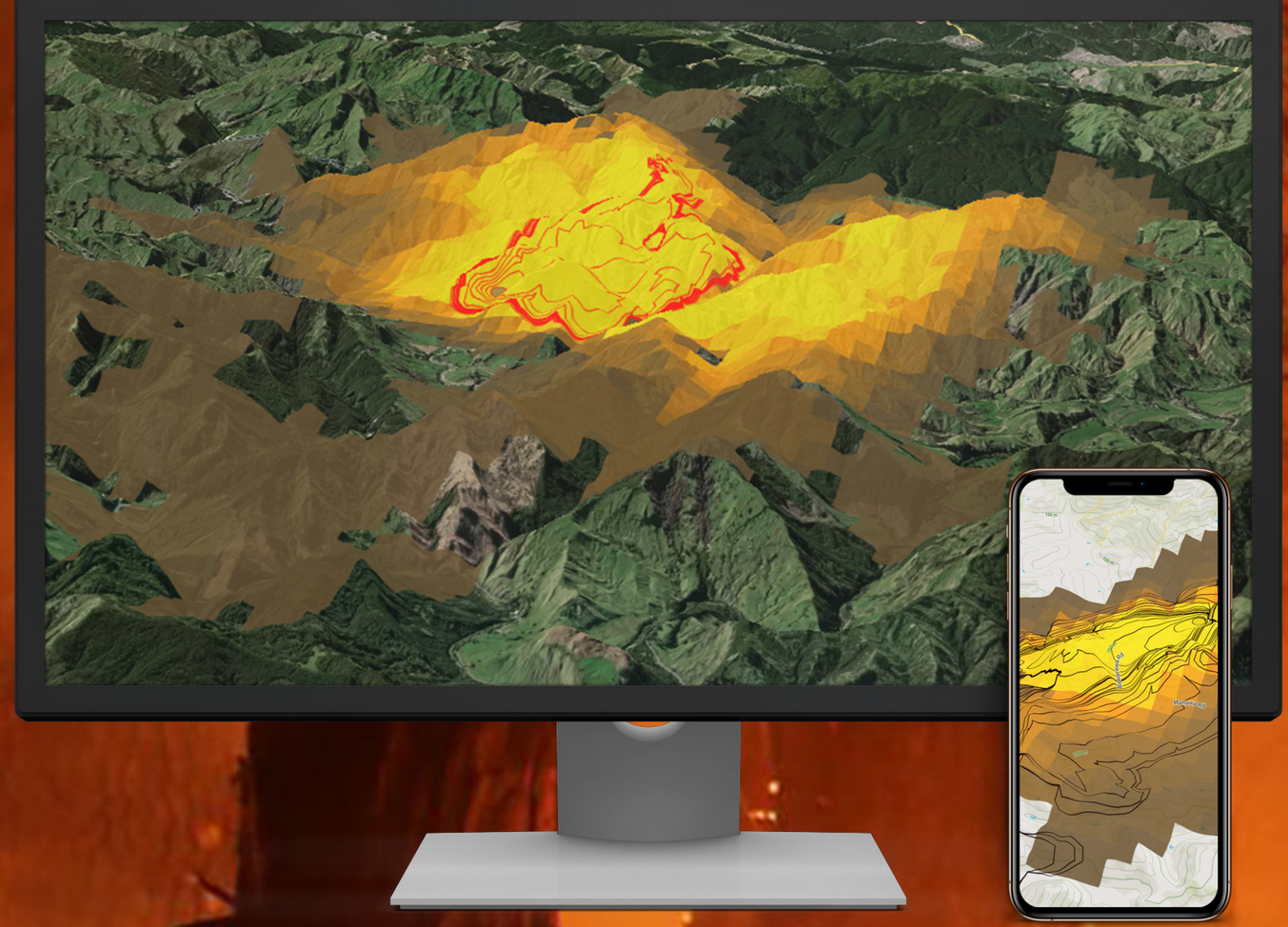
FIRECAST

BY HEARTLAND SOFTWARE SOLUTIONS



REAL-TIME WILDFIRE ANALYSIS

FIRECAST.CA

REAL-TIME WILDFIRE ANALYSIS

FireCast is a fully automated software service developed to provide real-time analysis of wildfire behaviour. Simulations presenting fire perimeters and a variety of statistics are completed within minutes. These quick results help support timely decision making in response planning.

