



Public Service, APRS and the Internet of Things

Presented by John Ronan, EI7IG

The “Sean Kelly”

▪ Hat tip to Sean Kelly

- One of the finest classical cyclists.

 - Native of Carrick on Suir, County Waterford

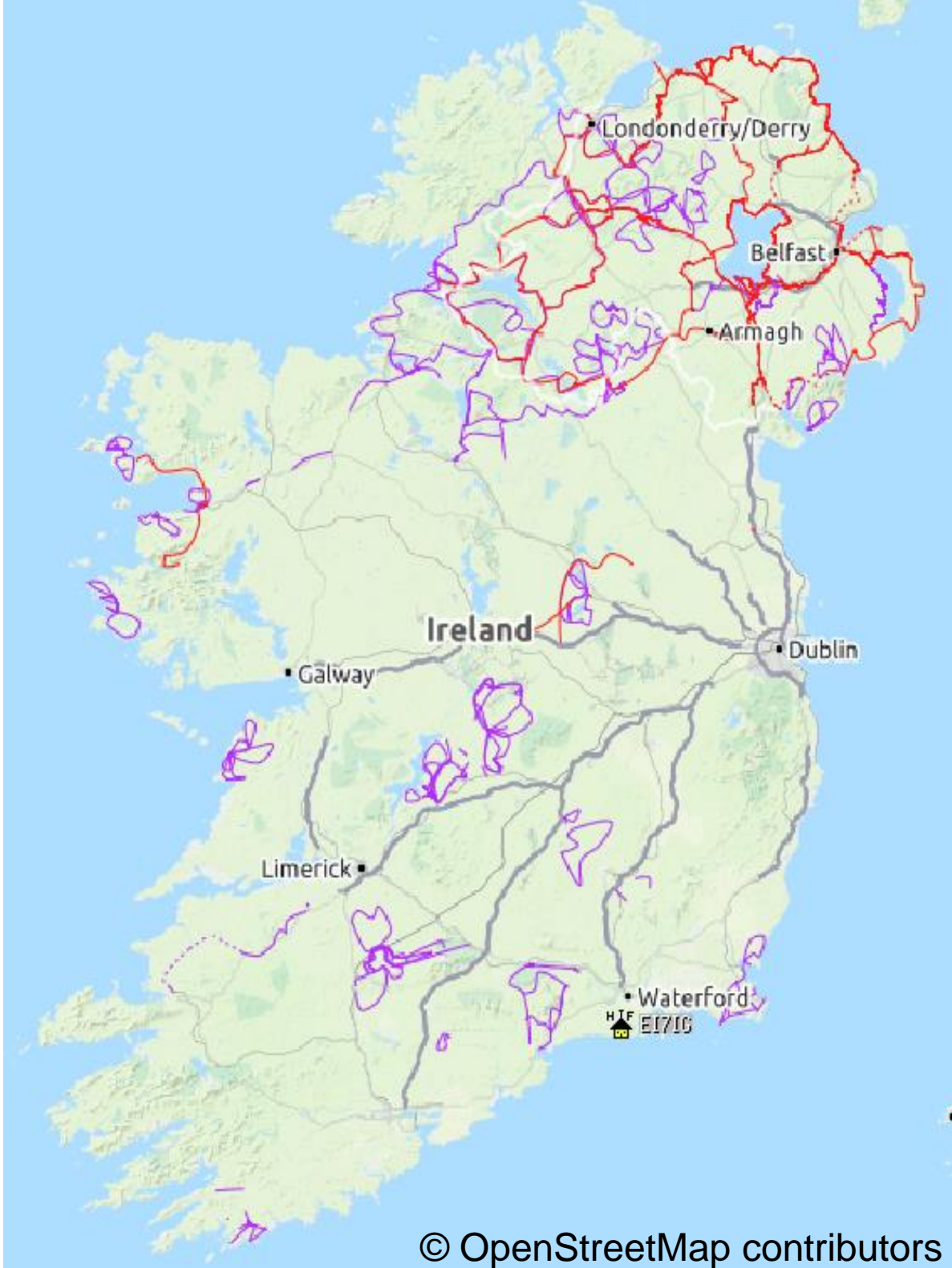
- Charity event, organised by Waterford Co.Co.

