DESIGN AND DEVELOPMENT OF AN IOT SOLUTION FOR THE HOME ENVIROMENT
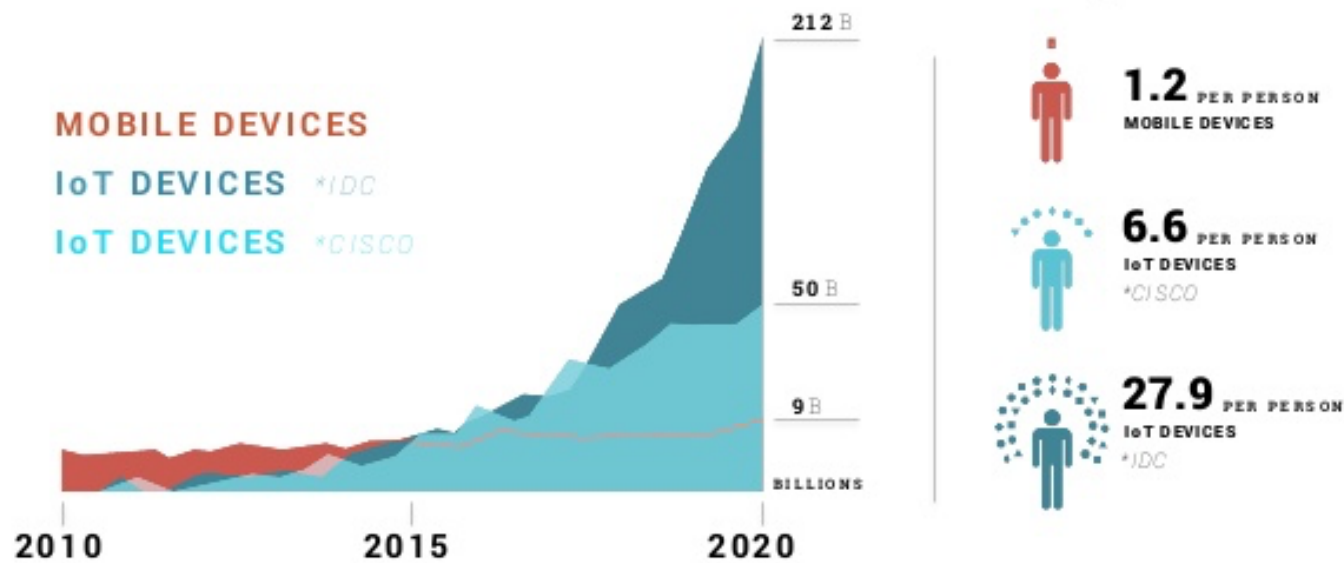
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Agenda

- ▶ Context and Objectives
- ▶ Technologies
  - ▶ IoT Communication Technologies
  - ▶ Server Technologies
- ▶ Prototype
- ▶ Testing
- ▶ Performance analysis
- ▶ Conclusions

Context and Objectives

Estimations by Cisco and International Data Corporation. Obtained from Slideshare.

Context and Objectives

▶ Study the market needs

▶ Cost-effective prototype

▶ Platform for future projects

IoT Communication Technologies

- Cost

- Availability

- Capabilities

- Legislation

IoT Communication Technologies

FEATURES	3G & 4G	SIGFOX	LORAWAN	Z-WAVE	BLUETOOTH LE
Network coverage	Very Good	Very Good	Good	Very Good	Very Good
Modules availability	Regular	Good	Good	Very Good	Good
Price	Bad	Good	Good	Regular	Good
Battery consumption	Bad	Very Good	Very Good	Very Good	Good
Signal range	Regular	Very Good	Good	Regular	Regular
Message error rate	Good	Good	Bad	Very Good	Good
Integration with other platforms	Bad	Very Good	Good	Regular	Bad
Support	Good	Very Good	Very Good	Very Good	Good

