Analysys

STEM® network investment model

Efficient platform for business-case modelling

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20-24 June 2005 – Belgrade

Agenda

- Brief overview of Analysys
- Working smarter with STEM
- Simple WLL example
- Examples of best practice and team working
- STEM feature set and methodology
- Training and licensing
- [Background on Analysys]

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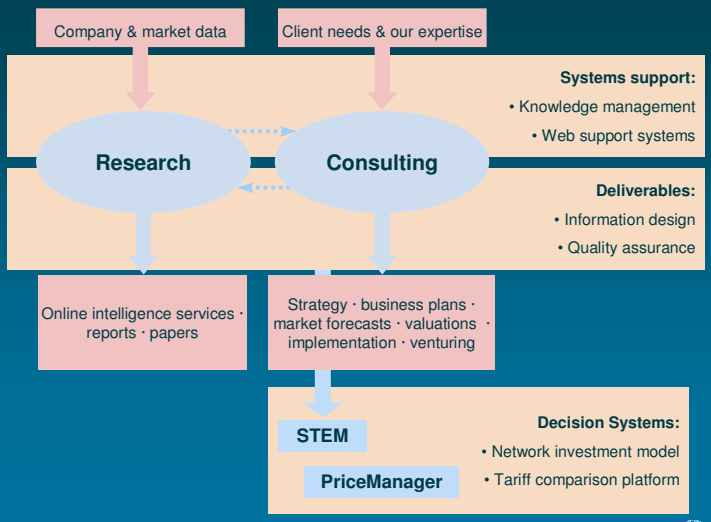
Analysys integrated service portfolio



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Working smarter with the STEM network investment modelling software

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STEM network investment model

Analysys STEM

- Strategic Telecoms Evaluation Model*
- A consistent language and flexible framework for evaluating investments in telecoms business
- A high-level communication tool which uses icons to represent the key drivers in a business plan
- A time-based revenue, capex and opex calculator which supports network roll-out and investment decisions
- A tailored package of software, training, consultancy and support services

* developed over 20 years with the emerging telecoms economy

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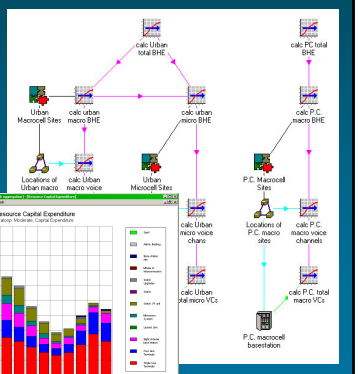
STEM network investment model

Business-case modelling by design

- Business planning based on service demand and equipment installation, categorised by market segment, service and geo-type
- Comparison of roll-out strategies across technologies, e.g. TDM, DSL, VoIP, GSM, UMTS, WiMAX
- Communication of vendor sales propositions
- Product analysis and breakdown of costs



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STEM network investment model

Operators and vendors using STEM

- BT Global Services
- Cable and Wireless
- Cegetel
- China Telecom
- Korea Telecom
- Swisscom Mobile
- Telecom New Zealand
- Telkom Indonesia
- Telkom SA
- Telstra
- Alcatel
- Ericsson
- Fujitsu
- Huawei Technologies
- Iskratel
- Juniper
- Marconi
- Motorola
- Nokia
- Siemens

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STEM network investment model

Consistent financial framework

- Service elements capture demand and tariff assumptions ⇨ REVENUE
- Resource elements represent unit costs and build constraints for hardware, software, licences, buildings and human resources ⇨ CAPEX, DEPRECIATION and OPEX
- Connection, traffic and location-based dimensioning rules are shown as graphical links ⇨ PROFITABILITY and BALANCE SHEET

