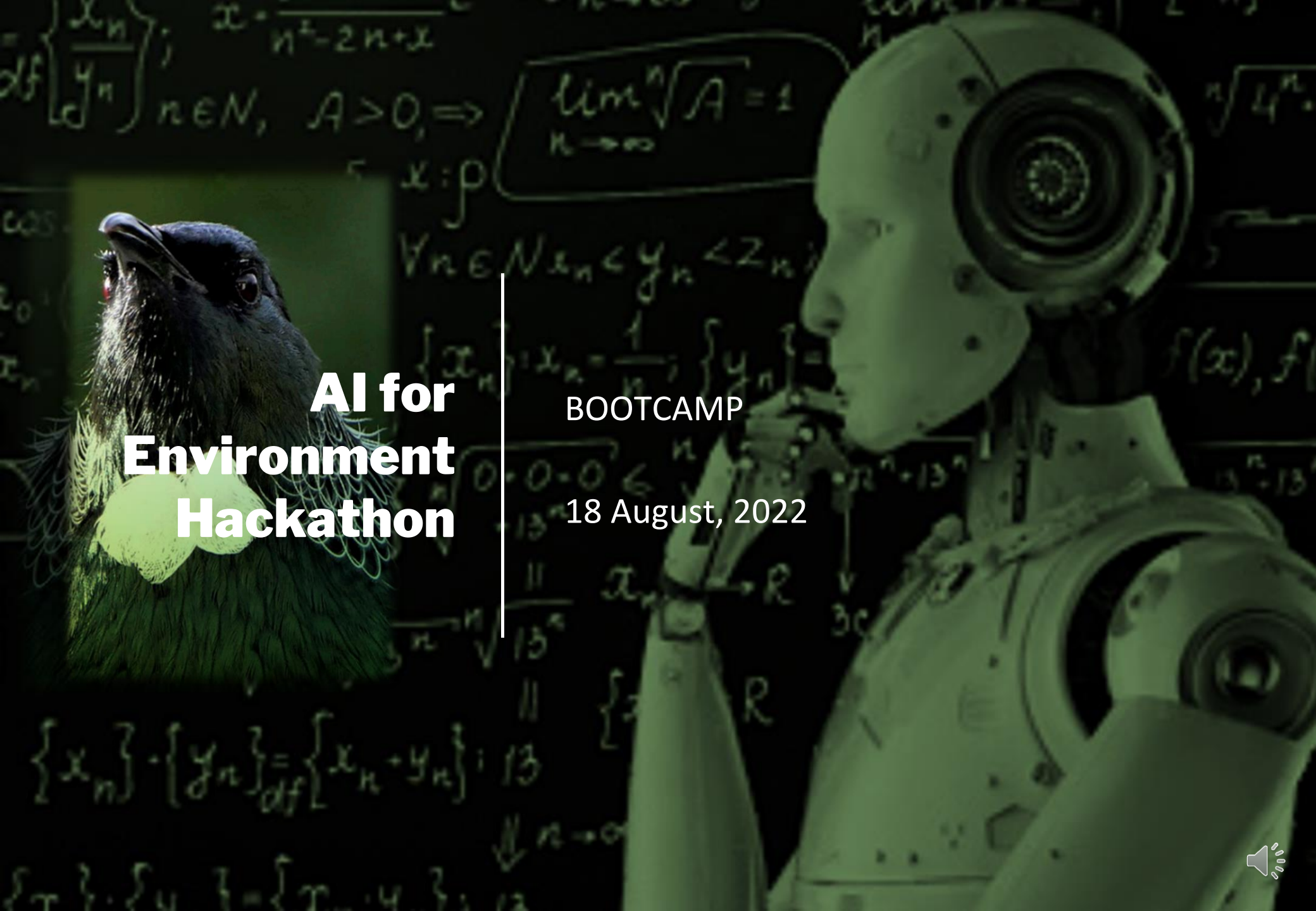


AI for Environment Hackathon

BOOTCAMP

18 August, 2022

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

COLLABORATORS

Te Ipu o te Mahara
Artificial Intelligence Institute
THE UNIVERSITY OF WAIKATO

She#

TAIAO
Time-Evolving Data Science and Artificial Intelligence for Advanced Open Environmental Science

AUT

CallaghanInnovation
New Zealand's Innovation Agency

aws

NeSI
New Zealand eScience Infrastructure

DATACOM

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND
SAPERE AUDE

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

BOOTCAMP AGENDA

What is it?
How do I join?
Dates & Locations

Technology
Data
Training

Participating
Ideas & Teams

Problem to Solve
Pitch Format
Judging Criteria

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

WHAT CAN I EXPECT?

