

Intelligent Technologies
that think, act and
and **change people's lives**

welcome



INTELLTECH
Intelligent Technologies

WHAT IS INTELLTECH?

Intelltech is a Software Provider focused on **Mining, Environmental and Water Dam Segments**, delivering **Integrated, Analytical, Intelligent Monitoring and Business Integration**, through our Unique **“Custom Digital Project”** approach.

POWERFUL MULTIDISCIPLINARY STAFF



DATA SCIENCE

Data Mining
Forecasting
Machine Learning
Big Data Analytics
Pattern Recognition
Artificial Intelligence
Statistics and Probability
Mathematical Programming
Computational Mathematical
Methods



INFORMATION TECHNOLOGY

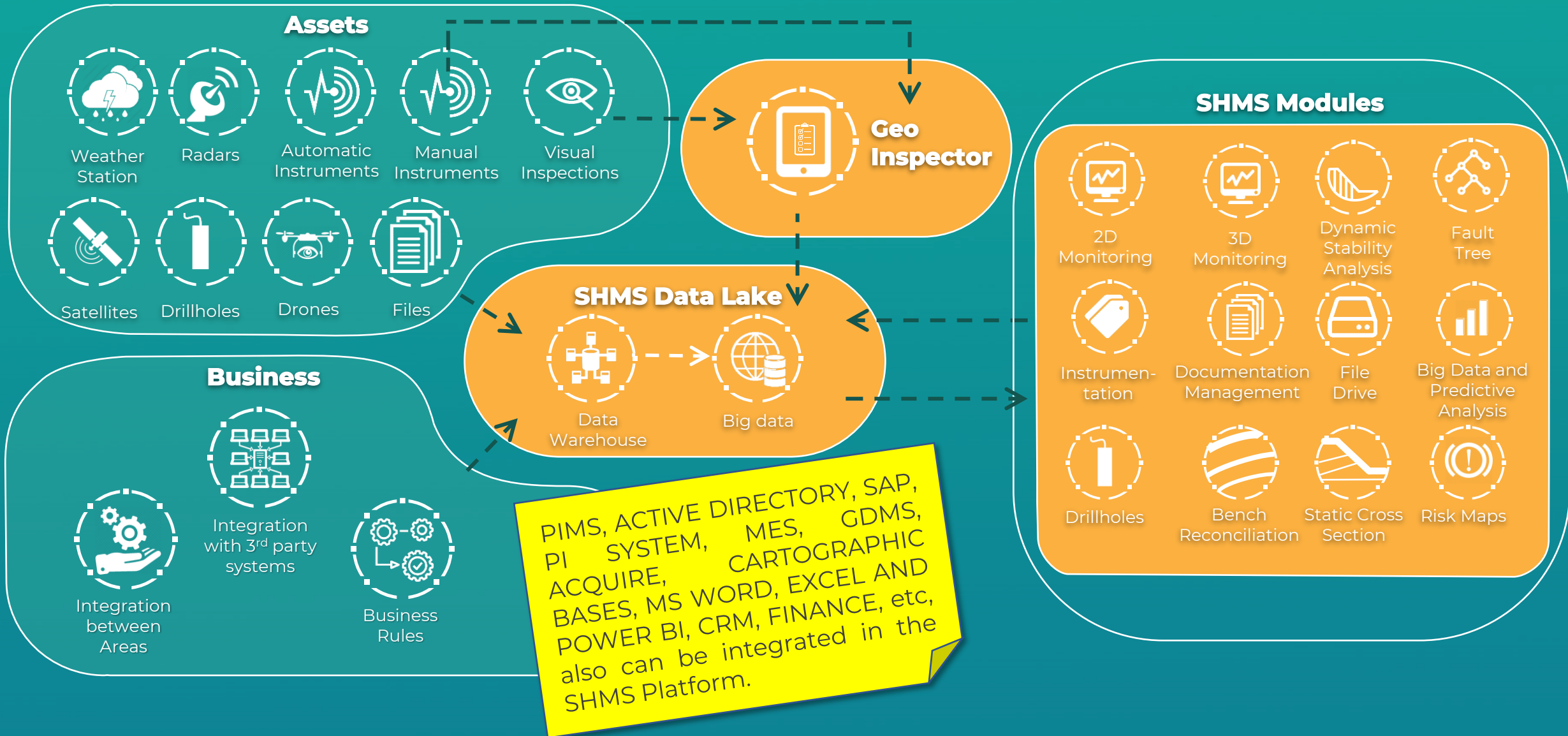
Fault Trees
Infrastructure
Customization
Cloud Computing
Cybernetic Security
2D Maps (WebGIS)
Internet of Things (IoT)
Web and Mobile Technology
Transmission and Integration
of Big Data



GEOSCIENCES

Geology
Geotechnics
Geostatistics
Civil Engineering
Mining Engineering
Environmental Engineering
Computational Geosciences

SHMS - Slope Health Monitoring System



INSPECTION AND MONITORING

of geotechnical structures

Fully Dynamic



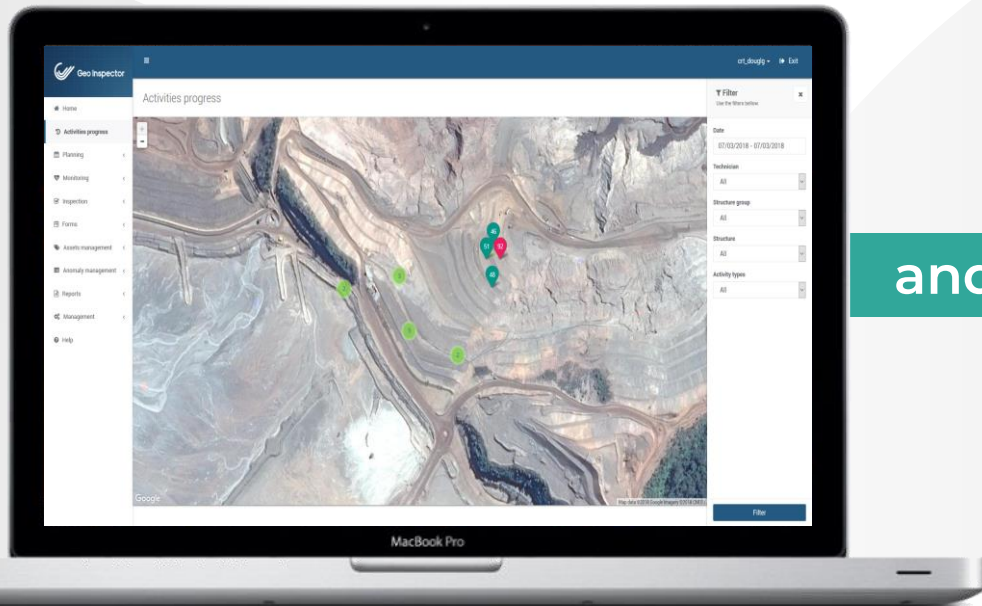
Geo Inspector



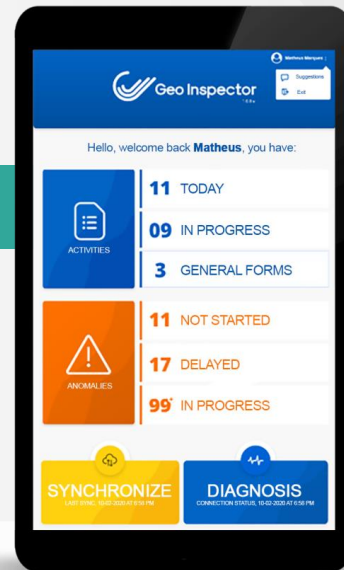
Geo Inspector

TAKE CONTROL OF YOUR
STRUCTURES AND ASSETS

ADMINISTRATIVE INTERFACE



MOBILE



and a

For **MONITORING** and
INSPECTION of
structures and assets

+ Agility in the decision-making
Automatic Report Generation
Real Time Information
100% On-line

INTELLIGENT INTEGRATION PLATFORM

Fully Dynamic



SHMS
Slope Health
Monitoring System

Interfaces

Total interfaces: 8

Search

NEW

Interface ↑	Type	Instruments	Status	Actions
Geo Inspector Database	JDBC	135	✓	...
Geomos Database	JDBC	42	✓	...
Groundprobe CavaSul	Ground Probe - SSR-FX (CSV)	1	✓	...
Groundprobe Santarem	Ground Probe - SSR-FX (CSV)	1	✓	...
Groundprobe Sela Tulipa	Ground Probe - SSR-FX (CSV)	1	✓	...
Inclinometros Manual	Inclinometer manual upload	11	✓	...
OPCDA - KEPWARE	OPC DA	82	✓	...
OPCDA-PLUVIOMETRIA		1	✓	...

