How Cloud computing helps build intelligent solutions to benefit the environment.

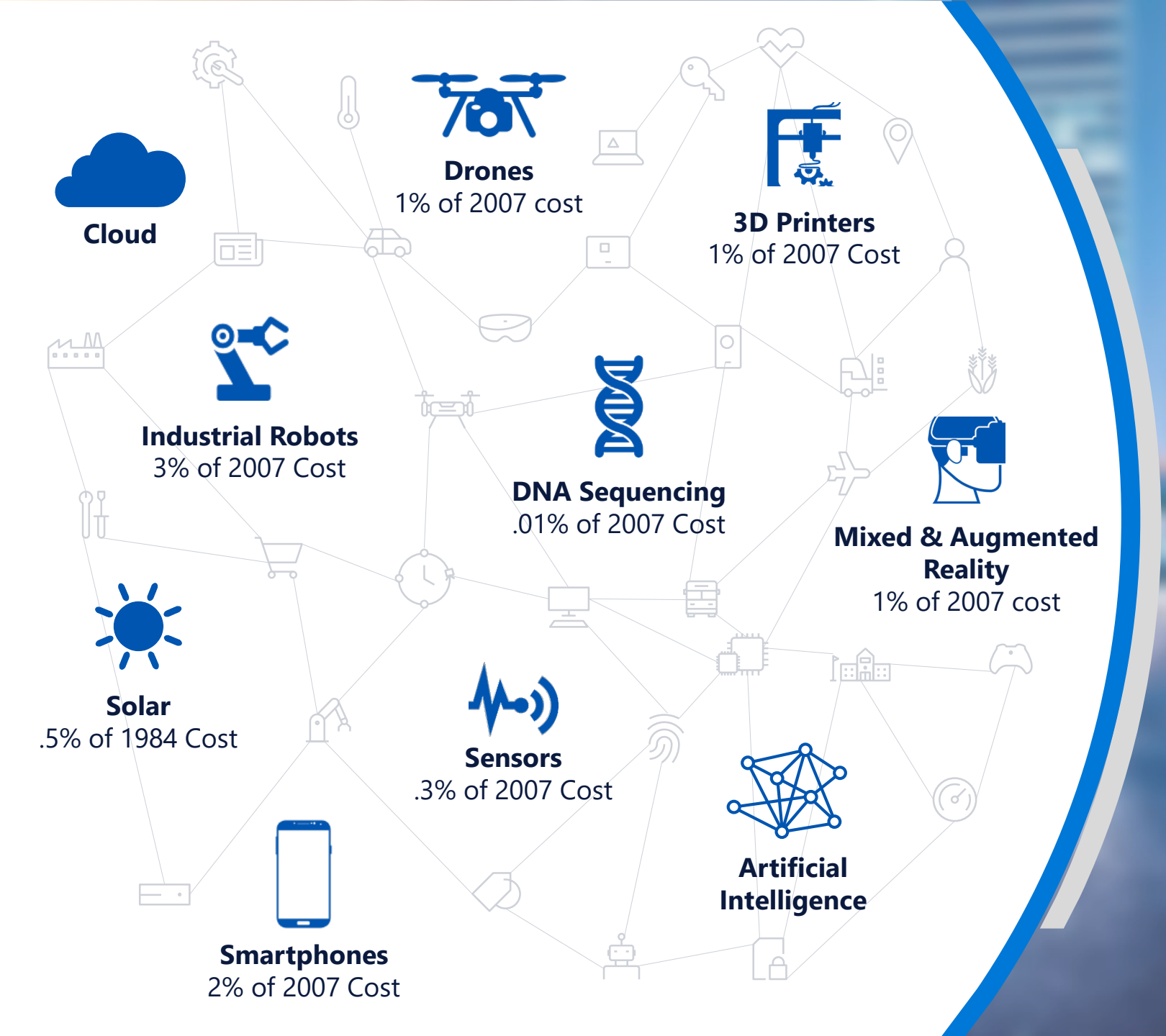
Ole Kjeldsen
Director of Technology- & Security
Microsoft Denmark & Iceland

