

Objective 3: FFR Modelling System

Jeremy Snook – ATLAS Technology

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**FUTURE
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Leadership in forest and environmental management, innovation and research

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Next generation biomaterials

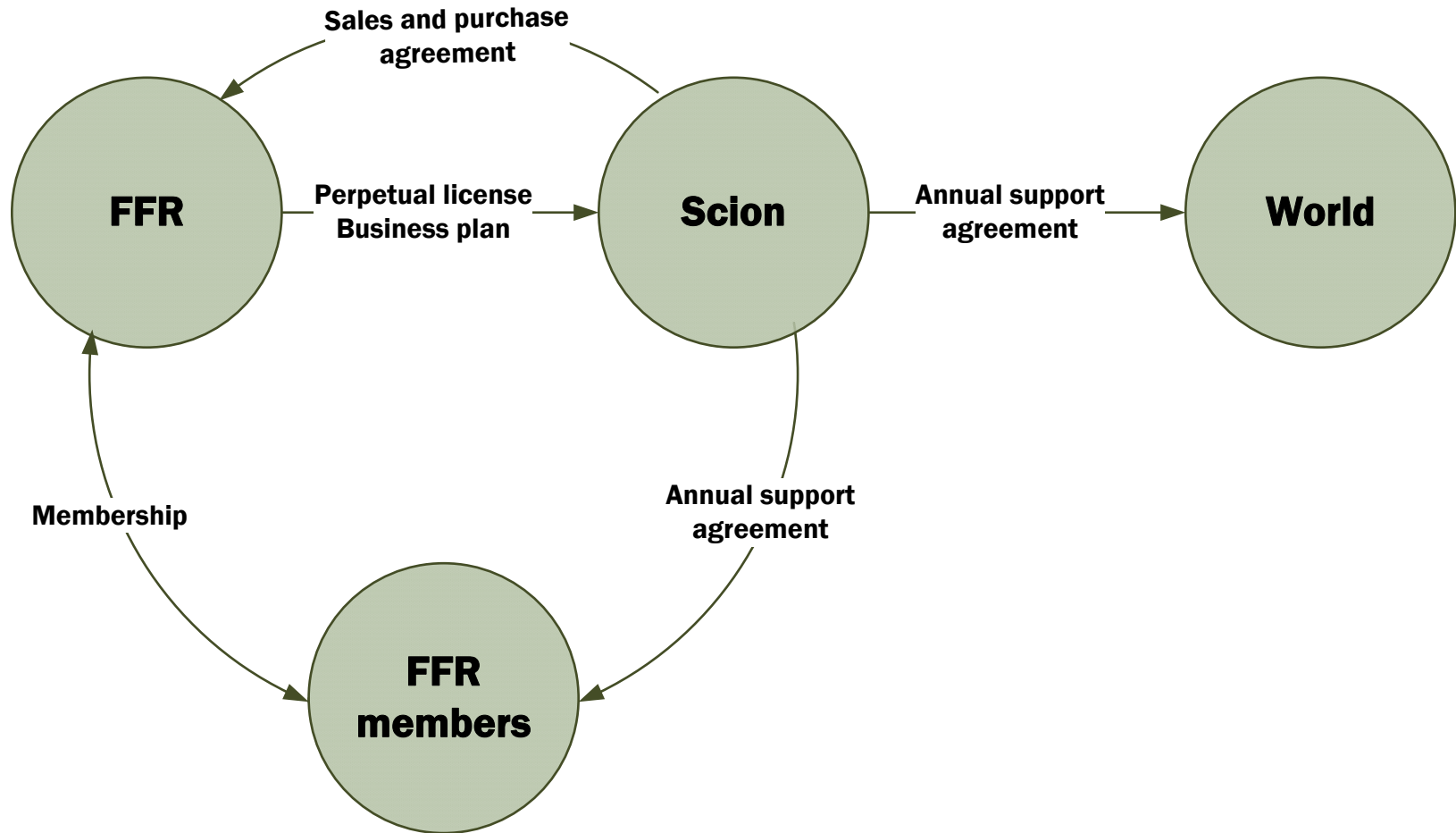
Objective 3: FFR Modelling System

- Update on Forecaster IP ownership
- Changing focus of Forecaster development
- Recent Forecaster development
- Presentation of 2010-2011 work programme