GEO INSPECTOR

ROBOTIC STATIONS

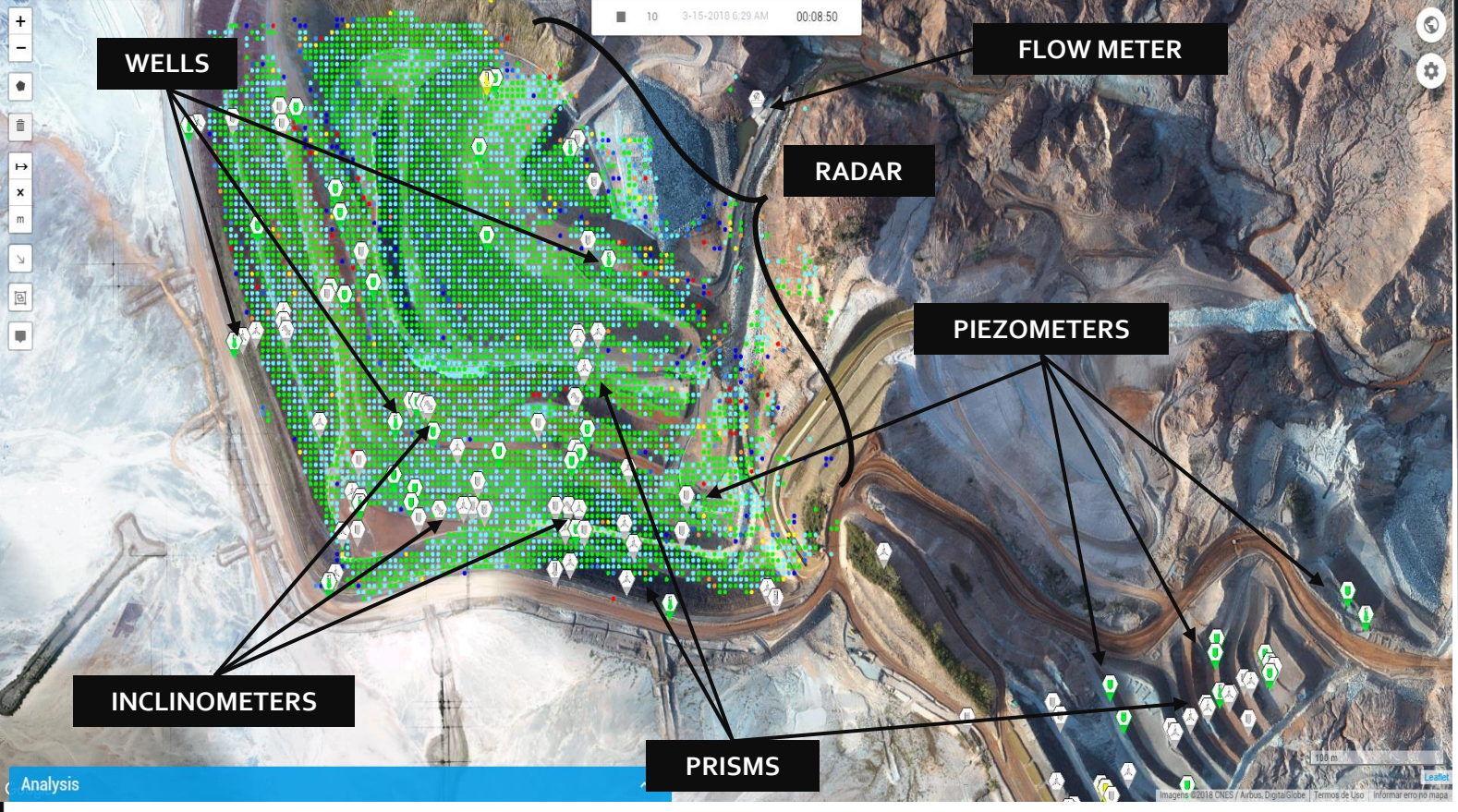
RADARS

INCLINOMETERS

OPC INSTRUMENTS AND INSAR DATA

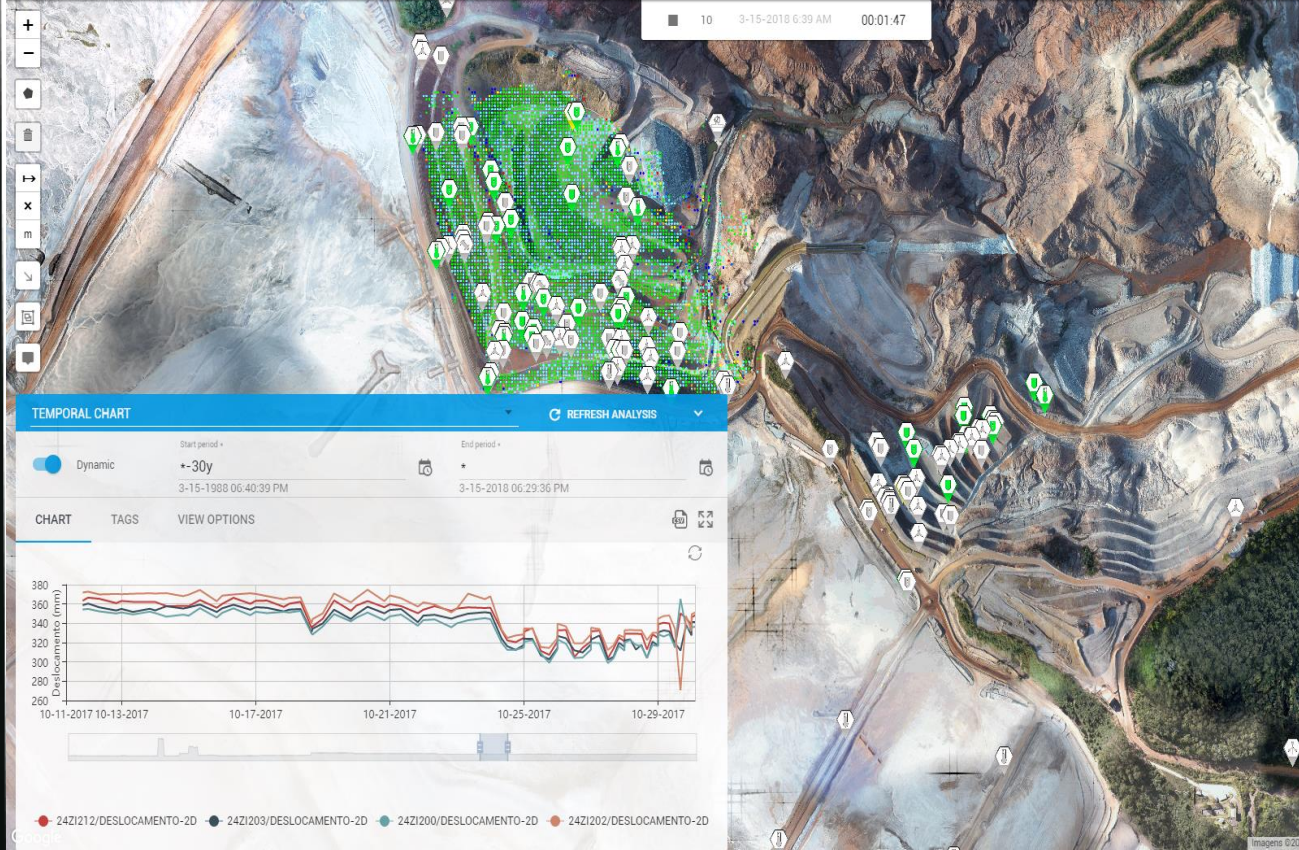
INTELLIGENT INTEGRATION

2D Monitoring



2D Monitoring with several integrated instruments in real time

2D Monitoring



Search in instruments

All Estação Me

>	23LI110	
>	23PA100	
>	23PA101	
>	23PA103	
>	23PA104	
Snapshot Date 3-14-2018 09:53:16 AM		
<input type="checkbox"/>	/COTA	738.955 (m)
<input type="checkbox"/>	/INA	3.863 (m)
<input type="checkbox"/>	/PRESSAO	37.9254 (kPa)
>	23PA105	
>	23PA106	
>	23PA107	
Snapshot Date 3-14-2018 11:39:50 AM		
<input type="checkbox"/>	/COTA	724.611 (m)
<input type="checkbox"/>	/INA	4.511 (m)
<input type="checkbox"/>	/PRESSAO	44.2804 (kPa)
>	23PA108	
>	23PA109	
>	23PA110	
>	23PA111	

