

# British Antarctic Survey (BAS)

**Safety and resilience on the ice –  
How BAS unifies and manages  
its Polar operations with IBM  
Maximo**

Presented by:  
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Also present today

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Maximo System Manager

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Maximo database administrator



# BAS Vision

To be a world-leading centre for polar science and polar operations, addressing issues of global importance and helping society adapt to a changing world

<https://www.youtube.com/watch?v=qGH-9W6446s&t=4s>

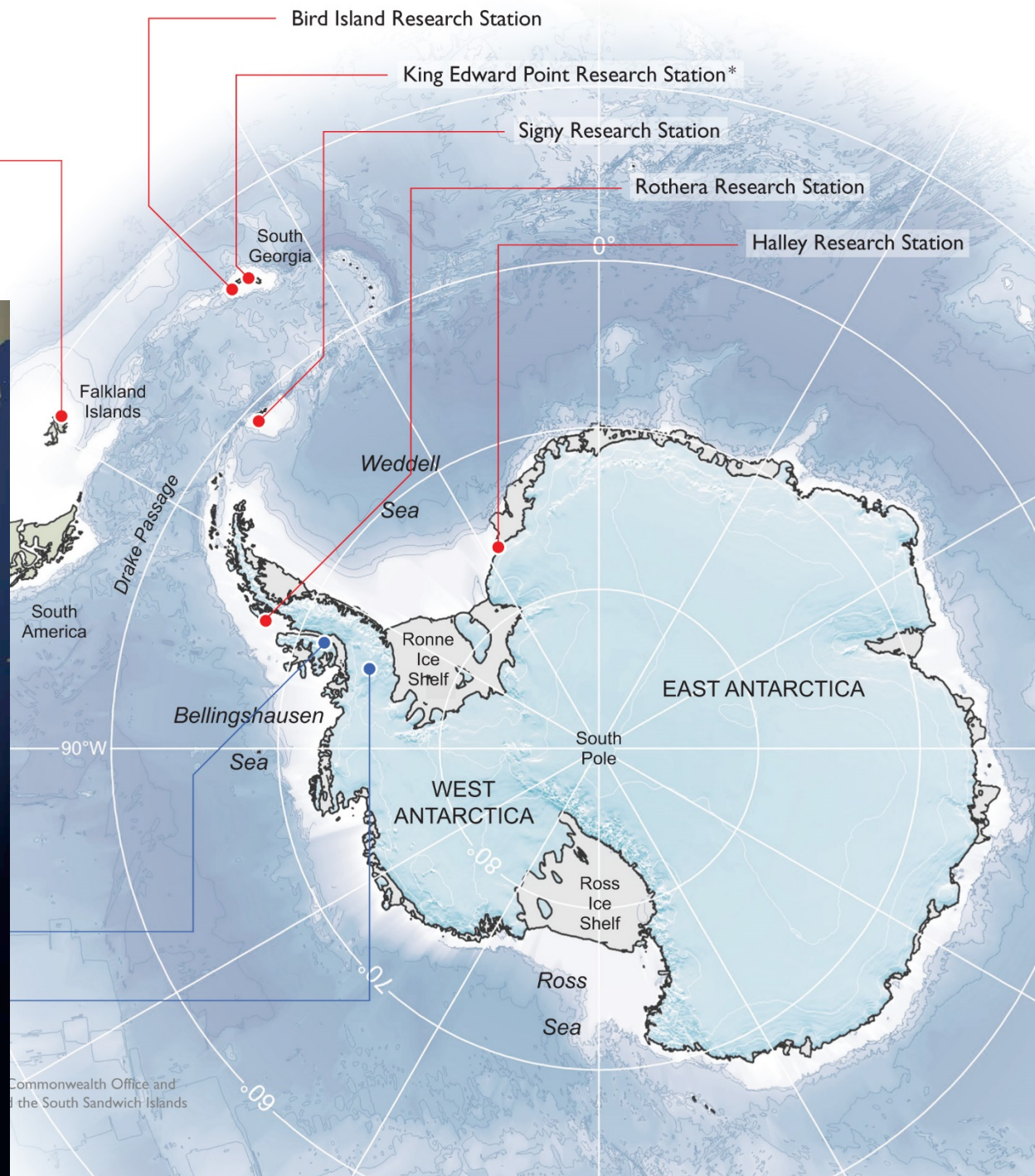




# British Antarctic Survey Antarctic Research Stations



BAS Stanley Office





# BAS Today (Research Stations)





# BAS Today (Mobile Assets)





# BAS Today (RRS Sir David Attenborough)





# Why did we need to change?



Air Operations



BAS Stations



Field Operations



BAS Vessels

## BAS Operations Information flow

### Compliance

Procedures  
Training records  
Inspections and audits  
Statutory records  
Incident and investigation  
Critical task records (PTW)  
Certifications  
Risk Assessment  
Planned maintenance  
Exercises