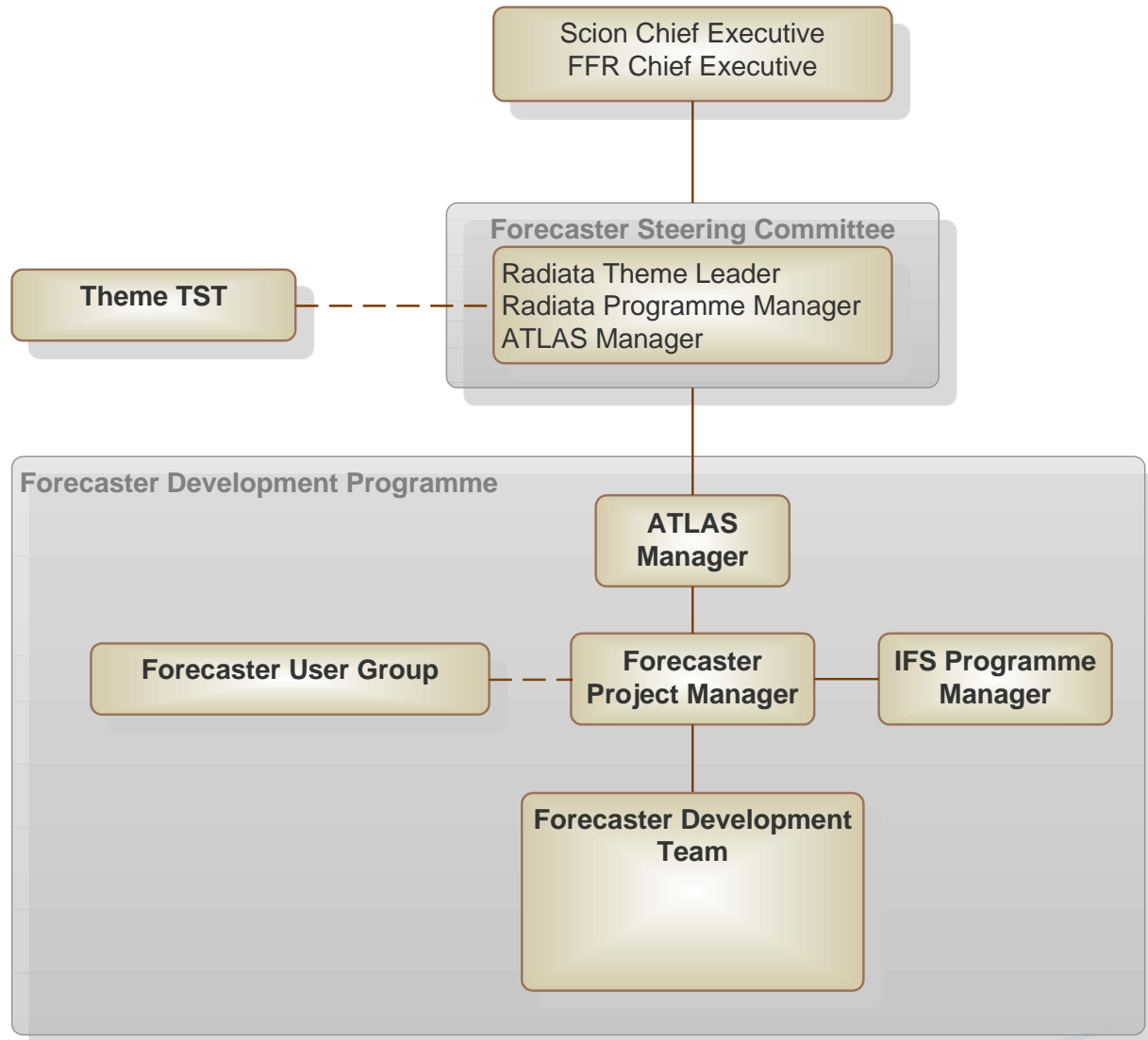
Update on Forecaster IP Ownership

- Forecaster seen as primary vehicle for delivering science to industry
- IP transfer on target for 1 July handover
- Forecaster is available to all non-licence holding members for a free 3 month trial.
- Summary of licences, support fee structure and ongoing management will be circulated to all members at end of May

Forecaster model



Governance model



Changing Focus

- Previous development focus was largely content-driven (e.g. new models).
- About a year ago, emphasis was changed to:
 - Stability – a well-tested, robust product.
 - Usability – making it easier to pick up and use.
 - While still supporting the addition of new science.

