



AscendXYZ



Agenda



- Traditional solutions
- Emerging technologies
- Bigger picture
- Implementation case
- Try it out



Recording of bird controller actions



Traditional recording

Bird control log



Data is logged with pen and paper





Traditional recording

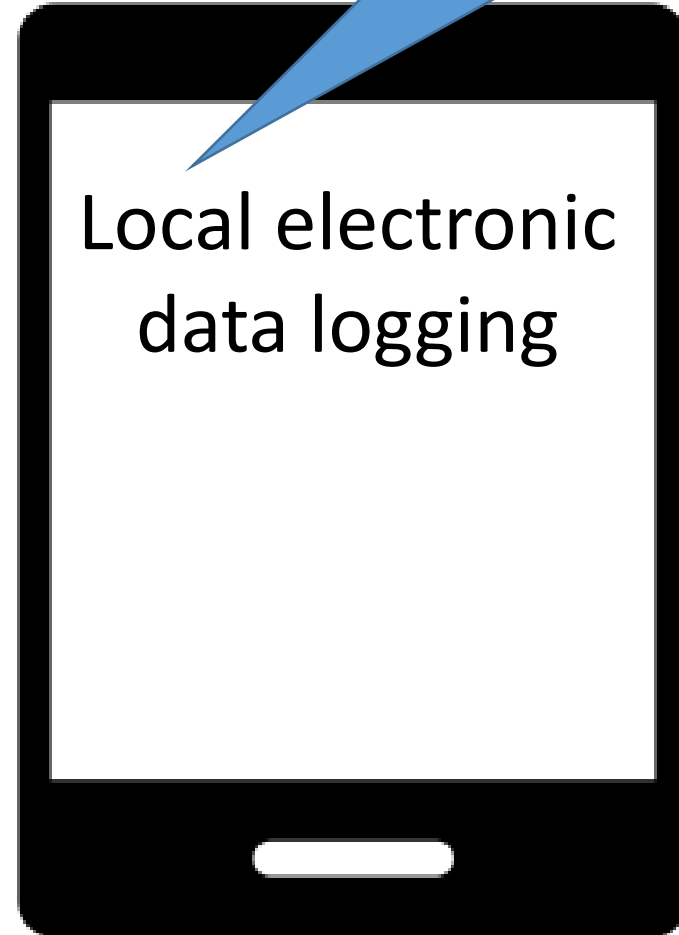


Bird control log



Local electronic
data logging

Or logged using tablets
that runs locally





Traditional recording



Bird control log



This process is performed
thousands of times every year



Traditional data management

Bird control log



In most cases data is transferred to excel and analysed

A simple line drawing of a spreadsheet with a grid of cells. The top-left cell is shaded grey. The grid consists of 10 rows and 2 columns.

XLS



Traditional data management



Bird control log



- It is time consuming
- Data is not used in real time
- Data is only used locally
- Digital systems are costly

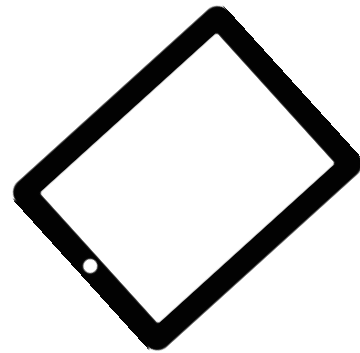


Emerging solutions



New

- Fast recordings
- Data used in real time
- Data used globally
- Free



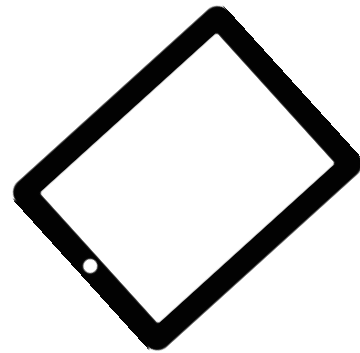


New vs. traditional



New

- Fast recordings
- Data used in real time
- Data used globally
- Free





Traditional

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- Data is not used in real time
- Data is only used locally
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New vs. traditional

	New	Traditional
TASK	 ASCEND RECORDING	 MANUAL RECORDING
Bird control actions and data processing	12 sec. pr. recording	2 min. pr. recording
Time spent every month	4 hours	50 hours



Recording - How does it work?



