Tackling the trade-off between uncertainty and complexity in techno-economic modelling of wireless networks and services

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The telecom sector plays an important role in today's society. The decision making in this industry should be based on well-founded analyses. Since businesses in this and other industries along are ever more reliant on complex technology, the decision making process has stopped being the sole privilege of the economist. Nowadays techno-economic valuation tools come into play which combine the necessary technological know-how with firm business logic into multidimensional cost benefit models.

Despite their importance, these models are not perfect. The designer of network valuation models is confronted with a trade-off between uncertainty on one hand and complexity and effort on the other. Data is often hard to obtain due to its confidential nature and certain things have to be accounted for that are difficult to model: market interactions, user adoption, component price evolution, etc... It makes the decison on what level of detail to adhere in the models a tough one.

Having shown that there is a trade-off between predictive power and complexity of a model, the main goal of the research is to tackle this problem and avoid the guesswork involved in deciding the techno-economic model's level of detail. Concretely, the aim is to create reusable and parsimonious techno-economic models that require only a minimum of project specific information to yield accurate results. The aim is in other words to find the optimal point in the aforementioned trade-off.

This would allow the researcher / decision maker to allocate more of his resources towards examining the impact of the decision variables and comparing different scenarios rather than losing time on the actual modelling.