BT48 7NN.

Fax No: +44 28 71365151

Email – [economic@derrycity.gov.uk](mailto:economic@derrycity.gov.uk)

2.4 All copies of written queries received, together with written replies will be sent to all proposers not later than two weeks before the date of return of partnership proposals. All responses will also be posted on the Councils website as detailed below: -  
<http://www.derrycity.gov.uk/Tenders/index.htm>

2.5 In order to ensure receipt of written replies, all prospective applicants are therefore requested to register their intent to submit a proposal in writing to the Senior Economic Development Officer by post, fax or email as noted in Clause 2.3 above, not later than three weeks before the date of return of proposals, including full contact details and indicating proposals will be submitted.

2.6 No representation, explanation, or statement made to an applicant, or anyone else, by or on behalf of the Council, as to the meaning of any of the proposal documents, or otherwise in clarification as aforesaid, shall bind the Council in exercise of its powers and duties under any subsequent Contract(s).

### **3 Accuracy Of Proposal**

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Proposals must be submitted for the supply of all the services specified in the Pricing Schedule. Proposals submitted for part of the services only will be rejected. Applicants must price separately for all items listed in the Pricing Schedule. The Council may reject any tender that is not priced separately.

### **4 Information to be provided**

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Applicants should provide a brief description of the overall organization of their company. This description shall note how long the company has been in operation.

Applicants must also include subcontracting information in this section if subcontractors will be engaged. Subcontractors must be named and their roles in the project briefly described.

#### **PROVIDE THIS GENERAL BACKGROUND INFORMATION:**

- Company Address
- Contact person
- Year established and company background
- Account experience

- Number of customers currently being serviced
- Comprehensive list of available services
- Provide any additional background information.

Applicants must complete and return all relevant tender/pricing, assurance and declaration forms and certificates etc.

## **5 Submission of Partnership Proposals (and/or Additional Proposals and Expressions of Interest)**

---

5.1 The applicant(s) shall be made on the Form of Tender(s) provided, and signed by the Applicant. All Contract Documents, together with these Instructions and completed Form of Tender(s) should be forwarded, by registered post or delivered by hand and a receipt obtained to:

“Partnership Proposal for the Design, Installation and Maintenance of Wireless Network Infrastructure for the Northern Ireland Broadband Flagship Project”

Mr A McGurk,

Town Clerk and Chief Executive,

98 Strand Road, Derry

BT48 7NN,

so as to arrive not later than 12.00 noon on 6th May 2005

No UNAUTHORISED alteration or addition should be made to the Tender Form(s), or to any other of the Contract Documents. IF ANY SUCH ALTERATION OR ADDITION IS MADE OR IF THESE INSTRUCTIONS ARE NOT FULLY COMPLIED WITH THE TENDER MAY BE REJECTED.

5.2 All documents requiring a signature shall be signed.

(a) Where the Applicant is an individual, by that individual

(b) Where the Applicant is a partnership by the two duly authorised partners.

(c) Where the Applicant is a company by two directors or by a director and the secretary of the company, such persons being duly authorised for that purpose.

5.3 Proposals shall be submitted strictly in accordance with the tender documents.

5.4 No alteration to the text of any of the Proposal Documents will be permitted, and if any are made, the proposal may be rejected. Failure to complete any part of the documents may also incur rejection of the tender.

5.5 Applicants must ensure that all requested documentation is returned with the completed tender.

5.6 No name or mark, including any franking machine slogan, is to be placed on the envelope to indicate in any way the identity of the sender.

5.7 Applicants or any representatives thereof will not be permitted to be present when the proposals are opened.

5.8 All prices should be quoted in pounds sterling and shall be exclusive of VAT.

## **6 The Basis of the Proposal**

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The rates quoted in the tender pricing section shall remain fixed for the duration of this contract.

## **7 Period of Acceptance**

---

The Tenderer is required to hold his tender open for acceptance for a period of 120 days from the closing date for the submission of tenders.

## **8 Evaluation of Proposal**

---

8.1 Evaluation/Award Criteria are outlined in next section.

8.2 Derry City Council is not required to accept the lowest or any proposal and may wish to award the contract as a whole or individual aspects depending on the strength of the successful team.

