



Accelerating Conservation's
Intelligent Edge with
Private/Public Partnership

Hi, I'm Sarah Maston



- Director of Partner Strategy and Global Scale Architect
- Data & Intelligence Process Architect with 25+ years experience that has made a few data & analytics platforms in the world :

To name a few...



- Inventor of the Nutrition Graph and Cognitive Nutrition (on patent at IBM)
- Mom to an 11-year-old & Lego Enthusiast



In June 2019,
I founded Project 15.

(with no formal conservation experience to speak of)





The a-ha moment.



IoT in Action Event Series

#IoTinActionMS



PRESS RELEASE

Houston Schools Deploying IoT-Enabled Building Safety Platform to Improve Emergency Responses

Published: Apr 15, 2019 8:30 a.m. ET



Aa

An Insight Enterprises safe-spaces point solution developed for BeSafe Technologies taps Microsoft Azure technology; provides accurate, real-time information to first responders

The city of Houston will be the first to implement an Internet of Things (IoT)-enabled platform called ActiveShield that redefines public safety. Two Houston schools will pilot the IoT safe-spaces technology created by Insight Enterprises **NSIT, +0.28%**, which integrates with a building safety platform from BeSafe Technologies to facilitate critical, real-time information sharing during a crisis.

ActiveShield leverages the power of **Safe Spaces developed by Insight**, part of a suite of customizable, end-to-end smart spaces solutions developed by the **Digital Innovation** team at Insight, a Fortune 500 global systems integrator helping organizations of all sizes manage and transform their business. Insight's Safe Spaces solution addresses communication challenges during emergency events

THE CITY OF
Houston, TX
Houston Smart Buildings

HAS BEEN SELECTED AS THE WINNER IN THE CATEGORY OF
SMART BUILDINGS

FOR THE
IDC Smart City
NORTH AMERICA AWARDS
2019

IDC ANALYZE THE FUTURE

Did you find the books?



Eric Dinerstein

To Sarah Maston



You replied to this message on 4/25/2019 10:47 PM.

Hi Sarah,

Hope you found the books or the books found you.



Dr. Eric Dinerstein

Director of WildTech and the Biodiversity and Wildlife Solutions Program at RESOLVE

Lead author of the Global Deal for Nature

Former Lead Scientist and VP for Conservation Science at the WWF for 25 years

Helped create the conservation plans for:

- The Galapagos
- The Chihuahuan Desert
- The Himalayas
- The Panda Mountains of China
- The Northern Great Plains of Montana







Variables limited - what is natural
vs. unnatural

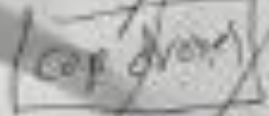


For your drawings

Eric Dinerstein
To Sarah Maston



- ① Spot 1.54A
- ② nose



Daisuke Nakahara

was a Principal IoT Solution Architect
on the IoT Innovation Team

25 years at Microsoft

Once upon a time was on the team
that invented the USB Drive and
since then many other things you
use every day.



Project 15

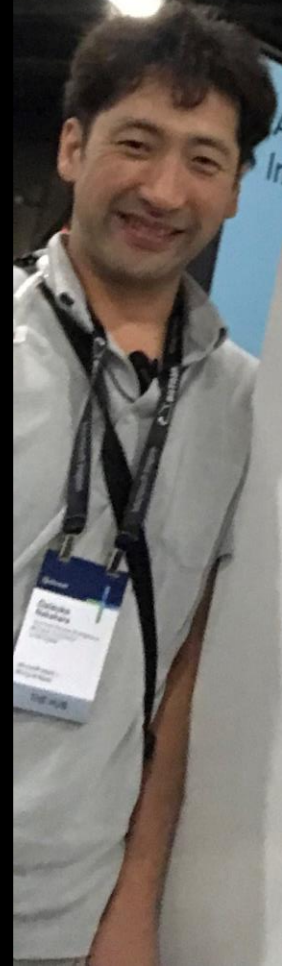
Building solutions on
Microsoft Azure



How can your
lot
#(re)Think
Join us! Project



c. July 2019 – Las Vegas – Inspire



Intelligent Edge

Azure Edge Infrastructure
Azure Sphere
Intelligent Edge Partner
Project 15





Select Language

Technology Products Markets Resources

CONNECTIVITY MATTERS

To Keep Up with Industry Movements



November 26, 2019 | Written by Alice DiSanto

IoT Technology Gone Wild—Rajant Joins Project 15 Animal Conservation Initiative

31 Shares


Can current IoT solutions help save animals?

What IoT solutions do we already have, that if applied to animal conservation, could help solve environmental challenges?

What if like-minded IoT solution providers, like Rajant, could accelerate collaboration around a joint mission?

Consideration of these questions, the ongoing drive to enable unfailing connectivity, and a heart for giving

