



Index and the TerraSpec + aiSIRIS In-Field Geoanalysis Solution

Christopher Butz

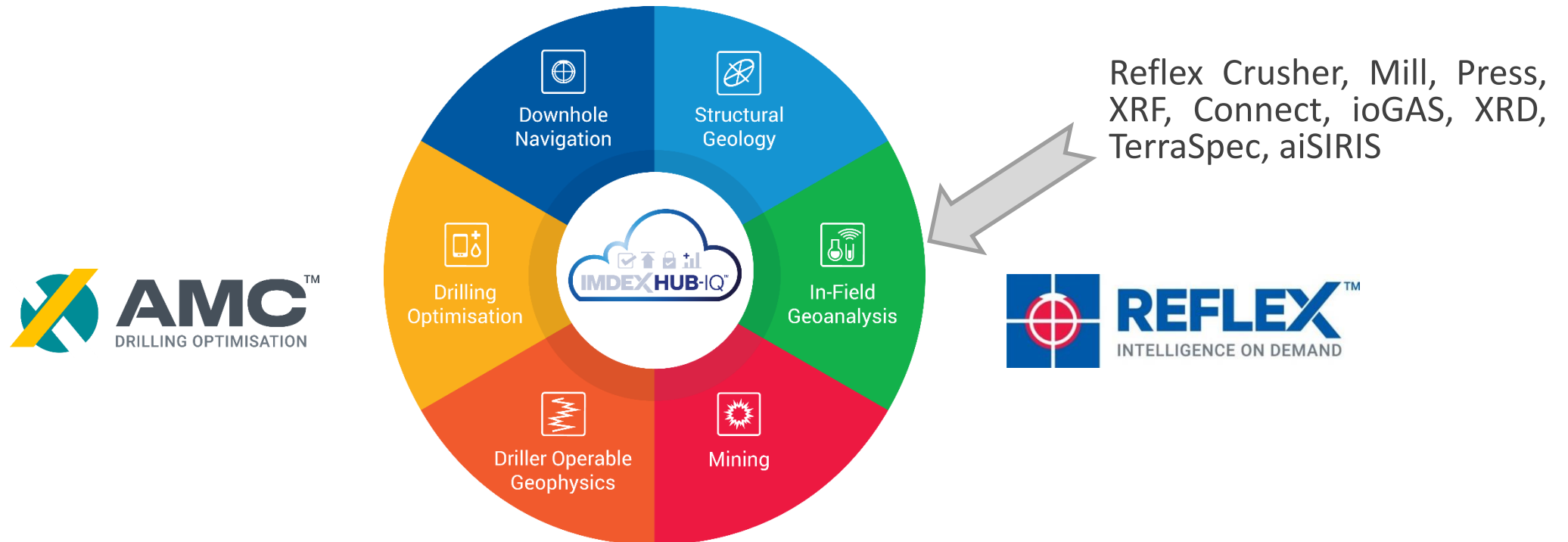
Geologist/Product Specialist

July 21st, 2020

Global Presence, Local Support



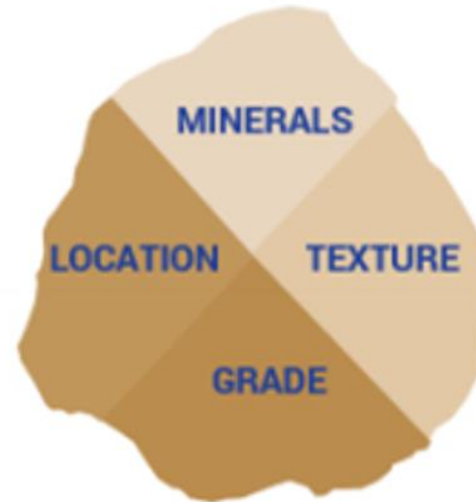
IMDEXTM is a world leader in equipment, technology and services for the mining industry. Our solutions are developed to simplify and speed up the operations of drilling and resource companies. Our products can be classified into 6 groups of solutions:



The ways to describe drill-core or other rock samples:

Location: IMDEXHUB-IQ connected survey tools mean geologists can see where their holes are anywhere and anytime, rather than relying on paper-based work flows.

Grade: IMDEX's In-field GeoAnalysis solution enables geoscientists to obtain quality assay data at the rig or core farm rather than waiting for laboratory results.