A hackathon is a design & coding sprint where “hackers” (participants) with both technical and non-technical backgrounds come together to build exciting projects.
You will learn many new skills, meet like-minded peers, and network with sponsors and mentors.
At the end of the hackathon you and your team demonstrate your project in front of a judging panel for a chance to progress to the AI Summit.

National Award:
The winning teams will pitch their solutions (in person or remotely) at the national AI Summit on 12 September in Auckland, where audience will vote for the overall winner.

Outcomes:
- **Building the community and ecosystem – your network**
- **Learn some new skills and form new friendships and connections**
- **Create something that might change our lives for the better**
- **Get noticed – for those on the national stage this could be a career making event**

HOW DO I JOIN?

- AI Forum Website
- She Sharp
- Hackathon2022.Taiao.io

DETAILS

Date:
Sep 08 - Sep 09

AI EnviroHack – AI for the Environment

https://aiforum.org.nz/event/ai-envirohack-ai-for-the-environment/

She#
Female-Led Hackathon
AI for the Environment.
SEPTEMBER 3 AND 4TH
AUT
AUCKLAND
https://shesharp.org.nz/events/shesharp-ai-envirohack-2022-info/

https://hackathon2022.taiao.io

forum NEW ZEALAND
Kāhui Atamai Iahiko o Aotearoa

TAIAO
Time-Evolving Data Science and Artificial Intelligence for Advanced Open Environmental Science

Te Ipu o te Mahara Artificial Intelligence Institute
THE UNIVERSITY OF WAIKATO

Artificial Intelligence & Environment Hackathon

For the first time in New Zealand, A challenge-event to help protect our environment.

September 8 & 9 - New Zealand

REGISTER

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

DATES & LOCATIONS

25th August, 6pm
Bootcamp Live Q&A session

3 & 4th September
She Sharp, AUT, WZ Building, Auckland Campus
University of Otago Campus, **Dunedin**

7th September
NVIDIA Training

8 & 9th September
Datacom, 54 Gaunt Street, **Auckland**
AI Institute, Gate 8, Hillcrest Road, University of **Waikato**
AWS, 222 Lambton Quay, **Wellington**
Callaghan Innovation, 5 Sheffield Crescent, Burnside, **Christchurch**

12th September
AI Summit, Aotea Centre, **Auckland**

LOCATIONS

We are inclusive organisations welcoming people from all genders and ethnicities

Callaghan Innovation
5 Sheffield Crescent
Burnside
Christchurch 8053

Christchurch

AWS
222 Lambton Quay

Wellington

She#

AUT
WZ Building
Auckland Campus

Auckland

Datacom
54 Gaunt Street

Auckland

University of Otago
Owheo Building
Department of Computer Science
133 Union Street East, Dunedin North

Dunedin

AI Institute
University of Waikato
Gate 8
School of Computing & Mathematical Sciences
Hillcrest Road

Hamilton

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

TECHNOLOGY

Both events:

BYOD
Bring Your Own Device – the hosts are providing connectivity but not hardware.

TAIAO
The TAIAO Project has free software available

AWS
AWS are providing online technology training and technical support for both dates

Microsoft
You can register for temporary licences as an individual (you can do this at any time)

Other
You are not limited to these options – you are welcome to BYO software as well.

NZ-wide Hack 8 & 9th Sept only:

NeSci
The AI Institute have secured 30 seats from NeSci for the NZ-wide hack on 8 & 9th Sept

NVIDIA
Deep Learning support on the day.