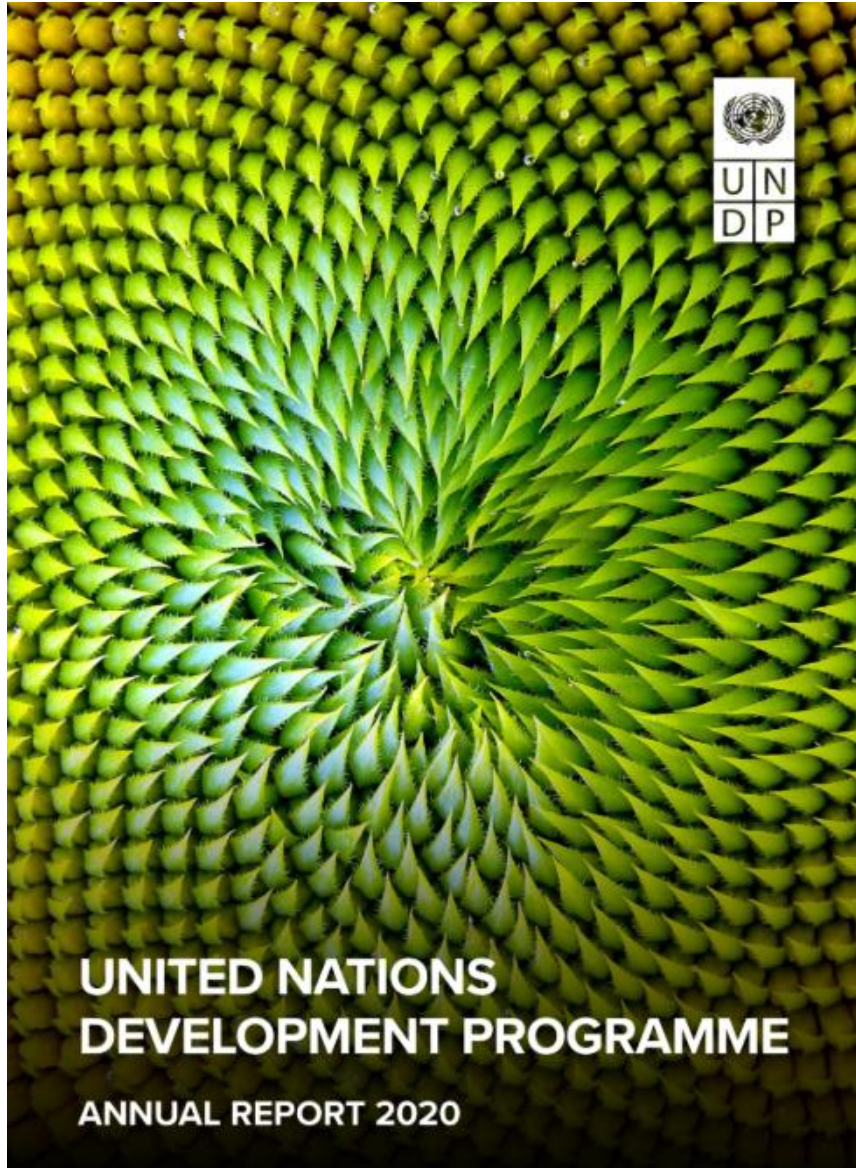




**We think we can
help you.**



One Year Later



SAMSUNG

The Samsung Global Goals app, jointly developed with UNDP, is now installed on over 100 million devices worldwide. This partnership has generated \$1.5M and engaged new audiences with the SDGs. With the #Generation17 initiative, visionary young leaders from around the world are raising awareness about how they are helping to solve some of the world's most urgent problems.

THE LION'S SHARE

The Lion's Share Fund added Gucci and Cartier to its partnership roster in 2020. The fund also launched the COVID-19 Response: Resilience in Wildlife Community Grants to support communities dependent on wildlife-based tourism that have been severely impacted by the pandemic.

HEART 17

In 2020, HEART 17 built its digital platform and began testing its functionality with youth drawn from UNDP's networks. The purpose of HEART 17 was deepened to focus on amplifying the voices of youth leaders on topics related to the environment and inequality. Brands supporting the initiative include H&M, Spotify and Mojang (Minecraft).

MICROSOFT

UNDP advanced its digital transformation partnerships for environmental sustainability and innovative data management solutions for the COVID-19 response. We are working with Microsoft to facilitate access to sustainable energy, biodiversity and ecosystem benefits in countries challenged by climate change. As part of the partnership, the GEF Small Grants Programme is collaborating with Project 15 at Microsoft to create opportunities for community-based initiatives to accelerate innovation and scale up impacts on species conservation, sustainable fisheries and agriculture.

CITI FOUNDATION

Co-led by UNDP and Citi Foundation, Youth Co:Lab establishes a common agenda to empower and invest in youth, so that they can accelerate the SDGs through leadership, social innovation and entrepreneurship. Since 2017, the programme has been implemented in 25 countries across Asia-Pacific, reached over 75,000 participants, benefited over 7,120 young social entrepreneurs, helped launch or improve over 1,000 youth-led social enterprises, and collaborated with over 192 ecosystem partners.

COVID-19 PRIVATE SECTOR GLOBAL FACILITY

The aim of UNDP's new facility is to foster and enhance public-private partnerships and solutions at both the global and national levels. UNDP joined forces with the ICC, UN Global Compact, PwC, Microsoft and DHL to develop the facility, which is tailored to countries' specific needs and supports small and medium-sized enterprises (SMEs) to advance green and digital technologies. Its work directly supports the progress of SDG 8, SDG 13, SDG 17 and the COVID-19 response.

DIGITAL GIVING

UNDP has also revitalized opportunities for individuals to mobilize resources through crowdfunding campaigns that provide tangible support to the most vulnerable. Over 15 campaigns were launched in 2020 alone.

Partners shown in the infographic include: **LAVAZZA** (TORINO, ITALIA. 1895), **Cartier**, **HEART 17**, **GUCCI**, **ICC**, **THE GLOBAL COMPACT**, **African Union**, **Citi Foundation**, **citi**, **Microsoft**, **DHL**, and **pwc**.

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Yoko Watanabe

Global Manager
GEF Small Grants Program implemented by the UNDP

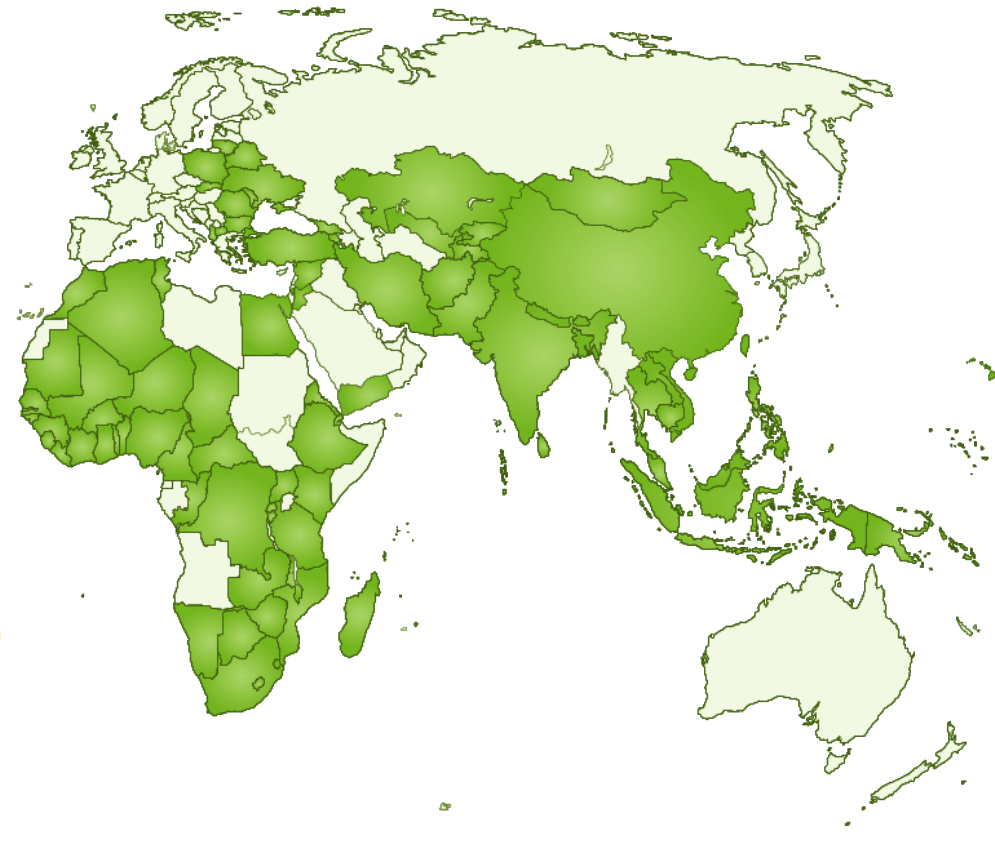
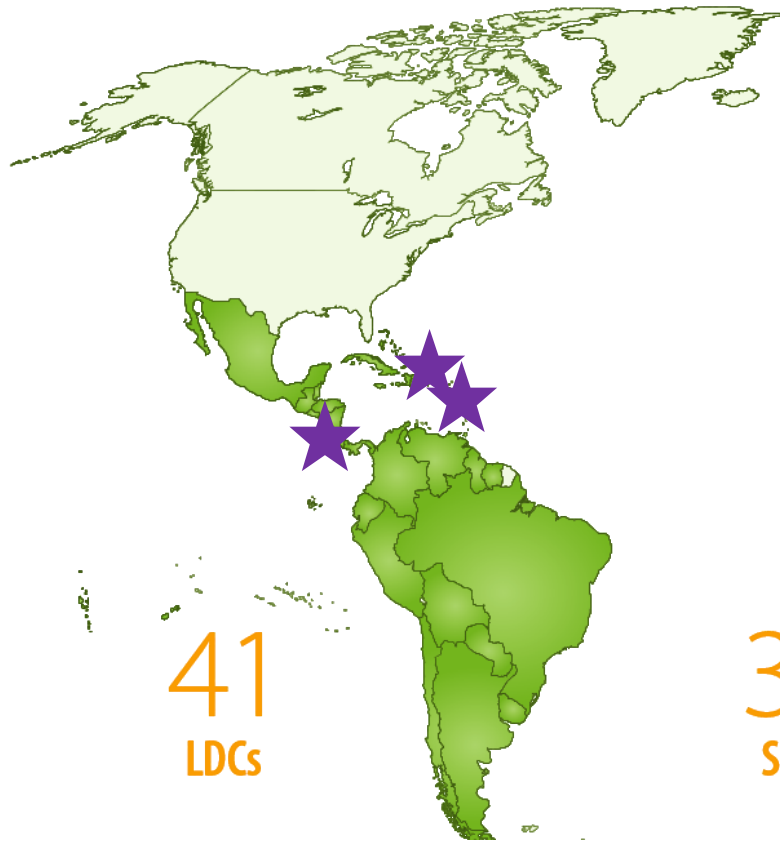
SGP The GEF
Small Grants
Programme

