



The connectivity of Maptek-Vulcan & Aegis

Mike Winfield, Maptek Pty Ltd

a better understanding of our rocks, and of
rock fragmentation



16th Annual Kenneth Finlay Memorial Lecture, October 2013

**“The geomechanics challenges of contemporary deep mining:
Technology as the pathway to increased safety and productivity”,**

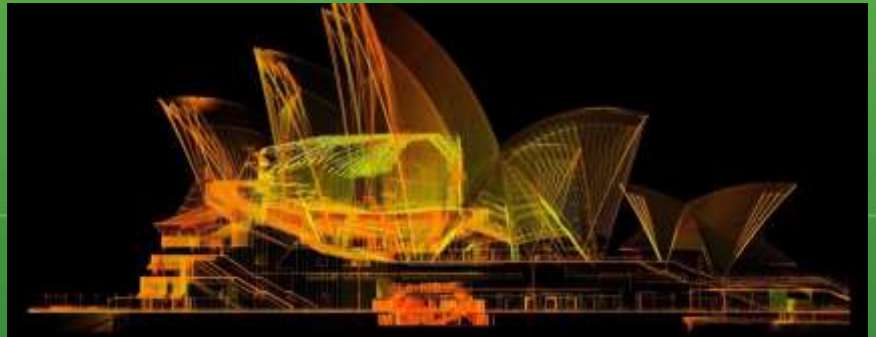
Professor Fidelis Suorineni, Chair of Mine Geotechnical Engineering at UNSW



Collaboration – 10,000+ scientists
more than 100 countries

The Hadron collider – Higgs Boson particle
Nobel Prize for Physics - October 8, 2013





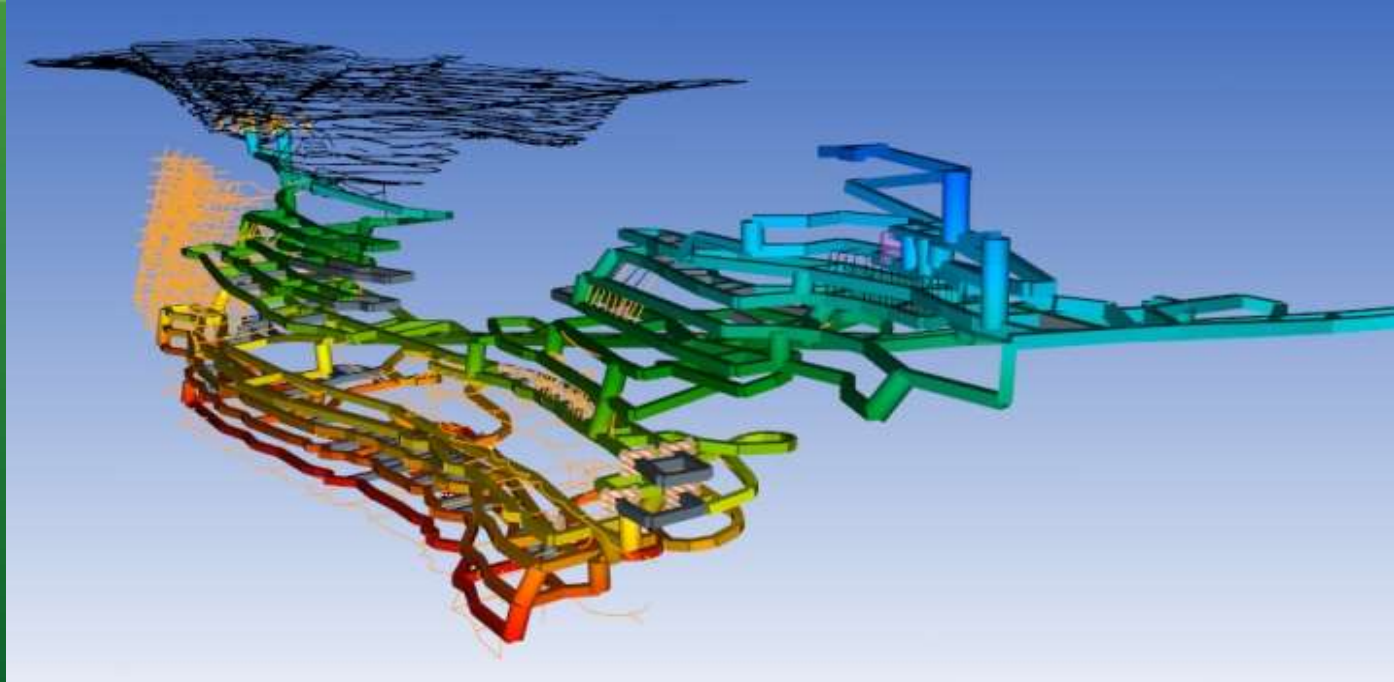
Maptek's collaboration with Scottish Ten, 2013



