

Smart
Mountain
for
tomorrow



20th OCOVA FORUM



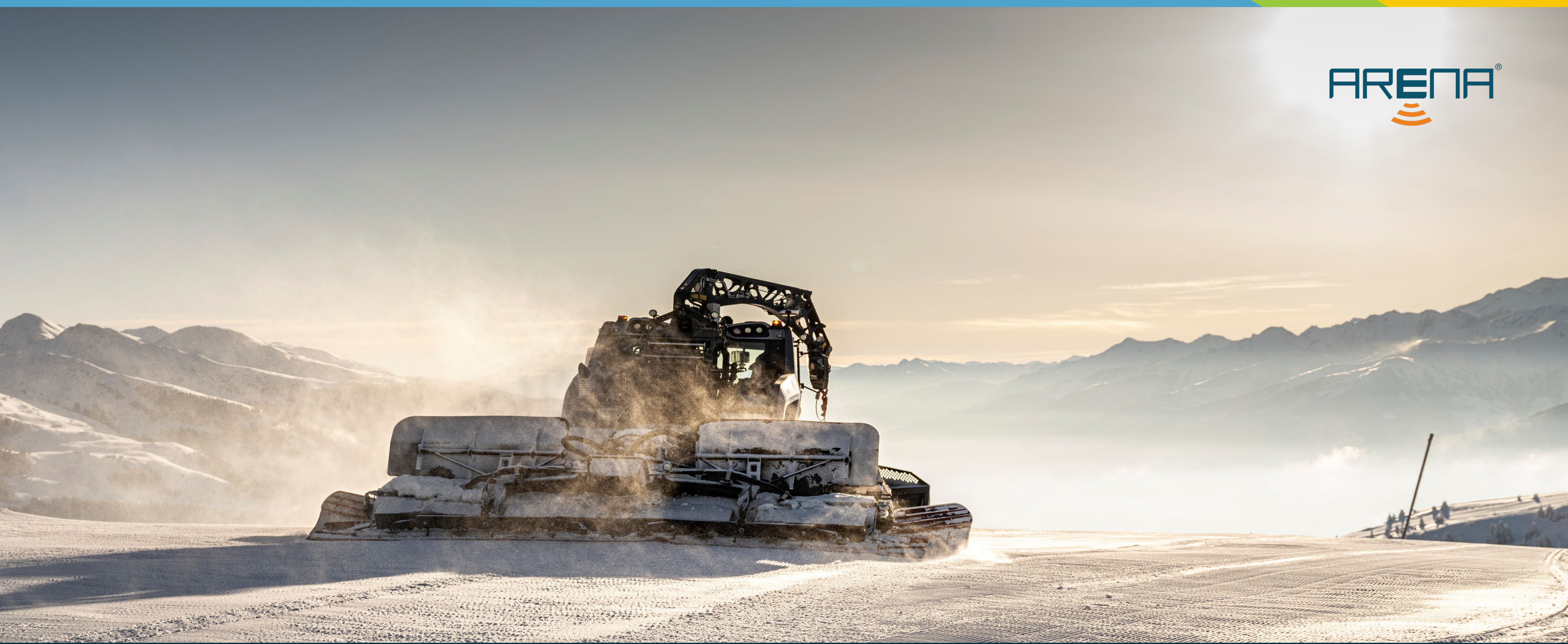
MEETING THE NEEDS OF MOUNTAIN AREAS

from multi-source data collection to GIS applications

Andrea Mayer

project management Slopemanagement





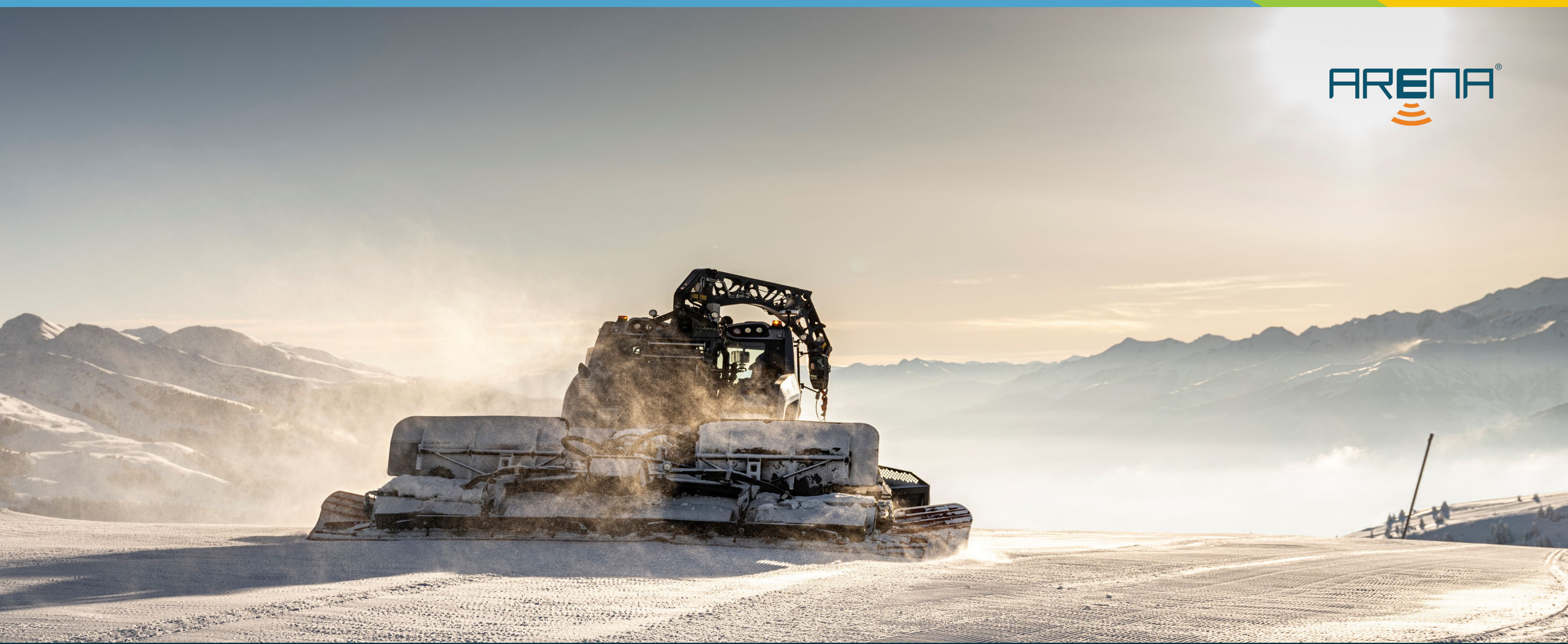
We change the way ski resorts worldwide think and act on snowmaking and grooming.