FEATURES

- Fuel models cover Canadian and New Zealand FBP fuel types!
- Access available via web and mobile browsers, and API's
- Visualizations in 2D and 3D views, with a variety of options (streets to satellite imagery)
- Perimeters and fire statistics displayed in the UI, and available via the API's
- Interactive playback of simulations for visualization of fire growth
- Agency- and user-customization of the UI for FBAN's, Duty Officers, Meteorologists
- Agency- and user-customization of a variety of simulation options
- Predictions based on GDPS, GEPS, RDPS, REPS, HRDPS, NAM, GFS, HRRR, SREF, ECMWF weather models
- Results automatically generated within minutes of new inputs
- A growing set of advanced outputs such as arrival times and critical fire paths to assets
- Archival of every fire ever modelled, for playback, post-fire analysis, and training

2022 FIRE SEASON STATS

~7,000

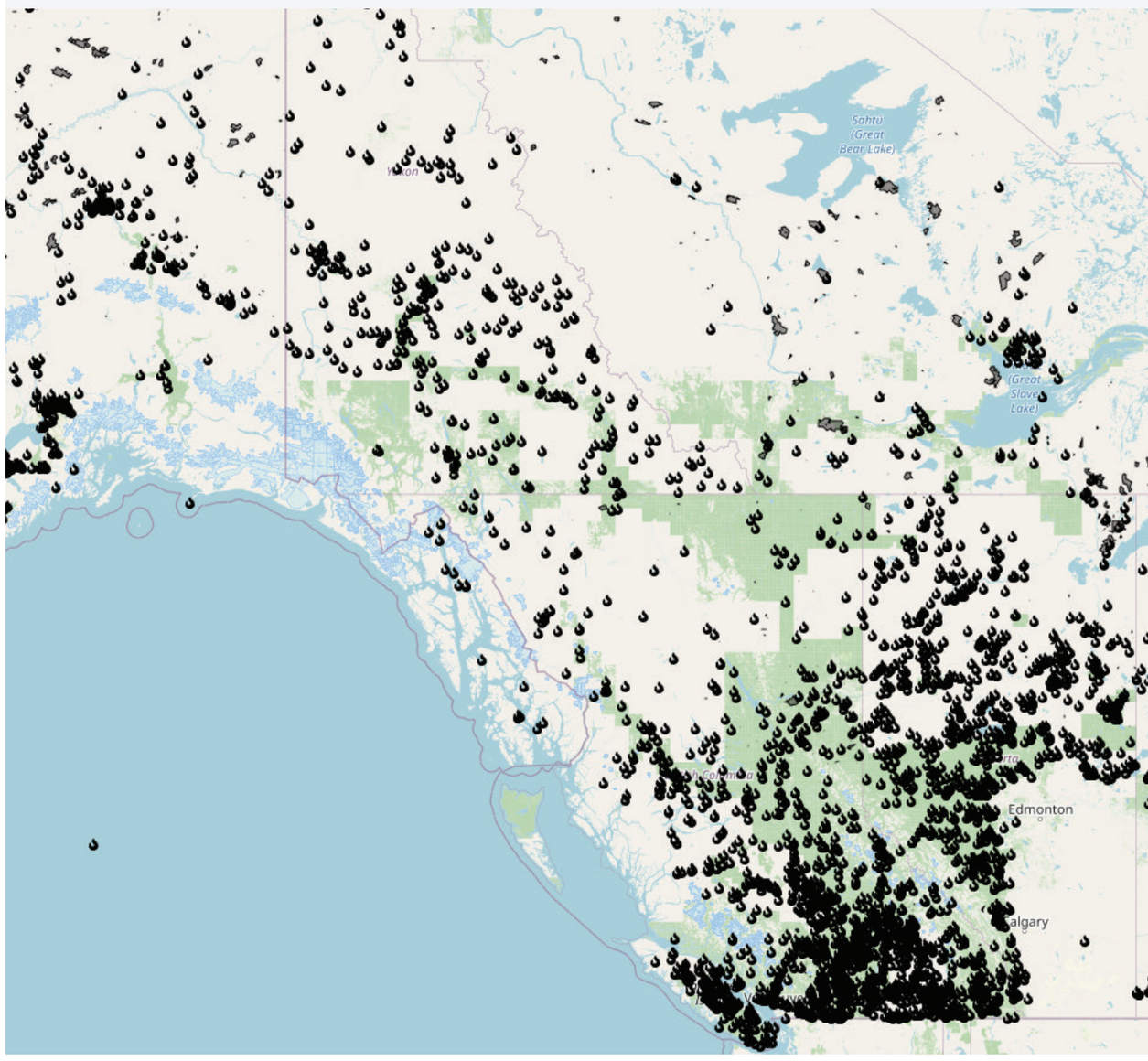
fires in near real-time across western Canada

4,700,000+

scenarios

~675,000

simulations of the modelled fires



POWERED BY W.I.S.E.