### Operational

Staff location  
Job allocation  
Emergency preparedness  
Cargo tracking  
Inventory control  
Fuel stocks and use  
Equipment Manuals  
Logs  
Operational reporting  
Action tracking

### Resilience

Planned maintenance tracking  
Criticality identification  
Fuel trends  
Stock levels and changes  
Management KPI reports  
Warranty management  
Good management information  
Learning from mistakes  
Sustainability



BAS Cambridge





## Assurance

- Redundancies in our life support systems are ready
- Critical assets are reliable
- All the things we need or may need are on the shelf
- We have trained our people for every eventuality
- The correct information is available when it is needed
- We learn the lessons of adverse events
- High risk work is anticipated and controlled
- That all of the above is happening



Following an extensive selection process, BAS chose to work with SRO Solutions to replace the previous CMMS with IBM's Maximo (with HSE add on), as well as SRO's data replication tool (SDR).



-  UK based IBM Maximo Gold Business partner
-  Global reach
-  Marine engineering origins
-  Approved Maximo for marine type approval



### **Own IP products:**

SDR - Data Replication tool (proven in other Antarctic Operations)





# Maximo Applications we use

Standard modules we use as the main pillars of Maximo



## Maximo Asset Management

Of course the 'bread and butter' of Maximo. BAS has four organisations levels in Maximo (land, Sea, Air and Science) to allow assets to be managed sensibly and allows for differences in



## Maximo Work Management

We use the full functionality of work management across our organisation. The work order application is used for Planned Maintenance and increasingly for operational tasking such as emergency exercises or drills



## Maximo Inventory & procurement

Ensuring clarity our inventories are well managed with 'max min' stock levels and regular counts is very important to us. We have integrated the procurement module with our ERP (Oracle) to provide a seamless system to request supplies from Antarctica



## Maximo Health, Safety & Environment

We are using Maximo HSE modules to develop better processes around hazard control. We have implemented a safety Incident reporting system and using the Defects module to manage both 'Operational Defects' or Non Conformities (CAPA).



# Maximo Applications we use

Configured Bespoke solutions specific to BAS



## Maximo cargo management solution

is under development for BAS Logistics and involves building new custom applications to record packing notes, packing cases, packing lists and manifests for all cargo and freight going to Antarctica.



## Maximo document distribution solution

SRO also created a document distribution solution to allow BAS to manage and control policy and procedure documents within its various research stations, ships and aircrafts.

This is a synchronised system which pulls from our SharePoint Environment



## Maximo Incident Management

We have adapted the Maximo Incident module to support our safety culture for reporting HS&E incidents. This system allows for local teams to engage with investigations and corrective action. A simple workflow keeps the corporate team on top of the lessons and actions from these events



## Crew functionality for Maximo

was developed in the system to create crew records, track crew leave and movements, store certificates and appraisal reports, and hold job roles with a pre-defined list of training courses required for that role.