DOWNLOAD PDF

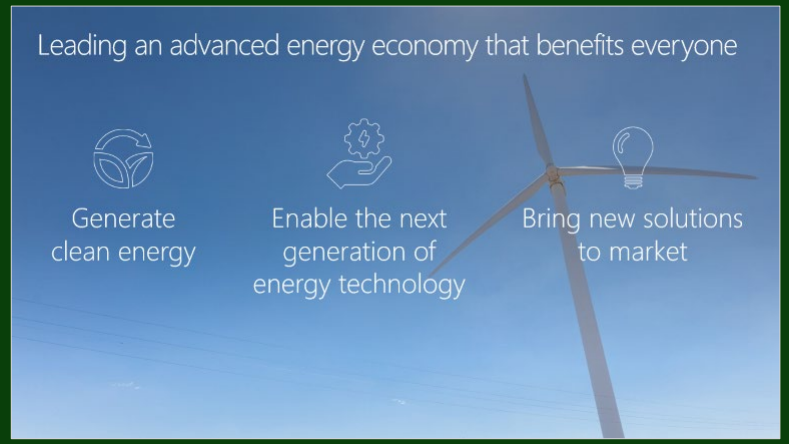
“The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it”.

Mark Weiser, XEROX PARC Researcher


inental CIGAR
TEN CENTS



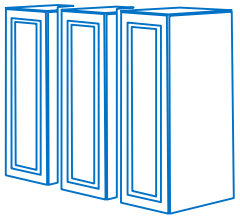
Transformative Technologies Democratized



Summarizing

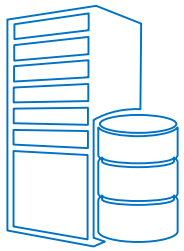
1. Hyper Scale Datacenters (a.k.a. Public Cloud) **will minimize negative environmental impact** of desired & required computing demands!
2. On top, it will – given the right customer demands - also **increase the overall security and resilience** in a world of ever increasing cyber-threats!
3. The amount and speed of **GreenTech innovation based on cloud enabled technology** – is a solid positive factor in our overall SDG focus!

Datacenter evolution: from 1995 to today



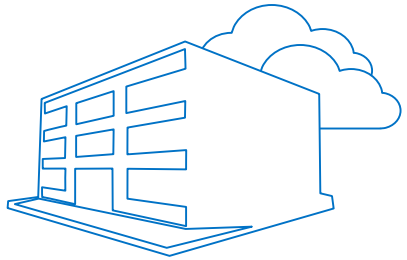
Traditional

2007



ITPAC

2009



Cloud

Today

Challenges in maintaining your own infrastructure, help grow Cloud computing

- Cost, time and complexity
- Lack of flexibility
- Data explosion
- Efficient energy use

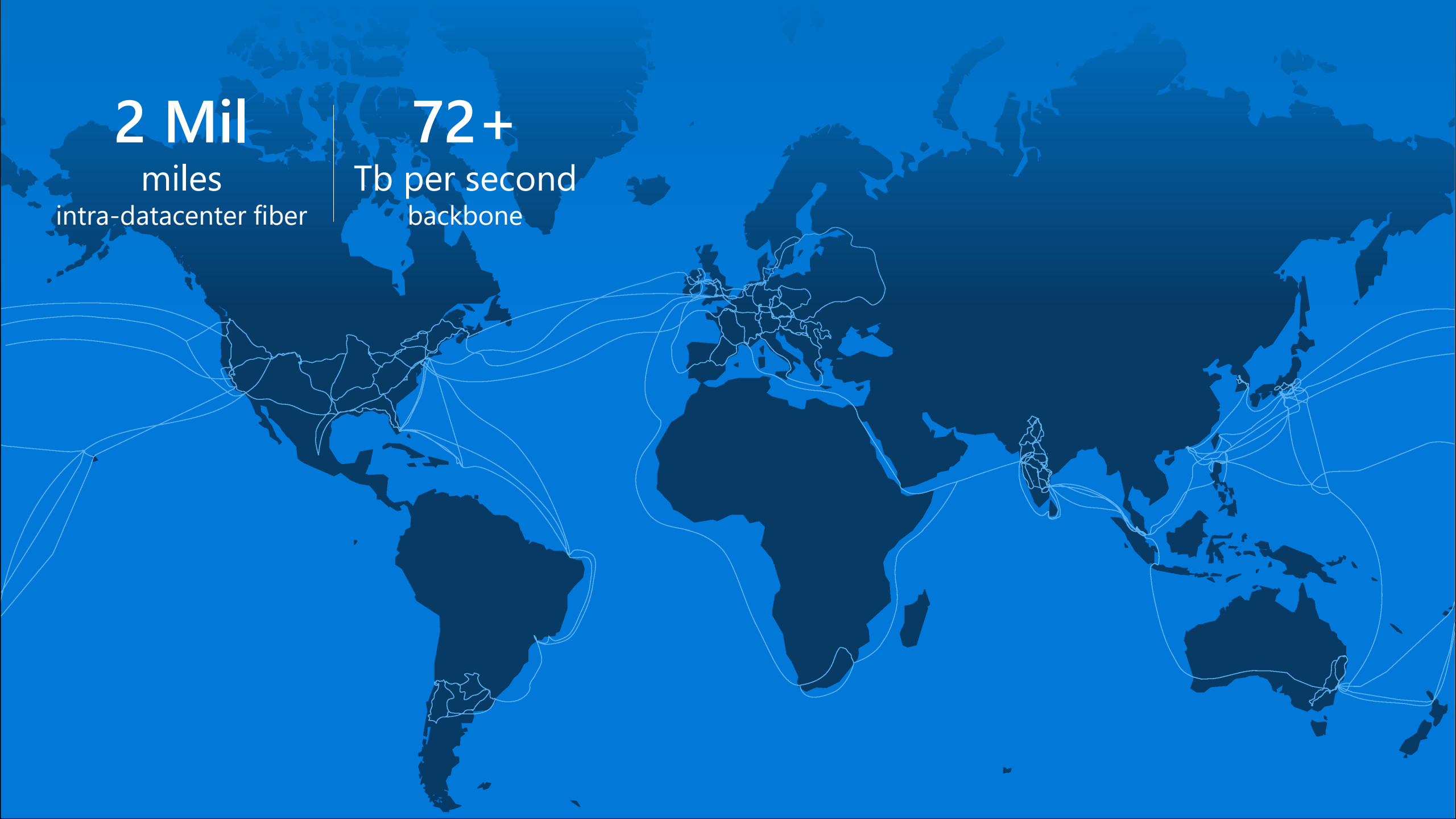
Infrastructure that powers the Microsoft Cloud