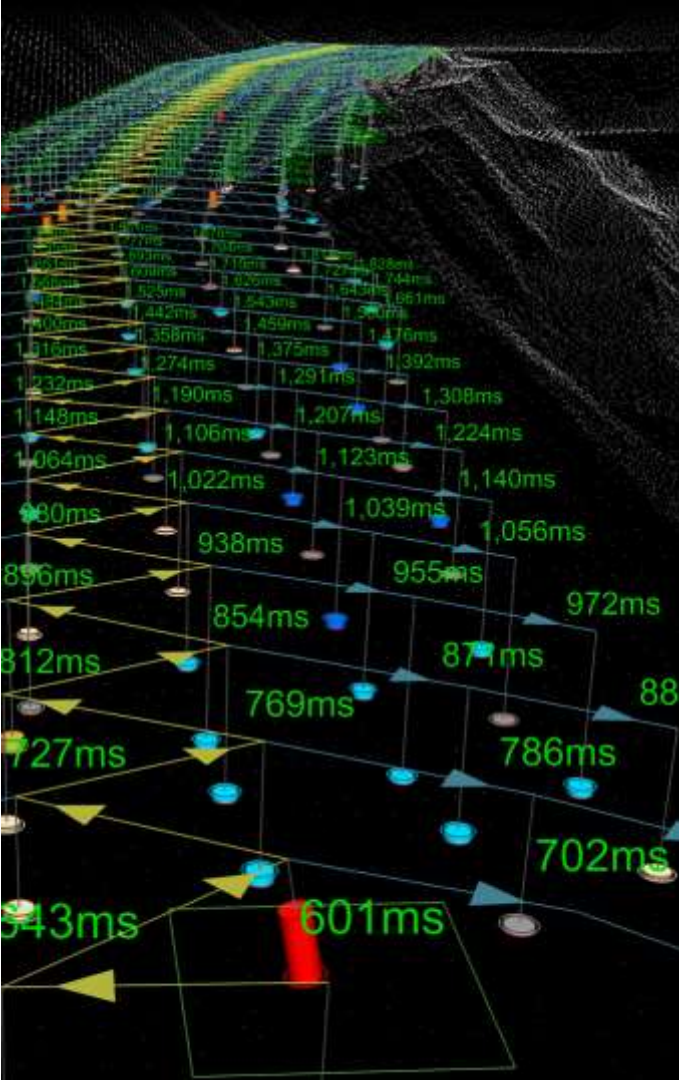
University of Adelaide Research Partners, 2014
IPAS - Institute for Photonics and Advanced Sensing



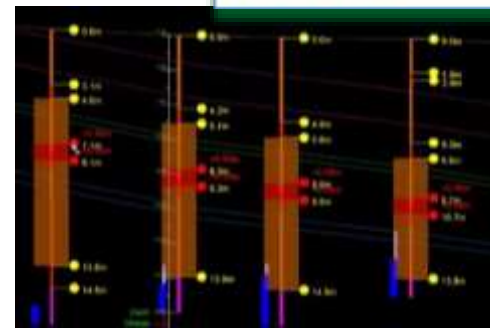
Partnering with BBE Vuma : Advanced Mine Ventilation, 2016



