Capgemini | AI for Good Global Summit

AI 4 Environment - Towards Sustainable Territories

How can Artificial Intelligence help achieve Environmental Goals?

Perform AI

How can AI help achieve Environmental Goals?

Whether it is under water, on land, in the woods or at sea – smart territories rely on data and their digital footprint, making AI a key technology to be leveraged.

With AI and data analytics, several of the sustainable development goals (SDGs) can be addressed to detect anomalies quicker, automate trivial processes efficiently and give to the human predictive tools they can use to make better decisions. Examples include the optimization of land use, the detection of garbage or the prevention of deforestation.

About the UN's SDGs

The Sustainable Development Goals (SDGs) are at the heart of the 2030 Agenda for Sustainable Development adopted by all United Nations Member States in 2015. They consist of 17 interlinked global goals that must go hand in hand with strategies in order to create a better and more sustainable future. SDG 7, 11, 12, 13, 14 and 15 address the main objectives that are linked to environment.

You can learn more about the SDGs here.

79%

of the SDGs targets could be positively impacted by AI.[1]

AI National Strategies act on environment

Engaging in the journey for a better planet, countries around the world have begun embracing AI's potential in order to improve and make the environment more sustainable and resilient.

Israel - Setting up Environmentally Friendly Cities[2]

Israel is considering making many of its cities environmentally friendly and has ear marked Tel-Aviv as the first one for this project. As part of its national AI strategy, **the city is expected to have better mobility, smart transportation, air pollution control monitors, smart traffic lights etc**.

Saudi Arabia - Creating the Sustainable City Neom[3]

In its digitization strategy called Vision 2030, the Saudi Arabian Government announced a USD 500 billion investment to create a sustainable smart city called Neom, **covering nearly 26,000 square kilometers**.

United Kingdom - Funding Education in fields of AI & Environment[4]

UK's Grand Challenges, which are four transformative global trends include issues related to climate change. Efforts include £200 million of funding towards 1,000 new PhD places over the next 5 years, for studying AI which could make industries more sustainable such as global food waste reduction efforts and work on tackling the illegal wildlife trade.

India - Becoming a pioneer in AI powered Renewable Energy[5]

"India is already playing a leading role in climate leadership. India has been a pioneer in a sustained push for clean energy revolution by leading the International Solar Alliance, and **setting up AI powered energy grids to achieve 100GW production by 2022**."

AI strategies around the world have an increased focus on the environment and this will surely help achieving the SDGs surrounding it. This will alleviate millions of people from their existing living conditions towards better and more resilient futures.

74%

of people agree that AI will help solve long standing challenges faced by the environment[6].

"The race for net-zero is on. AI-technique can act as a powerful enabler. It is vital for both the business and the planet."

- Vincent de Montalivet
Sustainable AI Leader – Capgemini

Our Approach

Applying the PublicGoesAI playgrounds of AI in the public sector, Capgemini accompanies several public organizations in their journey for a smarter territory. Data, AI and Analytics solutions are now enabling use cases towards sustainable territories.

Distributed Energy Grids –
AI can predict the demand and supply of energy, improve storage & assist in its efficient use.

Smart Agriculture and food –
AI-augmented agriculture is resource efficient and climate resilient. It can ensure that supply gaps because of poor farming practices can be curbed to a considerable extent.

Climate Monitoring –
Climate Informatics – use of AI to predict climate and effects of climate change. This field of AI helps augment decision making in various other sectors such as disaster management and daily weather reports.

Smart Cities –
AI and IOT based public services in cities will create sustainable cities and environments. This will greatly improve living conditions and uplift the livelihood of citizens all over the world.

Biodiversity Monitoring –
AI is being used frequently in Forestry management and species detection to assess the impacts of environmental changes.

Smart Disaster Mitigation –
Not only predicting disasters, but then focusing on resource prioritization to mitigate aftereffects, AI possesses significant capabilities in avoiding unforeseen consequences.

Despite the advances made in cognitive computing, AI systems can consume a lot of power and can generate high volumes of climate-changing carbon emissions. Even before beginning to deploy AI use cases, organizations need to carefully assess the environmental impact and ensure that the benefits of their AI deployments outweigh their emissions 'cost'.

