whatIf? Technologies

Designing the Future

Technology and Services for Strategic Planning Scenario Analysis

whatIf? Technologies provides software technology, products and consulting services for simulation models. These models are used primarily for strategic planning and scenario analysis, and also employed in risk analysis, policy analysis and education.

Our activities span a wide range of applications including:

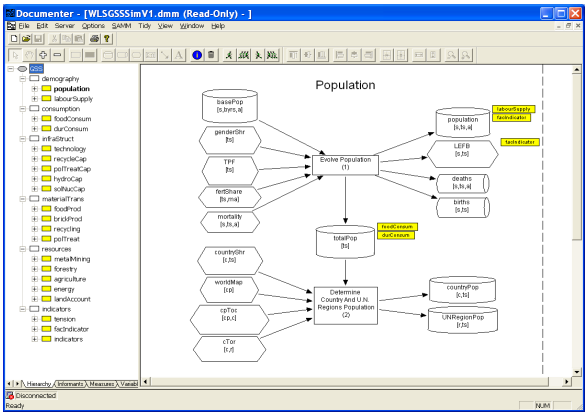
- Urban and regional planning
- Energy analysis
- Natural resource management
- Demography
- Sustainable development
- Human resource planning
- Financial simulation

Our three major areas of business activity are Technology, Custom Modelling and Application Products.

Technology

The whatIf?® suite of software technologies provides a unique and powerful environment for the development and use of models. Benefits include:

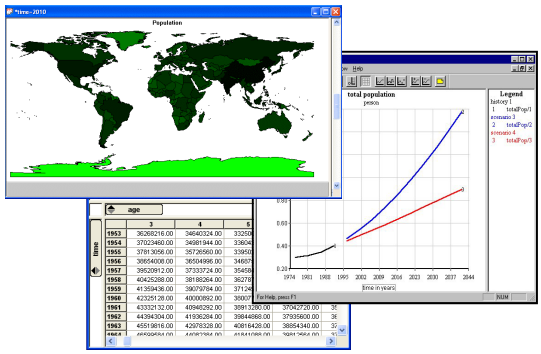
Complete & Integrated Environment. The suite spans the full modelling life cycle. This includes facilities for design, documentation, scenario management, data assembly, data cleaning and report generation. Furthermore, whatIf? is not confined to a single mathematical paradigm or analytical technique whether that be optimization, econometrics, agent-based simulation or differential equations (system dynamics).



Diagrams are used to represent and navigate models

"White box" Models. Models implemented in the whatIf? environment are not "black boxes". Transparency is achieved through a visual design environment, in which diagrams and a computable mathematical language allow users to view and understand model implementations. The model design serves as the model documentation and vice-versa.

Scenario Management. A crucial component is the intuitive graphical interface for creating, comparing and documenting assumptions for alternative scenarios. Each scenario represents a set of assumptions for each variable in a model. whatIf? includes functionality to generate user-guided numeric assumptions (large arrays of data); also to "mix and match" assumptions from different scenarios to create new scenarios. It is through this process of rapidly creating scenarios that a model is explored and insight gained.



Simulation data display: maps, graphs and tables

Data Visualization. The suite provides tools for both interactive visual display and creation of large arrays of data using line graphics, tables, and thematic maps. These tools are tightly integrated with the scenario management capability described above.

Collaborative Multi-user Architecture. whatIf? modelbases – the integrated collection of models, databases and scenarios – reside on internet-accessible servers supporting multiple simultaneous desktop users. Much of a model's value comes from the common base understanding it provides to stakeholders. Upon this common understanding, different viewpoints can be shared through various scenarios. Therefore, software support for multiple users and collaboration is key.

Extensibility & Interface to other Tools. whatIf? has been developed with extensibility in mind. Its modular design makes it possible to introduce new mathematical tools and data objects as the need arises with no impact on the existing models. Its supports a seamless interface with common spreadsheet, GIS and database software.

