Business-case evolution across technology and services

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02 October 2008 – Star Room, Danubius Health Spa Resort

A6: Multi-service and multi-layer network strategy and design

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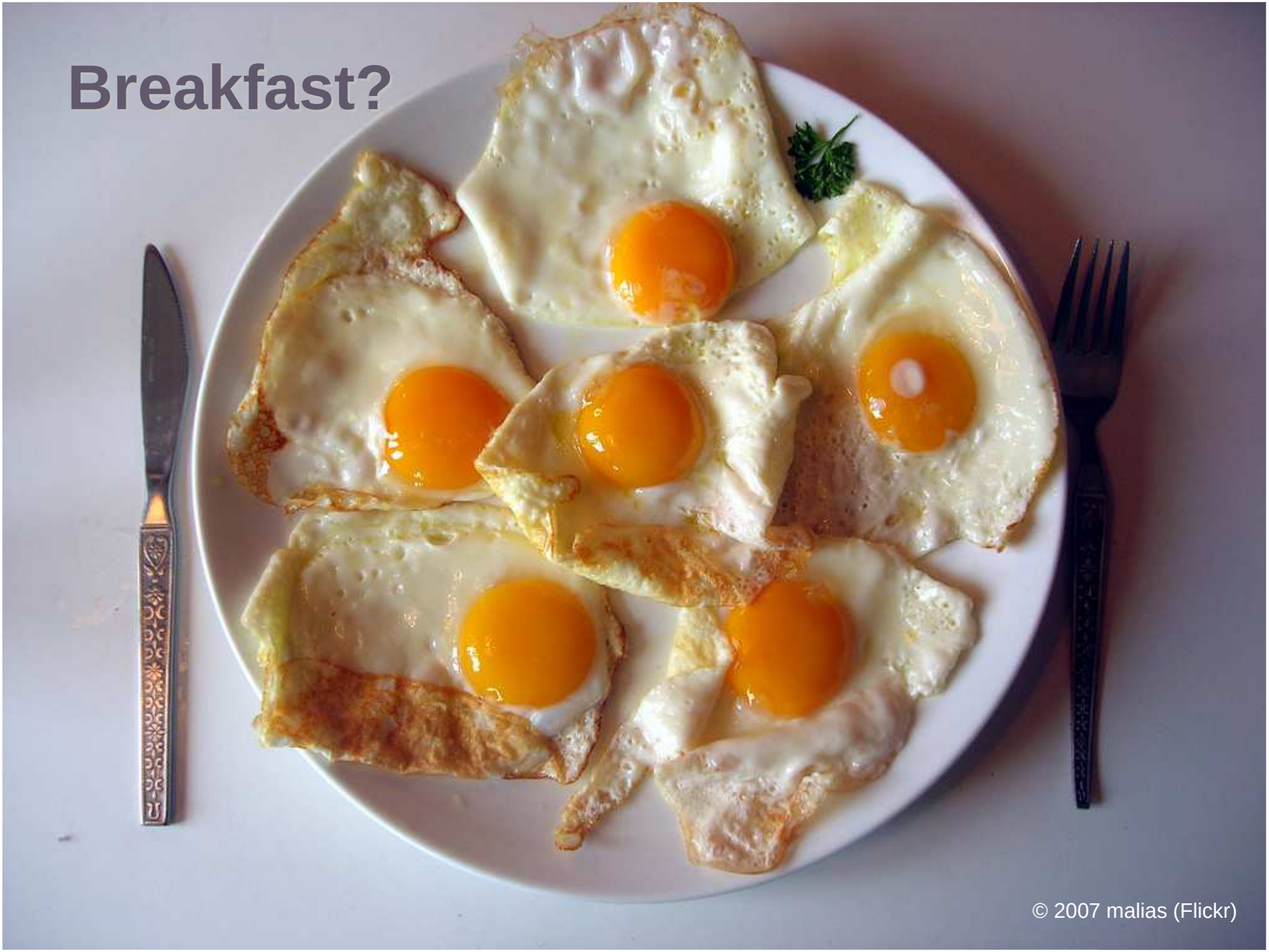
Sleep at 4 a.m.

Breakfast?



Family planning

Dimensioning for the unexpected!

Introduction

- What are the most common network business cases being considered today?
  - Incremental DSL roll-out and NGN access? WiMAX in the rural/urban periphery? Core NGN transformation? Convergence scenarios facilitated by femtocells?
- Operators face a bewildering range of choices, and yet the same technical and economic issues must always be addressed:
  - roll-out and equipment utilisation; site upgrades; time-to-market for a new, revenue-generating service; and plain and simple payback on investment.
- A business case model for WiMAX vs DSL in rural areas, relevant for any country with an established copper infrastructure, is used to tell a typical story of business model evolution across technology, geography and economics

Outline

- Business-case context and results
- Managing multiple scenario dimensions
- Handling geographical variants
- Sensitivity analysis – live demonstration
- Conclusions

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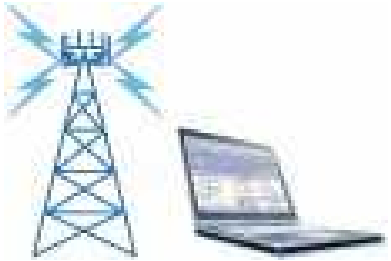
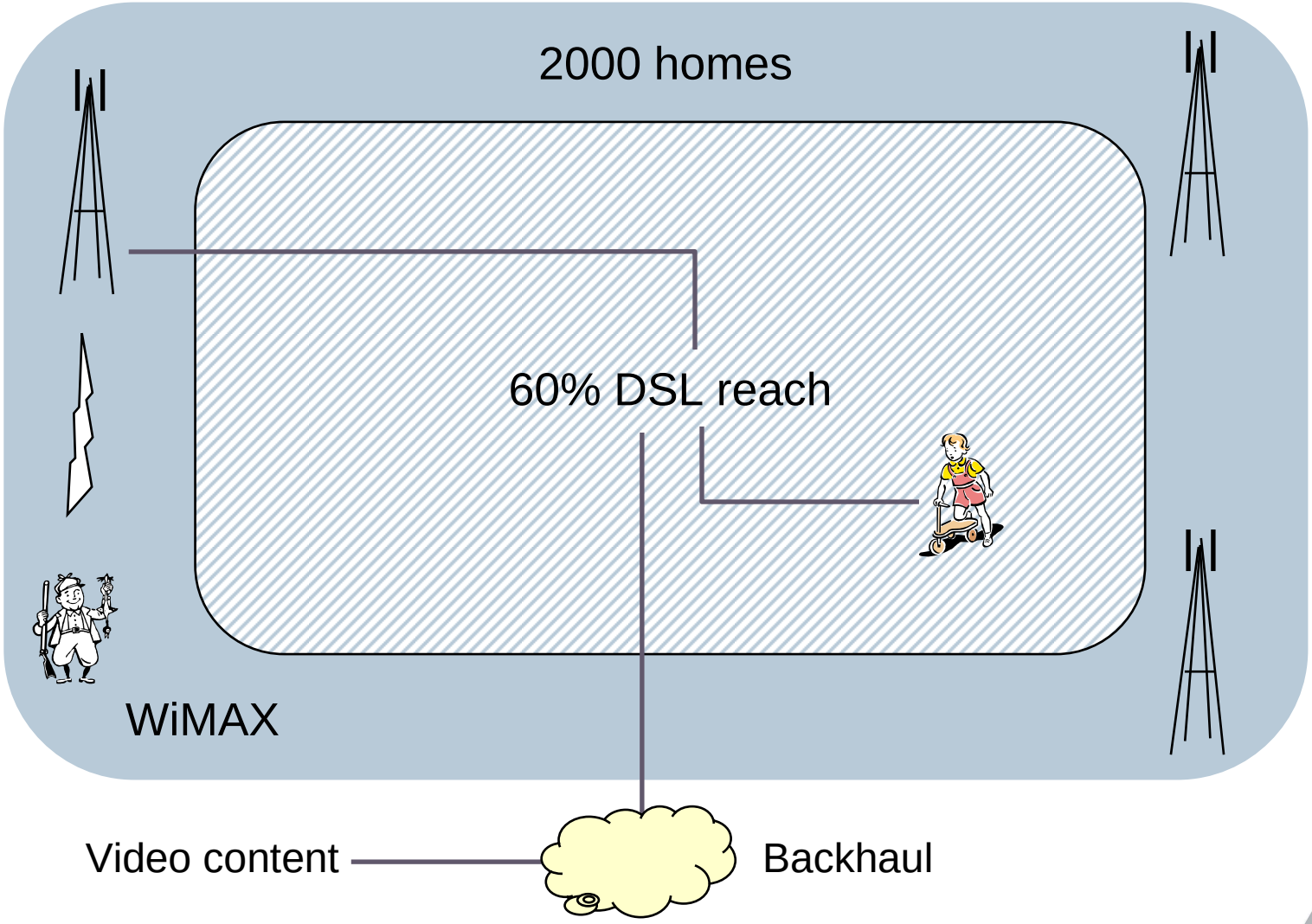
The economics of rural access