Forecaster Testing

- Focus on releasing a robust, quality product.
- Version 1.6 underwent the most comprehensive testing so far against real industry data.
 - But, more involvement from industry would be great (in terms of provision of data).
- ATLAS employed an additional tester specifically for this release.
- Sound testing processes have been put in place and will continue to be improved.

Recent Developments

- Spatial Interface
- Yield Generator Interface
- FFR/WQI Heartwood Model
- C-Change Carbon Model
- MOE Model
- Practical Advice Module
- Documentation Update
- Various Enhancements

Spatial Interface

- Map-based interface simplifies entry of a crop
- Several surfaces now implemented:
 - Altitude, latitude
 - P.RAD 300 Index, Site Index surfaces (D.Palmer)
 - Growth modelling region (for Yield Generator)
 - Mean Minimum Autumn Air Temperature (for MOE)
- Have received some user feedback suggesting changes (more welcome!)

Yield Generator Interface

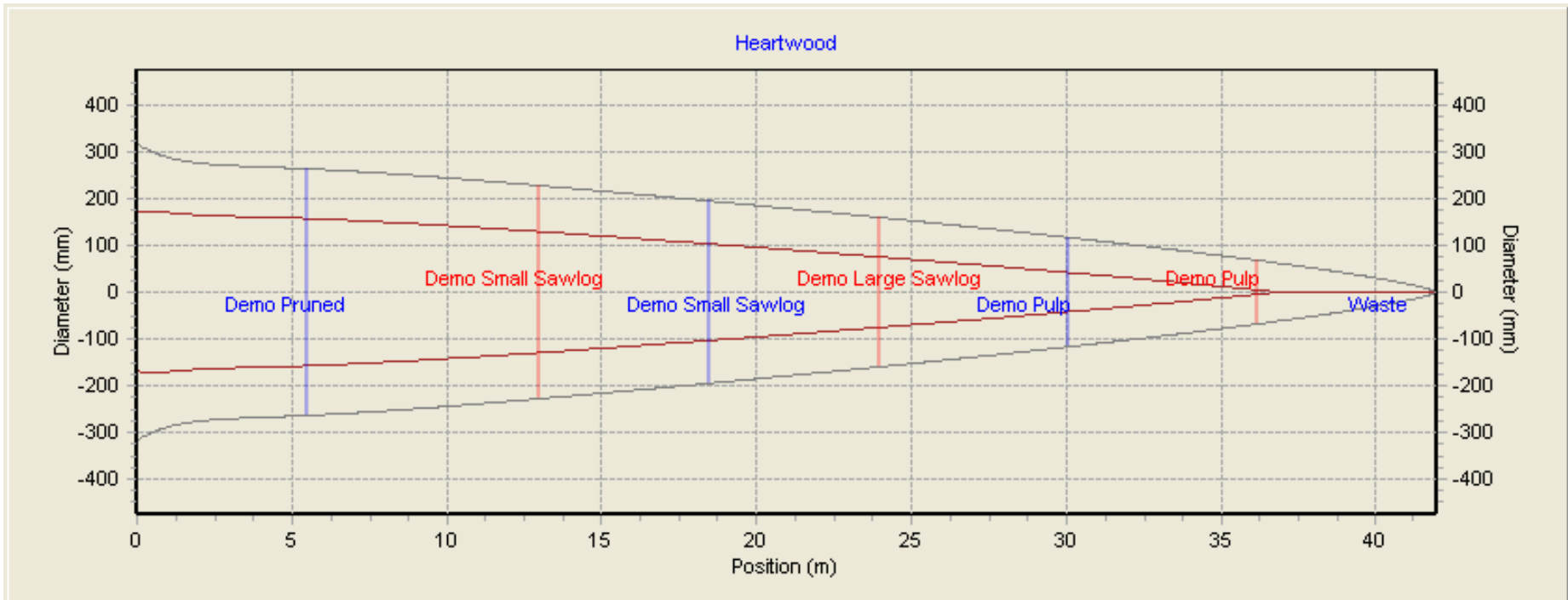
- First attempt at a role-based interface
- Aims to reduce clutter of interface, so that only the information required to complete the task (generate a yield table) is displayed to the user
- Single screen interface containing both inputs and outputs