Sign-in

Sign In

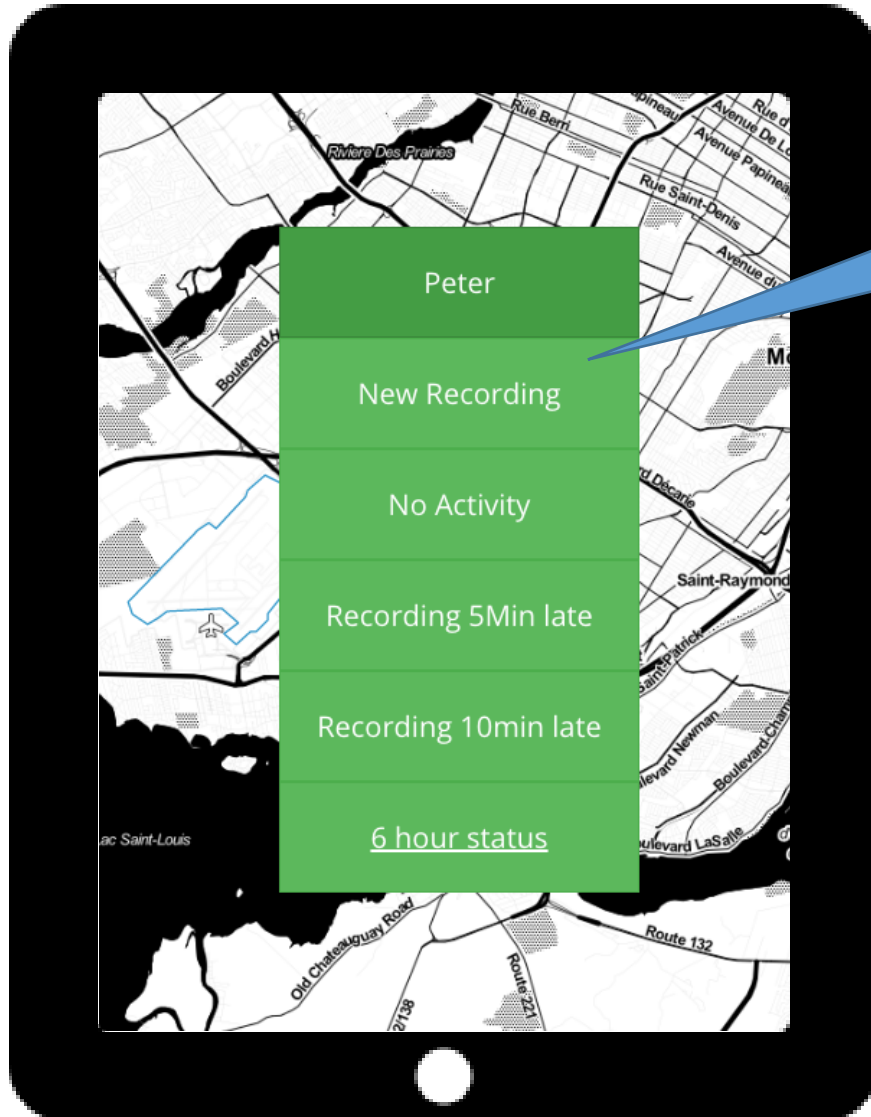
New Recording

No Activity

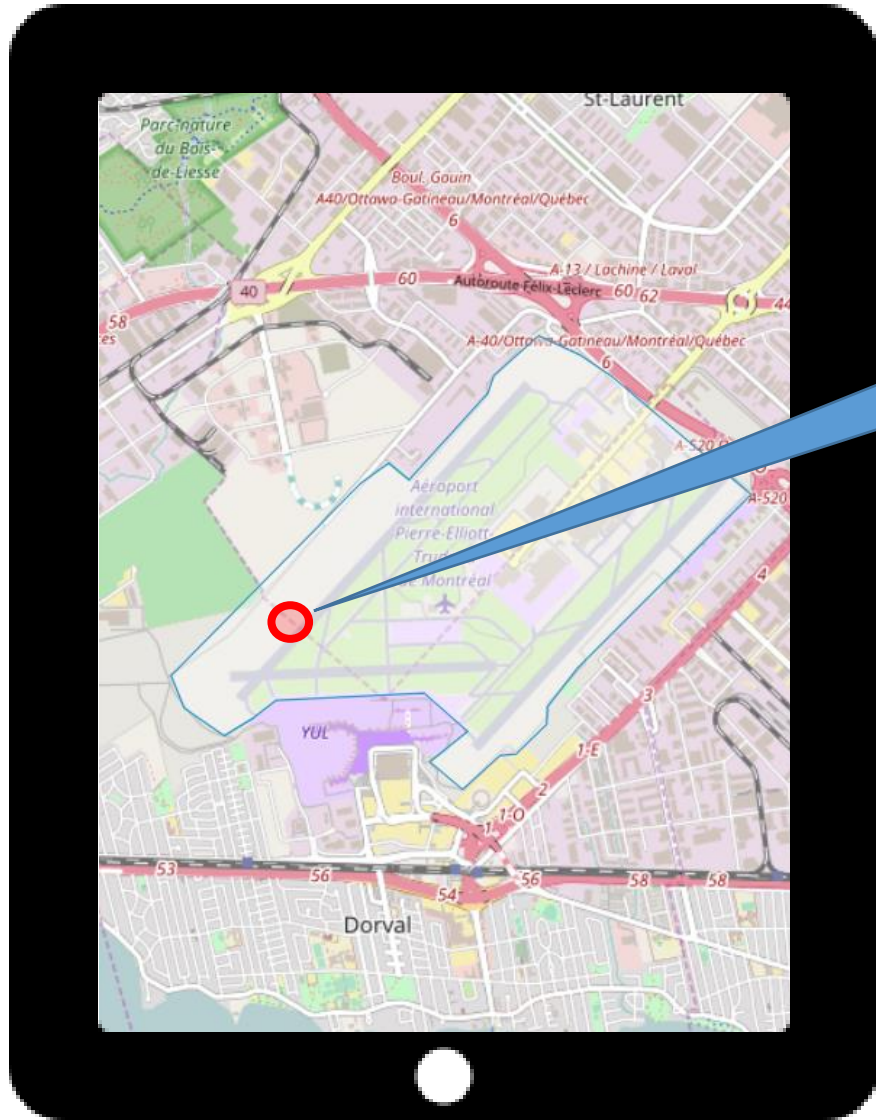
Recording 5Min late

Recording 10min late

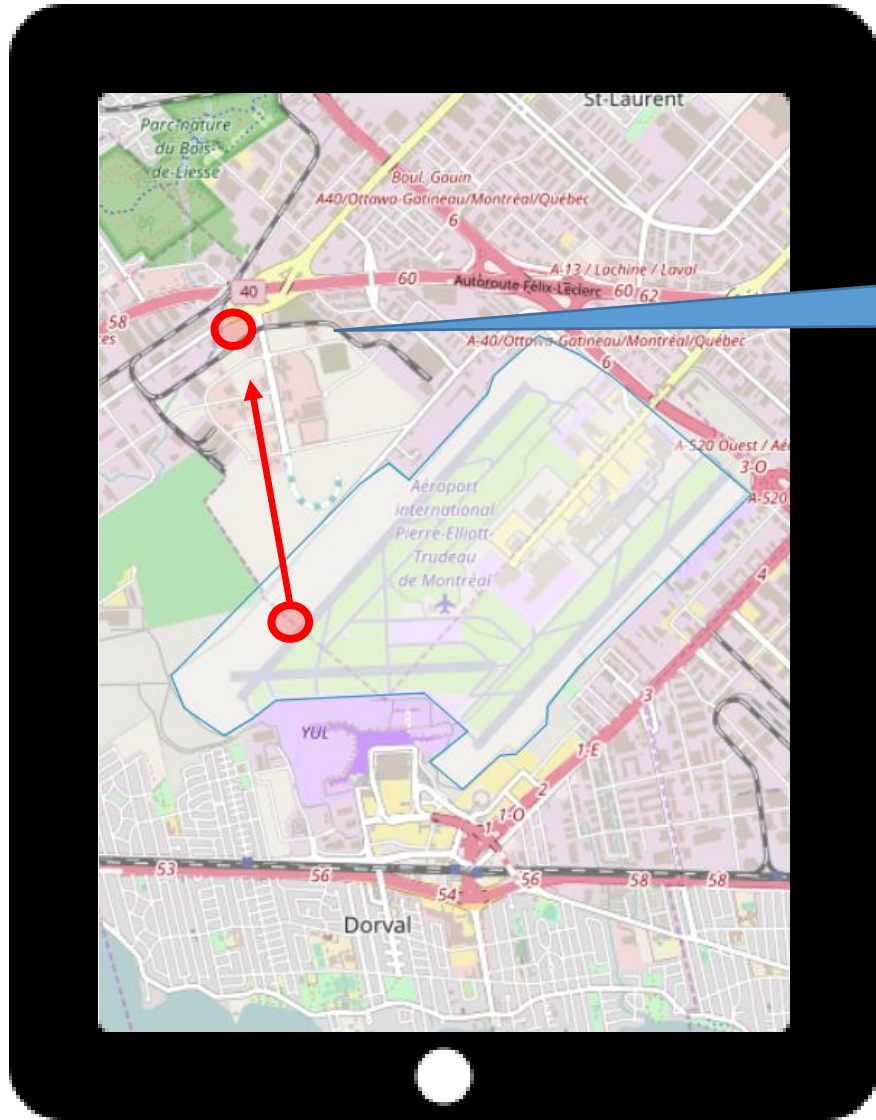
6 hour status



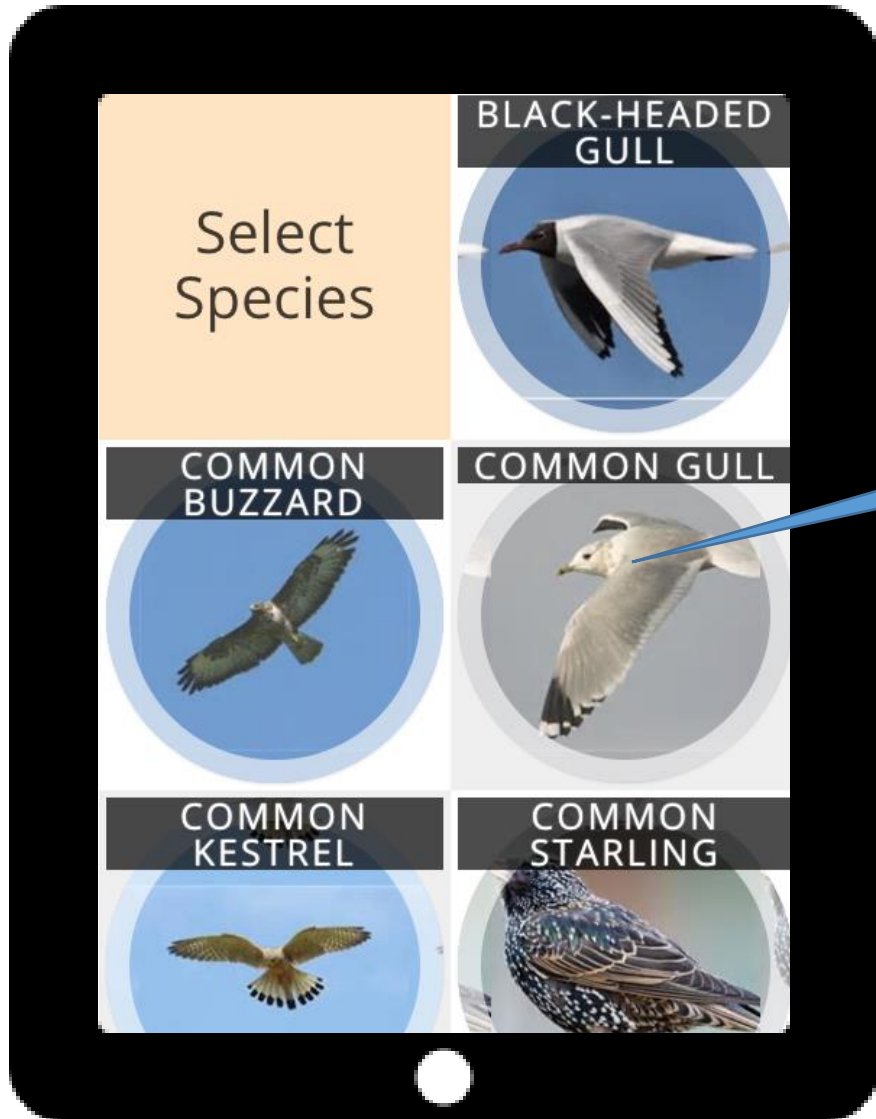
Choose "new recording"



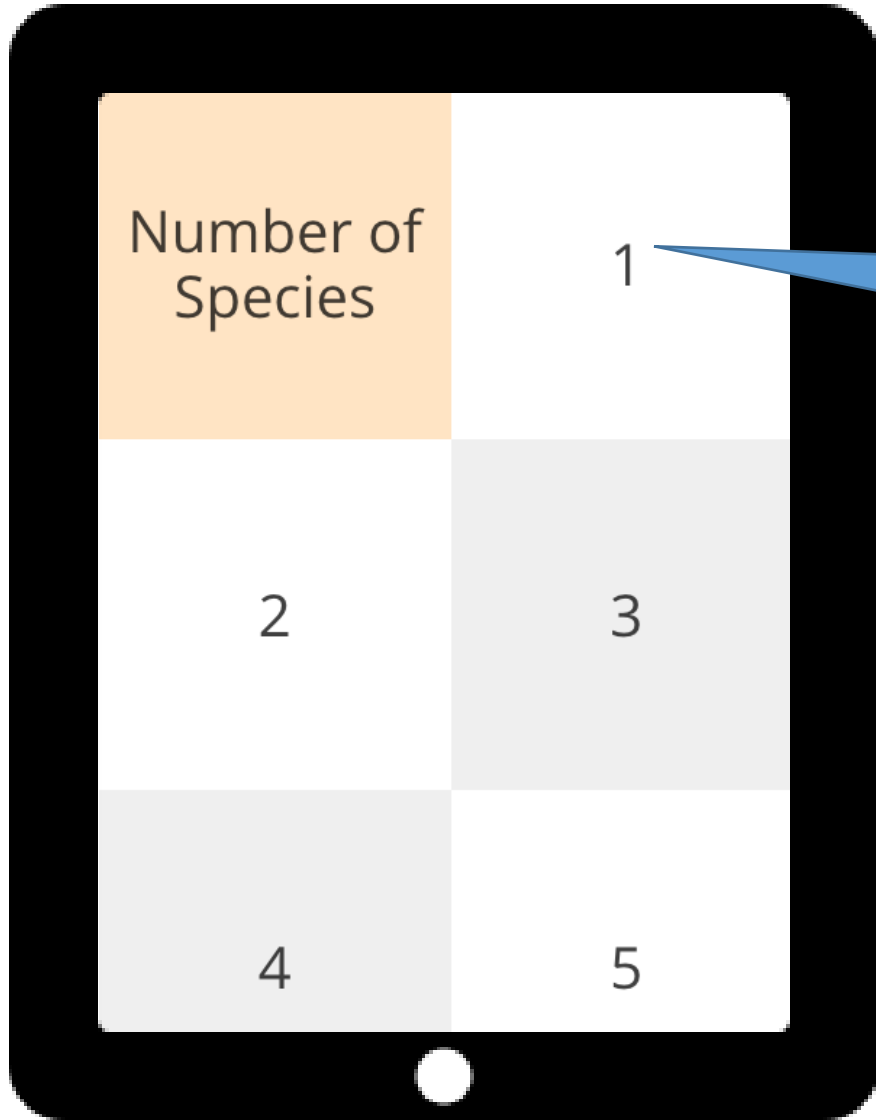
Mark position of the bird(s)