- Operators are considering BBFWA technologies such as WiMAX as a more cost-effective solution for delivering IP-based services in low-density subscriber areas
- We have developed a simple model where 2000 homes are connected over conventional copper to a local exchange, but in this rural area **only 60% are within reach of the current available DSL technology**
- WiMAX is suggested as an alternative broadband solution, and a network will be deployed during 2006, with the launch of commercial service scheduled for 2007



- We model scenarios for operating each technology in isolation, and also running both in parallel

The big picture



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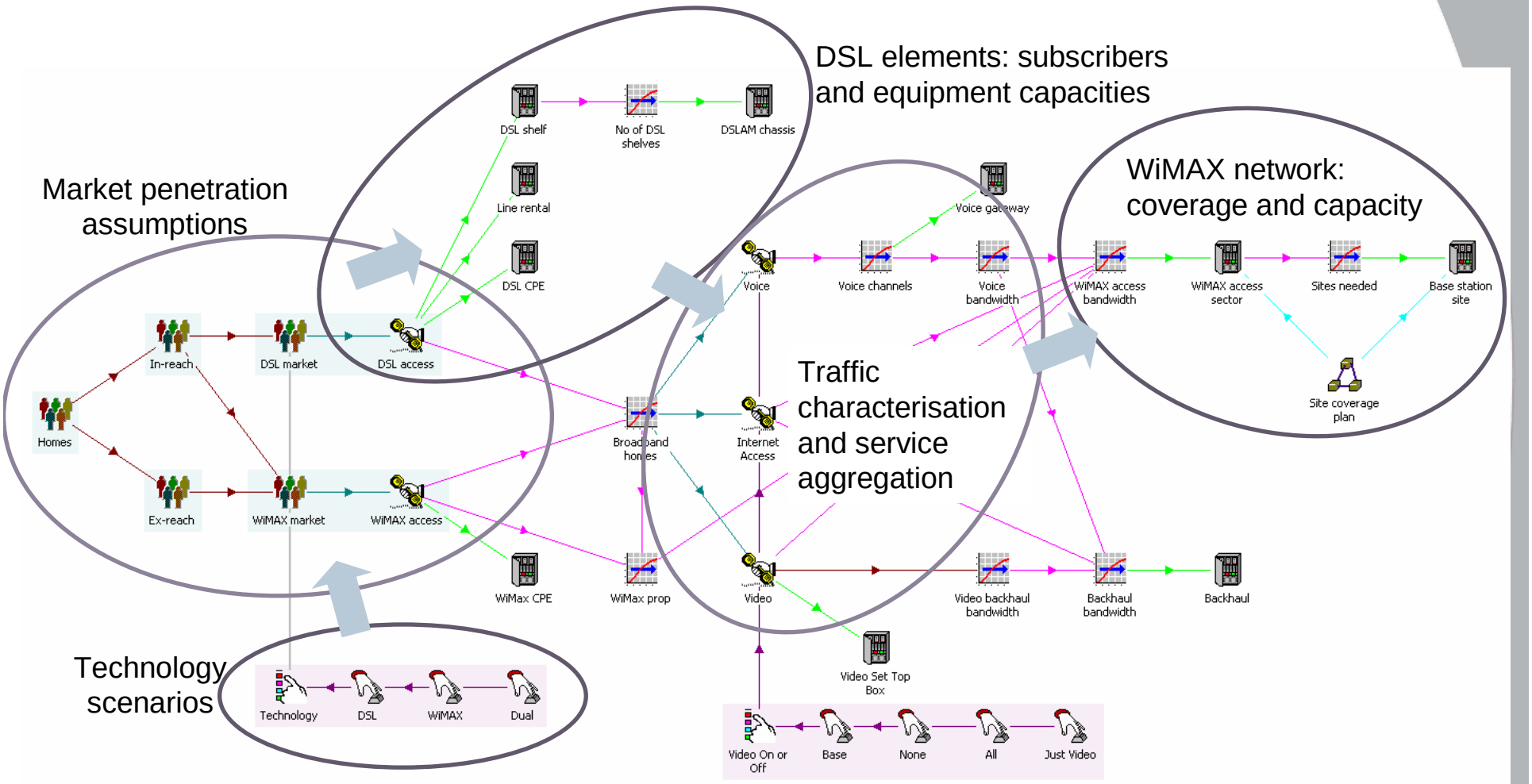
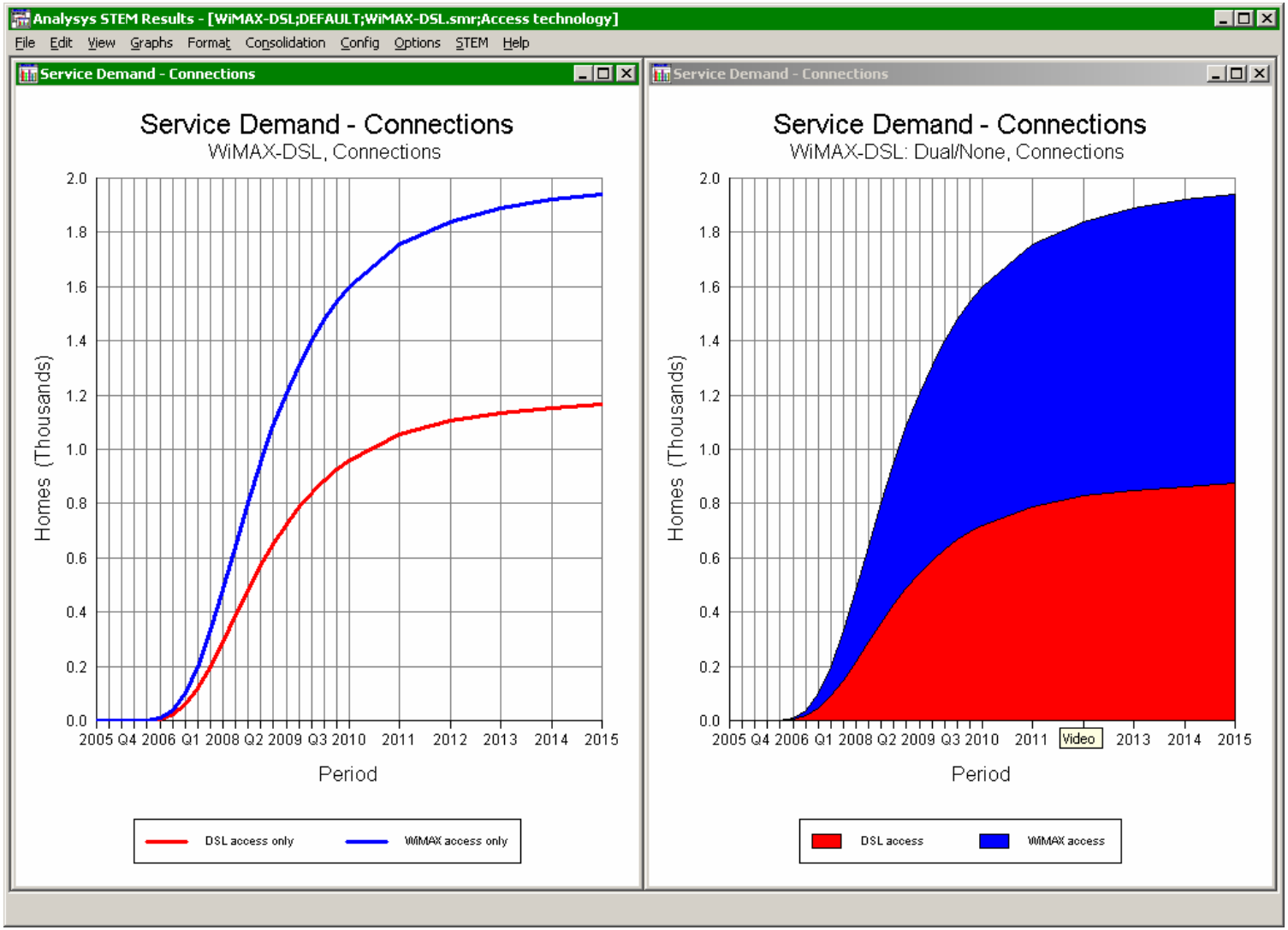
Services