## **9 Contract Documents take Precedence**

---

The information given in these Instructions for Applicants is given in good faith for the guidance of Applicants, but if there is any conflict, the Conditions of Contract, Specifications, and the Pricing Documents shall take precedence over these Instructions.

## **10 Pre-Selection Interviews / Presentations**

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Tenderers are put on notice that they may be required to attend the Council Offices, 98 Strand Road, Derry, for procedural and technical presentations and/or interviews during the process of tender evaluation at no charge to Council.

## **11 Contract Commencement Date**

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It is envisaged that this contract will commence in 30th June 2005

## 12 Questions

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All questions, requests or other communications regarding this tender must be made in writing to [dermot.harrigan@derrycity.gov.uk](mailto:dermot.harrigan@derrycity.gov.uk)

## 13 Late Submissions

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Tenders submitted after the closing date will not be accepted.

## Evaluation / Award Criteria

Submissions will be evaluated in respect of each option taking into account the following where relevant:

### **1.1 Company's Ability to Deliver - Including:**

- a. Financial Status
- b. Management Capability
- c. Technical capacity
- d. Experience of similar project
- e. Experience of service delivery
- f. References
- g. Key personnel

### **1.2 Operational Feasibility - Including:**

- a. Ability to commence the commission on time
- b. Compatibility of the proposal with existing networks
- c. Scalability of the proposal
- d. Sustainability of the proposal
- e. Future proofing of the proposal

### **1.3 Quality Control – Including:**

- a. Fit with the conservation buildings within the area designated by the 'Walled City Public Realm Plan'.
- b. Address any public safety issues emanating from the proposal

### **1.4 Price**

### **1.5 Compliance**

- a. Health & Safety Legislation
- b. Fair Employment

## Form of Proposal

“Partnership Proposal for the Design, Installation and Maintenance of Wireless Network Infrastructure for the Northern Ireland Broadband Flagship Project”

To: Derry City Council, Council Offices, 98 Strand Road, Derry BT48 7NN

Members:

Having examined all documentation bound in this Invitation Document as listed in the Table of Contents. I/we undertake to provide the above-mentioned services in conformity with this tender for the following prices: -

Item	Cost	Back up Information
Design and Installation of Wireless Network Infrastructure equipment including network, server and connections		
Management and maintenance		
Training		
Any additional requirements		

Please provide the following information on a separate sheet:

cost per service required, number of days allocated to each element of project, cost per day, breakdown of team costs, equipment costs broken down per item.

I/we agree that all prices will be fixed for the term of this contract.

I/we understand that you are not bound to accept the lowest or any tender.

Signed: .....

For or on Behalf of: .....

Address: .....

Position in Company: ..... Date: .....

It is a requirement of this tender that an additional proposal for full maintenance (remedial & preventative, including guaranteed response times), on an annual basis, is submitted for the ongoing maintenance of this assignment after the duration of this pilot project. This proposal should also provide costings for any hardware or software upgrades, including proposed discount levels, which are anticipated. Please provide this pricing on a separate quotation enclosed with this tender.

## Form of Agreement (Not For Completion)

AGREEMENT made the..... day of.....20.....  
Between Derry City Council of Strand Road, Derry, in the County of Londonderry  
(hereinafter called "the Employer") of the one part and of.....  
in the County of .....  
(hereinafter called "the Contractor") of the other part.

WHEREAS the Employer is desirous that certain works should be performed, viz:  
.....  
.....

and has accepted a Tender by the Contractor for the performance of such works,  
NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the General conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:-
  - (a) The said Tender;
  - (b) The Conditions of Contract;
  - (c) The Specification
  - (d) The Pricing Schedule

and the Contractor hereby acknowledges having read and understood same by virtue of setting his initials thereto at the time of signing hereof.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to perform the Works in conformity in all respects with the provisions of the Contract and the documents specified at paragraph 2 hereof.

4. The Employer hereby covenants to pay to the Contractor in consideration of the performance of the Works the Contract Price at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused their respective Common Seals to be hereunto affixed (or have hereunto set their respective hands and seals) the day and year first above written.

