

## Introduction

TreeAge Pro 2006 is a computer-based decision analysis package designed to help users structure decision problems, with the use of probabilities and values for alternative decision pathways. Using decision analysis, a complex problem or process can be broken down into components small enough to be readily understood and analysed. These components can be combined to create a model of the problem with several possible outcomes.



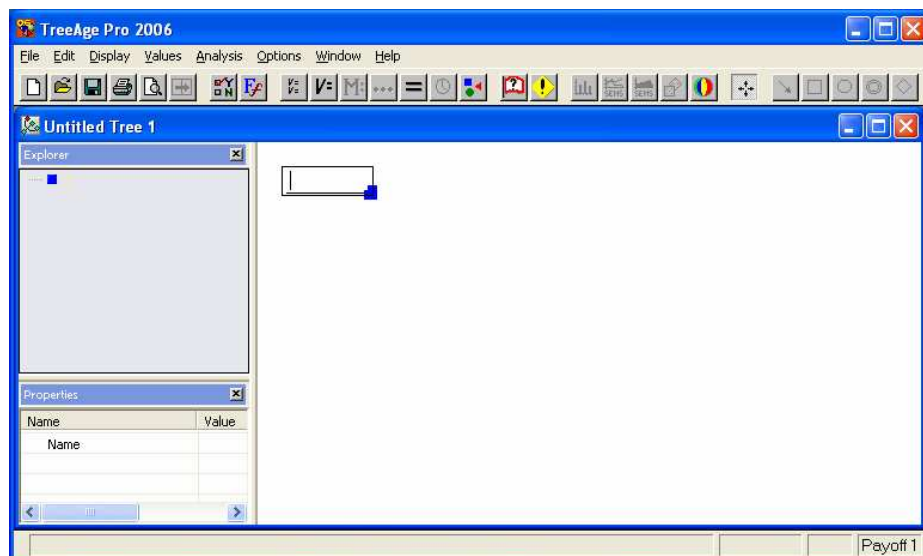
TreeAge Pro 2006 software is easy to use even for those relatively new to decision analysis. It is available on the network to all staff and students and can be installed on LSE owned machines.

## Starting TreeAge Pro 2006

TO START TREEAGE PRO 2006 IN COMPUTER CLASSROOMS AND PUBLIC COMPUTER AREAS

1. Click on **Start | Programs | Teaching | TreeAge Pro 2006**.

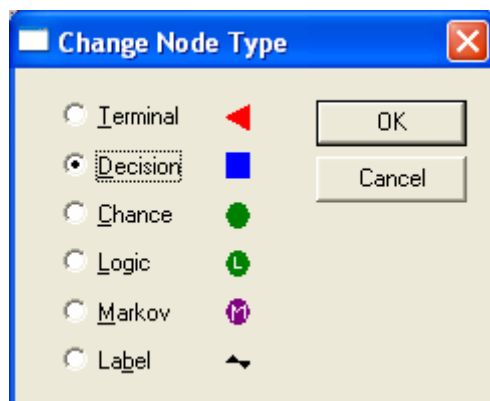
*The TreeAge Pro 2006 opening screen is displayed.*



You are presented with a new tree view containing a single node. This is referred to as the **root node**. The other two panes are the **Explorer pane** and the **Properties pane** and they are very useful when editing large trees.

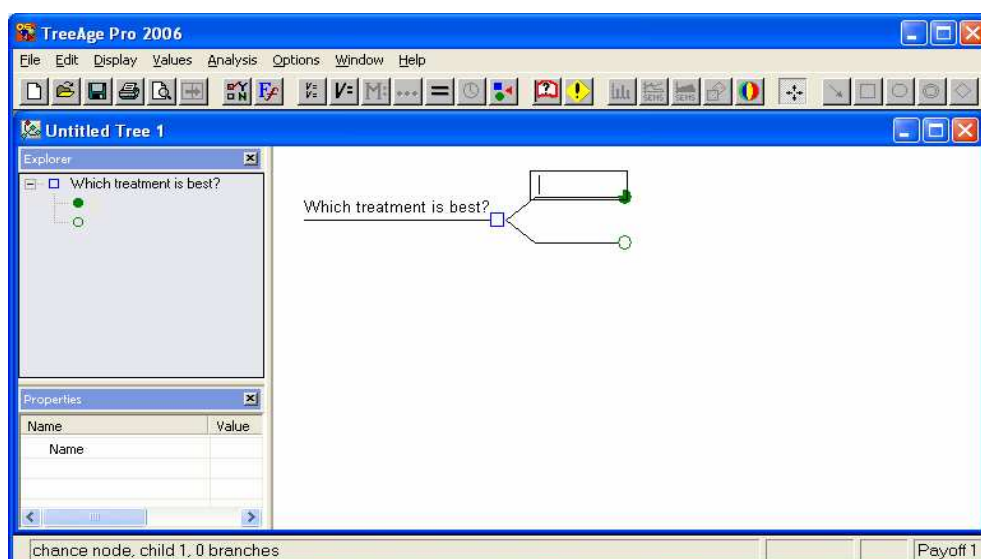
2. By default, the root node is a decision node. It cannot be deleted but it can be changed to another type of node, if appropriate, using the