- Official max entry of 5000

- 3 routes, 50k, 100k 160k

 - 12k childrens event on Saturday

- 10th Year of Running





Clonmel

Carrick-on-Suir

Mullinavat

Mooncoin

Waterford

Kilmacthomas

Cappoquin

HTE EIZIG
Tremore

Dungarvan

Fallow

Youghal

Civil Defence

▣ Lead Agency

- ▣ Medical assets include IRC, OMAC, Medical Doctor

▣ Communications assets

- ▣ VHF (70Mhz)
- ▣ UHF (450Mhz)
- ▣ Tetra
- ▣ Amateur Radio when required (AREN)

▣ Tracking assets

- ▣ Amateur Radio (AREN)
- ▣ SigFox experiment this year

The problem?

- ▣ Gaps in APRS infrastructure
 - ▣ Difficult to get access to sites
- ▣ Not enough mobiles digipeaters available on the day

Why Sigfox?

- ▣ Network infrastructure in place
 - ▣ VT Networks, Dublin
- ▣ Development kits available for reasonable cost
 - ▣ Approximately \$170, we purchased two
- ▣ Dev kits re-usable afterwards if experiment fails
- ▣ Padraig wanted an excuse to play with SigFox

Sigfox frame

▣ **5d01010067442b6337a03c99**

▣ 0x5d – unknown

▣ 0x0 – reserved

▣ 0x1010 – GPS Frame

▣ 0x067442b6337a – 7 09.640' 52 09.978'

▣ Simple hex to decimal conversion

▣ 03c – $60.60 * 2 = 120\text{m ASL}$

Sigfox frame

▪ **5d01010067442b6337a03c99**

▪ 0x99 – 10011001

▪ 1 = longitude sign (0=pos 1 = neg)