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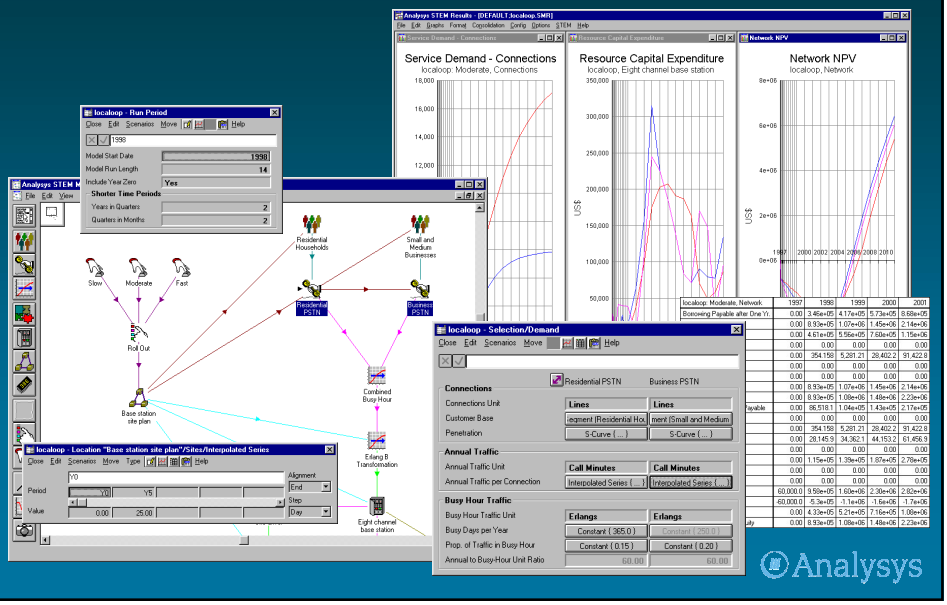
STEM network investment model

Intuitive graphical interface



STEM network investment model

STEM integrates communication with calculation

- Provides a brainstorming and presentational tool for rapidly developing network business models
- Automatically generates demand / cost-allocation formulae, geographical variants and scenarios
- Calculates annual, quarterly and monthly service connections, traffic and revenues, equipment installation and replacement, capex and opex
- Delivers hundreds of built-in results through an integrated charting interface which can drill-down into individual elements, revenues and costs

THINK

CREATE

RUN

REVIEW

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Professional modelling process

- Iconic presentation and pre-defined algorithms encourage **focus** on issues rather than formulae
- General connection/traffic/location dimensioning rules are applicable to a broad range of technologies and ensure **consistent** structure and data gathering
- Purpose designed interface accelerates modelling process and increases **productivity**
- Concise representation of complexity makes models **robust** and **easier to maintain** (less errors)
- Industry-standard platform lends **credibility** to results

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STEM creates business value

- **Flexibility** means quicker delivery of new cases, increased productivity, and greater focus on key issues, un-distracted by mundane spreadsheet maintenance
- **Robustness** saves hours of effort every time you alter the structure of the services or technology modelled, and helps avoid costly mistakes
- **Consistency** allows for the effortless exploration of new scenarios, enabling new insights which could be too time-consuming to explore in Excel

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Simple WLL example

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So let's look at an example …

- New entrant considering a wireless local-loop network
  - population of 100 000
  - survey established that 25 cells are required
- Entrant wants to gain an understanding of the cost structure and potential profitability
- How quickly to roll out the network?
- Use NPV as basis for commercial decision

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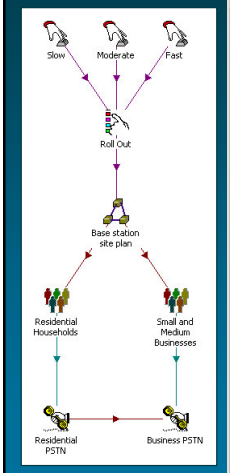
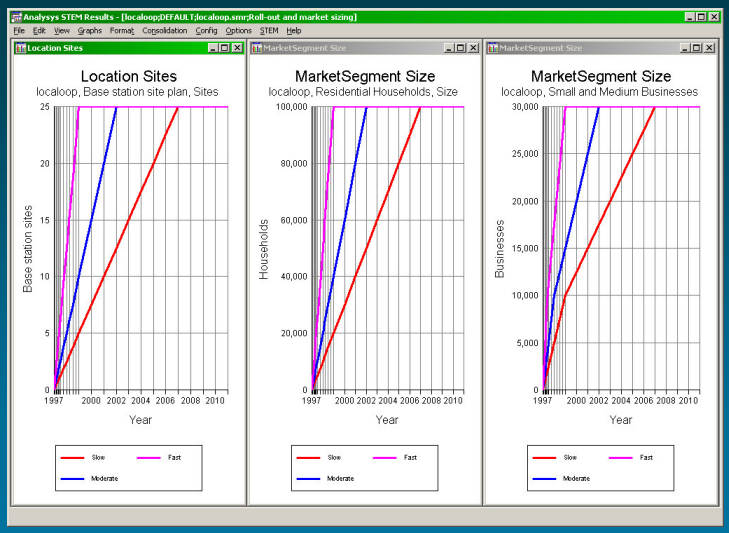
WLL modelling with STEM