TAIAO

Time-Evolving Data Science
and Artificial Intelligence for
Advanced Open Environmental Science

TAIAO Project Partners are:
University of Waikato
University of Canterbury
University of Auckland
Met Service
BECA

TAIAO [taiao.ai] is a community website designed to bring environmental scientists, data scientists, academics and the wider community together to share resources and collaborate.

As a user you can download and access a wide range of datasets, Jupyter Notebooks, software, and tutorials.

As a contributor, you can share your work, receive feedback, and help others with their work.

We advise you to **read the registration guide** and **create a log in now**.

This will enable you to:

- Share **datasets** and notebooks
- Access **Tutorials** and Software (including free licences)
- **Find support** – FAQs and email

AWS has an excellent set of pre-recorded online content that all participants can access.

We advise you to **create a log in now**. This will enable you to:

- Search and access datasets relevant to your idea
- Access Tutorials and Software
- Find support via FAQs and email

DATA REGISTRIES:

- AWS Open Data Registry (which has the GeoNet Aotearoa dataset loaded)
- LINZ also make a lot of data available that can be used.

Once we know what areas you are interested in we can start to recommend data sets.

FREE TRAINING:

AWS recommend the following courses (registration is required but free):

- AWS Foundations (if not familiar with AWS) – 1 hour
- Developing Machine Learning Applications – 4 hours
- Take a look at AWS Machine Learning University. This is a curated grouping of ML content that Amazon uses to train its own ML developers and will support deep dives into a number of topics.

If your organisation has any specific training needs that are not covered here please get in touch.

AWS is sponsoring both hackathon events and will have people on the ground (or virtually).

Te Ipu o te Mahara
Artificial Intelligence Institute
THE UNIVERSITY OF WAIKATO

NVIDIA

The AI Institute at the University of Waikato are hosting a day long **NVIDIA Deep Learning** training course.

7th September (all day) for all registered participants.

Led by Albert Bifet's team at the University of Waikato, this training is **free for academics** (and students) and available at a **discounted rate** (NZD500) for all other participants.

There are **limited seats available** on this course, so we urge any of your team members who have not registered for the hackathon to do so now, so they can take advantage of this offer.

Use the website to register your interest in this ttraining: https://hackathon2022.taiao.io/

Microsoft

Azure AI platform,
services, and solutions
Innovate and accelerate with powerful tools and services that bring artificial intelligence to every developer.
Play AI platform video
Explore Azure AI

DATA SETS

Google Dataset Search: Similar to how Google Scholar works, Dataset Search lets you find datasets wherever they're hosted, whether it's a publisher's site, a digital library, or an author's web page. It's a phenomenal dataset finder, and it contains over 25 million datasets.

TECHNOLOGY

Free licences: https://cloud.google.com/free

Google allow 90 day fee free licenses, You must give a credit card to register, but are not charged unless you explicitly enable billing by upgrading your Cloud Billing account to a paid account

Licenses covered include:

- Vision
- Natural Language
- Speech to text and translations
- ML Tables
- Big Query (1TB per month)

TRAINING

https://cloud.google.com/training/machinelearning-ai

Cloud OnBoard is a free, online training where instructors lead hands-on labs and test your skills with quizzes and games.

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

OTHER DATA SETS

NEW ZEALAND DATA SETS

- Data.Govt.NZ
- Stats New Zealand large data sets
- National Library of New Zealand Open Data Sets

BYO DATA

Some teams may have their own data set to bring

NOT HERE?

The earlier you can share your ideas with us, the more likely it is that we will be able to help you source the right data sets.

PARTICIPATING

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

PARTICIPATING

There are two kinds of registrations.