FireCast is powered by W.I.S.E. and thus is built upon validated software that implements the Canadian Fire Weather Index (FWI) and Fire Behaviour Prediction (FBP) standards. FireCast provides results via your desktop web browser or mobile device, as well as REST API's for your existing IT infrastructure to consume results.

COMPREHENSIVE INPUTS

FireCast is architected to support a range of possible input variations.

FUELS

Fuels are an important input to fire modelling. FireCast can work with a default, or any custom fuel grid that a user may have developed. Furthermore, FireCast allows for user modification to fuels to correct this data based on on-site verification or to reflect the reality of the wildfire behaviour.

WEATHER PREDICTIONS

Weather predictions can be sourced from any of the deterministic and ensemble weather models available for North America – and around the world! GDPS, GEPS, RDPS, REPS, HRDPS, NAM, GFS, HRRR, SREF are all supported automatically to reflect your preference. Additional weather models can be incorporated at your request.

IGNITIONS

Ignitions (real or potential) can be sourced from public data feeds, private IT API's, satellite data, and even introduced interactively through the web interface to model reported wildfire activity in real-time. User- and agency- experimental runs can be performed without impacting standard predictions of known fires.

PERFORMANCE

FireCast is the only fully automated real-time fire analysis tool that is architected for load balancing and redundancy to provide:

MAXIMUM PERFORMANCE

FireCast load balances and can distribute simulations across a suite of computation machines. It is dynamically scalable inreal-time to handle changes to computation loads quickly.

REDUNDANCY

Improves uptime guarantees. Distributing simulation work among a set of compute machines means that computations can continue even where machines go offline. Furthermore, the database deployment has a Monthly Uptime Percentage guarantee of at least 99.95%!

ADMINISTRATIVE TOOLS

Administrative Tools have been developed to monitor each component of the FireCast framework, to help with reactive corrections when something does occur.