Roll-out and market sizing





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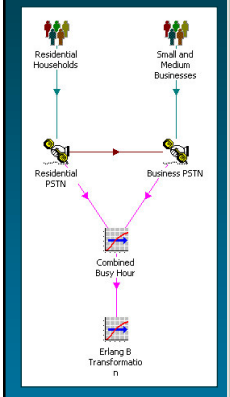
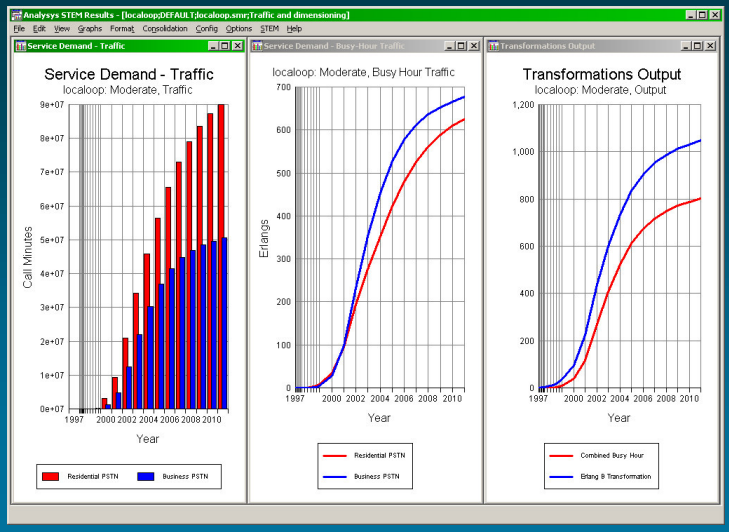
WLL modelling with STEM

Traffic and dimensioning





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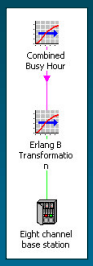
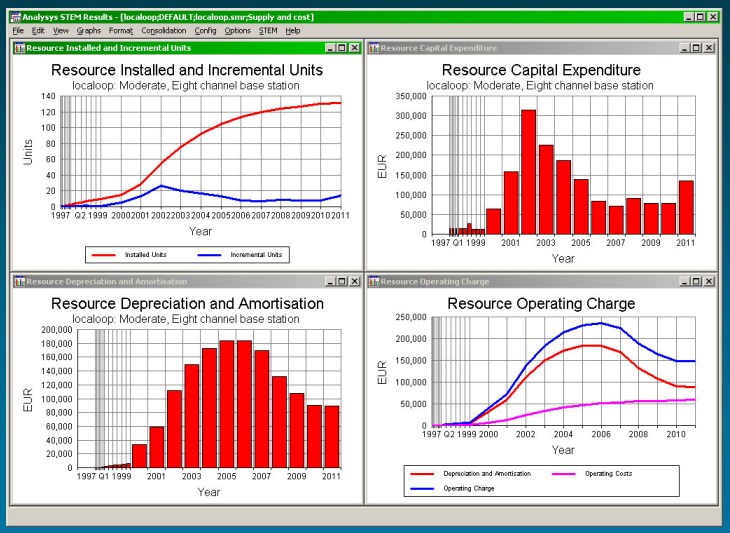
WLL modelling with STEM

Supply and cost





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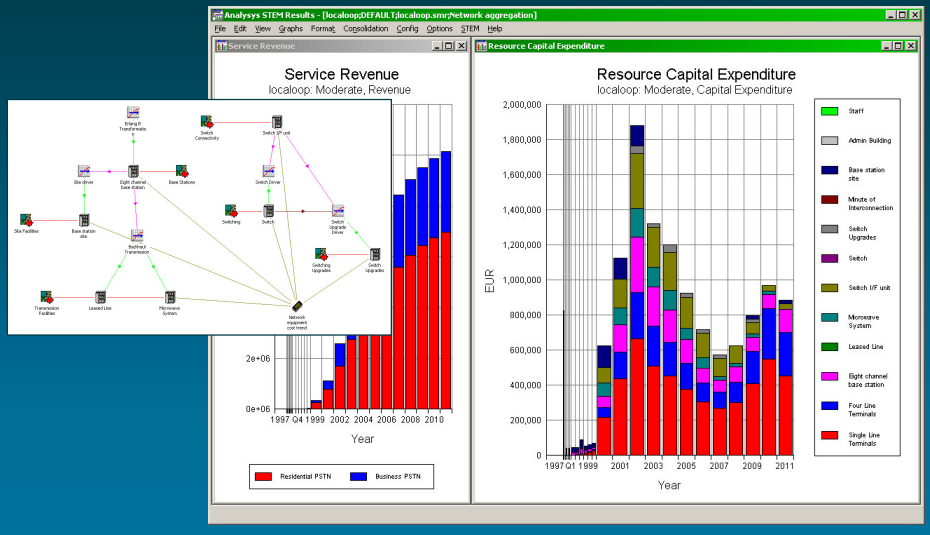
WLL modelling with STEM

