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GLOBAL FORESTRY CONFERENCE

Shaping the Future of Forest Intelligence

The next leap in forest planning optimization

From computational power to cognitive tools

Marie Eve Fillion, Director of Products - Optimization

What we'll explore today

- Where forest planning optimization is heading
- The Woodstock Platform foundations
- A look at Next Generation
- How we get there together
- Q&As

The next leap in forest planning optimization

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Optimization has transformed forest planning

Planning models have grown dramatically in complexity

```
1  *OBJECTIVE
2    _MAX HARVEST 1.._LENGTH
3  ; _MAXMIN TOTVOL  1.._LENGTH
4
5  *CONSTRAINTS
6  harvest >= 860812 1.._LENGTH
7  ;  _step(harvest,3000,3000) 1..4
8    _STEP(harvest,10000,10000)  5.._LENGTH
9    eastharv >= 220000 2.._LENGTH
10   eastharv >= 300230 1..1
11 ;  eastharv >= 176500 2.._Length
12  aplant <= 2342 1..1
13  aplant <= 2500 2.._LENGTH
14  apct   <= 15268 1..1
15  apct   <= 17500 2.._LENGTH
16  spacedct - 0.7 * ctspacearea <= 0 1.._LENGTH
17  plantedct - 0.7 * ctplantarea <= 0 1.._LENGTH
18  aplant - 1 * adjccarea <= 0 1.._LENGTH
19  apctpine - 0.5 * pinespce_area <= 0 1.._LENGTH
20
21 *FORMAT MPS
22
```

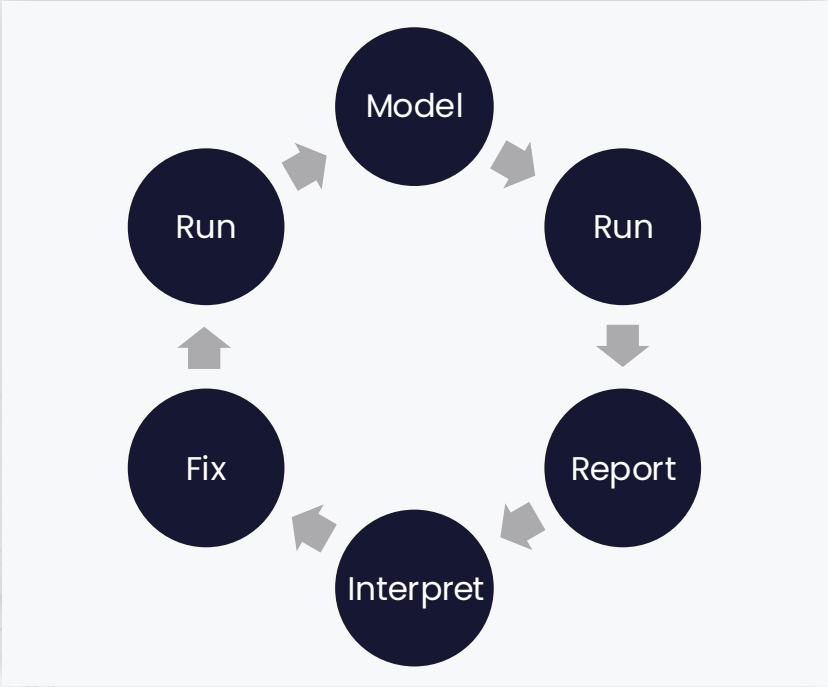
Optimize section - May, 2000
~20 lines

```
5,193
5,194 ;; User-defined constraints
5,195
5,196 *EXCLUDE
5,197 aMaintain 1.._LENGTH
5,198
5,199 *FORMAT CPLEX
5,200
5,201
```

Optimize section - Today
~5200 lines

The hidden work of planners

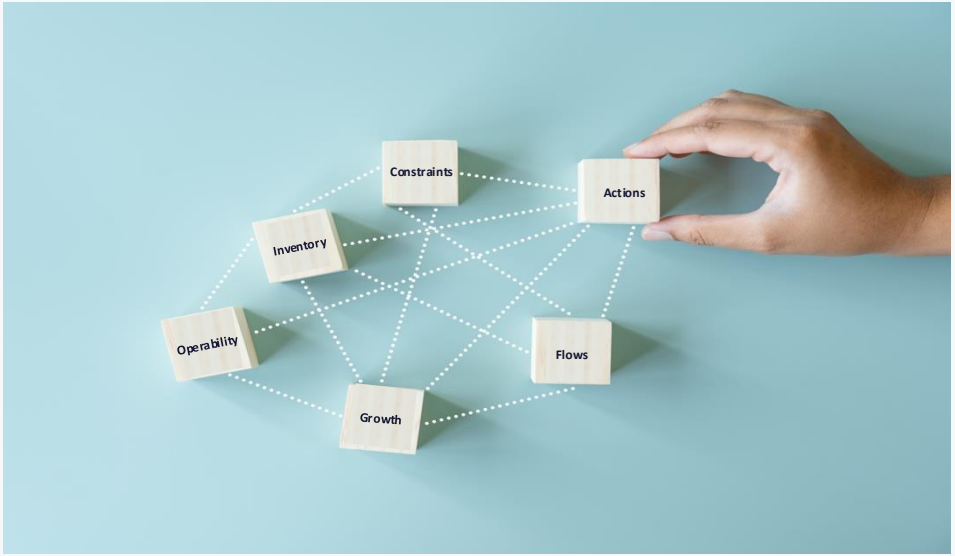
Understanding how planning systems behave



