Sustainability
Data Science Challenge
2021

Co-Creation Award

Info-Kit

- Verwaltungspreis 2023 -

Capgemini | OBAG | Microsoft

The Challenge

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The Objective

Sustainability
Data Science Challenge 2021

We support Austria‘s leading corporations to **reduce their carbon footprint** and to determine their **impact on biodiversity** using **advanced analytics**.

in partnership with

BIG A1 Verbund

Capgemini ÖBAG Microsoft

Creating sustainable value for Austria is the Challenge's overarching goal

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Business context

- Problem statement of **the Sustainability Data Science Challenge** collaboratively defined with **partner companies**
- The **buildings sector** as strong contributor to global **energy** consumption and **CO2 emissions**
- Technology can provide **meaningful impact** to deliver on the EU climate targets
- **Multi-stakeholder initiative** focusses on finding innovative solutions to create real sustainable impact for Austria

A cooperative approach towards tackling climate crisis with innovative ideas

Sustainable value

Impact
create a digital solution to improve biodiversity

Value generation
reduce ecological footprint of businesses

Open innovation

Diversity
share your thoughts in multi-stakeholder initiative

Scalability
develop a scalable solution to maximize impact

Skills and expertise

Network
collaborate with tech leaders, businesses and universities

Knowledge transfer
exploit learning opportunities with expert trainings

1 According to UN Environment Programme Finance Initiative

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The Challenge

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> Your task is to develop a computer vision model to identify the surface areas of aerial images. The model will be used to solve three sustainability-related problems.

The data

Use the provided data to solve the Challenge. We provide:

(1) aerial pictures
(2) weather data
(3) biodiversity scores
(4) carbon scores
(5) object labels

external data sources can be used.

The expectation

Train a computer vision model to identify different surface types.

Your predictions will be used to solve three cases:

Carbon footprint case
automatically determine the carbon sink for each image

Biodiversity case
automatically calculate the biodiversity score of each image

Sustainable energy case
automatically determine the potential for solar energy of each image

The tools

We provide you with following tools:

Microsoft Azure
Your platform to train and test your model

Microsoft Teams
Your platform to ask questions, share content and collaborate

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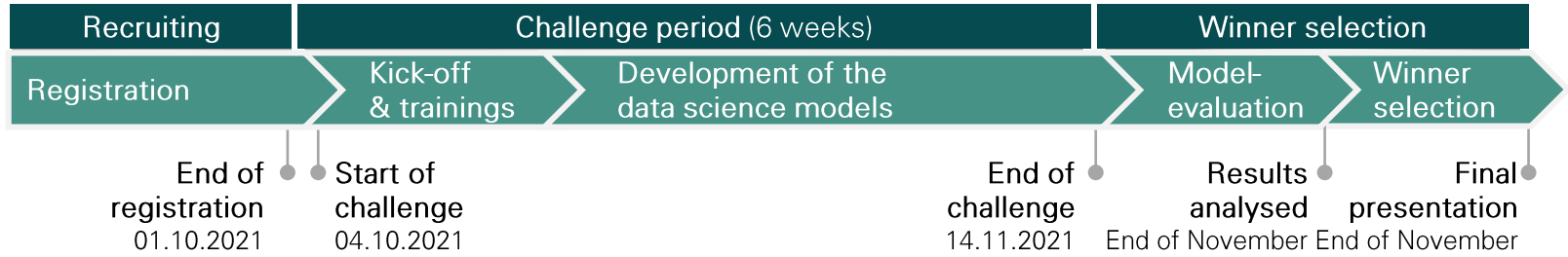
The Process

Participants have six weeks to develop an **advanced analytics model** to solve the challenge. In the first two weeks participants can **attend four expert trainings** focusing on cloud computing, Azure cloud platform, advanced analytics and sustainability.



How the winning team is selected!

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> The winning team is selected in a two-step process. Throughout the Challenge, participating teams can use the leaderboard to constantly compare their models and to evaluate the current performance level of the respective models.

During the Challenge: Leaderboard

Validate the performance of your model by using the leaderboard.*

How often?
daily

Where?
leaderboard on collaboration platform

Evaluation criteria:
your performance on the test-set with the following evaluation metrics:

- **70%:** The quality of the **predicted mask** as by the dice coefficient (F1 Score)
- **10%:** The submitted carbon sink Score
- **10%:** The submitted PV-Potential
- **10%:** The submitted Biodiversity Score

Specific details are in the **technical information paper** on the collaboration platform.

Round 1: Top 3 Selection

*In the first selection round the top **3 performing models** are selected.*

When?
end of the challenge on 14.11.2021, Announcement on 21.11.2021

Which model?
last submitted result counts

Criteria
same criteria as used to update the leaderboard **throughout the challenge.**

Test set
you have to **submit the same test-set** as throughout the challenge. However a different subset of it will be used at the different stages. Thus, the final results might show **different scores.**

Round 2: Winner Selection

*The jury will decide on the **winning team** based on the presentation of the results.*

When?
final presentation on 02.12.2021 during the closing event

Jury panel
Technical and business experts from ÖBAG, Capgemini and Microsoft

Criteria
The solution will be evaluated based on performance, usability and scalability. Code has to be made available.

