

Proposal to Department of Communications, Marine and Natural Resources
WLAN Trials Call for Proposals

Louth WLAN Pilot Programme

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Proposed by:



Regional Development Centre, Dublin Road, Dundalk, Co. Louth

Project Contact: [Section Deleted]

Supported By: Dundalk Chamber of Commerce
Drogheda Chamber of Commerce
Ardee Business Park
Louth Local Authorities
Dundalk Technology City Initiative
Dundalk Institute of Technology
Louth County Enterprise Board

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1 Project Summary

1.1 PRINCIPAL AIM

The Louth WLAN Pilot Programme (LWPP) aims to identify and demonstrate an **effective wireless local loop infrastructure** and commercial operating structure for deployment in the context of a **Regional WLAN Operator** facilitating the **cost effective** delivery of broadband services to a **variety of user types in a regional network supporting rural and small and medium sized urban areas**.

1.2 PROJECT LEAD

Digiweb Ltd., is an established Internet Services Provider located in Dundalk with a proven interest in developing **innovative broadband-enabling solutions**.

Key profile points include:

- Currently delivering **dedicated business broadband links via WLAN** in Dundalk.
- **Leading Hosting Services Provider supporting thousands of customers** throughout Ireland, Northern Ireland, the United Kingdom, and soon to launch in France.
- **Delivering broadband nationwide** through two-way VSAT technology tailored to smaller users.
- Leading an Enterprise Ireland **research project to develop Enterprise Management Software Systems for WLAN Broadband Networks**.

1.3 PROJECT SUPPORTERS

- **Dundalk Chamber of Commerce**
- **Drogheda Chamber of Commerce**
- **Ardee Business Park**
- **Louth Local Authorities**
- **Dundalk Technology City Initiative**
- **Dundalk Institute of Technology**
- **Louth County Enterprise Board**

1.4 TECHNICAL OVERVIEW

Through the deployment of [Section Deleted] operating within the license-exempt 2.4GHz and 5.8GHz spectrum, Digiweb aim to demonstrate an approach to **“last-mile” delivery of broadband services** which it is expected will **eliminate many of the challenges of WLAN implementation**.

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3 Project Objectives

- Identify the optimal technical platform for a Regional WLAN Operator.
- Implement and demonstrate the platform in a realistic regional network integrating across rural and small and medium urban (non-city) zones.
- Investigate nature and effectiveness of emerging Non Line Of Sight (NLOS) WLAN technologies
- Explore alternatives for WLAN Backhaul, WLAN Cell Extenders, and other connectivity options between zones where direct fibre connectivity may not extend.
- Develop and validate WLAN deployment calculations and projections in terms of actual technical area coverage.
- Develop subscriber density guidelines and minimum requirements based on assumed commercial service models.

4 Project Proposer

4.1 COMPANY OVERVIEW

Digiweb Ltd., established in 1997, is a **dynamic, innovative company** located at the Regional Development Centre in Dundalk. The company provides a **focused range of internet solutions** and products to SMEs, Consumers, and to other internet services companies, throughout Ireland, the UK, and soon, France.

Currently its services and products include:

- Internet Hosting and Managed Servers
- Wireless Broadband Internet – FWA and VSAT Satellite
- Software applications for the Internet industry

The company is in the final stage of securing its Basic Telecommunications License, which should be issued within coming weeks.

4.2 RESEARCH EXPERIENCE

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Innovation is a key driver for the company, and this has stimulated Digiweb into a period of rapid growth over the past year, introducing and implementing a number of new products and services which have met with strong demand in the marketplace.

The company is confident of its ability to lead this project, working in conjunction with its numerous project partners to deliver on the stated objectives.

5 Project Supporters

5.1 DUNDALK CHAMBER OF COMMERCE

Supporting business growth and expansion in Dundalk and its environs, the Dundalk Chamber of Commerce has campaigned strongly for investment in infrastructure and facilities within the region to attract and support high technology and knowledge based industry.

Dundalk Chamber will promote awareness of the pilot programme and its subsequent results among its membership, and support the programme through identification of pilot participants. It is envisaged the Chamber itself may also directly engage as a trial participant.

5.2 DROGHEDA CHAMBER OF COMMERCE

Drogheda Chamber of Commerce similarly has become an active advocate for the urgent requirement for broadband services within the Drogheda area, and the detrimental effect which lack of these services is causing in making it more difficult for the town to attract knowledge-based and other new businesses.

Drogheda Chamber is committed to ensuring that the necessary technologies are made available within the town, and promotes the need for a choice and flexibility amongst telecommunications services available. The Chamber will engage as a trial participant in the pilot programme, and will promote the programme and solicit feedback amongst its membership.