Solutions delivered include:

Geo Satellite Intelligence – mixing advanced cognitive image analysis, Machine Learning and Deep Learning, GSI helps to find new ways of solving . Sogeti has developed a special framework for pre-processing, correction and advanced analysis of satellite imagery, and can, using Data Science, produce detailed maps that visualize a client's specific needs.

Data Command Centers for Smart Territories – Each Territory is unique, and its challenges vary according to its history, size, infrastructure, geography etc. Capgemini's Smart Territory solution – is the promise of technological infrastructure that makes the territory more attractive, inclusive, resilient and sustainable. In order to build smart growth ecosystems, a customized vision and implementation is essential, accompanying a city or region administration through three stages: the Design of the territory's strategy, the creation of the tech foundation and the identification or relevant services.

A digital climate platform for earth monitoring – Capgemini France has been working with the European Space agency on several frontlines, based on AI and data platforms, for ex. to develop the pilot version of the Multi-Mission Algorithm and Analysis Platform. Fostering collaboration between climate stakeholders, the platform aims at an easier data exploration processing to help understand better the climate.

25%

reduction in travel time was achieved by using AI-enabled traffic lights in a city, which also helped in bringing down Air pollution.[7]

AI leads to power efficiency and reduced waste by[8]

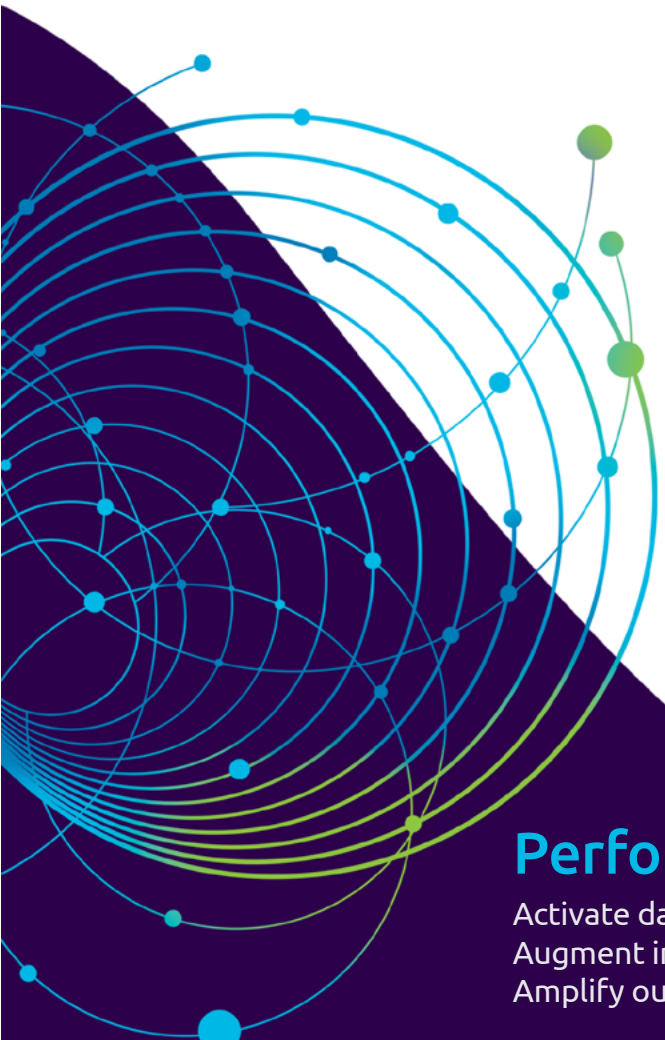
10%

Whale Conservation

Infested Forestry

Smart Cities

Use Cases



Perform AI

Activate data.
Augment intelligence.
Amplify outcomes.