Yield Generator Interface

- Site populated using spatial interface
- Function set can be populated using default regional function sets based on growth modelling region spatial surface
- Crops combined into regimes (as plant and measurement events) to streamline entry of crop history

Heartwood Model

- Joint FFR-WQI model implemented



C-Change Carbon Model

- Annual sheath-based approach
- Models carbon over two rotations
- Needs density model

Yield Table								Carbon Predictions					
Age	Stocking		Volume		Density			Rotation 1					
years	b4 thin stems/ha	Aft thin	Height m	Net m3/ha	Aft thin m3/ha	Dead	BHOW kg/m3	Tree	Total	AGL	BGL	DWL	FL
		ha							tC/ha				
15	550		28.0	366.1		0.0	448	400	188.6	116.2	25.3	26.1	21.1
16	550		29.7	417.2		0.0	455	403	201.5	131.0	28.3	23.0	19.3
17	546		31.4	466.5		1.7	460	406	215.0	145.2	31.3	20.6	17.8
18	542		33.0	515.1		2.1	466	408	228.7	159.1	34.3	18.7	16.6
19	537		34.5	562.8		2.5	470	410	242.6	172.7	37.3	17.1	15.5
20	532		36.0	609.4		3.0	475	413	256.5	185.9	40.2	15.9	14.6
21	527		37.4	654.6		3.5	478	415	270.3	198.6	43.0	14.9	13.8
22	521		38.8	698.2		4.0	482	417	283.8	210.8	45.8	14.2	13.0
23	515		40.1	740.2		4.4	484	419	297.0	222.4	48.5	13.6	12.4
24	509		41.4	780.5		4.9	486	420	309.8	233.5	51.1	13.3	11.8
25	503		42.6	818.9		5.3	488	422	322.1	244.1	53.6	13.2	11.3

C-Change Carbon Model

- Input variables
 - % TSV removed by clearfell/prod thin
 - Needle retention score (average number of years needles retained)
- Output (t C/ha)
 - Above ground live biomass
 - Below ground live biomass
 - Dead woody litter
 - Fine litter
 - Shrub/understory biomass

MOE Model

- 2-dimensional MOE model was developed (by Mike Watt) and has been implemented into Forecaster.
- Predicts MOE by ring at any point up a stem from:
 - Ring age
 - Stem slenderness
 - Average minimum autumn air temperature (new spatial surface implemented to provide this)
- Outputs:
 - MOE
 - Acoustic velocity (converted using density)

Practical Advice DSS

- Means of storing and making available relevant non-modelled advice
- If conditions of simulation meet pre-defined rules, advice will be presented to user in non-intrusive manner
 - e.g. Warning about risk of *Nectria* if pruning *P.radiata* in lower South Island
- System will support:
 - Research-based advice
 - User-defined advice

Practical Advice DSS

Practical Advice Register

Condition	Advice
Add New Condition	Add New Advice
Site.Altitude > 43.5 (°South) AND Prune_Event.Age > 0 (years) AND Crop.Species = P.RAD	Infection by Nectria flute canker may occur following pruning (more...)
Crop.Stocking < 300 (stems/ha) AND Site.Snow_Damage IN ("Med", "High")	Low stockings in snow-prone areas risk snow damage and understocked stands (more...)

Delete selected advice Copy selected advice Move Up Move Down

View all advice Ok Cancel Apply Help

Documentation Update

- Undertook a major review of the documentation
- Employed a professional technical documenter to rebuild the user manual from the ground up
 - Shift to process-based approach, proven to facilitate adult learning
- Review and update of technical content

Documentation Update

- Completion of manual update by end of June
- Development of web-based training material
 - Bite-sized how-to guides for individual models and features
 - Web-based, video or ‘white paper’ format
- Redevelopment of training course
 - Courses will be offered regularly

Other enhancements

- Plant and measure events added to regimes
 - Makes input of crop history more efficient
- AgeRange added as trigger type in regime
 - Makes clearfell age entry more efficient
- Entity names and event number (e.g. labelling as 1st, 2nd prune) can be exported to reports
 - Makes downstream reporting more efficient

Other enhancements

- Pruning behaviour improved – can now specify pruned stocking and/or % crop stems to prune
 - More flexibility for second and subsequent prunings
 - Easier to avoid/minimise catch-up pruning
- Importing and exporting of entities improved

Questions?