ARENA is an expert in slope management for over 25 years.

With our products and services, we support ski resorts to optimize snowmaking and grooming with data-driven processes. The focus is on resource efficiency, sustainability, and cost reduction.

Who are we?



slopedmanagement – why?

Climate change and rising energy costs as key challenges for ski resorts

Snow making:

Artificial Snow (Water, Energy, Staff costs)

€ 5/m³

Total costs/Season: € 3 Mio.



Grooming:

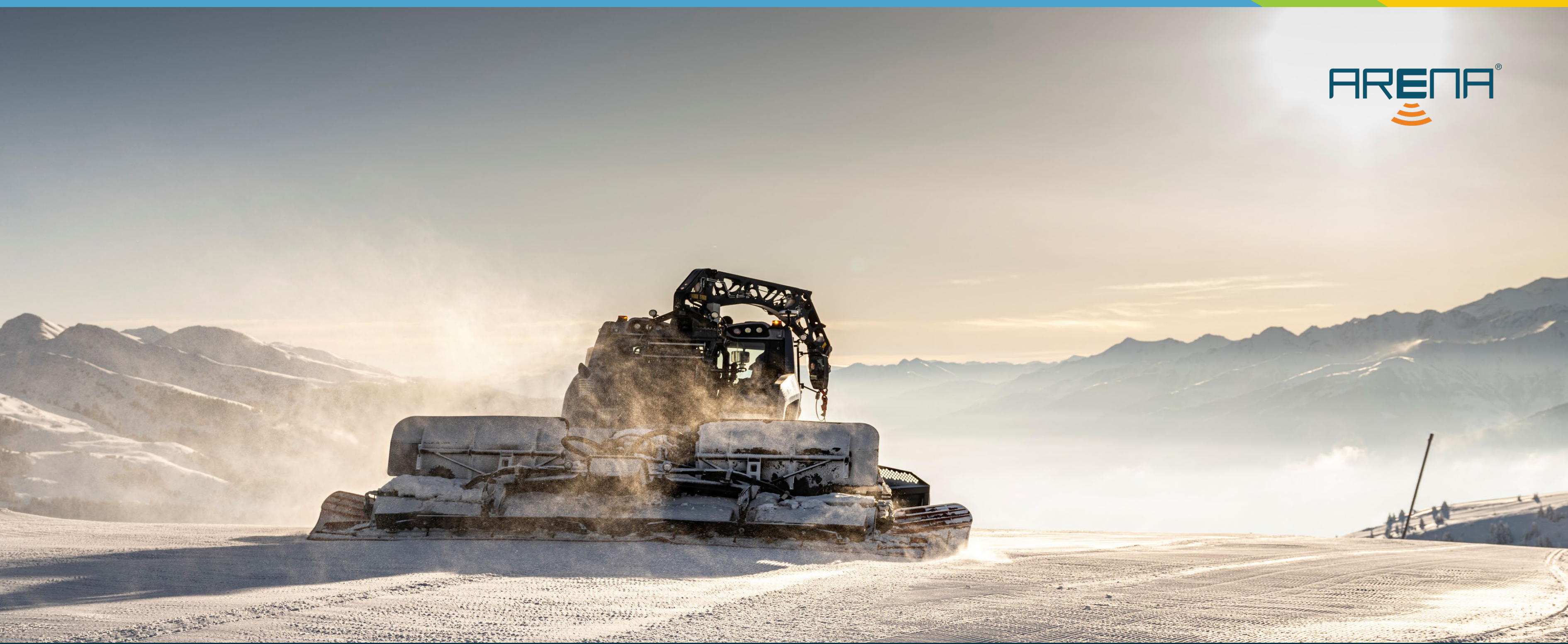
Groomer machine hour (Investment, Fuel, Staff)

