



Logica-ATDI Team wins MOD Pilot Spectrum Management Contract

Logica recently announced a contract with the UK Ministry of Defence (MoD), won through Competitive Tender, to enhance its battlespace capabilities through the development and implementation of a Pilot Battlespace Spectrum Management System (PBSMS).

The solution, developed by Logica, prime contractor for this initiative, and ATDI, spectrum management specialist, is highly sophisticated and raises the bar for similar solutions globally by allowing all UK armed forces to make most efficient use of the electromagnetic spectrum for radio communications dynamically and reliably.



The PBSMS will be capable of organising large amounts of information about military units and their spectrum needs and then use this information to provide working communications to all Joint service users of radio communications on the battlefield, in a rapidly evolving environment.

«The UK is one of the first nations to take steps to provide a dedicated Spectrum Management capability for its armed forces. Our military customers widely recognise that such a capability is essential in maintaining an operational edge in the modern Battlespace. The Pilot BSM System will provide an initial operating capability which will allow us to review the evolving user requirements, emerging user business process and operational concept, whilst also assisting in establishing a baseline for the mature BSMS.» said Neil Jarvis, a DPA representative, «The Logica and ATDI solution will enable the military spectrum managers to take account of terrain, weather and other prevailing conditions affecting Maritime, Land and Air Component radio communications, as well as allowing them to assess potential interference from other in-theatre users. In the interim it will become a key element in enabling the effective and efficient management of the users spectrum needs, and where responsibility dictates the needs of our Allied and Coalition partners.»



To meet the MoD's requirements Logica will develop the user interface, interoperability and specialist application software and will undertake systems integration with ATDI's application software onto 'semi-ruggedised' hardware. Logica will also provide initial equipment training to MoD military staff and in-service support for the solution throughout its lifecycle. ATDI will provide all of the COTS spectrum management solutions and specialist applications know-how to Logica.

Historically, military planners have viewed the spectrum as an infinite resource and have allocated users individual radio channels well in advance of any operations. This situation is no longer valid; modern military tools make increased demands on the available spectrum with every system from aircraft navigation to smart bombs and tanks being fitted with radio. This increase in military demand has been occurring just at the time when military spectrum is being released to civil applications to cater for the explosion in the use of mobile phones and other communication technologies. The challenge is now to provide a system capable of organising large amounts of information about military units and their spectrum needs and then using this information to provide working communications to all elements on the battlefield in a rapidly evolving environment.

John Berry, managing director of ATDI Ltd., said, «This system effectively addresses the complexity of modern military use of electromagnetic spectrum in a way never before achieved. Our tools were central to the success of the bid and we are pleased to have the opportunity to work in partnership with Logica on such a ground-breaking initiative.»

PBSMS: a system capable of organising large amounts of information about military units

Gary Lay, Logica's business manager, commented: «This latest win with the MoD is another illustration of our proven experience with the Department. The Logica-ATDI partnership was crucial to winning the contract as we are well matched with complementary capabilities. Logica's proven consultancy and systems integration expertise within the space and defence sector combined with the quality of ATDI's products will provide the MoD with the cutting-edge solution that is needed.»

Contact your nearest office for more information.

Editorial View from the top



Innovation is key to the development of markets and to the fuelling of growth in companies. This latest edition of Contact shows clearly that ATDI customers are steeped in innovation - whether by continuous incremental improvement or by revolutionary development.

In these four pages you will see the key role that regulators play in stimulating the industry in their country. In Ireland we have seen ComReg find innovative ways to stimulate the BFWA market. In Spain we see both national and regional regulators strive to support network development. In every case such action is laudable and we can all only wish that others would seek innovation to unblock and develop.

In these pages too, we see network innovation. DAB has yet to fly in many countries, stifled by the slow deployment of the broadcast network. Delivery from space with re-broadcast from terrestrial networks has significant merit. New police TETRA networks are themselves innovative and innovative methods are needed to prove contractual compliance. And in the military world innovative methods are needed to assure fighting forces of the spectrum they need to do their job. Innovation fuels improvement and is essential to the future of every society worldwide.