SGP The GEF Small Grants Programme

COVERAGE 127 ACTIVE COUNTRIES

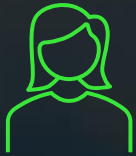
112 COUNTRIES IN THE SGP GLOBAL PROGRAMME

15 UPGRADED COUNTRIES

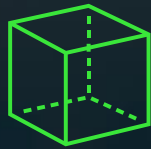


Typical Conservation Data Project **Process**

Conservation team sets project goal, scope and approach to collecting data



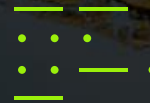
Build a proof of concept (POC)



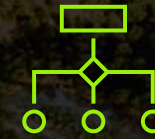
Use POC and/or architecture for Grant proposal



Use grant money to pay for development



Implement the solution



Scale out the Solution



"Catch 22"

Know what to do with the data, could get the grant with the data but don't know how to get the data

"DIY Devices"

I need to build my own device

"Cloud What?"

Do not have cloud and architecture design expertise

"Small Fish"

I have no grant yet and am not a big enough fish to get a grant without any data

"Pit of Financial Despair"

Grant money is used up attempting to develop an IoT/Data solution

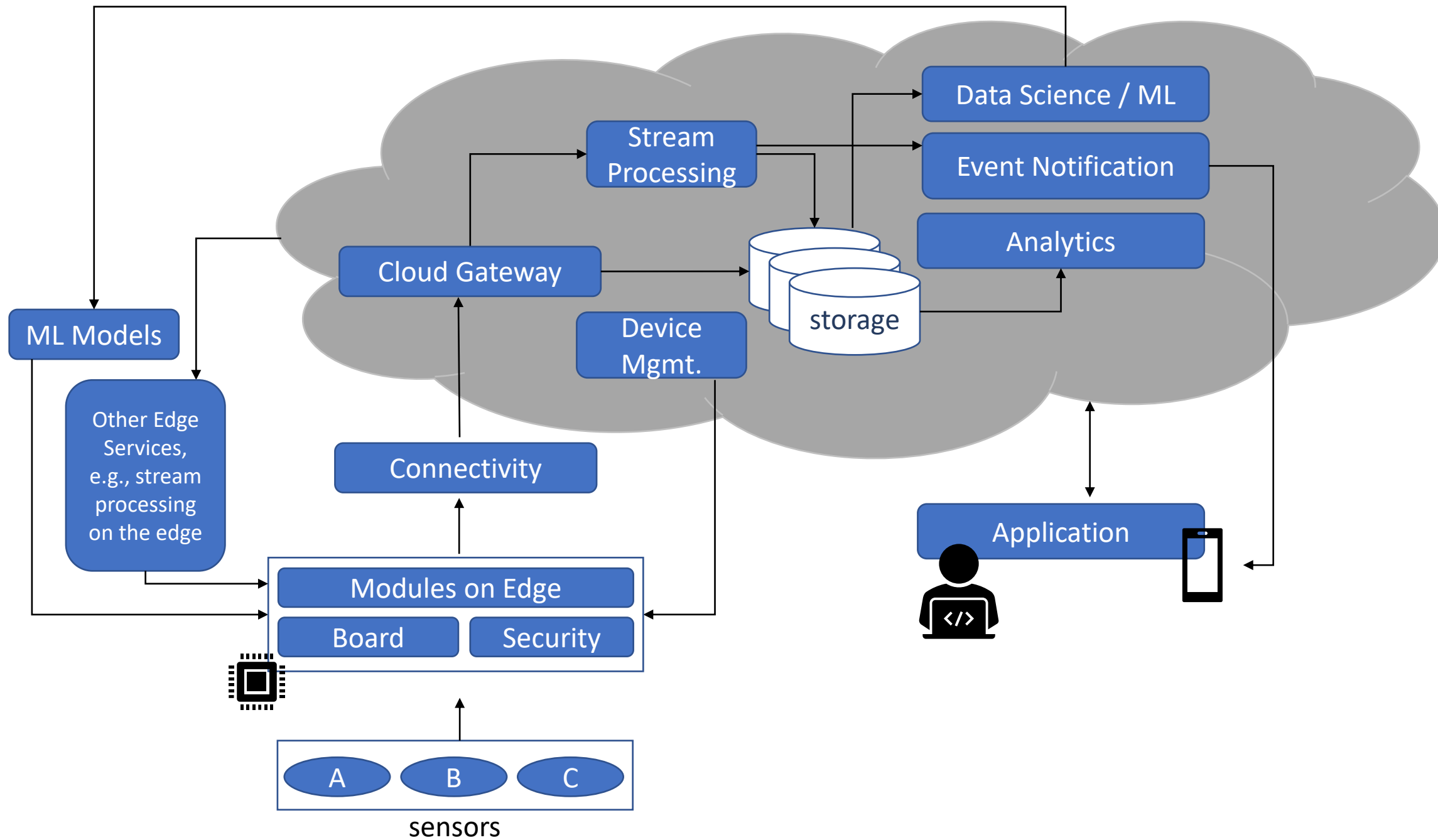
"Showcase"

Was built to be a research paper and not a lasting-solution and is spun down

"Myopic Build"

Solution was not built to be scaled out

Common Roadblocks



“People know **what kind of music** they want to play,
but that doesn't mean they **know how** to build a piano.
And, we're good at **building pianos.**”

