TOWARDS SMARTER CITIES WITH GREEN SPECIFICATIONS

WhatsApp, Facebook, Twitter, Google and Netflix. Everybody knows and uses these services. Software has become part of our daily life. However, software is also consuming a lot of energy. Green Specifications have been developed to increase eco-efficiency, i.e. also energy efficiency. The outcome is more flexible and more efficient software which perfectly fit the needs of citizens of a “smart” city and at the same time make better use of renewable energy sources.

**GREEN SPECIFICATIONS**
- Green Specifications help to unveil optimisation potentials and highlight trade-offs between energy/eco-efficiency and functionality, data as well as user behaviour.
- The result is more flexible and more efficient software which perfectly fit the needs of citizens of a “smart” city and at the same time make better use of renewable energy sources.

**GOALS**
- Create a formal definition
- Specify a meta-model
- Develop an approach to estimate the environmental impact of a concrete specification already during the development phase
- Define metrics that enable to compare the effects of decisions on the eco-efficiency of a software service
- Implement a video on demand (VoD) service as a showcase
- Add support for green specification in MS Visio
- Evaluate the effect and potential of green specifications

**A VIDEO ON DEMAND (VOD) EXAMPLE**
- Contractually defined that all movies are streamed without credits at the end
- Lower availability for less important data
- Execution of none time-critical tasks like “movie suggestions” at times where renewable energy is available

**FUNCTIONAL VIEW**
- Shows eco-efficiency of the functionality

**BEHAVIOURAL VIEW**
- Shows user behaviour
- Also enables to show behaviour of different user groups