- WiMAX is offered as a total replacement technology for the outlying homes: **voice** and **Internet** services will both be carried over WiMAX for those subscribers
- Revenue arises from the two separate access platforms, as well as from the individual services
- The model makes a high-level dimensioning of the relevant network elements based on the numbers of subscribers and associated traffic levels
- The model also considers the addition of an **IPTV** service, and its impact on service revenues and required network elements

Compact model of key drivers



Access technology



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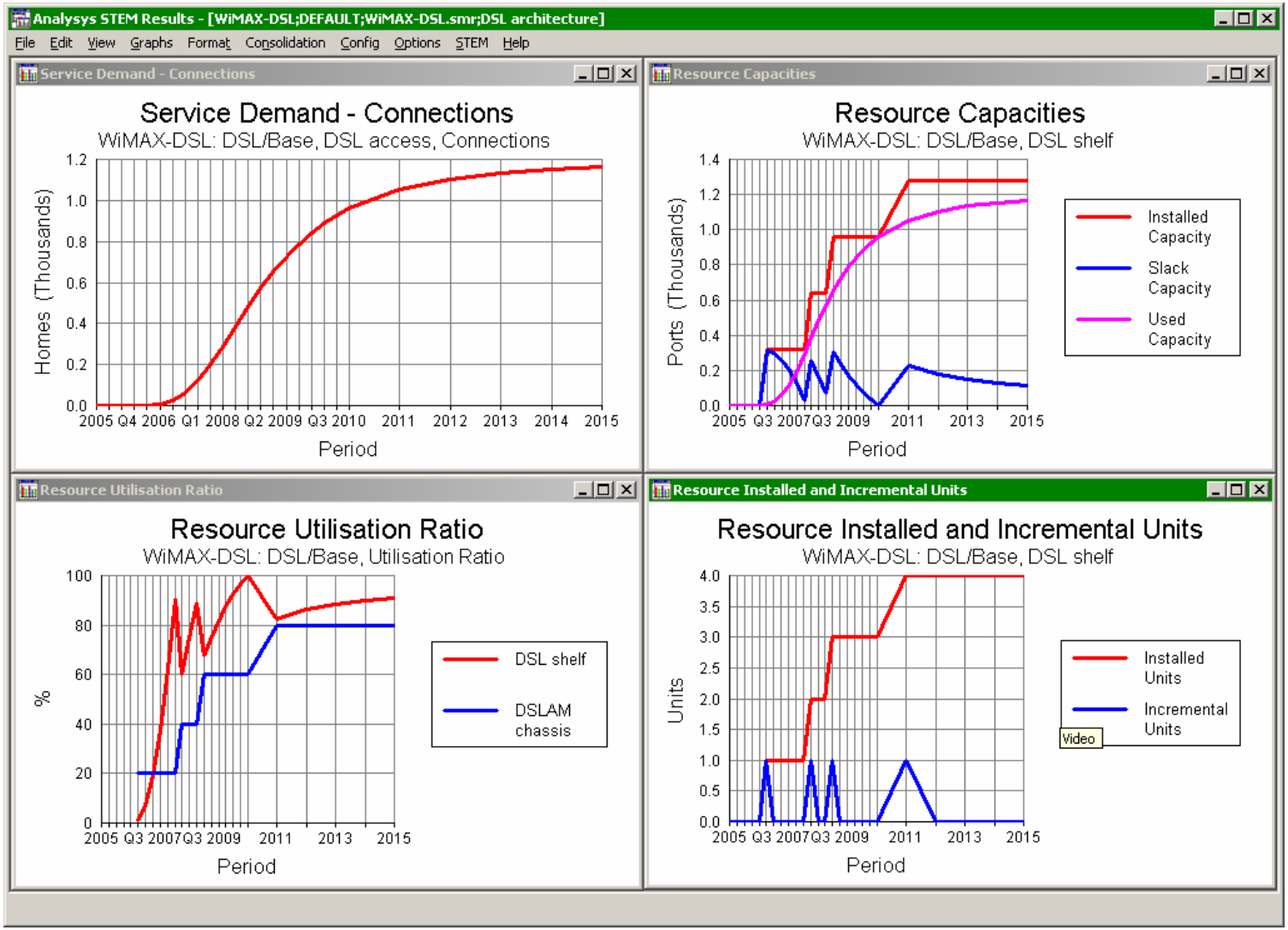
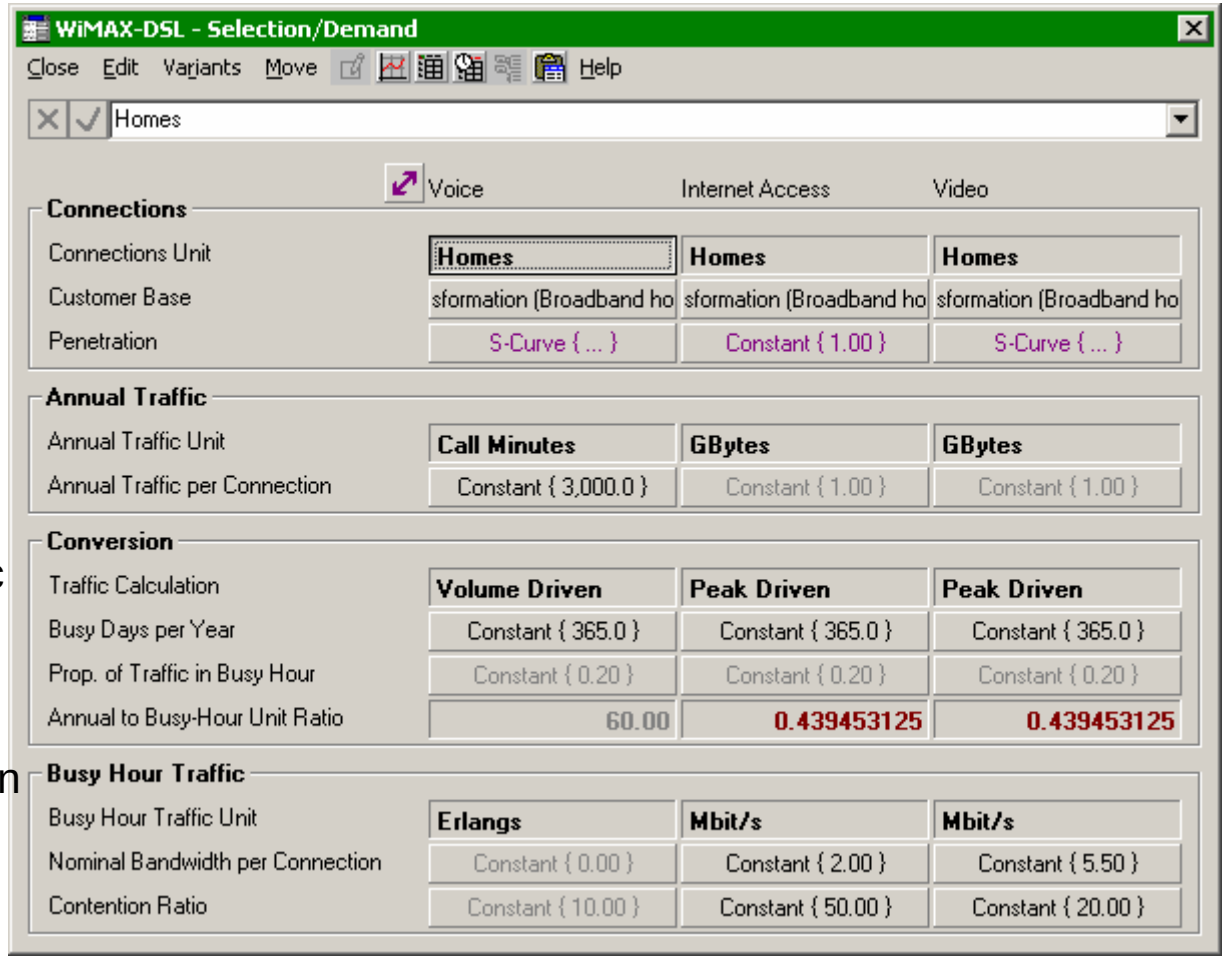
DSL capacities



