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Ideas for a New Interface to Forecaster

Authors:
A Gordon, J Snook

Research Provider:
Scion

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EXECUTIVE SUMMARY

Users of Forecaster have requested that the user interface be simplified. One approach is to change the interface so that it is more specialised toward the user's particular role and application of the software.

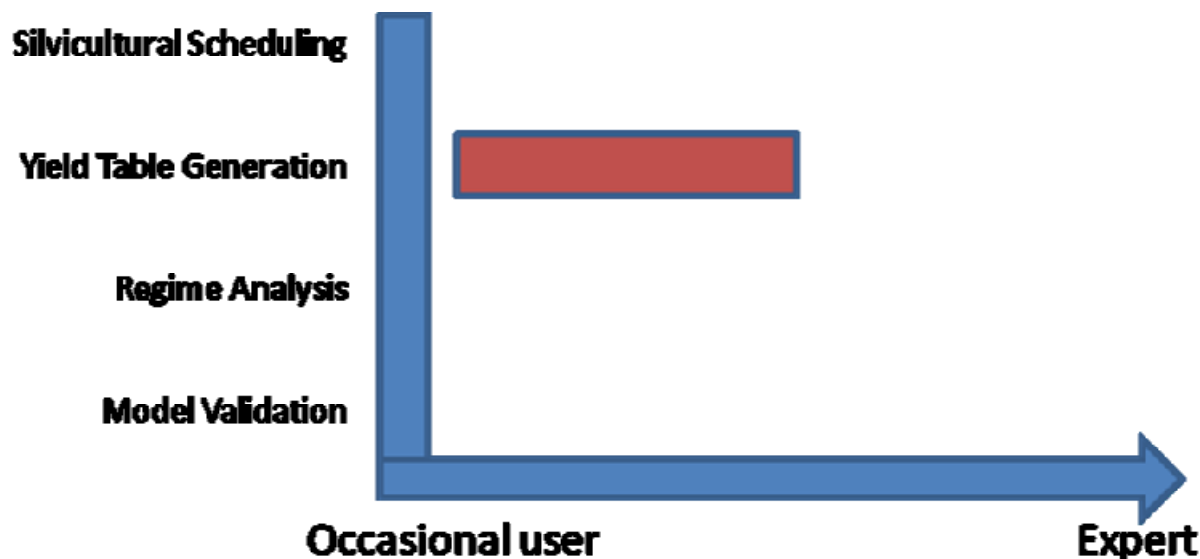
Objective 3 in the Radiata Management Theme research programme began with a survey of members on decision making and expectations of tools by key decision makers. A pilot study of value chain modelling was conducted while concurrently assessing from a selected user group, the likely requirements these users will have of the system.

Task 3.02.05 is titled "Determine roles/user groups and prototype new interface to Forecaster".

This report documents some of the considerations and implications for implementation of a new interface to Forecaster. It uses the example of the occasional user who requires Forecaster to generate yield tables, and gives implementation notes.

INTRODUCTION

These notes document some of the considerations and implications for implementation of a new interface to Forecaster which targets the occasional user who requires it to generate yield tables.



KEY USAGES

1. Silvicultural Scheduling – determining the timing of the next pruning or thinning. This is important for intensively managed radiata pine, particularly to control the size of the defect core remaining after pruning. Ideally the scope of this function should include operational constraints (crew availability, work-rate, and sequencing), so that a viable work program can be constructed rather than calculating timing for individual stands.
2. Yield Table Generation. Yield tables are a key component for forest planning and valuation. Starting points must include both measured stands and “green fields”.
3. Regime Analysis. When comparing the impact of silvicultural regimes it is often useful to analyze a matrix of scenarios covering the available decision-space. The size of the differences between scenarios can then be used to indicate which regimes give the best solution, and what the likely cost of following a sub-optimal regime will be.
4. Model Validation. Validation is a key part of model development. As Forecaster becomes a standard vehicle for model implementations, it is important to support validation efforts so that the reliability and accuracy of models can be easily determined. Initial efforts should focus on the use of PSP data for the validation of growth models.