€ 200/h

+ Additional costs at the end of the season

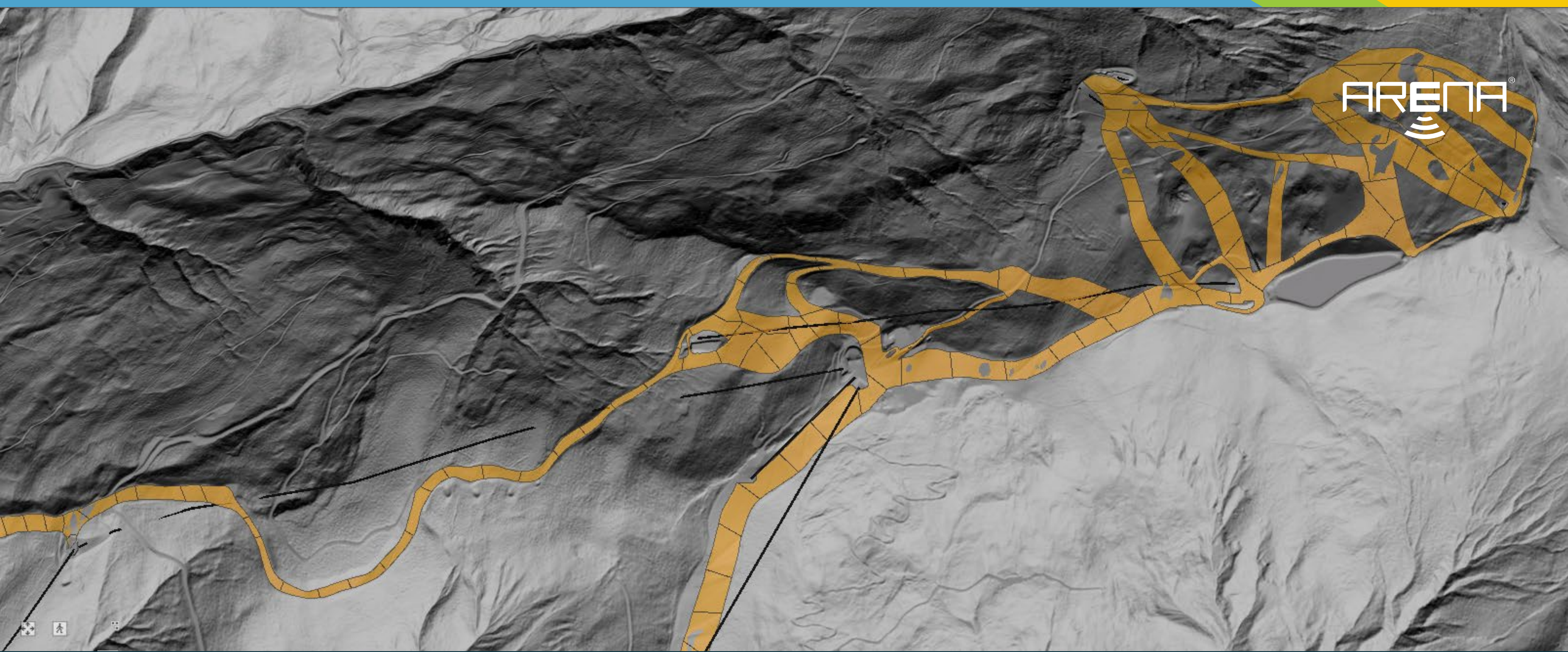
~ 6000 hours: € 1 Mio.

Technical snow making necessary but very cost-intensive and resource-intensive



slope management –

How?



Digital Terrain Model

slopemanagement.net

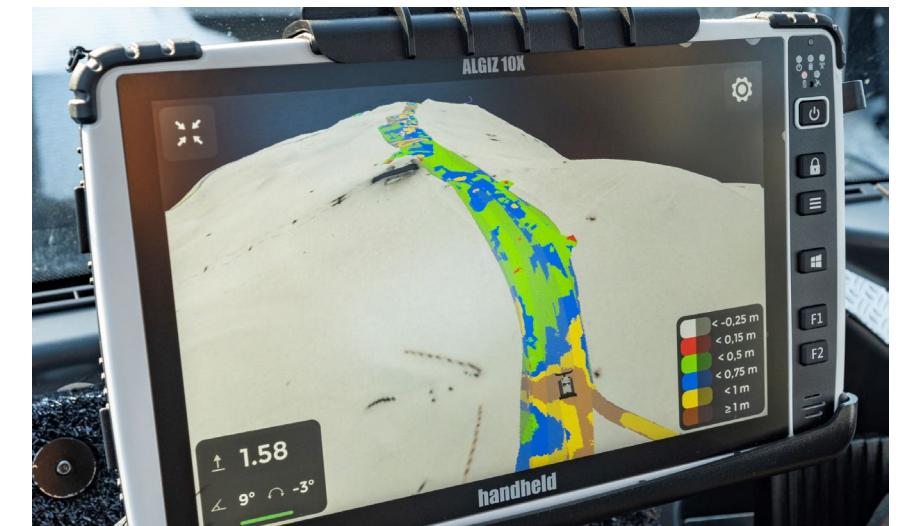
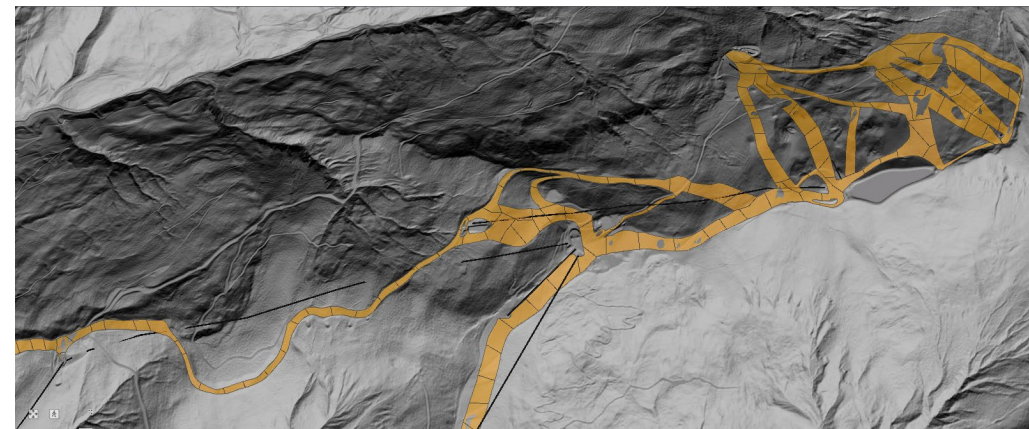
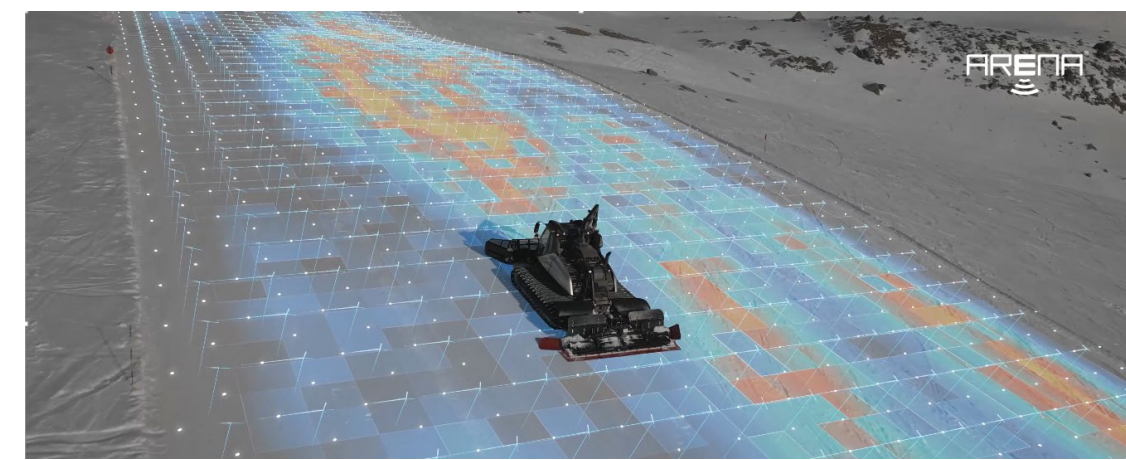