ATDI too has not been slow in innovating. You will see here our developments in spectrum management. You will see our developments in indoor modelling and our enhancements in planning features for military systems. We are committed to product innovation. Many of our customers have come to realise the high value that our specialism of radio modelling has within network innovation. Postulation about new networks is not just an economists or accountants task - technology makes it happen and engineers who understand that technology are key to success. ATDI fundamentally understand the delivery of services over radio. We are eager to work with others in the same way as we have worked with those you see here and those that, for reasons of commercial or governmental security cannot be mentioned.

We look forward to being of service to you in your innovation.

News in Brief



Transtel awards spectrum management system

Transtel, a division of Transnet Ltd., has extended its relationship with ATDI through the purchase of its spectrum management solution, ICS Manager.

Sold through its distributor Movere, ICS Manager will deliver in-depth spectrum management functionality working alongside ATDI's radio planning and spectrum management decision support tool, ICS Telecom. ICS Telecom has been used by Transtel since 1999.

Transtel is the largest full-service private telecommunications network operator in the Southern Hemisphere and, aside from the incumbent public operator, the company operates the only International Gateway for voice and data services in South Africa.

Contact mkadhi@atdi.com for more information



Tunisie Telecom to Plan and Deploy DECT Network



In January 2003, the national Tunisian operator, Tunisie Telecom, selected ATDI's ICS Telecom V6 as its radio planning tool of choice.

The system will be used to carry out national radio network planning for the deployment of a DECT network.

Tunisie Telecom will work with a local DECT equipment provider, OMNIA COM, to perform the national frequency planning.

Contact mkadhi@atdi.com for more information

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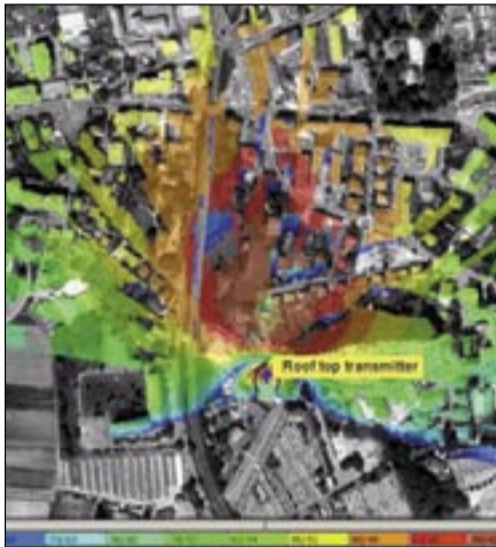
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Spanish Regulators Take their Responsibility Seriously

International regulators consider digital terrestrial television

The Office of Science and Technology, the Generalitat de Catalunya and the Junta de Castilla y León have all recently taken delivery of simulation software to enable them to model the impact of new telecommunications technologies being trialled and implemented across Spain.

Since the beginning of the 1990's the scope and volume of radio based telecommunications network deployment across Spain has grown enormously. The variety of technologies used has also evolved steadily in pursuit of healthy competition and this has in turn expanded the complexity of regulations needed to allow these technologies equitable



Human hazard (ECC 1999/519) area from roof mounted directional Transmitter

access to the radio spectrum. Taken together, these issues have introduced significant pressures on the regulators themselves:

- > Optimising the use of the spectrum - itself a finite resource
- > Meeting the demand for licences to both new and established operators
- > Managing radio infrastructure location to minimise the effect on public health

In Spain several national and regional administrations have purchased modelling and planning tools from ATDI to be able to respond to this growing challenge.

As a multi-technology modelling application, ICS Telecom allows engineers from these regulators to simulate the effects of spectrum assignment decisions to ensure that they are made in harmony with the needs of other independent communities for spectrum access.

One of the immediate technologies to which the new tools will be applied is digital terrestrial television. Here the digital service must be introduced without any undue disruption to the existing analogue network. At the same time, channels must be equitably distributed for digital use between the various operators.

The situation is similar in UMTS, PMR and LMDS, where regulator approval is needed for most siting in order to optimise frequency utilisation.

As for all technologies, the administrations take a caring approach to limiting the potential effect of electromagnetic energy on public health. To demonstrate that concerns are being considered, predicted power flux density charts from radio base stations across the country are produced and publicised using ICS Telecom.



One of the technologies is digital terrestrial television

These three Spanish regulators have joined a growing customer group across the world who seek to add value to their maturing domestic product by ensuring that the diversity of modern telecommunication technologies can speedily gain access to the radio spectrum whilst coexisting in a congested radio world.

