Transforming Safety
Applied Technology Underground

Presented by:
Mike Campigotto,
President SafeSight

SafeSight

Transforming Safety

SafeSight is an innovations Company that develops and provides cutting-edge solutions to the Mining industry.

SafeSight's solutions dramatically increase safety by keeping people out of harm's way all while enabling the collection of real time data.

The actionable data collected by SafeSight's solutions provide Mining companies valuable insight into their planning, operations and efficiency.

SafeSight

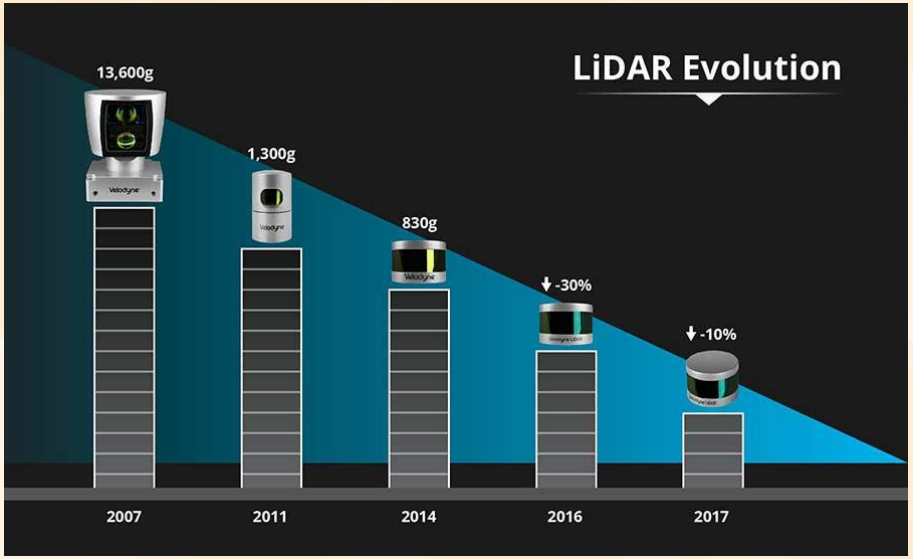
Transforming Safety

We look to transform the level of safety through our products and services in area such as:

- Survey
- MRC Development
- Shaft Maintenance
- Post Seismic Assessment and measurement
- Emergency response
- Vent and Raise investigation and planning

The New Status Quo - Rapid Evolution

- The rapid rate of technical evolution (smart, smaller and cheaper) allows for dramatic change
- It has the power to create a paradigm shift in any industry (safety, production and productivity).
- The application underground is ripe with safety transformational opportunity.



Rapid Evolution = Paradigm Shift

The power of rapidly evolving technology means it can be transformational. SafeSight has demonstrated underground transformation of safety while simultaneously:

- Reducing the risk and exposure of workers to injury
- Gathering real time data faster and of high quality enabling better decisions
- Sharing mining intelligence anywhere at anytime
- Transforming a workforce by ensuring adoption of the technology