Custom Modelling

whatIf? Technologies works with clients in the design and implementation of custom models using methods, standards

and procedures supported by the whatIf?® software technology. These five stages are typical of a custom modelling project:

1. Design Workshop. Our model designers come together with the client to scope and design the model, along with subject matter experts and data holdings experts. First, scoping establishes the issues that the model will be used to analyze. This is followed by model design - identifying processes to be represented in the model, and defining the relationships among these processes. Also considered at this stage are critical uncertainties – these become the subject of exploratory simulation. Data sources are also identified.

2. Model Coding. During the coding phase, the model structure outlined in the design workshop is formalized in the mathematical language, TOOL. The coding phase also provides an opportunity to begin training clients wishing to learn the TOOL language - the same language used to implement data import and reporting functionality after the model's initial release.

3. Calibration and Data Assembly. Models are calibrated over historical time to assure that model results are consistent with observed data. Calibration results in the assembly of a complete set of historical values of all a model's variables that are consistent with the necessary relationships of the model. Calibration involves assembly of the data sets identified in the design phase, conversion and standardization, parameter estimation and estimation of missing data.

4. Scenario Workshop. In the scenario workshop our model designers and facilitators meet with the client to begin exploring futures using the model, via scenario creation and analysis.

5. Integration. At this point we work to integrate the custom model and the whatIf? technology into the client's planning, consultation and communication processes. At the client's request, this may include establishing ongoing support, maintenance and training services to sustain the model's analytical value and productive life.

Application Products

Application products provide planning and analytic capability "out of the box". We provide rapidly assembled simulation models using pre-built model components. Application products leverage the collection of common modelling components we have developed for a particular application area, built up over decades of custom modelling experience. Currently we offer application products in two areas: Urban & Regional Planning and Energy Analysis.

Company History

whatIf? Technologies was founded in 1989 (as Robbert Associates) by Robert Hoffman, Bert McInnis and Michael Hoffman. The company built upon Robert and Bert's pioneering work in socio-economic modelling and simulation at Statistics Canada. There, for a decade and a half, they had developed a sequence of economic models, starting with the comparative static input-output models at regional and national scales and culminating with the Socio-Economic Resource Framework (SERF). This was the first long-term dynamic simulation model of the Canadian physical economy. SERF effectively combined the activity analysis concepts of Nobel laureates T. Koopmans and W. Leontief and the system dynamics concepts of MIT's Jay Forrester - from which the 'design approach'* to modeling emerged. SERF was used to explore issues of an industrial strategy for Canada, the demographic transition resulting from the post-war baby boom and the implications of the OPEC oil cartel.

The new company quickly established the reputation as a leader in creating computer-based simulation models for strategic planning and scenario analysis. Several modelling projects in urban and regional planning, transportation and economic sustainability were successfully completed.

One of the founding visions of the company was to advance the state of model-building and simulation software. Early experience at Statistics Canada showed that large, complex models implemented in one-off code were problematic for a multitude of reasons: poor transparency, tedious validation and duplicated basic I/O functionality, just to name a few. Several generations of software tools to support large-scale simulation modelling were developed, and the whatIf? suite of software had its origins in these generations.

By the early 2000s, the substantial model library built over a decade of custom modelling, coupled with the powerful whatIf? modelling suite paved the way for a new offering - application products. These products were assembled from pre-built model components, developed though repeatedly building models in the same application area and identifying common structures. Application products provide significant planning and analytical capacity without the level of investment required by custom modelling, which leads to faster implementation times. To date, application products have been released for Urban & Regional Planning and Energy Analysis.

In 2005 the company was renamed whatIf? Technologies, from Robbert Associates. This change leveraged the strong brand established by the whatIf? software, and aligned the company's three major business lines: Technology, Custom Modelling and Application Products.

For further information on our products and services, contact:

whatIf? Technologies Inc.
338 Somerset Street West, Suite 3
Ottawa, Ontario K2P 0J9

info@whatiftechnologies.com
www.whatiftechnologies.com
Tel: (613) 232-5613

companyprofileinfo20051026v0.3

* Gault, F. D., K. E. Hamilton, R. B. Hoffman, and B. C. McInnis. The Design Approach to Socio-Economic Modelling. Futures, February, 1987.