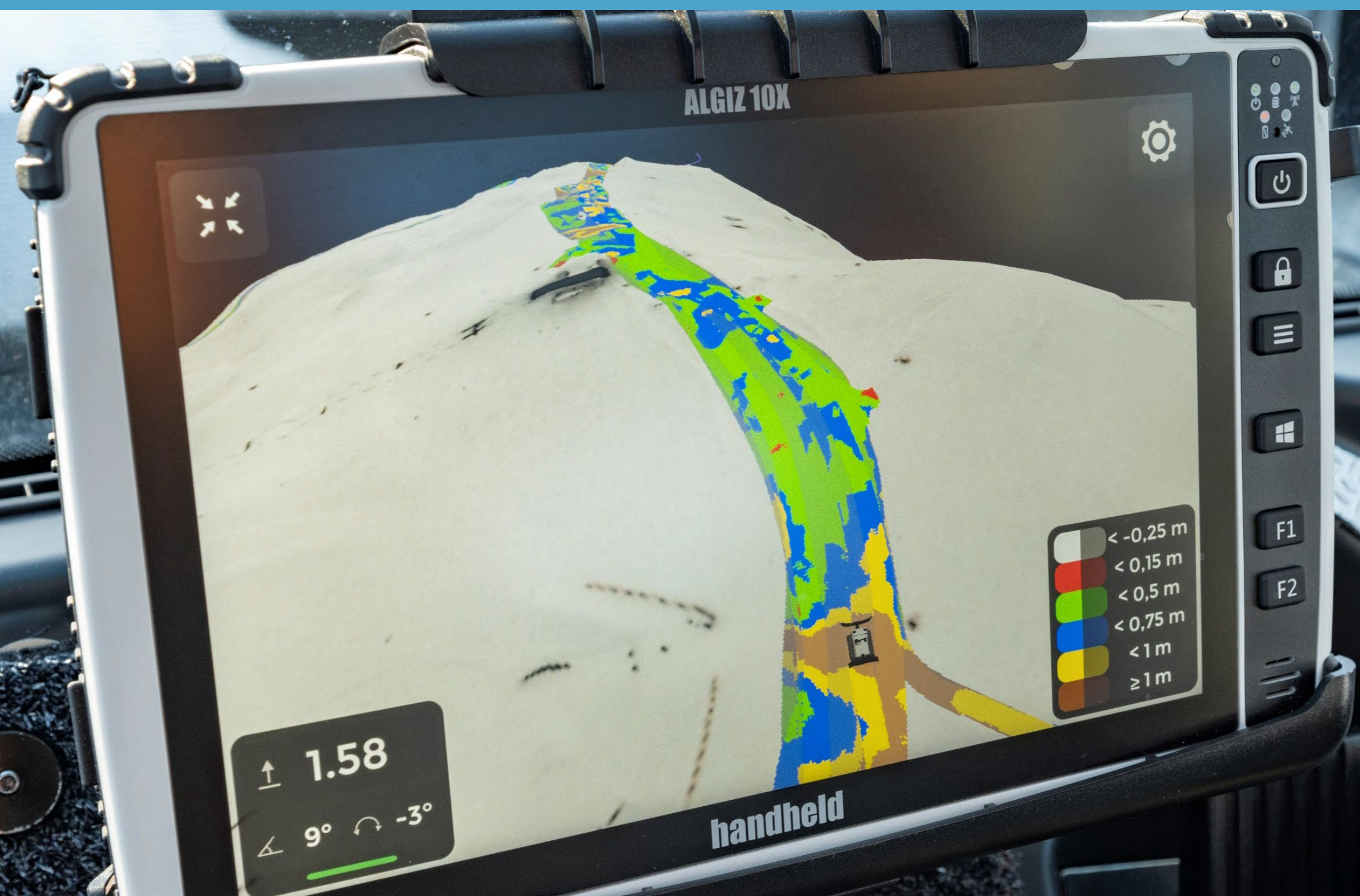
Snow Height Measurement



Snow Height Measurement



Snow Height Measurement



Snow Height Measurement



Schloßalm

Snowheights ❄️

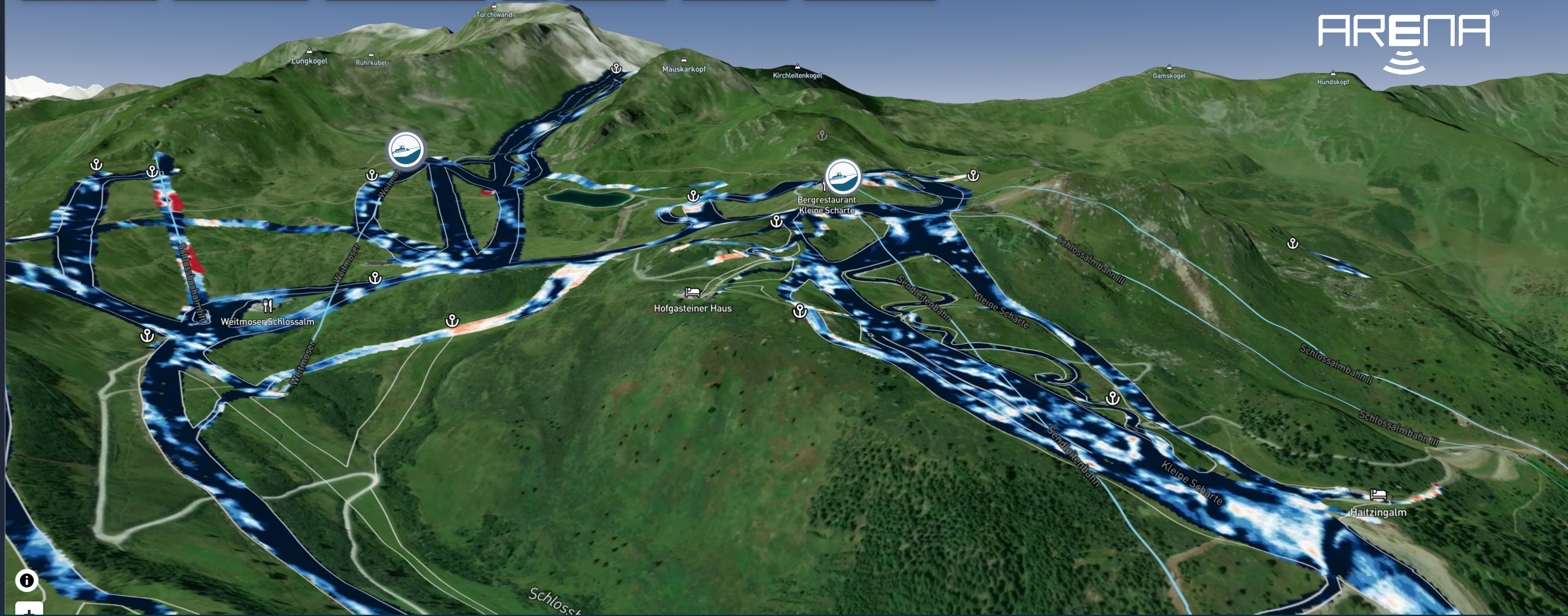
Masterplan



Reports 📄

