

# Flexibility and competition in the telecom sector: an integrated model for techno-economic evaluation

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## I. RESEARCH GOAL

The telecommunication sector is characterized by a constant and rapid evolution. A thorough techno-economic feasibility analysis is required before approving a project. However, the underlying assumptions of the most known evaluation tool, the Net Present Value (NPV) analysis are not consistent with the reality actors are confronted with.

The most important shortcoming in the NPV model is the absence of two aspects. The first is the flexibility to act against uncertainty in future evolutions. The second one is the ability to act against competitive reaction.

The goal of this doctoral research is building a coherent framework for techno-economic evaluation, applicable on realistic telecom cases.

## II. BUILDING ON EXISTING THEORIES

The first steps in implementing managerial flexibility have already been taken. The Real Option Theory (ROT) allows implementing initial flexibility. For example, when the uptake of broadband internet is higher than expected, providers can decide to expand their network to new zones faster. As such, management can change the initial project path during the lifetime of the project.

In the concentrated and highly competitive telecom market, competition cannot be neglected. In Belgium, when one player decided to offer unlimited download capacity, the other was forced to follow. Game Theory

(GT) can formulate an answer to this shortcoming. Still, the application of GT to realistic case poses considerable practical problems.

A study of ROT and GT on telecom cases resulted in several publications [1, 2]. The first steps in combining ROT and GT have already been taken. However, examples are mainly stylistic, which raises questions about the applicability of these approaches on realistic cases. In the next step we will extend initial flexibility with competitive reaction and vice versa in the techno-economic analysis of a wireless network. From the comparison of both approaches, insight in the dynamic interplay of these factors will be gained. This will result in a framework for extended techno-economic evaluation.

## III. MULTIPLE APPLICATIONS

This research will result in an integrated framework for techno-economic analysis of realistic telecom projects. Applying this framework to other cases in the later steps of this doctoral research will allow generalizing the framework. The framework able of implementing competition and flexibility will benefit all actors in the telecom market.

## References

1. Tahon, M., et al., *Parking Sensor Network: Economic Feasibility Study of Parking Sensors in a City Environment*, in *CTTE*. 2010, Ghent University: Ghent.
2. Lannoo, B., et al., *Game-theoretic evaluation of competing wireless access networks for offering Mobile Internet*, in *CRNI*. 2009: Brussels.