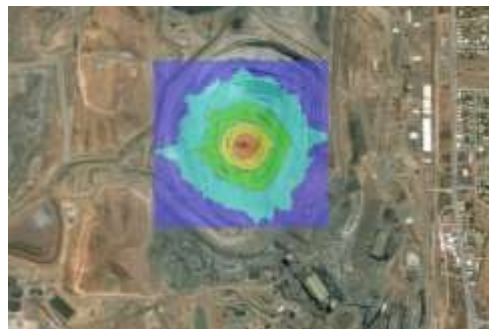
The primary focus will enable detailed data transfer between [Maptek Vulcan](#) software & [VUMA](#) ventilation simulation software.



Increase productivity



Reduce costs



Improve safety



Continuous improvement

ISEE2016_Demo02_MikeW_Comparison - Ring Sets - 175,175,254

Select Workframes Choose a View Fragmentation Statistics **Create Ring Sets** Block Model Create Blast Design Manage Databases Help

Scenario: Slope_ISEE_Demo02 RZ

Status: Ring Generated Automatically

3D View **Hole Layout View: RZ** Plan View Slope_ISEE_Demo02 Long Section View: Slope_ISEE_Demo02

Project Explorer

- ISEE2016_Demo02_MikeW_Comparison
 - Workframes
 - Voids
 - Slope Lines
 - Die Contacts or Slope Shapes
 - Blast_ISEE_Demo02_blast...
 - Polylines
 - Reference Line_Sep7th
 - Min: STRDMA
 - Die Type: DIORITE
 - Hot Rock: CONGLOMERATE
 - Scenario
 - Sizes And Values
 - Slope_ISEE_Demo02
 - Blast_ISEE_Demo02

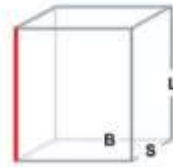
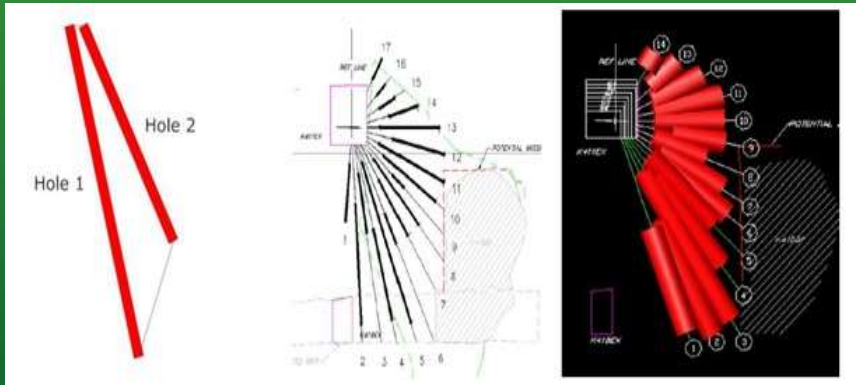
Slope Layout Table: Slope_ISEE_De...

Name	Azim	Dist	Pre L	Post L
R1	64.6	90.0		3.00
R2	64.6	90.0	3.00	3.00
R3	64.6	90.0	3.00	3.00