Minerals: AusSpec's aiSIRIS SaaS product provides a real-time mineralogy solution to IMDEX's rock knowledge offering. It replaces a workflow reliant on laboratory and expert interpretation that is asynchronous to data collection.

Texture: IMDEX's Structural-IQ solution combines multiple sensors to allow geologist to see the position of their structures in 3D as they log in the core farm. This replaces a workflow where data gathering and interpretation were separated by weeks or months.

In-field Geoanalysis Solution

Product Suite

Portable Analytical Equipment:

- XRF (X-Ray Fluorescence) → Chemistry
- XRD (X-Ray Diffraction) → Mineralogy
- **NIR/SWIR → Mineralogy**



Sample Preparation

- REFLEX CRUSHER
- REFLEX MILL
- REFLEX PRESS



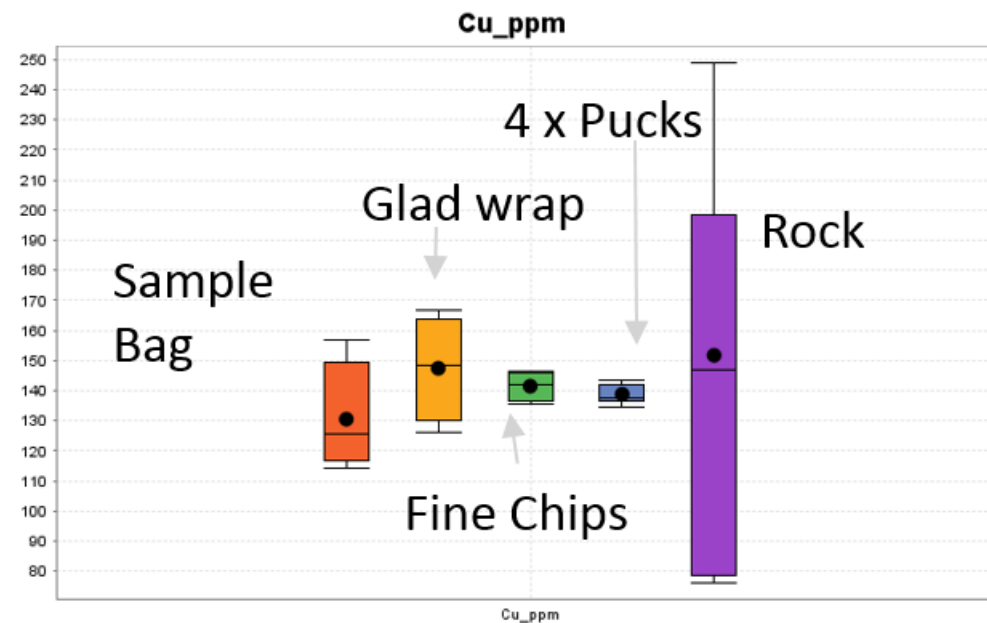
In-field Geoanalysis Solution

Product Suite

Importance of Sample preparation/presentation:

Repeatability of Cu using XRF in rock material, testing the sample sample

- As a unprepared rock
- Through a sample bag
- Through Glad wrap
- As fine chips
- As a puck