Traffic description for services

For **voice**, we estimate BH traffic (Erlangs) from input traffic volume (Call Minutes) and annual / daily traffic distribution parameters



For **data**, we estimate traffic volume (GBytes) from input peak bandwidth and contention ratio and the same traffic distribution parameters

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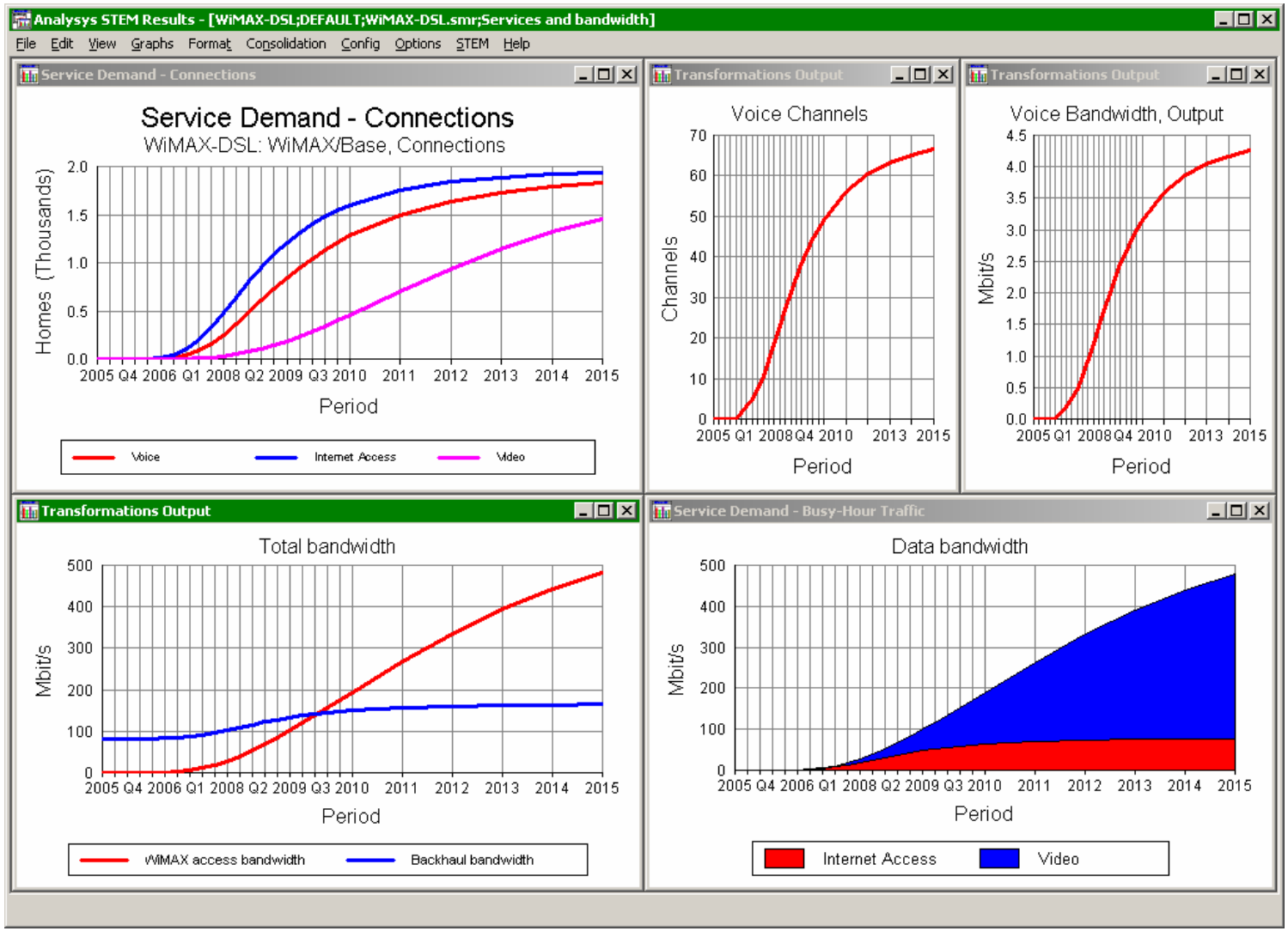
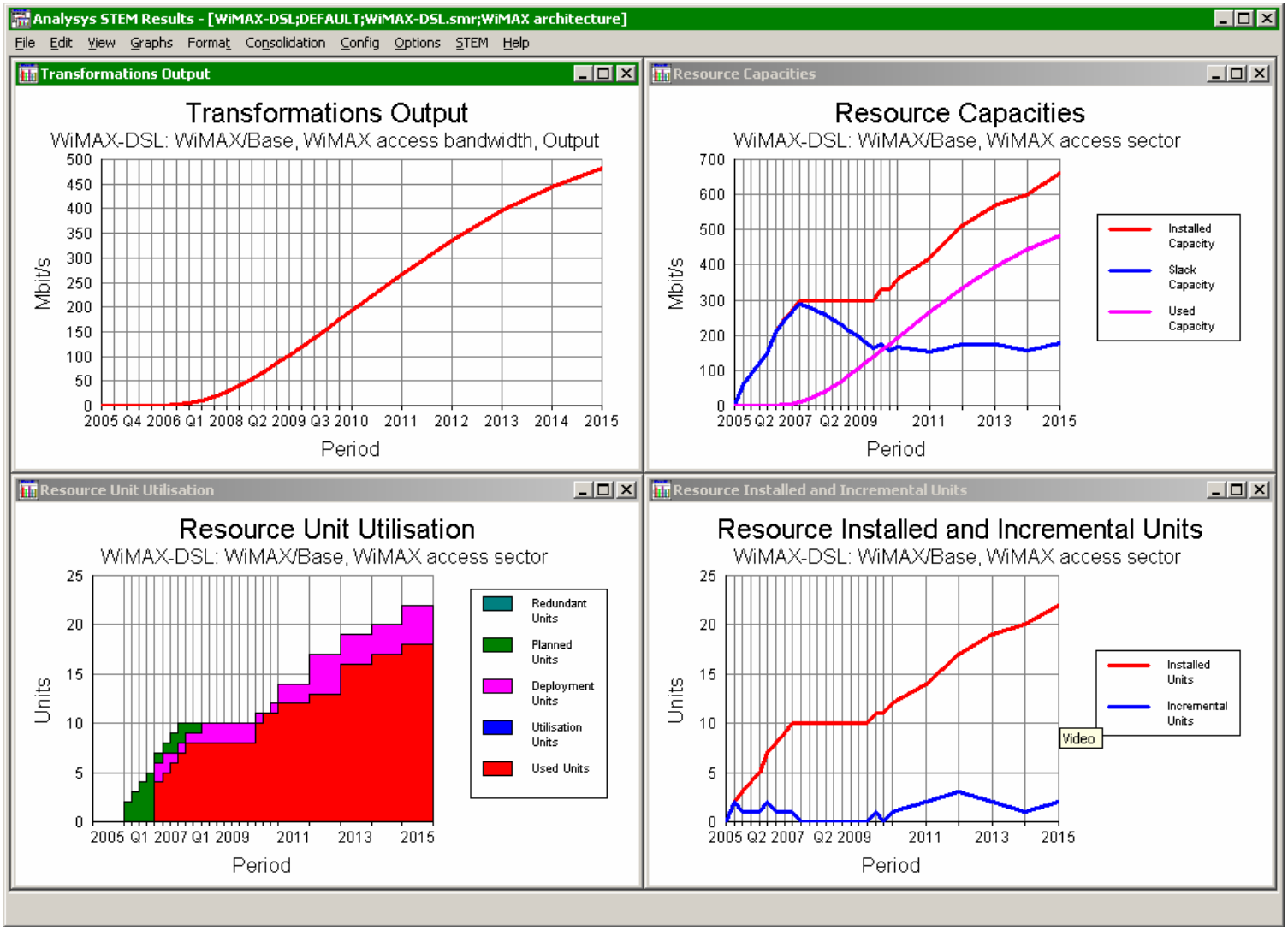
Services and bandwidth