Network aggregation



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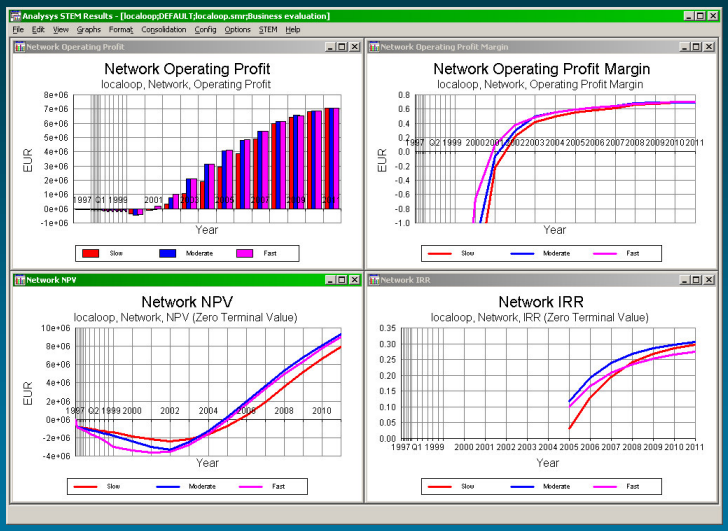
WLL modelling with STEM

Business evaluation



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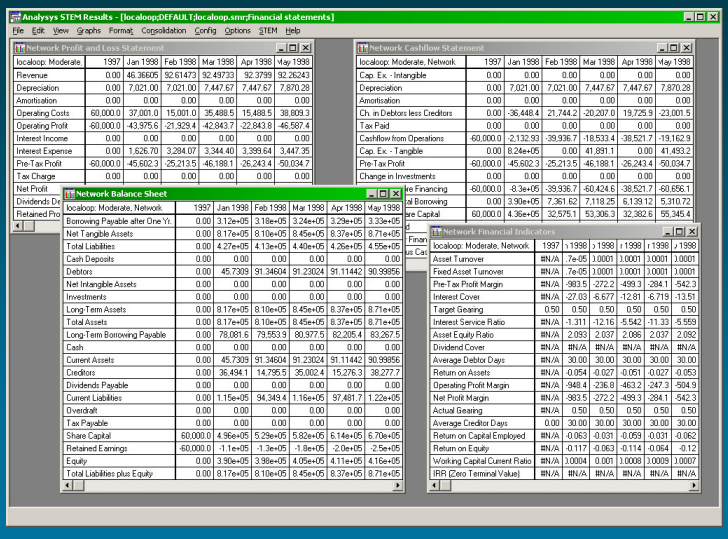
WLL modelling with STEM

Financial statements



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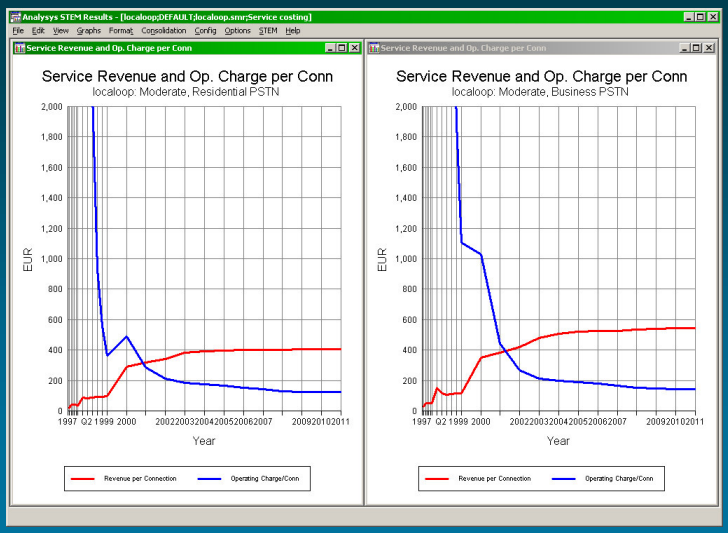
Service costing