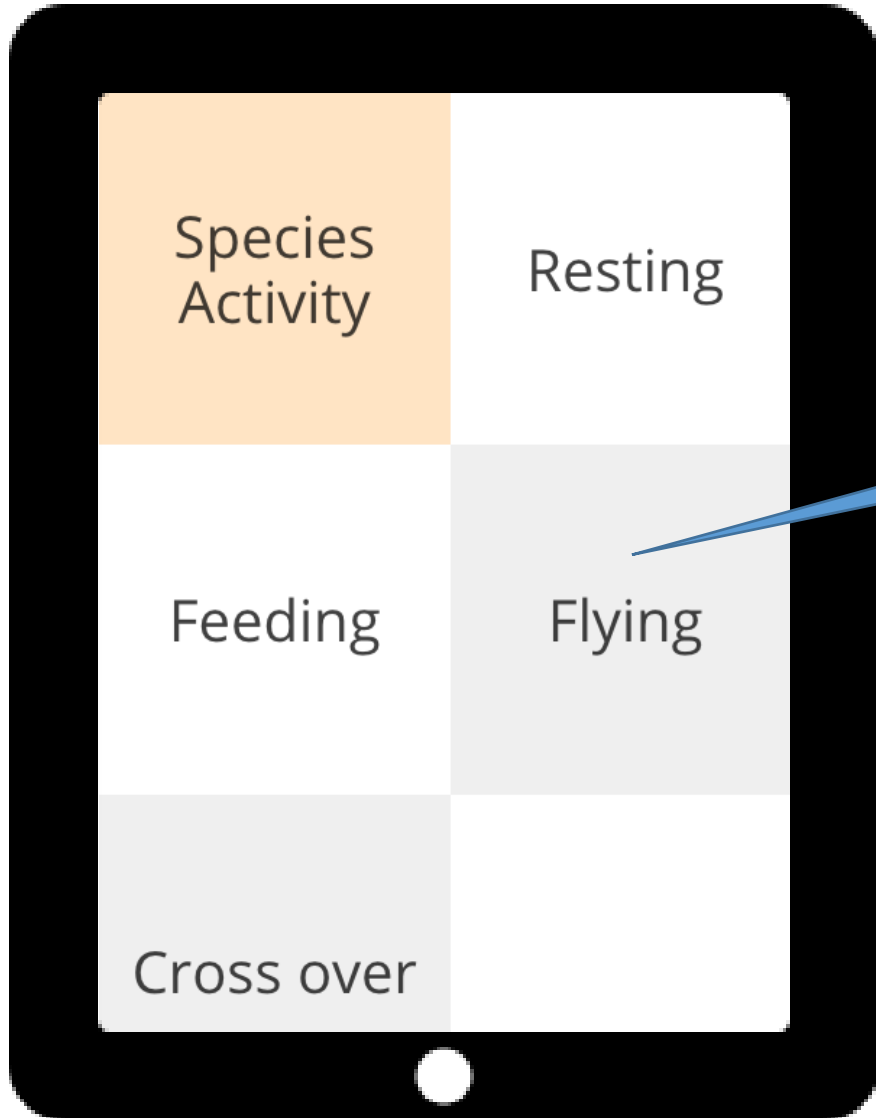
Mark flight direction



Select species



Select the number of birds



What was the bird doing

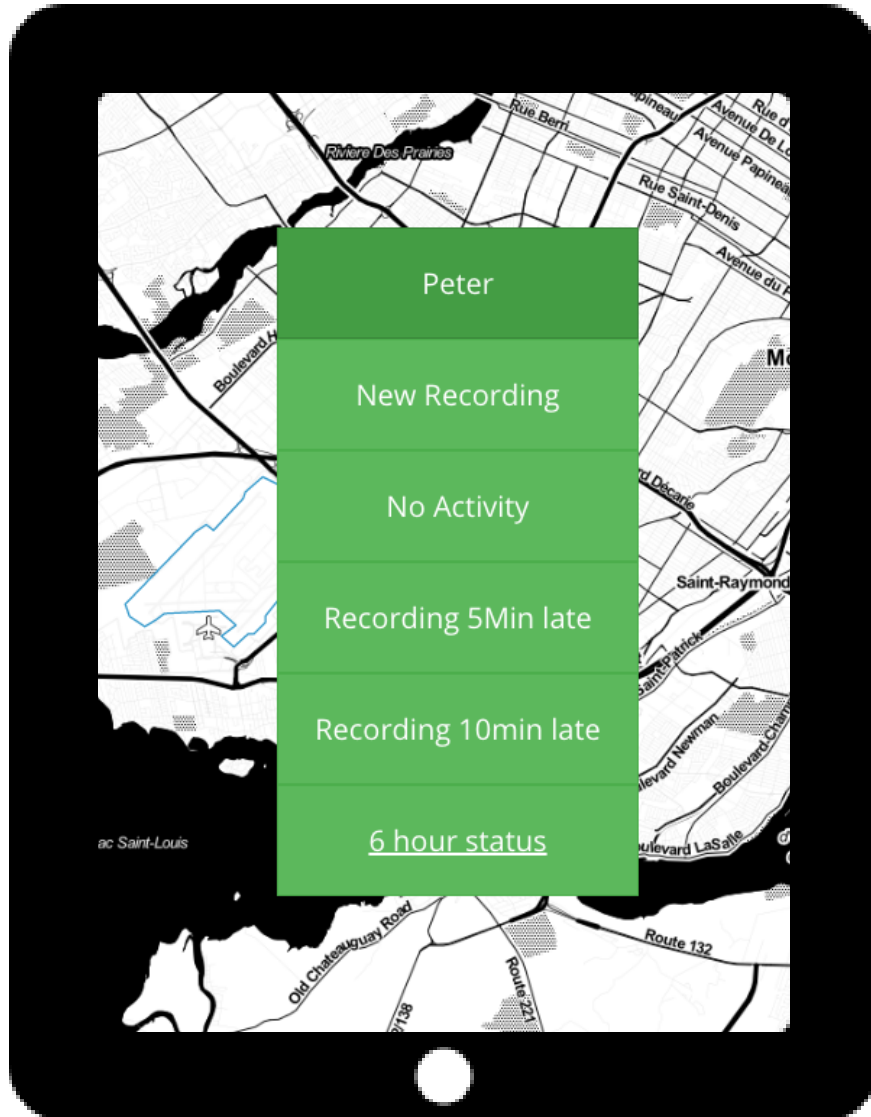


What did you do

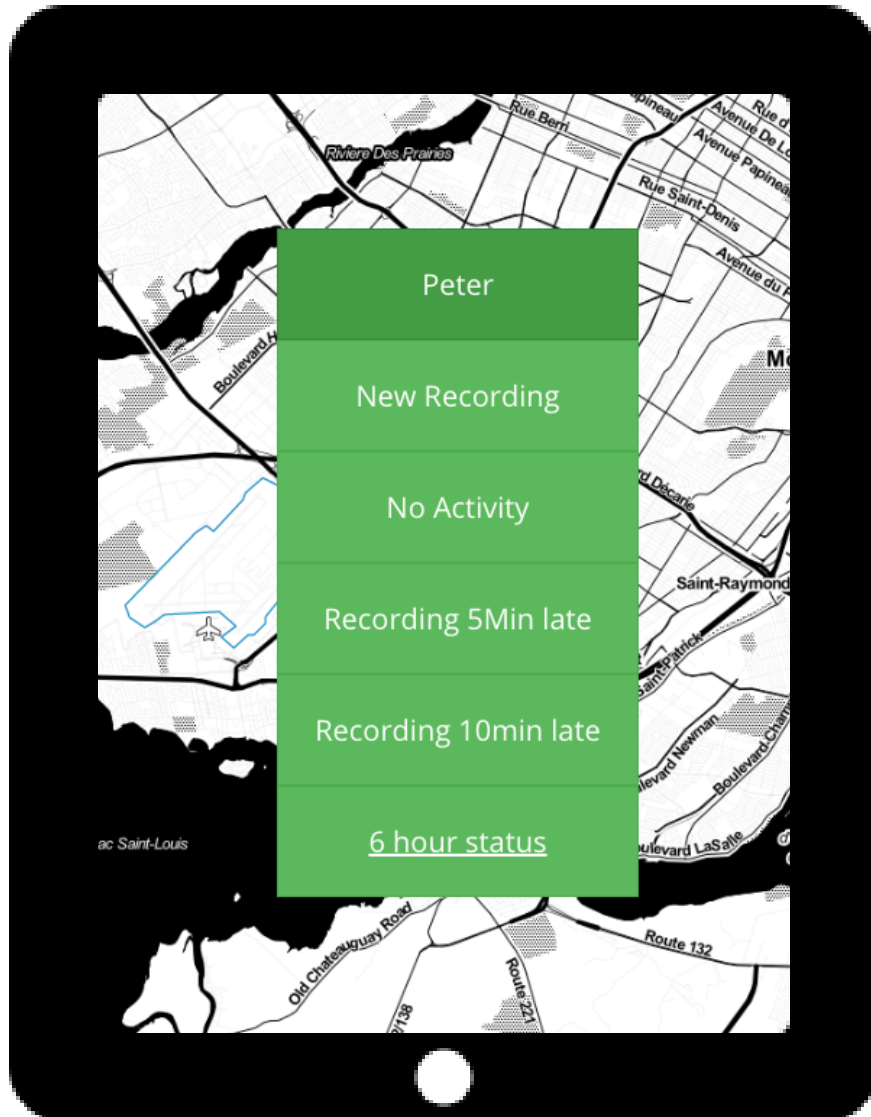


Number of shoots	1
2	3
4	5 or more

How many shots did you fire



Done and ready for the next recording



- You need to be online to load the service
- But you can use the service offline