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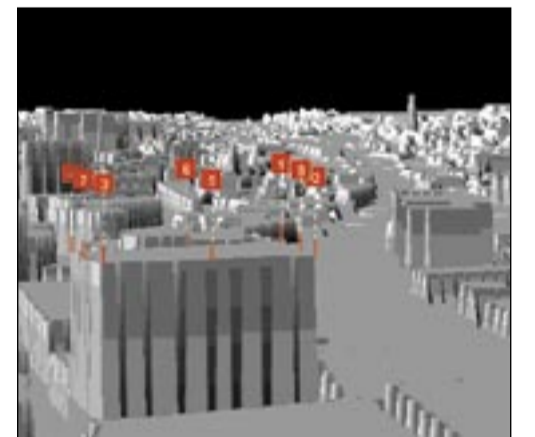
Kickstarting BWA Licencing

The broadband fixed wireless access business worldwide has gone through hell in the last few years. Initially the dot com bubble caused substantial growth and new telecommunication companies started up to deliver broadband services to large and small organisations.

Some looked at vertical services such as programme delivery... then the bubble burst and the BFWA market crashed. Licence holders disappeared or did not take up their licences with governments and those that did scaled down their deployments.

In a drive to recover this faltered market ComReg, the Irish regulator, asked ATDI to prepare a procedure that would evaluate BFWA licence applications whilst allowing a more flexible regime. In this new ComReg scenario, gone is the need to cover stated areas within stated timescales, gone is the need to deploy contiguous base stations and gone is the need to roll out substantial numbers of sites with commitment to serve substantial numbers of subscribers. In its place ComReg have implemented a flexible regime allowing anything upwards of a single base station site to gain a licence.

Such ad hoc licencing flexibility places massive



ComReg have implemented a flexible regime

demands on the spectrum managers themselves. Users must still be protected and all operators must know that the licencing regime can support them as their business (and associated network) grows beyond that originally licenced.

To solve these problems ComReg came to ATDI to develop licencing methods.

Commenting on the project, John Berry, UK Managing Director of ATDI, said, «More flexible licencing is one clear way to stimulate a lethargic market. The ComReg approach is very revolutionary in today's spectrum management terms and we were very pleased to be associated with such a step change in thinking.»

ComReg already uses ATDI's ICS Telecom software extensively for licence evaluation and approval. This project is an extension of a strong and on-going relationship between the two companies. ATDI has prepared a detailed step-by-step procedure for use by ComReg licencing engineers. Once this developmental stage of the project was completed, ATDI trained ComReg staff to ensure that they would know how to use the procedure in order to make the best use of this technology opportunity both now and in the coming years.

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Conseil Régional d'Aquitaine Takes First Step Towards Rural Broadband Internet

In a drive to bring Broadband Internet access to rural areas, local governments in France are researching possible solutions.

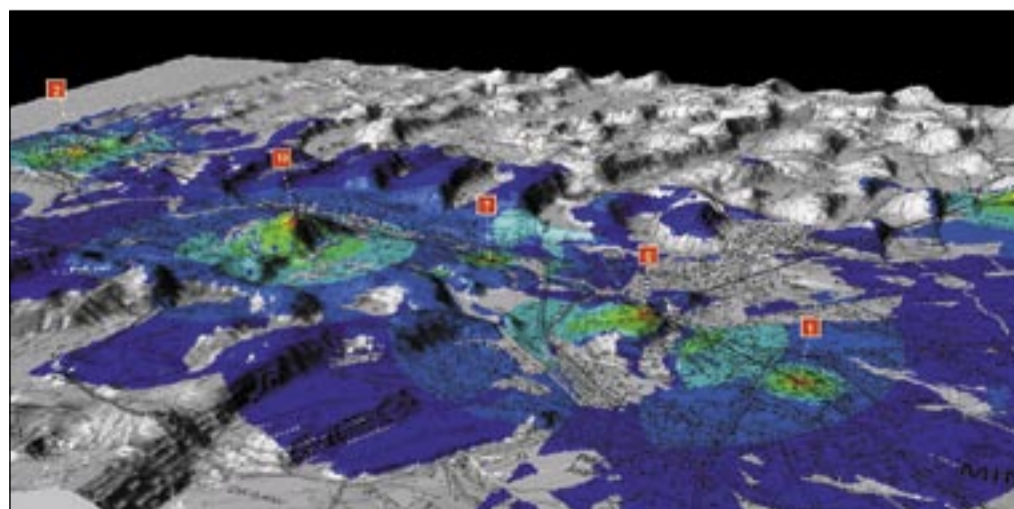
Although several technical solutions are available, they are not considered commercially viable by the incumbent operators. At the same time, local SMEs and indeed larger organisations are ready to move to broadband internet but they often face overwhelming technical and administrative difficulties in gaining connection.