▪ 0 = latitude sign

▪ 0 = altitude sign

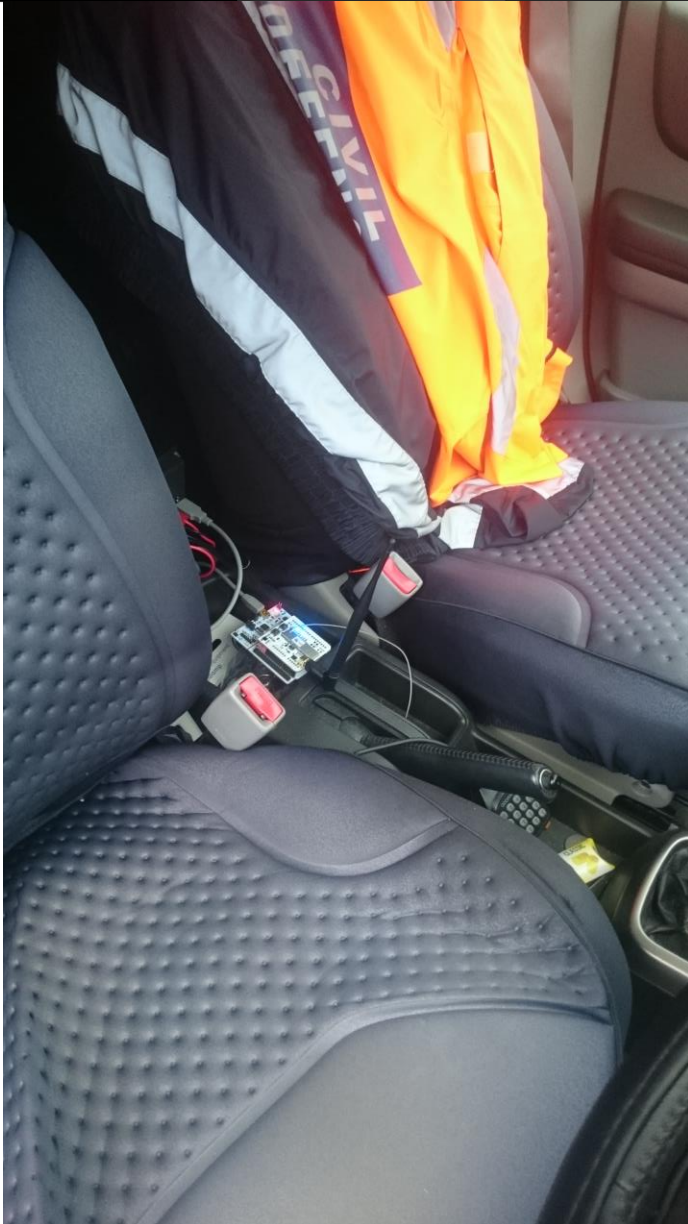
▪ 110 = 6 satellites in view

▪ 01 – HDOP, range 0 (good) to 3 (bad)

▪ Summary

▪ **-7 09.640' 52 09.978' @120m, 6 satellites visible, OK HDOP**

Initial Tests



Initial Tests

Google Maps APRS - Mozilla Firefox

aprs.fi/#!mt=roadmap&z=10&call=a%2FEI7IG-9&timerange=345600&tail=345600

52°18.46' N 8°40.50' W, IO52PH

Map data ©2016 Google 5 km

Initial Tests

Google Maps APRS - Mozilla Firefox

aprs.fi/#lmt=roadmap&z=9&call=a%2FEIOAC-9&timerange=345600&tail=345600

Firefox has prevented the outdated plugin "Adobe Flash" from running on http://aprs.fi.

52°35.53' N 8°50.80' W, IO52NO

Overlays

aprs.fi - Login

We use cookies to enhance the service. By continuing to visit this site, you are agreeing to our use of cookies. [Learn more](#)

Track callsign:

Address, city or Locator:

Show last: 4 days

Track tail length: 4 days

EIOAC-9

Updated: 2016-08-01 09:33:07 (4m)
Position: 52°9.96' N 7°9.64' W

2014 2015 2016

Other SSIDs: [EIOAC-3](#) [EIOAC-1](#) [EIOAC-2](#)

[EIOAC-3](#) [EIOAC-4](#) [EIOAC-5](#)

Wx: 14.4°C 91% 1016 mbar 1.0 m/s SE

Other views:

- Station info
- Raw packets
- Status packets - Beacon packets
- APRS/CWOP weather - Telemetry
- Messages - Bulletin board
- Prefix browsing
- Google Earth KML ?
- Data export tool
- Preferences - My account

Information:

[Stations currently moving](#) · [FAQ](#) · [Blog](#) · [Discussion group](#) · [Linking to aprs.fi](#) · [AIS sites](#) · [Service status](#) · [Database statistics](#) · [Advertising on aprs.fi](#) · [Technical details](#) · [API](#) · [Change log](#) · [Planned changes](#) · [Credits and thanks](#) · [Terms Of Service](#) · [iPhone/iPad APRS](#)