Much of the work happens outside the solver

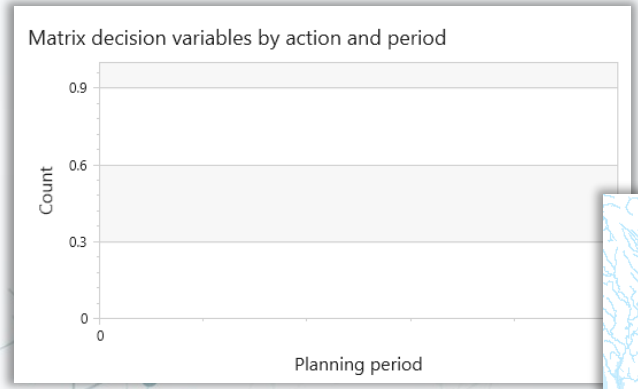
Why this happens

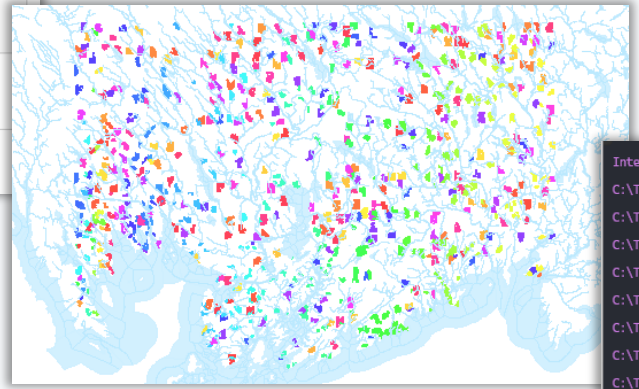
Optimization models are complex systems



Many interacting elements shape each decision

Forest planning software has become incredibly powerful





```
Interpeter Version : 2025.5.0 (64 Bit Xe10r~), Build Date : Jun 25 2025 10:42:28a

C:\Travail\Library\AtlanticRoads>If not exist "C:\Travail\Library\AtlanticRoads\RoadsToU

C:\Travail\Library\AtlanticRoads>If exist "C:\Travail\Library\AtlanticRoads\RoadsToUtopi

C:\Travail\Library\AtlanticRoads>Dir *.xx?  1>StartTime.txt

C:\Travail\Library\AtlanticRoads>If exist BeforeLp.bat Call BeforeLp.bat

C:\Travail\Library\AtlanticRoads>if exist Cplex.log Del Cplex.log

C:\Travail\Library\AtlanticRoads>if exist ODH.log Del ODH.log

C:\Travail\Library\AtlanticRoads>if exist "C:\Travail\Library\AtlanticRoads\RoadsToUtopi

C:\Travail\Library\AtlanticRoads>"C:\REMSOFT\VER2024.08\SOLVERS\CPLEX\REMSOFT.CPLEX.EXE"

Selected objective sense:  MINIMIZE
Selected objective  name:  OBJ1MIN
Selected RHS        name:  RHS
Selected bound      name:  BND

Version identifier: 22.1.1.0 | 2022-11-27 | 9160aff4d
CPXPARAM_TimeLimit                               3600
CPXPARAM_MIP_Tolerances_MIPGap                   0.001
```

The next leap in planning optimization is cognitive

FIRST GENERATION

Optimization-centered

- Run models
- Analyze reports

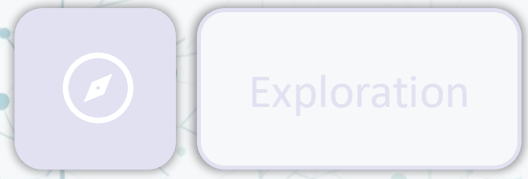
NEXT GENERATION

Understanding-centered

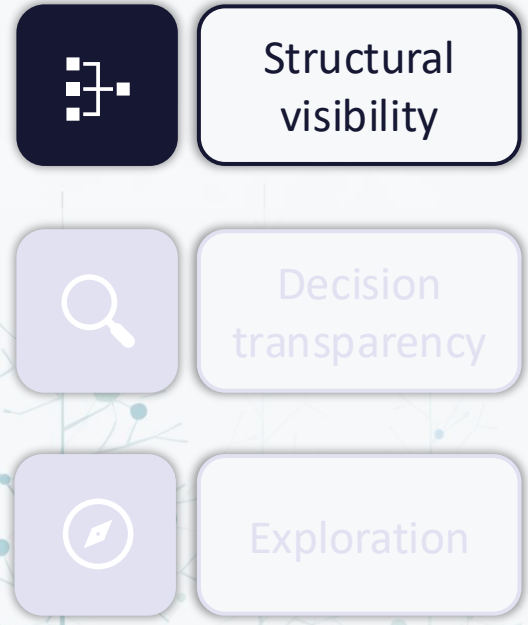
- Understand decisions
- Explore scenarios