To overcome these problems, the Conseil Régional d'Aquitaine (the local government of the Aquitaine region of France) has commissioned a study from ATDI and their partner Mercier.

The study aims to provide proposed solutions for connecting firms in rural areas to Broadband Internet working in collaboration with local companies. It will show the modelling of the radio network deployment (including WiFi), and

demonstrate the way in which cost modelling of different solutions will contribute to the preparation and evaluation of tenders.

Contact tog@atdi.com for more information



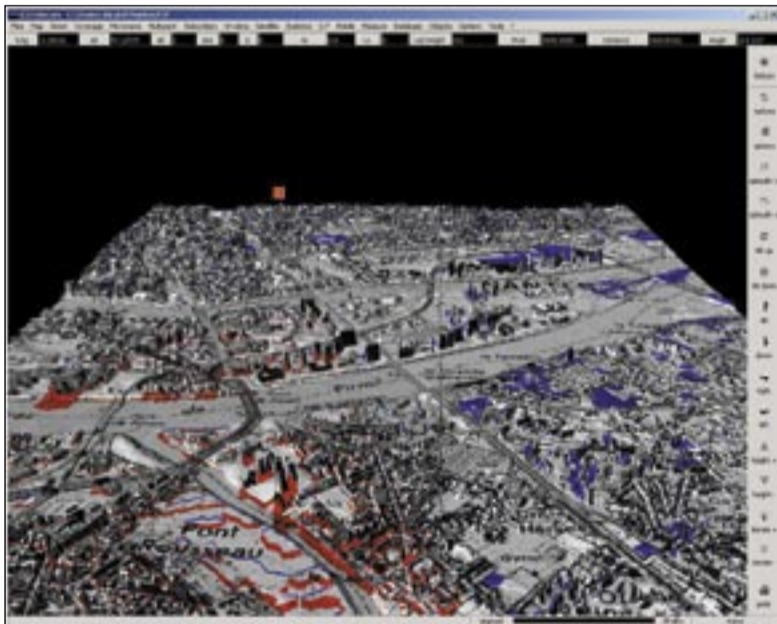
Terrestrial Repeaters Solve Satellite Sound Broadcasting Coverage Problems

WorldSpace, the first global operator of satellite digital audio broadcasting systems, and Alcatel Space, a world leader in the design and manufacture of satellite DAB technologies, have entered a strategic partnership to develop a digital sound broadcasting system for Europe delivered from space.

Both companies expect the planned system to provide seamless coverage across Europe, offering programmes of crystal-clear quality to users with in-car, fixed, and portable radios.

The network uses an L-Band allocation for the satellite downlink to the domestic subscriber but satellite delivery requires a clear line-of-sight between satellite and receiver to overcome the high path loss to space. With large numbers of mobile and portable-fixed users in urban areas it is near impossible to achieve this to a high percentage of subscribers.

To overcome such problems it is necessary to install terrestrial repeaters to relay the satellite signal. Of course, when planning such a system, the number of these terrestrial repeaters will have a significant impact on the total cost of the delivery network.



The repeater network was planned covering three reference cities

Alcatel and WorldSpace called on ATDI to identify the areas across France where terrestrial repeaters will be required and to estimate both their number and their technical characteristics.

Initially, the coverage of the satellite was calculated over the whole country. Then, a repeater network was planned covering three reference cities (Paris, Nantes and Boulogne-sur-Mer), using a high-resolution cartographic dataset.

And finally, the results found in the reference cities were extrapolated to apply to the whole of France using a medium-resolution cartographic dataset -covering all towns with a population greater than 50,000 inhabitants.

Since the service is targeted at mobile receivers, the next step will be to perform a detailed analysis of the coverage of the roads across France, taking into account contributions from both satellite and terrestrial repeaters.