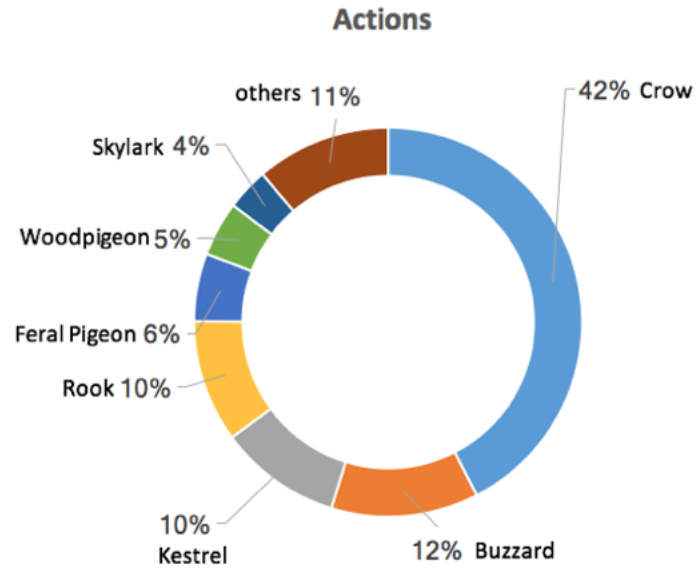
The recordings are analysed in real time, this enables us to put mitigating actions into place



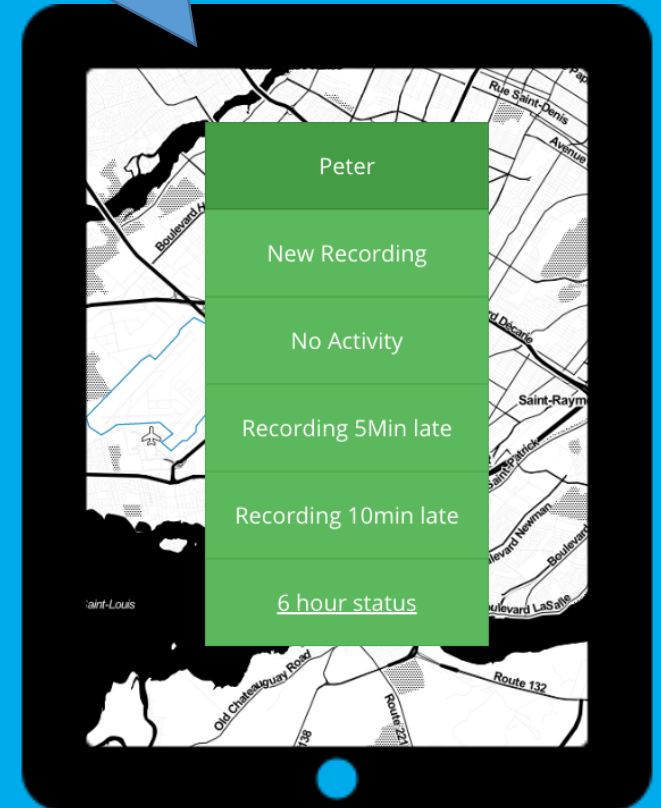
HOME



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As the data is entered it becomes available in the service

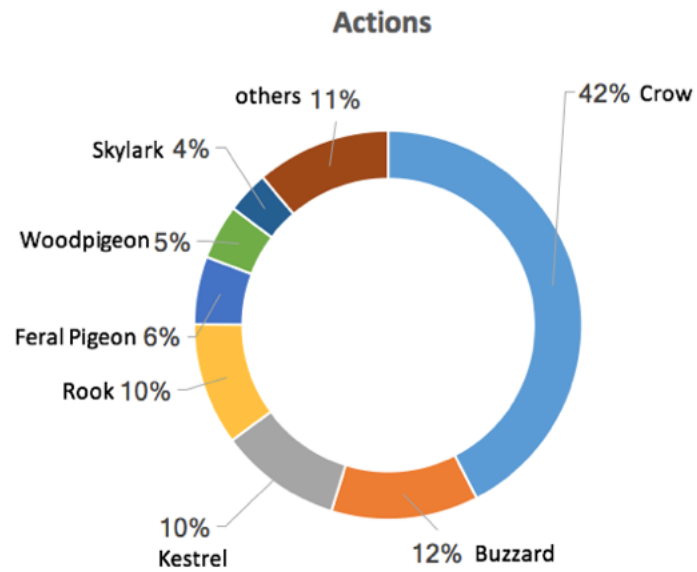




HOME



SUPPORT



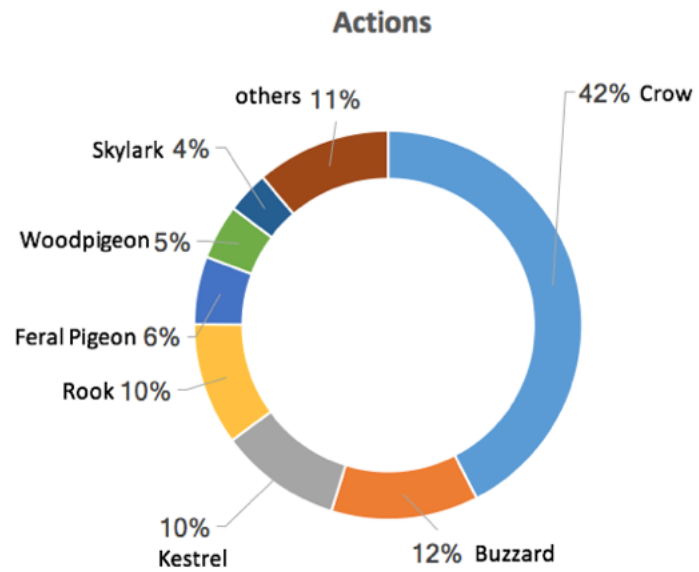
This is Billund Airport's data from April 2017



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Here we view the species distribution