SCAN TO VISIT THE FIRECAST WEBSITE

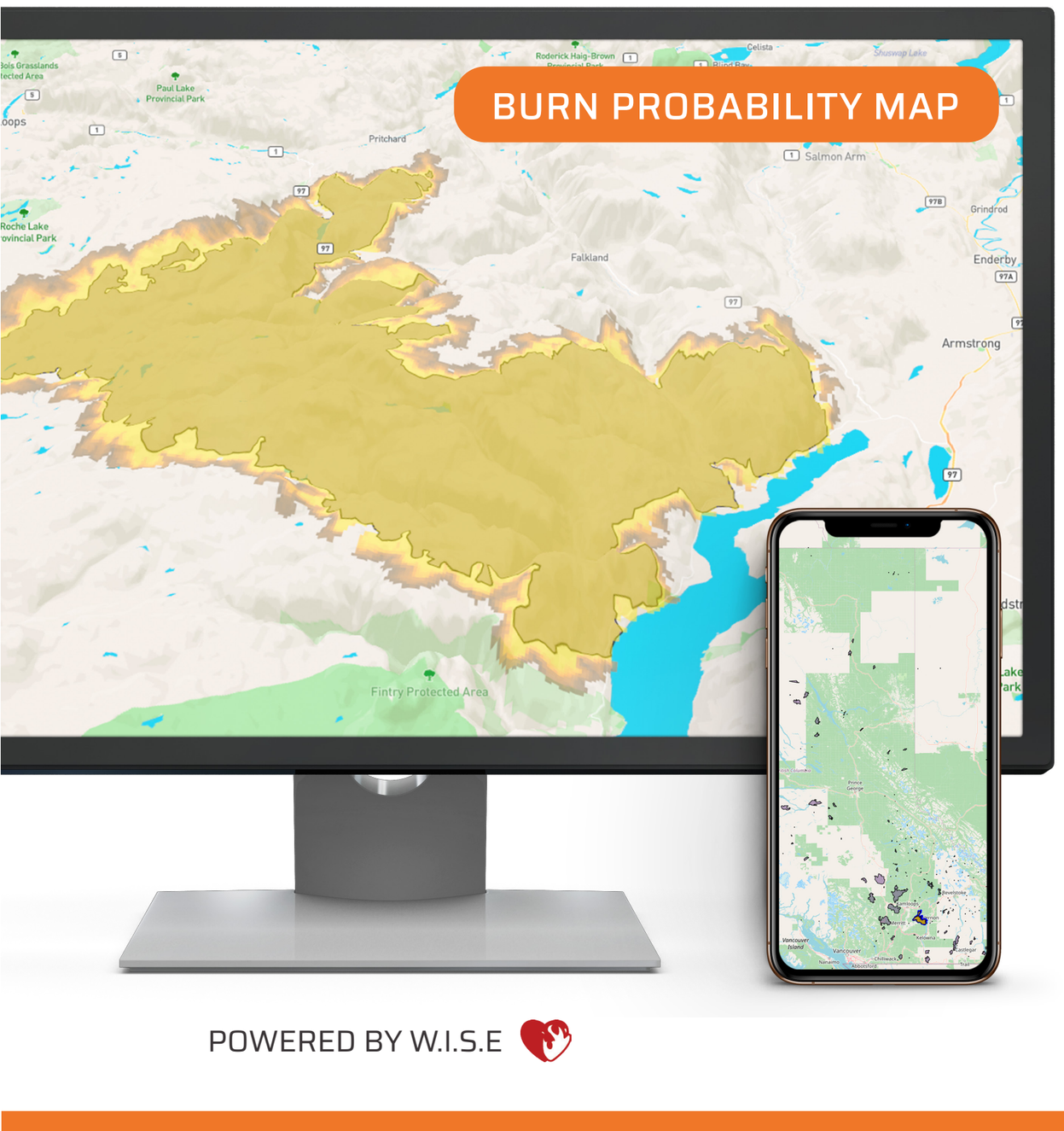
COMPREHENSIVE OUTPUTS

FireCast can be used to interactively review and observe fire weather as predicted from the supported weather models. This lets a meteorologist contrast different weather models to prioritize and select preferred weather models, where applicable. There is no need to use an outside tool. Weather predictions are automatically acquired and updated as they are made available by the governing agency. When new weather predictions are available, each active fire in the system is automatically re-calculated.

FireCast provides a large set of wildfire simulation outputs and tools to help you react to a fire incident easily and quickly. For each simulation – either from an automated burn or from an interactively introduced ignition, a variety of outputs are available.

FIRE PERIMETERS

For deterministic weather predictions, but also burn counts and burn probability percentiles for ensemble weather predictions, to provide insight on what may happen given different weather predictions.



POWERED BY W.I.S.E

FIRE BEHAVIOUR OUTPUTS

Rates of spread, fire intensities, crown fraction burned, flame lengths to provide insight on not just where the fire could go, but also how the fire may behave.

TIME OF ARRIVAL

To values at risk for deterministic weather predictions for deterministic weather predictions, but also probabilistic outputs for ensemble weather predictions.

CRITICAL FIRE PATHS

To values at risk, to indicate how a fire may reach assets.

PLAYBACK

Lets the user see how the fire may grow during the course of the simulated duration. This 4D map environment provides real-time on demand spread prediction results in both desktop and mobile browsers.

Visualizations are performed in 2D and 3D views, with a variety of options ranging from streets to satellite imagery, to help visualize what the wildfire potential is.

This data can be overlayed atop weather data from the weather models listed above to give the user a powerful representation of the wildfire conditions and predicted behaviour.

The user may also export other important files:

- **FGM file** for more detailed modelling inside Prometheus, or in your own instance of W.I.S.E. or other fire growth modelling software.
- **Weather** used in the simulation(s) that have been executed, can be exported.
- **Report and Summary** files to validate and report on settings used for the simulation.