And the survey says....?



Thames Valley Police checks Airwave with new surveying equipment from ATDI

Thames Valley Police force has bought two Gemini™ systems and one Libra™ upgrade from ATDI to enable it to establish a dedicated radio network surveying resource for the new radio network due to be put into service later this year.

The new systems will enable the Force to make sure that the Airwave service it is buying from O2 will do the job for which it is intended - providing the level of coverage required by the Force across the police area.

Once the network has been deployed, but before officers commence using it, extensive tests must be made to prove that agreed performance has been achieved at agreed locations. If the designers have done their job well, their planned 'certainty' (that there will be a defined probability of achieving communications at all specified locations) should translate to implemented 'actual', allowing the Thames Valley Police Airwave Project team to accept the network and the service it offers on behalf of the Force.

Thames Valley Police Radio Communications Department (Radiocom) has obtained a survey vehicle that will be dedicated to carrying out drive tests in the police area. To that end, one of the Gemini™ systems will be fitted within the vehicle. The second system will be a portable unit and will be used for in-building surveying. Field strength testing (checking the presence of adequate signal) at each point on the ground tells only one part of the story in a digital communications network. It can however be very useful in fault finding once problems are discovered.

The Gemini™ system will be used for perceived quality testing



Thames Valley Police will soon benefit from secure and highly available communication

(where sample speech is transmitted as it would in a real call). This is the only real way to evaluate the actual network performance and find the places where reception might be unintelligible or unavailable.

Together, the systems will provide peace of mind within the Force that the Airwave system will bestow the network performance required to effectively police the Thames Valley Police area.

Under the Gemini™ and Libra™ contract ATDI will also supply Thames Valley Police with comprehensive training to ensure that the Force Radiocom Team is able to respond to surveying requirements as soon as RFS is reached. As Rod Attewell, the Thames Valley Police Radio Networks Manager commented, «We need to be ready to survey the network as soon as it is delivered. Gemini™ and Libra™ will give us the necessary automatic surveying capability to speedily and quantifiably assess network compliance.» Thames Valley Police may also offer its expertise in verification surveying of the Airwave service to it's consortium forces in the future.

Gemini™ and Libra™ are trademarks for Radio Systems Information Ltd.

Contact lee.shanks@atdi.co.uk for more information.

The IF-77 radio wave propagation model

The IF-77 model is appropriate for the modelling of air/air, air/ground, air/satellite, ground/ground, and ground/ satellite paths. It has recently been incorporated into a number of ATDI software solutions for bespoke applications or for software components.

The model is useful in estimating the service coverage of radio systems operating in the frequency band from 100MHz to 20 GHz. Extensive comparisons of IF-77 predictions with measured data have been made by various agencies and companies in the past years and an atlas of basic transmission loss predictions has been generated using the model.

The model considers irregular terrain and propagation beyond the line-of-sight range. Terrain features are linked to the lower antenna and the radio horizon for the upper antenna is determined from the horizon obstacle or is taken as the smooth Earth radio horizon when a common horizon is negated by the earth's bulge.

The model includes allowance for:

- Average ray bending
- Horizon effects
- Long-term power fading
- Surface reflection multipath
- Tropospheric multipath
- Atmospheric absorption
- Ionospheric scintillations
- Rain attenuation
- Sea state
- Very high antennas



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Survey Services

ATDI have a sound competence in verification of installed networks, whether mobile or broadcast.

Verification can be done in many ways. Where time permits, comprehensive surveying allows the network operator to compare planned performance with that implemented. Alternatively, where a system integrator takes copious measurements himself and hands over results, verification can be done by validating these measurements and, within statistical inference limits, using these data to demonstrate compliance.

Whatever the need for surveying and data analysis, ATDI has the tools and the capability to support network operators in network verification.

Two tools, Libra™ and Gemini™, support ATDI survey services.

Libra™ uses a calibrated receiver, which fits in any vehicle without modification and can be operated by the driver alone. Up to 5 frequencies may be surveyed to produce statistically valid coverage data. Once data is recorded the analytical software can be used to show maps of composite coverage or the data can be exported to permit correlation within prediction tools, such as ICS Telecom, to assist in fine tuning prediction models. The Libra™ tool is completely technology independent.