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Examples of best practice and new opportunities

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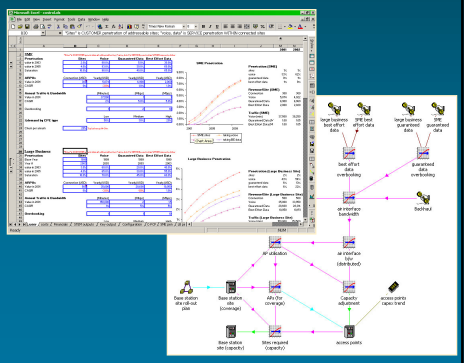
Example STEM/Excel synthesis

- Sales tool model, built for a vendor
- Sanitised copy for demonstration
- Models FWA platform for operator customers in a specimen city
- Key inputs and results driven from Excel
- Model structure protected in STEM



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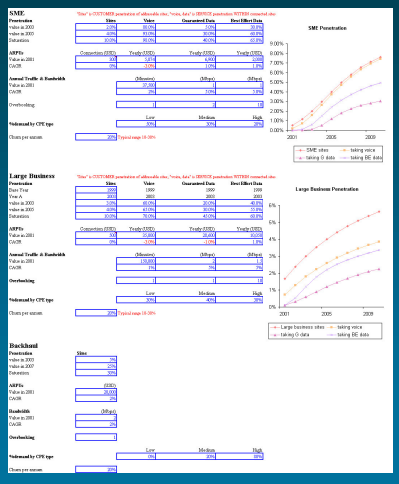
Key inputs in Excel

- Market size
- Backhaul options
- Base station access points
- Geography type
- SME, Large Business and Backhaul customers
- Comparative costs



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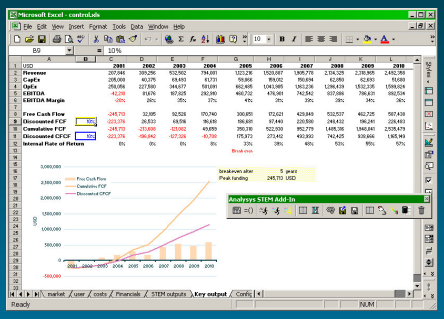
Key results linked from STEM

- Service connections
- Equipment installation
- Capex and opex
- Revenue and gross margin by service
- Profit and loss, cash-flow and balance sheet
- DCF, NPV and IRR



Analysys STEM add-in for Excel

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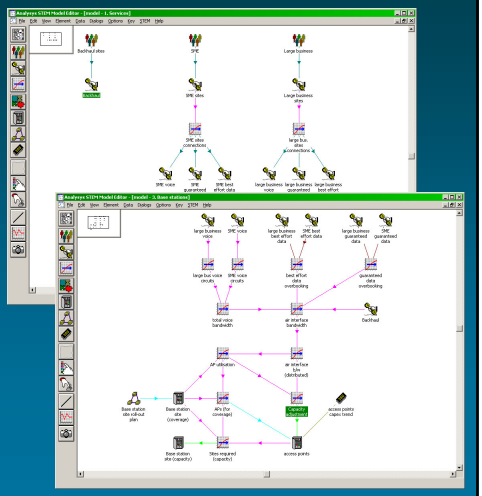
FWA modelling with STEM

Detailed structure in STEM

- Clear development of concept through multiple views
- Access and traffic-based revenues
- Detailed air interface bandwidth calculation
- Readily customised with scenarios



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Fit with people and processes

Business cases the hard way

- Business-case models are typically built from the bottom-up each time in Excel:
  - laborious re-working of basic calculations
  - scope for copy errors; slow handover
- STEM wraps up core elements of telecoms business planning, enabling rapid and reliable, same-day development of business cases
- Consistent structure and graphics act provide a common language across divisional teams