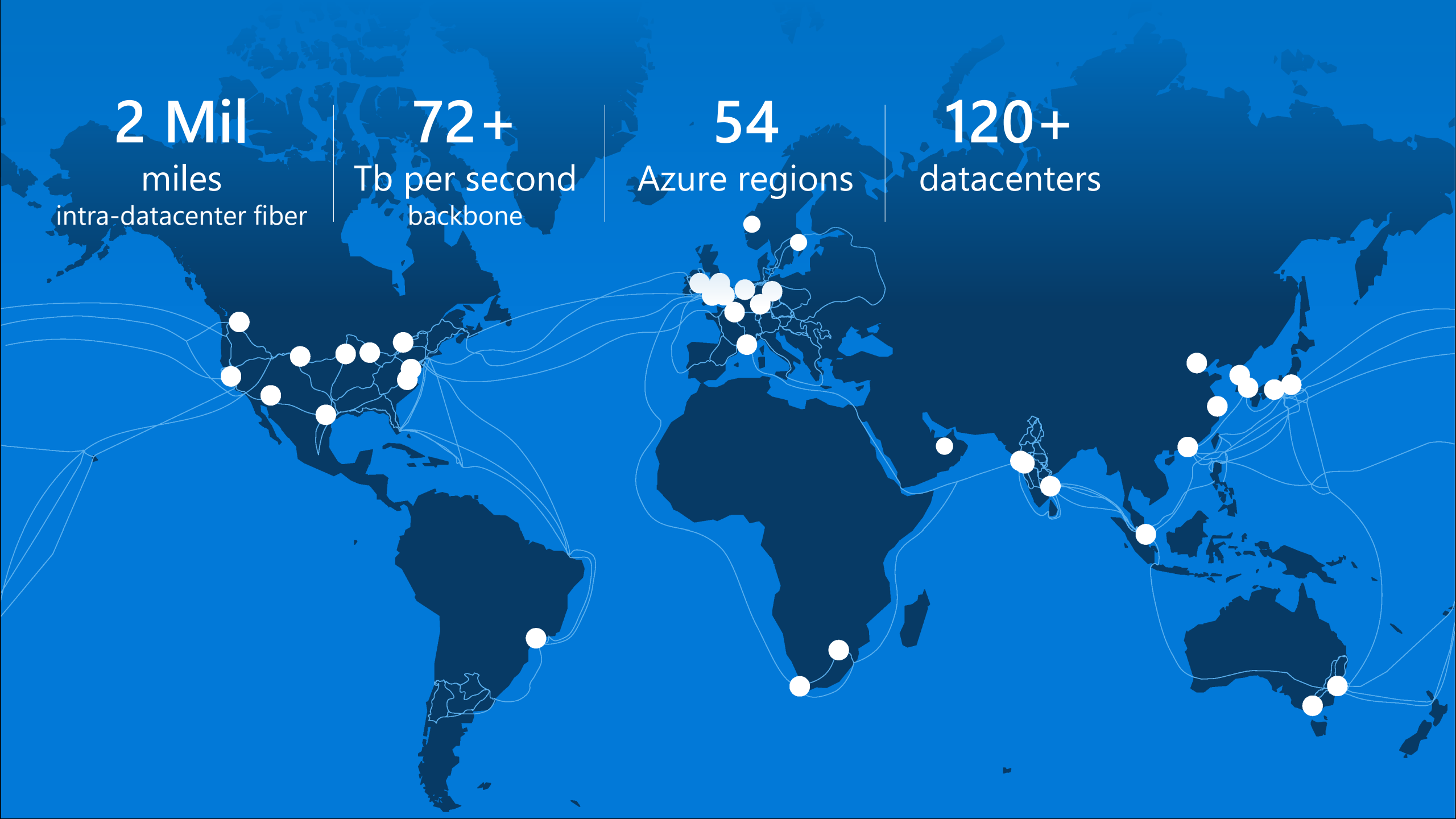
Global reach, local presence

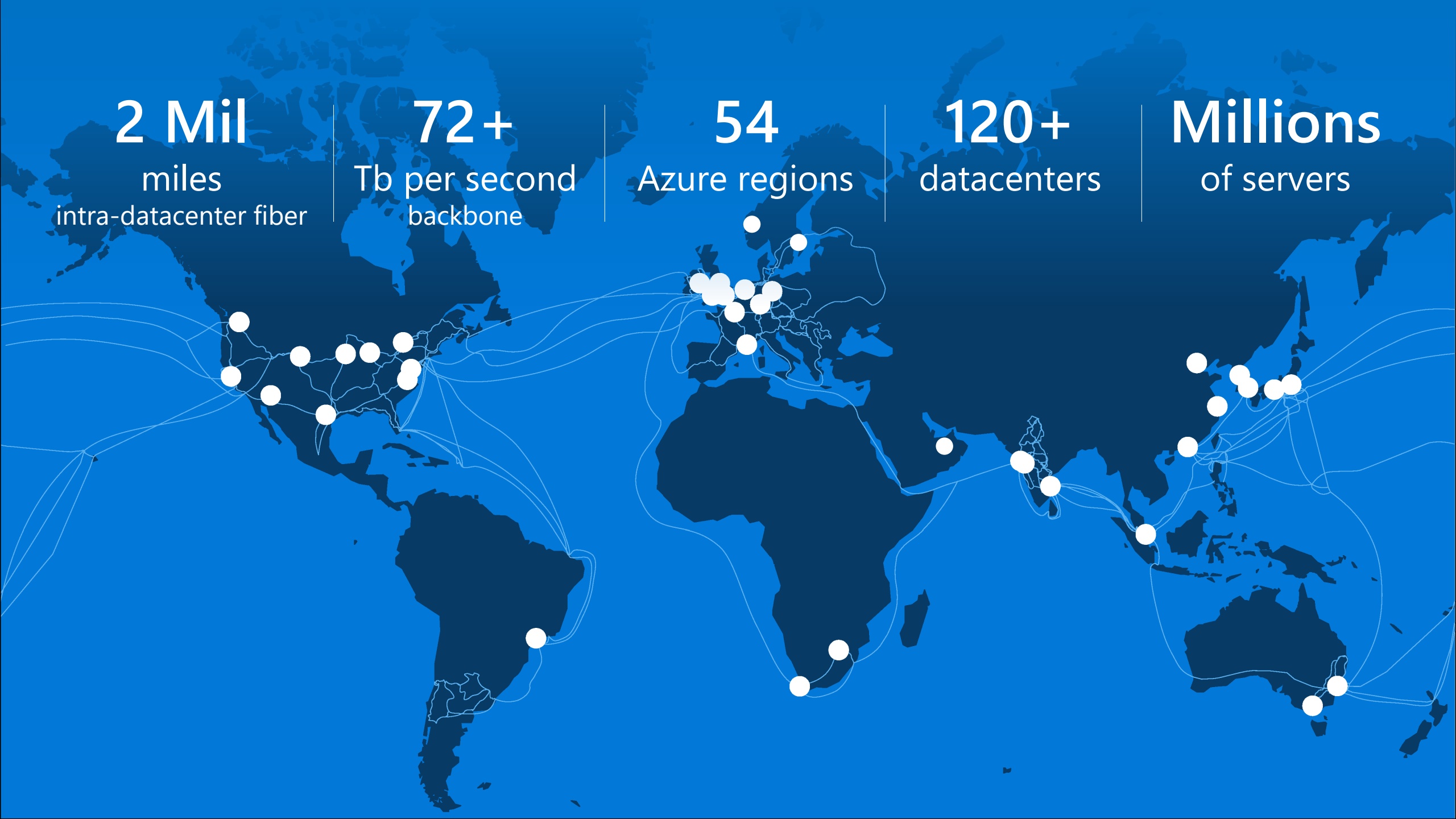
Secure and compliant

Advancing a sustainable future

Global reach, local presence


2 Mil
miles
intra-datacenter fiber
72+
Tb per second
backbone


2 Mil
miles
intra-datacenter fiber
72+
Tb per second
backbone
54
Azure regions
120+
datacenters


2 Mil
miles
intra-datacenter fiber
72+
Tb per second
backbone
54
Azure regions
120+
datacenters
Millions
of servers

Advancing a sustainable future

Microsoft:
100% Carbon neutral
in 2012

https://www.microsoft.com/en-us/environment

CLIMATE
LEADERSHIP
COUNCIL

75% carbon reduction before 2030
% of renewable energy used in DCs:
- 50% in 2018
- 70% in 2023
- 100% TBA ☺

17 new MS Campus buildings (2.5M square feet)
No use of fossile fuels during construction
15-30% reduction of CO2 in materials