5.3 ARDEE BUSINESS PARK

Developed as a Community Initiative, the Ardee Business Park was established to provide incubation facilities and services to attract new business into Ardee. The Business Park has since expanded its remit to also become a local centre for training and education, and currently enjoying full occupancy it is planning expansion for early 2003.

Despite recent general infrastructural improvements in the town, no broadband services are currently available, and this inhibits the ability of Ardee Business Park to deliver the level of incubation and education services with respect to connectivity that they would wish. Ardee Business Park is a keen supporter of this pilot programme, and in addition to participating in the pilot in conjunction with their tenant start-up companies they will also provide facilities and connectivity location for the network equipment required to support the Ardee WLAN zone.

5.4 LOUTH LOCAL AUTHORITIES

Responsible for a wide variety of public services throughout the County, Louth local Authority (comprising Louth County Council, Dundalk Urban District Council, and Drogheda Borough Council) is an experienced party with respect to WLAN. Operating its own private 10-node WLAN network in Dundalk, the Authorities have witnessed at first hand the benefits of WLAN implementations.

Through the Information Systems Section support is being provided for the Pilot project, with the Local Authorities keen to promote the provision of options and alternatives for users in community projects, the home, and in business. Though not a direct trial participant itself, the Local Authorities are putting forward the Redeemer Centre in Dundalk and/or the Moneymore Community Centre in Drogheda to benefit from participation in the programme trial, and providing a Community perspective input to the study.

5.5 DUNDALK TECHNOLOGY CITY INITIATIVE

Established under the auspices of Dundalk Chamber of Commerce, this Initiative is representative of every main developmental and business organisation in Dundalk and is responsible for the promotion and development of facilities and infrastructure to create the pre-eminent location for high-tech and knowledge based enterprises in Ireland.

Member organisations include Dundalk Chamber of Commerce, Dundalk Institute of Technology, Enterprise Ireland, FAS, Louth Local Authorities, Louth County Enterprise Board, IDA, and Representatives of Local Business. The establishment of the pilot WLAN trial would deliver a fundamental advancement in some of the infrastructure objectives of the Dundalk Technology City Initiative.

5.6 DUNDALK INSTITUTE OF TECHNOLOGY

A leading contributor to the educational, cultural, and enterprise support facilities within the region, Dundalk Institute of Technology are supporting the WLAN trial particularly in the context of the establishment of broadband links between Drogheda and Dundalk.

The Institute is about to begin construction in Drogheda of a sister incubation centre to the Regional Development Centre on campus in Dundalk. This new centre will require broadband services to support tenant start-up companies, to provide links to the main DKIT campus, and to facilitate delivery of courses and content to the Drogheda centre.

DKIT will support the programme by providing the central basestation location and facilities for the Drogheda zone, and will further assist in the collection and analysis of data surrounding the commercial model development.

5.7 LOUTH COUNTY ENTERPRISE BOARD

Responsible for supporting enterprise throughout County Louth, the Enterprise Board are acutely aware of the costs for small business in availing of connectivity services and is keen to encourage developments which will deliver lower cost options to their clients. The Board will also be instrumental in identifying potential trial participants throughout Drogheda, Ardee and Dundalk.

6 Technical Overview

6.1 PROJECT SCOPE

This Pilot proposes the establishment of a Trial Regional WLAN Network, integrating both rural and urban zones to provide a realistic test-bed for the implementation of WLAN technologies, and the development of best practice models for subsequent commercial operations.

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Centred on the larger towns of Dundalk and Drogheda, the pilot will also wirelessly integrate Ardee, and a number of small towns and villages will either naturally fall within the service coverage area, or may be specifically included through use of Wireless Cell Extenders to push coverage out to more remote areas.

None of the towns included in this proposal have access to broadband services. Larger businesses in Drogheda and Dundalk are obliged to use expensive leased lines, but smaller business, community organisations, and residential users presently have no viable broadband options in any of the towns considered.

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Also included within the planned Pilot coverage area are a number of very small towns which are unlikely to ever benefit from cable or fibre-based broadband connectivity, yet through this programme approaches to deploying broadband in such towns may also be studied.

6.2 TECHNICAL PLATFORM

The technical approach for the Louth WLAN Pilot Programme (LWPP) is based on the following key components:

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Wireless Backhaul

To conduct a Pilot using only a single node or access point would not accurately reflect the nature of the WLAN networks which will need to be deployed across the country if wireless broadband is to become a reality. Within this proposal, it is planned to use one Wireless Backhaul and possibly a Wireless Cell Extender in the network topology.