idle

Map data ©2016 Google 5 km

Trial





Photos: Ari

D



Photos: Ari

D



Photos: Ari

D

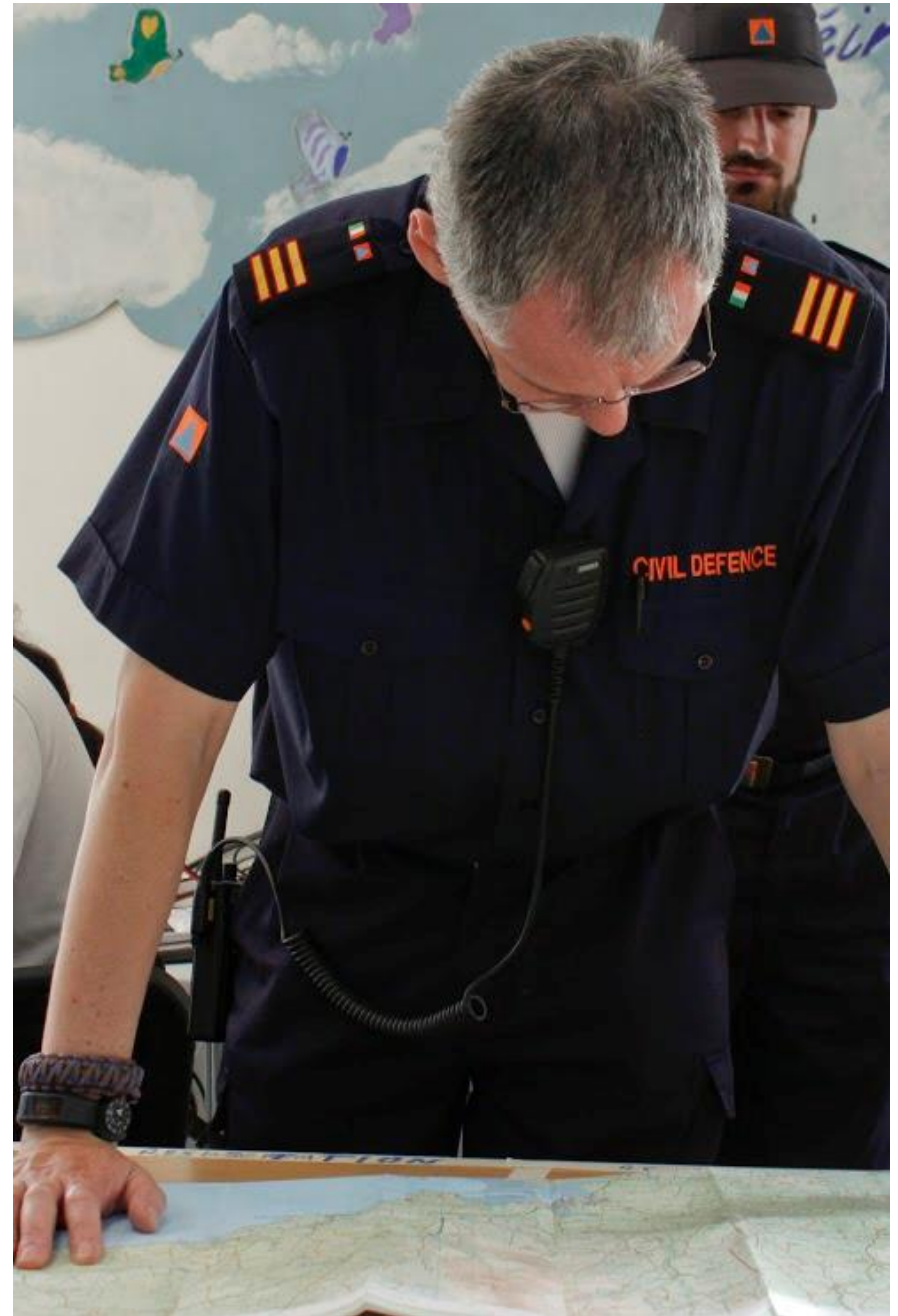