All of MS Campus runs on 100% carbon free electricity
Expanding our smart building concept to enable
zero carbon & zero waste goal.

Microsoft

How the Cloud helps customers reduce emissions by up to 90%

- Reduce over-allocating of infrastructure
- Share application instances between multiple organizations
- Operate server infrastructure at higher utilization

Source: Cloud Computing and Sustainability: The Environmental Benefits of Moving to the Cloud, Accenture, November 2010

Microsoft commitment to sustainability

2012

Carbon neutral

2018

50% energy use from wind, solar & hydropower

2020

60% energy use from wind, solar & hydropower

Long-term goal

100% energy use from wind, solar & hydropower

Designing for resource efficiency

Greener datacenters for a brighter future:

May 19, 2016 | Brad Smith - President

Commitment to renewable energy

Microsoft will purchase 100% of the wind energy generated by project in Wieringermeer Polder

https://aka.ms/MSSustainability
https://aka.ms/MSRenewableEnergy

Microsoft, plans Zero-Carbon Data Center in **Sweden.**

For more information, please see the case study at

Leading an advanced energy economy that benefits everyone

Generate clean energy

Enable the next generation of energy technology

Bring new solutions to market

Project

Sund & Bælt

Problem

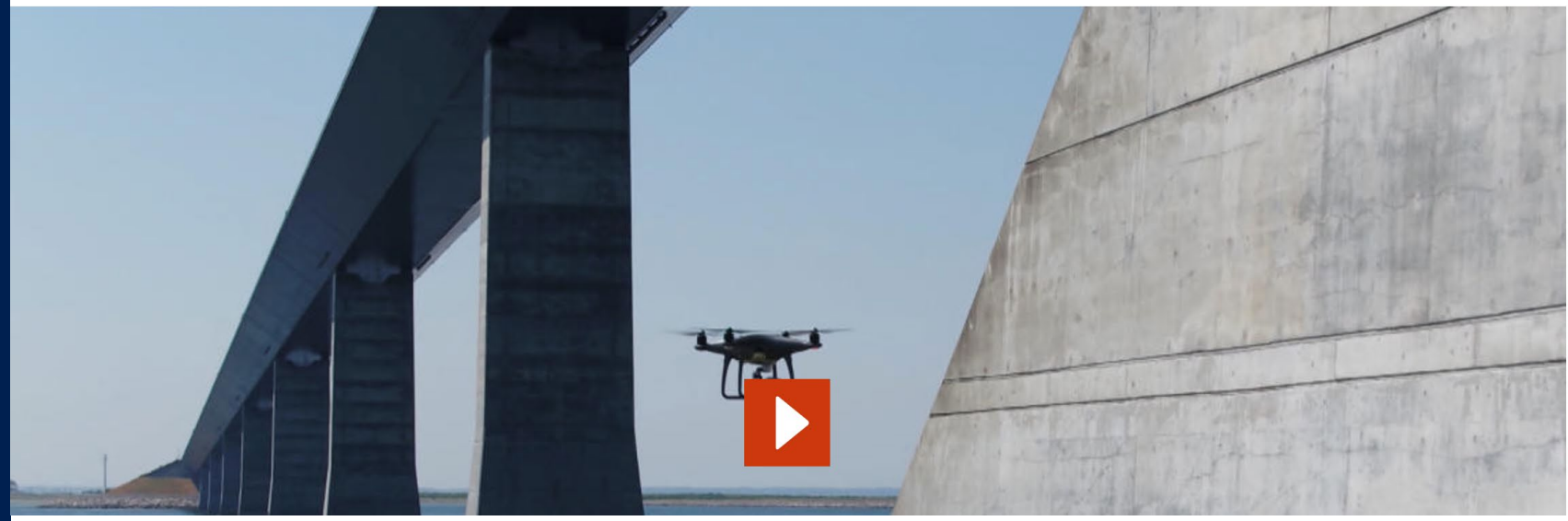
Concrete deteriorates over time, exposing the steel structure, potentially to rust and long term high cost maintenance or even collapse. Previously engineers were inspecting the concrete manually year round, exposing personel to the elements and high risc scenarios. Sund & Bælt needed a way to easily predict where and when maintenance are needed.