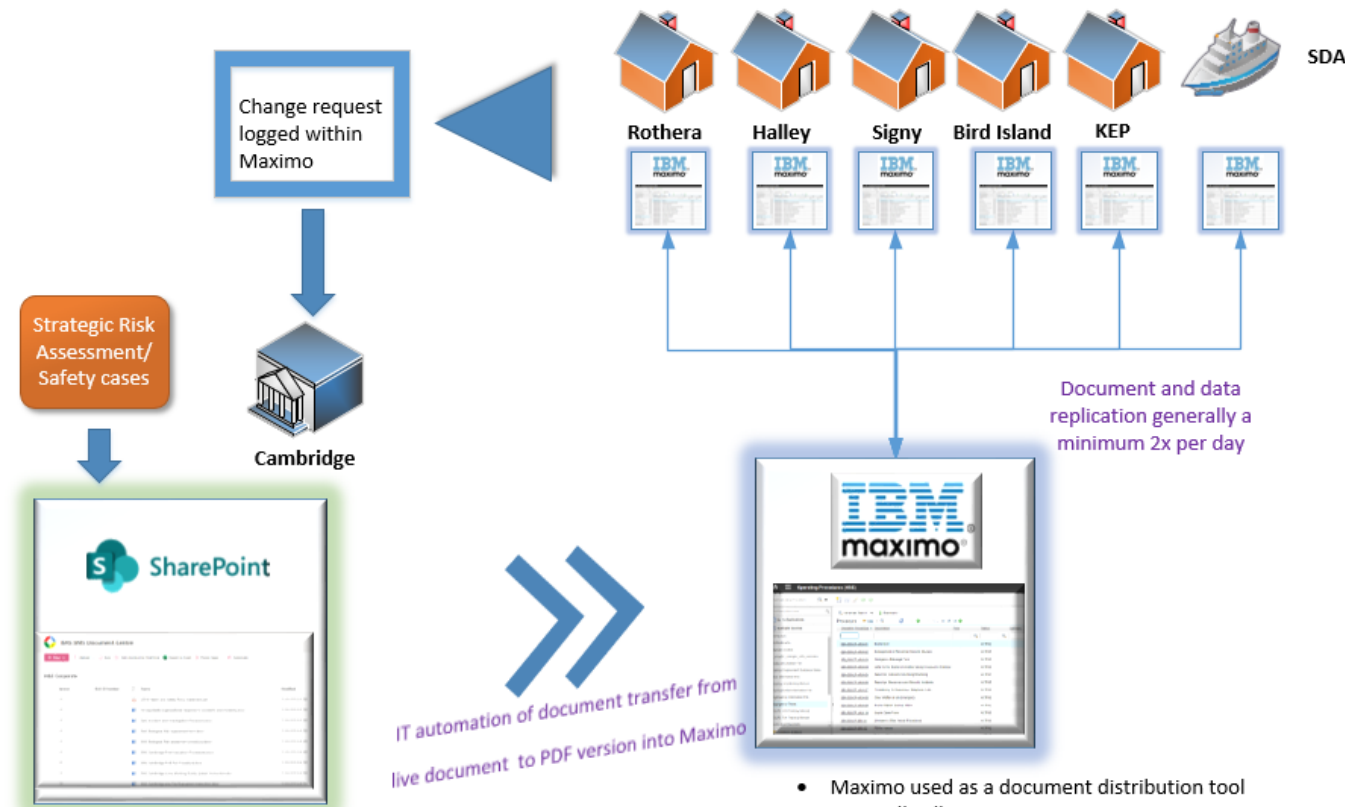


# Documents distribution



## Maximo document distribution solution

SRO also created a document distribution solution to allow BAS to manage and control policy and procedure documents within its various research stations, ships and aircrafts.



- Single SharePoint Document centre
- Each document controlled with ID and version and owner
- Documents collated by site or corporate
- Documents have last reviewed/modified date but not next review date (as a general rule)
- Documents under strict control by managers
- Change requests logged in Maximo accepted or rejected by the managers

- Maximo used as a document distribution tool
- Generally all PDF versions
- Read only
- A live mirror of the published version on SharePoint

- Change requests logged in Maximo accepted or rejected by the managers
- Documents under strict control by managers
- Documents have last reviewed/modified date but not next review date (as a general rule)
- Documents collated by site or corporate
- Documents under strict control by managers