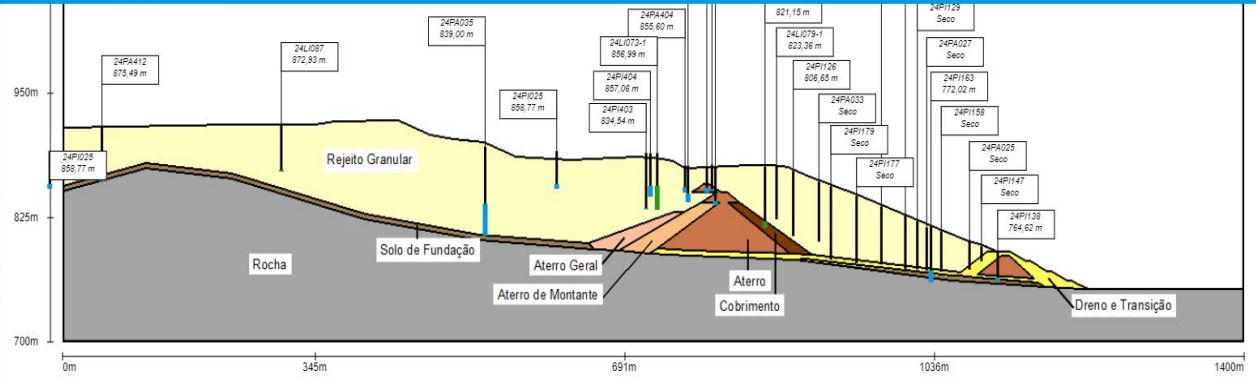
Show 20

Temporal analysis of instruments on the 2D Monitoring Module

2D Monitoring



BARRAMENTO PRINCIPAL - SEÇÃO 1

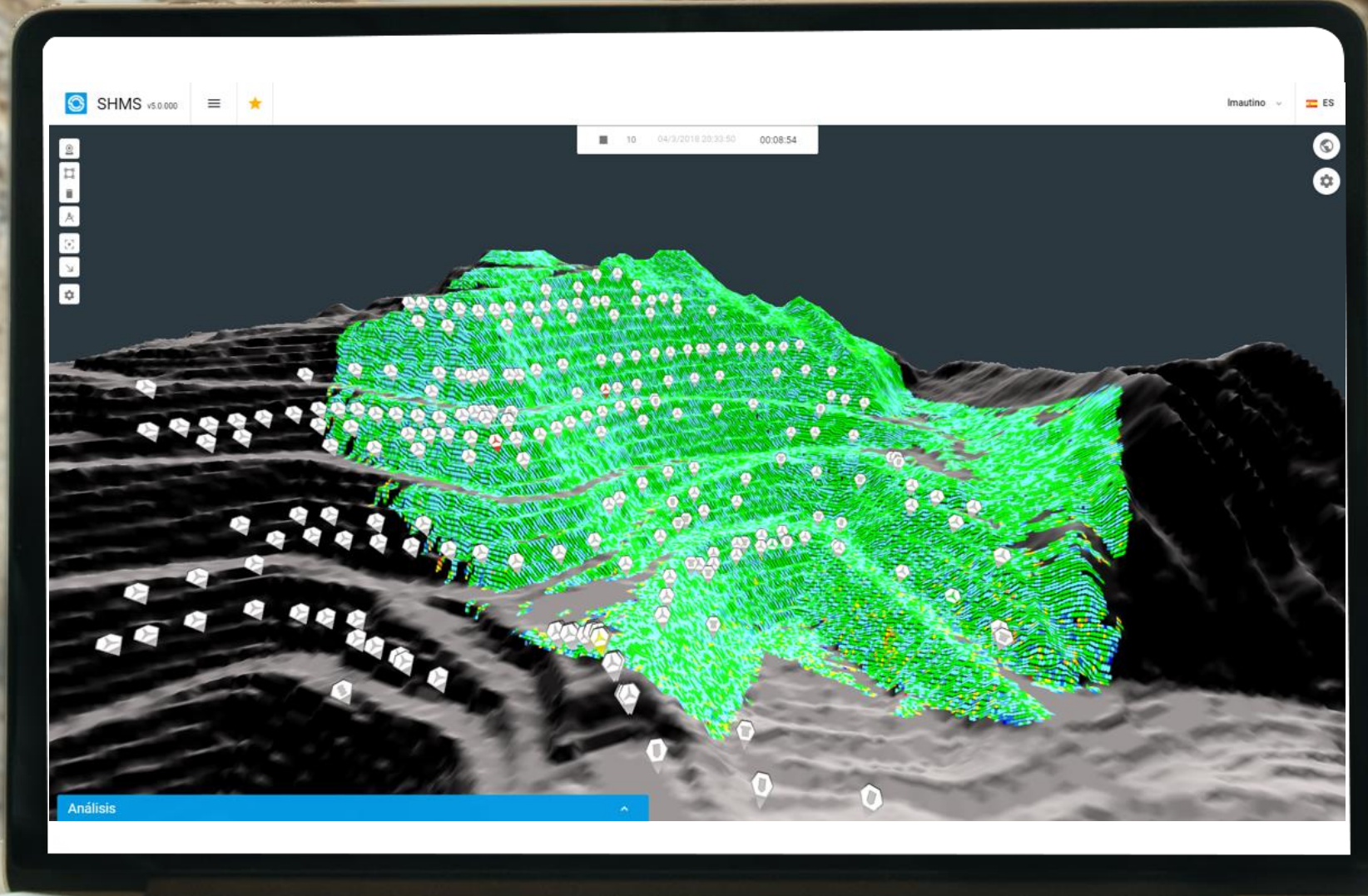


Cortes transversais

- BAIA 03 - SEÇÃO C
- BAIA 03 - SEÇÃO E
- BAIA 03 - SEÇÃO F
- BAIA 03 - SEÇÃO G
- BARRAGEM EBII - SEÇÃO PRINCIPAL
- BARRAMENTO PRINCIPAL - SEÇÃO 1
- BARRAMENTO PRINCIPAL - SEÇÃO 3 - SUP...
- BARRAMENTO PRINCIPAL - SEÇÃO 5 - INFE...
- CAVA DO GERMANO - SEÇÃO 1
- CAVA DO GERMANO - SEÇÃO 2
- CAVA DO GERMANO - SEÇÃO 3
- CAVA DO GERMANO - SEÇÃO 4
- CAVA DO GERMANO - SEÇÃO 5
- CAVA DO GERMANO - SEÇÃO 6
- CAVA DO GERMANO - SEÇÃO 7
- CAVA DO GERMANO - SEÇÃO 8
- DIQUE AUXILIAR - SEÇÃO B
- DIQUE AUXILIAR - SEÇÃO C
- DIQUE AUXILIAR - SEÇÃO D
- DIQUE B11 (MACACOS) - SEÇÃO AA
- DIQUE DE OFICINA - SEÇÃO AA
- JOÃO MANOEL - SEÇÃO A - Inferior
- JOÃO MANOEL - SEÇÃO A - Superior
- JOÃO MANOEL - SEÇÃO B