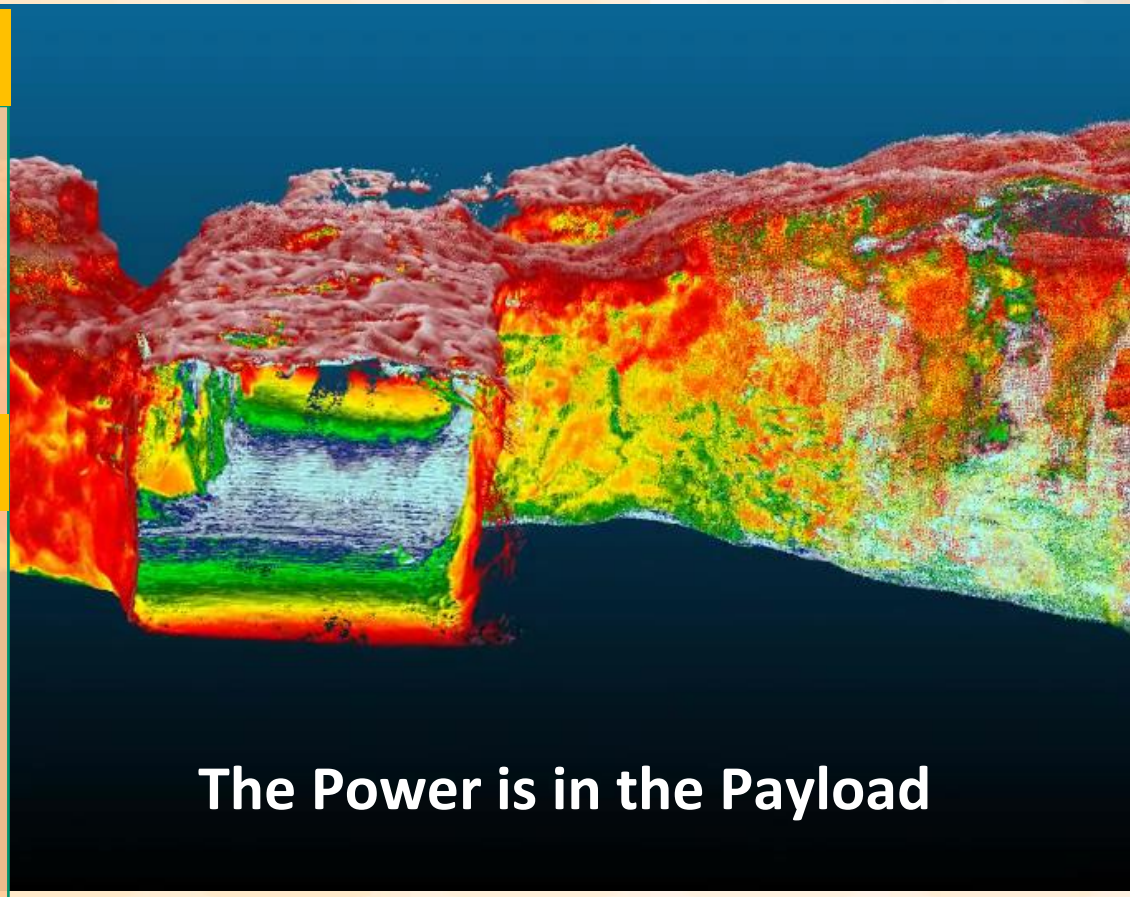
Current State of Technology

Data Collection

- HD Video
- 3D mapping
- Photogrammetry

Core Capabilities

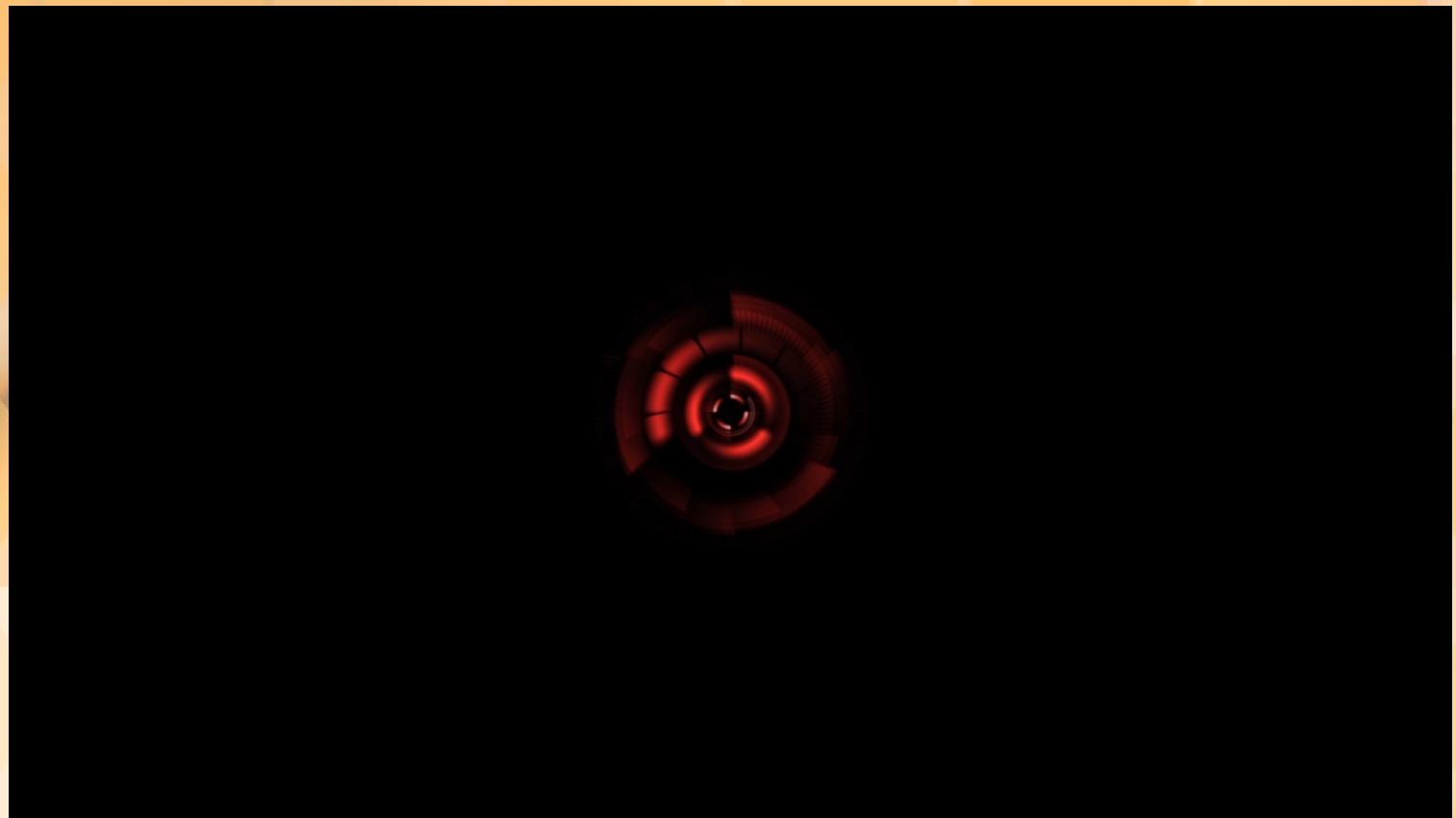
- Geo referenced post flight
- Obstacle avoidance
- Level 1 and Level 2 autonomous flight
