LEAPFROG EDGE INTERVIEW
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Peter is a Corporate Consultant with thirty years of experience who specialises in resource estimation, mining geology and production-related issues. He is experienced in Mineral Resource estimation, geostatistics, grade control, due diligence work and is at the forefront of the application of implicit modelling technologies. Peter is a CP for gold, uranium and base metals.

What has been your involvement with Leapfrog EDGE?

I was involved in Leapfrog from the very early stages (circa 2002) and have provided developmental input since then, especially into the workflow ideas that underpin Leapfrog Geo. This involvement in development work made me ask the question "why not include an estimation module in Leapfrog?" Leapfrog Geo was already doing estimation via the RBF algorithm and often providing the client with the Resource Domain Model that underpins any MRE, so it was an obvious and natural next step to move into the Resource Estimation area. I think many clients were asking the same question.

To ensure they had a leading product Leapfrog canvassed many experienced resource practitioners around the world and further developed their in-house capability through the acquisition of geostatistical consultancy (QG), now known as Expert Services. They took the time to ask us what we would like to see in a next generation estimation package, and carefully assessed this knowledge and expertise, rather than supplying a Leapfrog only vision.

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I personally spent many hours with the developers working on difficult areas such as the presentation of variography. Variography underpins any geostatistical estimate but in many packages it is difficult to perform. We spent much effort simplifying the process to make this difficult procedure accessible and performable by most geologists, without diluting the product just to make it easy. The result was a very intuitive variogram analysis tool that is both powerful and easy to use.

Other things in estimation have also been simplified, especially the creation of block models. All of this has been put into an easy to follow and auditable workflow that makes for more transparent and updateable estimates.

Naturally, Leapfrog EDGE will not be immediately adopted by all resource practitioners; they are notoriously conservative, for good reason, as they are the guardians of the company assets. However, I believe that the more open minded will immediately see the advantage of using Leapfrog EDGE and find it difficult to go back to other software. The main reasons will be the time and simplicity in producing robust estimates that are comparable in quality with existing software. Once more widespread I expect Leapfrog EDGE will become a world leader in estimation, just as Leapfrog Geo is in modelling.

What do you think is the biggest benefit of Leapfrog EDGE?

The real benefit of Leapfrog EDGE is its ease of use. It's easier and less tedious than other software and is well designed. Current resource estimation software is very old technology now, it's difficult to use and it's either missing things or you have to write scripts or programmes to do some of the specifics. Leapfrog EDGE has all of the industry standard features that need to be there but in an environment that is very user friendly. The software dramatically reduces the learning curve of doing resource estimation. That is a huge benefit but it also delivers time savings when doing a 'comparable' estimate. It's far easier and quicker in Leapfrog EDGE and you can do multiple realisations, not just one.

What are the most valuable features or tools in Leapfrog EDGE, compared to other options on the market?

It's the same tools effectively, (with a few new innovative exceptions), but now they're all in one place and are much easier to use. And if you're carrying out analysis and your tools are easier to use your mind is concentrating on the problem at hand and not the problem of mastering the software.

Leapfrog EDGE opens up the ability for more people to carry out resource estimation as long as they follow industry standard established guidelines and practices. This could be better for estimation as often the mine geologist will know the data and know the geology of the mine best. Leapfrog EDGE has the potential to democratise resource estimation so long as they follow accepted industry practice and procedure in developing any estimate. A poor understanding of the principles of resource estimation will lead to poor estimates no matter how good the software is.

Have you used Leapfrog EDGE for projects with clients?

I've compared Leapfrog EDGE to other resource estimation software and the results come out the same but the way you do it is easier and far more intuitive. Leapfrog EDGE takes less time to become proficient, the learning curve is weeks

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compared to several months or years for other software. This does not mean it has any less functionality, it has most of the tools of other packages plus some additional ones.

How has resource estimation or geostatistics changed over the last 10 years?

It's become a lot more sophisticated. The market has moved from just using general mining packages to using niche packages that specialise in a specific area. Leapfrog EDGE combines many of the tools from these specialist packages into an all round estimation package. They have learnt from the mistakes of others and listened to what the resource geologists need. Examples of this include automatic Swath validation plots, Automatic Boundary Analysis plots and improved ways of interpreting variography.

How do you think it will change over the next 10 years? Or should it change?

Industry needs more dynamic estimation models. A single static model for the life of mine is no longer good enough. Management want to test risk in a project or estimate. Only having one model that takes months to update is a barrier to this process. Leapfrog EDGE offers the opportunity to perform multiple realisations of an estimate in a relatively short time frame compared to other software. Also some of the preconceived ideas of requiring a block model could be changed and the ability to perform unfolded estimates in complex folded ore bodies could become a reality in the very near future.

What is one part of the resource estimation process that is often overlooked?

The geology. People put a lot of effort into geostatistics and they make fundamental

mistakes as they don't understand the geology. Combining the power of Leapfrog Geo with a fully integrated estimation workflow means the practitioner can give stronger emphasis to providing a robust geological model to underpin the estimate.

Geostatistics will not save you if your geological domains are incorrect. Hence the acronym EDGE (Estimation, Domaining and Geostatistical Evaluation), with the emphasis on domaining. Working directly with Leapfrog Geo means resource domain models can often be updated in minutes as new data becomes available rather than days or weeks. Despite the improvements in efficiency of these new tools the fundamental input and understanding should be through good geology.

Can you give an example of one part of the resource estimation process that gets a lot of attention even though it doesn't contribute to the end result?

The little tweaks and widgets don't necessarily provide a better resource estimate, they are nice to have but not essential, practitioners often tinker around the edges at expense of the big fundamental changes that could be game changers. Following the geology is a prime issue. If Leapfrog EDGE was to incorporate features such as using structural trends in ordinary kriging and unfolding the variogram these will have a far greater effect than say theoretical minimum number of samples used to estimate a block. If estimation is steered more toward what is geologically realistic than being driven purely by theoretical mathematics the more robust estimates will be.