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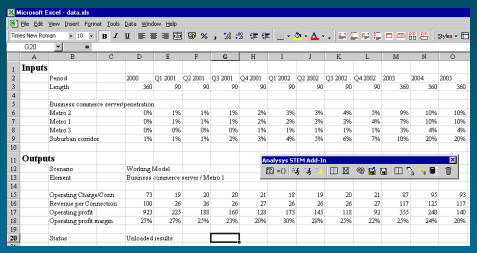
Fit with people and processes

Team engagement

- STEM supports comprehensive input of data from Excel (and all ODBC data sources)
- The STEM add-in toolbar for Excel provides worksheet formula access to all STEM results



- An expert modeller can create interfaces which help colleagues leverage value from STEM

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STEM is purpose built as a flexible and robust platform for the economic modelling of networks

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STEM features: methodology

- Assumptions for market segmentation, customers, connections, bandwidth, annual and busy-hour traffic drive the calculation of:
  - connection, rental and usage revenues
  - equipment installation, utilisation and replacement
  - capital expenditure, depreciation and operating costs
- Automatic aggregations for profitability and cashflow

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STEM network investment model

STEM features: additional algorithms

- Erlang B, customer churn, elasticity of demand and cost dependent tariffs
- Pre-run installation, deployment, planned units, technology shift and decommissioning
- Cost trends and age factors, economies of scale, overheads and value-chain analysis
- Financial parameters for working capital, tax and interest, gearing, borrowing, equity and dividends
- Flexible framework can be extended with user-definable formulae and transformations

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STEM network investment model

STEM features: modelling platform

- Object-oriented editing interface associates data directly with icons and links between elements
- Multiple views provide alternative insights into the model structure
- Seamless integration of annual, quarterly and monthly data
- Integrated multi-dimensional scenario engine
- End-to-end auditable
- Interfaces with Excel and ODBC databases
- Comprehensive documentation and online help

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Analysys STEM support

- Immediate access to specialist telecoms finance support team
- Library models can be used to kick start business cases, operational analysis or technology studies
- Models complement our training courses
- We provide email (stem.support@analysys.com) and UK business-hour hot-line support to our clients
- STEM is continuously upgraded to guarantee relevance and maximum effectiveness for our users

Training programme

- To be able to use the tool effectively:
  - 2-day basic, structured training course, using a series of exercises based on a fictitious scenario to focus on software concepts and techniques
- And to understand how to model with STEM:
  - 3-day advanced modelling workshop, where we help build models directly relevant to a client

Introduction to Analysys

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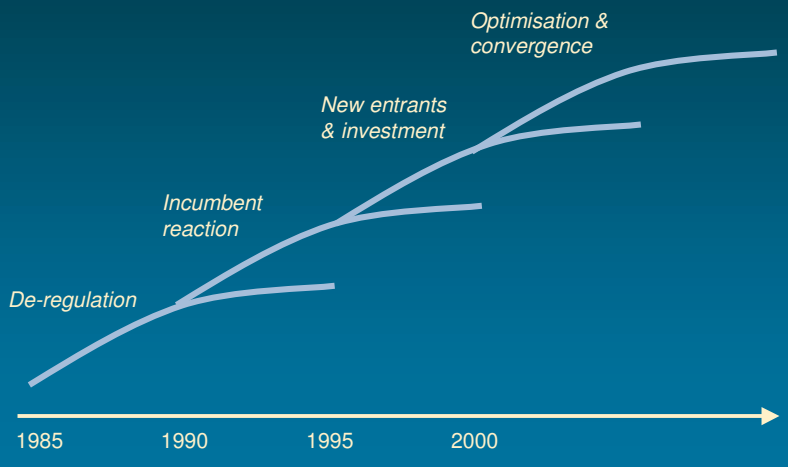
Analysys's expertise encompasses 20 years of market evolution



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Introduction to Analysys

Local presence – global perspective

Analysys office ▲ Analysys associate ✦

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Introduction to Analysys

We advise throughout the telecoms, IT and media sector

- Fixed, mobile and satellite operators
- Banks, investment and legal institutions
- Regulators and policy makers
- Equipment manufacturers
- Large corporate users