- Network Connectivity
- BLOS operations



Drone Application - Survey

Workers to inspect, assess and create 3D models from a safe and secure location.

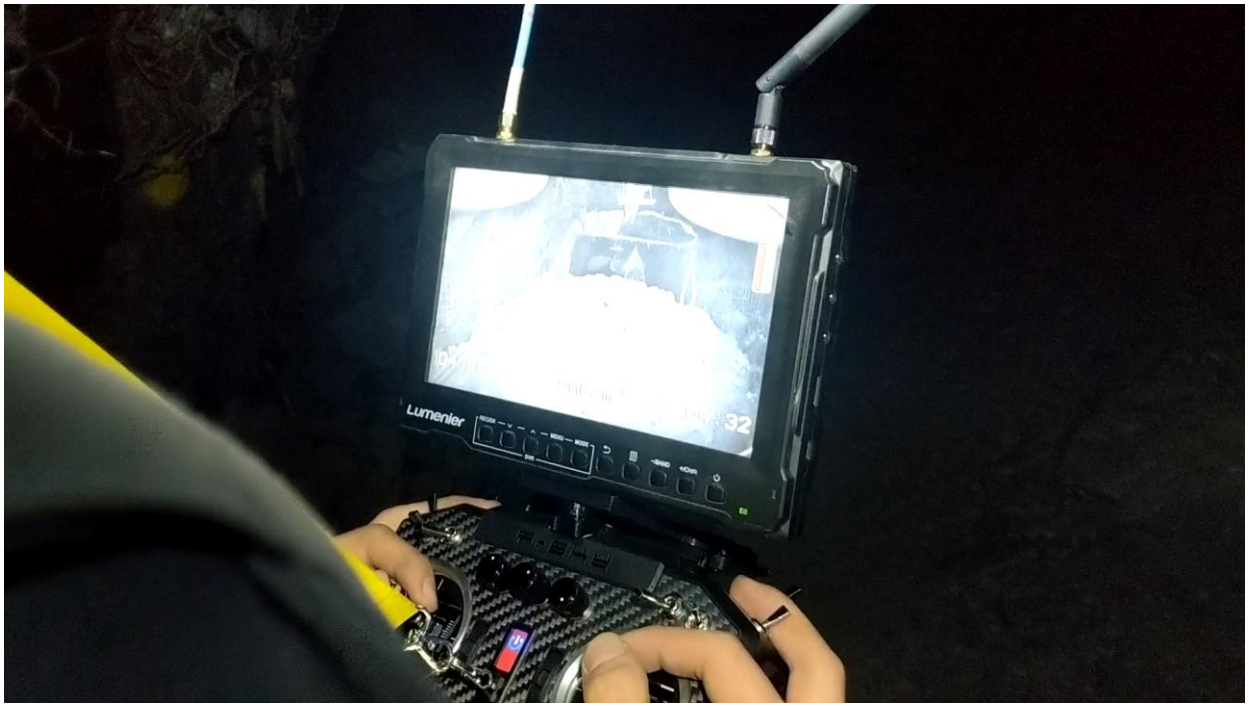
Done in half the time and gather 40% more actionable data.