Hole Listings Table: RZ

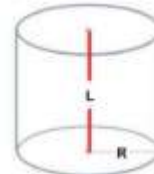
ID	Hole Length	Hole Diameter	Rotation	Tilt	Collar Spacing Previous	Collar Spacing Next	Toe Spacing Previous	Toe Spacing Next	Horiz. Pivotal Offset	Type	Collar Offset	Toe Offset	Explosive	Charge Diameter	Charge Collar	Charge Length	Charge Toe	Primer	Blast
1	3.26	100	110.2	90.0	1.61		3.00	3.00	-2.09	Planned	0.00	0.00	TITAN 7000 RL	100	0.50	2.76	3.26	3.01	Blast_ISEE_Demo02
2	4.55	100	-137.7	90.0	1.61	1.22	3.00	3.00	-2.09	Planned	0.00	0.00	TITAN 7000 RL	100	0.50	4.05	4.55	4.30	Blast_ISEE_Demo02
3	11.54	100	-159.2	90.0	1.22	0.61	3.00	3.00	-2.09	Planned	0.00	0.00	TITAN 7000 RL	100	0.50	11.04	11.54		Blast_ISEE_Demo02
4	27.81	100	-169.8	90.0	0.61	0.28	3.00	3.00	-2.09	Planned	0.00	0.00	TITAN 7000 RL	100	2.38	25.52	27.81		Blast_ISEE_Demo02
5	34.90	100	-175.4	90.0	0.28	0.22	3.00	3.00	-2.09	Planned	0.00	0.00	TITAN 7000 RL	100	0.50	33.30	33.90		Blast_ISEE_Demo02

Polygonal v Radial v Ellipsoidal Break Geometries



Rectangular Volume – 1
 $V = BSL$; (2)

L = explosive column height
 S = spacing
 B = burden



Cylindrical Volume – 2
 $V = \pi R^2 L$; (3)

L = explosive column height
 R = radial break



Prolate Ellipsoid Volume – 3
 $V = \frac{4}{3} \pi \times \frac{1}{2} L \times R^2$; (4)

L = column height
 B = burden, S = Burden, $S = B = R$

Figures 1, 2 and 3 illustrating some geometries to define powder factor.



Aegis Underground Drill & Blast

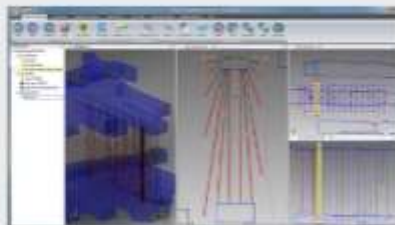
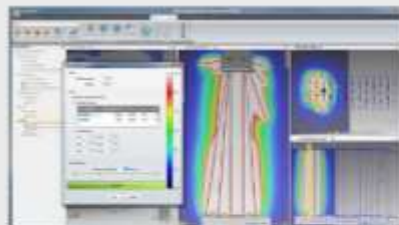
Efficient and effective underground drill & blast analysis and design.

Quickly generate underground longhole drill layouts, manage blasts, and conduct advanced blast analysis and optimisation.

What is Aegis?

Aegis allows engineers to produce underground drilling and charging layouts, complete with costing, in seconds.