Recording Analytics

GET THE MOST OUT OF YOUR DATA

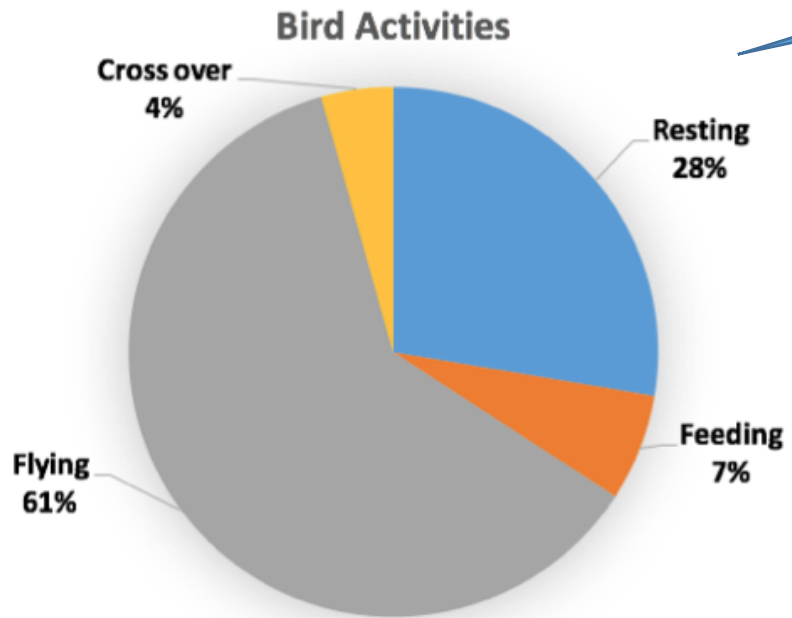
ASCEND RECORDING



HOME



SUPPORT



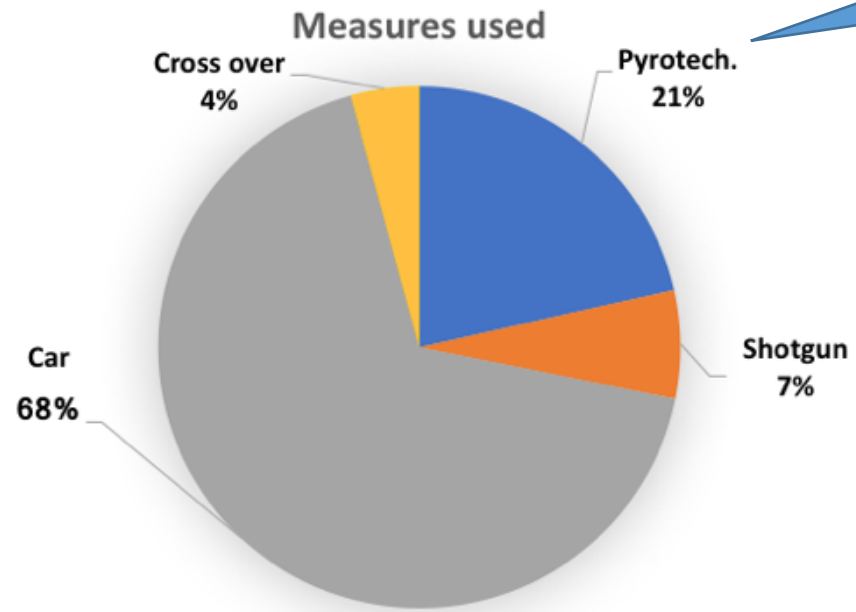
Bird Activity



HOME



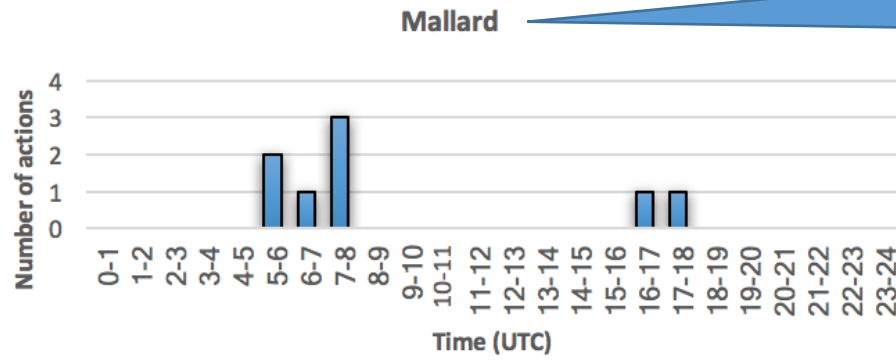
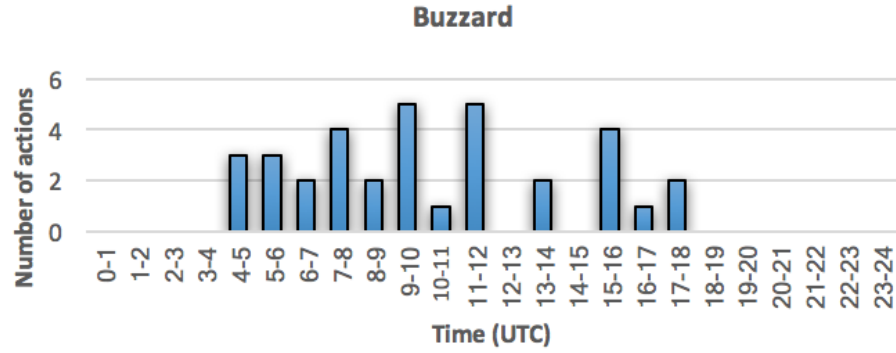
SUPPORT



Actions taken

Recording Analytics

GET THE MOST OUT OF YOUR DATA



Daily Mallard recordings

Recording Analytics

GET THE MOST OUT OF YOUR DATA



HOME



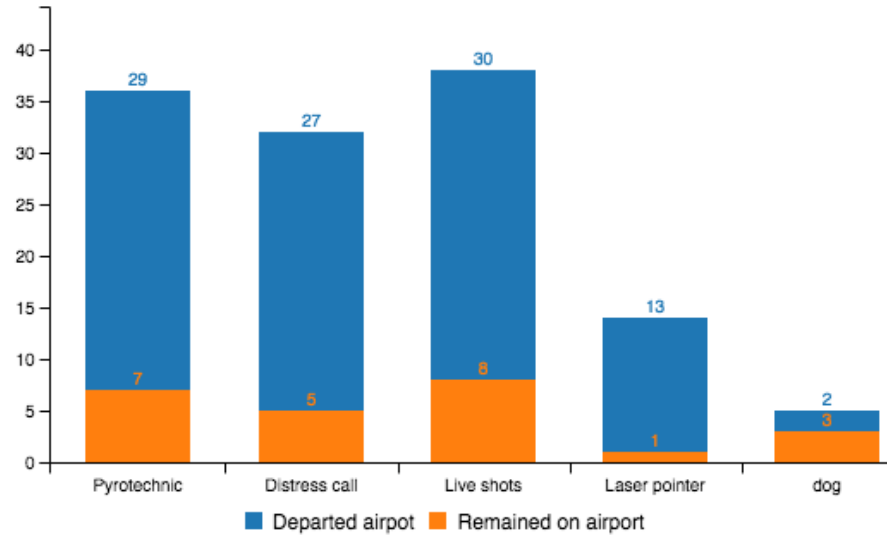
SUPPORT

ASCEND RECORDING



Effectiveness of the different action types are measured

Effectiveness of Actions ^



Recording Analytics

GET THE MOST OUT OF YOUR DATA

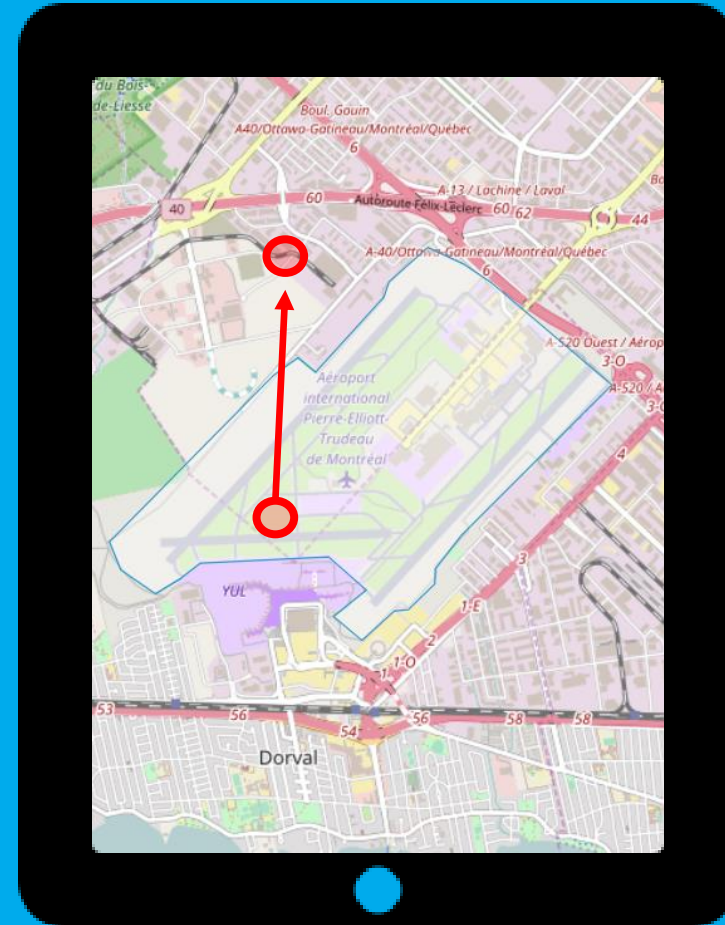
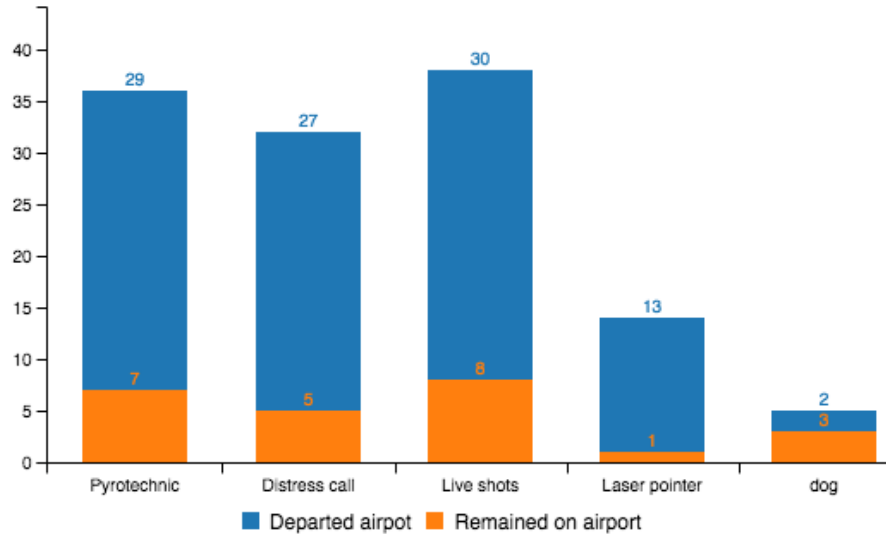


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Effectiveness of Actions ^



By measuring if the birds depart or remain on the airport area



Recording based risk matrix?



If anyone here can define the formula for a recording based risk matrix we will implement it!