WiMAX drivers



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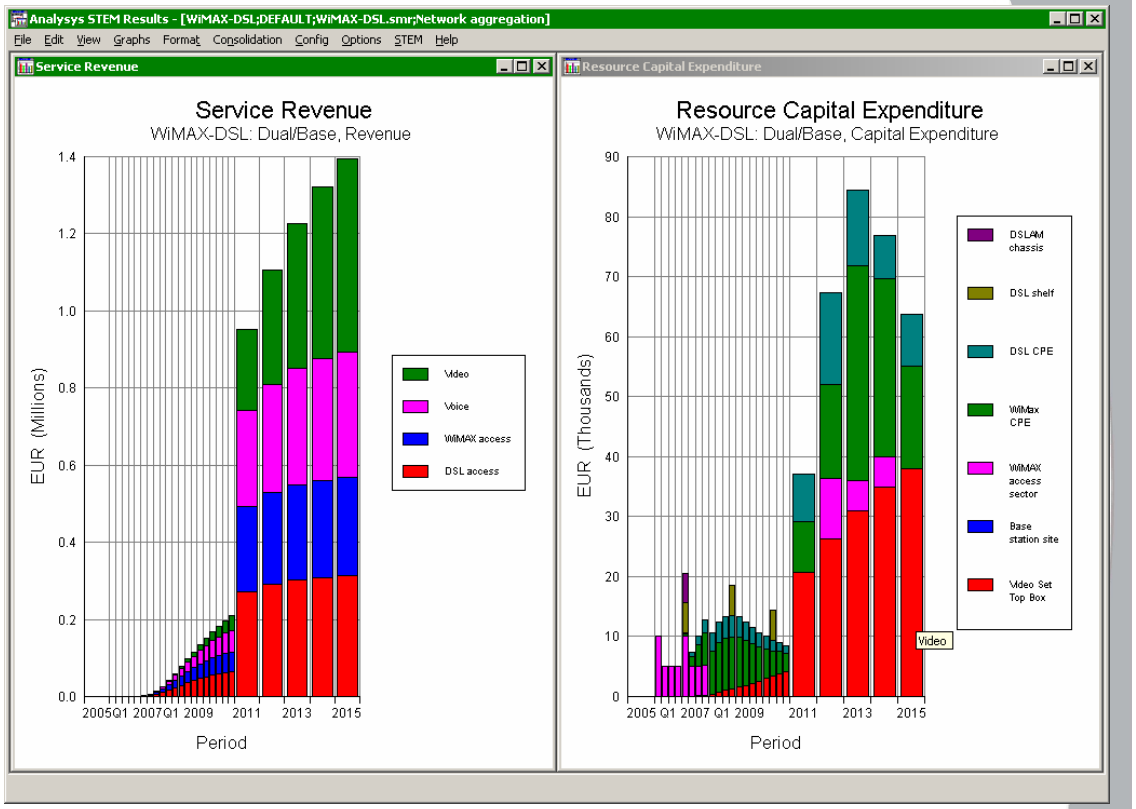
Business metrics and evaluation

- The model automatically aggregates revenues over services and capex / opex across the various elements of the network
- Overall profit and cashflow results are immediately available, as well as many detailed financing and valuation results
- All of these may be used as metrics for comparing strategic options from different perspectives



- Notice that results are generated in quarters initially, and then in years
- This split is a parameter of the model, not a fixed attribute