The Next Generation

The Next Generation

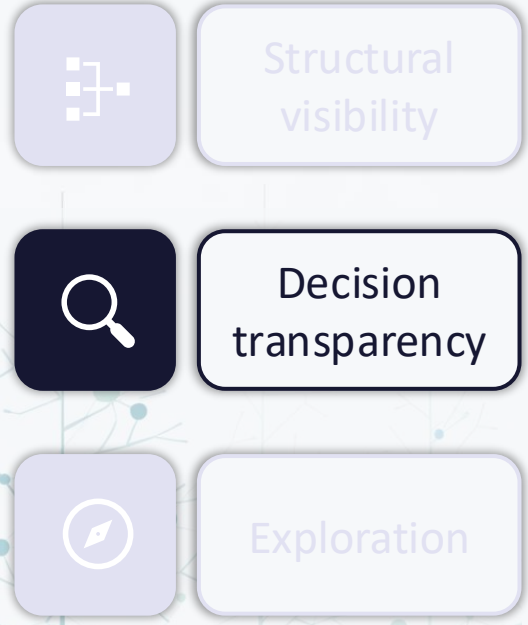


The Next Generation



Understanding how planning systems behave

The Next Generation



The Next Generation

Structural visibility

Understanding how planning systems behave

Decision transparency

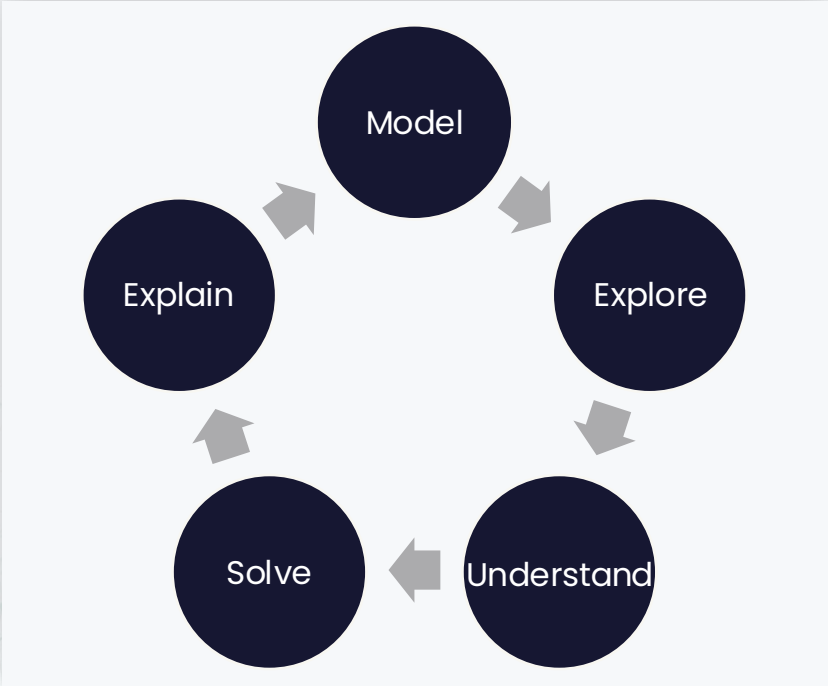
Trace how constraints, rules, and objectives influence outcomes

Exploration

Test ideas and learn how the system responds

The future workflow

From running models to understanding systems



See structure • Understand decisions • Explore possibilities

The next 20 years of planning optimization

The real challenge ahead is not solving bigger problems.
It's helping planners understand the systems they are managing.

Building the next generation of optimization

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Introducing the Woodstock Platform