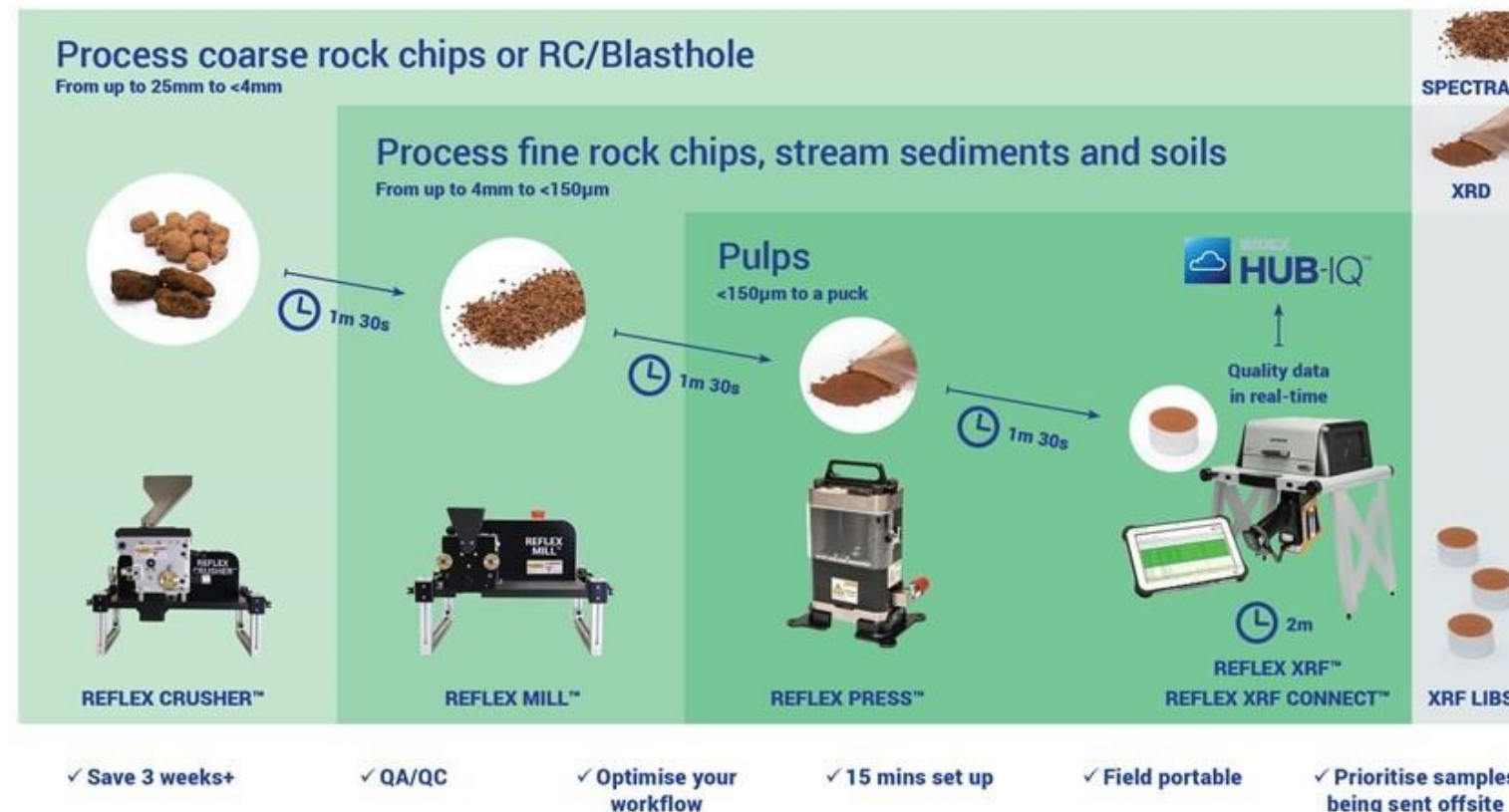


In-field Geoanalysis Solution

Product Suite



Quality geochemical data in 10 minutes, **where and when you need it**

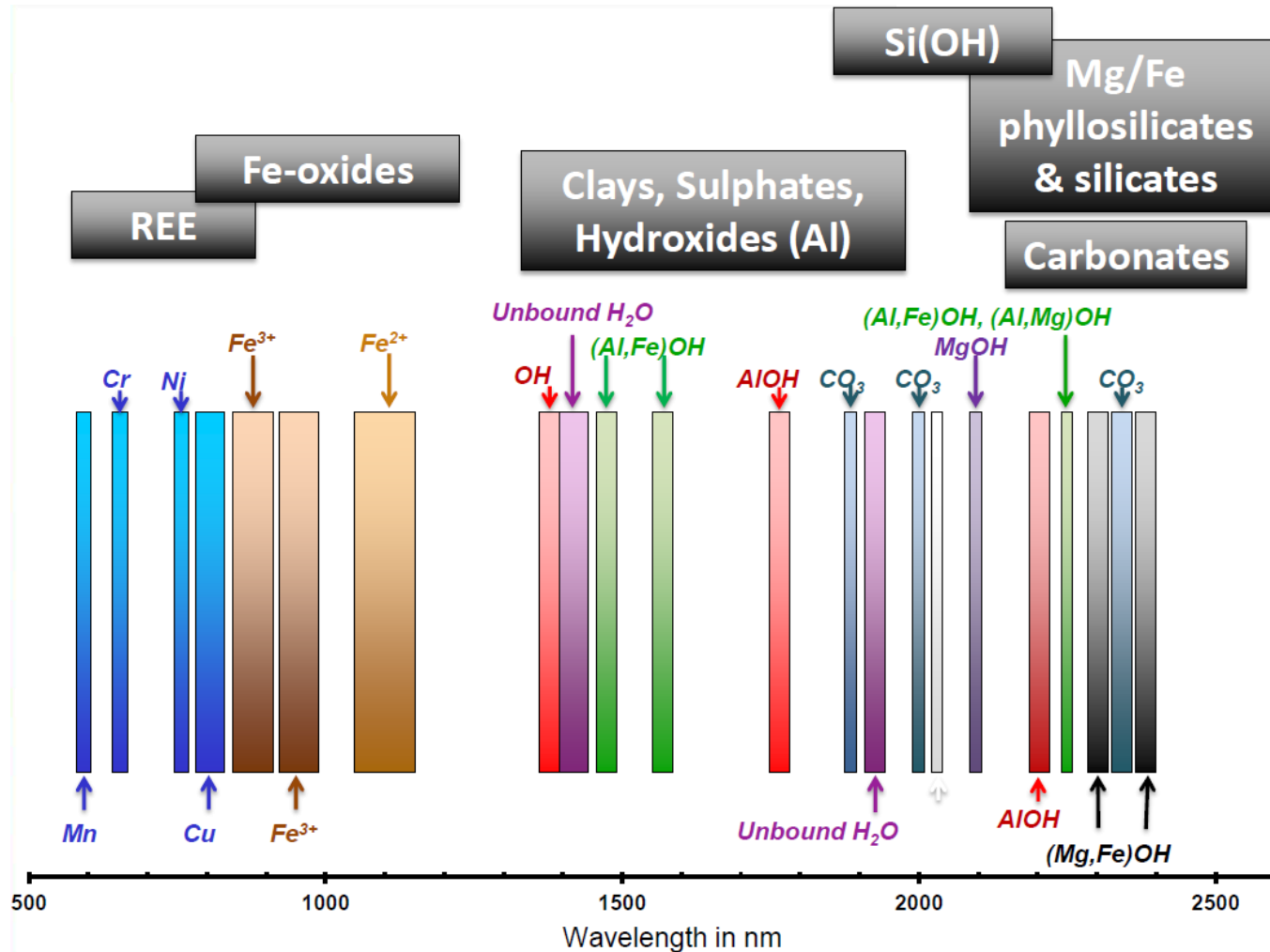


TerraSpec Halo in Exploration

- Portable mineral identifier (350 to 2500 nm)
- Fast measurement (10-15 sec)
- Has on onboard library of 150 minerals
- Reports relevant spectral scalars (like crystallinity of certain clays, or the position of various absorption features.
- Useful at all stages of exploration & mine development. Main use is to vector to using mineral transitions



Spectrally Active Minerals



Halo onscreen mineral
ID and scalar report



Case Study

HEG Exploration Services → Newmont Lake – Burgundy Ridge (2019)



Western Alteration Zone:

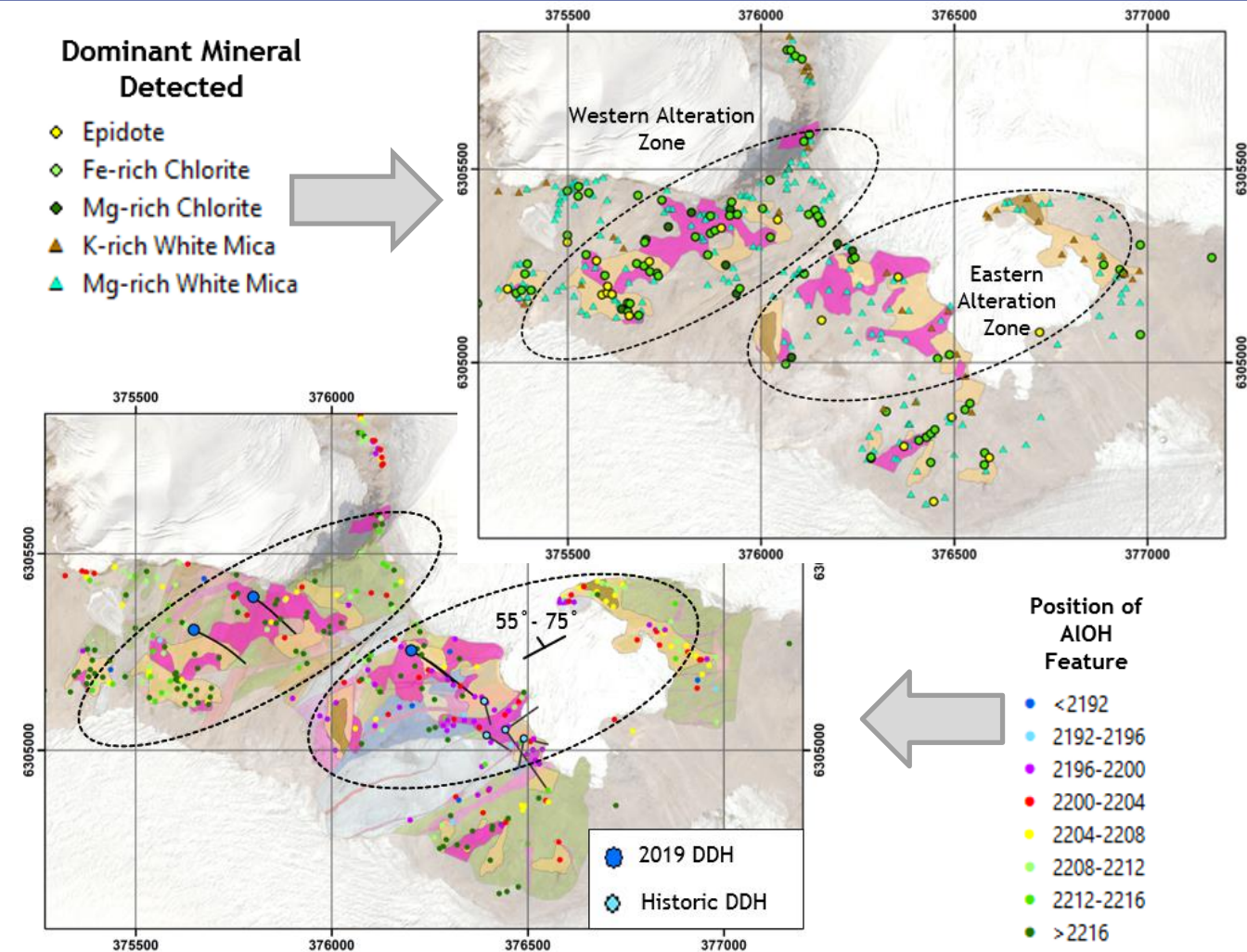
- Chlorite-Epidote-White Mica dominant alteration
- Longer wavelength AIOH features of white mica
- Interpreted distal alteration setting

Eastern Alteration Zone:

- White mica with a mixed K-rich, Mg-rich signature.
- Overall shorter length AIOH signature.
- Interpreted proximal alteration setting.

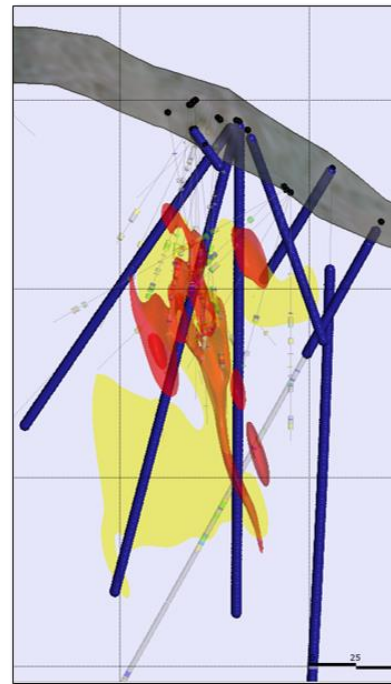
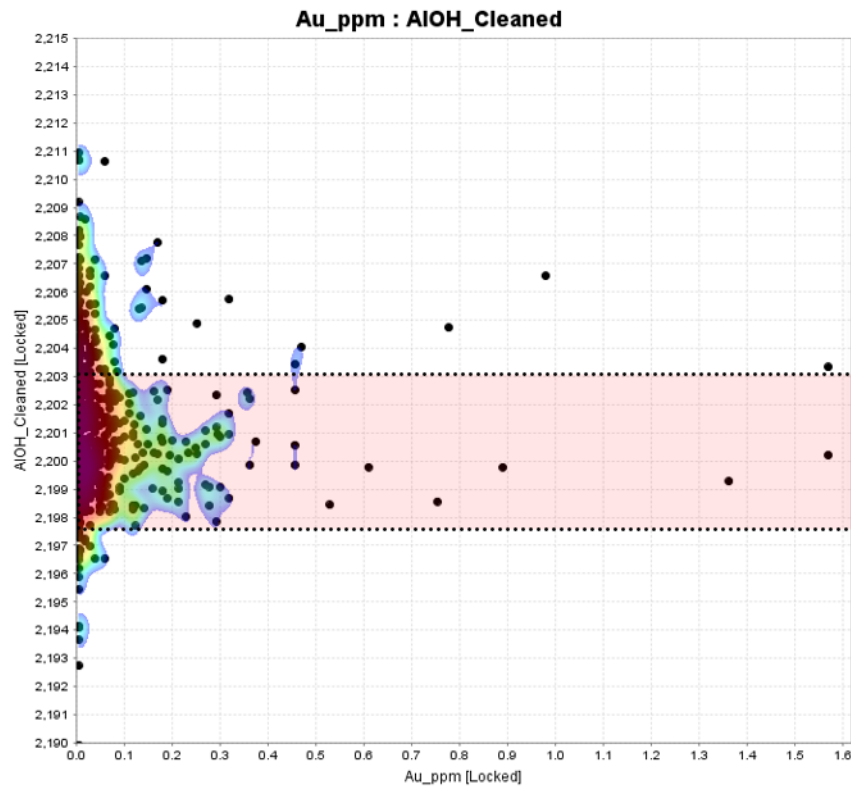
Drilling Planned in both areas:

- Western Zone – Deeper testing with steeper holes.
- Eastern Zone – Previous drilling along edge of alteration, large untested portion of alteration system warranted further testing. Shallower holes planned.

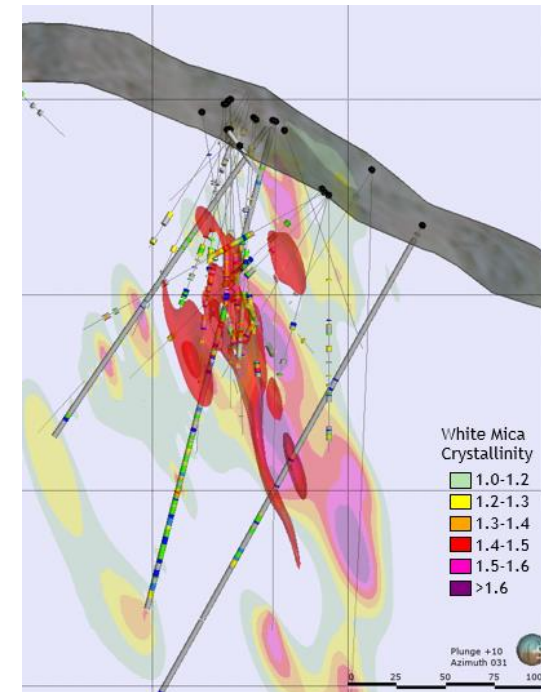


Case Study

HEG Exploration Services → Newmont Lake – Northwest Zone (2019)



Grade



White Mica Crystallinity

A new tool for alteration mineralogy



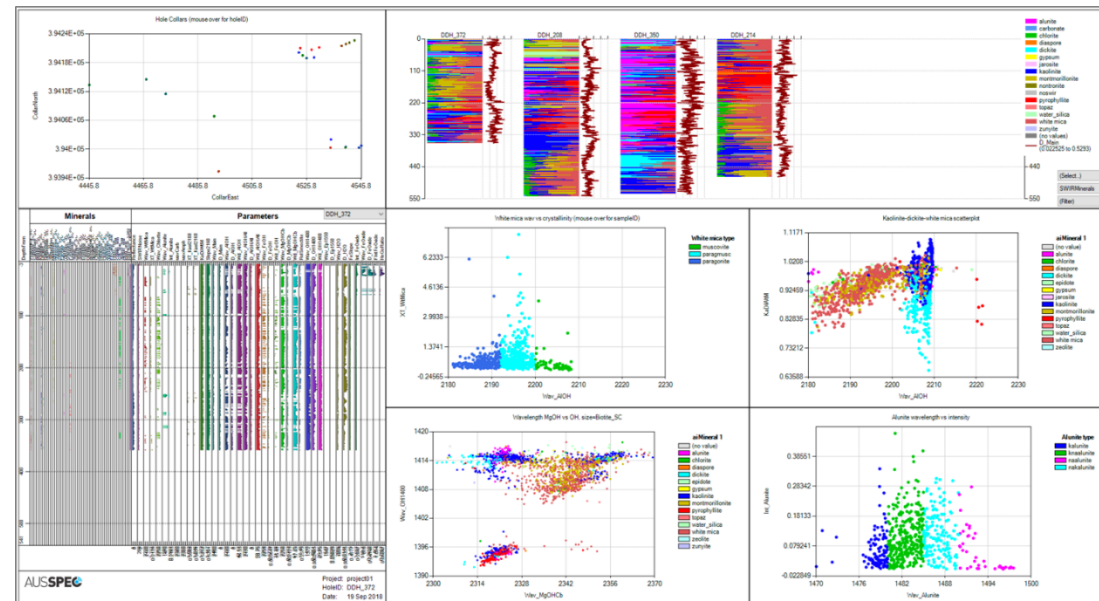
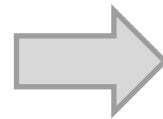
AUSPEC