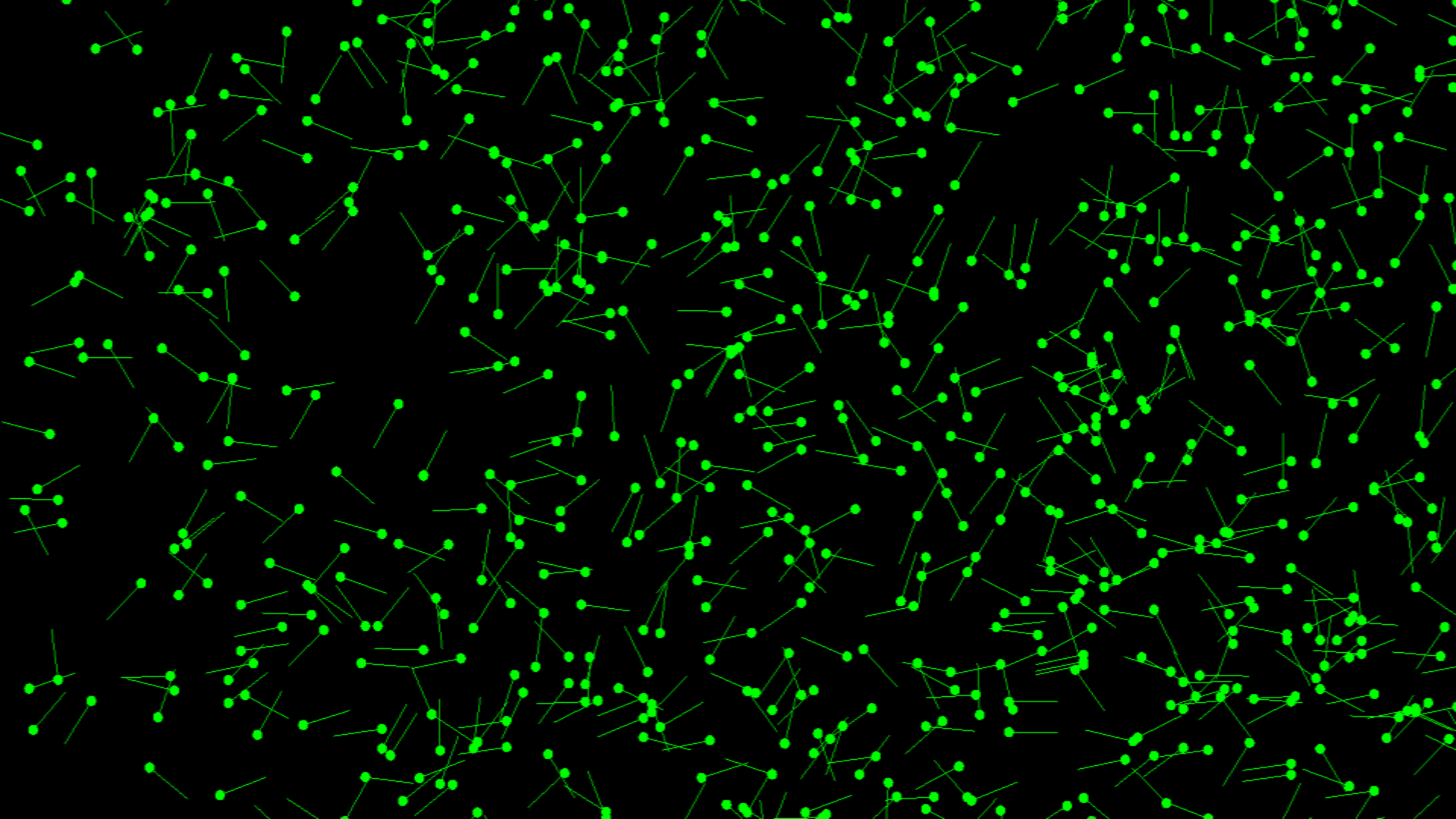
- Conduct multiple blasting scenarios quickly with costs calculated for a variety of blasting strategies and the results compared.
- Generate reports to print drill and blast plans on paper or export them to REVIEWS format for upload to compatible drill rigs.
- Improve blast quality break and fragmentation results, increasing efficiency and reducing downstream costs.