- **Participants:** Eligible for the training and access to software licences, data, etc
- **Mentors:** Subject to confirmation, we are seeking people with varied skill sets able to support participants from a technical, problem solving and pitching concepts

IDEAS

- Register your idea before the event, or
- On the day

The earlier you register your idea (problem to solve), the more likely it is that we will be able to source relevant data sets – setting you up for success

FORMING TEAMS

You can:

- Come as a pre-formed team
- Register as an individual and join a team any time before, or on the day
- Diversity - we find that ‘rainbow’ teams tend to build the best solutions
- We recommend that teams have 3 to 6 members

Use the links on the She Sharp and Taiao Event pages to:

- Register your Ideas
- Register your Team
- Invite other participants to join your team / Join a Team
- Ask Questions

PROBLEM TO SOLVE

PROBLEM TO SOLVE

The AI Forum recently published a report on **AI for the Environment .**

In it there were 10 recommendations divided into 3 sections.

The Hackathon concentrates on delivering real life examples of how we could deliver the first of those sections:

Build a Coherent Environmental Data Ecosystem

- Deploy AI alongside other new technologies to enhance environmental data collection.
- Develop a national environmental open data framework.
- Consider where and how mātauranga Māori may be incorporated within Government AI systems.
- Coordinate the development of standards and best practices for environmental data management.

What might a solution look like?

The purpose here is to participate, ideate and learn, but of course if your objective is also to win the judges will need to see the purpose in what you are creating - and you may need to appeal to some who are not necessarily technologists or data scientists, for example:

- Bring together disparate data sources to produce something new, for example:
  - Demonstrate bringing together different forms of citizen science with academic and government research to uncover previously hidden insights – e.g. pest control; water; erosion; native and non-native flora, fauna and sea life; emissions; waste; etc.
  - Demonstrate bringing together data from different sources for an environmental purpose without impacting data sovereignty, e.g. Federated Data; Data Mesh; etc.
- Consider how we might deploy AI alongside other new technologies to enhance environmental data collection, enabling the incorporation of mātauranga Māori and principles of accessibility and openness into a Climate Change solution.

Do not be limited by these examples – we are hoping you will have your own ideas that you want to try out!

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

EXAMPLES OF PROBLEMS TO SOLVE

The Butterfly Effect

The NZ Moths & Butterflies Trust have been collecting detailed data on moth and butterfly sightings on a daily basis for the last 15 years. Use this data with other habitat, geo-spatial and weather data to prove the butterfly effect – or at least inform how we help these incredibly important pollinators.

Te Korowai

Te Korowai o Waiheke have 2 weeks of visual recordings of rats recorded in the Rocky Bay area of Waiheke. Rats are very clever predators – they are adaptive problem solvers. Te Korowai would like to understand more about the behaviour of these rats, so that they can improve their tracking and eradication programme across important refuges for native species.

Surf's Up

Bring together data from weather patterns and wave monitoring (Tsunami watch) for a dual purpose: coastal erosion predictions and much improved surf reports.

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

CRITERIA

You will be judged against the following criteria:

MEETING THE INNOVATION BRIEF

1. You must **answer** (at least) one of the **Data challenges from the AI for Environment Report**.
Include information about this in your pitch deck.

2. You must be **solving an environmental problem** (aligned to the UN Sustainability Goals).

3. Your pitch should involve an **innovation** – this includes an **innovative use** of existing technology.

PROBLEM AND SOLUTION

1. Demonstrate that you understand the problem you are solving
2. Explain how your solution solves it.

Be clear and concise – and engage your audience.

WILL YOUR SOLUTION WORK?

1. Is it technically feasible?
2. Will it solve the problem?

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

AI for Environment Challenge

To build a Coherent Environmental Data Ecosystem:

- Deploy AI alongside other new technologies to enhance environmental data collection.
- Develop a national environmental open data framework.
- Consider where and how mātauranga Māori may be incorporated within Government AI systems.
- Coordinate the development of standards and best practices for environmental data management

Your solution should provide an example of how one or more of these challenges might be met.