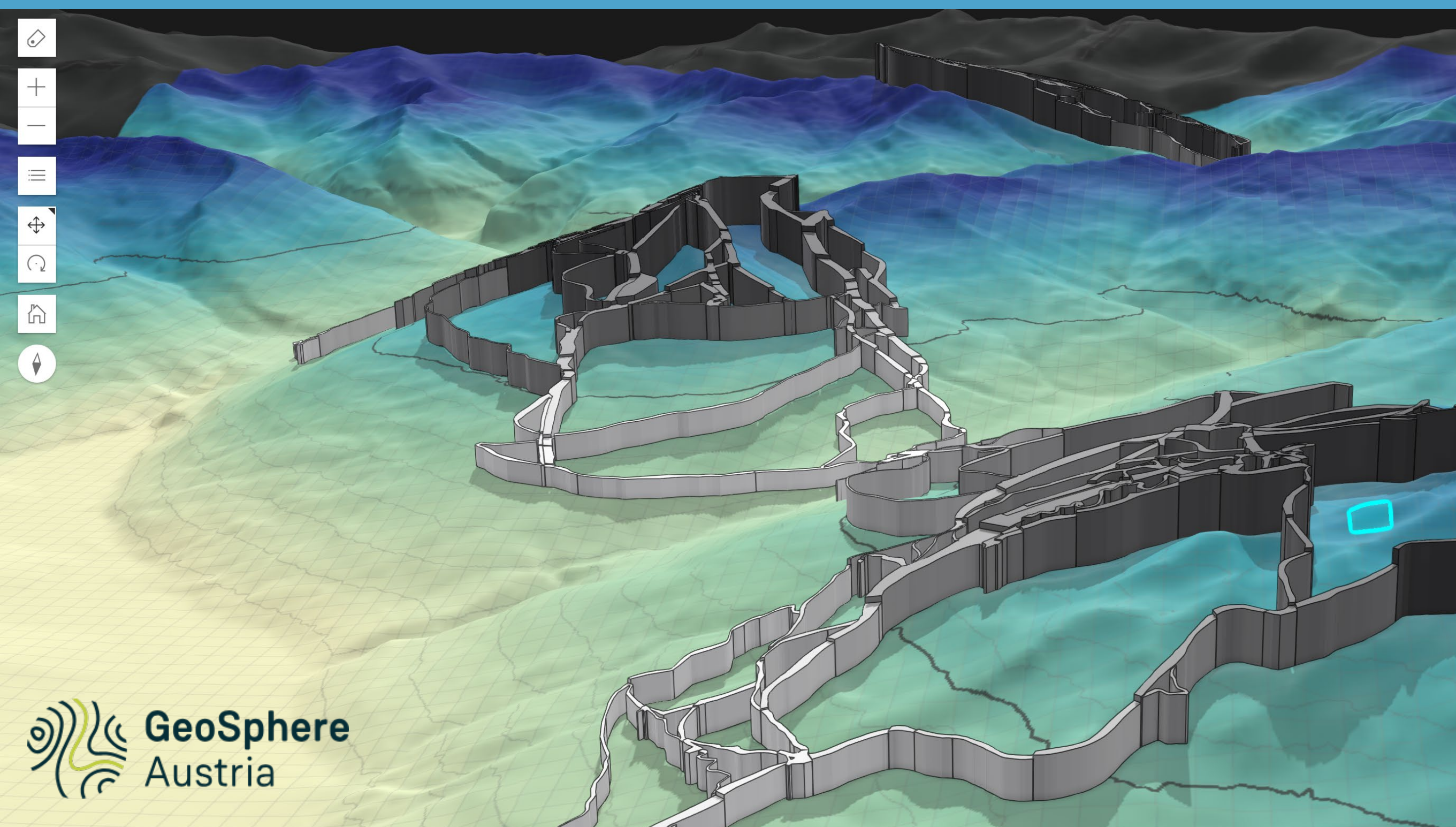
Analysis 🔍

Drive Tracks 🚗



Management Platform

slopemanagement.net



zoom up

Natural snow depth compressed to 450kg/m^3

15. January

TOTAL Minimum	0.19
TOTAL Max	1:18
OVERALL Mean	0.66

Snow depth [m/year] (period: 2011-2022)