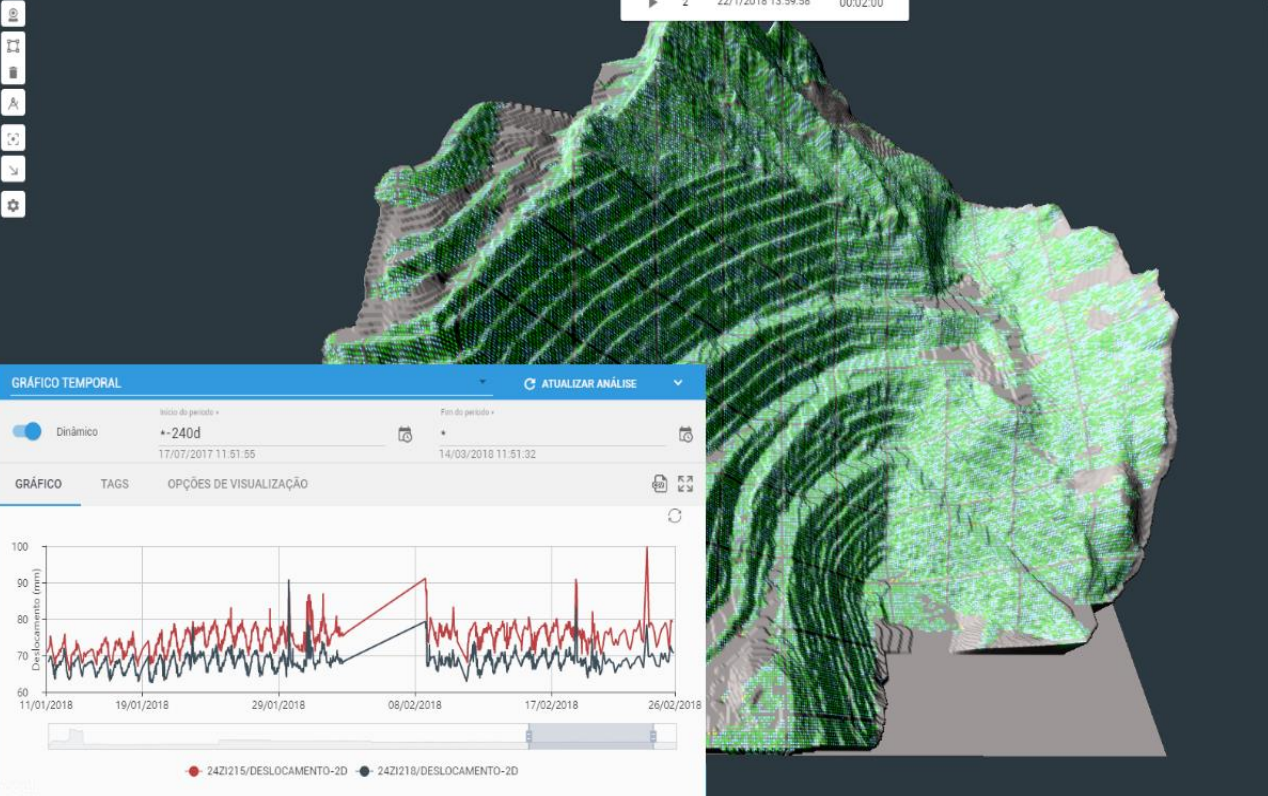
Instrument analysis on a cross section

Cross Section



**Three-dimensional
models with terrain
topography**

3D Monitoring



Pesquisar por instrumentos

Prisma

Última atualização 07/03/2018 17:33:09

<input type="checkbox"/>	/COTA	903.7948 (m)
<input type="checkbox"/>	/COTA-DIF	-45 (mm)
<input checked="" type="checkbox"/>	/DESLOCAMENTO-2D	71 (mm)
<input type="checkbox"/>	/DESLOCAMENTO-3D	84 (mm)
<input type="checkbox"/>	/ESTE	659.314.9734 (m)
<input type="checkbox"/>	/ESTE-DIF	-68 (mm)
<input type="checkbox"/>	/NORTE	7.764.576.4670 (m)
<input type="checkbox"/>	/NORTE-DIF	-23 (mm)
<input type="checkbox"/>	/VELOCIDADE	0.08 (mm/h)

- 24ZI216
- 24ZI217
- 24ZI218

Última atualização 07/03/2018 17:33:21

<input type="checkbox"/>	/COTA	897.8192 (m)
<input type="checkbox"/>	/COTA-DIF	-9 (mm)
<input checked="" type="checkbox"/>	/DESLOCAMENTO-2D	62 (mm)
<input type="checkbox"/>	/DESLOCAMENTO-3D	63 (mm)
<input type="checkbox"/>	/ESTE	659.265.2912 (m)
<input type="checkbox"/>	/ESTE-DIF	-57 (mm)
<input type="checkbox"/>	/NORTE	7.764.690.9848 (m)
<input type="checkbox"/>	/NORTE-DIF	-16 (mm)

Itens por página

20 1-3

3D Monitoring with time graphical analysis of different instruments

Big Data and Predictive Analysis

Revisions NEW REVISION Reference 12-31-0 10:00 AM NEW CONDITION

12-31-0001 10:00:00 PM

> Ok	Property	Limits 1
> Caution	Property	Limits 1
> Warning	Property	Limits 1
> Danger	Property	Limits 1

Name: Alarm status: Danger Alarm type: Property

Limits

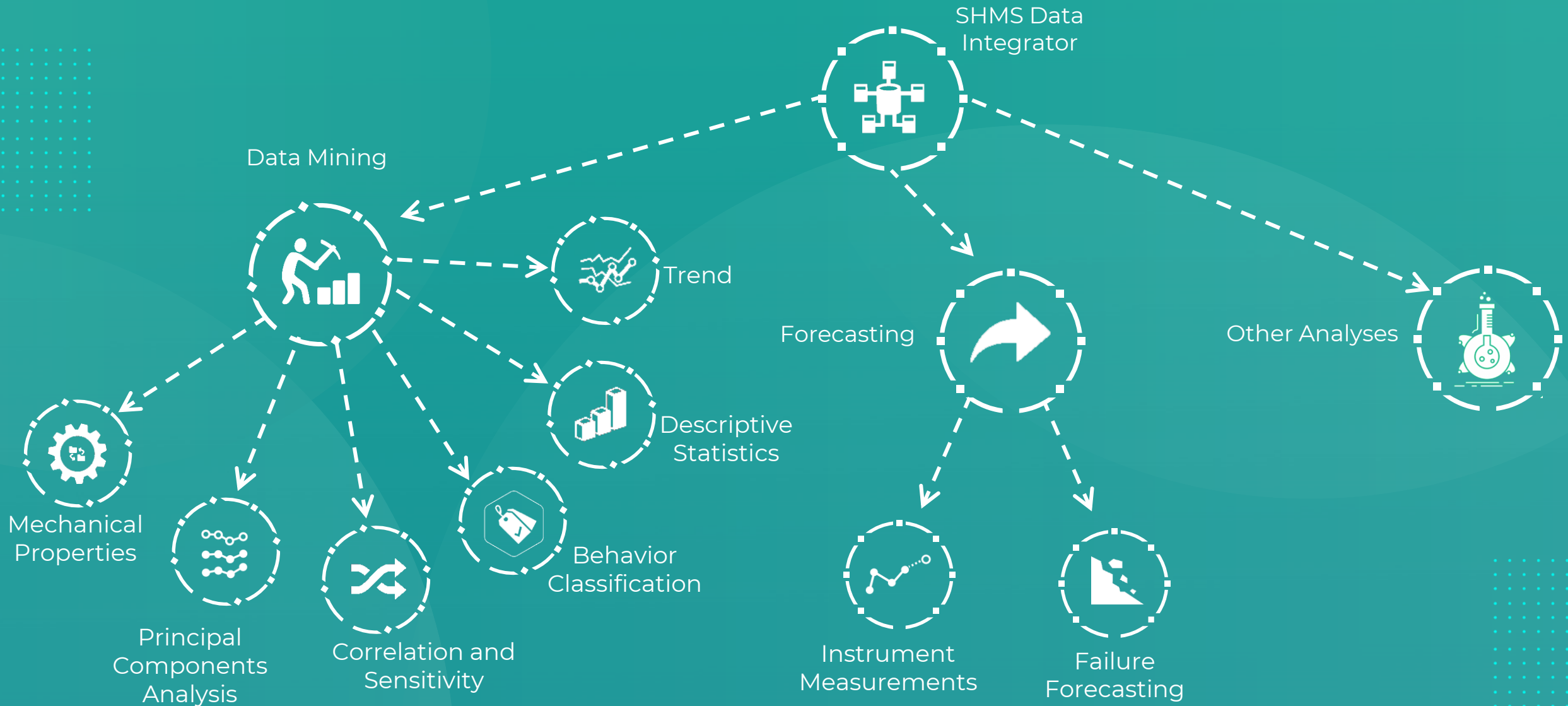
Limit type: Greater than Value: 760.5 NEW LIMIT