A foundation for optimization innovation

Optimization core

- Optimization engines
- Modeling capabilities

Data structures

- Resource models
- Supply chain structures

Platform API

- Desktop tools
- Cloud optimization

The Woodstock Platform

Optimization as a service

Cloud optimization through APIs

Optimization applications

Tailored solutions for industry needs

Point optimization

Embedded optimization in workflows

Future opportunities

Future innovations in optimization

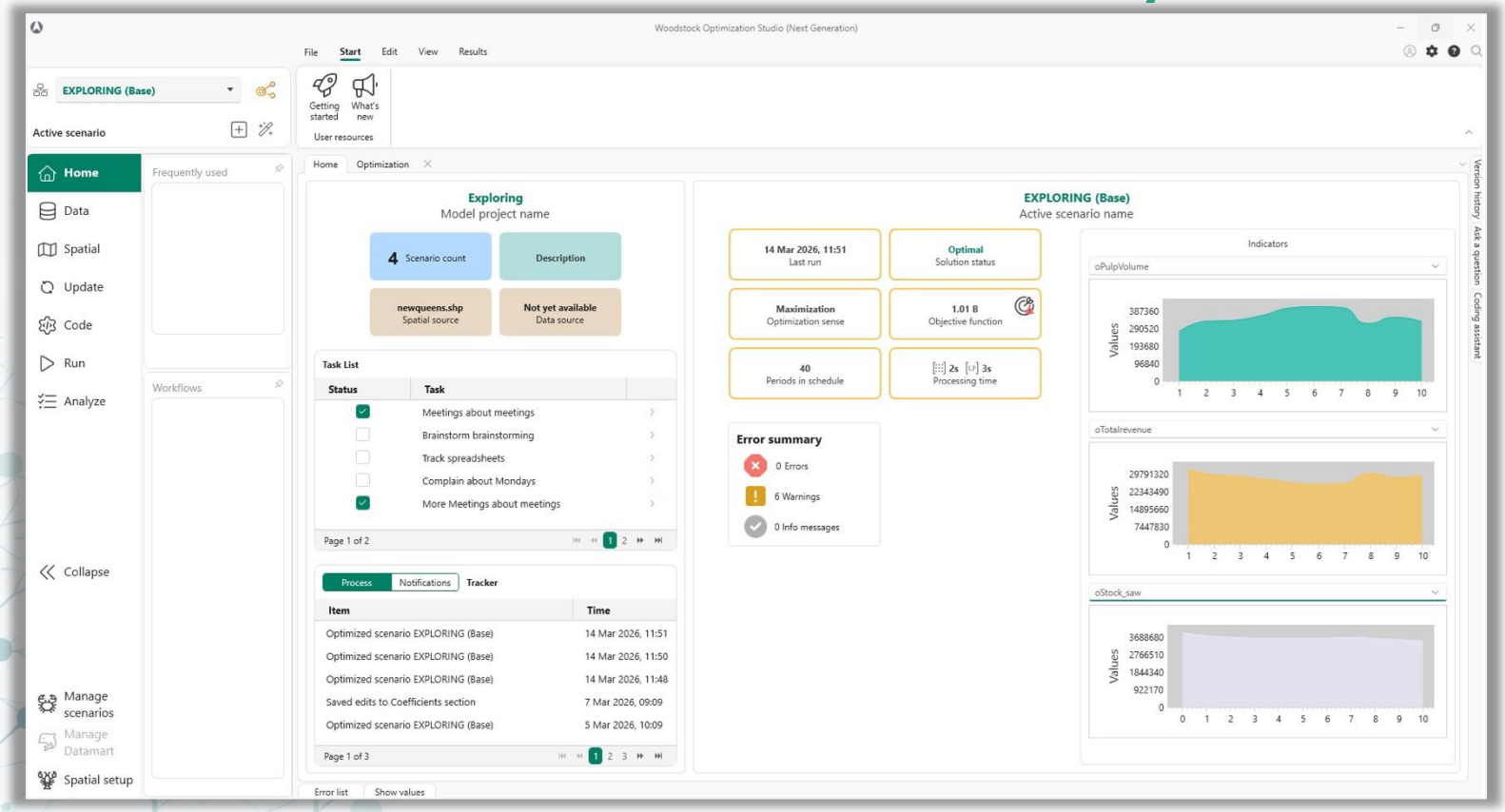
Woodstock Next Generation

Reimagined, lean, modern desktop modeling

Woodstock Next Generation

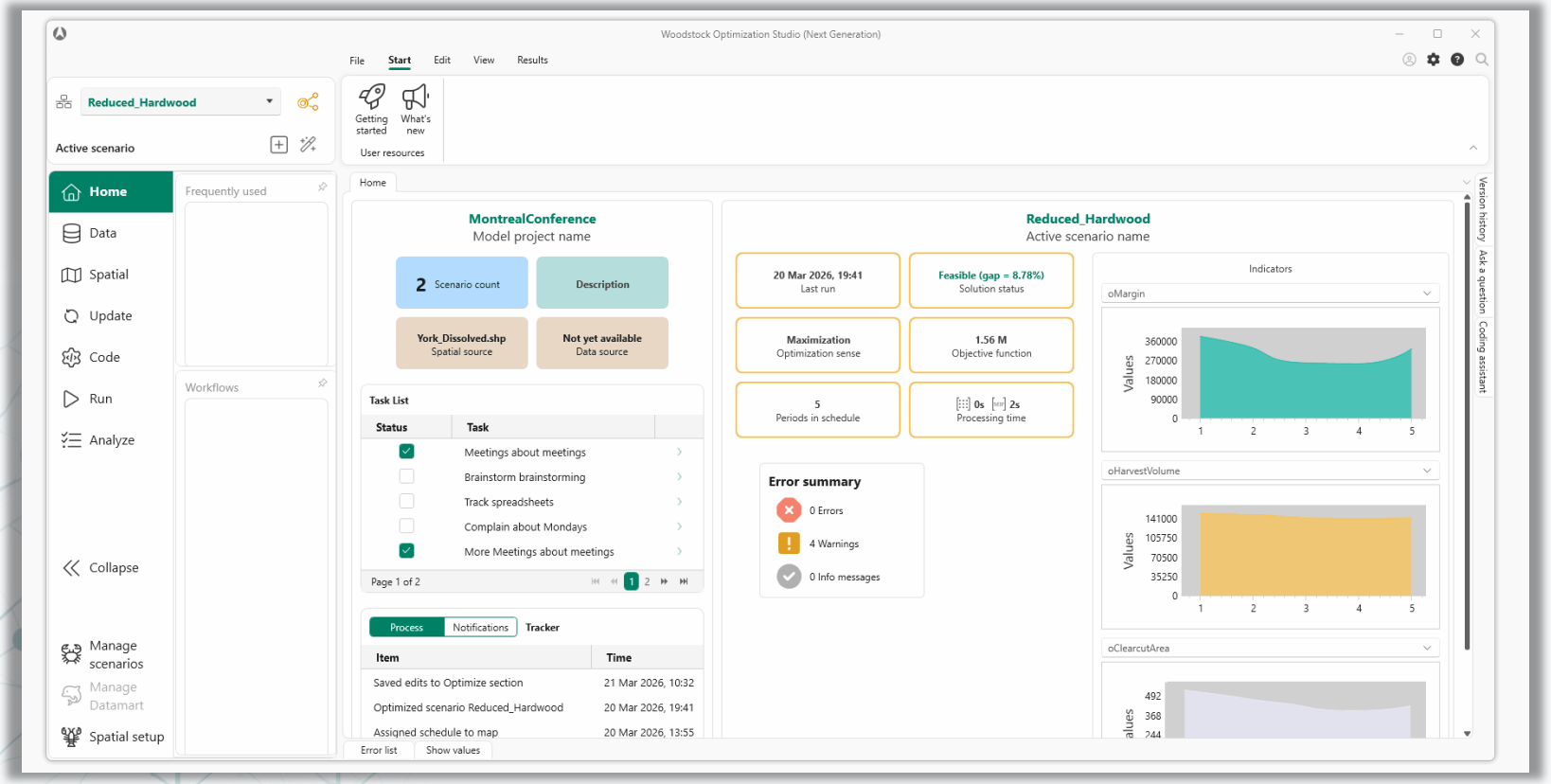
Clarity • Simplicity • Continuity

Woodstock Next Generation: clarity



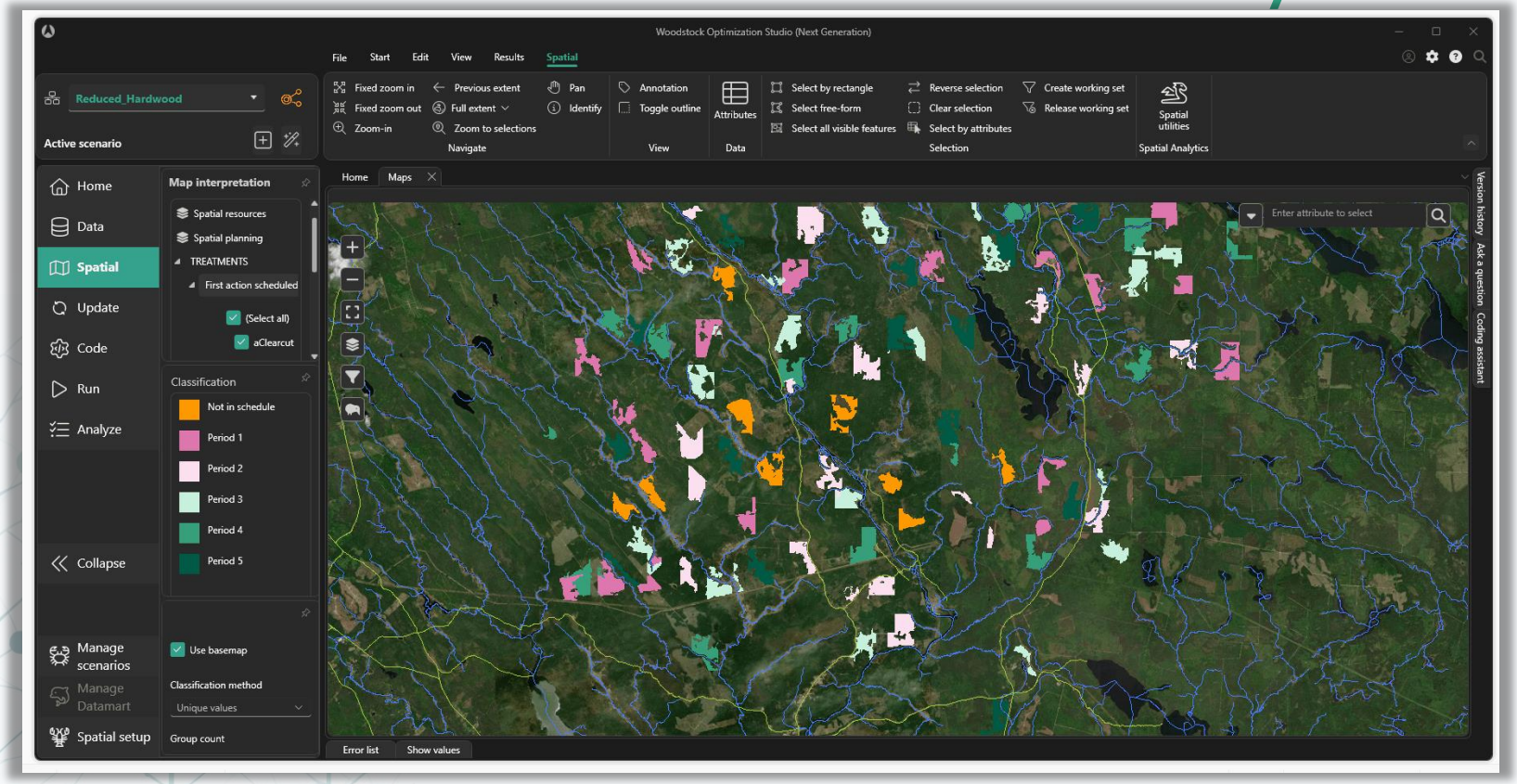
The model • The active scenario • The system state