Gemini™ is a survey tool specifically developed for assessing perceived quality, i.e. the overall performance that a user will experience whether that be limited by coverage problems, system overloading or equipment limitations. Gemini™ measures the critical parameters associated with coverage and grade of service, including use of human speech recordings. The results are analysed within the software using Mean Opinion Score methods based upon international standards. This sophisticated analysis allows the results to be displayed as maps, graphs and tables to enable easy interpretation. Gemini™ is technology independent, although it has been developed with the TETRA market in mind.

Gemini™ and Libra™ are trademarks for Radio Systems Information Ltd.

Contact brian.green@atdi.co.uk for further information.

Indoor Network Design for WiFi Applications

ICS Telecom, ATDI's flagship network planning tool, has been extended to incorporate indoor network deployment functions for WiFi and other confined space applications including IEEE 802.11-b systems.

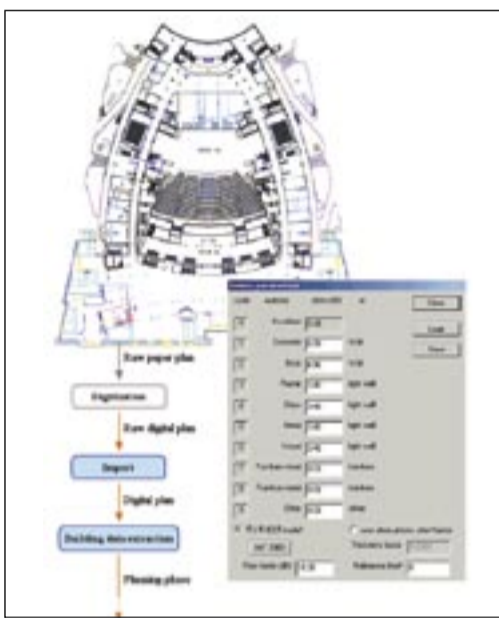
Traditionally the stumbling block for indoor propagation prediction has been the availability of building construction data. With the prevalence of comprehensive drawings for recently constructed or refurbished buildings, this problem can now be overcome simply in most instances. The building data can be manually extracted using ICS Telecom from a basic digitised floor plan.

Based on knowledge of the material between transmitter and receiver (concrete, brick or plaster walls or concrete or wood floors and ceilings) standard or operator input attenuation factors can be applied. From this model, indoor coverage prediction can be performed wherever in a multi-storey building the base stations or nodes and their associated subscribers are located. The result is access within ICS Telecom to the normal network modelling functions of coverage, traffic analysis, frequency assignment and interference analysis.

Planning and optimisation of WiFi and other indoor systems is now available.

Once the technical parameters of one or more base stations, nodes or Access Points has been defined, the user can calculate the coverage area, based upon a realistic propagation model. The coverage areas can then be analysed.

There are three possible deployment modelling methods available. Where the location of wireless subscribers or wireless devices is known, the tool can be instructed to automatically determine the



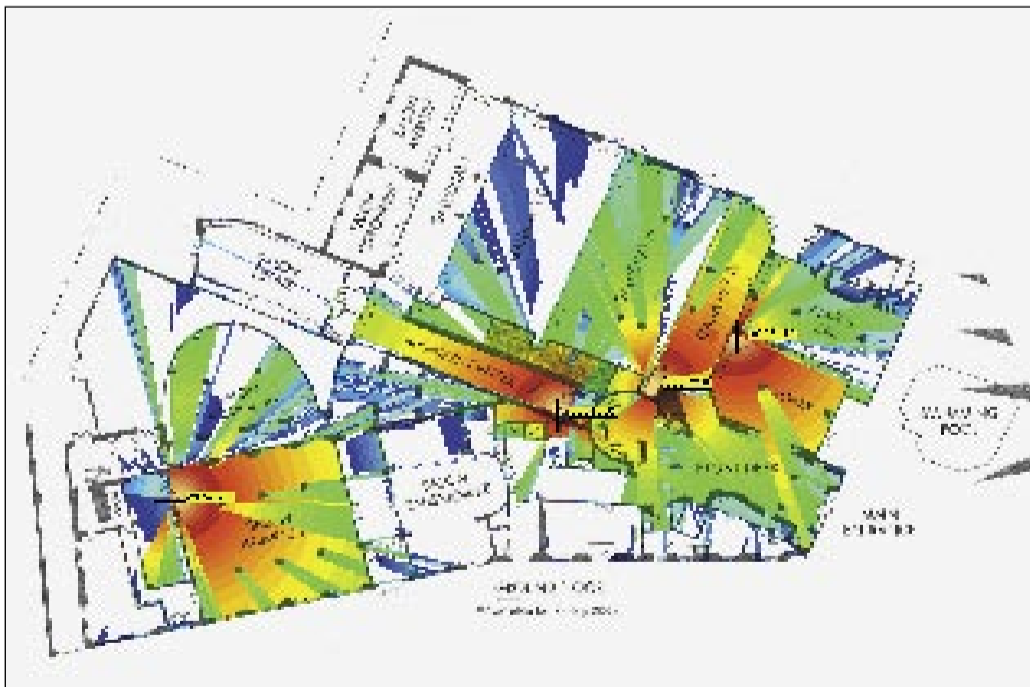
Building data extracted from a basic floor plan