Use Case – SAVING SPERM WHALES

SAVING SPERM WHALES

Global Data Science Challenge – Capgemini and Azores Whale Researchers

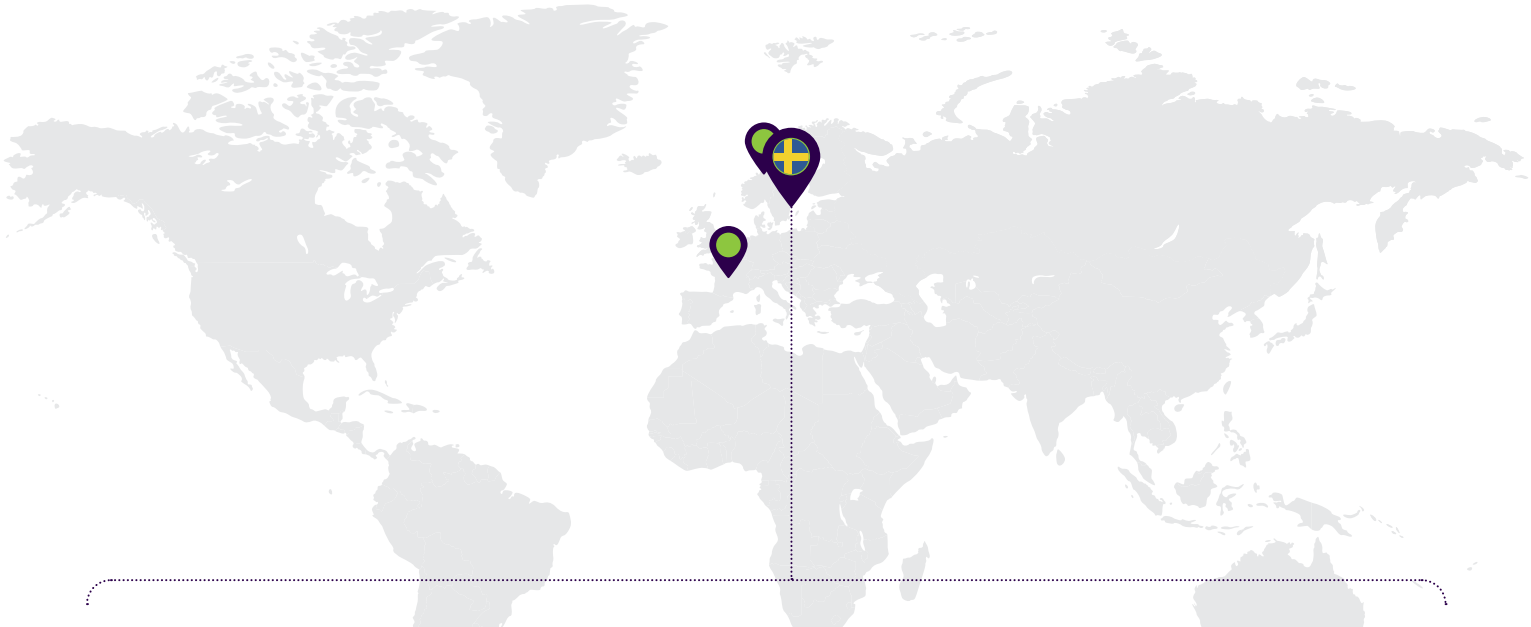
Challenges

- Sperm whales were subject to indiscriminate hunting.
- This pattern was threatening the ecological balance of the oceans.
- Identifying Sperm Whales posed difficulty with old methods.

Solutions

- Image Processing mixed with AI identifies characteristics of whales.
- AI was used to tag different whales and consequently track their movements to monitor their wellbeing and survival.