Solution

Using drones, the Azure Cloud, and machine learning algorithms to analyze the massive amounts of images collected by the drones, Sund & Bælt can now do both targeted preemptive & ad-hoc maintenance. Minimizing both the cost and the riscs to engineers and other maintenance workers.

Droner og robotter undersøger Storebæltsbroen for slitage

Storebæltsbroen bliver undersøgt for slitage ved at klatre på den.
Men nu tester man, om droner og robotter også kan hjælpe.



Drones & Robots, record images of the vast amounts of concrete used in bridges, and cloud based cognitive analytics, **highlights any need for maintenance.**

For more information, please see the case study at
& watch the video at:

Project

City of Gandia

Problem

To enhance government services and improve the quality of life for its current and future citizens, City of Gandía leadership took up a new energy efficiency and sustainability initiative.

"A city has no future if it isn't thinking about the needs of future generations," says Diana Morant Ripoll, Mayor of Gandía.

The most glaring sustainability issue in the city was its energy-consuming network of streetlights.

Solution

The system of 13,152 new LED light poles, each outfitted with IoT devices that allowed them to be managed remotely via Microsoft Azure.

Spanish city goes green and cuts costs through cloud-based smart city initiatives

"This is a singular opportunity... we've been given access to state-of-the-art technology, resulting in a 54.39 percent reduction in our spending on street lighting and public buildings in Gandía."

—Miguel Ángel Picornell Canut: Second Deputy Mayor
City of Gandía

The solution allows for **improved control, lower energy costs,** better citywide lighting, and a **annual 2,723-ton carbon emissions reduction.**

For more information, please see the

AJUNTAMENT DE GANDIA

Project

FarmBeats

Problem

The world's population will reach 10 billion by 2050, with less arable land and water for growing food than we have today.

The only way to feed everyone in the future could be through precision agriculture—but the technology is still too expensive.

Solution

Microsoft Researchers are using sensors, drones, the Azure Cloud, and machine learning algorithms to analyze conditions like moisture and soil temperature in real time.

By analyzing this data, the FarmBeats project could help predict what farmers should plant to maximize their yields.

Together, cheap sensors, rural broadband, drones, and cloud analytics **can feed a growing world.**

For more information, please see the

Many more examples of practical environmentally focused cases in the download:

Summarizing

1. Hyper Scale Datacenters (a.k.a. Public Cloud) **will minimize negative environmental impact** of desired & required computing demands!
2. On top, it will – given the right customer demands - also **increase the overall security and resilience** in a world of ever increasing cyber-threats!
3. The amount and speed of **GreenTech innovation based on cloud enabled technology** – is a solid positive factor in our overall SDG focus!

THANK YOU ☺

DOWNLOADS

PDF of presentation
(https://aka.ms/HCSMSoct19)

Cloud Sustainability Report
(https://aka.ms/mscloudsustainability)

Smart cities overview
(https://Microsoft.com/citynext)

Please scan the QR Code
to download my contact info (vCard)

My contact details ☺
(https://aka.ms/olek)