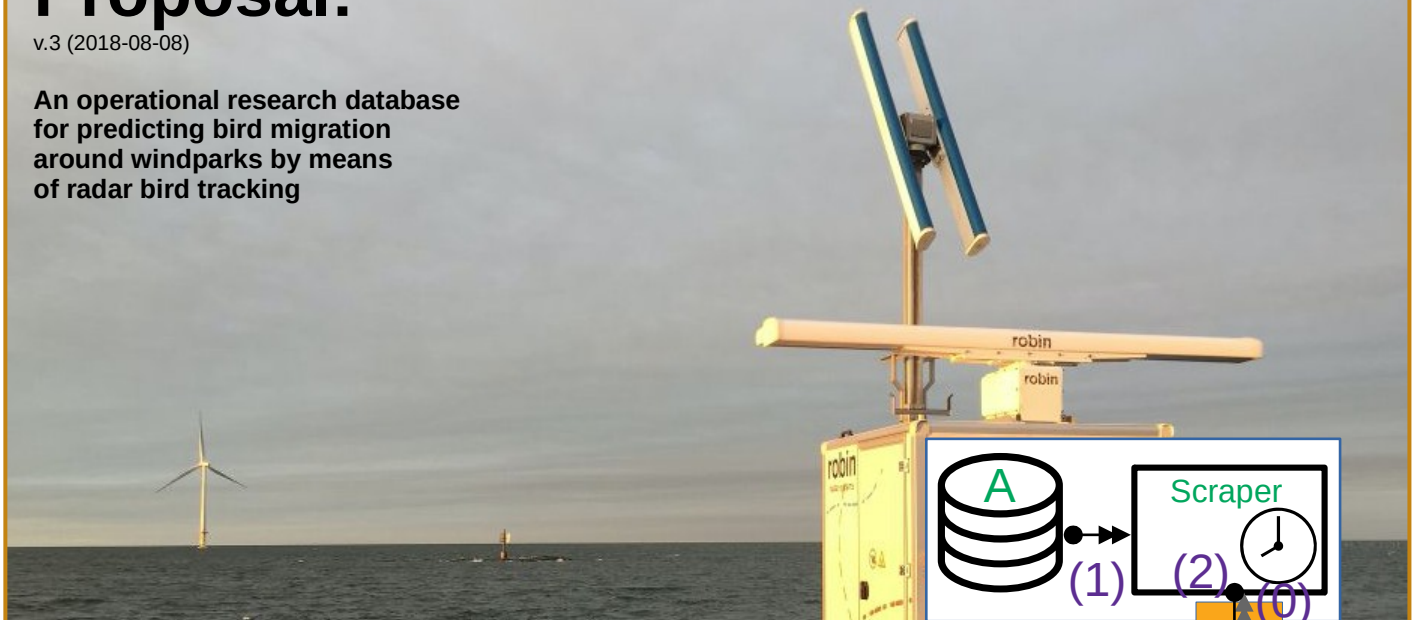


Proposal:

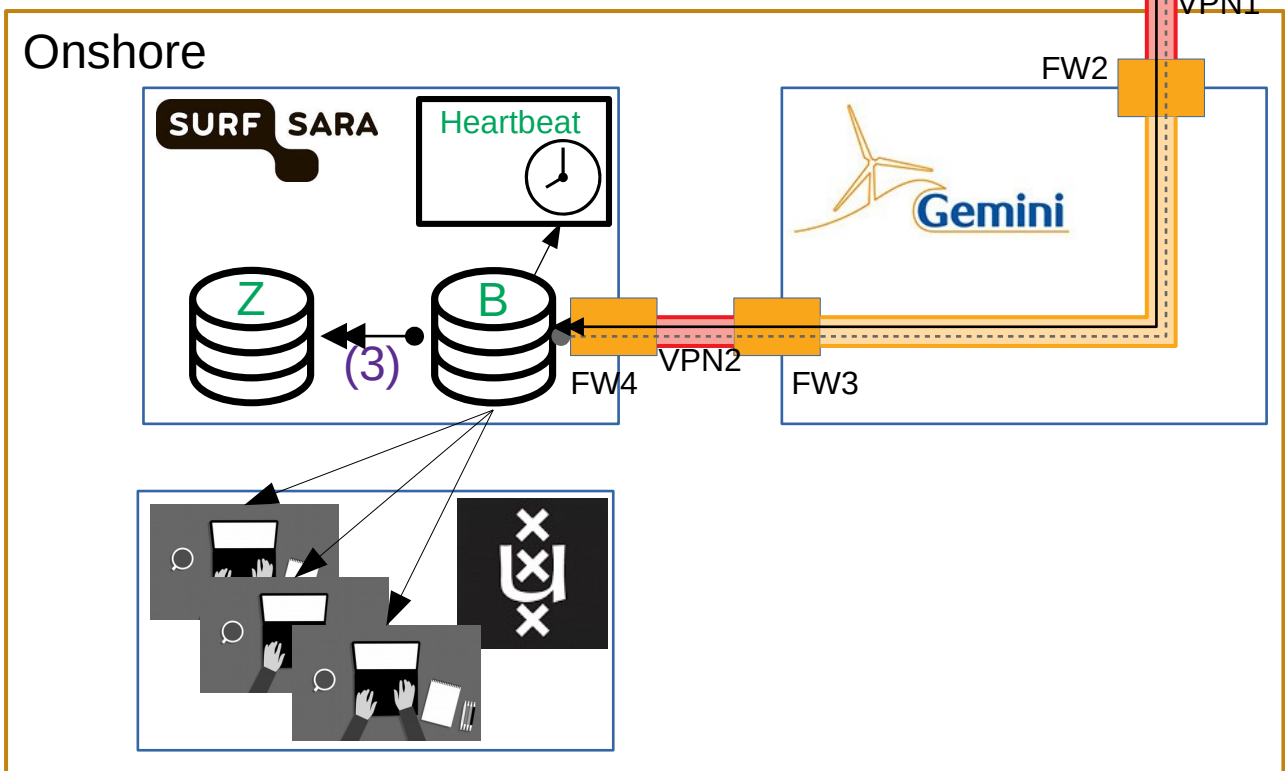
v.3 (2018-08-08)