Use Case – DETECTING INFESTED AREAS IN FORESTRY



DETECTING INFESTED AREAS IN FORESTRY

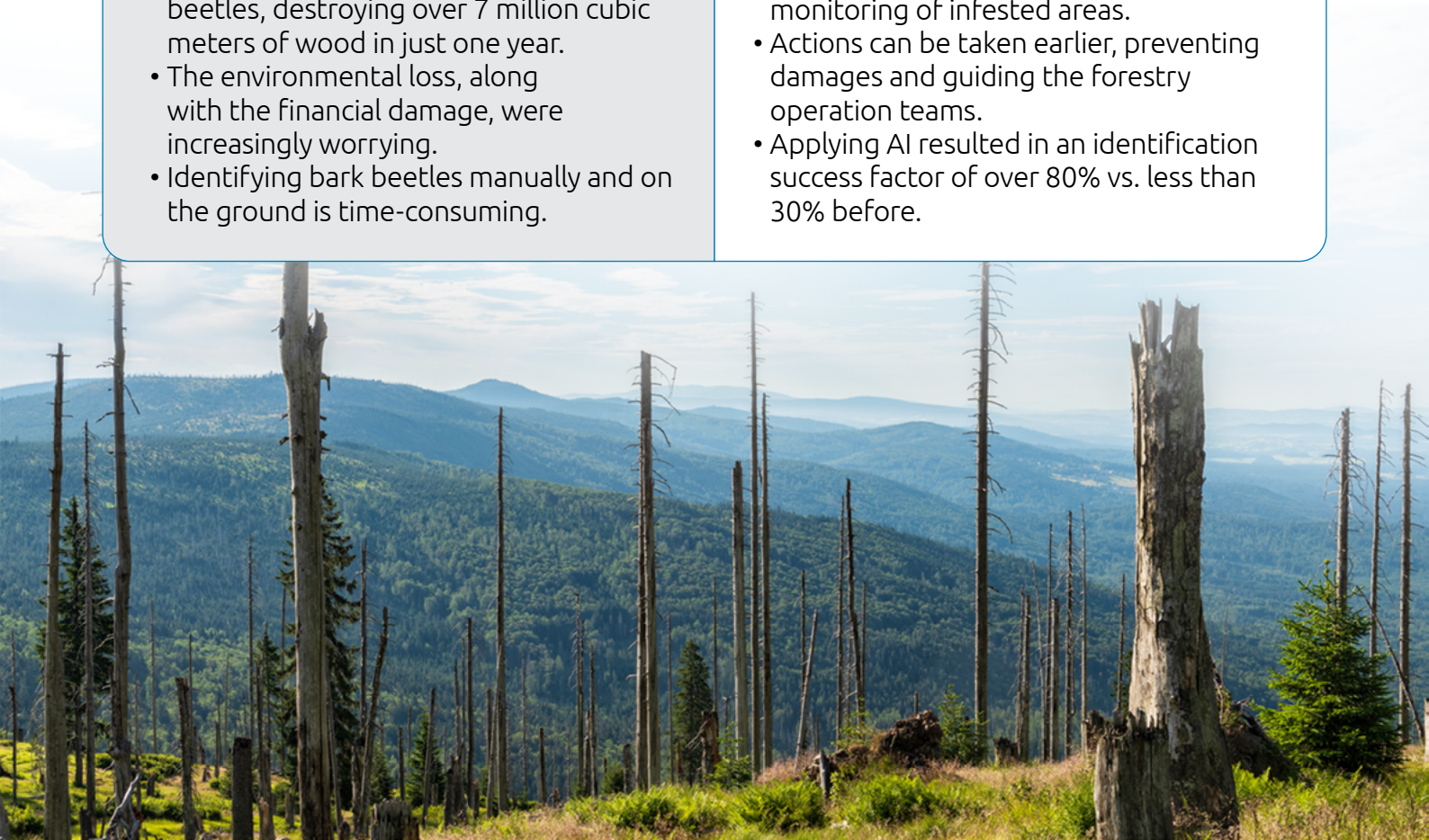
Swedish Forestry Board

Challenges

- Increased damages were caused in Swedish forests by swarming bark beetles, destroying over 7 million cubic meters of wood in just one year.
- The environmental loss, along with the financial damage, were increasingly worrying.
- Identifying bark beetles manually and on the ground is time-consuming.

Solutions

- The mix between AI and satellite images can accelerate the detection and monitoring of infested areas.
- Actions can be taken earlier, preventing damages and guiding the forestry operation teams.
- Applying AI resulted in an identification success factor of over 80% vs. less than 30% before.



