

# URBAN SOUND (PLANNING)



## Urban sound planning, beyond noise control

- Developing **virtual reality** as a tool for urban planning and design
- Technology for capturing the **soundscapes of the world**: binaural, ambisonics, 32 channel; augmented with 360 degree video
- Virtual soundscape creation based on collections of **pure sound**

## Smart cities monitor sound, the city's heartbeat

- Sound contains rich information, not only about the soundscape, but we need smarter data mining
- Microphones are cheap, you can put them everywhere, but adequate **feature extraction** is needed to limit data transmission
- Smart **building** (measuring for improving the quality of life of the inhabitant) meets smart **city** (monitoring for the community)

## Measuring on the fly

- Mobile measurements result in faster coverage of the city
- **Data fusion** with cloud data allows for faster convergence
- Sound as a proxy for air pollution, infrastructure state, ...

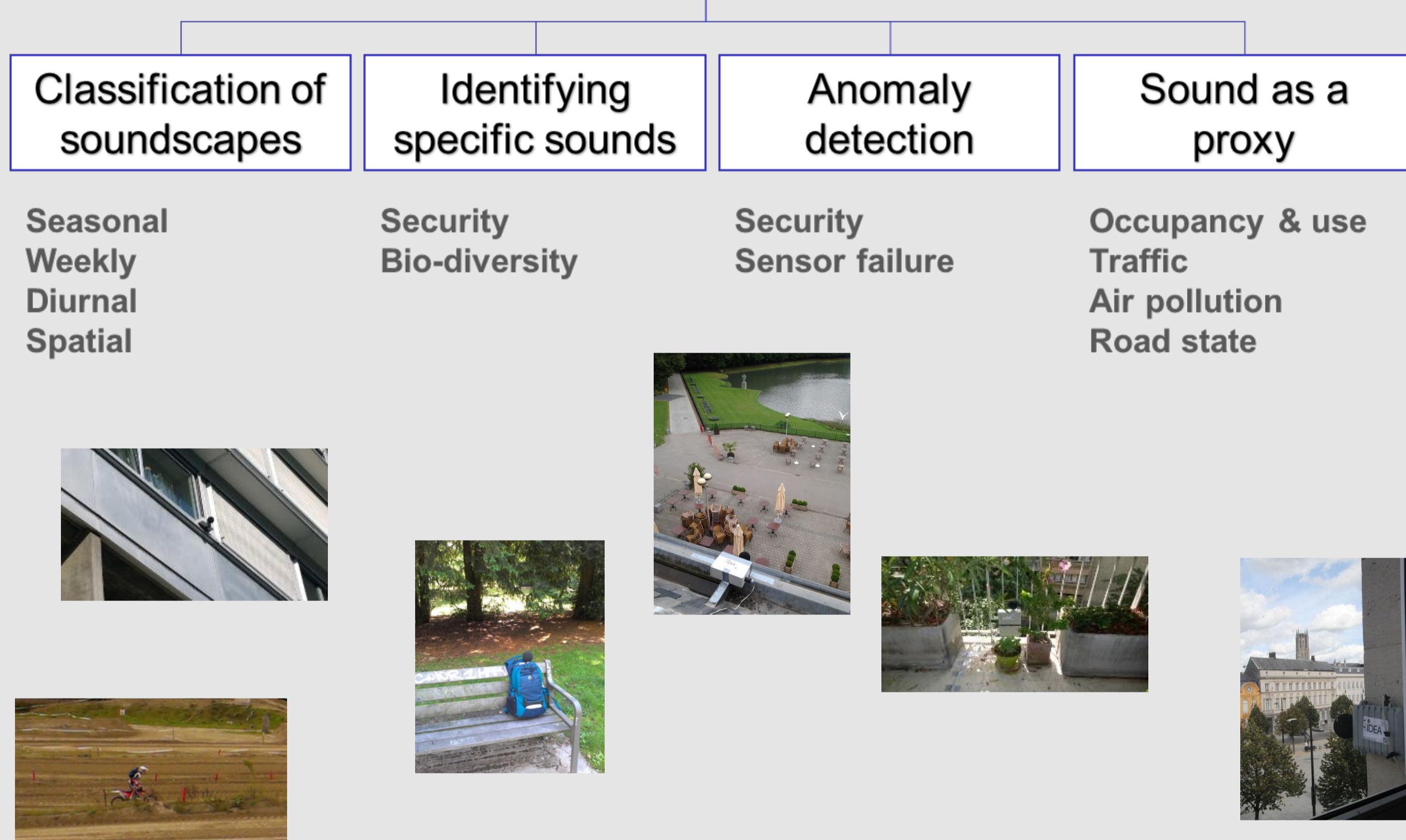
## Creative digital solutions for the public space

