

# MINING SOFTWARE Jeff Whittle

You know you have made a difference in the world when your family name becomes a verb. This has happened in the mining planning world and the individual in question is Jeff Whittle - the man who has made a revolutionary impact on the mining industry in pioneering strategic mine planning. For well over three decades, His innovative thinking has made an impact on the vast majority of mining companies and mining professionals involved in the evaluation of mining deposits and the planning of mining operations.



Whittle first got into mining in 1979, when he joined the then Newmont Australia, now Newcrest. He and his wife Ruth started Whittle Programming in 1984 when he saw the need for an implementation of the Lerchs-Grossmann (two more inductees) algorithm, and figured out how to create it.

He began writing the Whittle software strategic mine planning software. Over the next 16 years he developed a series of mining optimisation packages, including Whittle Four-X, Opti-Cut (inspired by Ken Lane's theories on cut-off grade optimisation) and the Milawa algorithm (a creative solution to the difficult non-linear mine scheduling problem). Whittle Programming was sold in January 2002 to Gemcom Software International, which is now known as GEOVIA following its acquisition by Dassault Systèmes. GEOVIA is the largest global provider of mining software.

In its nomination of Jeff Whittle, GEOVIA stated: "When we purchased Whittle Programming, its key software was known as Four-X, but for us, there was only one name that mattered - Whittle. It was the name that was known and trusted the world

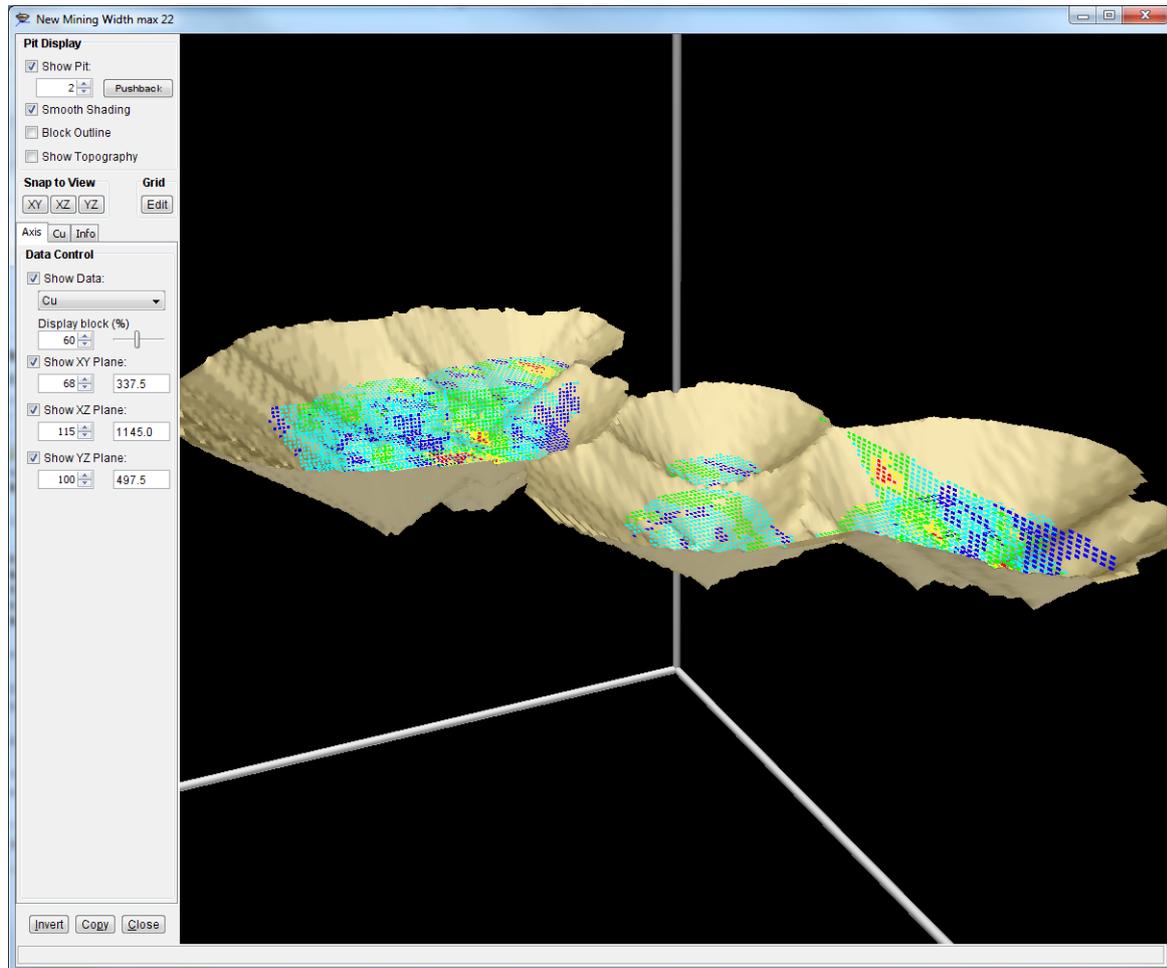
over, and which had become synonymous with strategic mine planning, pit optimisation resource/reserve estimation and support tool for feasibility studies. For us, the industry and our customers, the Whittle name equals trust; it is no wonder it is the industry's standard solution. Whittle is, and has been for years, a verb in the industry with financial institutions and investors asking project and mine owners - has your project been Whittled?"

A recent review of documents [including technical reports, PEA results, quarterly updates etc.] for public resource companies listed around the world found the name Whittle to be included in the documents of over 500 publically listed companies globally.

The Whittle software, of course, was developed to do much more than just pit and Net Present Value (NPV) optimisation and economic analysis to support feasibility studies. It takes into account the orebody, the design, operating costs and market factors such as metal prices, to optimise the life-of-mine schedule, stockpile utilisation and blends. Furthermore, it includes the ability to run hundreds of 'what-if' scenarios to find the most economically advantageous alternatives and to gain an understanding of the opportunities, risks and what the key drivers of value are for the project or operation.

Jeff's contributions to the mining industry did not just stop at having developed the standard-bearer for strategic mine planning. He played a key role in evangelising strategic mine planning, creating a platform for mine planners the world over to come together to learn the concepts behind it and the software and to share their experiences with one another. Whittle

strategic mine planning conferences began in the 1990s and were attracting several hundred mining professionals by the time the company was sold to Gemcom.



#### Whittle Four-X from Dassault Systèmes' GEOVIA

While he may have sold Whittle Programming to Gemcom, Jeff and the Whittle family through Whittle Consulting remain active in advancing mining optimisation capabilities. In fact, their partnership with GEOVIA continues on to this day. In 2010, the two companies announced that the core elements of the family's Enterprise Optimisation solution had been incorporated into GEOVIA's Whittle software in the Simultaneous Optimisation module (SIMO). This partnership brings new, revolutionary advances that will again turn the mining industry on its head.

At 83 years of age, Jeff remains dedicated to developing software on what he sees as an "interesting problem." His latest efforts have produced Prober C, perhaps his most ambitious and sophisticated software project to date. Prober C is applied by his current business, Whittle Consulting, which has demonstrated repeatedly that the Enterprise Optimisation approach, which considers multiple mining and economic factors simultaneously, can yield improvements in NPV of 5%-35% or substantially more, even when a number of conventional optimisation approaches have already been applied.

Jeff trained as an experimental physicist but started to program in 1962 and now calls himself a Computerist. Jeff is a fellow of both AusIMM and the Australian Computer Society.