SIGNED BY: -

IN THE PRESENCE OF: -

SIGNED AND SEALED  
BY DERRY CITY COUNCIL  
IN THE PRESENCE OF: -

MAYOR

CLERK AND CHIEF EXECUTIVE OF THE COUNCIL

## **Form of Assurance**

---

### **HEALTH AND SAFETY AT WORK (NORTHERN IRELAND) ORDER 1978**

The Contractor's attention is drawn to the provision of the above Order, which became law on 1 May 1979, and in particular to Clause 4 of the Order "General Duties of Employers to their Employees".

I undertake in the event of my tender being accepted to carryout these works with due regard to the provisions of the Health and Safety at Work (Northern Ireland) Order 1978 and all attendant Regulations made there under.

Site staff shall be adequately trained, instructed and supervised to ensure so far as is reasonably practicable the Health and Safety of all persons who may be affected by the works under this Contract.

All plant, equipment and vehicles for use under this Contract shall, where statutorily required, be tested and examinations will be submitted to the city Engineer before any item of plant is brought into use under the Contract.

Before commencing work I will prepare a written policy on the Health and Safety of any employee engaged in this work together with written organisational arrangements for carrying out the policy, including particular arrangements for the health and safety of employees required to enter manholes and culverts.

Signed: .....

On behalf of: .....

.....

.....

.....

Date: .....

(signed copy to be returned with Tender Submission)

**COLLUSIVE TENDERING CERTIFICATE**

We certify that this is a bona fide tender and that we have not fixed or adjusted the amount of the tender by or under or in accordance with any agreement or arrangement with any other person. We also certify that we have not done and we undertake that we will not do at any time before the hour and date specified for the return of this tender, any of the following acts:

1. Communicating to a person other than the person calling for those tenders, the amount or approximate amount of the proposed tender, except where the disclosure, in confidence, of the approximate amount of the tender was necessary to obtain insurance premium quotations required for the preparation of tender.
2. Entering into any agreement or arrangement with any other person that he shall refrain from tendering or as to the amount of any tender to be submitted.
3. Offering or paying or giving or agreeing to pay or give any sum of money or valuable consideration, directly or indirectly to any person for doing or having done or causing or having caused to be done, in relation to any other tender or proposed tender for the said work, any act or thing of the sort described above.

In this certificate the word "person" included any persons and anybody or association, corporation or unincorporated and "any agreement or arrangement" included any such transaction, formal or informal and whether legally binding or not.

Signed: .....

On behalf of: .....

.....

.....

.....

Date: .....

(signed copy to be returned with Tender Submission)

# Declaration of Commitment to Promoting Equality of Opportunity and Good Relations

## 1. Preamble

---

**1.1 Under Section 75 of the Northern Ireland Act 1998 Derry City Council must have due regard to the need to promote equality of opportunity:**

- Between persons of different religious belief, political opinion, racial group, age, marital status or sexual orientation;
- Between men and women generally;
- Between persons with a disability and persons without;
- Between persons with dependants and persons without.

1.2 In addition the Council must also have regard to the desirability of promoting good relations between persons of different religious belief, political opinion or racial group.

1.3 The Council is committed to fulfilling these obligations and is keen to not only to ensure that suppliers of goods and services, contractors undertaking work on behalf of the Council, and groups who receive support from the Council do not act in any way that would contravene the Council's statutory equality duties but also that they help promote equality of opportunity and good relations within their own area of work and organisation.

1.4 It is therefore a condition of any offer of grant aid / support or contract for goods or services that the Chief Executive, Managing Director or other authorised person signs, on behalf of their organisation, the declaration below. This declaration will confirm that the organisation is committed to promoting equality of opportunity and good relations and will not act in any way that will undermine the Council's commitment to fulfil its statutory obligations.

1.5 The Council will not enter into any contract or provide support / grant aid to any organisation which does not sign the Declaration of Commitment to the Promotion of Equality of Opportunity and Good Relations.

## Declaration of Commitment to the Promotion of Equality of Opportunity and Good Relations

---

We (insert name of organisation): .....