Safety Impacts - Survey

Workers operate from a point of safety and removed from harms way.

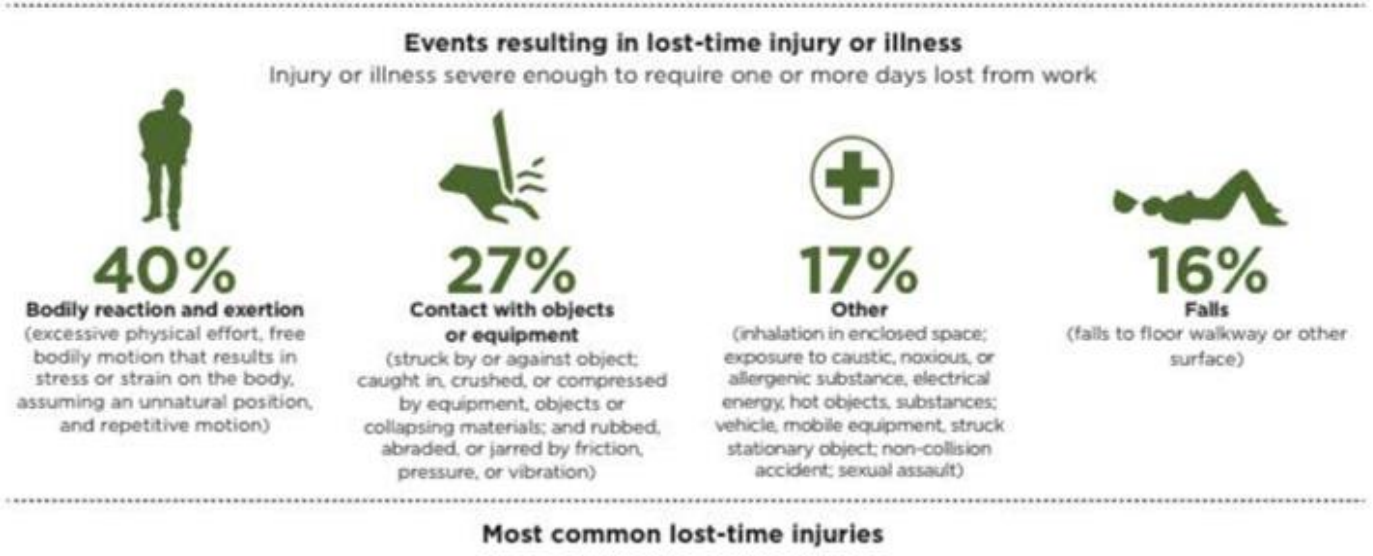
Reduced physical stress: less equipment, lighter requires less physicality to deploy and operate.



Safety Implications - Survey

40% of lost time injury or illness were the result of Bodily reaction and exertion.

As a survey worker transform to this new form of data collection, so does their exposure (limiting) to these types of injury.



Operational Results - Survey

- Crew capacity can double with no change in staffing.
- Crews can now survey in areas that where not safely accessible
- Crews can scan stopes multiple times during development to better monitor over/under scenarios

Drone Application - FOG

Assess the impacts in implications of a Fall Of Ground is high risk but critical work.