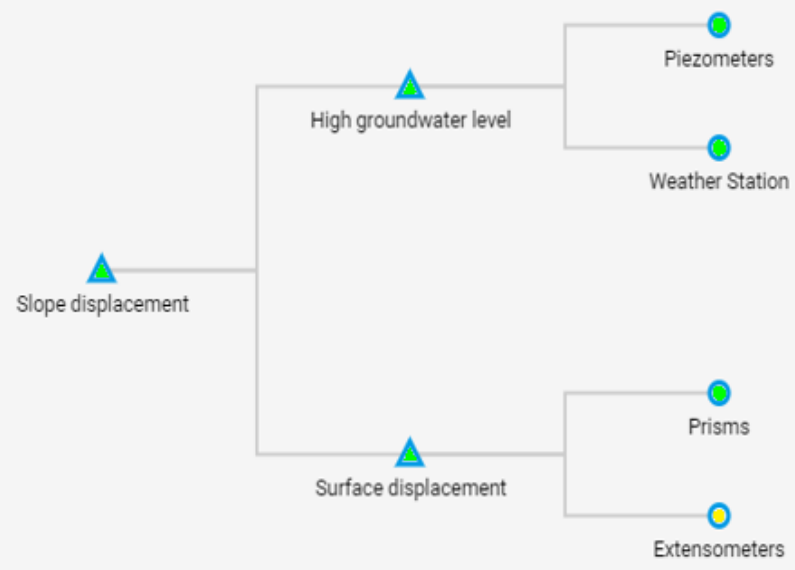


Configuration of Risk Alerts and Instrument Notifications

Notifications

PREDITIVE AND BIG DATA ANALYSIS





Combination of instrument alarms on a tree structure

Fault Tree Analysis

East: 274673.0706167507
North: 8944751.789127879
Altitude: 4422.256989782243

Terreno
Projeto
Ponto de perfuração

Cortes transversais

715.55	
730.55	
745.55	
760.55	
775.55	
790.55	
805.55	
820.55	
843.82	
858.82	

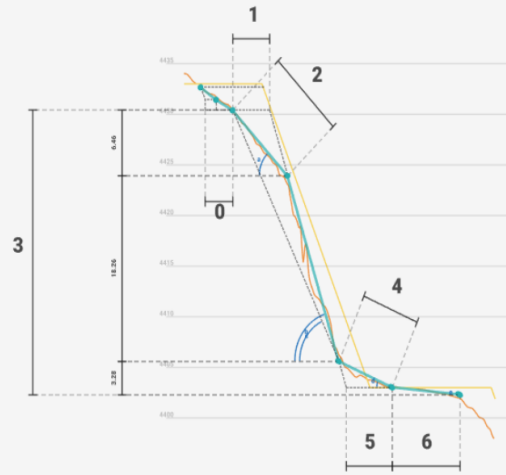
Valores das sessões

SESSÕES

- 0 Bancada efetiva 2,6782 m
- 1 Breakback 4,1214 m
- 2 Breakback aslope 8,9240 m
- 3 Altura do banco 28,0028 m
- 4 Filled berm aslope 6,4784 m
- 5 Berma preenchida 5,1425 m
- 6 Berma 7,5905 m

ÂNGULOS

- a Breakback angle 46,3972 °
- b Ângulo da face do banco 72,5361 °



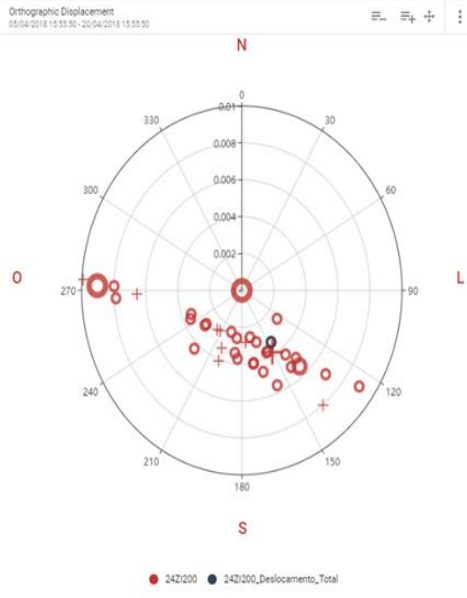
Definition of slope crest, face, and foot segments

Bench Reconciliation

Nombre de lo template

DEFAULT STRUCTURE

AGREGAR ANÁLISIS



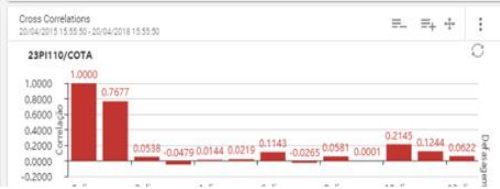
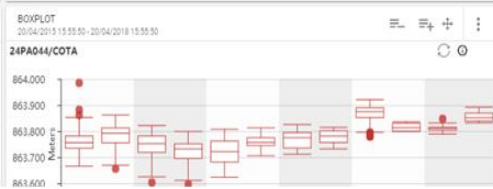
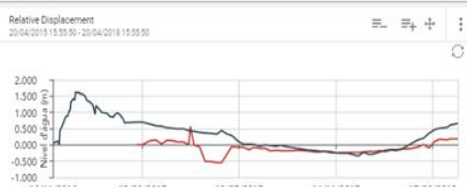
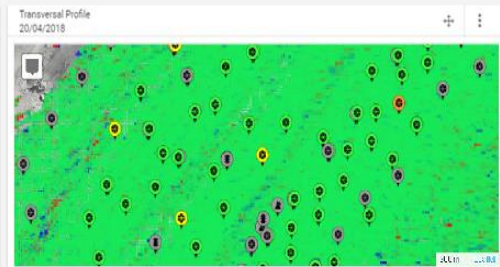
TAG VALUES CHART
20/04/2018 15:55:50

Topo do alarme: Pior caso
Categorias: Status de alarme: Non

Normal Cuidado Atenção Emergência Desconhecido Está operando Não está funcionando

Status de alarme	Nome da tag ↑	Valor	Última atualização	Status
●	24ZI205/DESLOCAMENTO-3D	61.3418	06/04/2018 13:32:06	Está operando
●	24PI150/COTA	872.8636	20/04/2018 15:23:08	Está operando
●	24PA039/COTA	871.6477	20/04/2018 15:23:08	Está operando