Woodstock Next Generation: simplicity



Build models with guidance

Woodstock Next Generation: continuity

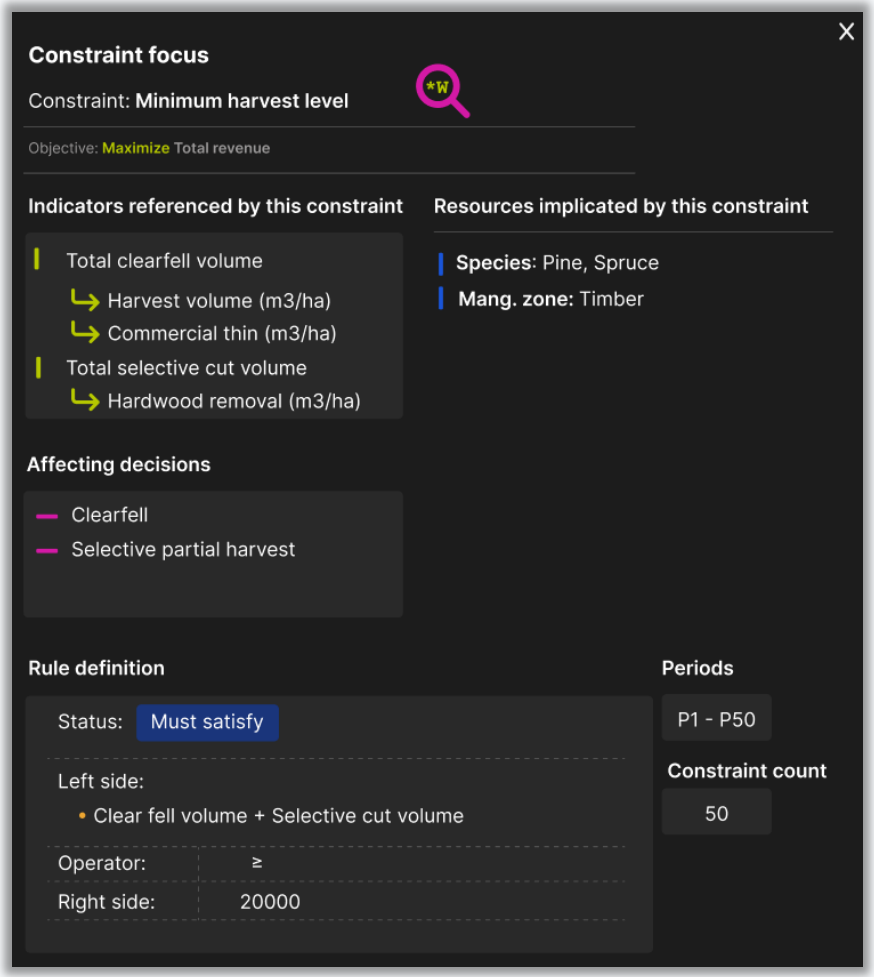


Clear feedback at every step

What comes next

Where this foundation is taking us

Woodstock Next Generation: structural visibility



See and navigate the model

Woodstock Next Generation: decision transparency

What is driving the result

See which constraints are actively limiting the solution.

Focus on the real bottlenecks.

What is about to matter

Spot constraints close to becoming limiting.

Anticipate sensitivity / change.

What is not influencing the solution

Identify constraints that are not active.

