This study integrates existing fire behavior, vegetation simulation, and land management planning tools into a system for optimizing fuel treatments in time and space, given resource constraints (such as wildlife or hydrologic effects), and management constraints (such as budgets, accessibility, and operational feasibility of treatments).

Forest managers faced with limited budgets, limited prescription-burning days, air quality issues, and effects on other critical forest resources must determine priorities for where, when, and how to apply and maintain hazardous fuel reduction treatments.

The new system integrates existing applications: ArcGIS (spatial modeling), MAGIS (Decision Support System), FVS-FFE (vegetation modeling) and FLAMMAP (potential fire), and includes the graphical interfaces of its model components to specify problem setup and view results. It adds a new integrated heuristic solver that determines the best spatial arrangement of fuel treatments that accounts for both change in fire behavior as well as other resource issues (economic, environmental etc).

User Inputs:
- Treatment Scenario Specifications
- Fuel Moisture, Wind, Ignition
- Constraints: Environmental, Economic, etc.

Selection of Treatment Schedules

Solution:
- Best Spatial Schedule of Treatments
- Maps, Reports, Charts
- FLAMMAP Display

Model-ready GIS Data
- FVS-FFE attributes
- Slope/Aspect/Elev Grids
- MAGIS cost/output attributes

Remote-sensing Spatial Data
- Vegetation Polygons
- Elev/Slope/Aspect

PLOT Data

Statistical Analysis:
- FVS/FFE-ready attributes for polygons

FLAMMAP Display

Selection of Treatment Schedules

Solution:
- Best Spatial Schedule of Treatments
- Maps, Reports, Charts
- FLAMMAP Display

FLAMMAP

Heuristic SOLVER

Treatment Schedule Display

Flammap Run Display

The new system integrates existing applications: ArcGIS (spatial modeling), MAGIS (Decision Support System), FVS-FFE (vegetation modeling) and FLAMMAP (potential fire), and includes the graphical interfaces of its model components to specify problem setup and view results. It adds a new integrated heuristic solver that determines the best spatial arrangement of fuel treatments that accounts for both change in fire behavior as well as other resource issues (economic, environmental etc).

Summer 2008: System ready for test applications
Summer 2009: Web-enabled software delivery, including user's manual and active tutorials

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Magis Application Framework: Landscape-level Spatial Decision Support System for Scheduling Vegetation Treatments