Recognise Derry City Council's duty to have due regard to the need to promote equality of opportunity:



## Freedom Of Information

Derry City Council is subject to the provisions of the Freedom of Information Act 2000. Should any tenderer consider that any of the information supplied by them is either commercially sensitive or confidential in nature, this should be highlighted and the reasons for its sensitivity specified. In such cases, the relevant material will, in response to FOI requests, be examined in light of the exemptions provided for in the FOI Act.

Tenderers should be aware that the information provided in the completed tender and contractual documents could be disclosed in response to a request under the Freedom of Information Act. No information provided by Tenderers will be accepted “in confidence” and Derry City Council accepts no liability for loss as a result of any information disclosed in response to a request under the Freedom of Information Act.

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In accordance with the Lord Chancellors code of Practice on the discharge of public functions, Derry City Council will not accept any contractual term that purports to restrict the disclosure of information held by the Council in respect of the contract or tender exercise save as permitted by the Freedom of Information Act. The decision whether to disclose information rests solely with Derry City Council.

Derry City Council will consult with tenderers, where it is considered appropriate, in relation to the release of controversial information. Tenderers will be notified by the council of any disclosure of information relating to them.

# Non-Submittal of Tender Form

FAO: Derry City Council Tender Review, Council Offices, 98 Strand Road, Derry BT48 7NN

FAX NO.:

Tender: "Partnership Proposal for the Design, Installation and Maintenance of Wireless Network Infrastructure for the Northern Ireland Broadband Project"

Supplier:

Our company is unable return a tender submission for this project for the following reason:

- Unable to submit price in timescale
- Unable to complete work within required programme
- Other (please specify below)

.....  
.....  
.....  
.....  
.....

Signed:.....

For or on Behalf of: .....

Address:.....

.....  
.....

Position in Company: .....

Date: .....

# Appendix 7

## Wireless City DVD Tender Invitation Document

*Economic Development  
Public Relations, DVD and Website Production Services for the Northern  
Ireland Broadband Flagship Project*

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# 1 Introduction & Scope of Works

Derry has been designated by DETI as Northern Ireland's Flagship Project for the demonstration of wireless broadband technology. Derry City Council, the University of Ulster and North West Institute (NWI) are working in partnership to implement initiatives that will create a wireless-enabled working environment in the City for students, lecturers, tourists, City Councillors and local government officers.

The project aims to provide a leading edge wireless network within the City's Historic Walls Council Chamber and Offices, a SMART Classroom environment within the University of Ulster and NWIFHE and the provision of specific electronic services for tourists including historic and cultural information, eating guides and shopping opportunities through wireless devices such as PDAs.

There are three distinct strands to the project:

## **WIRELESS CAMPUS:**

This strand will involve provision of wireless networking services on and off campus, development of SMART Classrooms and piloting a tablet PC mandate initiative

## **WIRELESS COUNCIL:**

This strand will involve the provision of wireless infrastructure in the Council offices on the Strand road and Council Chamber on Guildhall Street.

## **WIRELESS WALLS:**

This strand will implement a wireless network in the walled area of the City and focus on provision of specific electronic services for tourists including historic and cultural information, eating guides and shopping opportunities through wireless PDAs.

Derry City Council in conjunction with its partners – the University of Ulster and North West Institute (NWI) wish to invite tenders from companies with extensive experience in Public relations, DVD, Website and Multimedia Presentation Development as part of the sales and marketing programme of the project to be launched in June 2005.

## 2. Services Required

---

Identify and evaluate key messages to achieve the outputs as detailed in section 2.5 and translate these messages into a DVD, Website and Multimedia Presentation.

### **2.1 Services Required**

The services that are required are detailed below:

1. Production of a DVD
2. Design, construction and maintenance of an interactive website which will be accessible when viewed on a PC and other platforms including PDAs

### 3. Creation of a Multimedia Presentation

#### **2.2 Objectives of DVD, Website and Multimedia Presentation**

The objectives of the DVD, Website and Multimedia Presentation are as follows:

- Increase awareness of Derry as a Digital City
- Promotion of Derry as an attractive location for Investment.
- To be an information resource for the demonstration of best practice
- Raise the profile of each of the participating organisations including Derry City Council, the University of Ulster, North West Institute and the Department for Enterprise Trade and Investment

#### **2.3 Target Audience**

The target audience for the DVD, Website and Multimedia Presentation includes:

- Investors: To visualise and communicate the unique selling proposition of Derry
- Businesses: To demonstrate the benefits of using new technology in general and wireless broadband technology in particular and to see an increase in the level of usage of wireless broadband
- Peer Local Authorities and 3rd Level Educational Organisations: To be an informational resource for peer local authorities and educationalists and to promote Derry as a model of best practice

#### **2.4 Key Themes**

- Derry is the Regional City for Ireland North West, the second largest city in Northern Ireland and the fourth largest on the island of Ireland. Ironically for a city that is steeped in historical pedigree, Derry is also known for being a youthful City and at the cutting edge of technological innovation and entrepreneurial flair.
- Infrastructure: Derry has a well developed broadband telecommunications system
- Wireless Campus: Focus on Tablet PCs and wireless technology - the benefits for research, teaching and learning
- Wireless Council: Focus on Councillors operating in a wireless environment – business benefits of work being carried out electronically and potential cost savings in terms of staff time and paper usage etc.
- Wireless Walls: Focus on the use of new technology in the provision of enhanced services to visitors.
- Wireless Businesses: Focus on companies utilising wireless broadband and the business benefits for these companies – boosting trade, attracting new customers and cost savings etc.

#### **2.5 Outputs**

- 15 no. investors visiting Derry per annum

- 50 no. businesses using the wireless demonstration centre in the University
- 10 no. delegates from peer local authorities visiting Derry
- 10 no. delegates from peer educational organisations visiting the University and North West Institute

### **3 Format of promotional tools and materials**

---

#### **3.1 The DVD should include the following elements:**

- An interactive Menu – for maximum flexibility allowing the viewer to decide the running order of the DVD
- Introduction – An introductory overview of Derry as a digital city
- A profile of the key themes as detailed in section 2.4, plus a sponsor overview
- Estimated total running time – Approx. 20 Minutes
- Video footage, graphics, music, voiceover and typography
- Credits
- The DVD should be dynamic, informative and highly creative
- The DVD sleeve should be printed on 300 grams silk art card

#### **3.2 Format of Website**

- An interactive website – for maximum flexibility
- Content
  - Homepage – An introductory overview Project
  - Additional Pages – Highlighting the key themes as detailed in section 2.4, plus a sponsor overview. The site should allow for scalability. There should also be a dynamic section that the partners can contribute to i.e. news updates etc
  - Text, images and video
- Brand/ Design: The brand for the website has already been established however must be refined for delivery on the web.
- Accessibility: Conformance with level AA of the Web Accessibility Initiative (WAI) standards on accessibility.
- Domain Name Registration
- Other: search engine submission, hosting of site and availability of website statistics

#### **3.3 Format of Multimedia Presentation**

- Content:

- Introduction – An introductory overview of the project
  - A profile of the key themes as detailed in section 2.4
  - A sponsor overview
- 
- Brand/ Design: The brand for the presentation has already been established however must be refined for delivery in a multimedia presentation
  - The Presentation should be dynamic, informative and highly creative
  - The presentation should be complete prior to the project launch on 1st June 2005

## **4 Requirements for Submission of Tenders**

---

### **4.1 Format of Tenders**

Those interested in tendering for this project should submit a tender document of no more than twelve A4 pages (exclusive of CVs) under the following headings:

#### **UNDERSTANDING OF BRIEF**

Proposed methodology and general approach to assignment and earliest start date and expected time frame for delivery.

#### **EXPERTISE**

Composition of proposed project team to include CVs, relevant qualifications and any other relevant information. The appointed company should possess extensive expertise in Public relations, DVD and Website Production Services.

#### **EXPERIENCE**

Evidence, including references of a track record of similar type projects

#### **COST**

A breakdown of cost of tender as per Form of Tender based on cost per service required, number of days allocated to each element of project, cost per day, breakdown of team costs. Costs should be exclusive of VAT but inclusive of all anticipated expenses. Interim payments will be made in accordance with work stages set out for the delivery of the assignment.

#### **COPYRIGHT**

All original artwork, photography and film shall remain the property of Derry City Council

Tenderers should note that a maximum budget of £30,000 exc VAT has been set for this assignment.