**Options/Change Node Type** command or by clicking on the **Change Node Type** button.



The Change Node Type dialog box allows you to make an appropriate choice.

When the root node on the tree is selected, the node symbol changes to a filled in square and it is at this point that you can type in a node name.



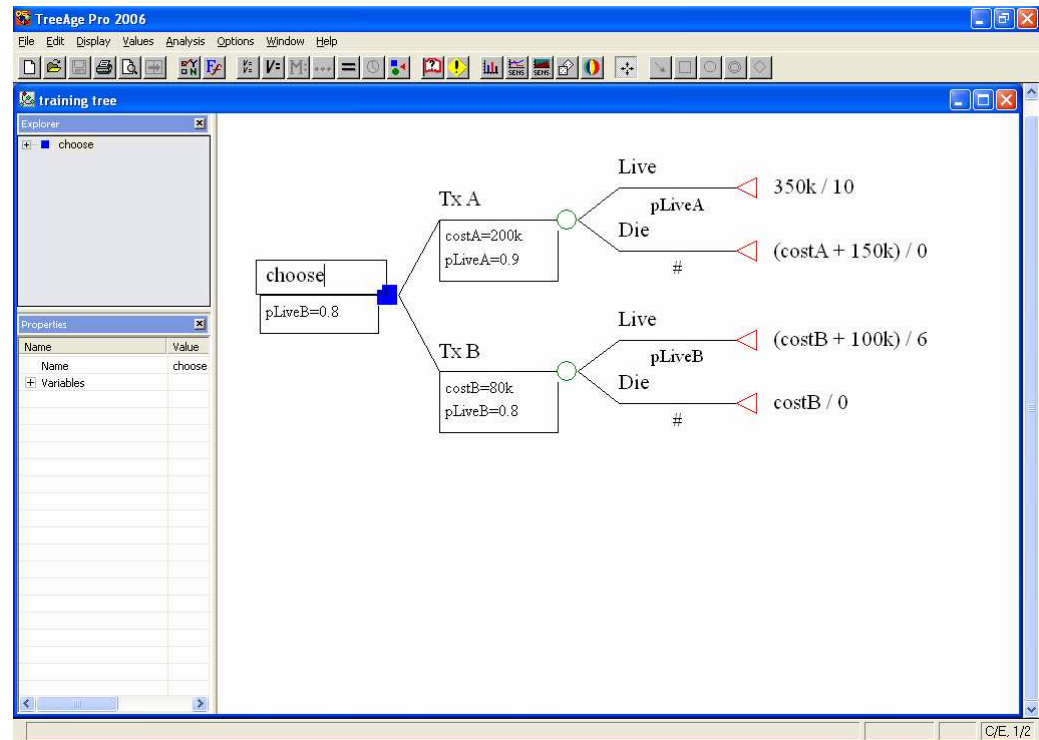
Further branches can be added to the tree by **double-clicking** on the node symbol or alternatively selecting the root node and using the **Options/Add Branches** command. The cursor will change to a branch cursor and further branches can be added.

*Each new node created by adding a new branch to an existing node is automatically a chance node, unless you change the node type as described above.*

All right-most nodes in the tree, as they have no branches attached to them, must be changed from chance nodes to **terminal nodes** (for details of how to do this see step 1 at the top of page 2). This then allows **payoff values** to be assigned.

*In Decision Tree Analysis, the term **payoff** is used to denote the net value of a particular outcome represented by a terminal node. Payoffs can be thought of in terms of possible life expectancy, currency, market value or any other unit of measure.*

**Probabilities** must next be entered for each event in the tree. In Decision Tree diagrams, probabilities are usually assigned below the appropriate branch line. **Click below the appropriate branch line** or position the cursor in the node name field above the branch line and press the **TAB** key on the keyboard.