- Connecting urban public space to the digital world
- C3places (Cyberparks) project looks for **creative student ideas**

## Virtual reality evaluation



Information that could be retrieved from smart sound sensor networks

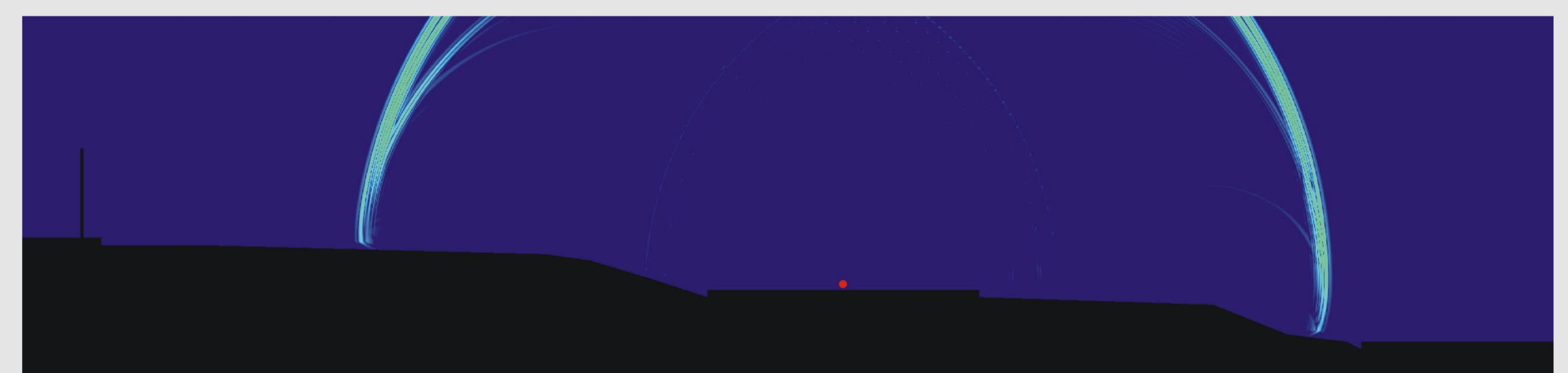
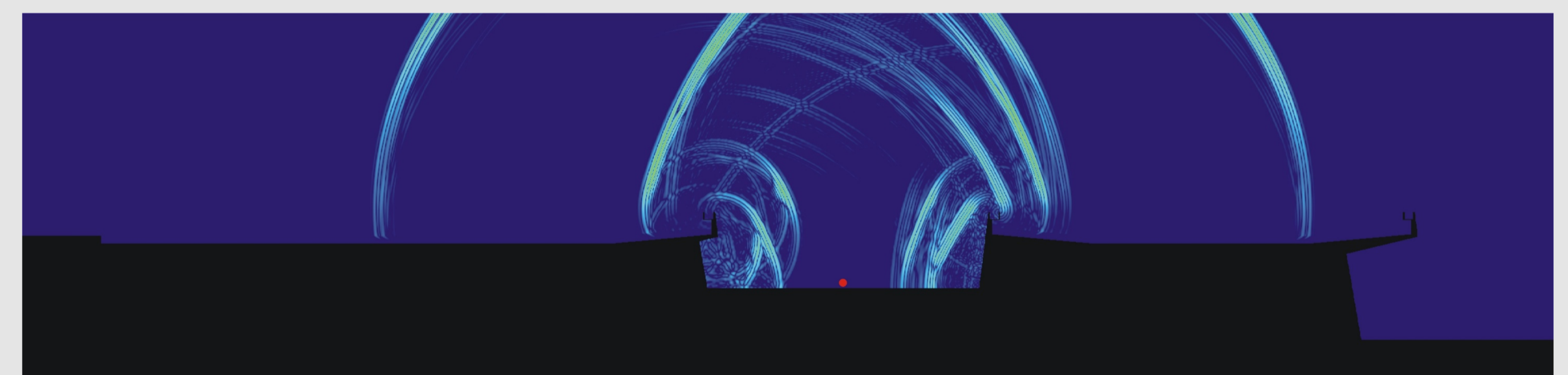