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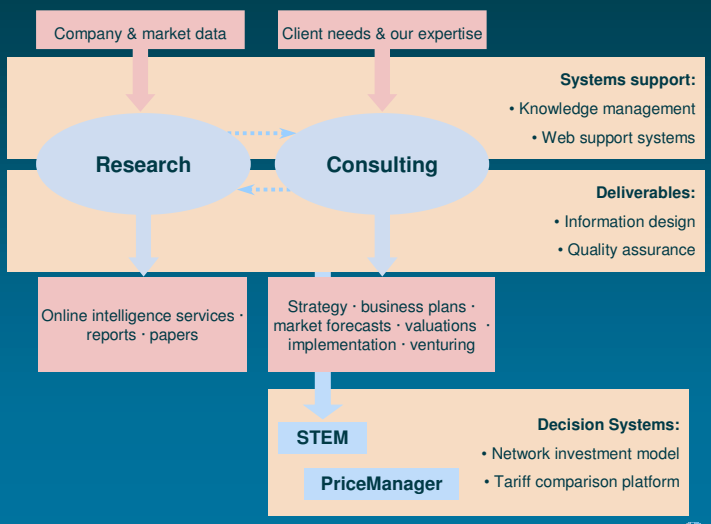
We offer an integrated service portfolio



Practical results delivered with speed, objectivity and insight

- In-depth understanding of economics, strategy, finance, regulation, technology
- Close relationships with extensive network of industry experts
- Committed to long-term client relationships
- International perspective – over a dozen nationalities are represented in our staff mix

Introduction to Analysys

Commitment to securing sustainable performance enhancements

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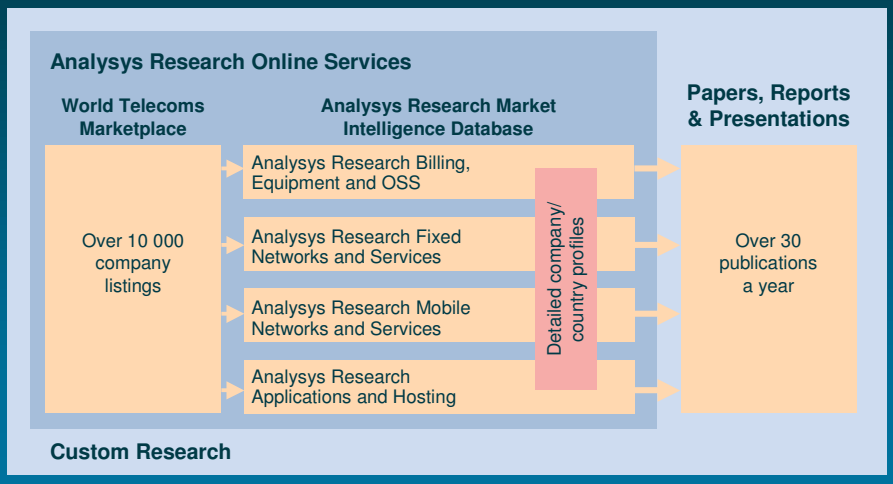
Analysys Research fuses real-world experience and rigorous analysis



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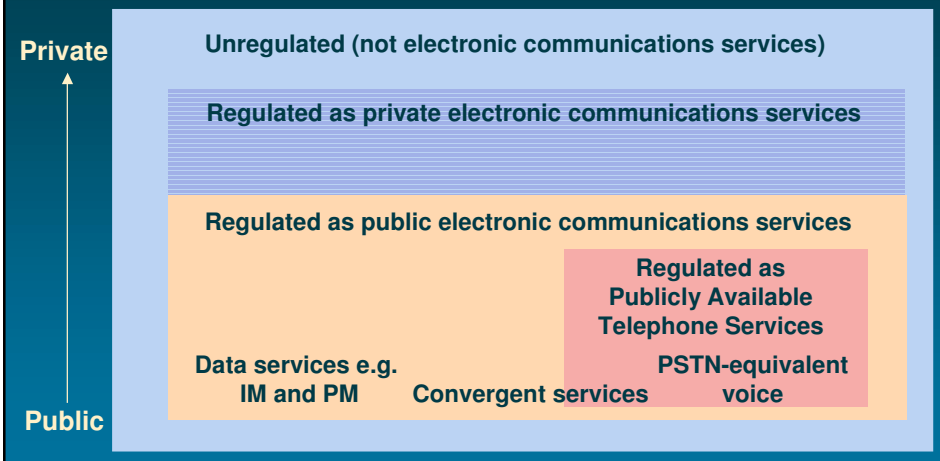
A selection of recent consulting projects

- VoIP regulation in Europe
- Mobile LRIC in Central Europe
- DSL business-case analysis in France
- GSM licence bid in the Middle East
- Fixed LRIC in South-East Asia (STEM)
- Online tariff comparison in the UK (PriceManager)