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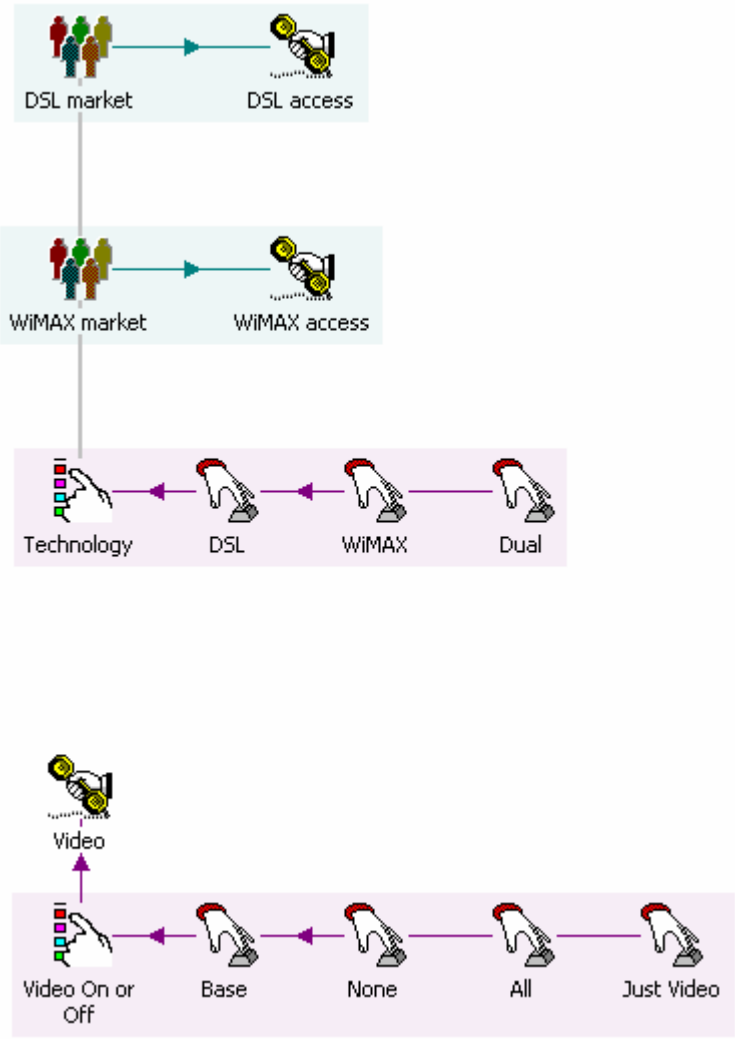
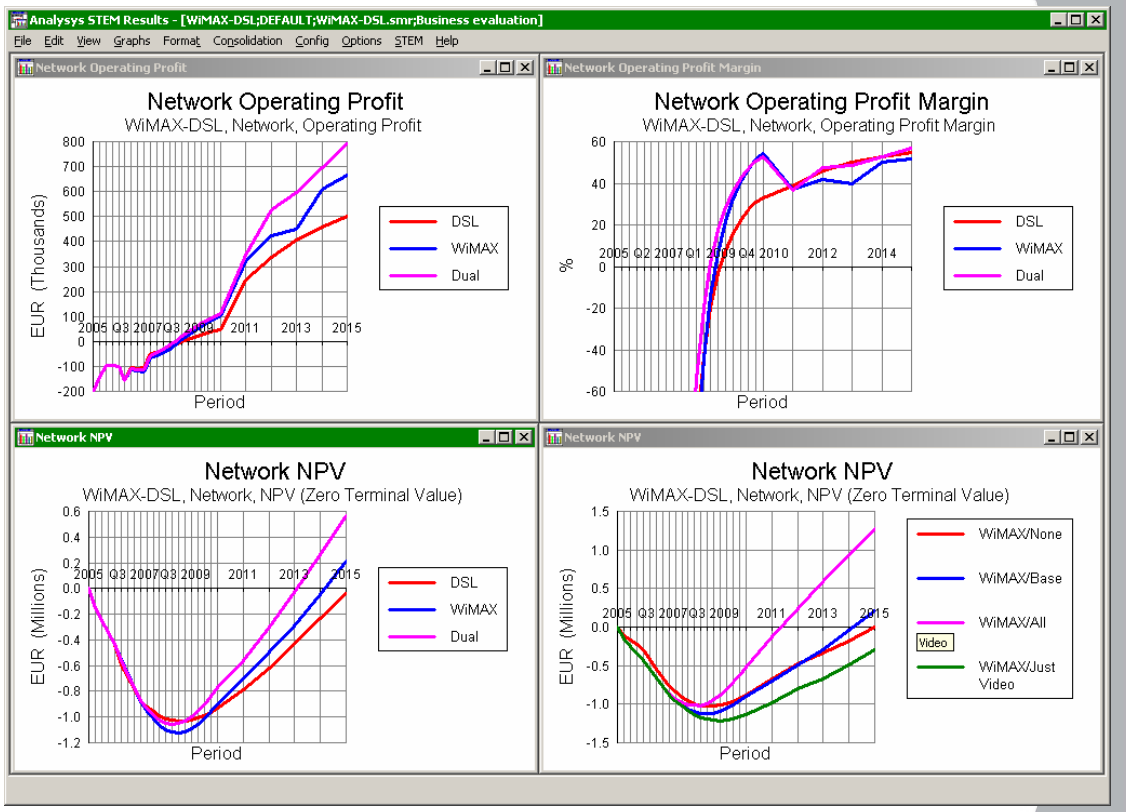
Comparative technology scenarios

- Rather than build three separate models and risk assumptions and calculation getting out of step, a common scenario structure is used for the market models driving each technology, so that all results can be generated from the same consistent base data
- Technology choice drives relative markets:
  - less DSL subscribers if WiMAX is available (may be cheaper)
- Video on/off choice varies proportion of customers with video:
  - sensitivity of WiMAX case to bandwidth saturation from video



Business case robustness

- Business models must evolve to accommodate new technologies or services, and to adapt to the rapidly changing focus of an investment project
- It must be straightforward to edit a scenario space, or to start again, without compromising the model
- The emphasis should be on the analysis rather than the editing of formulae!



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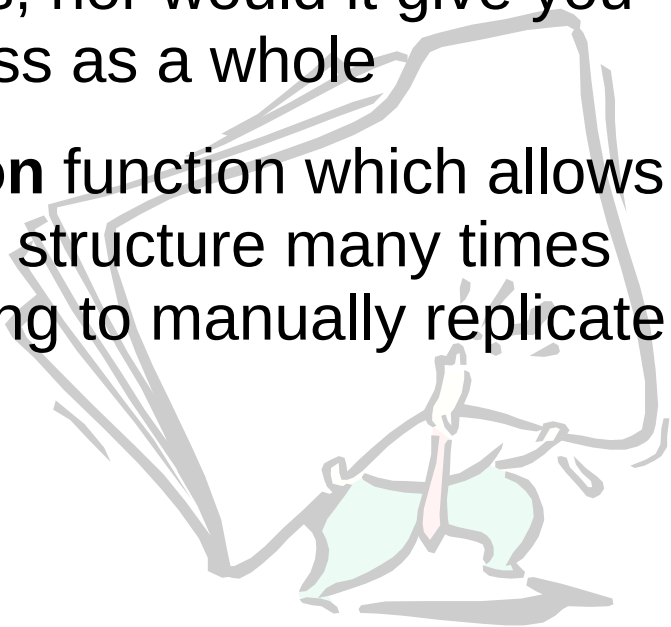
Site-by-site calculations

- Suppose we have access to specific market size data at a per-site level, and possibly even different penetration growth curves
- Although we could run the model over and over for each site in turn, this would not be very practical for a detailed scenario or sensitivity analysis, nor would it give you results for the network business as a whole
- We use a **template replication** function which allows you to repeat the same model structure many times within one model without having to manually replicate any of the model structure



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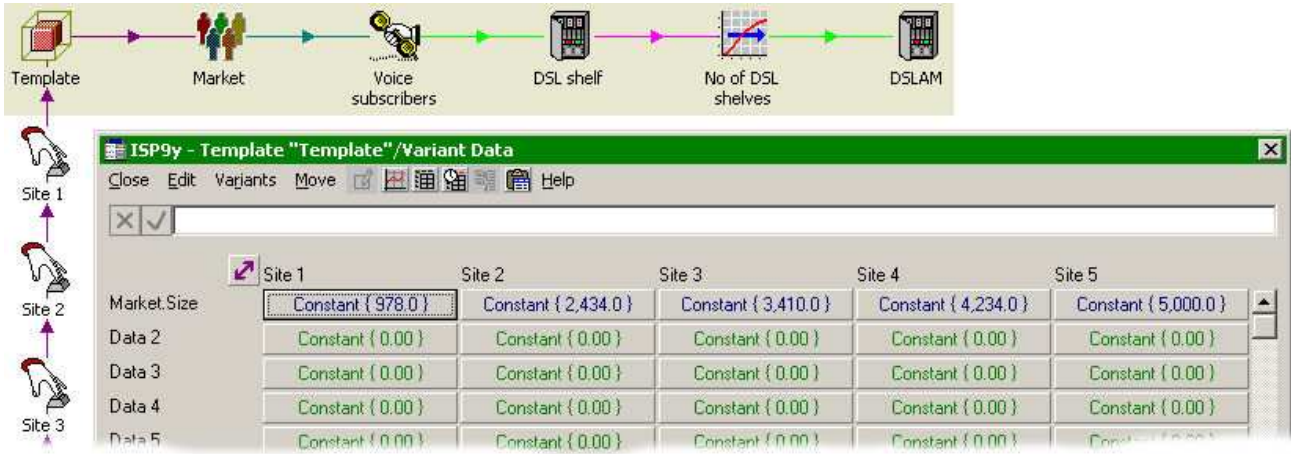
Specifying template variant data

- First you group the elements in question as a template
- Then you identify the inputs within that template which should vary by site



- A table with one row per input and one column per site allows you to just type in the varying values without repeating the entire calculation structure, ensuring consistency of calculation and results for all sites