Mobile sensing of noise levels in Paris

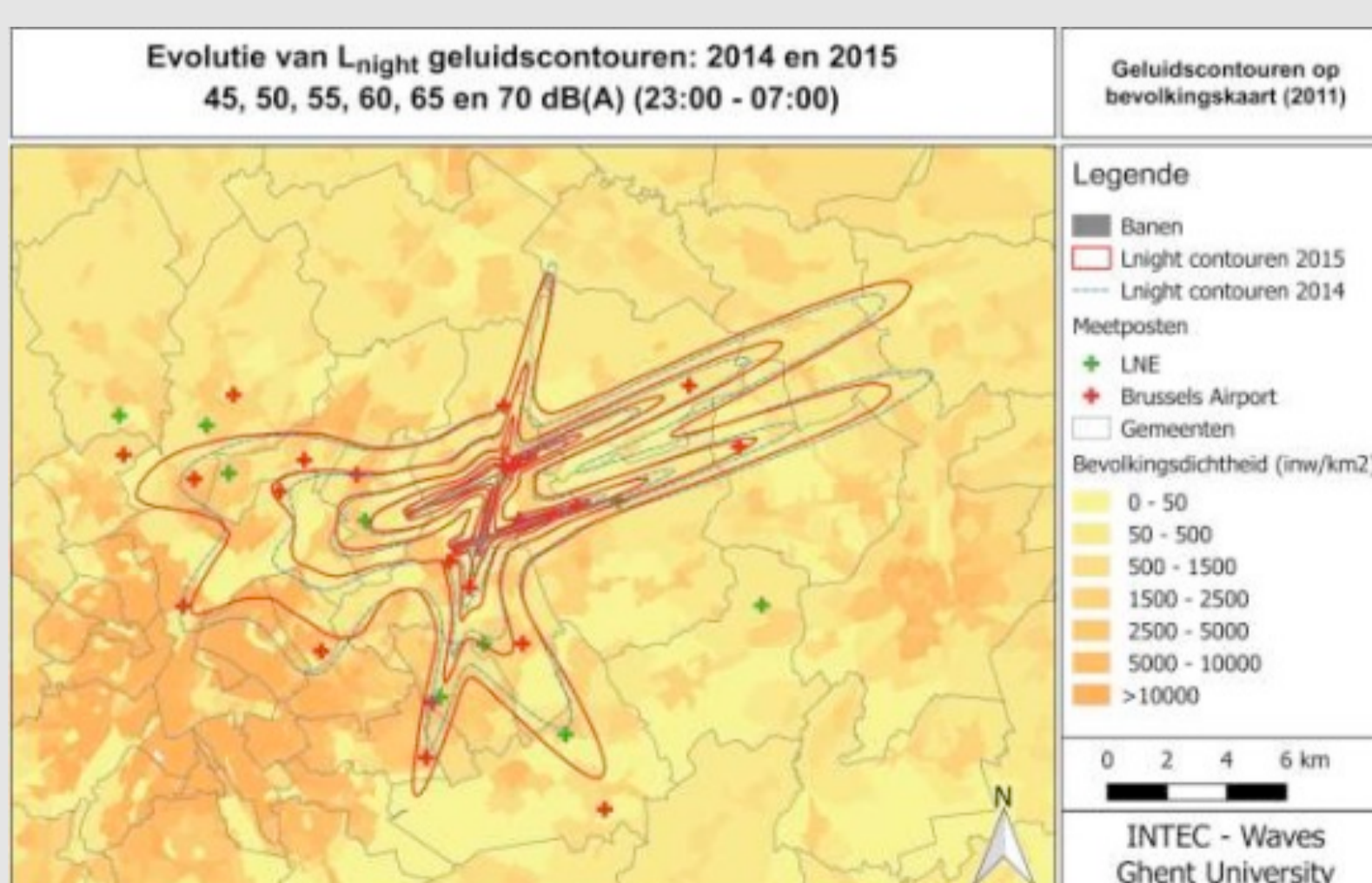
## In touch with the world today

covering the Antwerp ringroad – or not a flight plan for Brussels national airport wind turbines – sustainability not in my backyard

Covering the ring road in Antwerp will improve the soundscape in the green areas around it making them available for a range of leisure activities. In preparation of these expensive infrastructure works, numerical simulations need to provide insight in the expected improvement. Advanced computational algorithms