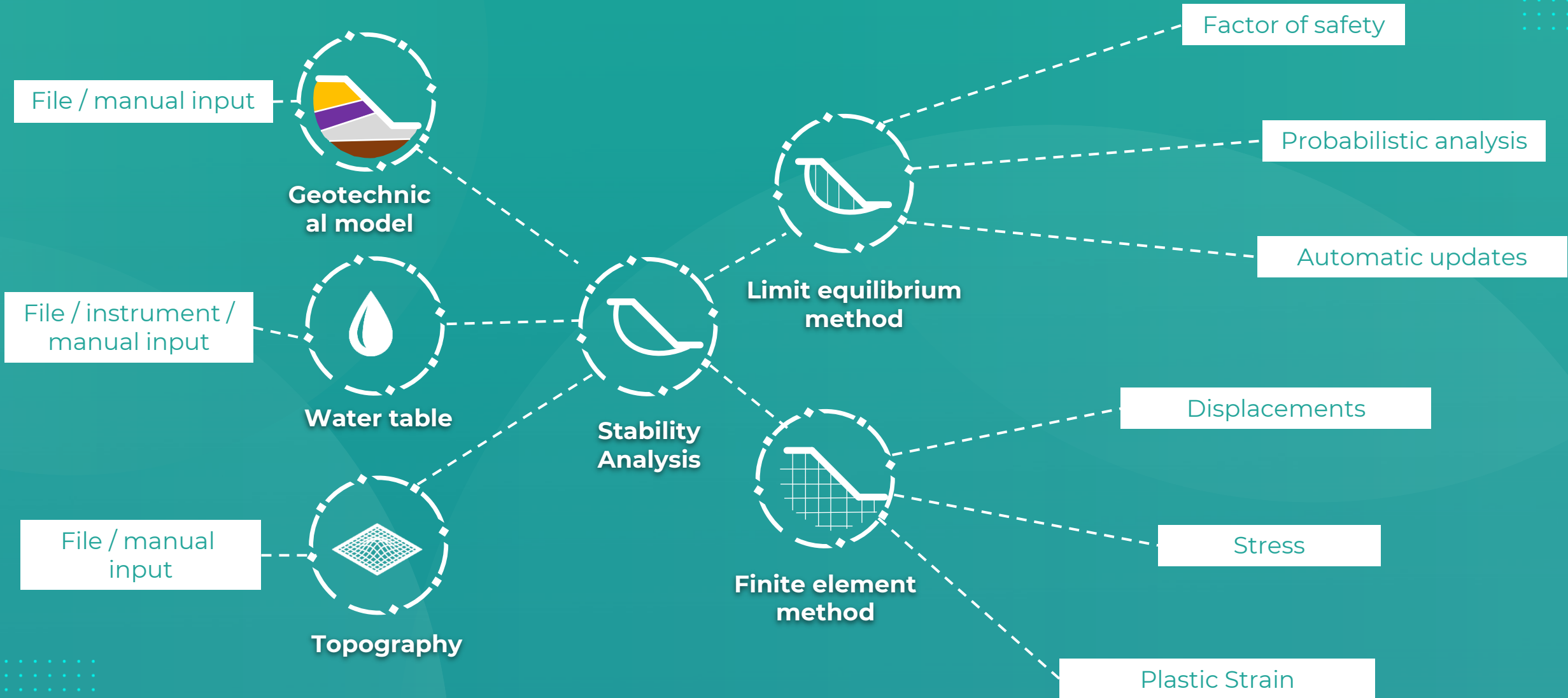
MAP: A

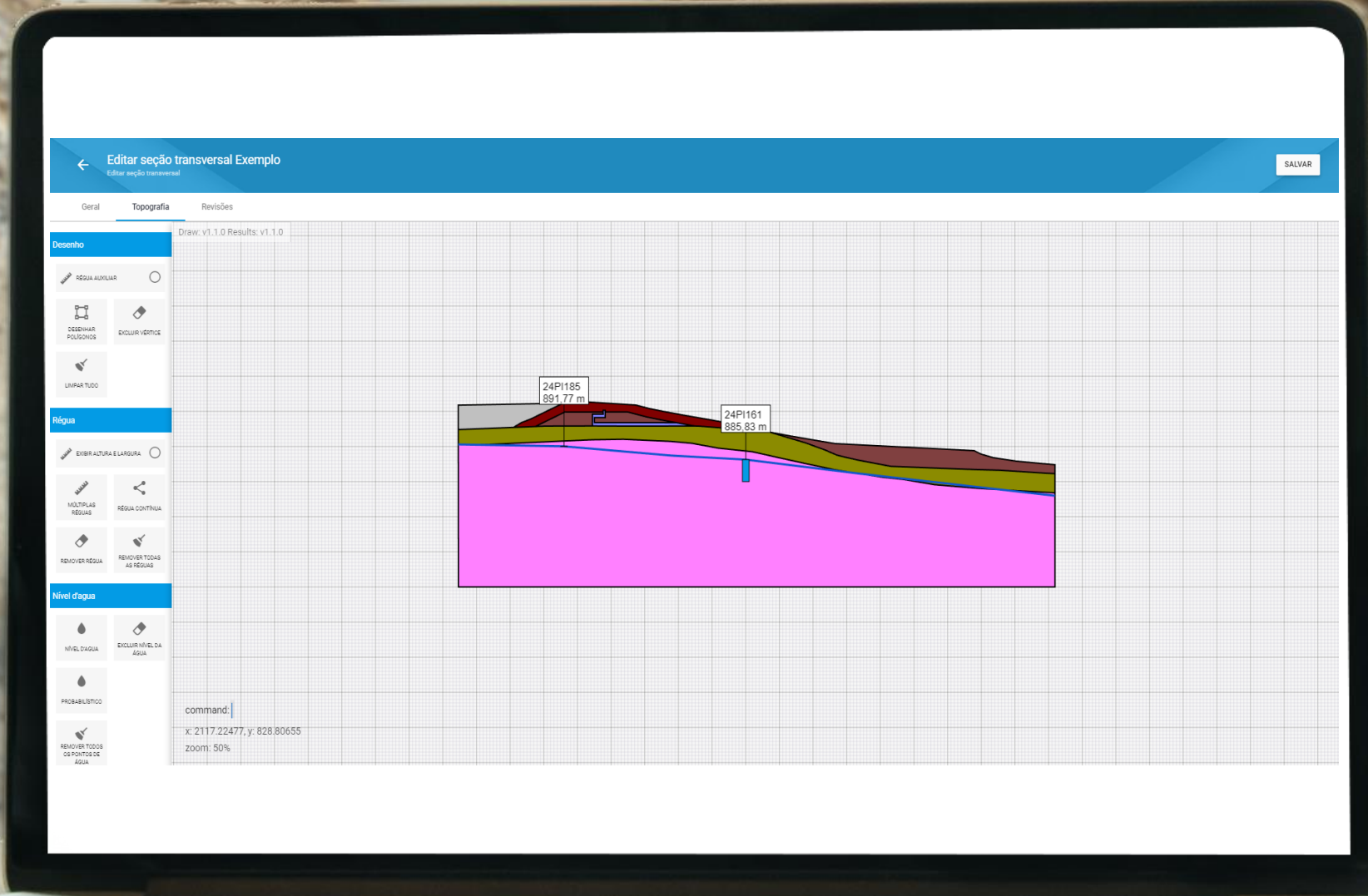


User-created dashboard with specific analysis of instrumentation data

Dynamic Dashboards

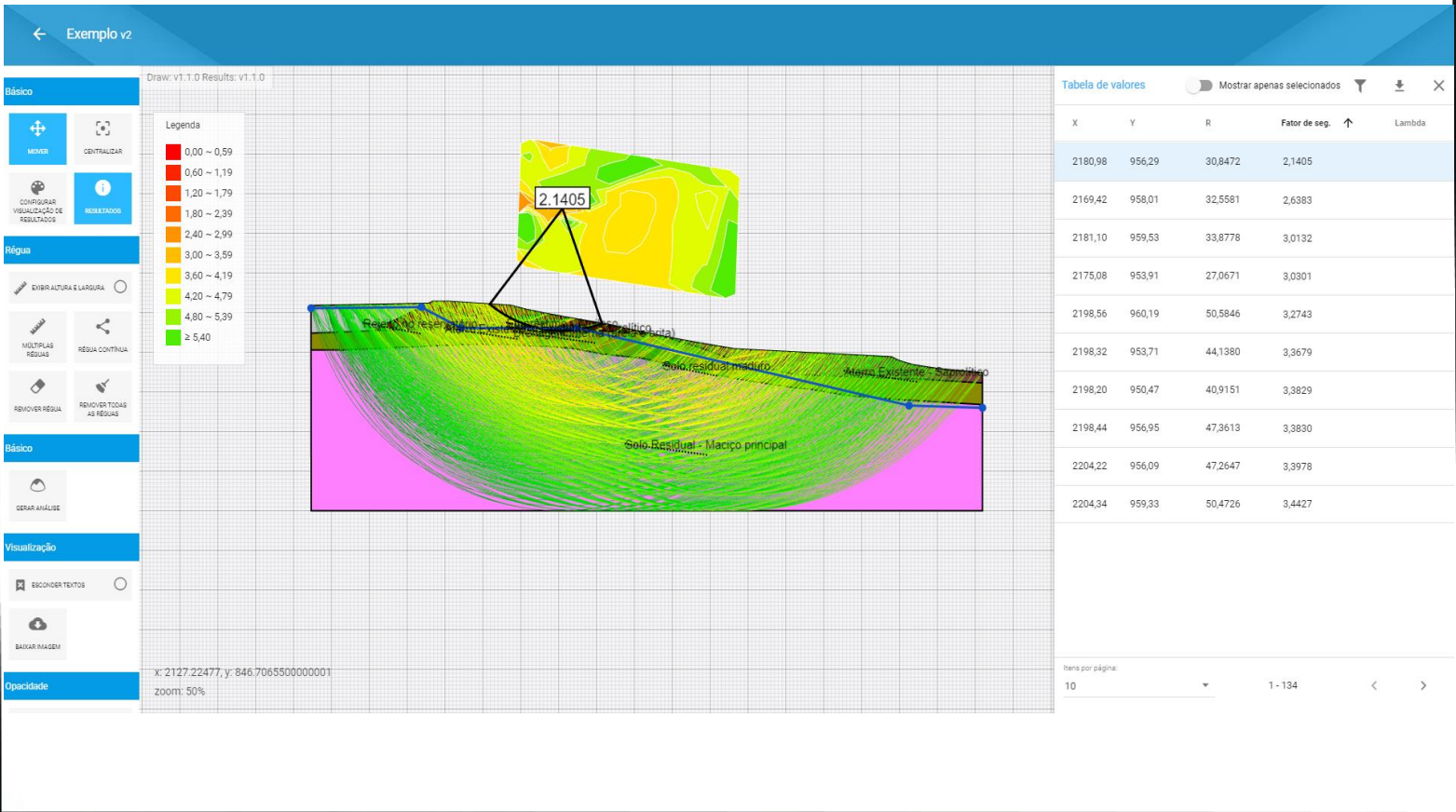
DYNAMIC STABILITY ANALYSIS





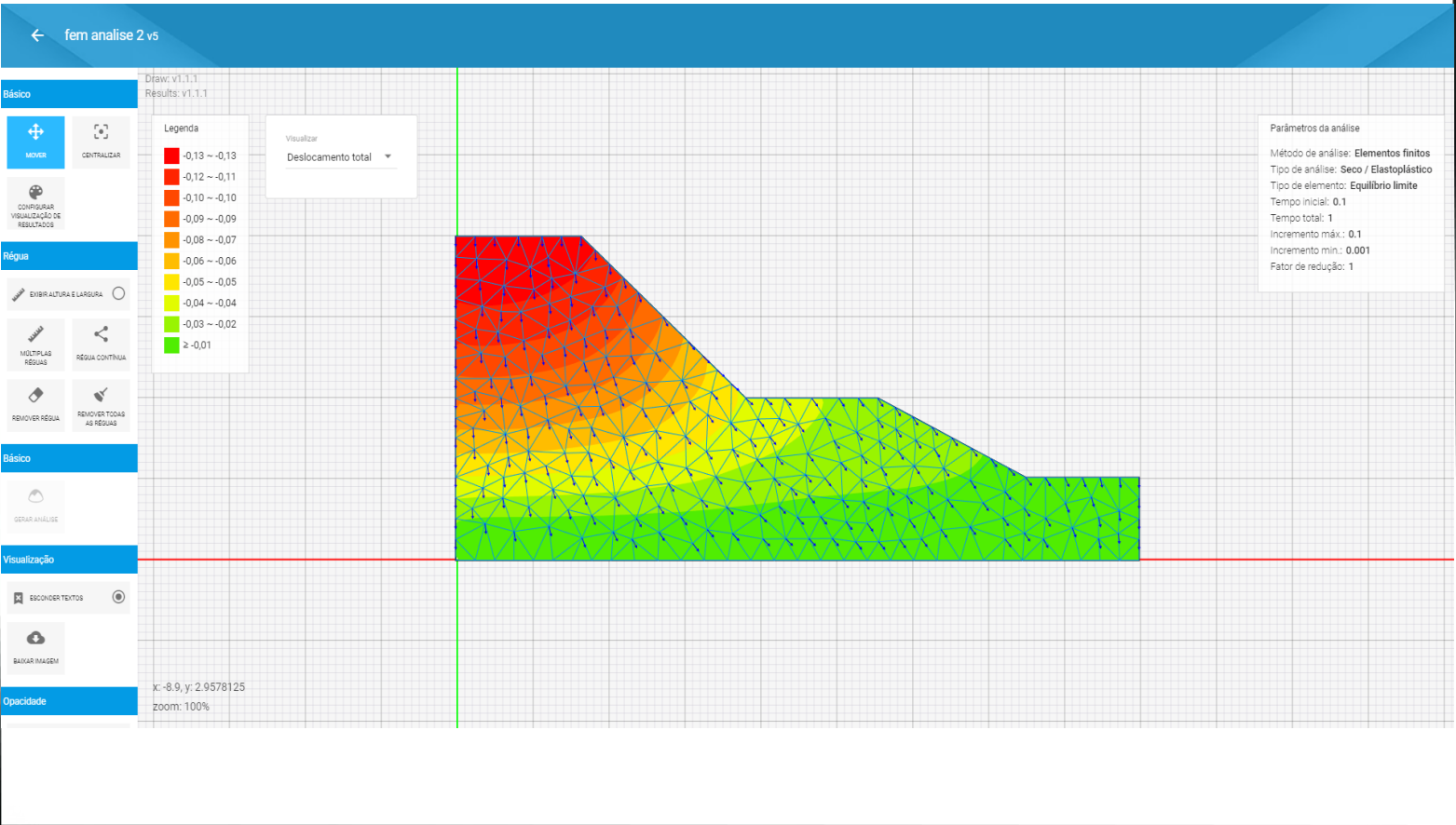
STABILITY ANALYSIS

Instruments



STABILITY ANALYSIS