Photos: Ari
D



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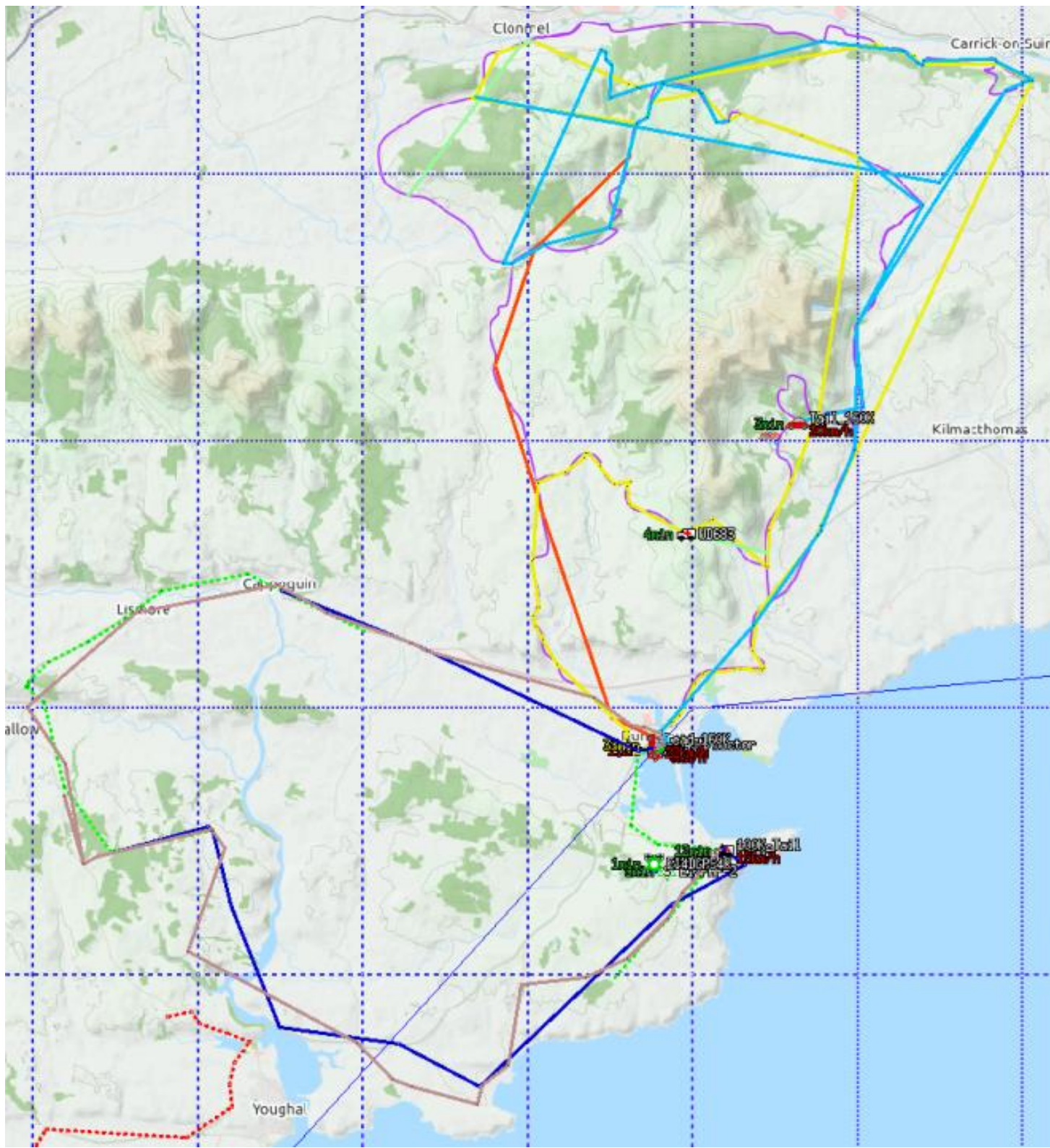
D