are needed for this, some of which still need to be developed over the coming years.



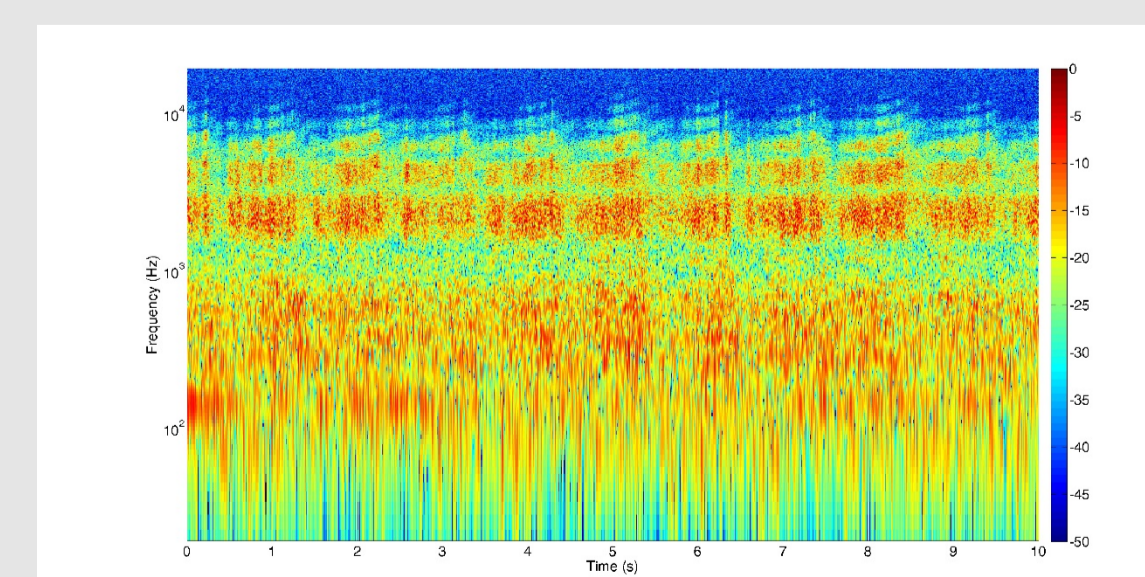
Optimizing operations may reduce the number of people exposed to nighttime noise around Brussels National airport  
Strong safety restrictions on how aircraft can fly  
Grounded in effect estimation



Turbulent inflow could cause additional low frequency noise, a complex physical phenomenon



Wind turbine noise has a very typical spectro-temporal very noticeable characteristic



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