1 out of 1

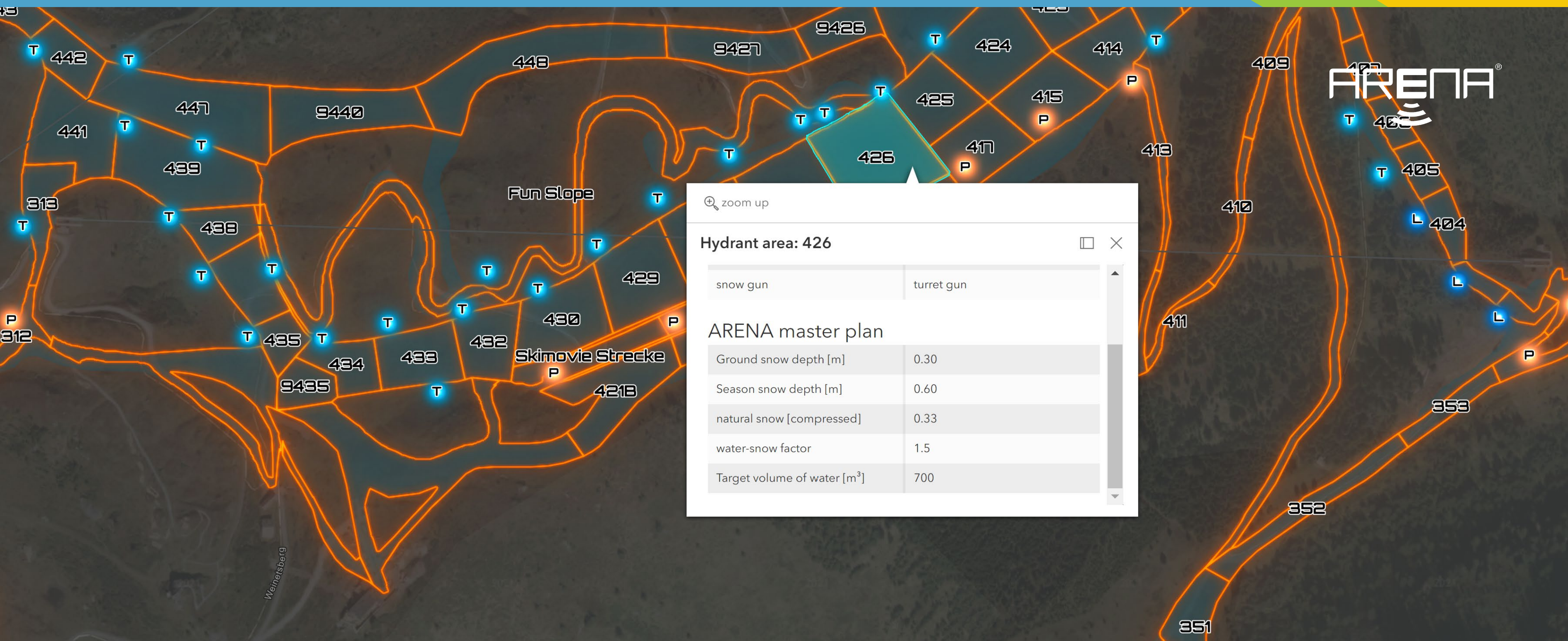


Meteorological data

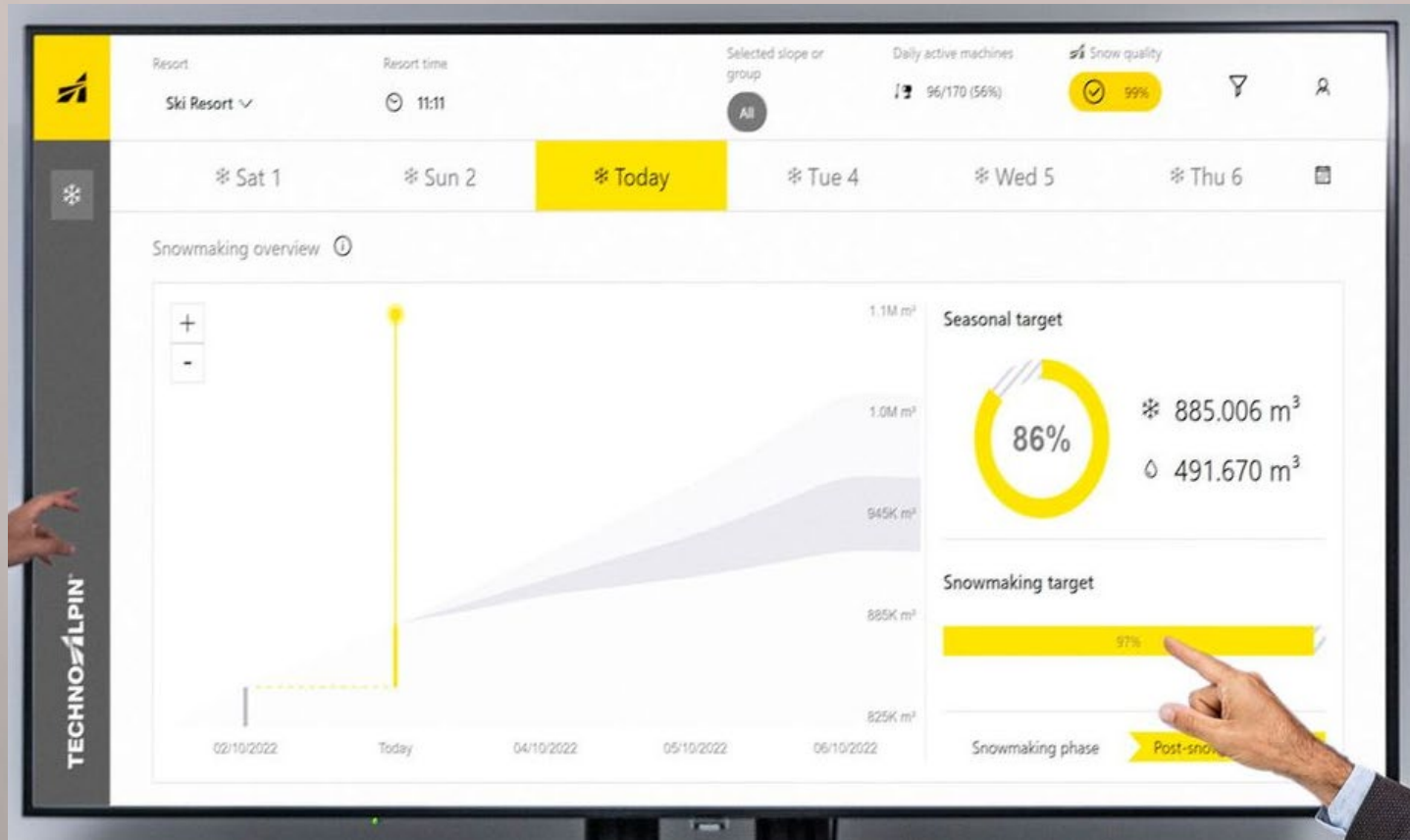


Target snow heights
snow season

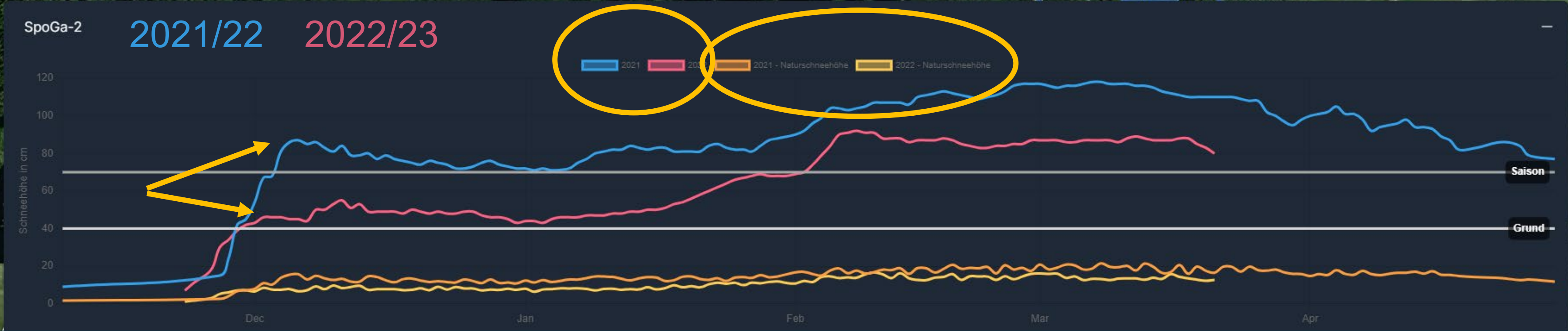
snow base



Target water volume



Snowmaking control system

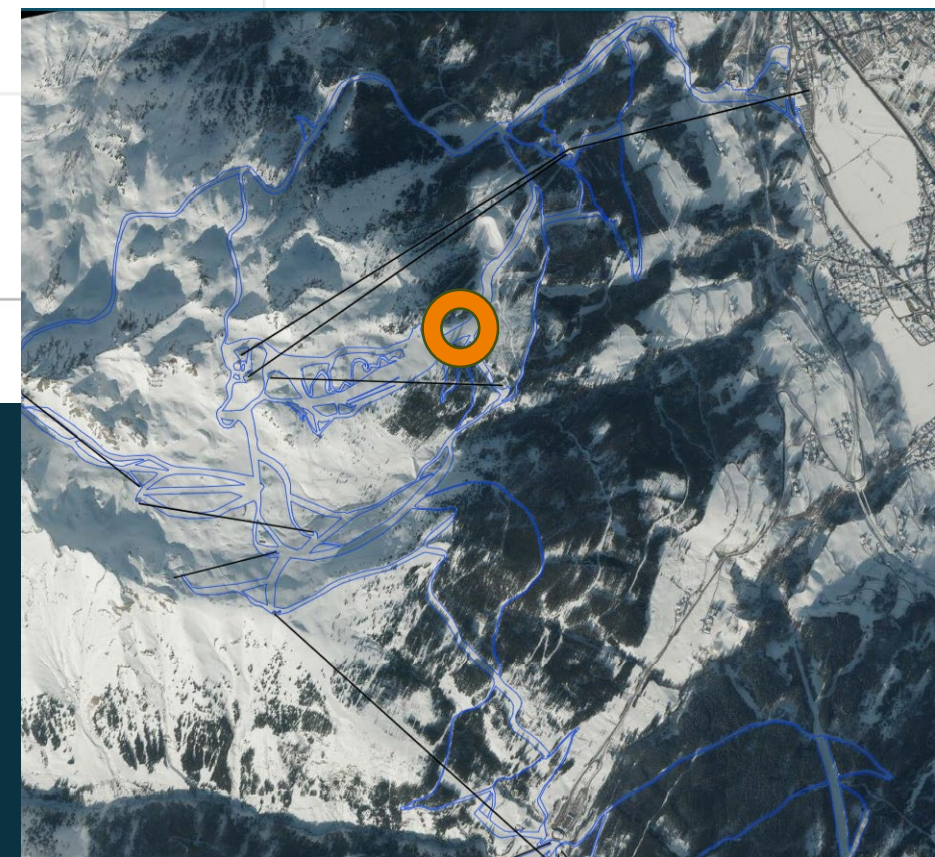
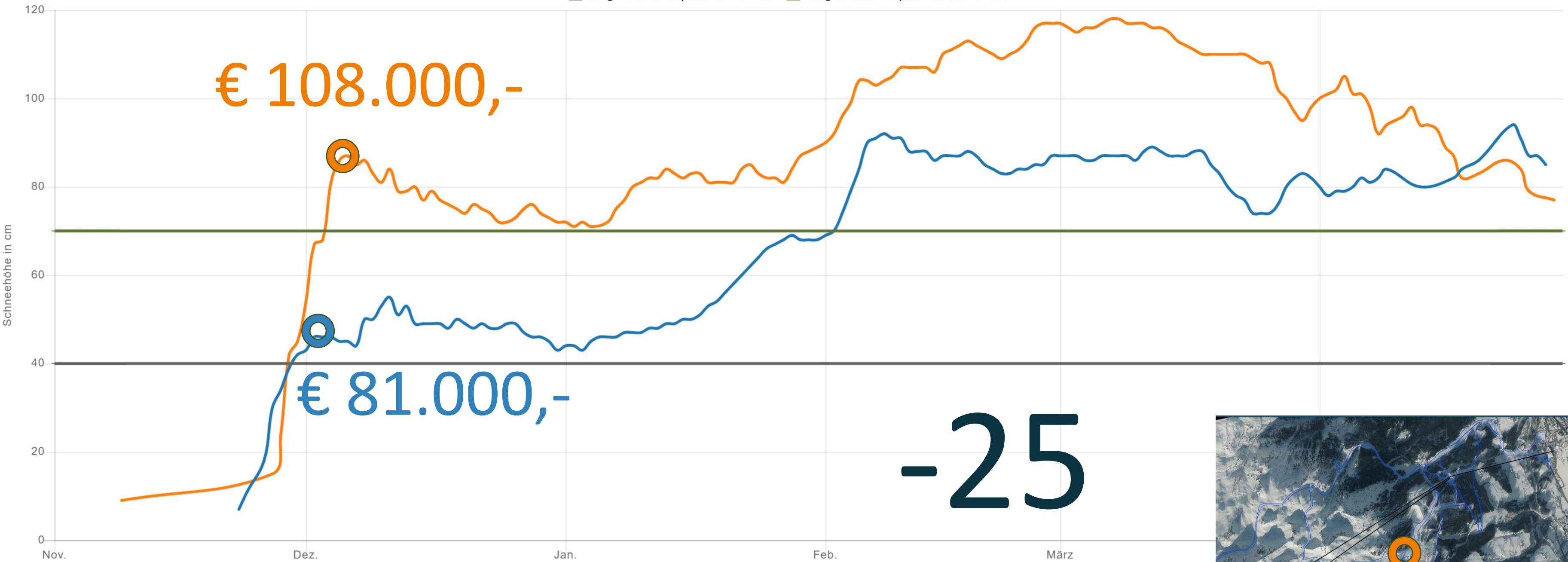


Monitor your data over the winter season

snow depth	2022/23	2021/22
Measured	✓	✓
Nature (ZAMG)	✓	✗



■ Target snow depth base-40cm ■ Target snow depth season-70cm



Brandbichl – Gastein Ski resort

Season	Water Usage per ha