Align to the UN Sustainability Goals

1. No Poverty: Access to basic human needs of health, education, sanitation

2. Zero Hunger: Providing food and humanitarian relief, establishing sustainable food production

3. Good Health and Wellbeing: Better, more accessible health systems to increase life-expectancy

4. Quality Education: Inclusive education to enable upward social mobility and end poverty

5. Gender Equality: Education regardless of gender, advancement of equality laws, fairer representation of women

6. Clean Water and Sanitation: Improving access for billions of people who lack these basic facilities

7. Affordable and Clean Energy: Access to renewable, safe and widely available energy sources for all

8. Decent Work and Economic Growth: Creating jobs for all to improve living standards, providing sustainable economic growth

9. Industry, Innovation and Infrastructure: Generating employment and income through innovation

10. Reduced Inequalities: Reducing income and other inequalities, within and between countries

11. Sustainable Cities and Communities: Making cities safe, inclusive, resilient and sustainable

12. Responsible Consumption and Production: Reversing current consumption trends and promoting a more sustainable future

13. Climate Action: Regulating and reducing emissions and promoting renewable energy

14. Life Below Water: Conservation, promoting marine diversity and regulating fishing practices

15. Life on Land: Reversing man-made deforestation and desertification to sustain all life on earth

16. Peace, Justice and Strong Institutions: Inclusive societies, strong institutions and equal access to justice

17. Partnerships for the Goals: Revitalize strong global partnerships for sustainable development

AI EnviroHack

Pitch Deck Template

Use this deck as a guide not a constraint

Remember you have 5 minutes – so practice, refine, practice, refine, practice!

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

CONNECT

30 seconds

Connect with your audience

Think of it like speed dating – you have 30 seconds to make your first impression – and that first impression could change your life (and everyone else's) FOREVER

- Who are you and what is your passion?

AI for Environment Hackathon Series

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

PROBLEM TO SOLVE

1 MINUTE

What is the problem you are trying to solve? and **Why should I care?**

- Who or what does it impact?
- Humanise it – **Create empathy** for the creatures (human or otherwise) impacted
- Use a **short story** and **KILLER DATA** (this is an AI Hack after all)

Make sure you describe the problem you are solving (not necessarily the one that you set out to solve)

AI for Environment Hackathon Series

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

YOUR BIG IDEA

2 MINUTES

EXPLAIN YOUR INNOVATION

- How does it solve the problem?
- AND how does your innovation meet the brief?
- **Show us your prototype** (High Fidelity or Click-through slideware)

AI for Environment Hackathon Series

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

FUTURE IMPACT

1.5 MINUTES

IMPACT

- What will your innovation change?
- Be compelling - Why should I care?

WHAT DO YOU NEED?

- What do you need to make this work?

FUTURE

- What could this mean for the future? (FOR <u>OUR</u> FUTURE?)