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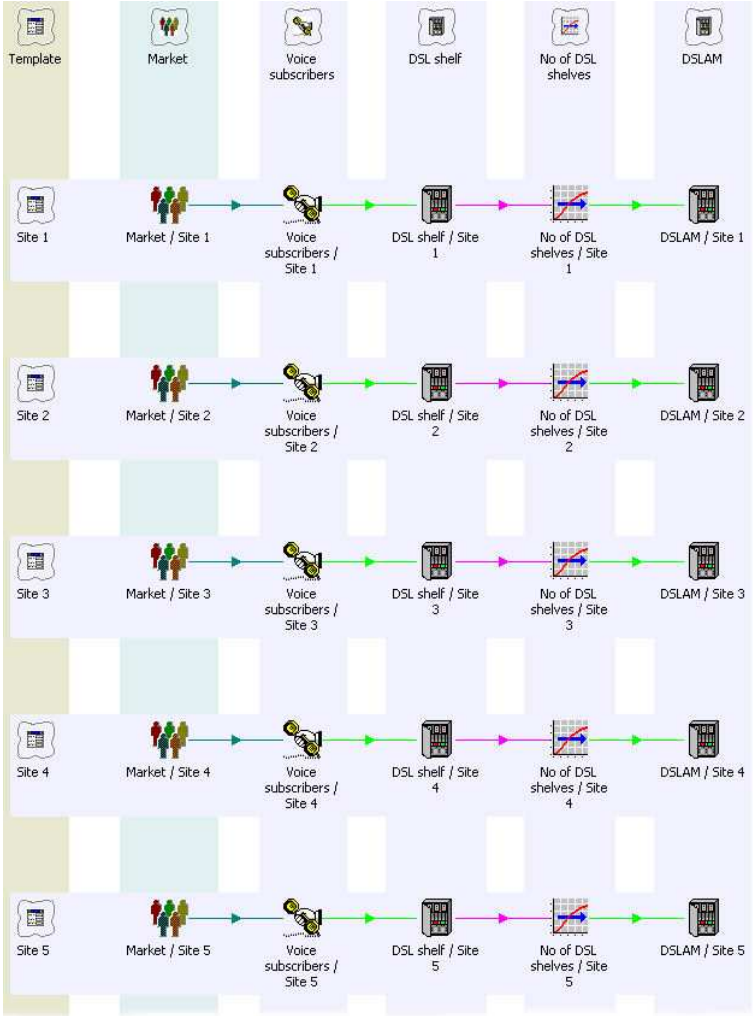
Replicated template elements

- Manual replication is feasible with copy-and-paste …
- … but this is labour-intensive, subject to user error, and does not help much if you want to add something to the calculation structure later
- Whereas any new structure added to the template will be automatically propagated across all sites
- Detailed and consistent results are generated for each individual site, as well as for the network as whole



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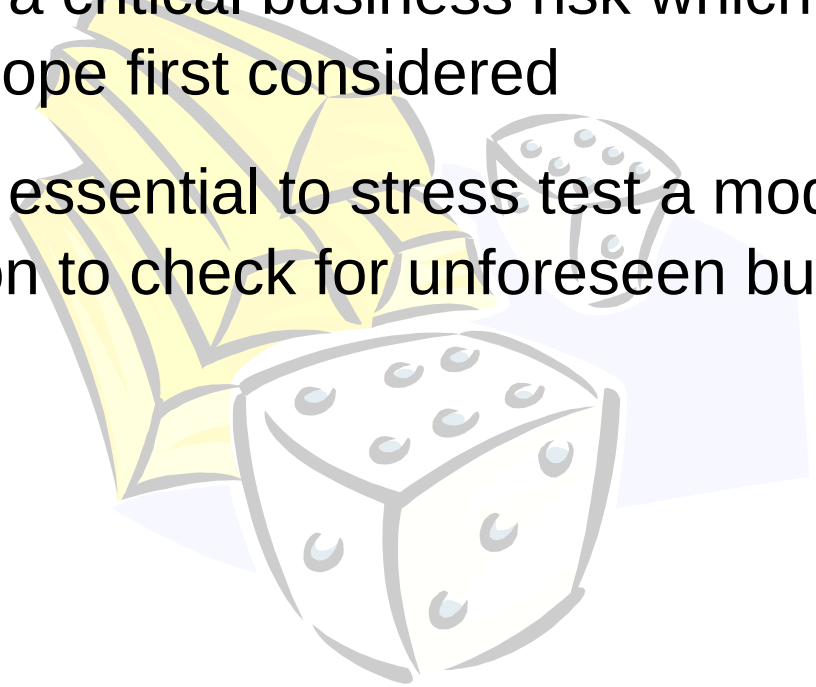
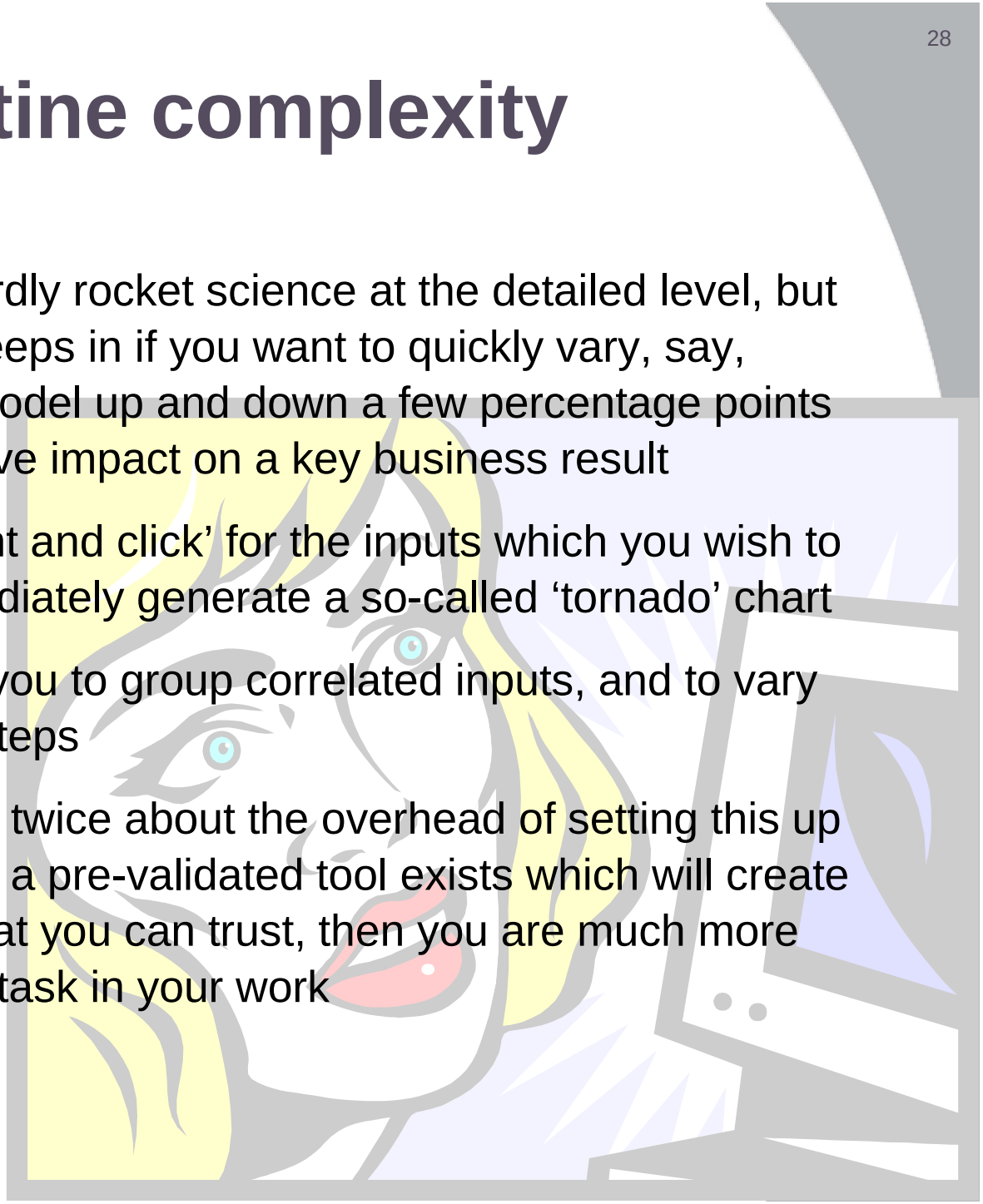
Sensitivity analysis