IoT Communication Technologies - Sigfox
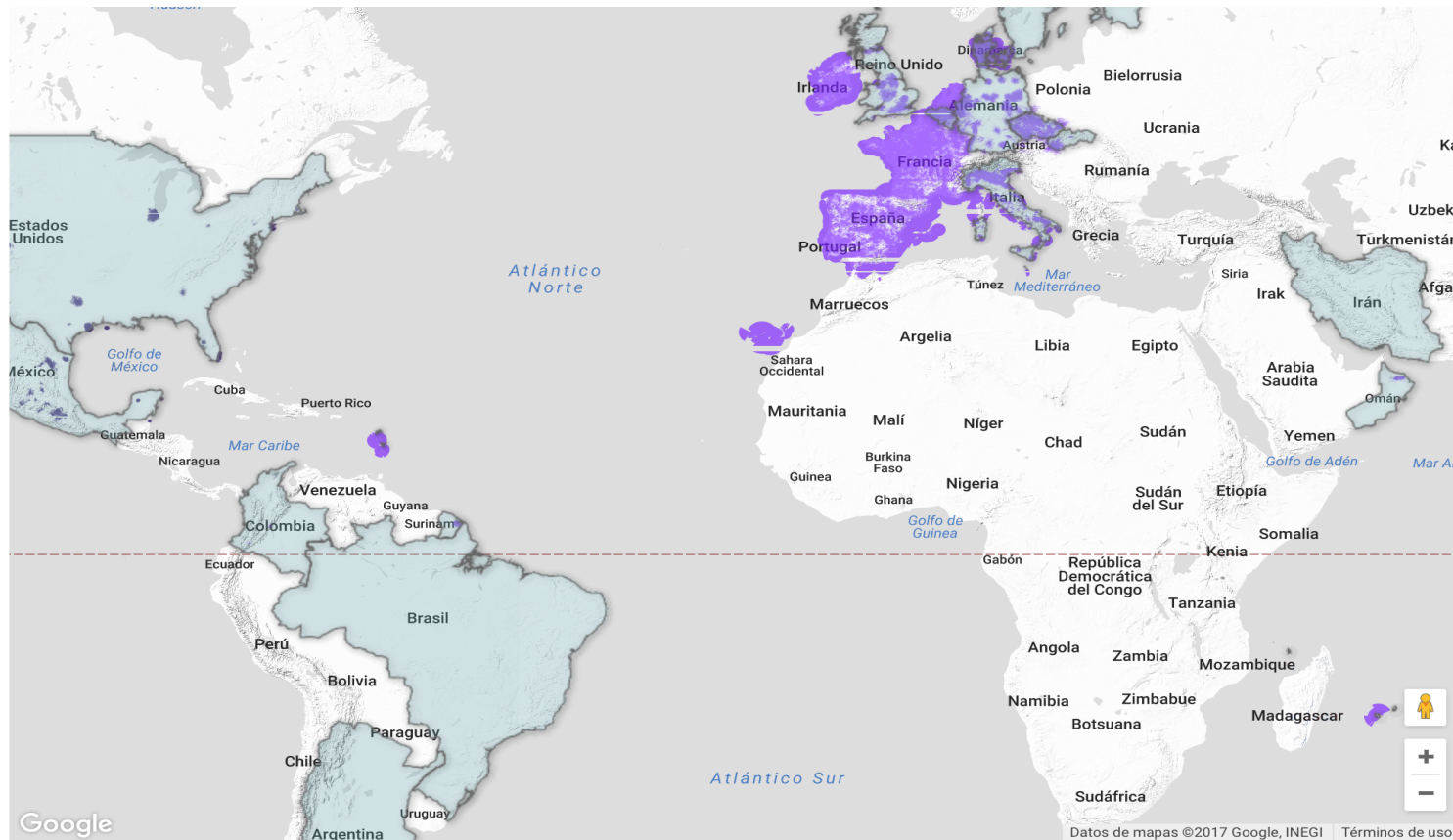
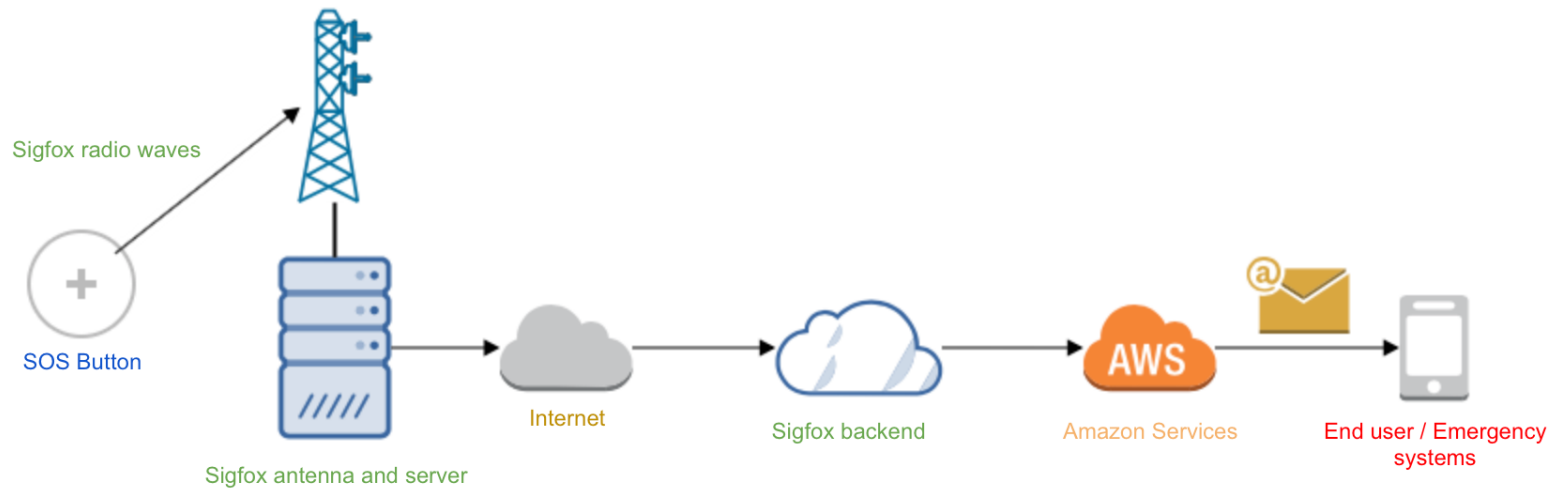■ Live coverage   ■ Country under roll-out   *Obtained from the Sigfox webpage*   7