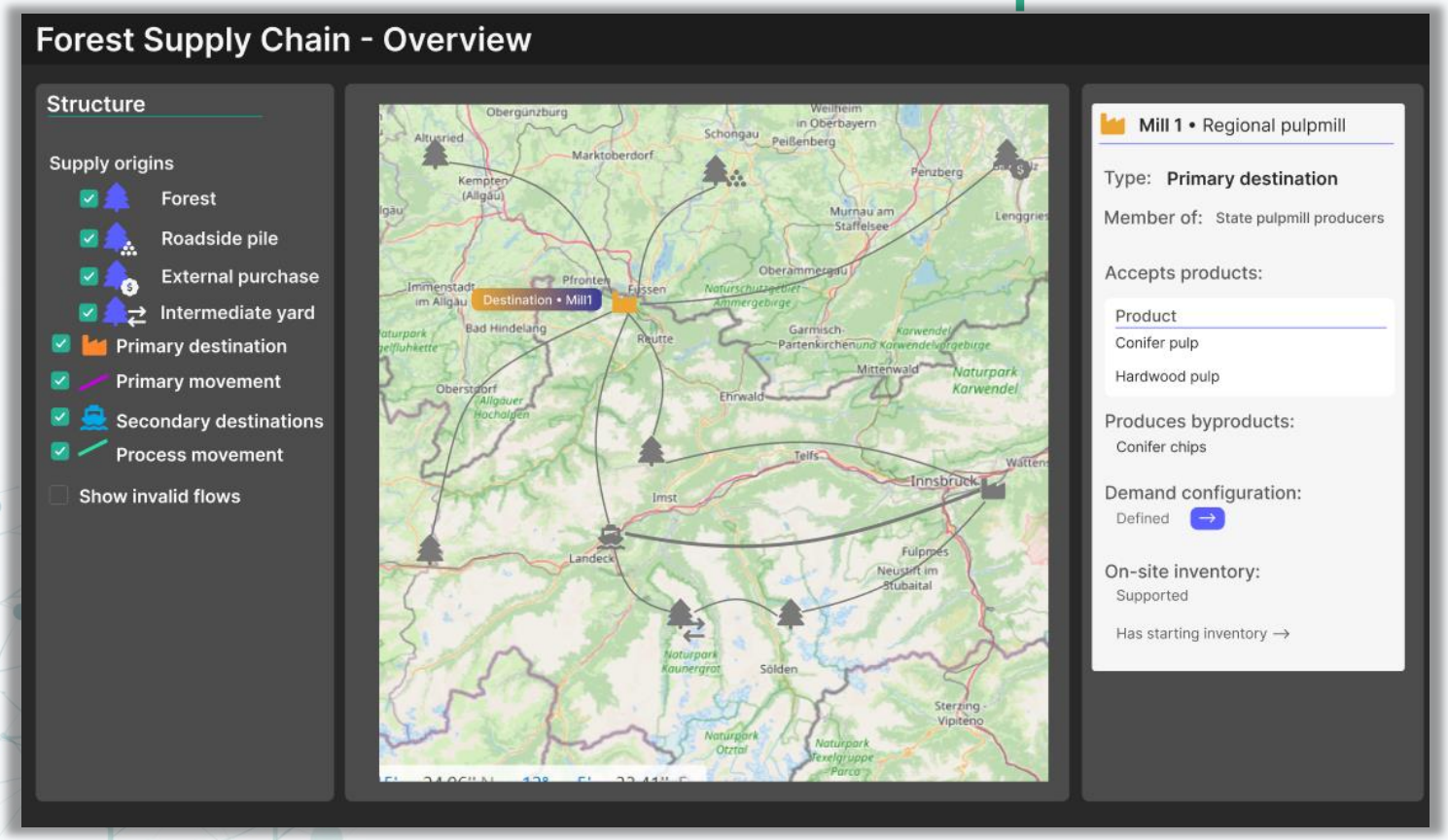
Ignore what's irrelevant.

Where to act

Understand which changes will have impact.

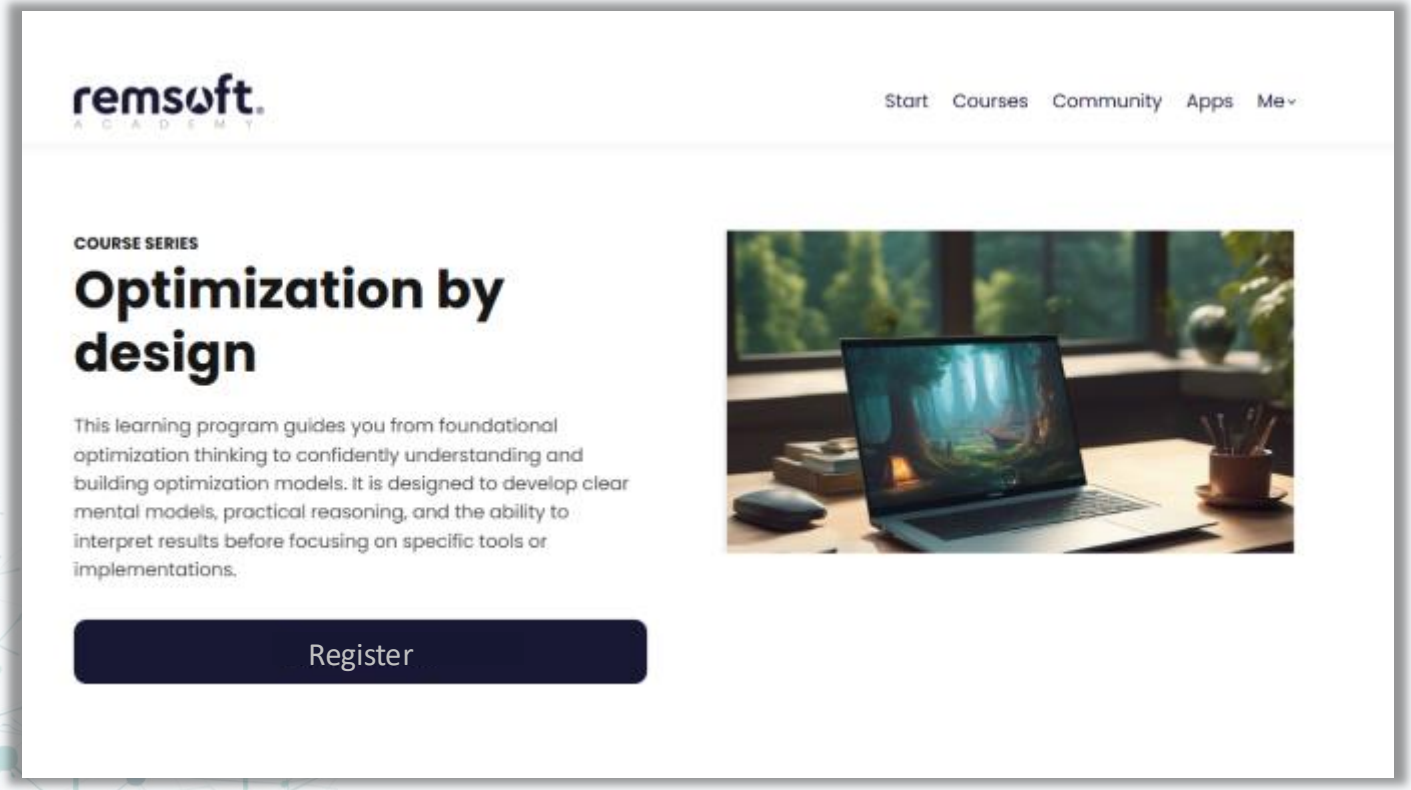
Make targeted adjustments.