Prize
The winning team receives the prize of € 5.000

* The first leaderboard will be published the day after the first training on Friday 8.10; Participating teams of the partner companies will be listed on the leaderboard, but compete without eligibility for the prize.

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The Jury

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The Metrics

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Section	Evaluation criteria and scoring models	Weighting of overall score
Overall score	The top 3 performing teams will be selected based on the technical performance of the respective advanced analytics model.	The jury selects the SDSC winner based on the following metrics: 70% technical metrics (accuracy scores and 'defensio') 30% qualitative metrics (presentation, usability, scalability)
Tech-nical (70%)	The technical score comprises 70% of the overall SDSC winner team selection criteria. 50% are determined by the results of the quantitative evaluation of the model which has been used to select the top three teams. 20% are determine by the teams argumentation and defensio of the model arguing why the approach has been used, also answering technical related questions in the Q&A session.	**50% accuracy scores of data science model consisting of:** 70%: Quality of predicted mask as by dice coefficient (F1 score) 10%: The submitted carbon sink score 10%: The submitted PV potential 10%: The submitted biodiversity score **20%: 'defensio' of model and key assumptions in Q&A session**
Qualit-ative (30%)	The qualitative score comprises 30% of the overall SDSC winner team selection criteria and mainly focusses on three key sections. The section "presentation skills" evaluates effective business communication skills of the presenting teams. The section "usability" and "scalability" analyse the potential for application in the real-life business context and the recommendations on how the partner companies could further use and scale the model in their company.	**10%: presentation skills** **10%: usability** **10%: scalability**

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OUR MEMBERS OF THE JURY
Overview

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The Business Experts

Claudia Michl, MSc
Head of Coordination Office
at Climate Change Center AT

Claudia is a **Strategic Coordinator** at **the Climate Change Center Austria**, a center for Global Change and Sustainability. She has experience as a **research associate** and **UN climate reporter** in the area of **environment** and **sustainability**.

Dr. Maximilian Schnödl, MBA
Director ÖBAG

Maximilian leads ÖBAG's **investment management and strategy**. Prior, Maximilian was **CEO of US technology company Springbrook Software**. From 2014 to 2017, he served as COO, CFO and CSO at Accela. He holds supervisory board positions at Austrian Post and Springbrook Software.

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The Technology Experts

Jillian Augustine, PhD
Senior Data Scientist
at Crayon

Jillian received her PhD in **Molecular Biology** and is now working for Crayon's **AI Center of Excellence** for Europe. She has experience in working on **data science projects** in various industries. Jillian is passionate about **data and communication** both to stakeholders and within data teams.

Max Schöttler, MSc
Senior Consultant
at Capgemini

Max has **profound hands-on experience** in areas such as Solution/Delivery Architecture, **Data Science** and **Data Engineering**, with a strong focus on Microsoft Azure as a platform. Further, he is specialized in algorithm optimization, **predictive analytics**, computer vision and cloud migration.

Daniel Kühlwein, PhD
Managing Data Scientist
at Capgemini

Daniel has **7+ years of experience** in the domain of data science. He is the **founder and organizer of Capgemini Global Data Science Challenge** and is leading projects in the area of data science and AI. Daniel is also a member of the **AI Center of Excellence**.

Dr. Robert Hoffmann
Solution Architect & Data
Scientist Microsoft Austria

Robert is supporting enterprises in Austria with their **technical challenges** around **Advanced Analytics** & **AI, Big Data** and IoT.
He has **10+ years of experience** in **applied research**, most recently at the **MSKCC and MIT**.

Media Engagement Metrics

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Veranstaltungen

3 Events

Impact Days
Climate Impact Days
Abschluss-Event

Media Coverage

1 Interview

Brustkasten

1 Presseaussendung

Social Media

140+ Postings

Insta, LinkedIn, FB
60+ LinkedIn
70K+ User

Media Content

4 Videos

Interviews (2)
Image Video (2)

Trainings

4 Trainings

Data Science (2)
Azure Cloud
Sustainability

Awards

1 Award

Capgemini Consulting
Sustainability Award
Europe

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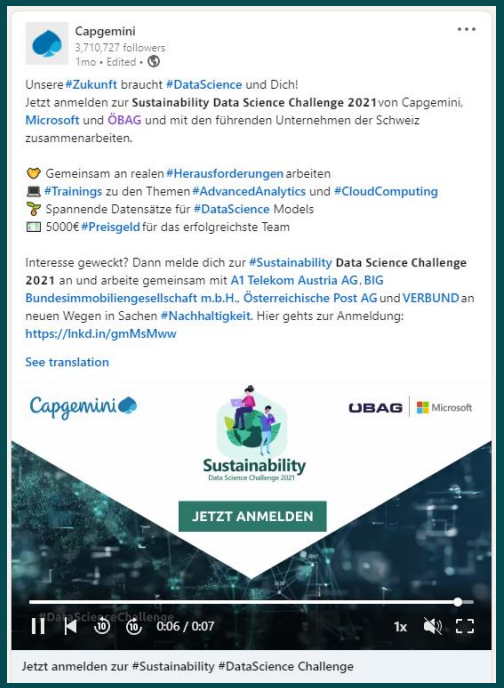
4x

video content



>140

social media postings

online article

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Let‘s start shaping the Sustainable Future of Austria with AI

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