best locations for the access points. Where the locations of access points is already known, ICS Telecom can analyse the connectivity available for various subscriber scenarios and where subscriber locations are unknown the tool can generate a coverage footprint in the conventional fashion.

Once the locations of the access points are defined, the tool can be used to undertake an automatic frequency assignment minimising interference to optimally assign spectrum to the network. The network can then be optimised for balance between traffic handling and interference.

ATDI will be happy to demonstrate this new functionality. Simply contact your nearest office.

Indoor Coverage



"On the Move" radio planning

ATDI has incorporated an on-the-move (OTM) function in HTZ Warfare, its flagship military modelling platform.

OTM is a dynamic function that calculates connectivity, whether line of sight (LOS or non line of sight (NLOS), while mobile units (MU) are in motion, giving the commander real time communications situational awareness of the signals and electronic warfare aspects of the battlefield.

OTM is an upgrade from the on-the-pause (OTP) function, in which calculations are taken during «snap shots» in the mission. The drawback to OTP is not having data between the pauses.

The military has a requirement to make calculations during phases of movement in order to improve mission planning and success. Each MU has a path to follow. As the MUs move at their designated speed, they establish links with one another either directly or indirectly through terrestrial communications infrastructure, satellites or unmanned aerial vehicles.

In HTZ Warfare, each MU is assigned specific parameters, such as path, speed, radio characteristics, and whether it is a radio unit, an intercept receiver or jammer.

Once all MUs are programmed, an OTM scenario is generated, and runs like an animation. As the OTM runs, it displays the connectivity as a line between MUs that have a link. A report is generated, providing the following:

- > Azimuth to other nodes on the network
- > Power received from one MU to another
- > Distance between the MUs

OTM makes mission planning more accurate and more realistic thereby allowing signals and EW managers

to limit communications to when it is both needed and available. This in turn limits hazardous periods of unnecessary communications.

Where HTZ Warfare is deployed in the field, mission planning can occur at every stage up until mission start and during deployment itself thereby accounting for changes in the battlefield environment.



Contact your nearest office for more information.

Our customer loyalty, Our best warranty

Every year more customers demonstrate confidence in ATDI's products and services worldwide.

For us, this shows great customer satisfaction with the current features of our software, but also it confirms our commitment to, and belief in, post-sales service and support.

We provide more than conventional upgrades and technical support for our complete range of software solutions. We want our customers to benefit from an efficient and personalised range of services relating to:

- > Planning method consultation
- > Sourcing of optimal propagation algorithms
- > Migration to new technologies
- > Access to specific technical documentation
- > Surveying and consulting services

ATDI will continue to court customer loyalty through persistent innovation and service excellence. This will be supported by a series of User Group



Meetings that aim to keep existing and future customers up to date with our products and services. Our last meeting proved extremely successful with all attendees reporting to us that they gained a good knowledge of our products and services and, as a result, they recognised the value that they could bring to their organisations.

Our considerable Project Management experience in both modelling and measurement were noted by all and we were seen to have a competitive advantage in several key areas. 40% of attendees felt that our competitive advantage was in our strong, experienced engineering team, 25% felt it was in our comprehensive, flexible product range, 25% felt it was in our ability to handle bespoke software projects and 10% felt it was in our ability to provide software components to system integrators.

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