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SEAMLESS INTEGRATION

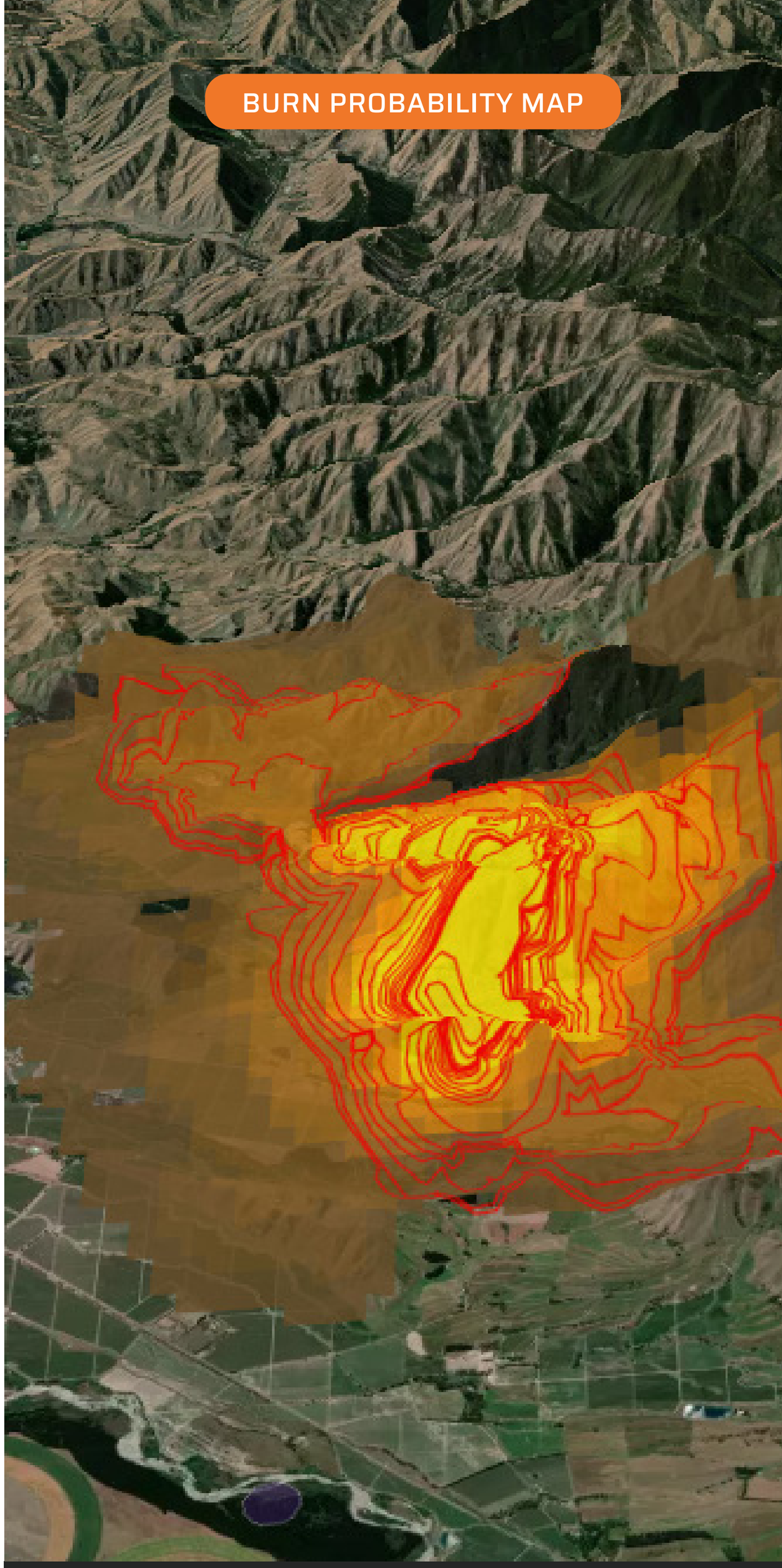
Contemporary fire behavior software tools typically require a high degree of specialization, training and effort in the preparation and conversion of GIS data to use the software. Historically, this has been a limitation in using these tools for initial attack and real time applications. Instead, FireCast has been designed to provide analysis capabilities for a range of situations and users with minimal training.

Where necessary, FireCast exposes all outputs to your own infrastructure, or can even be deployed inside your own infrastructure. Although our preference is to host FireCast to provide full control over uptime guarantees and real-time improvements through a fire season, we can discuss licensing and deployment.

FLEXIBILITY

FireCast, by default will execute simulations based on standardized defaults for Prometheus and W.I.S.E. However, FireCast takes fire growth modelling automation to a new level:

- Each user can configure preferences for display and units of measure (metric and Imperial).
- A variety of simulation parameters can be set: fire simulation durations, input sources, fuels, deterministic and ensemble weather.
- Defaults for simulation parameters (such as grass curing, green-up periods) can be set by region, to capture reality of changing landscape across a large area.
- Simulation parameters can be adjusted in real-time to re-run simulations – to capture on-site knowledge and observed wildfire behaviour.



DEVELOPED BY

HEARTLAND
SOFTWARE SOLUTIONS

+1 (780) 545-4480

HEARTLANDSOFTWARE.CA

INFO@HEARTLANDSOFTWARE.CA