- Project 15 from Microsoft

Project 15 from Microsoft

Open Platform for Conservation and Ecological Sustainability Solutioning

Species Tracking & Observation

Poaching Prevention

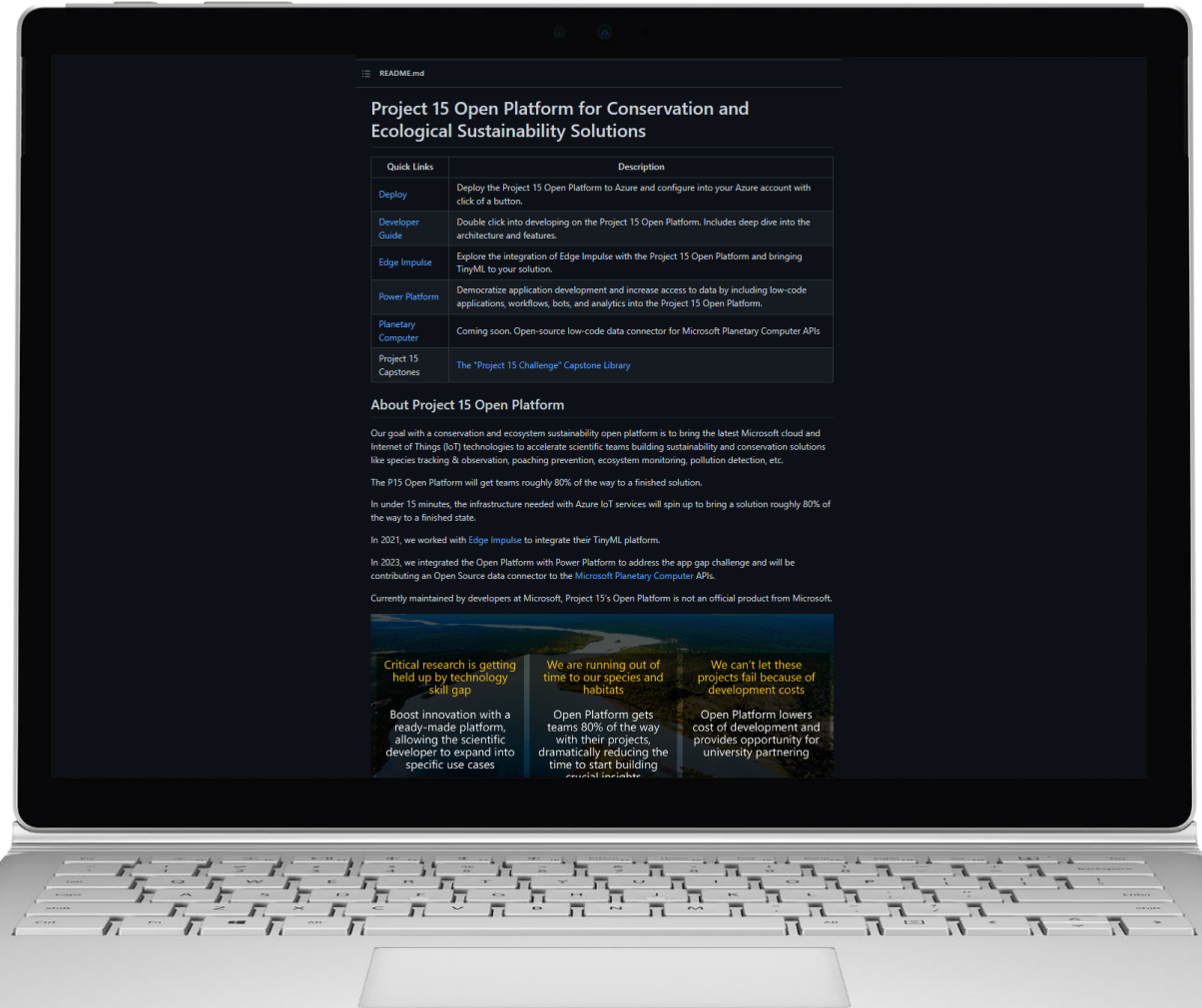
Pollution Detection

Water Quality

Ecosystem Monitoring

- An easy to deploy (in 15 minutes or less) technology solution applicable across a range of use cases
- Provides around 80% of Code Needed for most Projects
- Free, open-source code available on GitHub

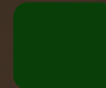
aka.ms/project15code



Project 15 Open Platform



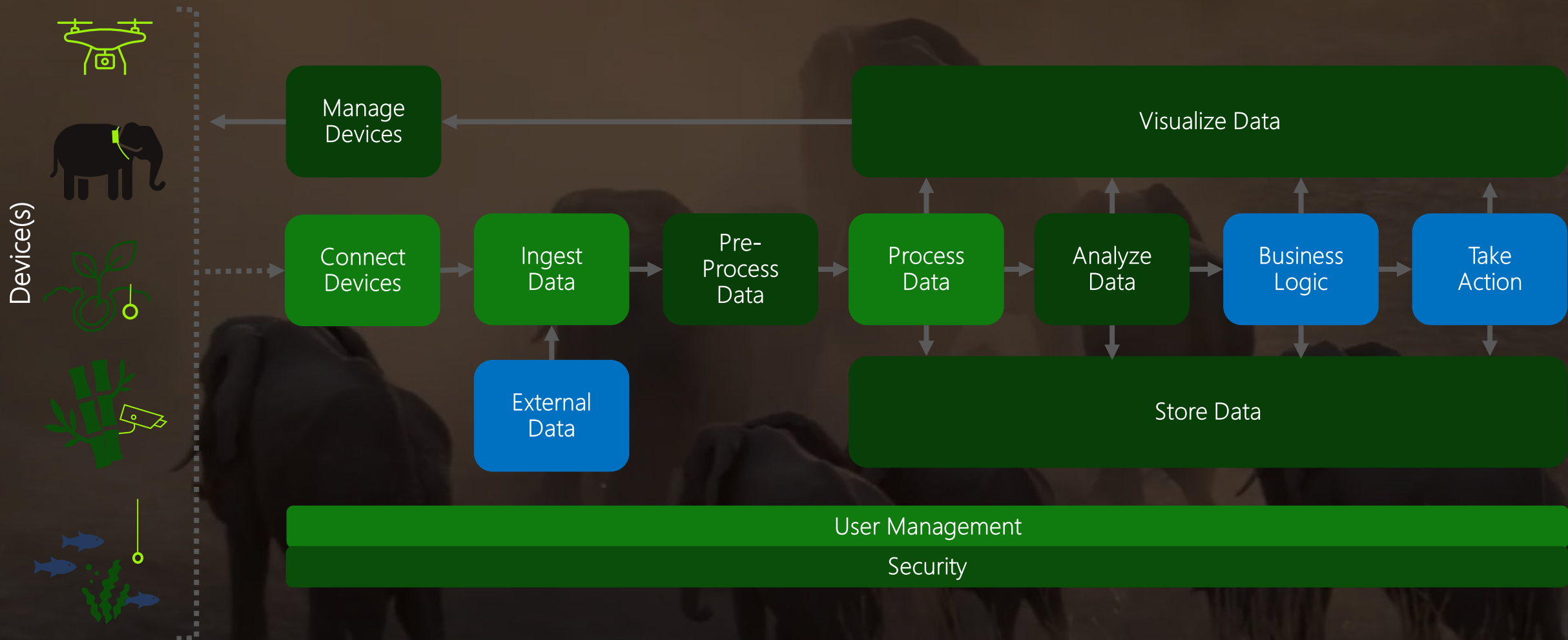
Fully included in Open Platform



Included but needs customization



Not Included, requires full customization





project15

Project 15 from Microsoft | Open Platform Repository

Deploying Project 15 from Microsoft Open Platform in 3 steps

This document walks through deployment of Project 15 from Microsoft Open Platform in 3 steps.