Matrix of centers



STABILITY ANALYSIS

Finite elements -
Displacement

DEPLOYMENT SCENARIOS



Basic



Basic - Standalone



Replication -
Disaster Recovery



HA - High Availability



Cloud

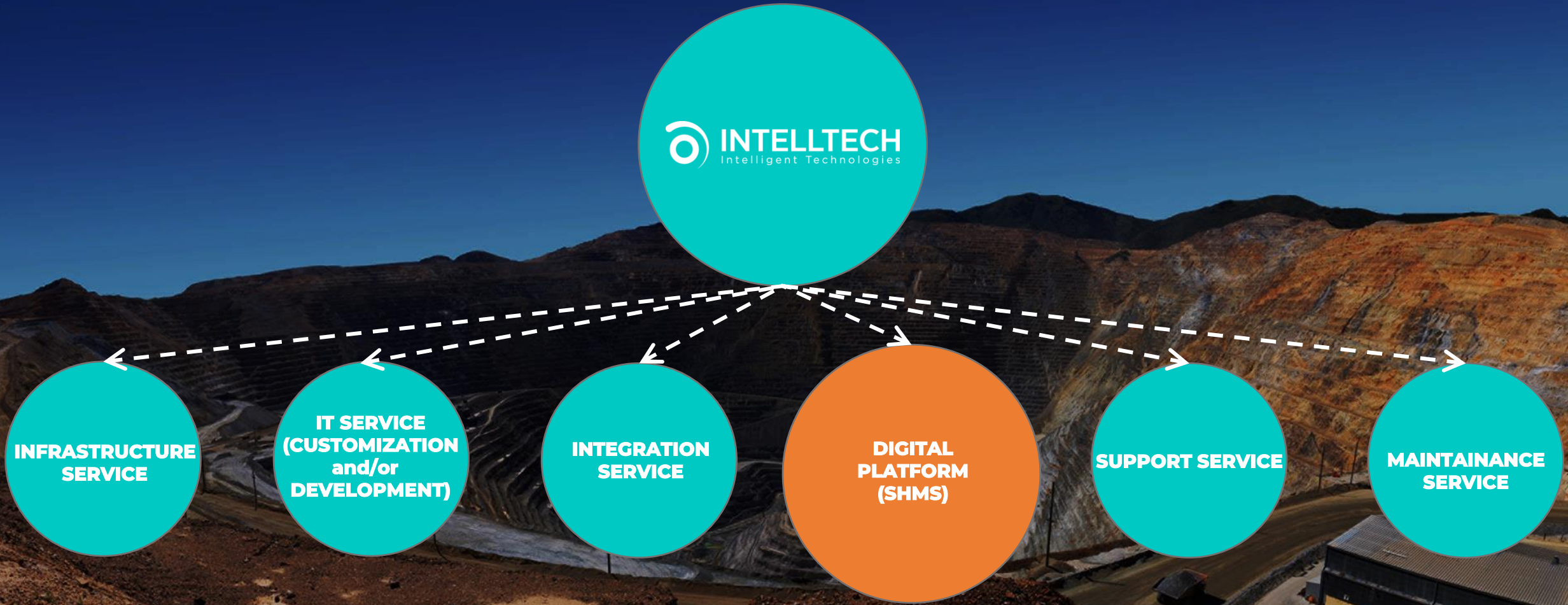


Hybrid

Test & Certification

Production

MAIN PARTS OF THE “CUSTOM SOLUTION”



OUR DIFFERENTIATOR – CUSTOM DIGITAL PROJECT (CDP)

