



**GRADIS** team members (from left):  
Leszek Kotulski, Igor Wojnicki,  
Sebastian Ernst, Adam Sędziwy.

## GRADIS

# A new era of smart lighting

**Picture the average family settling in for the night: as darkness falls, their house is gradually lit up by a large number of lamps that use a significant amount of energy on a nightly basis.**

Now imagine the same family home, only this time lit up using LED lamps: the intensity of the light can be flexibly controlled by a smart system, keeping energy use to a minimum and reducing lighting costs.

KIC InnoEnergy immediately saw the environmental value and commercial potential of this idea that was advanced by a team of scientists from the AGH University of Science and Technology in Krakow. Soon after, and with KIC InnoEnergy's support, the company GRADIS (Graph Augmented Distributed Intelligent Systems) was founded.

## About KIC InnoEnergy

KIC InnoEnergy SE is a European company that fosters the knowledge triangle of education, research and business in order to boost innovation and entrepreneurship. Our strategic objective is to become the leading engine for innovation and entrepreneurship in the field of sustainable energy in the world. KIC InnoEnergy is, along with Climate and ICT Labs, one of the three Knowledge and Innovation Communities (KICs) created under the leadership of the European Institute of Innovation and Technology (EIT). We are a commercial company with 27 shareholders that include top ranking industries, research centres and universities - all of them key players in the energy field. More than 100 additional partners contribute to our activities, forming a dynamic network that is always open to new entrants that will further our pursuit of excellence.

KIC InnoEnergy is profit oriented, but has a "not for dividend" financial strategy; we reinvest any profits generated in our activities.

### Foreseeable impact

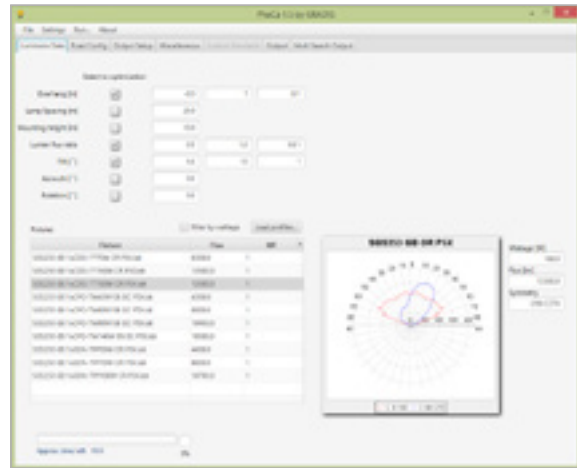
If we take 100 as the cost of any good produced or consumed in Europe, 27% is energy cost. Thus, just 1% of reduction in the cost of energy will represent €20B of savings, ensuring increased competitiveness in the European industry.

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# Success story. GRADIS



Street lighting as an example of field application to optimise parameters of external lighting



The GRADIS application software

We asked project leader Professor Leszek Kotulski and team member Adam Sędziwy to tell us more about the services GRADIS offers and their plans for the future.

## How did GRADIS come about?

Adam Sędziwy: It began with the innovation project Alive & KICing, coordinated by our Belgian partner KIC InnoEnergy Benelux. The aim of the project was to develop a business model for the implementation of innovative solutions that would lead to energy savings in cities. It involved building new and modernising existing infrastructure, in order to reduce operating costs in the future. The project required work on optimising lighting design, which was carried out independently by our team. GRADIS was founded on the basis of this work.

## What comprises GRADIS technology?

Adam Sędziwy: There are two elements to the technology. The first part involved designing and optimising lighting systems as a means of minimising their related energy costs. The second component was to provide these lighting installations with a control system, which was achieved by means of a special software solution, allowing the system to adjust to the environment (the time of the day, weather conditions etc.) by automatically raising or lowering the level of illumination required for lighting to remain at a comfortable level.

## What product do you manufacture?

Leszek Kotulski: We offer an innovative software solution. In addition to the software itself, it introduces a range of complimentary services that recognise the exact conditions of the place where the software has been installed. Each software solution is therefore unique, customised - specifically designed for each and every customer's needs.

## What makes your solution innovative?

Adam Sędziwy: The functionality and adaptability of our software solution is currently unrivalled on the market. This has been confirmed on discussions with the major market players, including Philips, Schreder and General Electric. Tests run in Belgium have shown that a solution based on this technology, enhanced by an optimised installation design, and an advanced control system, can lead to a 60 per cent reduction in power consumption.

## Who are GRADIS' services directed at?

Adam Sędziwy: Our customers can be divided into two main groups. The first is local government bodies, or owners of areas where modernisation is taking place or where new lighting systems are being installed. In other words: those who incur the operating costs. The second group includes those architects who are engaged in designing lighting systems for public spaces.

## What was KIC InnoEnergy's role in the creation of GRADIS?

Leszek Kotulski: First of all, much credit goes to our Business Creation Officer at KIC InnoEnergy who spotted the commercial potential of our ideas. Were it not for the acceleration services offered to us by KIC InnoEnergy, GRADIS may not exist at all. They took care of some 80 per cent of the formalities and administration details during the evolution process, allowing us to focus on our idea and on developing the project itself.

## What plans do you have for the near future?

Leszek Kotulski: At the moment we're in talks with a municipality near Krakow about developing a project. If all goes to plan, we hope to implement a smart lighting system there that will utilise LED lamps.