1. Click to open Azure Resource Manager (ARM) Template
2. Personalize and configure deployment
3. Run Post Deployment Script

Requirements

- Azure Subscription
If you do not have Azure Subscription, please create an account for free (12 months)
<https://azure.microsoft.com/free/>
You must be an administrator or an owner of the subscription
- A PC with Web Browser

1. Open ARM Template Deployment

Click **Deploy to Azure** button below



[!TIP]

Right click the button below and select **Open link in new tab** or **Open link in new window**

2 : Personalize and configure Open Platform

aka.ms/project15code



The "App Gap"

The "App Gap" challenge

500 million

new apps will be built in the next 5 years
– more than all apps built in the last 40 years!¹

5x

Faster demand for mobile apps than IT
departments can deliver.²

86%

of organizations struggle to find technical
talent to build applications.³

A growing demand for apps but not enough developers to build them



The global shortage of developers will
increase from 1.4 million today to

4 million in 2025⁴

¹ IDC FutureScape: Worldwide IT Industry 2020 Predictions. Doc # US 45599219, October 2019

² Gartner, How to Deliver Enterprise Mobile Apps Faster – 2017

³ Patrick Moorhead, [Microsoft goes all-in on hybrid Cloud and Edge at Ignite 2019](#), citing Indeed survey, Forbes.com, Nov 2019

⁴ IDC, Quantifying the Worldwide Shortage of Full-Time Developers, Doc # US48223621, September 2021

Democratizing Development

What the developer wants to see:

```
from azureml.core.model import Model
from azureml.contrib.services.aml_request import AMLRequest, rawhttp
from azureml.contrib.services.aml_response import AMLResponse
from PIL import Image
import json
import os
import io
import base64
import pandas as pd
import numpy as np
from PIL import Image
import onnxruntime as rt
import logging

from inference_schema.parameter_types.pandas_parameter_type import PandasParameterType
from inference_schema.schema_decorators import input_schema, output_schema

logging.basicConfig(level=logging.DEBUG)

sample_input = PandasParameterType(pd.DataFrame({'image': 'xd8\xel\xb7\xeb\xa8\xe5 \xd2\xb7\xel'}))
sample_prediction = {'Prediction': "PNEUMONIA", "Confidences": [5.102448583982629e-34, 1.0]}
sample_output_schema = PandasParameterType(pd.DataFrame([sample_prediction]))

def get_model_and_sig(model_dir):
    """Method to get name of model file. Assumes model is in the parent directory for script."""
    with open(os.path.join(model_dir, "signature.json"), "r") as f:
        signature = json.load(f)
    model_file = os.path.join(model_dir, signature.get("filename"))
    if not os.path.isfile(model_file):
        raise FileNotFoundError(f"Model file does not exist")
    return model_file, signature

def load_model(model_file):
    """Load the model from path to model file"""
    # Load ONNX model as session.
    print("Creating Inference session from ONNX file")
    print(model_file)
    return rt.InferenceSession(path_or_bytes=model_file)

def get_prediction(image, session, signature):
    """
    Predict with the ONNX session!
    """
    # get the signature for model inputs and outputs
    signature_inputs = signature.get("inputs")
    signature_outputs = signature.get("outputs")

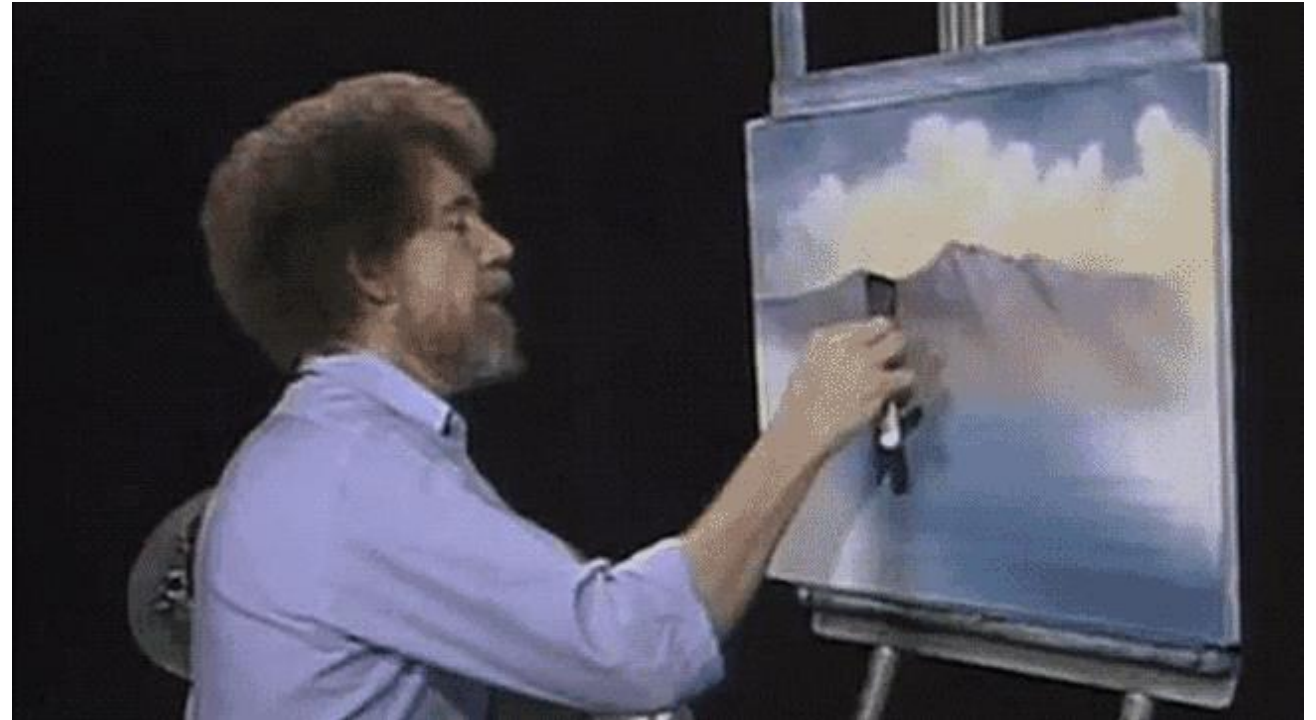
    if "Image" not in signature_inputs:
        raise ValueError("ONNX Model doesn't have 'Image' input! Check signature.json, and please report issue to Lobe.")

    # process image to be compatible with the model
    img = process_image(image, signature_inputs.get("Image").get("shape"))

    # run the model!
    fetches = [(key, value.get("name")) for key, value in signature_outputs.items()]
    # make the image a batch of 1
    feed = {signature_inputs.get("Image").get("name"): [img]}
    outputs = session.run(output_names=[name for (_, name) in fetches], input_feed=feed)
    # un-batch since we ran an image with batch size of 1
    # convert to normal python types with tolist(), and convert any byte strings to normal strings with .decode()
    results = {}
    for i, (key, _) in enumerate(fetches):
        val = outputs[i].tolist()[0]
        if isinstance(val, bytes):
            val = val.decode()
        results[key] = val

    return results
```