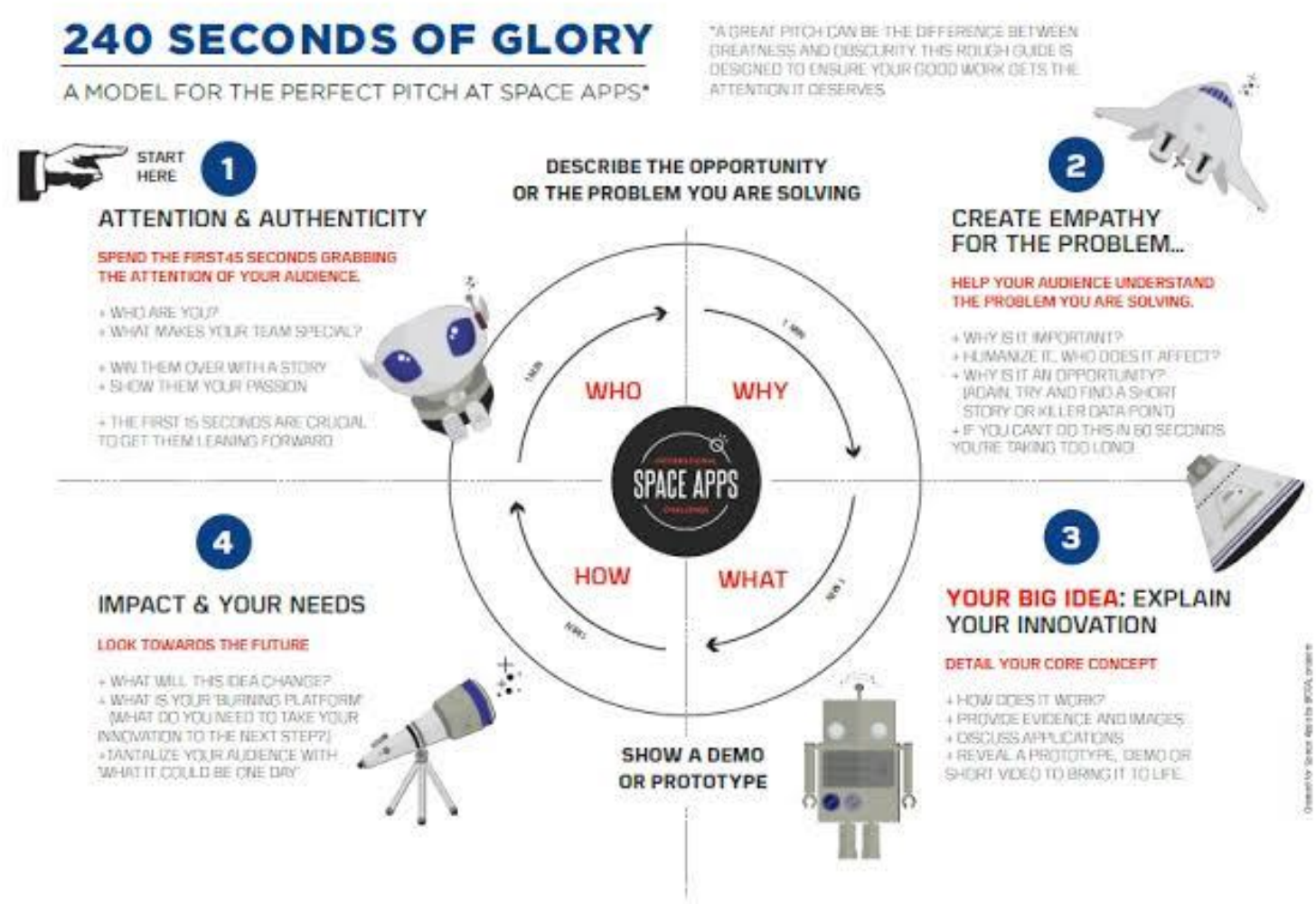
AI for Environment Hackathon Series

forum NEW ZEALAND
Te Kāhui Atamai Iahiko o Aotearoa

AI for Environment Hackathon Series

NASA's Space App's

This pitch deck is based on the hugely successful space apps challenge (we think plagiarism is the highest form of praise) – luckily we are giving you an extra minute (for 300 Seconds of Glory)



LOCATIONS & LOGISTICS

FEMALE-LED AI HACKATHON

BootCamp – Data & Tech
Pitching
Ideate & **Form Teams**
18 August

Bootcamp – Live Q&A
25 August

AI EnviroHack
Hackathon START
3 September

AI EnviroHack
Hackathon END
Teams Pitch to Judges
4 September

AI Summit
Top Team(s) pitch at the AI Summit (Live or pre-recorded)
12 September

AUT
WZ Building
Auckland Campus

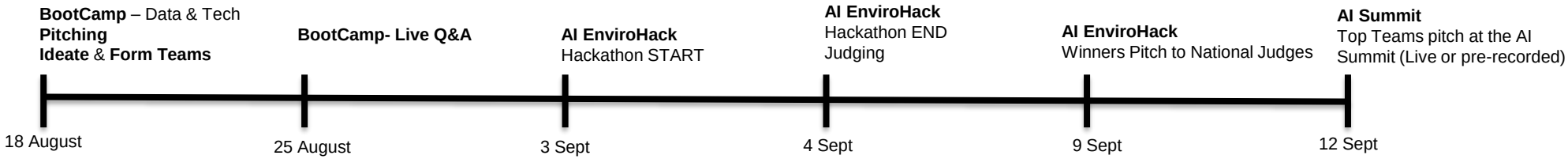
Auckland

60 Participants

12 Teams

Top 2 Pitch to AI Summit

NZ-WIDE AI HACKATHON



University of Otago
Owheo Building
Department of Computer Science
133 Union Street East, Dunedin North