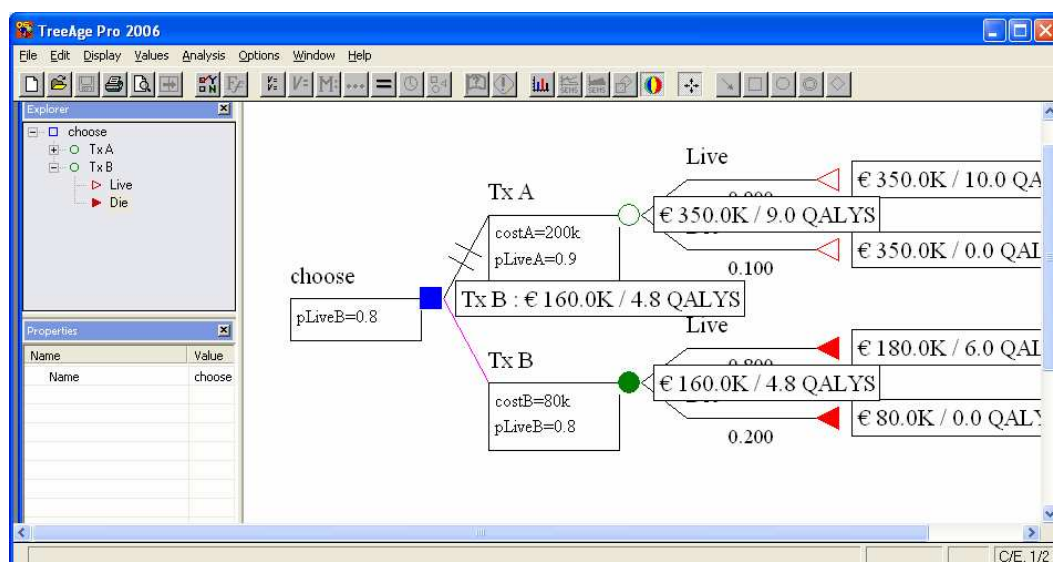
Once you have entered all the payoffs and probabilities in your tree, you need to decide whether the best possible outcome at decision nodes will be based on maximising or minimising the expected value. For example, when calculating treatment costs, you could decide the best path to select would be based on minimising expected value.

To set the calculation preferences for the tree, use the **Edit/Preferences** command. On the resulting screen, if your calculations are using a single payoff, select **Calculation Method as Simple**. The optimal path should be set to **High** or **Low** depending on what your decision tree is trying to calculate.

**When the tree is complete, it is advisable to save your tree (File/Save) before calculating it.**

TreeAge Pro 2006 analysis features can then be used to calculate expected values and select an optimal path.

Choose **Analysis/Roll Back** to carry out the analysis of the completed decision tree.



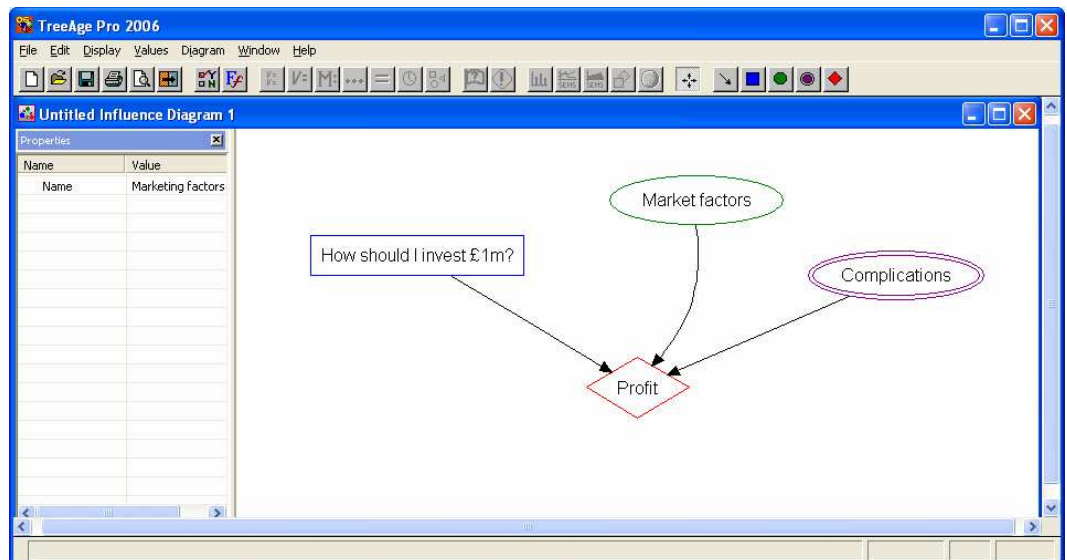
**Note** that **Roll Back** will need to be turned off in order to make further changes to the tree.