What we really need:



Microsoft Power Platform

No code, low code, and code first—all are welcome



Power BI

for low-code
data exploration,
analytics and reporting



Power Apps

for low-code
web and mobile
application development



Power Automate

for low-code
robotic process automation
or workflow automation



Power Virtual Agents

for low-code
chatbots and
conversational agents



Power Pages



AI Builder



Data Connectors



Power Fx

Built-in Connectors for Cloud and On-premises



Built-in connectivity to 1400+ cloud services, content services, databases, APIs, etc.



Seamless hybrid connectivity to on-premises systems via the on-premises data gateway



Develop and register custom connectors as a building block for citizen developers

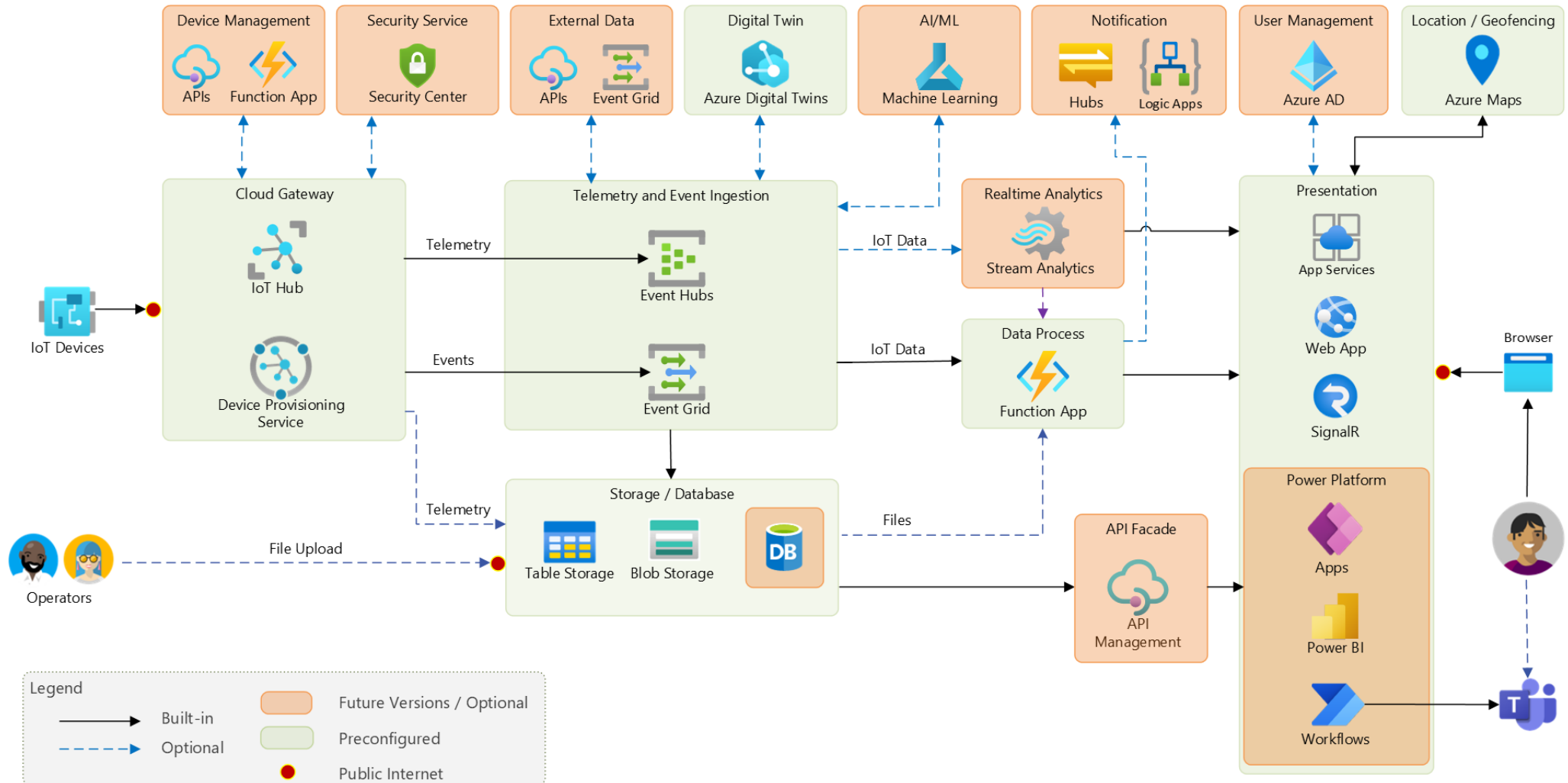


Break down data silos by using multiple data sources in a single application





Project 15 Open Platform





Together we can.

The importance of Partnership

[Home](#) » [Programme](#) » [Official Programme](#) » [Green is the new gold: partnering with the private sector for conservation finance](#)

Green is the new gold: partnering with the private sector for conservation finance

Why attend

The business models and investment case for conservation are not widely understood by investors and the private sector. The session will discuss concrete initiatives in which the private sector is tackling conservation with collaborative partnerships and innovative financial solutions that are deployed for ecosystem protection and conservation.

Description

The session will showcase initiatives in which the private sector is supporting conservation outcomes with a focus on innovation and new partnership models. First, an expert panel will explore the key elements and foundations of collaborative partnerships pioneered by major

Session agenda

Speaker



Mr Bernard GIRAUD
President & Co-Founder,
Livelihoods Funds
France

Green is the New Gold
16:00 - 17:30



Ms Kate GILMAN WILLIAMS
Founder and CEO,
Kids Can Save Animals
United States of America

Green is the New Gold
16:00 - 17:30



Mr Ben VALK
Global Head Food & Agri Partnerships,
Rabobank
The Netherlands

Green is the New Gold
16:45 - 17:30



Mr Carlos Manuel RODRIGUEZ
CEO and Chairperson,
Global Environment Facility (GEF)
Costa Rica

