Press Release

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AIT DEVELOPS AI-DRIVEN WIND FLOW SIMULATION FOR DIGITAL URBAN PLANNING

- Simulation enables real-time analysis of wind flows for urban planning for the first time
- City Intelligence Lab: Corona crisis shows potential of online platform for cooperative collaboration

Researchers at the City Intelligence Lab (CIL), part of the AIT Center for Energy, developed an artificial intelligence (AI)-based simulation for wind currents. This makes it possible to determine wind factors in planning within seconds, which means that designs can be analysed and optimised in real time at every planning stage, taking wind factors into account. Wind flows have great importance in times of extreme weather conditions in terms of dangerous speeds during storms, but also for fine-tuning the microclimatic conditions of a neighbourhood. This application could be developed across countries with the partners of Giraffe Technologies, despite the measures taken on COVID-19 in the interactive online platform of the CIL.

"The cities of the future must not only be equipped with smart technologies, but also consistently planned digitally - from the neighbourhood to the building. With the new simulation, we can take into account the influence of wind currents on the microclimate, but also the effects of storms, already in the planning stage and adjust numerous parameters within a very short time. Working in real time greatly simplifies the planning processes for our partners in both architectural and urban development projects. We can adapt these complex plans within seconds. The innovative power of the platform is the use of artificial intelligence (AI) and big data to create diverse planning scenarios within the shortest possible time," explains Nikolas Neubert, Head of Competence Unit Digital Resilient Cities at the Center for Energy of the AIT Austrian Institute of Technology.

Wind currents important for microclimate in cities

Understanding urban wind currents is becoming increasingly important for urban planning, not least due to more extreme weather conditions caused by climate change. "The current development can firstly locate those areas with potentially dangerous wind speeds during storms and mitigate the impact. Secondly, the results can be used to fine-tune the microclimatic conditions of a neighbourhood - whether to cool it down or keep it warm," explains Angelos Chronis, Head of City Intelligence Lab at the AIT Center for Energy. The CIL's online platform for collaborative design paired with real-time analytics enables previously impossible workflows. "Getting feedback within seconds instead of hours or days is a game changer for planning. Now designs can be analysed and optimised in real time at every stage, taking wind factors into account," Chronis knows.

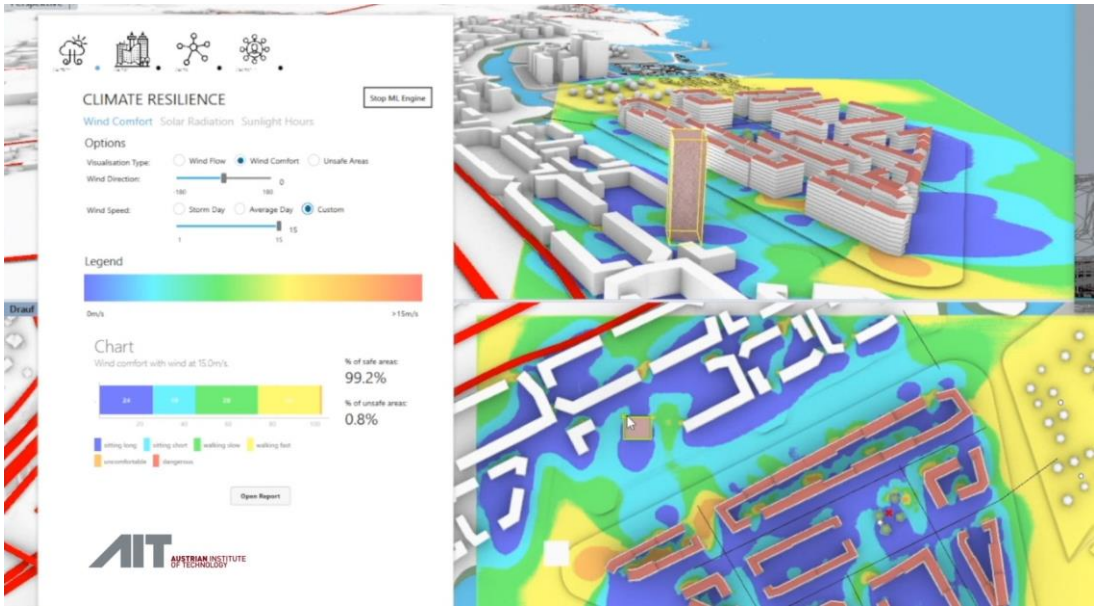
City Intelligence Lab: The Corona crisis shows potential of online platform for cooperative collaboration

The CIL as a working environment is a collaboration platform where the effects of planning changes are immediately visible. In times of increased physical distance, researchers and developers can access the platform online and work together regardless of where they are working. With the help of artificial intelligence, projects and possible planning scenarios can be worked out more quickly. For example, the effects of a district development, such as the height of buildings and their impact on the microclimate, can be displayed within a short time, a few minutes. 3D models as well as the results of projects are accessible around the clock and can be exchanged with project partners worldwide via a browser - independent of location from the City Intelligence Lab. "This enables us to create a radically new form of seamless collaboration with our clients. The possibilities of digital collaboration far beyond office and national borders were already reality before the Corona crisis, but are now receiving special attention and importance," Neubert is convinced. "Because the current situation now shows the enormous potential for global and cooperative collaboration and that it works," says Neubert.

City Intelligence Lab - an international showcase lab

The lab is an interactive platform for exploring new forms and technologies for urban planning practice of the future and follows the approach of co-creative development, the co-creation of new knowledge. The platform is supported by the latest digital planning tools using Big Data and Artificial Intelligence (AI).

Press photo:



The researchers of the City Intelligence Lab of the AIT Center for Energy developed a wind simulation that can determine wind factors in planning within seconds. © AIT

City Intelligence Lab at the Center for Energy is an interactive, digital platform for intelligent urban district planning of the future © AIT / Hinterramskogler

Video of the wind simulation
https://cities.ait.ac.at/site/index.php/2020/04/08/our-ai-models-at-work-introducing-our-partnership-with-giraffe-technologies-2/

AIT Center for Energy

At the AIT Center for Energy, around 200 employees under the direction of Wolfgang Hribernik ,are researching solutions for the sustainable energy supply of tomorrow. The many years of experience and scientific excellence of the AIT experts as well as the high-quality laboratory infrastructure and global networking offer companies innovative and applied research services and thus a clear competitive advantage in this future market. The Center for Energy's portfolio of topics is based on three central systems: Sustainable energy infrastructure, decarbonisation of industrial processes and plants, and innovative technologies and solutions for urban transformation (buildings, cities). Further information about the Center: https://www.ait.ac.at/energy

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