## Crew functionality

### Qualifications Expiring within 90 days

Filter > < < < <

UserID	Name	Qualification	Description	Certificate #	Expiration Date
CHLT	Christopher Walton - BAS	COOK1	Ships' Cook Certificate of Competency	84189/12	01/12/21
PAUNOZ	Paula Munoz Garcia - BAS	BOAT1	Proficiency In Survival Craft and Rescue Boats (other than Fast Rescue Boats)	0209999021216152	01/12/21
MAAMJO	Madeleine Bonham Jones - BAS	HEL12	Helideck Emergency Response Team Member (HERTM)	1370410512191159933	05/12/21
AMALIT	Amanda Little - BAS	ENG1	ENG1 Seafarer Medical Certificate	163859	08/12/21
CHSON	Chad Edgson - BAS	OOWENG	Officer Of The Watch (Engineer) Unlimited Certificate	CoC0074443	08/12/21
GEOHAL	George Hale - BAS	BASICST1	Basic Safety Training	N/A	08/12/21
LSS	Lloyd Sutton - BAS	MEDIC3	Proficiency In Medical Care	FPMCP/16/15037101	08/12/21
PETYNN	Peter Flynn - BAS	HAZAIR	Dangerous Goods By Air Awareness		17/12/21
SCOTHO	Scott Thornton - BAS	HAZAIR	Dangerous Goods By Air Awareness	N/A	27/12/21
EURAY	Euan Murray - BAS	2NDENG	Second Engineer Unlimited Certificate of Competence	COC0074675	12/01/22
BRYSON	Bryn Ferguson - BAS	ENG1	ENG1 Seafarer Medical Certificate	147983	13/01/22
NIEANN	Niel Channing - BAS	ENG1	ENG1 Seafarer Medical Certificate	161551	14/01/22
DEEVA	Desislava Fileva - BAS	ENG1	ENG1 Seafarer Medical Certificate	148	21/01/22
WIAT	William Whatley - BAS	VAX7	Typhoid Vaccination	N/A	28/01/22
MATMAN	Matthew Chapman - BAS	ENG1	ENG1 Seafarer Medical Certificate	151040	29/01/22
CHESSE	Christopher Naessens - BAS	HAZGOOD1	Dangerous Goods By Sea	CTI/ 42356	31/01/22
EURAY	Euan Murray - BAS	ENG1	ENG1 Seafarer Medical Certificate	207070	01/02/22
DTU	Richard Turner - BAS	BOAT3	Proficiency In Fast Rescue Boats	00125ASTD00321735620	02/02/22



## Crew functionality for Maximo

was developed in the system to create crew records, track crew leave and movements, store certificates and appraisal reports, and hold job roles with a pre-defined list of training courses required for that role.



## BIM and digital twin



### Maximo supporting our Digital Twin

Currently Bentley colleagues are assisting SRO in working on a proof of concept using the COBie and Revit data for the BAS' Discovery House

# SRO Data Replication (SDR)



## Synchronisation of data across globally dispersed vessels and assets

The SDR facilitates full access for BAS remote locations and disconnected sites to main Maximo hub and maintains data across organization effectively by capturing only pertinent ones.

### Why SDR

- IBM approved global solution
- Tried and tested with Maximo for the Marine industry
- Replicate data to poor connectivity areas
- Replicate unlimited databases together to act as one production system
- Enable your sites for online Maximo usage
- Architect multiple hubs to balance user load
- Provide central Maximo speeds at remote sites
- Unlimited scalability & flexibility to configure the replication network to suit your company's needs.