		Frequency					
		Very high	High	Moderate	Low	Very low	
Severity (%)	Very high	> 20					
	High	10.0 - 20.0	Herring Gull		Buzzard		
	Moderate	6.0 - 9.9				Hooded Crow	
	Low	2.0 - 5.9		Kestrel		Common Gull Lapwing Grey Partridge	Owl (Asio spp.) Black-headed gull
	Very low	0.0 - 1.9		Swallow Spp.		Skylark House Sparrow	Black Tern



Bigger picture



By combining the information with other new technologies we can gain important insights



Monitoring the safeguarding zone



How do we monitor a 530 km² safeguarding zone - by using satellites



Ascend XYZ Site Monitoring

CREATE SITES OF THE 13KM ZONE





Layers	 Natural lake	 Site	 Natural lake
Tools	Create	Common Sites	



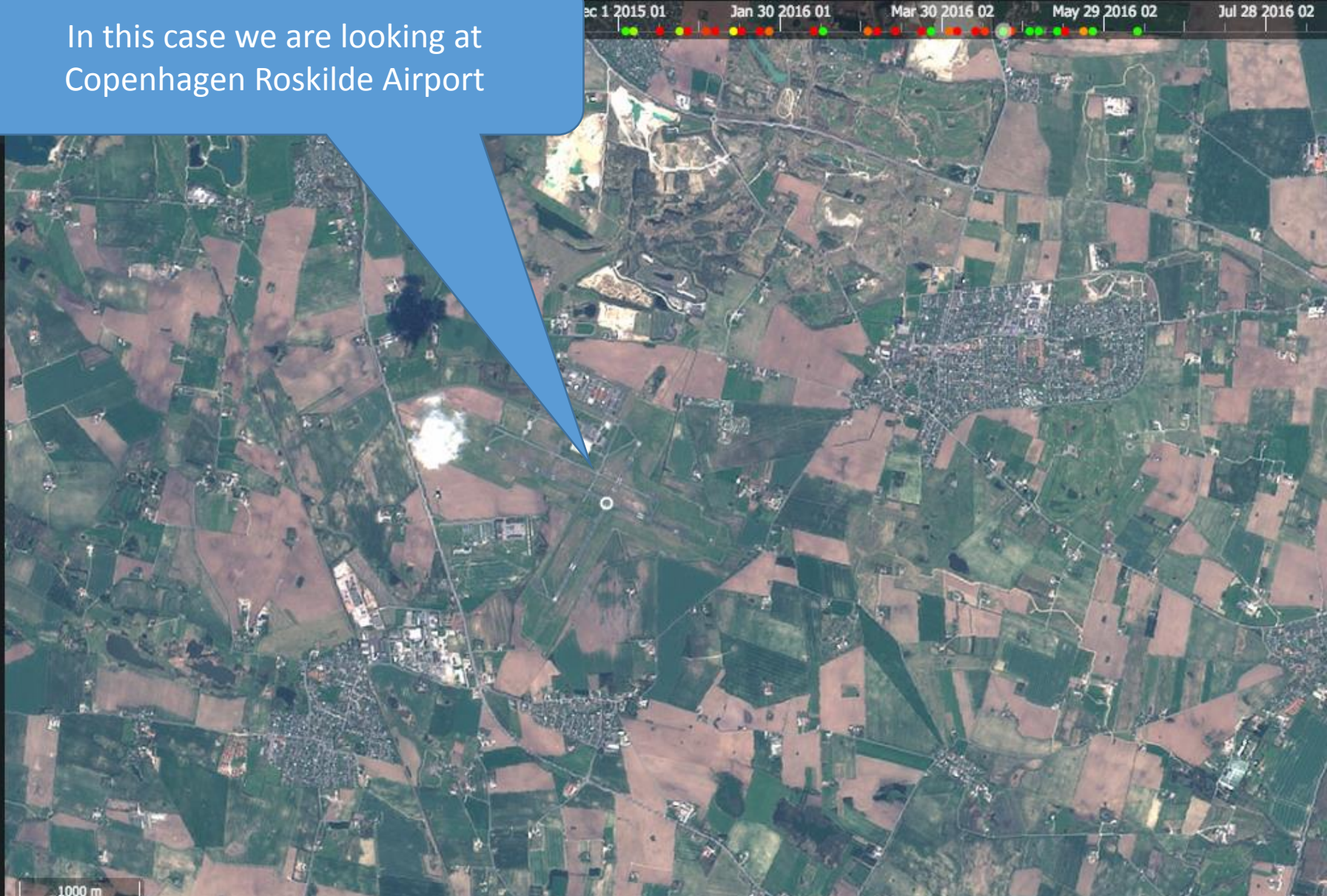
HOME



SUPPORT

- ## Layers
-  **Satellite Images**
Sat April 22
 -  **Find Water**
Sat April 22
 -  **Topological map**
Topological map from Open Street Map
 -  **Map with labels**
Bing Maps from Microsoft with labels

In this case we are looking at Copenhagen Roskilde Airport



1000 m

Ascend XYZ Site Monitoring

CREATE SITES OF THE 13KM ZONE

Layers

Natural lake Site Natural lake

Tools Create Common Sites



HOME



SUPPORT

- ## Layers
- Satellite Images
Sat April 22
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02 Jun 4 2015 02 Aug 3 2015 02 Oct 2 2015 02 Dec 1 2015 01 Jan 30 2016 01 Mar 30 2016 02 May 29 2016 02 Jul 28 2016 02



The satellite passes regularly and lets us monitor changes in the safeguarding zone

1000 m

Layers

Nat

Tools

Cre



HOME



SUPPORT

Layers

- **Satellite Imagery**
Tue May 2
- **Find Water**
Tue May 2
- **Topological map**
Topological map from Open Street Map
- **Map with labels**
Bing Maps from Microsoft with labels

This image is from May 2

Aug 3 2015 02 Oct 2 2015 02 Dec 1 2015 01 Jan 30 2016 01 Mar 30 2016 02 May 29 2016 02 Jul 28 2016 02



1000 m

Layers

Nat

Tools

Cre

This image is from May 5

Layers

- Satellite Imagery
Fre May 5
- Find Water
Fre May 5
- Topological map
Topological map from Open Street Map
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Aug 3 2015 02 Oct 2 2015 02 Dec 1 2015 01 Jan 30 2016 01 Mar 30 2016 02 May 29 2016 02 Jul 28 2016 02



HOME

SUPPORT



Layers

Nat

Tools

Cre

Layers

- Satellite Imagery
Fre May 12
- Find Water
Fre May 12
- Topological map
Topological map from Open Street Map
- Map with labels
Bing Maps from Microsoft with labels

This image is from May 12





Layers

Tools

Layers

- Satellite Image
Thu May 25
- Find Water
Thu May 25
- Topological map
Topological map from Open Street Map
- Map with labels
Bing Maps from Microsoft with labels

This image is from May 25

Aug 3 2015 02 Oct 2 2015 02 Dec 1 2015 01 Jan 30 2016 01 Mar 30 2016 02 May 29 2016 02 Jul 28 2016 02





Layers

Tools

Layers

- Satellite Image
Sun June 11
- Find Water
Sun June 11
- Topological map
Topological map from Open Street Map
- Map with labels
Bing Maps from Microsoft with labels

This image is from June 11

Aug 3 2015 02 Oct 2 2015 02 Dec 1 2015 01 Jan 30 2016 01 Mar 30 2016 02 May 29 2016 02 Jul 28 2016 02





Monitoring the safeguarding zone



This enables us to monitor the use and changes in the landscape
“that could impact wildlife behaviour”





In order to identify changes we need to know the area, therefore we register all the habitats in the safeguarding zone

Ascend XYZ Site Monitoring

CREATE SITES OF THE 13KM ZONE

Layers



Corn



Natural lake



Site



Margel excavation



Basin bog



Water retention



Playing fields



Natural lake

Tools

Create

Common Sites



HOME



SUPPORT

Create New Site



Natural lake

Water body not created by excavation



Basin bog

Water body caused by a natural depression in the bog



Peat excavation pond

Permanent water body created by excavation of peat



Water retention pond

An artificial pond created to collect and store surplus water



Mineral extraction point

Mining is the extraction of valuable minerals or other geological materials from the earth from an orebody, lode, vein, seam, reef or...



Trout pond farm

Water bassins for raising fish commercially



City park pond and green

Artificial ponds and managed swards for recreational use of the public



Meadow

Moist area covered by low natural light-open vegetation



Saltmarsh

A coastal meadow influenced by salt water



Coastal low-water

Water body with a water depth of one

Here we are looking at Gdansk Airport in Poland



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Water body with a water depth of one

All the yellow areas are habitats



Ascend XYZ Site Monitoring

CREATE SITES OF THE 13KM ZONE

Layers: Corn, Natural lake, Site

Tools: Create

Common Sites: Mirel excavation, Basin bog, Water retention, Playing fields, Natural lake



- ### Layers
- Satellite Images
Fre August 20
 - Find Water
Fre August 20
 - Topological map
Topological map from Open Street Map
 - Map with labels
Bing Maps from Microsoft with labels

We use the satellite images to look for changes



5 km

Ascend XYZ Site Monitoring

CREATE SITES OF THE 13KM ZONE

Layers: Corn, Natural lake, Site

Tools: Create

Common Sites: Margel excavation, Basin bog, Water retention, Playing fields, Natural lake