Use Case – CONNECTING DATA FOR SUSTAINABILITY

CONNECTING DATA FOR SUSTAINABILITY

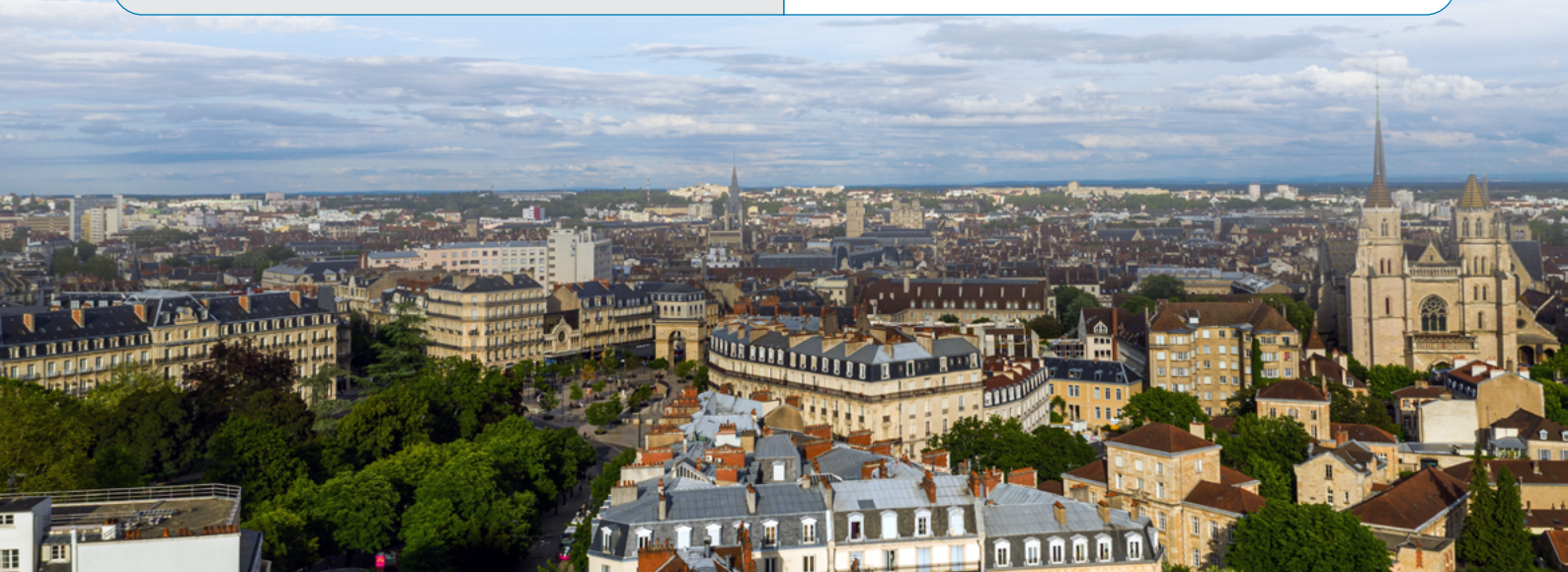
City of Dijon

Challenges

- The city of Dijon previously relied on 8 different data centers, therefore dealing with siloes.
- The city administration aimed at reducing the territory's environmental footprint while modernizing public services and reducing costs.

Solutions

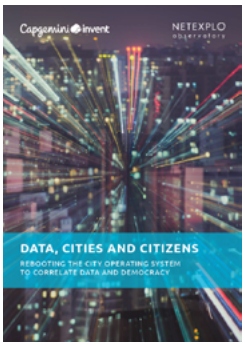
- By following a data-driven approach, OnDijon now builds its smart city on one central data command center.
- Various use cases include the monitoring of air quality, traffic and light need in the city.
- The project resulted in 65% of energy savings.
- AI opens new opportunities building on the territory's data, like a bus route optimization, a smart use of traffic lights or a quick detection of broken infrastructure.



Thought Leadership Positions

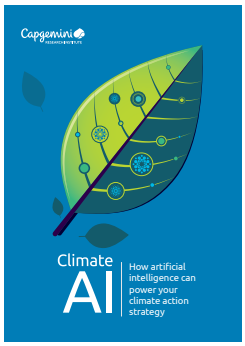
Street smart

2020



Data, cities and citizens

2020



Climate AI

2020

Contact our Experts!

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More Information

Missed the event?
Catch up on all the individual session recordings!

Additional links

Sustainable AI
AI in the Public Sector
Capgemini @ AI for Good Summit

References

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8. *Capgemini Research Institute (2020) - Climate AI: How AI can power your climate action strategy*

About Capgemini

Capgemini is a global leader in consulting, digital transformation, technology, and engineering services. The Group is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. A responsible and multicultural company of 265,000 people in nearly 50 countries, Capgemini's purpose is to unleash human energy through technology for an inclusive and sustainable future. With Altran, the Group reported 2019 combined global revenues of €17 billion.

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