About VibSim: VibSim AS is an Oslo-based technology start-up in the area of machine learning-based software for CBM. Founded in 2013, it has been through a long gestation period, but is today focusing on oil and gas, wind power, transport and infrastructure. It is owned by Via Maskin (60%), and an external investor (40%). Aasmund Barikmo, the founder and CEO of VibSim, is also 100% owner of Via Maskin.

About Crisp Ideas: Crisp Ideas AS is an Oslo-based advisory firm in the area of strategy, business development, sales, and funding for early-phase technology companies with aggressive global ambitions. Founded in 2004, it has today three practice areas: management consulting, quantitative analysis (including decision analysis), and digital channels. Grim Gjønnes is the General Manager of Crisp Ideas. For more about Crisp Ideas, see www.crispideas.com.

Strategic issues: In 2014, Aasmund Barikmo in VibSim was facing some serious decisions: whether or not to invest in the case, on what market to focus, whether to partner with what company, whether to seek additional funding from new investors and in case what type of investors, and generally how to go all in or not. He was also facing serious some major uncertainties, including what was the probability of technical success, what was the market, and what was the size of the addressable market.

Ultimately, Aasmund also wanted to know what his share in VibSim was actually worth, with or without an industrial investor.

Methodology: Grim Gjønnes in Crisp Ideas suggested that one could apply decision trees for valuating Via Maskin's share, as such trees explicitly models the uncertainty, the optionality, and the complexity inherent in the sequence of decisions and uncertainties that aggregate to form a commercialization process for a high-tech start-up.

There are of course a number of alternative approaches to determining the value of such business opportunity, typically based on deterministic discounted free cash flow (DFCF), various types of multiples, or in the extreme, real options theory. None of them provided the capability for modelling the complex sequence of decisions and uncertainties that Aasmund and VibSim faced.

Equipped with DPL Professional from Syncopation Software, Aasmund and Grim produced a full decision tree in DPL during two half-day workshops plus some individual work. The fully expanded tree had around 8-9m end nodes, each of them with a different evaluation function. The DPL software automatically calculated the optimal decision at any point in the tree, that is, the decision that maximizes expected future DFCF from VibSim to Via Maskin.

Client benefits: The DPL software calculated of course the optimal decisions for Aasmund, and the value of Via Maskin's investment in VibSim. However, subsequent discussions between Aasmund and Grim revealed that client benefits were really about a better qualitative understanding of strategic issues like:

- How to price VibSim's products?
- To whom in the value chain (manufacturers, control system providers, asset owners, or service providers) to offer these products?
- What is the addressable market, and how big is it?
- Is this an incremental or disruptive innovation?
- What will over time happen if an industrial investor gets a significant ownership share?

- What are critical decisions, uncertainties, and parametric sensitivities facing Aasmund and VibSim?

Quote from Grim Gjønnes, Dr. Ing., General Manager Crisp Ideas: *"Using decision tree methodology and DPL from Syncopation Software have allowed me to differentiate myself in the space of strategy advisory firms, by driving non-trivial strategic insight, as we have seen in this case, or in other cases in M&A space by driving theoretically sound justifications for higher valuations than those obtained by standard DFCF analysis in Excel by incorporating the value of optionality and reduced discount rates. It has been a pleasure working with the guys in Syncopation on addressing certain technical issues with the original DPL models produced for VibSim."*

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