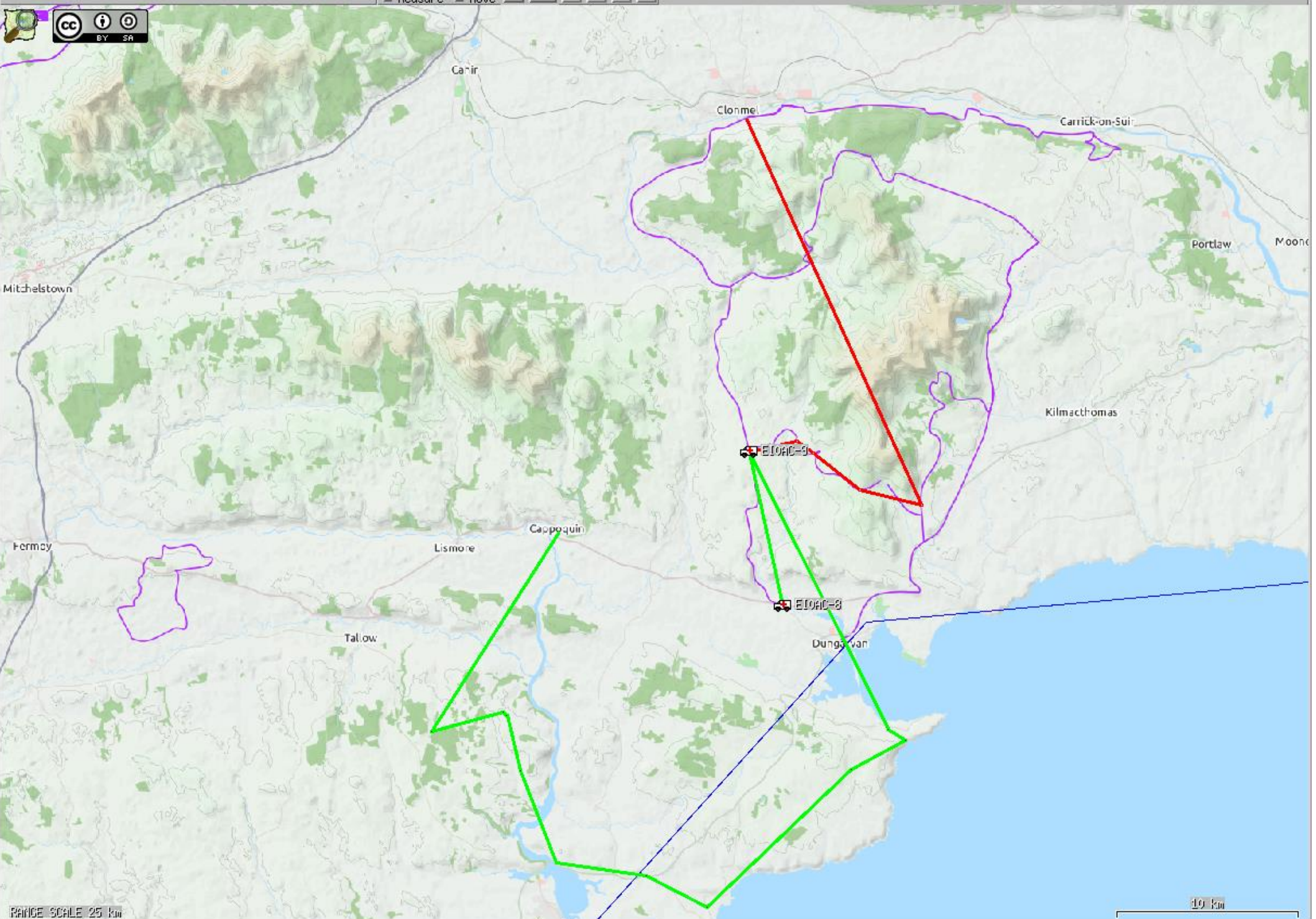


Photos: Ari
D

Timelapse

■ 5 Minutes of screenshots captured in timelapse during the day.





Trial - Issues

▣ The good

▣ Software worked

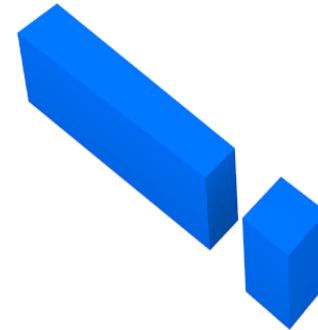
▣ <https://github.com/jpronans/sigfox2aprs>

▣ Given the issues, worked well

▣ Radio operators checked time of last transmit before calling Ambulances

▣ The bad

▣ Should have investigated power sources more thoroughly



Any Questions

☐ Thanks for listening