2020/21	3.127 m ³ /ha
2021/22	2.815 m ³ /ha
2022/23	2.816 m ³ /ha
Schlossalm (Gastein)	
Overall Savings	€ 420.000

-10%

Savings per ski resort



“With ARENA, we achieved a significant optimization of the use of resources while maintaining the same quality.”

(Andreas Innerhofer, CEO Bergbahn AG Gastein, Austria)

ARENA Slope Management

Interreg



Co-funded by
the European Union



Alpine Space



Vision projekt Novalitude

slopemanagement.net

Interreg Alpine Space project NOVALTITUDE:

Energy consumption per m³ artificial snow for every slope section in the resort

Vision

Smart Mountain for tomorrow



20th OCOVA FORUM



MERCI POUR VOTRE ATTENTION
THANK YOU FOR YOUR ATTENTION



ARENA is proud to cooperate with some of the world's leading ski resorts. The strong focus on alpine ski resorts in Europe is now expanding to new markets.

Austria: Kitzbühel, Arlberg, Lech, Zürs, Planai, Ischgl, Saalbach, Snow Space, Gastein, ...

Germany: Oberstdorf-Kleinwalsertal, Alpspitzbahn

Italy: Kronplatz - St. Vigil, Corvara

Switzerland: Arosa-Lenzerheide, Disentis

...and many more

ARENA Slope Management