## BAS HQ



Administration Server  
Web Server  
Application Server



Database Server



Rothera

Administration Server  
Web Server  
Application Server  
Database Server



Halley

Administration Server  
Web Server  
Application Server  
Database Server



Signy

Administration Server  
Web Server  
Application Server  
Database Server



RRS SDA

Administration Server  
Web Server  
Application Server  
Database Server



KEP

Administration Server  
Web Server  
Application Server  
Database Server



Bird Is

Administration Server  
Web Server  
Application Server  
Database Server

# The Challenges

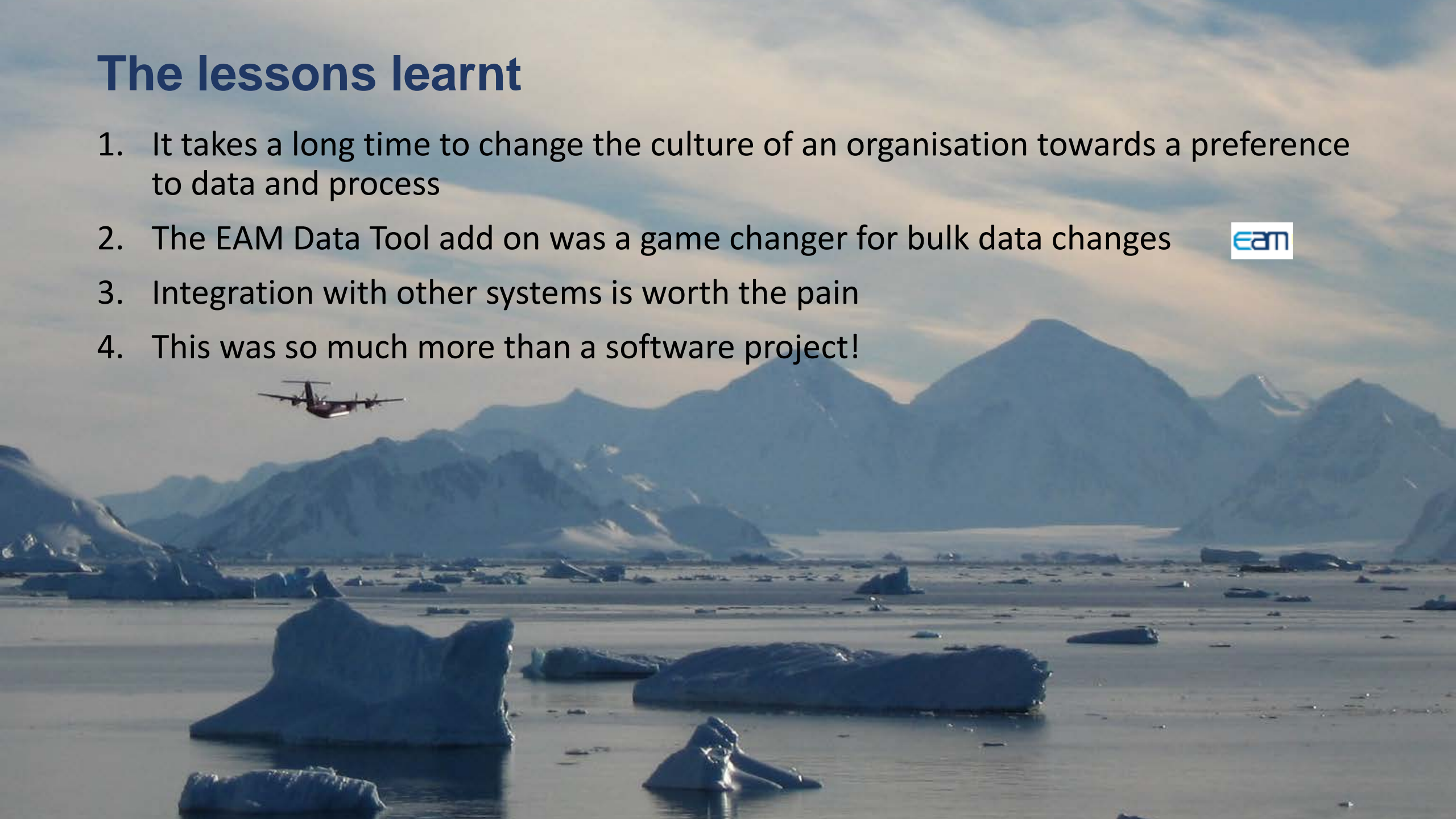
- Data, Data, Data! We had three broad areas of data acquisition
  1. Data migration from 'AMOS' to 'Maximo' (20 years of current asset data) using Pentaho ETL
  2. New data (SDA) mostly manual acquisition, labour intensive (spread sheets) XML and later EAM
  3. BIM limited knowledge in industry, we needed to be clear what data was important
  4. 16,900 assets, 12,400 PM's, 49,100 Inventory Items
- Replication
  - We need to be exacting with system changes (Dev, Test, Test Replication, Production Environments)
- Training
  - We have a high turnover of seasonal staff and training will be a continued major burden each year





# The lessons learnt

1. It takes a long time to change the culture of an organisation towards a preference to data and process
2. The EAM Data Tool add on was a game changer for bulk data changes
3. Integration with other systems is worth the pain
4. This was so much more than a software project!





# The benefits so far

- We have created interest from all over our organisation
- We have a system in which we can grow
- We are finally using single sources of truth in many areas
- We are protecting our bandwidth for other operations
- Reduction in work (email, Spreadsheets) is coming





# Questions



# Links

BAS Case study on SRO website

<https://srosolutions.net/clients/case-study-british-antarctic-survey/>

Link to British Antarctic Survey website

<https://www.bas.ac.uk/>

Video of RSS Sir David Attenborough (2:47)

<https://youtu.be/cUBQodY60U0>