# Instructions to Tenderers

## 1. Invitation To Tender

---

1.1 Derry City Council principally invites detailed and costed proposals for Tender brief defined in Introduction.

## 2 Explanation of Documents / queries during the tender period / registration of intent to tender

---

2.1 It is the responsibility of prospective facility/service providers (hereafter referred to as 'tenderers') or parties submitting 'expressions of interest' to obtain for themselves at their own expense any additional information necessary for the preparation of their proposals (hereafter referred to as 'tenders') or 'expressions of interest'.

2.2 Tenderers are advised to ensure that they are fully familiar with the nature and extent of the obligations to be accepted by them if their tender is accepted, including the Council's Standing Orders, a copy of which may be seen by arrangement.

2.3 Should any tenderer be in doubt as to the interpretation of any part of the contract documents, the Senior Economic Development Officer shall endeavour to answer written enquiries. All queries must be submitted in writing to arrive with the Senior Economic Development Officer not later than 2 weeks before the date of return of tenders, ie, date, by post, fax or email to:

Senior Economic Development Officer, Derry City Council, Council Offices, 98 Strand Road, Derry, Northern Ireland, BT48 7NN.

Fax No: +44 28 71365151, E-Mail – [economic@derrycity.gov.uk](mailto:economic@derrycity.gov.uk)

2.4 All copies of written queries received, together with written replies will be sent to all tenderers not later than two weeks before the date of return of tenders. All responses will also be posted on the Council's website as detailed:- <http://www.derrycity.gov.uk/Tenders/index.htm>

2.5 In order to ensure receipt of written replies, all prospective tenderers are therefore requested to register their intent to tender in writing to the Senior Economic Development Officer by post, fax or email as noted in Clause 2.3 above, not later than three weeks before the date of return of tenders, including full contact details and indicating tenders will be submitted.

2.6 No representation, explanation, or statement made to a tenderer, or anyone else, by or on behalf of the Council, as to the meaning of any of the tender documents, or otherwise in clarification as aforesaid, shall bind the Council in exercise of its powers and duties under any subsequent Contract(s).

### **3 Accuracy Of Tender**

---

Tenders must be submitted for the supply of all the services specified in the Pricing Schedule. Tenders submitted for part of the services only will be rejected. Tenderers must price separately for all items listed in the Pricing Schedule. The Council may reject any tender that is not priced separately.

### **4 Information to be provided**

---

Tenderers should provide a brief description of the overall organization of their company. This description shall note how long the company has been in operation.

Tenderers must also include subcontracting information in this section if subcontractors will be engaged. Subcontractors must be named and their roles in the project briefly described.

#### **PROVIDE THIS GENERAL BACKGROUND INFORMATION:**

- Company Address
- Contact person
- Year established and company background
- Account experience
- Number of customers currently being serviced
- Comprehensive list of available services
- Provide any additional background information.

Tenderers must complete and return all relevant tender/pricing, assurance and declaration forms and certificates etc.

### **5 Submission of Tender Documents (and/or Additional Proposals and Expressions of Interest)**

---

5.1 The tender(s) shall be made on the Form of Tender(s) provided, and signed by the Tenderer. All Contract Documents, together with these Instructions and completed Form of Tender(s) should be forwarded, by registered post or delivered by hand and a receipt obtained to:

“Marketing, DVD Production and Website Development Services”

Mr A McGurk,  
Town Clerk and Chief Executive,  
98 Strand Road, Derry  
BT48 7NN,

so as to arrive not later than 12.00 noon on 8 April 2005

No UNAUTHORISED alteration or addition should be made to the Tender Form(s), or to any other of the Contract Documents. IF ANY SUCH ALTERATION OR ADDITION IS MADE OR IF THESE INSTRUCTIONS ARE NOT FULLY COMPLIED WITH THE TENDER MAY BE REJECTED.

5.2 All documents requiring a signature shall be signed.

(a) Where the Tenderer is an individual, by that individual

(b) Where the Tenderer is a partnership by the two duly authorised partners.

(c) Where the Tenderer is a company by two directors or by a director and the secretary of the company, such persons being duly authorised for that purpose.