An operational research database
for predicting bird migration
around windparks by means
of radar bird tracking

Offshore



Onshore



Synopsys:

Data replication:

At the windpark, offshore, the radar hardware and software produce (track) information into a database, A. SURFsara host a research database, B. Robin's scraper can run at the windpark every minute to read from B what the latest record is (see 0), then read from A what is new since then (see 1), and finally send all new records from A to B (see 2).

Data path:

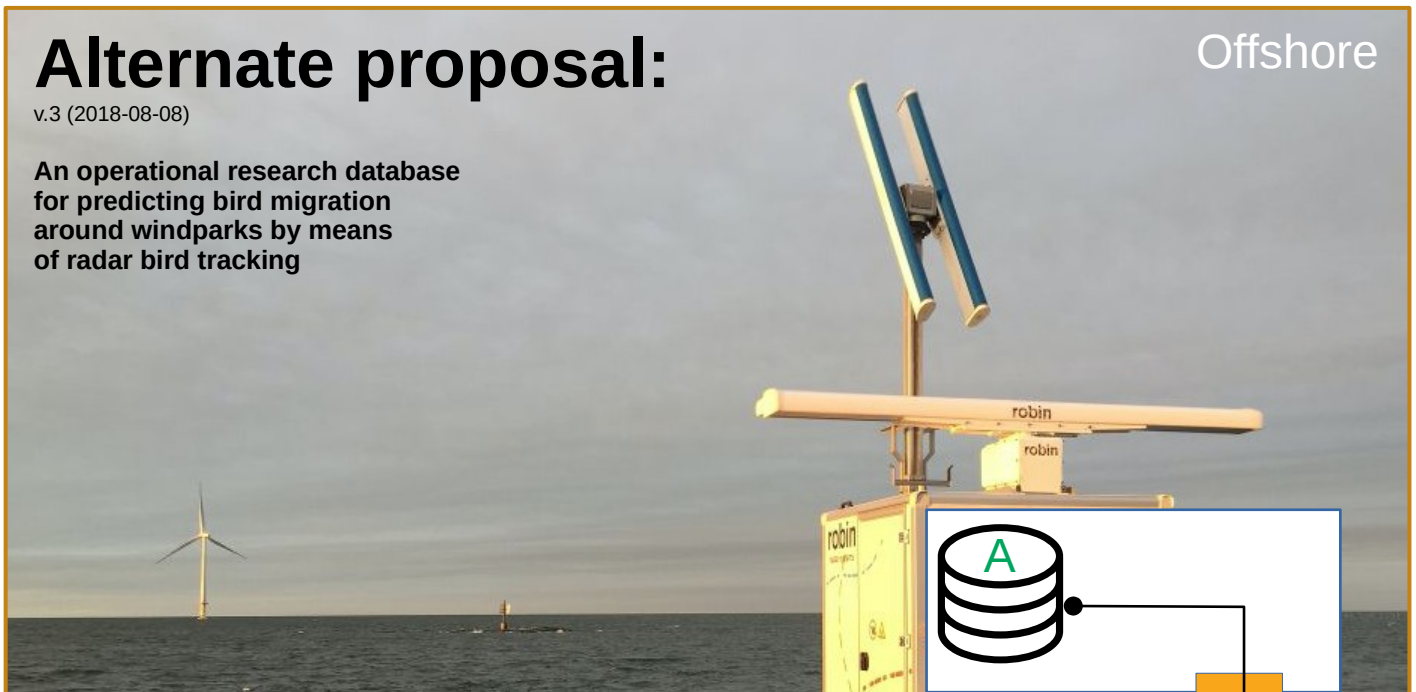
From the offshore radar location to the onshore Gemini's datacenter, there is a cable in place. For the sake of this description, this is connecting firewalls FW1 and FW2 through VPN1. Another two firewalls FW3 and FW4 between Gemini and SURFsara keep a secure connection over the Internet through VPN2. Internally, Gemini arrange their network to connect FW2 and FW3.

Data consistency and preservation:

SURFsara arrange a long-term storage solution, Z, possibly offline, for archival purposes, through a transfer (3). A process running periodically (Heartbeat) checks whether data is still coming through; it could emit an alert when data fails to come after a given period of time.

Offshore

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Onshore

The diagram illustrates the Onshore system architecture. It features three main components: SURF/SARA, Gemini, and Robin.

- SURF/SARA:** Contains a database (Z) and a database (B). A heartbeat clock is shown. A red line connects database B to Gemini.
- Gemini:** Contains a database (B) and a database (Z). A red line connects database B to Robin.
- Robin:** Contains a database (B) and a database (Z). A red line connects database B to the Scraper.

The network flow is as follows:

- (1) Data flows from Gemini to Robin.
- (2) Data flows from Robin to the Scraper.
- (0) Data flows from the Scraper to Gemini.

Firewalls (FW2, FW3, FW4, FW5, FW6) and VPNs (VPN2, VPN3) are used to manage the network connections.

Data replication:

Data path:

Data consistency and preservation:

SURFSara arrange a long-term storage solution, Z, possibly offline, for archival purposes, through a transfer (3). A process running periodically (Hearbeat) checks whether data is still coming through; it could emit an alert when data fails to come after a given period of time.