VoIP regulation in Europe

- Analysys undertook a wide-ranging study examining the major trends in the area of VoIP and associated convergent services such as instant messaging for DG Information Society, European Commission
- The study was designed to help the Commission and national regulatory authorities to classify the issues and the potential implications arising from these services in the context of the New Regulatory Framework
- Within the project, we looked at a wide variety of VoIP business models and technologies, and closely examined the relevant parts of the New Regulatory Framework (e.g. the definition of a publicly available telephone service)

Under the NRF*, how a service is classified determines its regulation



* New Regulatory Framework developed by the European Commission

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Mobile LRIC in Central Europe

- The leading mobile operator in a Central European country was required to provide a cost model to the regulator to support the current interconnect rates
- The operator already possessed a historic cost accounting, fully-allocated cost model, but was required to provide an LRIC-based calculation for 2002
- We trained the client's team in the principles of LRIC modelling, developed a model specification and project plan, and provided regular onsite assistance to help them through each stage of the LRIC modelling process
- At the end of the process, the client had gained a clear understanding of LRIC and the implications of LRIC-based pricing for its business

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DSL business-case analysis

- We developed a set of economic models of the French DSL market, for use by the operators and by the regulator:
  - to analyse the business case of operators across the value chain (such as infrastructure-based operators, retail ISPs and vertically integrated operators)
  - to investigate the possible existence of a margin squeeze
  - to calculate the long-run incremental costs incurred by France Telecom in offering wholesale DSL services
- The models were used by a consortium of alternative operators to estimate the impact upon margins and long-term investment of various retail and wholesale pricing decisions by France Telecom

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Mobile licence bid in the Middle East

- For a leading international fixed and mobile operator, Analysys developed comprehensive models of the market and also of the individual business, to evaluate the economic potential of a GSM licence in the Persian Gulf
- Our model provided a detailed analysis of all aspects of the business, including revenues, operating expenses, capital expenditure and financing
- This model was used to value the opportunity and to gain internal support for the client's bid
- Analysys then led the preparation of the licence application itself, developing integral commercial strategies covering a range of topics, including market entry, positioning, distribution and tariffs

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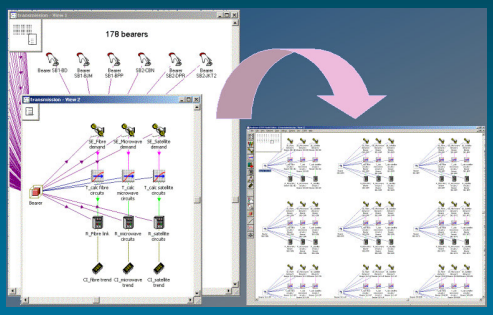
STEM® network investment model

- Telkom Indonesia modelled a voice backbone network with 29 trunk switches from three different vendors and 178 bearers on a number of transmission technologies
- STEM provided a robust and consistent model for network and capex and opex and overheads
- Optimised to manage very large, repetitive model infrastructures
- Enabled LRIC calculation for a minute of traffic on each of a total of 435 routes (30 × 29 / 2) between trunk switches



Transmission model and replicated detail

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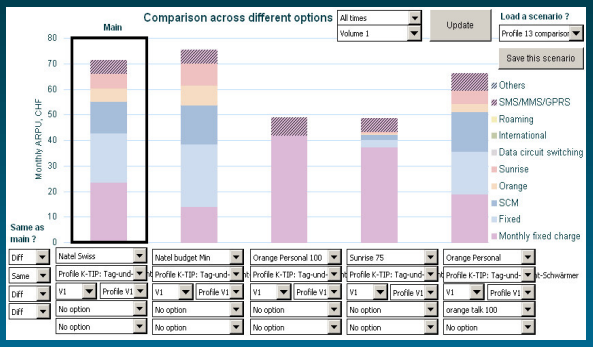
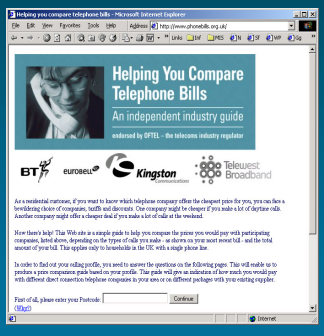
Analysys PriceManager™





- Rapid comparison of ARPUs from different tariff plans, customer profiles and options
- Detailed revenue breakdown – for example, by destination and time of day

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STEM® network investment model

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