Woodstock Next Generation: exploration



Explore • Understand • Decide

A fourth element



Supporting the next generation of planners

Moving forward together

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Your models are safe

Increase the value of the work you have already done

Existing models

Planning expertise
Embedded knowledge
Tested workflows

Built into the foundation

Model compatibility
Shared optimization core

Woodstock Next Generation

New tools
New interfaces
Better exploration

A progressive transition

Today

Woodstock Optimization Studio continues supporting planning in production

Next Gen exploration

Early adopters begin testing the new platform

Hybrid workflows

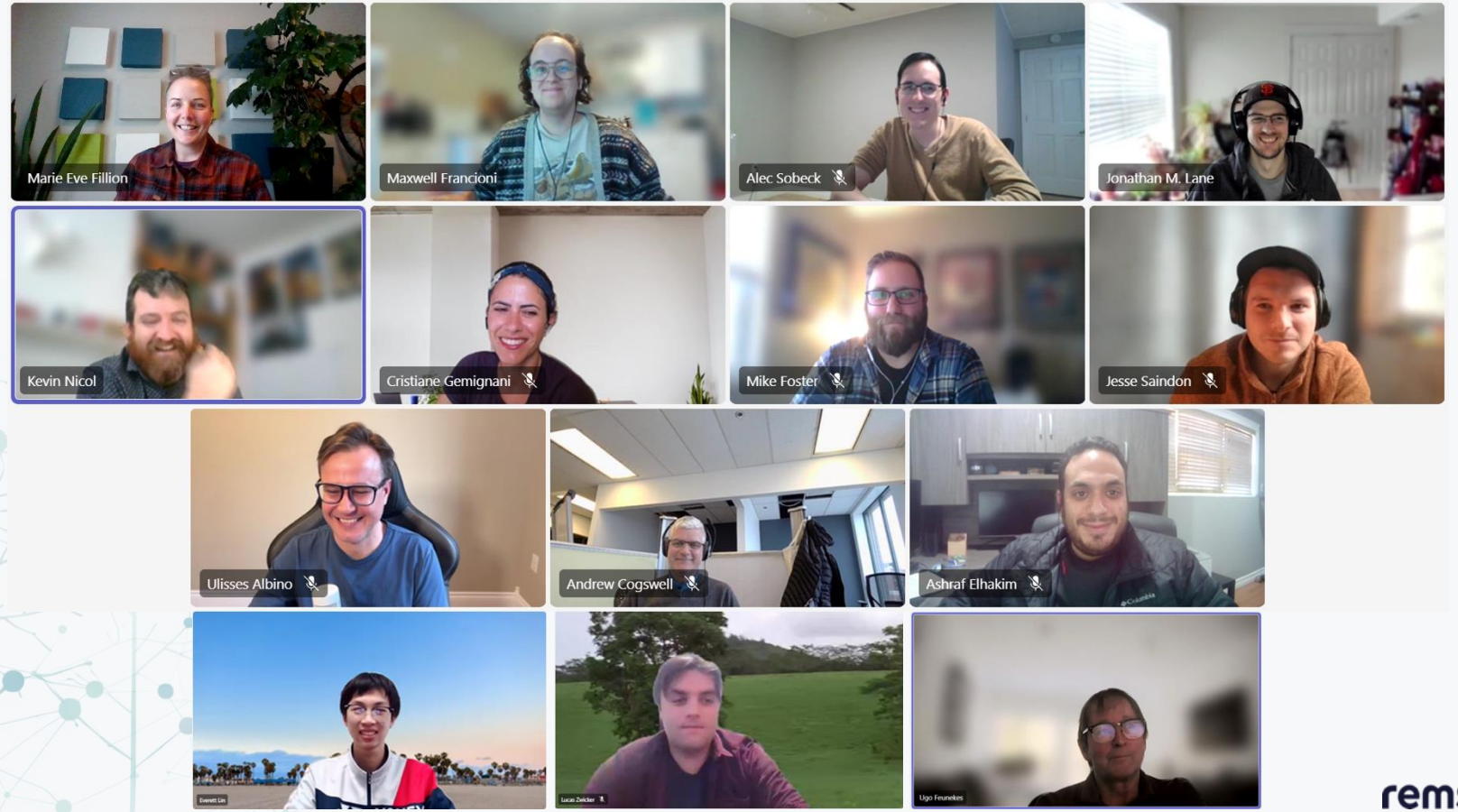
Planning teams combine existing models with new tools

Next Gen becomes primary platform

How you can engage today

How to start shaping what comes next

The Team behind it



Better tools

+

Better understanding

+

Stronger community

=

BETTER PLANNING DECISIONS

Thank you!

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