Execution of
CDP for
Monitoring
and Business
Integration

Client's needs,
requirements
and vision

Innovation
Opportunity

Immersion in
the operation



SHMS PLATFORM

Instrument/Sensor
Integration

Data Quality

Integration between
Mining Complex

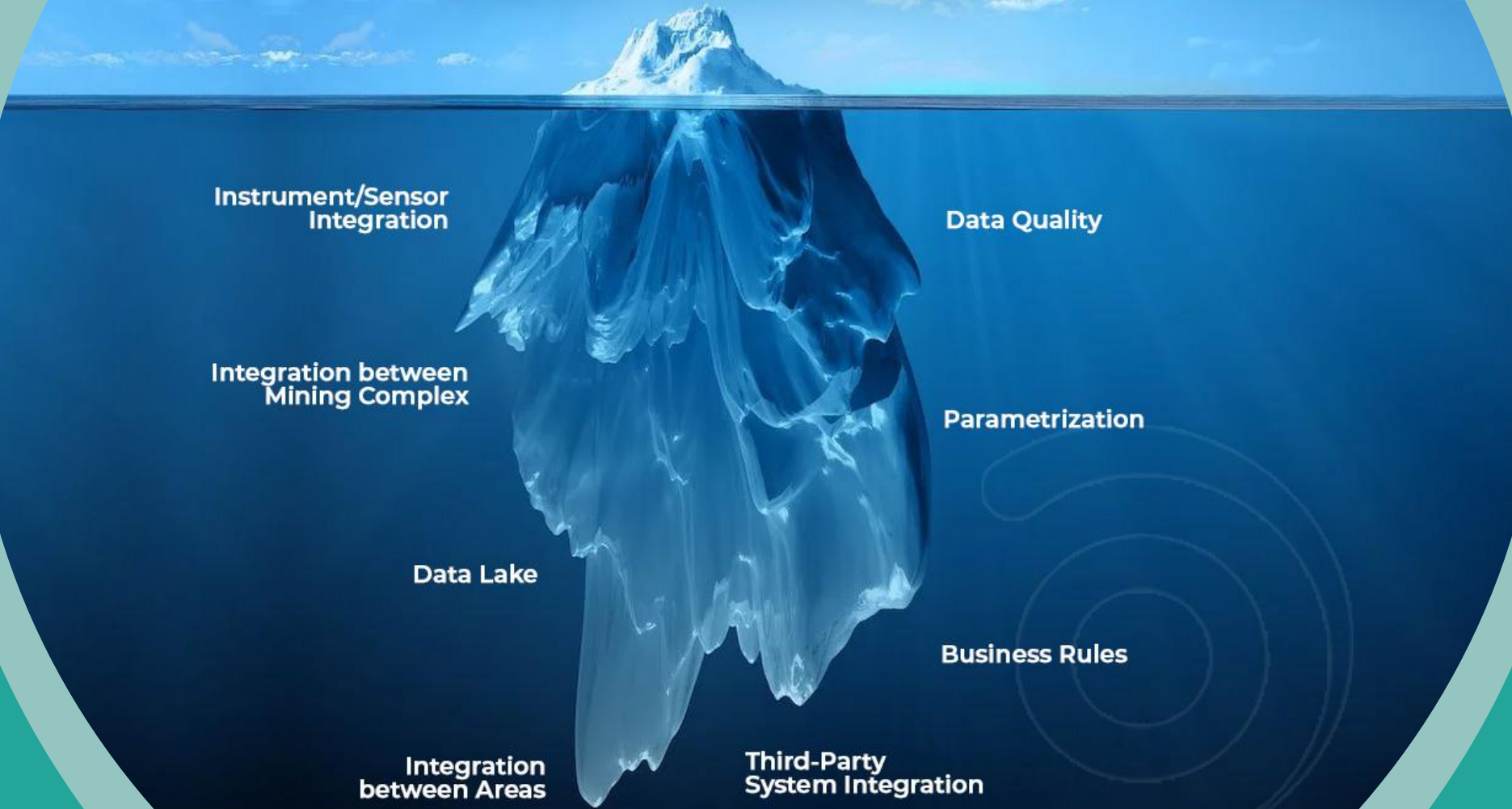
Parametrization

Data Lake

Business Rules

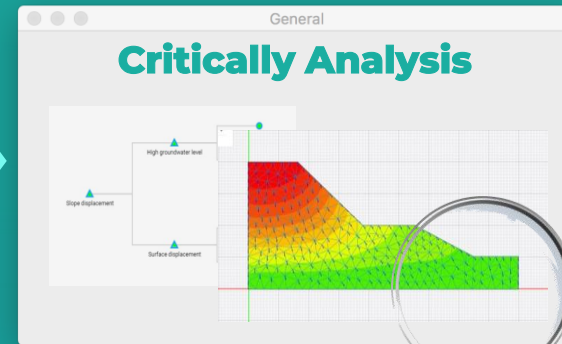
Integration
between Areas

Third-Party
System Integration



SAMARCO'S CDP

Monitoring and Inspector Center



**EMERGENCY
OPERATION**

Manual and automatic Instruments/sensors

- Water quality
- Pulviometric Station
 - V-notch weir
 - Piezometer
 - Prism
- GroundProbe Rada
 - Inclinometer
 - Freeboard
- SAA Inclinometer and others.



INTELLTECH
Intelligent Technologies

Technical and Geotechnical users



SAMARCO'S CDP

Open-Pit and other Geotechnical Structures.



Photo of Integrated Monitoring Center at Samarco.



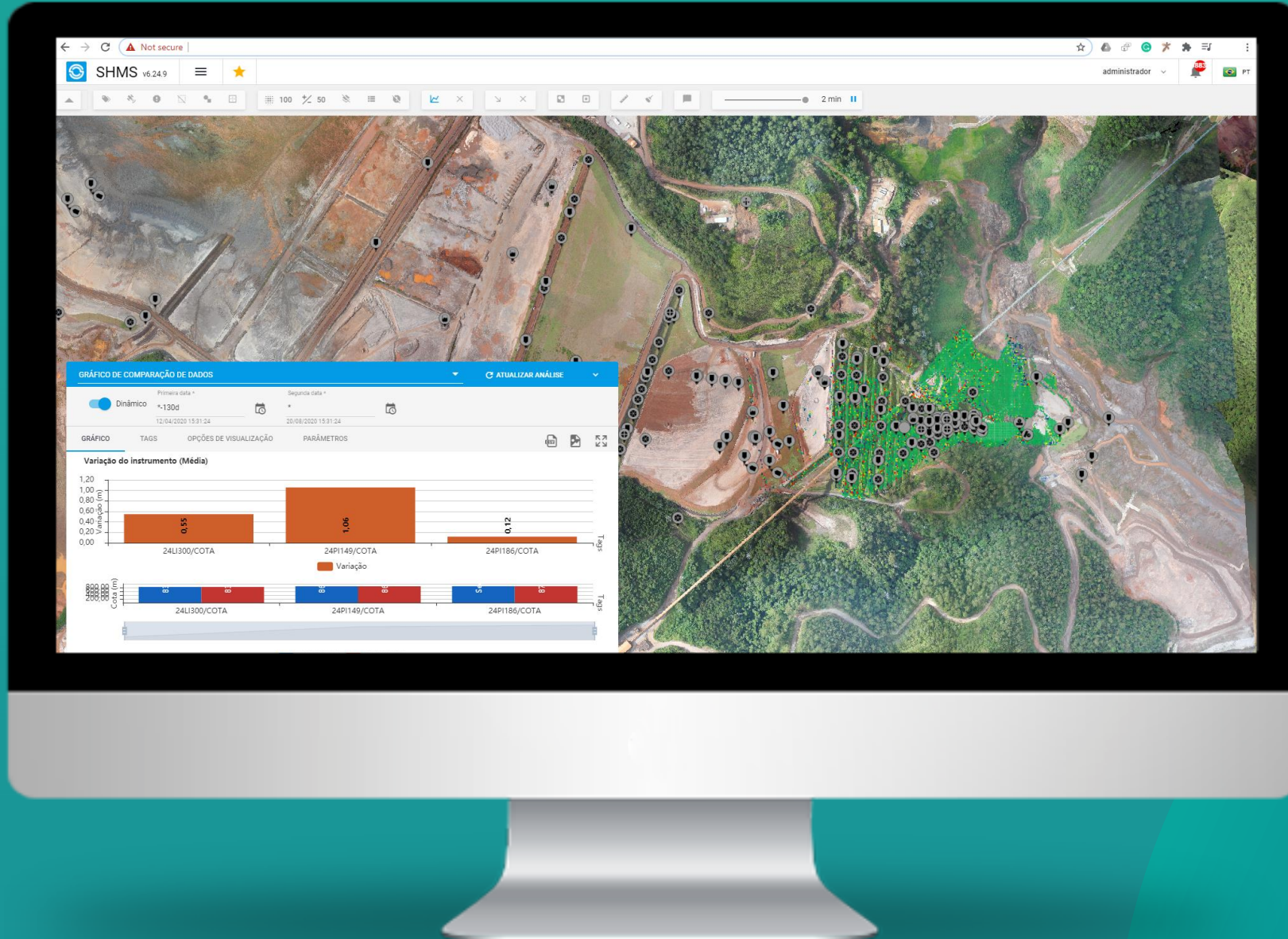
Tailings Dams.



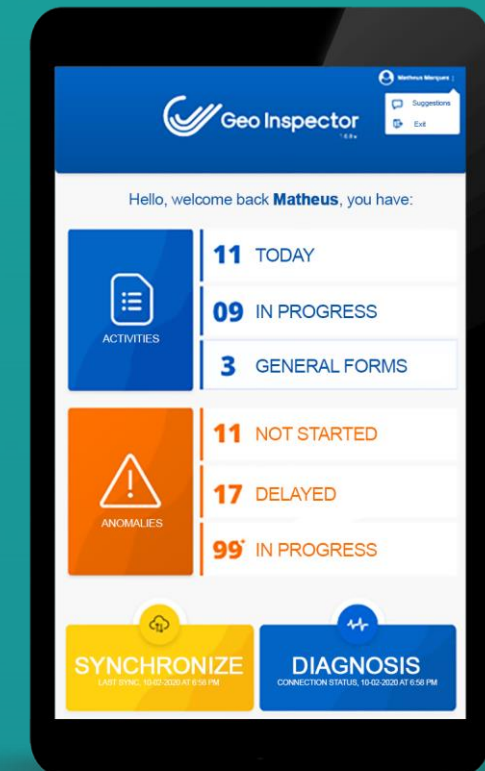
SAMARCO'S CDP

Instrument Type	# of integrated instruments
Water quality	1,069
Pluviometric Station	
V-notch weir / Piezometer / Wells / Flowmeter	
Prism	
GroundProbe Radar	
Inclinometer	
Freeboard / Bathymetry	
Flowmeter	
SAA Inclinometer	

SAMARCO'S CDP



SAMARCO'S CDP



Thanks

for watching

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