

The background features a complex digital and network-themed graphic. It includes a grid of thin white lines, a series of overlapping red and orange hexagonal shapes, and a large sphere in the lower-left corner covered in binary code (0s and 1s). The overall color palette transitions from light blue at the top to teal and green at the bottom.

■ **Planning and modelling**



*By providing an integrated family of products and services, ATDI offers network operators, systems integrators, equipment vendors, regulators and consultants a unique opportunity to achieve both technical excellence and process efficiency in the modelling and planning of broadcast, mobile, fixed and satellite networks.*

### **Planning and modelling in context**



Modelling relies on there being some hypothesis or assertion which is required to be proven or modified. In radiocommunications such hypotheses abound particularly at the beginning of a technology or method. Typical examples might include the assertion that rail routes can be provided with public GSM and UMTS service from low cost, low technology trackside solutions or that UTRA TDD can successfully share with DVB-T services without there being undue interference experienced by either service. Such examples are somewhat incomplete and the whole business of modelling requires very precise definition of both parameters and constraints. Yet modelling is the most powerful and persuasive way of demonstrating what might be and what benefits the future might bring over today's state of the art. Scenario modelling is an established way of amplifying network performance in ways that are meaningful to engineers and laymen alike. Modelling is often a business level activity balancing technology with topology, spectrum and markets.

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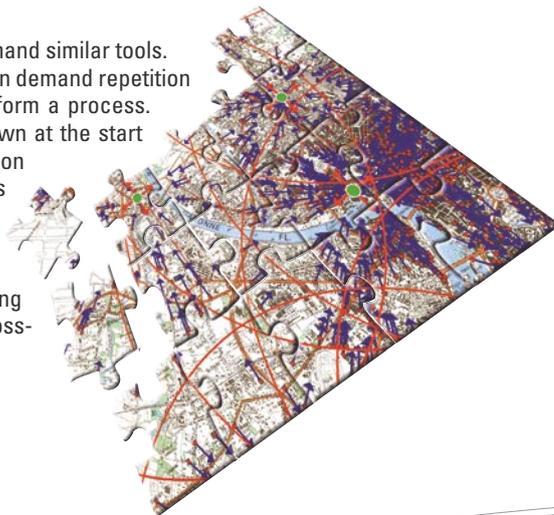
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***Planning is a 'whole organisation' task. It starts with requirements elicitation in marketing and ends in service delivery and sales.***

Planning suggests that at the start of the planning phase all parameters and all methods are known. If not, further modelling is needed. Planning also suggests that once started, there is an end goal visible and that all in the planning team are aware of that objective. All that is needed are the tool sets and the knowledge to put in place processes to ensure completion on time and to budget. Planning is therefore described by a project lifecycle. Planning is however inextricably linked to the practicalities of site acquisition and implementation and is normally iterative. Planning is a 'whole organisation' task. It starts with requirements elicitation in marketing and ends in service delivery and sales.

Both planning and modelling demand similar tools. Both planning and modelling often demand repetition of the same activities linked to form a process. Frequently the process is unknown at the start of the project but on completion of due research, high process efficiency can be achieved. For complete success, planning and modelling must exist in a context of process engineering embedded within other cross-organisation systems.





## ATDI in planning and modelling

Modelling and planning are simply the two sides of the same coin – one aiming to illuminate sensitivities and viabilities and the other aiming to realise a network. In both cases software makes the activity possible and the software tools needed are similar. ATDI has been developing and supplying software tools since 1991. In that time we have developed planning & modelling solutions for every known radiocommunications technology and delivered these to over 700 users in 70 countries.



Considered at the highest level, planning and modelling activities convert a set of requirements into either a plan or into some illumination of a problem. The process makes use of several key enablers; map data allows expression of the environment in which the network is to operate and frequently also includes geo-marketing data describing potential network subscribers, zones or boundaries, while software tools make use of this data to model radio propagation mechanisms, in turn allowing complex networks to be developed.

ATDI understands that provision of the right tools and the right data is essential but also that our work with our customers cannot stop there. We provide a full support service both remotely and on-site. Where our customers feel they need someone else to complete the planning or modelling work, we are happy to undertake consultancy from the smallest modelling task to the biggest network plan.

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## Tools and services to do the work

### Cartographic and geo-marketing data

All planning and modelling begins with the set up and use of appropriate cartographic data. ATDI is able to provide adequate data for every planning and modelling task across the World. This provision extends to geo-marketing data such as population databases, post code databases and other demographic and morphological information that takes the engineering work into marketing and sales to make the planning and modelling work useful across the business.

### ICS Map Server

Cartographic data is near ubiquitous but it comes in many forms including paper maps, satellite and aerial photography and soft forms such as aerial survey. ICS Map Server is invaluable in extracting, converting, geo-referencing and otherwise preparing data for use in planning and modelling software.

### ICS Telecom

ATDI's flagship planning and modelling tool allows any size of network using any technology to be analysed and synthesised. By being multi-technology capable from the outset, ICS Telecom also allows users to evaluate the interaction between networks and specifically between networks using different technologies.