aiSIRIS → ai Spectral InfraRed Interpretation System

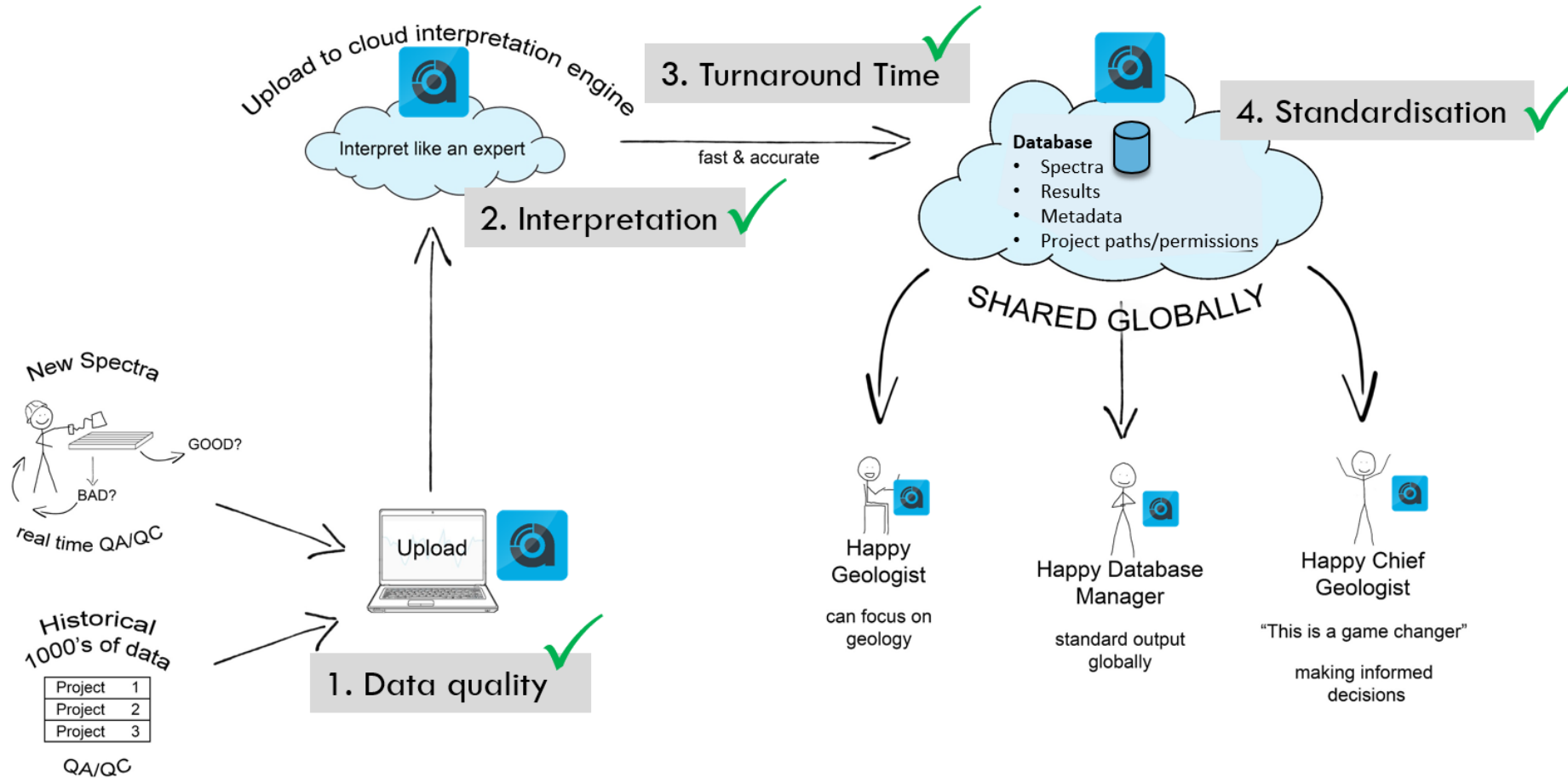
aiSIRIS is currently comprised of:

- aiSIRIS Cloud: AI Interpretation engine, database, accounts
- aiSIRIS Desktop: User interface for customers to upload/sync, results display

aiSIRIS Desktop
“View” tab

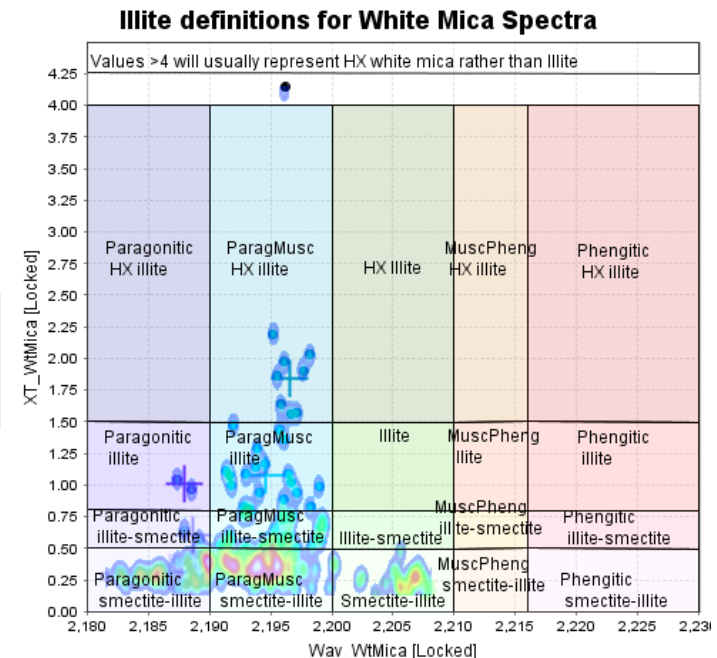


A new tool for alteration mineralogy



Data Integration

- Analysis of aiSIRIS spectral data with provided diagrams
- Integration with other types of data (e.g. XRF, XRD, laboratory data, geophysics, physical properties of rocks)
- Multivariate analysis, supervised and unsupervised
 - K-means clustering
 - Self-Organizing-Maps
 - Principal component analysis
- Real-time connections with
 - Leapfrog,
 - GOCAD
 - Geoscience ANALYST



The New TerraSpec Workflow

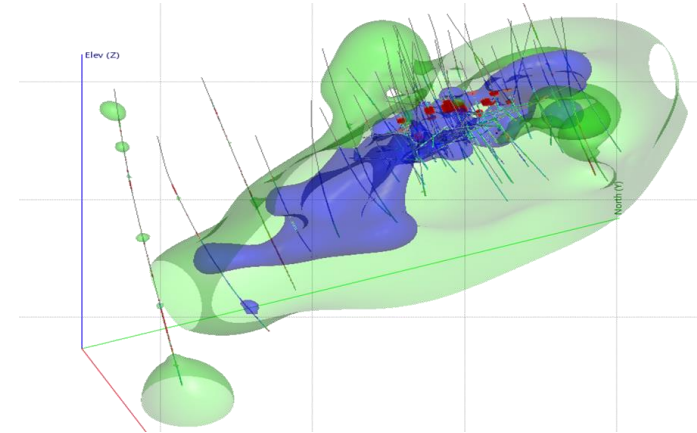
Halo > aiSIRIS > ioGAS > Leapfrog



Immediate
Data collection,
mineral identification
and scalars



Spectral QAQC
Standized plots /
viewing templates
Secure data sharing

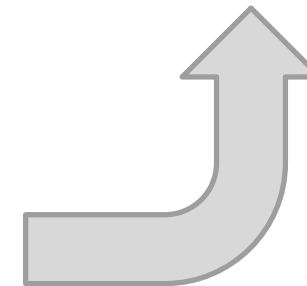


Multidisciplinary Intergration



leapfrog®

FAST, DYNAMIC GEOLOGICAL MODELLING



Thank you!

Christopher Butz
Product Specialist
E: chris.butz@imdexlimited.com
M: +1 604-790-6006