- All of the business modelling techniques described so far revolve around established processes, structured calculations, and careful organisation of data
- However, if you are too disciplined and rigidly methodical, you may miss a critical business risk which lies outside the problem envelope first considered
- Therefore it is essential to stress test a model in a pseudo random fashion to check for unforeseen business issues



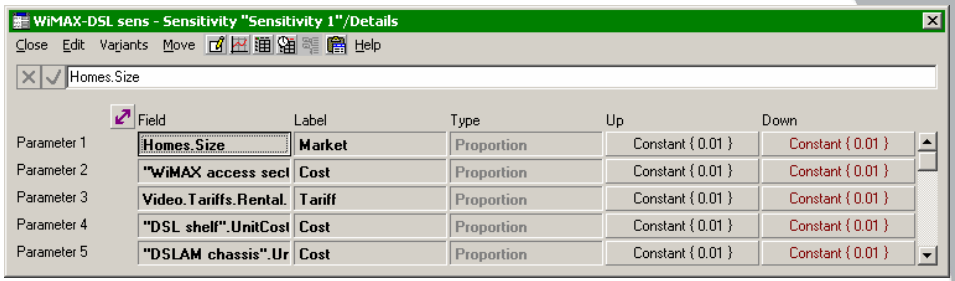
Managing routine complexity

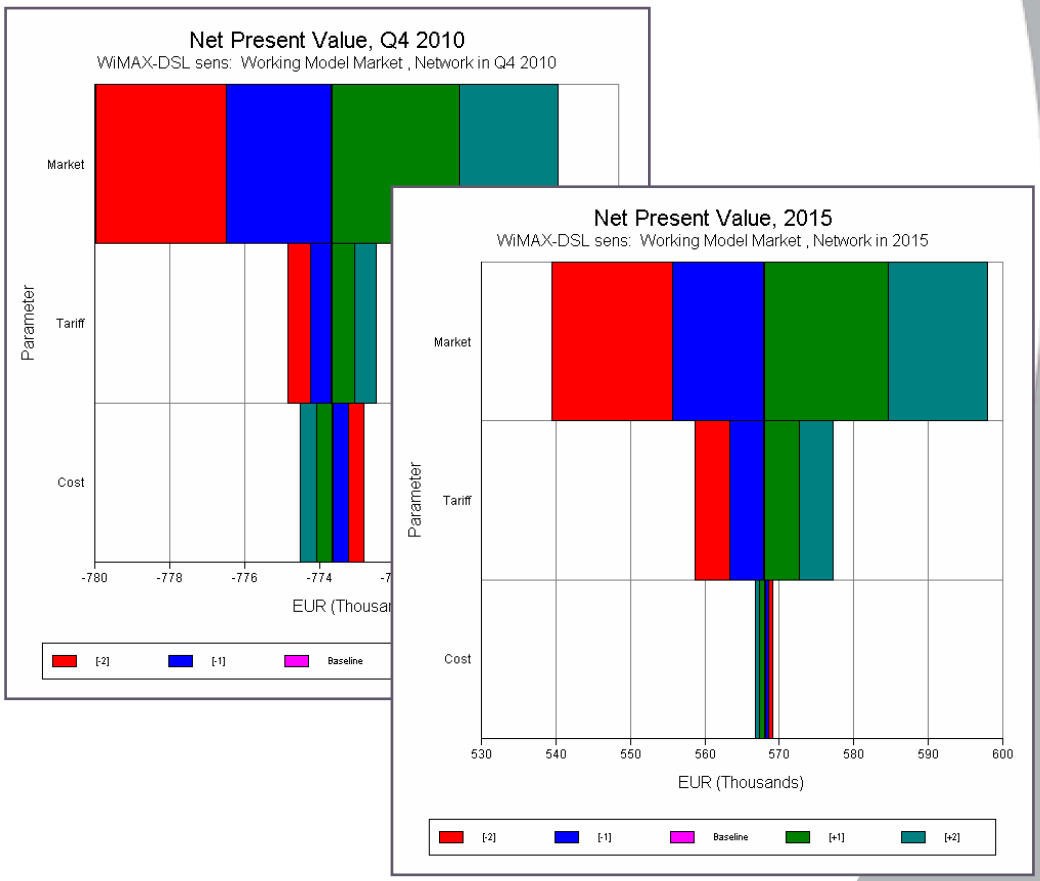
- Sensitivity analysis is hardly rocket science at the detailed level, but significant complexity creeps in if you want to quickly vary, say, twenty inputs across a model up and down a few percentage points and graph the comparative impact on a key business result
- Our model supports ‘point and click’ for the inputs which you wish to include in order to immediately generate a so-called ‘tornado’ chart
- Additional options allow you to group correlated inputs, and to vary the number and size of steps
- Whereas you might think twice about the overhead of setting this up yourself; if you know that a pre-validated tool exists which will create a calculation structure that you can trust, then you are much more likely to include this vital task in your work



Measuring impact with tornado charts

- We look at the size of the market, the tariff for video on demand, and a number of correlated infrastructure costs
- A tornado chart for 2015 demonstrates that changing the market size has the most impact on the NPV
- The same chart for 2010 shows greater sensitivity to the infrastructure costs (as the network utilisation is lower at this stage)
- The colours in the chart reflect the +ve or –ve impact on the result (market size or tariff compared to cost)





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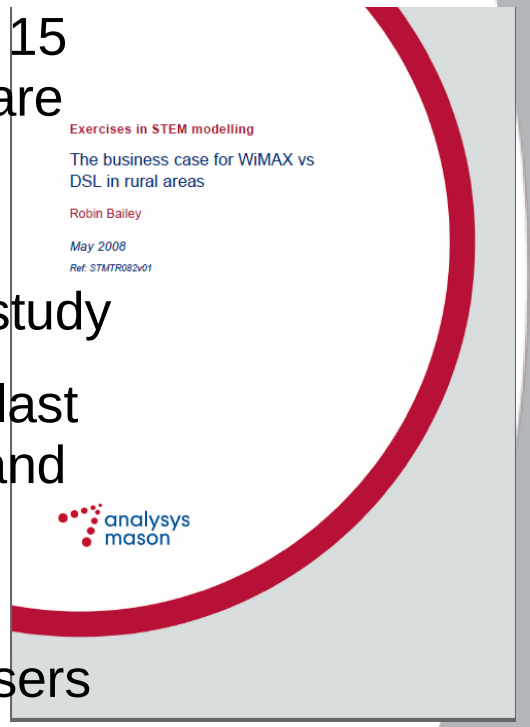
- STEM automates the management of scenario results and lets you focus on insightful analysis instead of wrestling with the same old formulae in a spreadsheet
- New structure added to a template is automatically propagated across all sites; so detailed and consistent results are generated for each modelled site, and aggregated for the network as a whole
- You are much more likely to include sensitivity analysis in your work if you can use a pre-validated tool to create the robust calculation structure rather than code it yourself

Learning an established process

- A new training course is available, written around this *Business case for WiMAX vs DSL in rural areas*
- A 190-page exercise book presents 55 exercises in 15 groups covering all key features of the STEM software and current modelling practices
- The exercises build up essential skills by working through, and making various additions to this case study
- This course has been written from scratch over the last 18 months with a view to presenting an up-to-date and complete introduction to working with STEM
- The exercise progression distils working knowledge gleaned from real-life problem solving for existing users as well as countless demonstrations to customers exploring every conceivable requirement



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STEM User Group Meeting

- 16–17 September 2009, King's College, Cambridge, UK
- Interactive sessions on business planning for convergent services and product-profitability analysis
- Master classes for established users in parallel with fast-track training for newcomers
- Guest presentations from operator and vendor clients

Please register by email to stem.admin@analysysmason.com for the 2009 event

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