Green is the New Gold
16:00 - 17:30



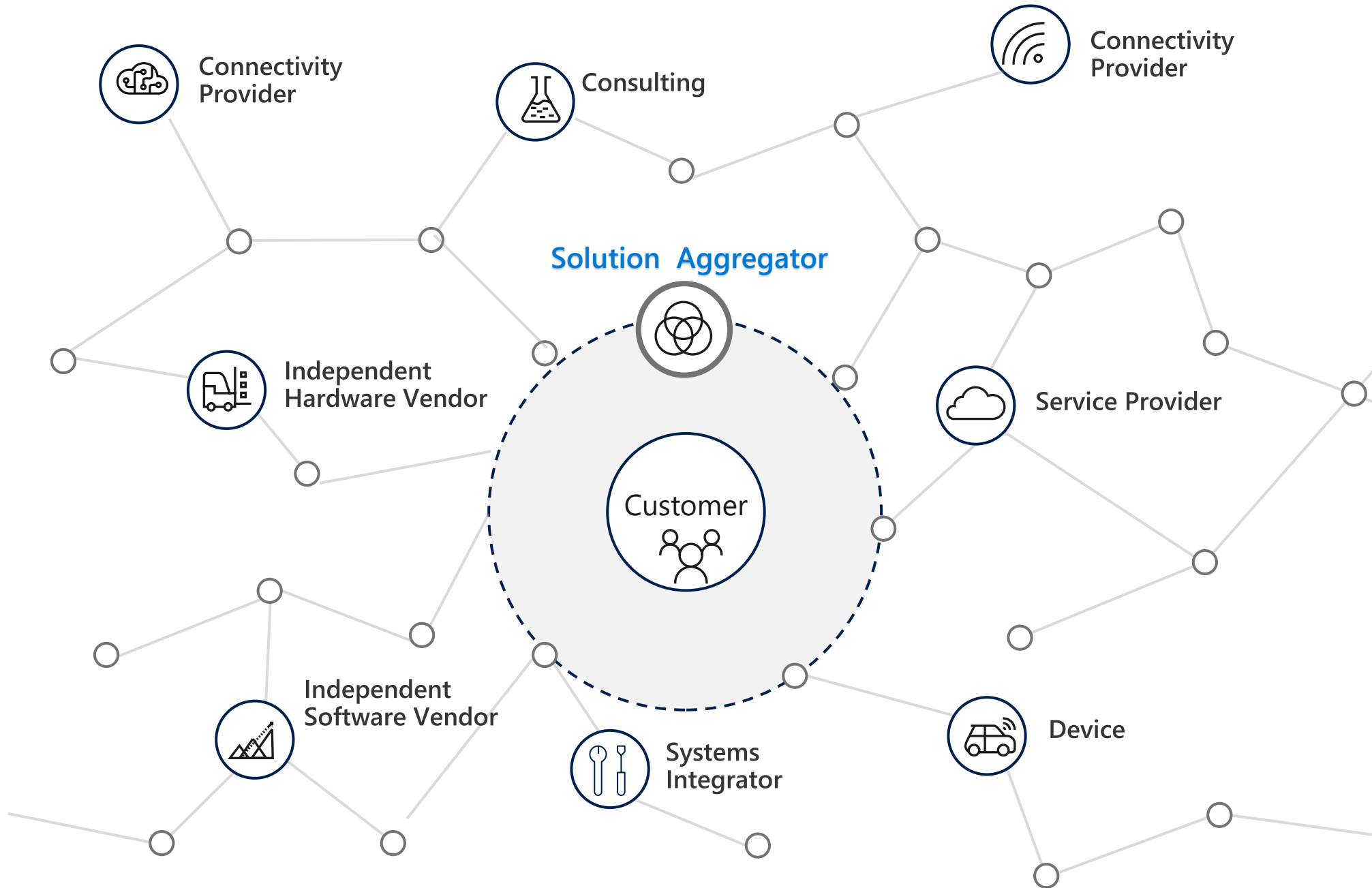
Sarah MASTON
Founder of Project 15 from Microsoft,
Microsoft
United States of America