### HTZ Warfare

Planning and modelling in the military world demands several additions over those that are already provided in ICS Telecom. HTZ Warfare is a comprehensive piece of communications electronic warfare and radiocommunications planning and modelling software.

### HerTZ Mapper

HerTZ Mapper provides the field engineer, the marketer and those planning smaller systems with the ability to analyse and synthesise using a simpler and lower cost tool without loss of accuracy.





## IMP Calc

Radio signals interact. How they interact is to a large extent predictable. IMP Calc computes the intermodulation products that occur when signals mix displaying, 3rd, 5th, 7th and 9th order products

## CSDT and ICS Web

During the planning activities copious amounts of data on the performance of the network is generated. For this to be useful to the sales and marketing organisation, it must be available and in a form that others can interpret. ATDI has implemented several systems to allow coverage plots and other descriptions of deployed networks to be accessed across operator organisations. The Customer Services Display Tool operates over a local or wide area network and ICS Web makes use of the Internet.

## ANTIOS

The performance of a network is dependent on the antennas used. These antennas can be simple or, more commonly today, complex, made up in turn from multiple elements. Antios is a software system that allows elemental antennas to be specified and various combinations of these elemental antennas to be synthesised to produce an aggregate effect and a final composite polar response in three dimensions. Once synthesised this can be exported seamlessly into ICS Telecom and HTZ Warfare for use in further network modelling and planning.

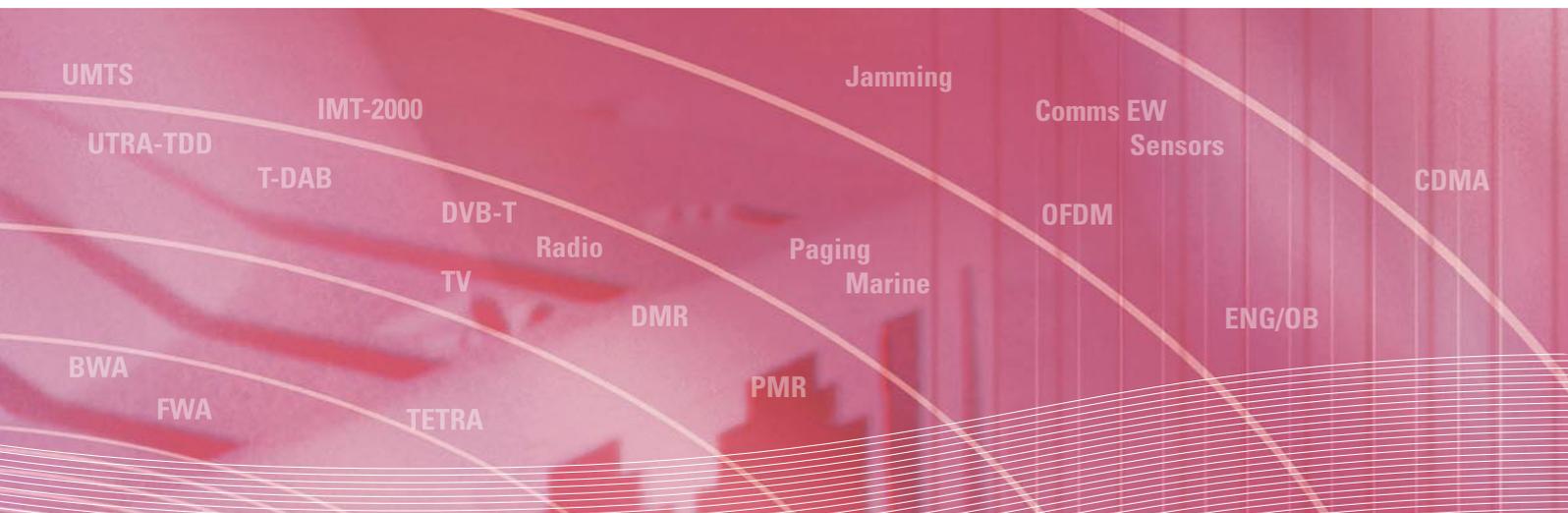
## Macro Recorder

Once methods have been developed for both modelling and for planning, these need to be developed as processes providing automation and an audit trail. ATDI's Macro Recorder allows the operator to 'teach' the system a series of set tasks and then to execute these at the touch of a single button, no matter how complex the series originally was.



## Consultancy

ATDI consultants are experts in the use of ATDI planning and modelling tools. They are also competent in the understanding and development of user requirements and in the development of tools and data that might be needed to satisfy these requirements. The result is an unparalleled capability in radiocommunications consultancy taking on everything from the biggest, most complex and the most intellectually challenging planning and modelling tasks to the smallest, simplest and most straightforward.



## Putting it all together

### **Product**

The list above outlines the ATDI portfolio of products. For further information on any one of these products simply contact us. Most can be supplied off the shelf. Where it transpires that something more specific to task is needed we will be happy to quote for the production of a custom tool. Where an embedded solution is needed we may recommend one or more of our radiocommunications software components.