TreeAge Pro 2006 also includes an integrated **Excel module** which is very useful as it allows dynamic linking between a TreeAge Pro 2006 decision tree and a Microsoft Excel spreadsheet. Tree variables can be linked directly with spreadsheet cell values or formulae thus cutting out the need to constantly switch back and forth between a spreadsheet and a decision tree when working with particularly complex calculations. The integrated Excel module also allows you to have greater functionality with your TreeAge Pro charts.

## Influence diagrams

TreeAge Pro 2006 **influence diagram** interface can be used to show the factors that influence a decision. TreeAge Pro 2006 goes beyond the capabilities of the standard influence diagram by adding information *inside* nodes and arcs – including lists of event outcomes, probabilities and payoff values. With TreeAge Pro 2006, this hidden information is used to convert the influence diagram directly into a fully-configured tree, ready for analysis. This is very useful as previous versions of the software did not allow this in so much detail.

The influence diagram window can be opened using the **File/New/Influence Diagram** command.



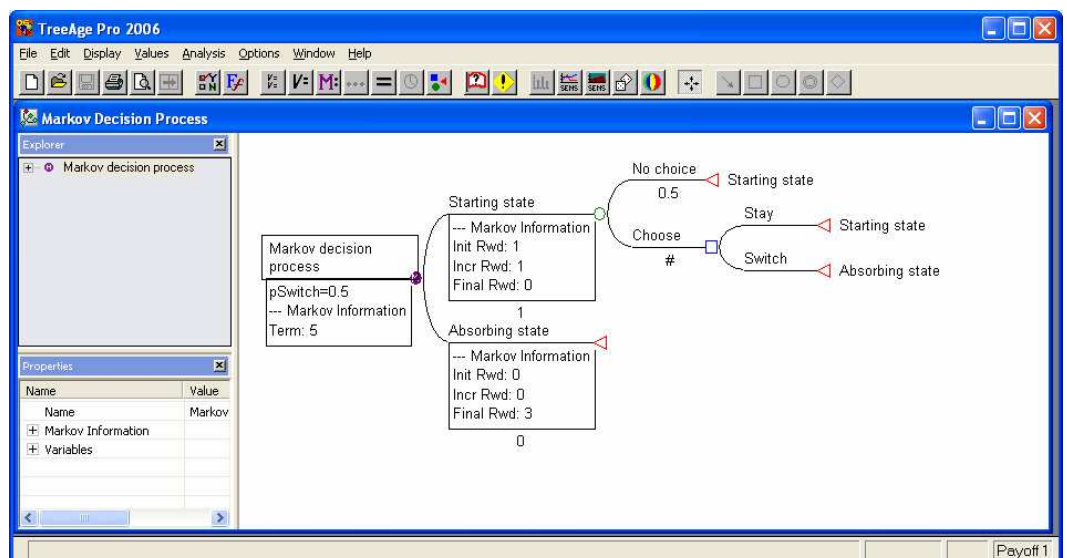
To create a node, **right-click** in the influence diagram window. Then from the resulting quick menu, choose a **new decision**, **new chance**, **new deterministic node** or a **new value**.

## TreeAge Pro 2006 modelling capabilities

TreeAge Pro 2006 offers much more than basic decision tree analysis and expected value information.

It can be used to run sensitivity analyses, including Monte Carlo simulations on up to 5 million trials or samples in a single simulation.

It supports the development of **Markov models** (often used in medical decision making), with fixed or time-dependent transition probabilities. Markov processes are graphically displayed with nodes to identify all of the potential states and the potential state transitions.



## Further information about TreeAge Pro 2006

TreeAge Pro 2006 is available on all student machines on the LSE network (via Programs and then **Teaching**). Staff wishing to have the software installed on their LSE owned machines should contact their IT Cluster Support team.

Printed manuals are available in the LSE Library but the full manual also comes in PDF format installed with the software. The manual can be accessed via the **Help** menu by selecting **PDF Manual Content**.

Student versions of the software, which have limitations on the size of the decision trees they build, can be purchased at a reduced price directly from the manufacturer at [www.treeage.com](http://www.treeage.com)

Staff and students wishing further information are advised to contact Angela Aubertin ([a.aubertin@lse.ac.uk](mailto:a.aubertin@lse.ac.uk)).