This data allows for repair and remediation

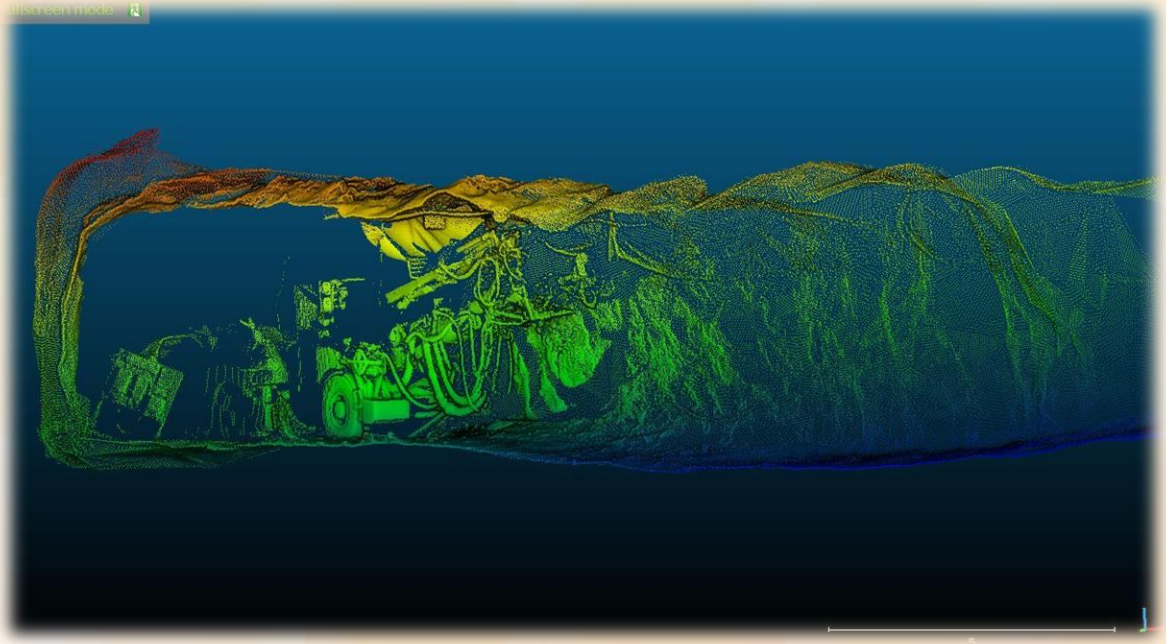
Safety Impacts - FOG

Assessment, Measurement and root cause can be done with no exposure to the worker

Safety Implications - FOG

More data of the incident means:

- Clearer and more accurate remediation to prevent reoccurrence
- Apply lessons learned for prevention in other areas
- Create a safer working environment



Operational Results - FOG

- Ground Support and Mine Engineers have 50% more analytical data
- Operation can be restored 30% to 50% faster than non drone supported investigation

Drone Application - Mine Rescure

Emergency response underground:

- Injury
- Fall of Ground (FOG)
- Ventilation
- Fire
- Seismic Event

Safety Impacts - Mine Rescure

Assessment of the environment from a safe operating position

Reduced risk to rescue team by entering a known environment:

- Air quality
- Ground support
- Thermal
- Worker location

Safety Implications - Mine Rescure

- Extended Search and Rescue times
- Rescuers operate in a lower risk environment
- Safer planning and execution of rescue and recovery tactics

Operational Results - Mine Rescure

- Extended reach and range of rescue efforts
- Faster initial response to emergency
- More accurate response to the unique conditions of the emergency

Building on Innovation
SafeSight MRC Rail Runner

Building on Innovation
SafeSight MRC Rail Runner

Supporting Section 63, - Every place where drilling and blasting is being carried on in an underground mine shall be examined by a supervisor during each work shift. R.R.O. 1990, Reg. 854, s. 63 (1).

Procedure – Raise and Face Assessment	Risk Level	Time to Complete
Current Practice – Supervisor Observation	High	30 minutes
MRC Rail Runner	Low	8 minutes

The Way Forward