HOME

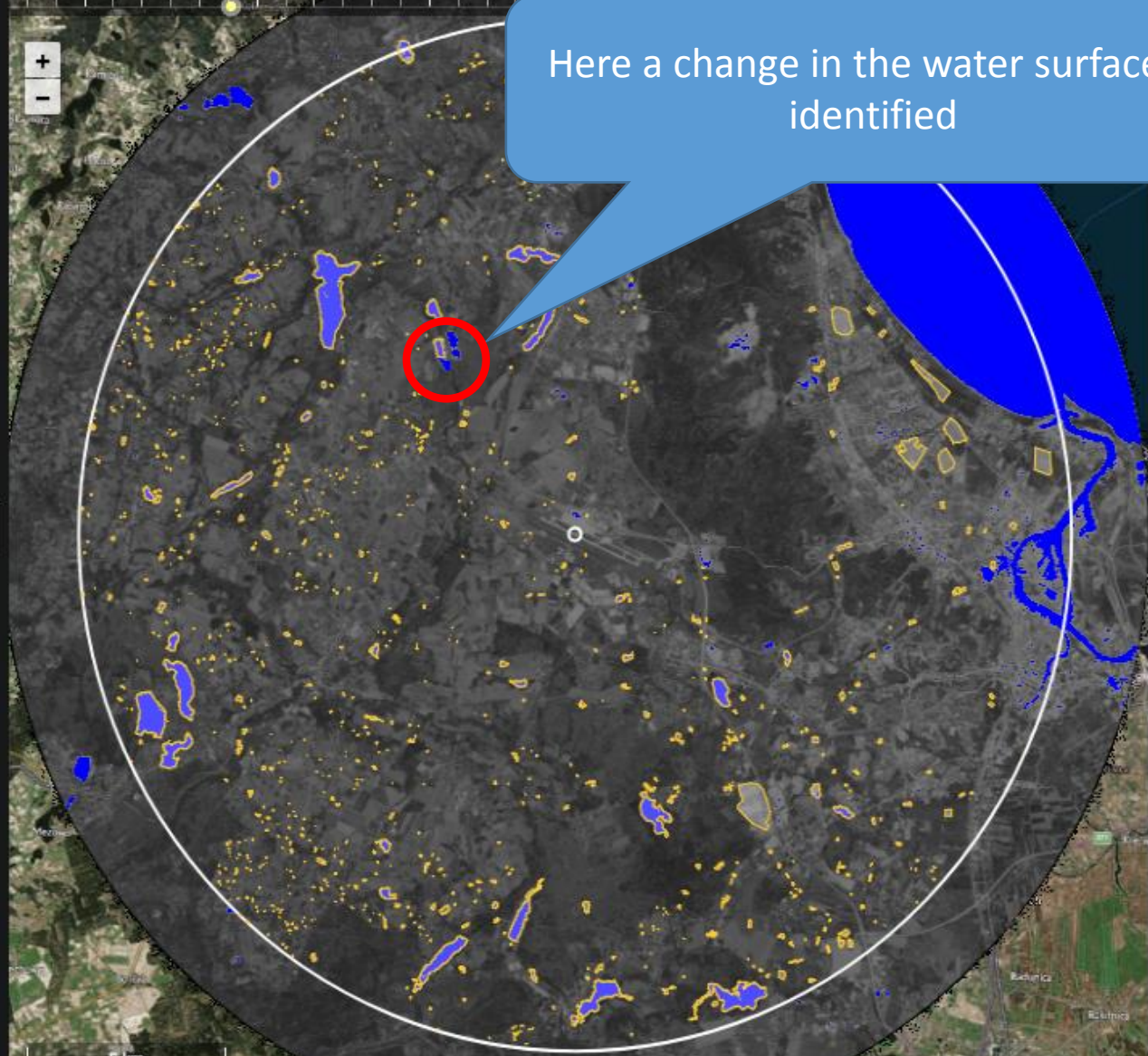


SUPPORT

Layers

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Fre August 20
- Find Water
Fre August 20
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Topological map from Open Street Map
- Map with labels
Bing Maps from Microsoft with labels

Jun 4 2015 02 Sep 2 2015 02 Dec 1 2015 01 Feb 29 2016 01 May 29 2016 02 Aug 27 2016 02 Nov 25 2016 01 Feb 23 2017 01 May 24 2017 02



Here a change in the water surface is identified

Ascend XYZ Site Monitoring

CREATE SITES OF THE 13KM ZONE

Layers



Common Sites

Tools Create



HOME



SUPPORT

Create New Site



Natural lake

Water body not created by excavation



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Water body with a water depth of one

Jun 4 2015 02 Sep 2 2015 02 Dec 1 2015 01 Feb 29 2016 01 May 29 2016 02 Aug 27 2016 02 Nov 25 2016 01 Feb 23 2017 01 May 24 2017 02



Ascend XYZ Site Monitoring

CREATE SITES OF THE 13KM ZONE

Layers



Corn



Natural lake



Site



Margel excavation



Basin bog



Water retention



Playing field

Tools Create Common Sites

Create New Site



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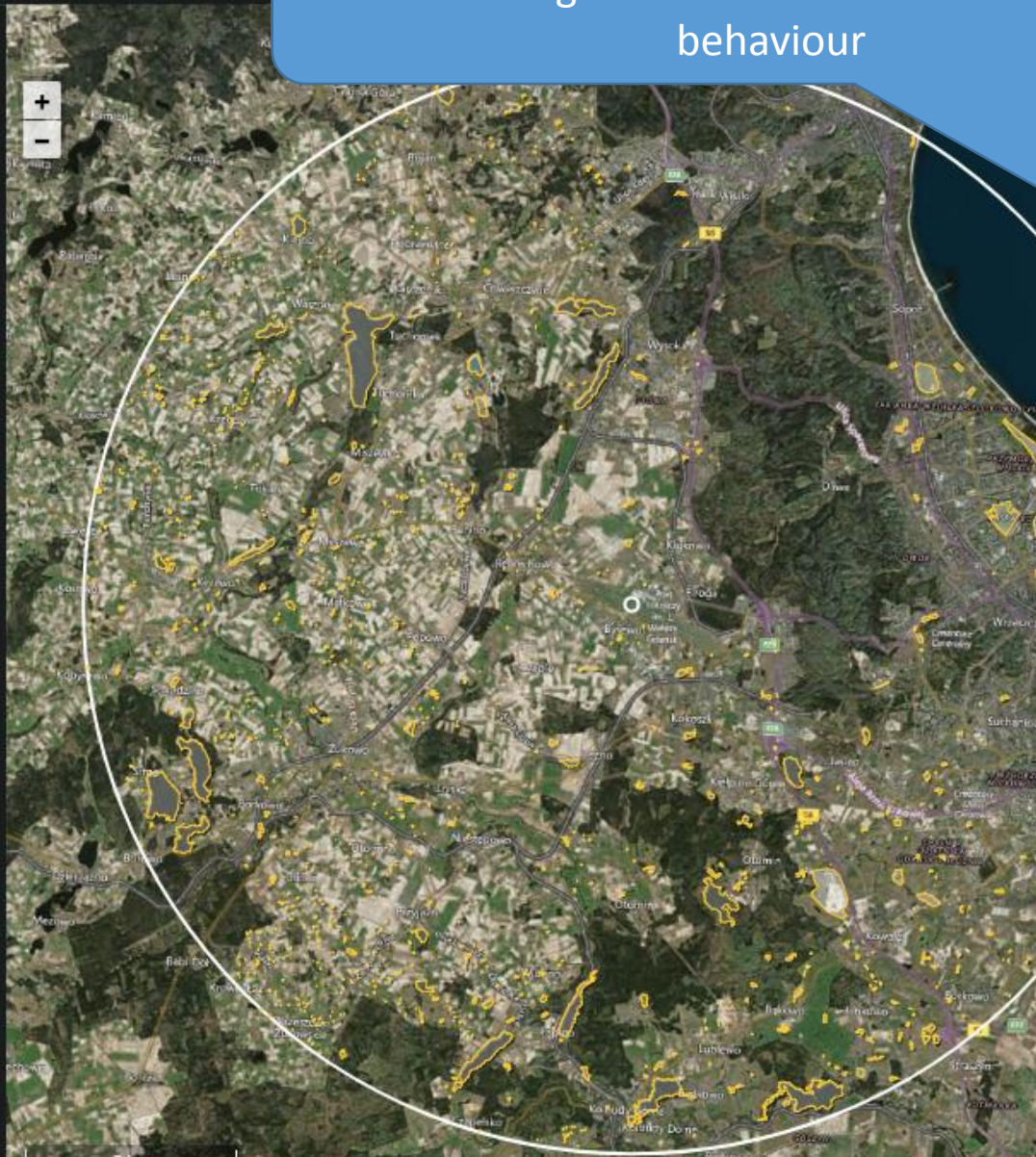
A coastal meadow influenced by salt water



Coastal low-water

Water body with a water depth of one

I can combine the landscape changes with the recordings to better understand wildlife behaviour





This information can be used to optimize mitigating actions and decrease the risk of bird strikes



When talking about *new* technologies emerging, they are actually not new, they are just made accessible



New?



Satellite imagery has
been used for decades...



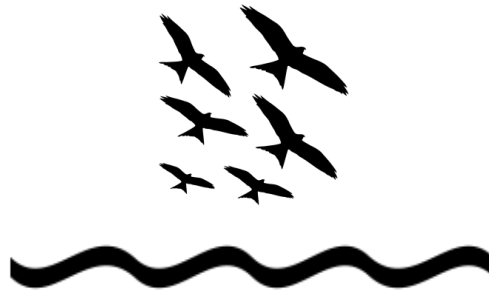


New?

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been used for decades...



Monitoring sites is
not new...



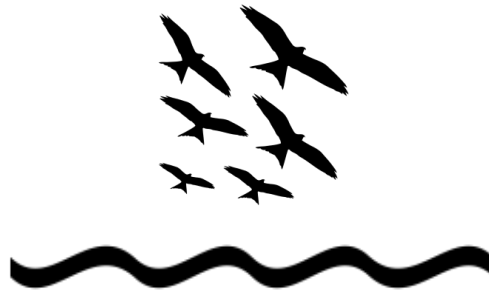


New?