### **Integrated Solution**

Whilst the products listed are stand alone, they do integrate to provide a complete, integrated solution extending from requirements elicitation and expression through mainstream planning and deployment through to display of the final network. ATDI will be happy to advise on the supply of an end-to-end computer aided planning and modelling system.

### **Training**

ATDI recognises that provision of software and data alone is not enough. We offer extensive training both in the tools and the way in which the tools may be applied to solve particular problems and model particular network types.

### **Technical Support**

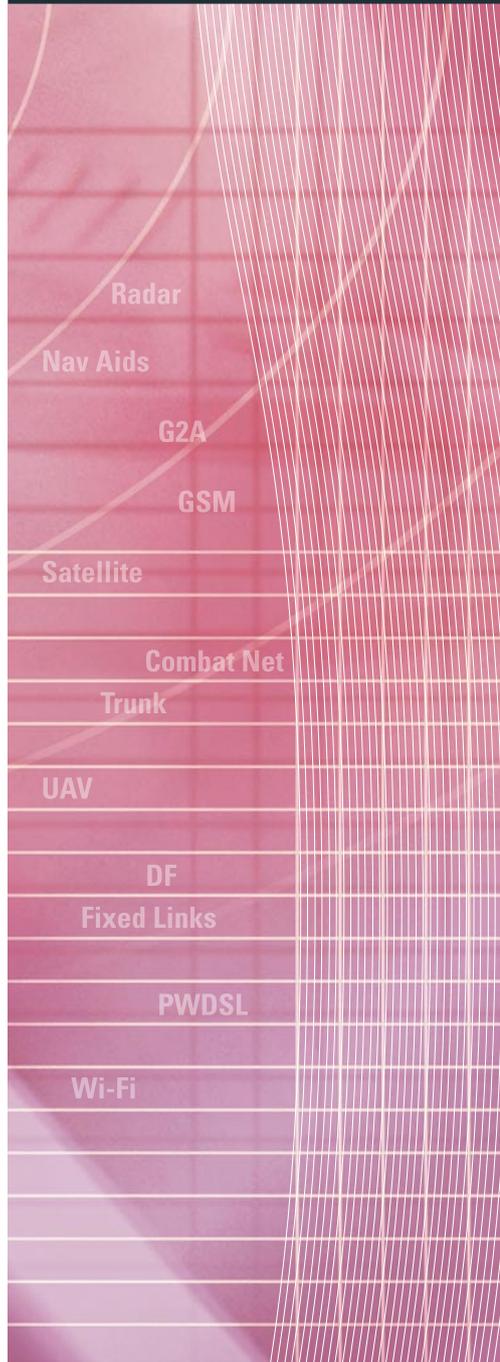
ATDI offers telephone and email technical support on all products. This covers both the use of the product and its application in carrying out specific planning and modelling tasks.

### **Maintenance**

Maintenance is the change to software to provide error rectification, compatibility with new operating environments, new functionality and improved reliability. To cover all of these ATDI has a policy of continuous innovation and development and therefore all customers can expect to have the opportunity to upgrade their application several times throughout its life.

### **Close Support**

ATDI is happy to extend provision of technical support to customers on-site. Often this is to help customers undertake planning and modelling tasks in domains with which they are unfamiliar, helping the customer's engineers in the first few weeks with developing methods and setting up software.



## **Contact us**

*ATDI has helped many systems integrators achieve great things in the radiocommunications domain. Could we help you?*

**ATDI Ltd**  
Kingsland Court - Three Bridges Road  
Crawley - West Sussex - RH10 1HL - UK  
Tel. +44 (0)1293 522052 / Fax. +44 (0)1293 522521  
World wide web page: <http://www.atdi.co.uk>  
E-mail: [enquiries@atdi.co.uk](mailto:enquiries@atdi.co.uk)

**Advanced Topographic Development and Images Limited**  
Company Registration Number 3198786

### *Other offices...*

**ATDI SA**  
8, rue de l'Arcade  
75008 Paris - France  
Tel. +33 (0)1 53 30 89 40  
Fax. +33 (0)1 53 30 89 49  
E-mail: [atdi@atdi.com](mailto:atdi@atdi.com)

**ATDI Inc.**  
2, Pidgeon Hill Drive, Suite 560  
Sterling - VA 20165 - USA  
Tel. +1 703 433 54 50  
Fax. +1 703 433 54 52  
E-mail: [americas@atdi.com](mailto:americas@atdi.com)

**ATDI EST**  
Bd. Aviatorilor, nr 59  
Bucharest - Romania  
Tel. 00 40 21 222 42 10  
Tel/Fax. 00 40 21 222 42 13  
E-mail: [eastern-europe@atdi.com](mailto:eastern-europe@atdi.com)

**ATDI Ibérica**  
c/Manuel González Longoria 8  
28010 Madrid  
Spain  
Tel. +34 914 467 252  
Fax. +34 914 450 383  
E-mail: [southern-europe@atdi.com](mailto:southern-europe@atdi.com)

**ATDI Sal.**  
812 Tabaris, Avenue Charles Malek  
Beirut - Lebanon  
Tel. +961 1 330331  
Fax. +961 1 216206  
E-mail: [mea@atdi.com](mailto:mea@atdi.com)