MANAGING COMPLEXITY

A simplified interface is required to support occasional users of Forecaster who are not familiar with steps needed to construct, run and report on a project. Human/computer interaction principles suggest such an interface should have the following characteristics:

1. "Single Page" layout. Applications with multiple windows are very flexible in terms of customizing layout and workflow. However such an interface is difficult to learn, partly because human memory is often tied to spatial relationships. If these relationships are not fixed it is difficult to remember the function or control. The "single page" paradigm ensures that parts of an application retain their spatial relationship with each other so that the whole becomes easy to learn and remember. It also attempts to keep all key functions visible (or partly visible) at all times so that there is always a visual clue to each branch of a process. Flow (work process) is inherent in the layout, with the user progressing from left to right / top to bottom.
2. Modes. There is often detail on a form that can be defaulted or left at the last setting. Such information should not normally be displayed, although it can always be accessed using a *More* button on the form.
3. Templates. Templates are a good way of simplifying a task by providing the outline of the solution. A novice can then "fill-in" the template and be reasonably certain that key information or processing has not been overlooked.
4. "Wizards" are a sequence of modal forms that define a process. This is an ideal way to learn a new task, especially if it involves a number of steps or branches. "Wizards" often exhibit the following characteristics, involving a number of steps:

The user is presented with a series of small, uncluttered forms;
Each page has a heading and a description of what you are meant to do on each page;
Each page asks the user to complete one or two tasks;
The bottom of each page will have a forward and back button, unless you are on the first or last page;
All pages will have a cancel button so that you can quit the wizard;
The final page will have a finish button (and so might other pages);
If you hit the Back and Forward buttons, the wizard will remember your previous entries;
The fields on the forms will have intelligent default values.

Sub-tasks

1. Define the boundaries of the New Zealand growth modelling regions as polygons using NZMG coordinates.

Define a standard functions set for radiata pine for each of the GM regions. These functions should be drawn from the set available to FFR members.

INITIAL CONCEPT OF INTERFACE

Yield Generator



Location

Northing 1756345 m
 Easting 5467598 m
 Altitude 375 masl
 Site Index 29.6 m
 300 Index 31.4 m3/ha/ann

more ▾

Crop Meas

Years old
 Month
 MTH
 Stocking
 Basal Area / QM DBH

more ▾

Regime

Trigger	Event
Date = 7/1984 month/year	Prune to 599.8 stems/ha order from 'Furthest Pruning Lifts' (0) with Maximum Pruned Height(m) of 2.2, Minimum Green...
	Thin all unpruned stems to waste
Date = 7/1986 month/year	Prune to 299.9 stems/ha order from 'Largest Height' (0) with Maximum Pruned Height(m) of 4.0, Minimum Green Crown...
Date = 7/1988 month/year	Prune to 299.7 stems/ha order from 'Largest Height' (0) with Maximum Pruned Height(m) of 6, Minimum Green Crown R...
Date = 7/1990 month/year	Observation
Date = 7/2010 month/year	Stop

Stand at Age 30

Results

MTH	BasalArea	Stocking	QMDBH	TSV
43.5	86.5	375	587	853.3

Log Product Volume

Pruned	327
S1	134
S2	0
L1	240
L2	0
Pulp	187

TRV
 Waste
 Total Extracted

Defaults

Species = P.RAD
 SiteIndexGF=14
 CuttingStrategy=\Standards\Strategy14a
 ClearFellAge = 30
 PlantedStocking = 850

APPENDICES - IMPLEMENTATION NOTES

1. This interface will build on the existing entities and persistence mechanism used in Forecaster.
2. It will support a single (flat) list of projects. Projects can be created (via SaveAs) and deleted. Project data is stored under the *YieldGenerator* folder in each entity type.
3. Each project will equate to a single *Combination* in a Forecaster project, i.e., a single instance of each entity.
4. Data will be written to entities (hence verified) when the *Results* button is pressed.
5. In-place editing of data fields will be preferred, but one level of modal dialogue may be needed.
6. Where possible all forms will have a mode button (*Standard / Expert*) to hide detail that may not be relevant to the current user and that can be defaulted.
7. The *Location* section may incorporate the crop measurement which will initially be limited to [G,N,MTH,t]. This measurement can then be used to calibrate the productivity indices. The interface may look like:

where values can be entered, be derived from the measurement or be derived from the location.

8. This interface will not support the entry of measured stem lists (e.g., from SilviQC).
9. The specification of the regime will include Establishment as an event, as well as the measurement if entered when calibrating productivity indices. Use colour coding to distinguish historical events from planned events.
10. All times are specified as dates (year, month). Establishment year can be zero.
11. Allow for a clearfell range. Assume annual steps between the first and the last clearfell dates.
12. Reporting. Stand history (year, month, basal area, MTH, stocking, TSV).
Yield table (ProjectName, CuttingStrategy, YearsOld, Month, Species, stocking, product1, product1, ... productn).
Other reports could include: drill-down to stem list, stem development chart, stem height/DBH scatter at age with dbh distribution and green crown heights.