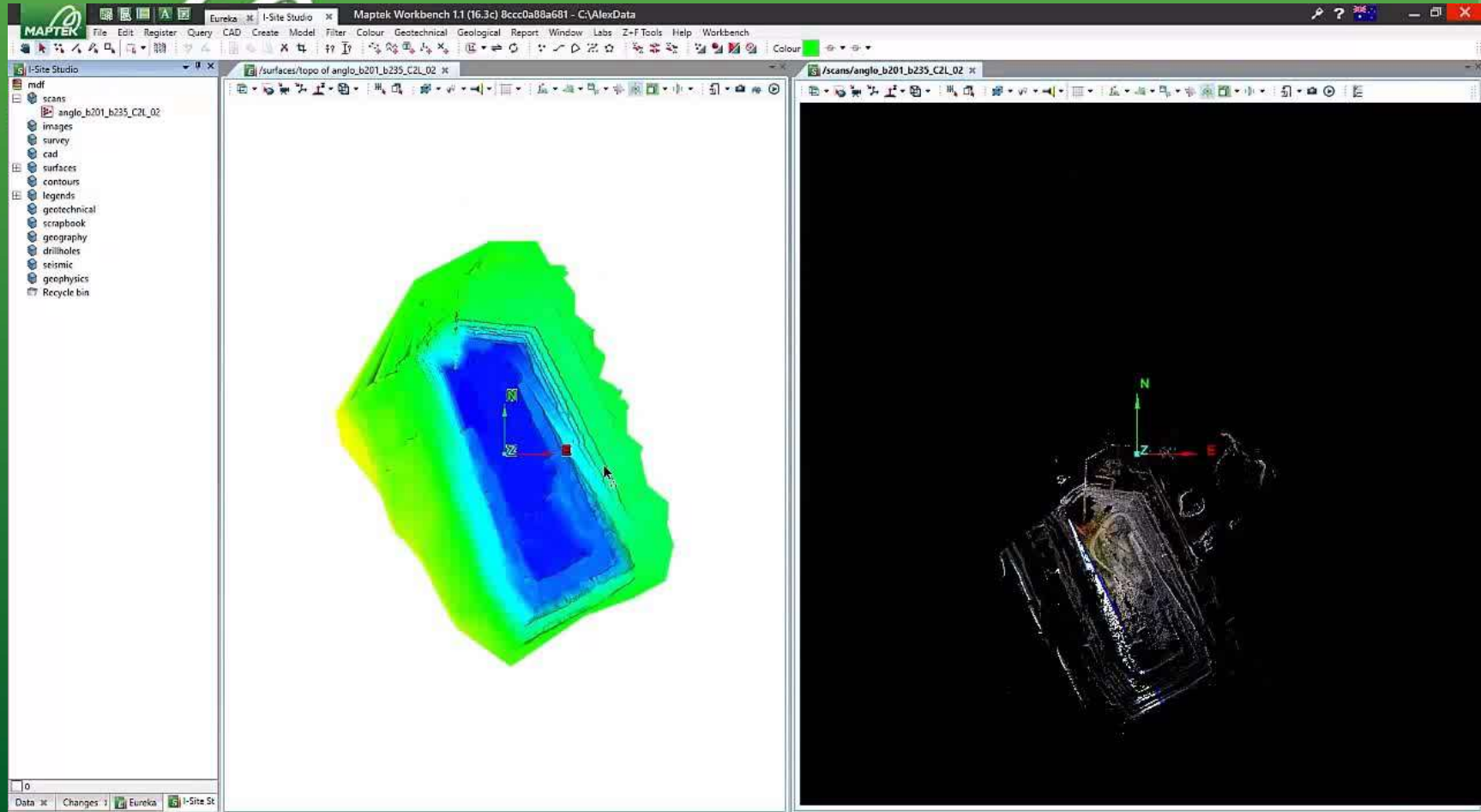
Benefits

- Significant time savings compared with conventional design software
- Rapidly create, iterate, and compare multiple drill and blast scenarios, including cost
- Inbuilt plotting and reporting tools and REVIEWS data transfer
- Import surveyed holes for comparison with planned holes
- Reduce costs associated with overbreak, underbreak and material handling

[Find out more](#)



Maptek Workbench Integration PDT : Eureka & I-Site, 2016





Maptek Roadmap



Maptek - Workbench



Vulcan



I-Site Studio



BlastLogic



Evolution



I-Site Hardware



PerfectDig



Eureka



Sentry

Partners



Aegis



3D Dig



Vuma-3D



Acknowledgements, References & Thanks

Prof F Suorineni “The geomechanics challenges of contemporary deep mining: Technology as the pathway to increased safety and productivity,,

Verbatim. Prof J ‘Blue’ Evans, Head of Gartrell School of Mining, Metallurgy and Applied Geology, SA Institute of Technology.

D Roy, T Williams, C Preston, “Underground Stopes Drill and Blast Designs Optimisation Program”

C Preston, T Williams, I Lipchak., “Modeling of Dynamic Break in Underground Ring Blasting”, ISEE 2015 Paper



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