Green is the New Gold
16:00 - 17:30



Tanja HAVEMANN
Co-founder & Director,
Clarmondial
Switzerland

Green is the New Gold
16:45 - 17:30





hackster.io

AN AVNET COMMUNITY



2,100,000+

MEMBERS IN 150 COUNTRIES



35,000+

OPEN SOURCE PROJECTS



270+

COMPANY PLATFORMS

Hackster's Reach



550,000+

MONTHLY HACKSTER NEWS READERS



8,000,000+

MONTHLY SOCIAL MEDIA IMPRESSIONS



6,000,000+

MONTHLY WEBSITE VIEWS



50,000+

MONTHLY VIDEO VIEWS





Rex St. John



Tim van Dam - Smart Parks



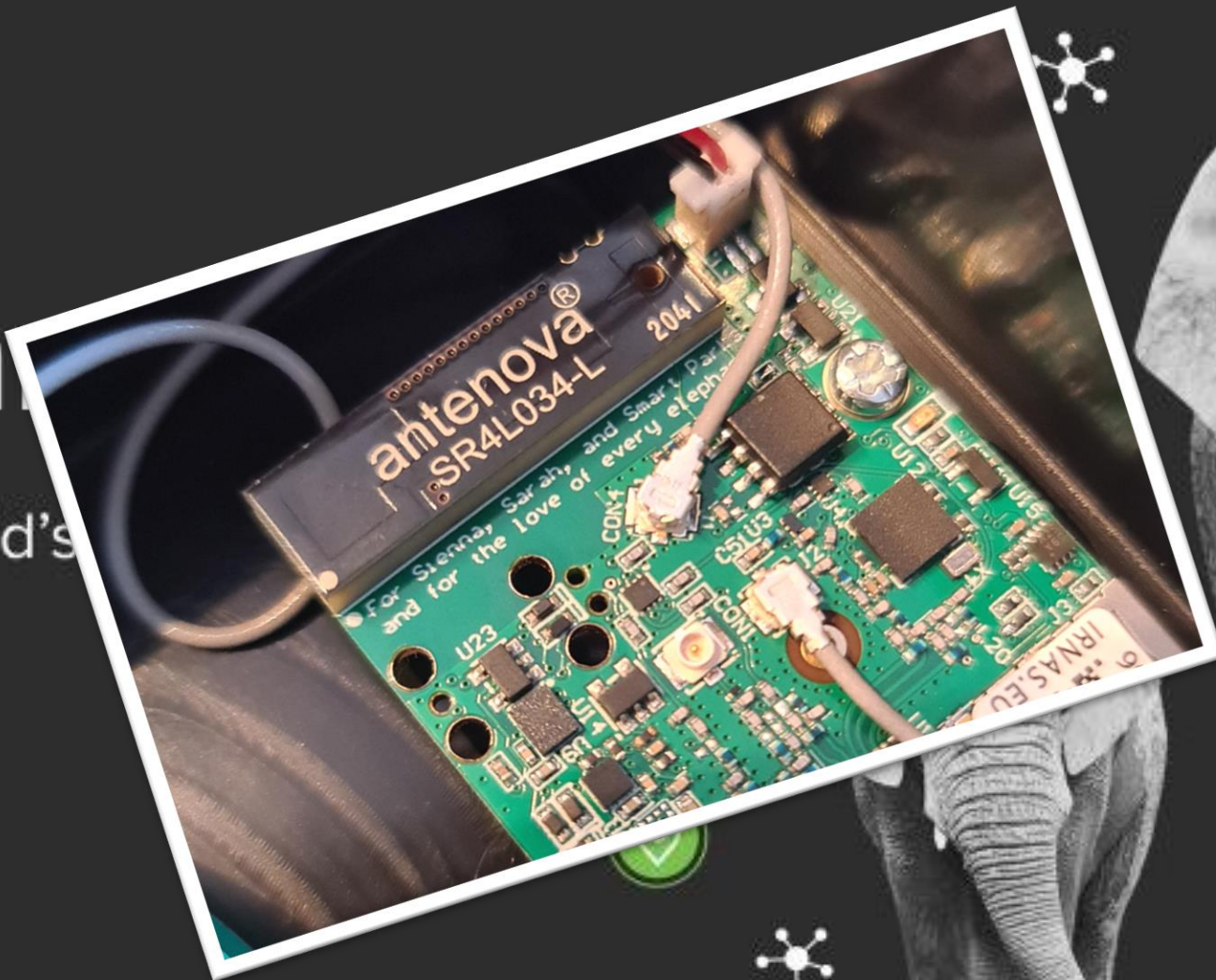
Adam Benzion



Sarah Maston

Elephant

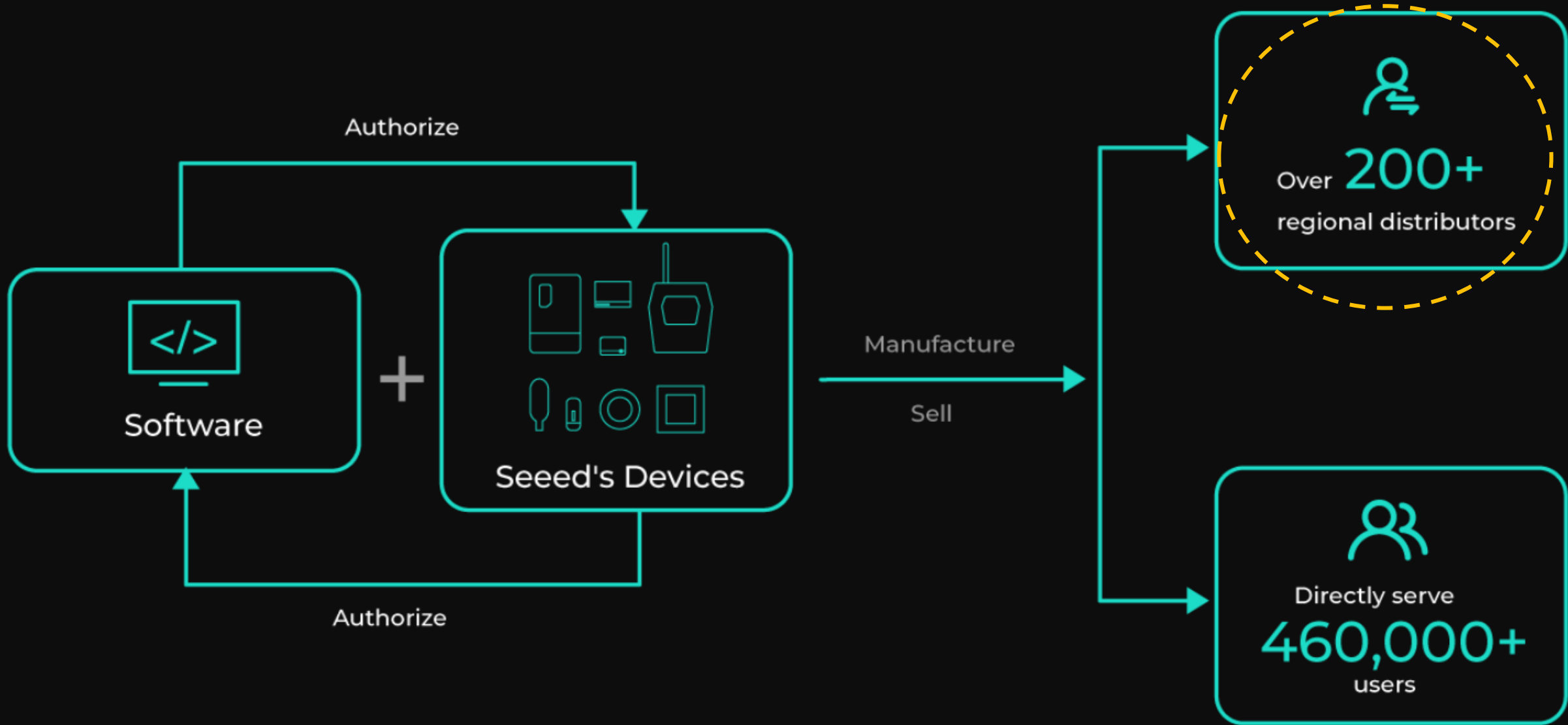
Building The World's
Wildlife Tracker.





seeed studio





Seeed Studio New Product Catalog 2022

IoT Into the Wild



To bridge the huge gap between the real-world frontiers and technology applications, Seeed is presenting you full AIoT solutions to digitalize the wild.



seeed studio

IoT Into the Wild Contest for Sustainable Planet 2022

Up to 100 Seeed Studio LoRaWAN Dev Kits Available // Over \$14,000 in Prizes



The banner illustration depicts a vibrant, stylized landscape with rolling hills, wind turbines, and various animals. It features several IoT-related icons: a wind turbine labeled 'Wind turbines', a cow labeled 'Cows', a deer labeled 'Deer', a panther labeled 'Panther spotted', a water drop labeled 'Water', and a temperature gauge labeled 'Temperature'. The scene is set against a bright green background with birds flying in the sky.



A grid of sponsor logos is displayed below the banner. The logos are arranged in five rows and three columns:

- Row 1: 柴火创客 CHAIHUO MAKERS, EDGE IMPULSE, FAB CITY
- Row 2: hackster.io AN AVNET COMMUNITY, HAX, helium
- Row 3: Himax, Iaac Institute for advanced architecture of Catalonia, Microsoft
- Row 4: NO (with Wi-Fi and house icons), seeed studio, SEMTECH
- Row 5: SOSV, The PARADISE 桃花源, zambezi





seed studio

Project Repository of IoT Into the Wild Contest for Sustainable Planet 2022



https://www.seedstudio.com/iot_into_the_wild.html





Friends of Project 15 from Microsoft



Empowered lives.
Resilient nations.



From an original internal pitch deck for Project 15 – c. 2019

Stage 1 Goals



AWARENESS IN BOTH
SCIENTIFIC COMMUNITY &
TECHNICAL COMMUNITY



GROW THE PROJECT 15
ECOSYSTEM



CREATE THE PROCESS TO
CONNECT ON SOLUTIONS

Panel



Connecting the Dots: A Discussion on Private and Public Partnership and Driving Impact for Our World

Sarah Maston

Director of Global Partner Development, Microsoft

Eric Pan

Founder and CEO, Seeed Studio

Stephanie O'Donnell

Community Manager, WILDLABS

Yoko Watanabe

Global Manager, GEF Small Grants Programme

Gautam Shah

Founder, Internet of Elephants



Oct 11, 2022 @ 9:35 AM PT





Thank you!

aka.ms/project15story

Please don't hesitate to reach out to connect on LinkedIn!

 [/in/smwmaston/](https://www.linkedin.com/in/smwmaston/)