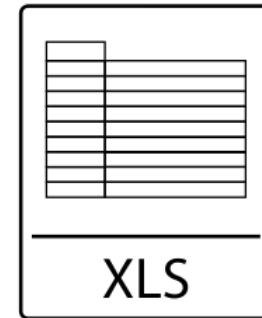
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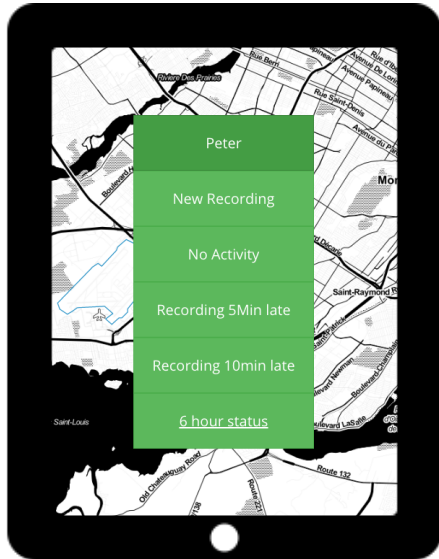


Digital recording is used in different forms

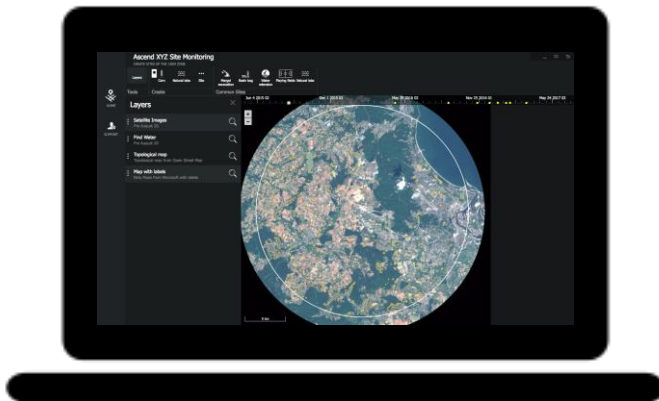




Accessibility

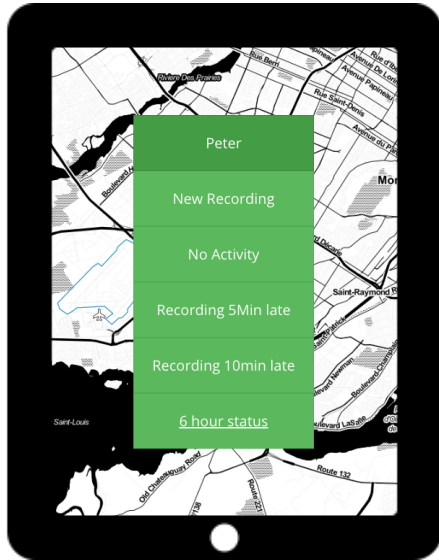


“What is new, is the accessibility”

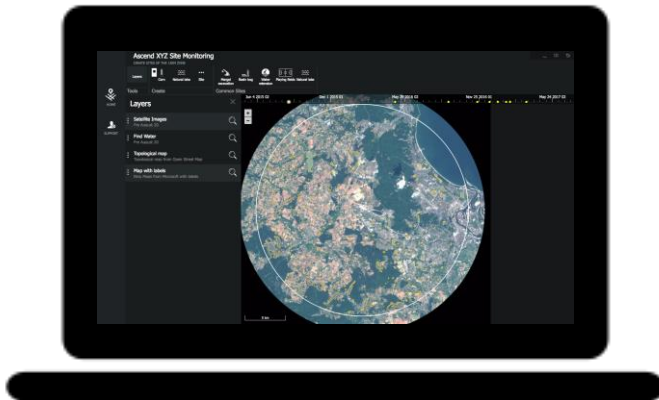




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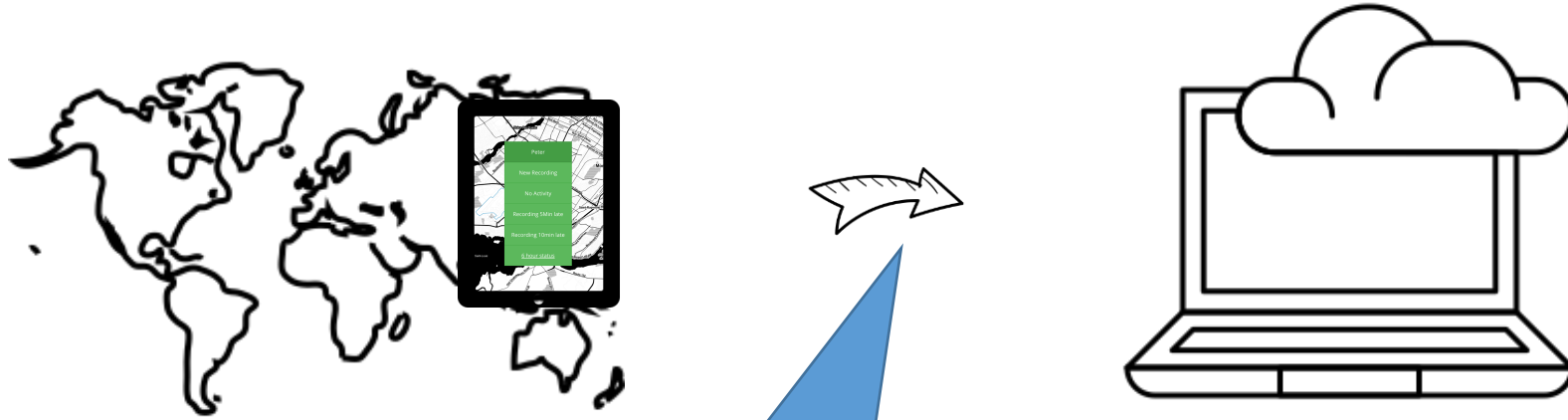


Accessibility covers anything from cost to IT implementation barriers and usability





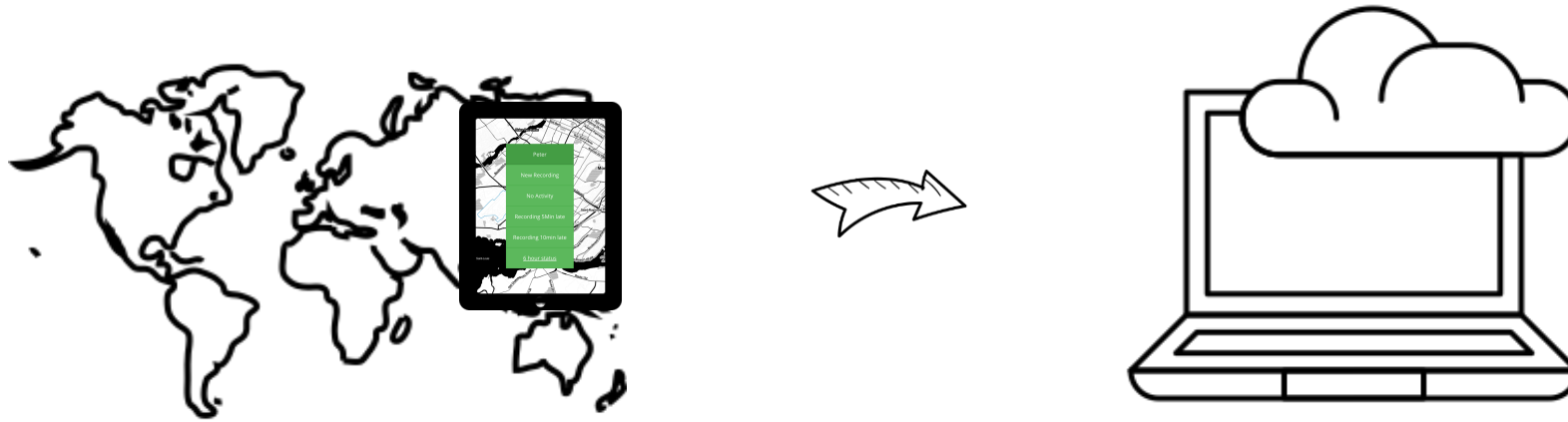
The BIG picture



As information flows from the airports to the cloud we can make it available for analysis



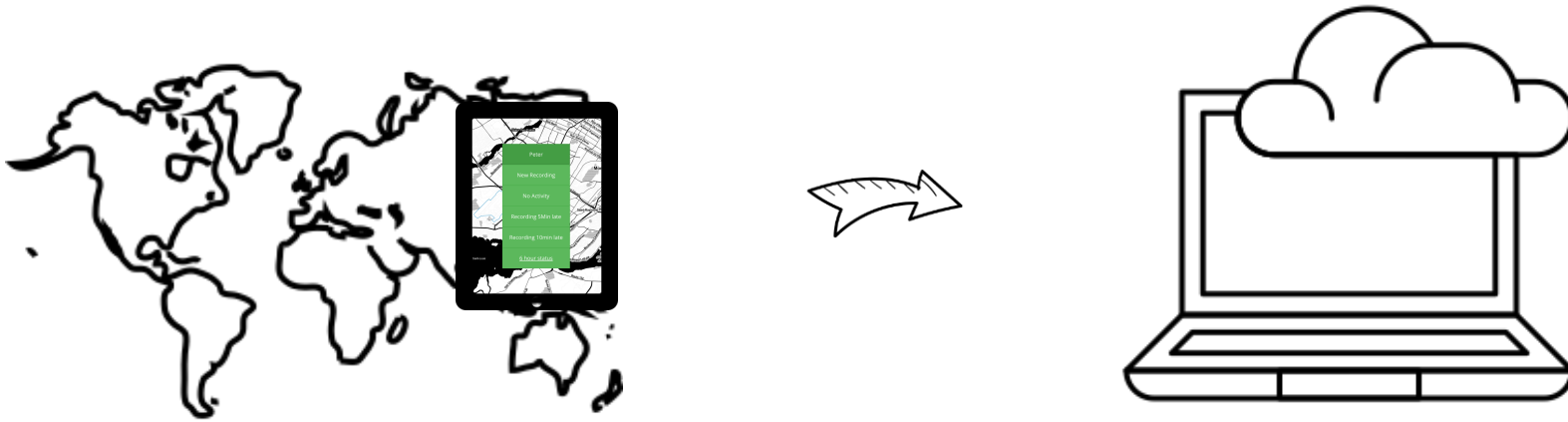
The BIG picture



- Does laser work equally well on all species?
- Can we identify changes in migration patterns?
-?



The BIG picture



- Tell us what you would do with this data
- Then we will automate it and make it available



Data ownership



The airports own the data, but they can choose to share the data in anonymised form



Implementation case



- The recording service is free
- There is no hardware cost
- There is no implementation cost
- It takes 10 minutes to set up



Try the recording for Montreal Airport



Try the recording flow: www.bird123.org



Ascend XYZ