5.3 Tenders shall be submitted strictly in accordance with the tender documents.

5.4 No alteration to the text of any of the Tender Documents will be permitted, and if any are made, the tender may be rejected. Failure to complete any part of the documents may also incur rejection of the tender.

5.5 Tenderers must ensure that all requested documentation is returned with the completed tender.

5.6 No name or mark, including any franking machine slogan, is to be placed on the envelope to indicate in any way the identity of the sender.

5.7 Tenderers or any representatives thereof will not be permitted to be present when the tenders are opened.

5.8 All prices should be quoted in pounds sterling and shall be exclusive of VAT.

## **6 The Basis of the Tender**

---

The rates quoted in the tender pricing section shall remain fixed for the duration of this contract.

## **7 Period of Acceptance**

---

The Tenderer is required to hold this tender open for acceptance for a period of 120 days from the closing date for the submission of tenders.

## **8 Evaluation of Tender**

---

8.1 Evaluation/Award Criteria are outlined in next section.

8.2 Derry City Council is not required to accept the lowest or any tender and may wish to award the contract as a whole or individual aspects depending on the strength of the successful team.

## **9 Contract Documents take Precedence**

---

The information given in these Instructions for Tenderers is given in good faith for the guidance of Tenderers, but if there is any conflict, the Conditions of Contract, Specifications, and the

Pricing Documents shall take precedence over these Instructions.

## **10 Pre-Selection Interviews / Presentations**

---

Tenderers are put on notice that they may be required to attend the Council Offices, 98 Strand Road, Derry, for procedural and technical presentations and/or interviews during the process of tender evaluation at no charge to Council.

## **11 Contract Commencement Date**

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It is envisaged that this contract will commence on 18 April 2005

## **12 Questions**

---

All questions, requests or other communications regarding this tender must be made in writing to Louise.Breslin@derrycity.gov.uk.

## **13 Late Submissions**

---

Tenders submitted after the closing date will not be accepted.

## Evaluation / Award Criteria

Submissions will be evaluated in respect of each option taking into account the following where relevant:

### **1.1 Company's Ability to Deliver - Including:**

---

- a. Financial Status
- b. Management Capability
- c. Technical capacity
- d. Experience of similar project or service delivery
- e. References
- f. Key personnel

### **1.2 Price**

---

### **1.3 Compliance**

---

- a. Health & Safety Legislation
- b. Fair Employment

## Form of Tender

“Marketing, DVD Production and Website Development Services”

To: Derry City Council, Council Offices, 98 Strand Road, Derry BT48 7NN

Members:

Having examined all documentation bound in this Invitation Document as listed in the Table of Contents. I/we undertake to provide the above-mentioned services in conformity with this tender for the following prices: -

Item	Cost	Back up Information
DVD		
WebPage		
MultiMedia Presentation		

I/we agree that all prices will be fixed for the term of this contract.

I/we understand that you are not bound to accept the lowest or any tender.

Signed: .....

For or on Behalf of: .....

Address: .....

Position in Company: ..... Date: .....

# Form of Agreement

*(Not For Completion)*

AGREEMENT made the..... day of.....20.....

Between Derry City Council of Strand Road, Derry, in the County of Londonderry  
(hereinafter called "the Employer") of the one part and of.....  
in the County of .....  
(hereinafter called "the Contractor") of the other part.

WHEREAS the Employer is desirous that certain works should be performed, viz:  
.....  
.....

and has accepted a Tender by the Contractor for the performance of such works,

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the General conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:-
  - (a) The said Tender;
  - (b) The Conditions of Contract;
  - (c) The Specification
  - (d) The Pricing Schedule

and the Contractor hereby acknowledges having read and understood same by virtue of setting his initials thereto at the time of signing hereof.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to perform the Works in conformity in all respects with the provisions of the Contract and the documents specified at paragraph 2 hereof.

4. The Employer hereby covenants to pay to the Contractor in consideration of the performance of the Works the Contract Price at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused their respective Common Seals to be hereunto affixed (or have hereunto set their respective hands and seals) the day and year first above written.