Dunedin

10 Participants

2 Teams

Top Team
Pitch to the National Judges

Winners
Pitch to AI Forum's Summit

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND
SAPERE AUDE

NZ-WIDE AI HACKATHON

BootCamp – Data & Tech
Pitching
Ideate & **Form Teams**
18 August

BootCamp- Live Q&A
25 August

Training Day (Virtual)
NVIDIA Deep Learning course
7 Sept

AI EnviroHack
Hackathon START
8 Sept

AI EnviroHack
Hackathon END
Regional Pitches,
Winners Pitch to National Judges
9 Sept

AI Summit
Top Teams pitch at the AI Summit (Live or pre-recorded)
12 Sept

Datacom
54 Gaunt Street

Auckland

40
Participants

8
Teams

Top 2
Pitch to the National Judges

Winners
Pitch to AI Forum's Summit

NZ-WIDE AI HACKATHON

BootCamp – Data & Tech
Pitching
Ideate & **Form Teams**
18 August

BootCamp- Live Q&A
25 August

Training Day (Virtual)
NVIDIA Deep Learning course
7 Sept

AI EnviroHack
Hackathon START
8 Sept

AI EnviroHack
Hackathon END
Regional Pitches,
Winners Pitch to National Judges
9 Sept

AI Summit
Top Teams pitch at the AI Summit (Live or pre-recorded)
12 Sept

AI Institute
University of Waikato
Hillcrest Road
Hamilton

Waikato

50 Participants

10 Teams

Top 2
Pitch to the National Judges

Winners
Pitch to AI Forum's Summit

Te Ipu o te Mahara
Artificial Intelligence Institute
THE UNIVERSITY OF WAIKATO

NZ-WIDE AI HACKATHON

BootCamp – Data & Tech
Pitching
Ideate & **Form Teams**
18 August

BootCamp- Live Q&A
25 August

Training Day (Virtual)
NVIDIA Deep Learning course
7 Sept

AI EnviroHack
Hackathon START
8 Sept

AI EnviroHack
Hackathon END
Regional Pitches,
Winners Pitch to National Judges
9 Sept

AI Summit
Top Teams pitch at the AI Summit (Live or pre-recorded)
12 Sept

Amazon Web Services
222 Lambton Quay

Wellington

40
Participants

8
Teams

Top 2
Pitch to the National Judges

Winners
Pitch to AI Forum's Summit

NZ-WIDE AI HACKATHON

BootCamp – Data & Tech
Pitching
Ideate & **Form Teams**
18 August

BootCamp- Live Q&A
25 August

Training Day (Virtual)
NVIDIA Deep Learning course
7 Sept

AI EnviroHack
Hackathon START
8 Sept

AI EnviroHack
Hackathon END
Regional Pitches,
Winners Pitch to National Judges
9 Sept

AI Summit
Top Teams pitch at the AI Summit (Live or pre-recorded)
12 Sept

Callaghan Innovation
5 Sheffield Crescent
Burnside
Christchurch 8053

Christchurch

20
Participants

5
Teams

Top 2
Pitch to the National Judges

Winners
Pitch to AI Forum's Summit

CallaghanInnovation
New Zealand's Innovation Agency

AI SUMMIT – a national audience of experts

AI for Environment Hackathon Series

She#

60 Participants → 2 Teams

50 Participants → 2 Teams

40 Participants → 2 Teams

40 Participants → 2 Teams

20 Participants → 2 Teams

10 Participants → 1 Team

Te Ipu o te Mahara Artificial Intelligence Institute
THE UNIVERSITY OF WAIKATO

2 Teams

4 Teams

Aotearoa AI Summit
Atamai Iahiko
Artificial Intelligence

Summit Pitches are limited to 6 (max)

Judges will select winners to proceed

Pitches at the **AI Summit** are on the **main stage** on **Monday, 12 September** and can be:

- In person
- Via remote link up
- Pre-recorded

Overall winner will be selected by the AI Summit audience