As broadband services are not currently available in Ardee to any extent, it is planned to test the viability of building a wireless backhaul link to deliver the bandwidth into the central basestation for that zone. Should this prove successful it opens up the extensibility of WLAN networks to integrate coverage zones which may previously have been considered too distant, and most importantly delivers substantial cost savings to WLAN broadband operations.

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Wireless Cell Extenders

Extenders may be used also, where a population centre – possibly a small village - is located just outside the optimal coverage area. [Section Deleted] it can be seen for example that Castlebellingham and Annagassan may lie just outside the ideal coverage area, and thus an Extender located in Dunleer possibly could be used to amplify and relay signals towards those areas. *It should be noted that until the project is approved and detailed topology analysis and network design can be undertaken, the aforementioned is merely an example of one potential deployment of a cell extender.*

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Integrated Coverage Zones

Effective deployment of wireless local loop solutions will require the seamless coverage of multiple contiguous areas – including urban, suburban, and rural profiles. Within this pilot the effort particularly has been made to identify and include such area types. While making the pilot a little more complex, it also delivers a realistic testbed on which to experiment and develop best practices which can safely be relied upon to work in the real environment post-trial.

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WLAN Broadband Trunk Options

For the purposes of the pilot programme it may not be commercially viable nor available to connect to the bandwidth trunk in the areas under consideration. In this situation it is proposed that a two-way satellite unit would be used solely to feed the central basestation of the WLAN network. The pilot will as planned focus on the operation of WLAN technologies, but this scenario has the advantage that it permits further alternatives and options be considered within the wireless space. Such approaches would be particularly appropriate for towns the size of Ardee or smaller, should they not have a broadband trunk available nor have the ability to establish a wireless backhaul to other network nodes.

In contemplating this scenario within the region in question, the subsequent extension of commercial services to locations such as Castleblayney or Carrickmacross would benefit immensely from this methodology and network topology being examined and refined during the Pilot study.

7 Project Costing

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8 Project Plan and Milestones

8.1 PROJECT PHASING

- Phase I: Planning and Network Implementation** **Weeks 1 - 12**
Initial phase including topographical survey and analysis, network architecture, equipment identification and purchase, and network infrastructure installation.
- Phase II: Preliminary Trials and Testing** **Weeks 13 - 24**
Configuration and refinement of network infrastructure to optimise system and to define discrete broadband services. Also during this phase the trial participants will be identified.
- Phase III: Pilot Programme Operational** **Weeks 25 - 52**
Live operation of Pilot establishing realistic operating parameters and collecting data regarding network performance, coverage statistics, subscriber density, QoS, and commercial data.
- Phase IV: Post-Pilot Results and Pre-Commercialisation** **Weeks 53 - 64**
Collation and analysis of data and preparation of reports and audits for Department of Communications, Marine and Natural Resources. The proposer will then go forward to commercialise the project outcomes, as outlined in the next section.

8.2 PROJECT TASKS AND MILESTONES

Week Start	Week End	Task Description
1	4	<ul style="list-style-type: none">Project Supporter and Partner BriefingsDraft Network Architecture Development
5	8	<ul style="list-style-type: none">Topographical analysis of regionNetwork Architecture refinement based on analysisIdentification and RFQ for network equipment
9	12	<ul style="list-style-type: none">Equipment Order and DeliveryPre-installation site surveys with Install teamIdentification of preliminary participant trial sites
13	18	<ul style="list-style-type: none">Network InstallationPilot documentation and supporting information preparation

		<ul style="list-style-type: none"> • Definition of discrete services to be delivered through pilot
19	24	<ul style="list-style-type: none"> • Preliminary participant trial sites live • Network testing and refinement • Identification and installation of remaining participant sites.
25	52	<ul style="list-style-type: none"> • All trial participant sites live and operational • Full network operation and service delivery • Automated and Manual Collection of performance statistics and data • Participant and Potential Subscriber reviews and surveys
53	58	<ul style="list-style-type: none"> • Data Collation and Preliminary Analysis • Final survey of Participant feedback • Pilot Programme Review with Project Supporters
58	64	<ul style="list-style-type: none"> • Final Analysis, Reporting and Audit

9 Commercial Viability and Continuity

The infrastructure deployment proposed within this Pilot programme delivers a strong foundation on which to subsequently build out a future full-scale commercial Broadband WLAN covering the entire North East Region, including currently under-served locations such as Carrickmacross, Castleblayney, Carlingford, Omeath, and the wider rural areas of the region.

Further, the intensive trialing of various WLAN technologies and ‘last-mile connectivity’ methodologies proposed herein, will deliver a sound commercial model and experience on which to develop the wider network.

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10 Appendix 1: Supporting Letters

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11 Appendix 2: Tax Clearance Certificate

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