SIGNED BY: -

IN THE PRESENCE OF: -

SIGNED AND SEALED  
BY DERRY CITY COUNCIL  
IN THE PRESENCE OF: -

MAYOR

CLERK AND CHIEF EXECUTIVE OF THE COUNCIL

**Form of Assurance**

---

Health and Safety at Work (Northern Ireland) Order 1978

The Contractor's attention is drawn to the provision of the above Order, which became law on 1 May 1979, and in particular to Clause 4 of the Order "General Duties of Employers to their Employees".

I undertake in the event of my tender being accepted to carryout these works with due regard to the provisions of the Health and Safety at Work (Northern Ireland) Order 1978 and all attendant Regulations made there under.

Site staff shall be adequately trained, instructed and supervised to ensure so far as is reasonably practicable the Health and Safety of all persons who may be affected by the works under this Contract.

All plant, equipment and vehicles for use under this Contract shall, where statutorily required, be tested and examinations will be submitted to the city Engineer before any item of plant is brought into use under the Contract.

Before commencing work I will prepare a written policy on the Health and Safety of any employee engaged in this work together with written organisational arrangements for carrying out the policy, including particular arrangements for the health and safety of employees required to enter manholes and culverts.

Signed: .....

On behalf of:.....

.....

.....

.....

Date: .....

## **Collusive Tendering Certificate**

---

We certify that this is a bona fide tender and that we have not fixed or adjusted the amount of the tender by or under or in accordance with any agreement or arrangement with any other person. We also certify that we have not done and we undertake that we will not do at any time before the hour and date specified for the return of this tender, any of the following acts:

1. Communicating to a person other than the person calling for those tenders, the amount or approximate amount of the proposed tender, except where the disclosure, in confidence, of the approximate amount of the tender was necessary to obtain insurance premium quotations required for the preparation of tender.
2. Entering into any agreement or arrangement with any other person that he shall refrain from tendering or as to the amount of any tender to be submitted.
3. Offering or paying or giving or agreeing to pay or give any sum of money or valuable consideration, directly or indirectly to any person for doing or having done or causing or having caused to be done, in relation to any other tender or proposed tender for the said work, any act or thing of the sort described above.

In this certificate the word "person" included any persons and anybody or association, corporation or unincorporated and "any agreement or arrangement" included any such transaction, formal or informal and whether legally binding or not.

Signed: .....

On behalf of: .....

.....

.....

.....

Date: .....

# Declaration of Commitment to Promoting Equality of Opportunity and Good Relations

## 1. Preamble

---

1.1 Under Section 75 of the Northern Ireland Act 1998 Derry City Council must have due regard to the need to promote equality of opportunity:

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1.2 In addition the Council must also have regard to the desirability of promoting good relations between persons of different religious belief, political opinion or racial group.

1.3 The Council is committed to fulfilling these obligations and is keen to not only to ensure that suppliers of goods and services, contractors undertaking work on behalf of the Council, and groups who receive support from the Council do not act in any way that would contravene the Council's statutory equality duties but also that they help promote equality of opportunity and good relations within their own area of work and organisation.

1.4 It is therefore a condition of any offer of grant aid / support or contract for goods or services that the Chief Executive, Managing Director or other authorised person signs, on behalf of their organisation, the declaration below. This declaration will confirm that the organisation is committed to promoting equality of opportunity and good relations and will not act in any way that will undermine the Council's commitment to fulfil its statutory obligations.

1.5 The Council will not enter into any contract or provide support / grant aid to any organisation which does not sign the Declaration of Commitment to the Promotion of Equality of Opportunity and Good Relations.



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Derry City Council will consult with tenderers, where it is considered appropriate, in relation to the release of controversial information. Tenderers will be notified by the council of any disclosure of information relating to them.

# Non-Submittal of Tender Form

FAO: Derry City Council Tender Review, Council Offices, 98 Strand Road, Derry BT48 7NN

FAX NO.:

Tender: "Marketing, DVD Production and Website Development Services"

Supplier:

Our company is unable return a tender submission for this project for the following reason:

- Unable to submit price in timescale
- Unable to complete work within required programme
- Other (please specify below)

.....  
.....  
.....  
.....  
.....

Signed:.....

For or on Behalf of: .....

Address:.....

.....  
.....

Position in Company: .....

Date: .....