Server Technologies

- ▶ Cost

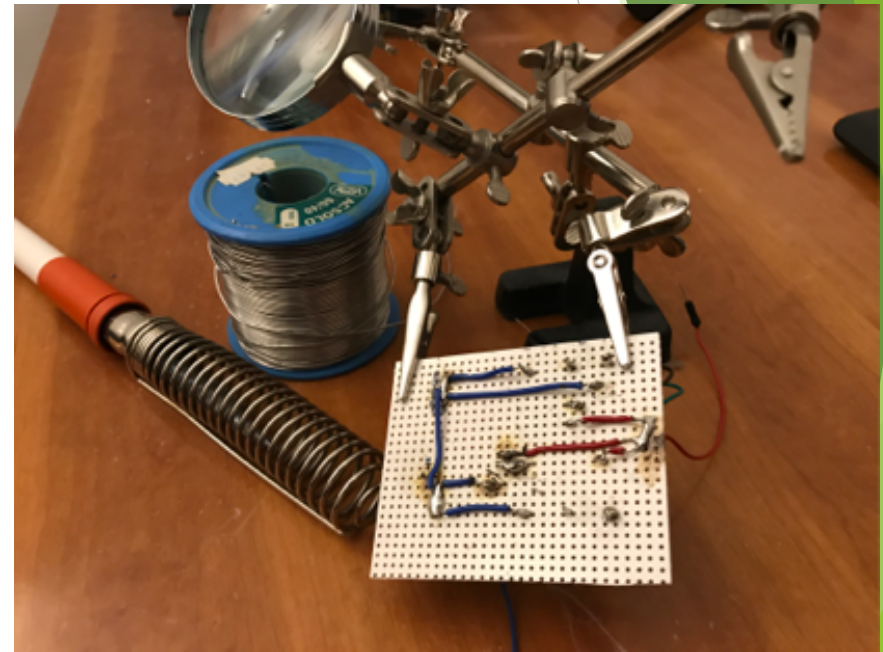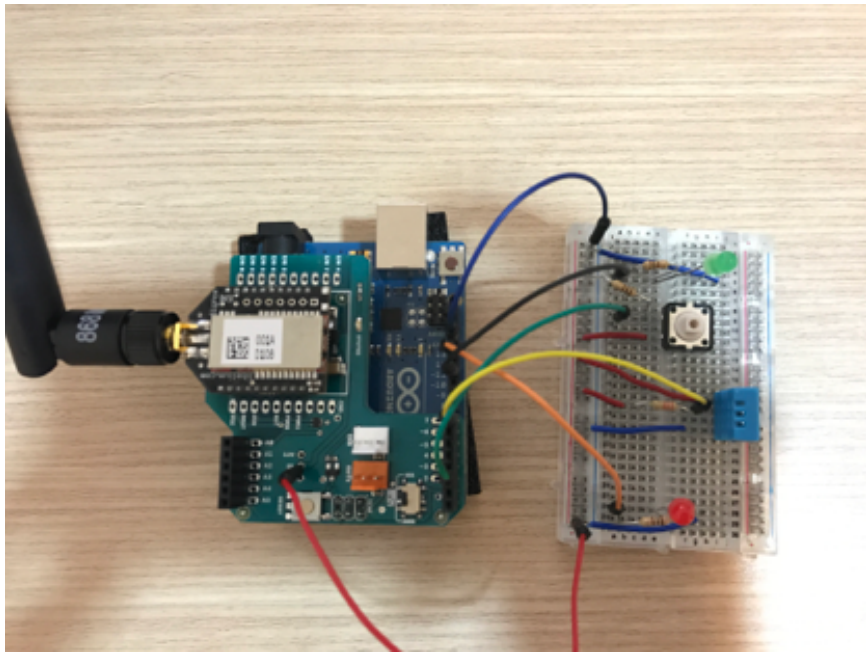- ▶ Services

- ▶ "Time to market"

- ▶ Scalability

Server Technologies

FEATURES	TRACCAR	AZZURE	SENTILO	AWS
Installation	Regular	Very Good	Regular	Very Good
Implementation time	Bad	Good	Bad	Good
Modular	Bad	Very Good	Good	Very Good
Scalable	Good	Very Good	Good	Very Good
Price	Regular	Good	Regular	Very Good
Support	Bad	Good	Regular	Good
Documentation	Bad	Very Good	Good	Very Good

System Architecture

Sigfox radio waves

SOS Button

Sigfox antenna and server

Internet

Sigfox backend

Amazon Services

AWS

End user / Emergency systems

Prototype

Validation

▶ Amazon IoT dashboard
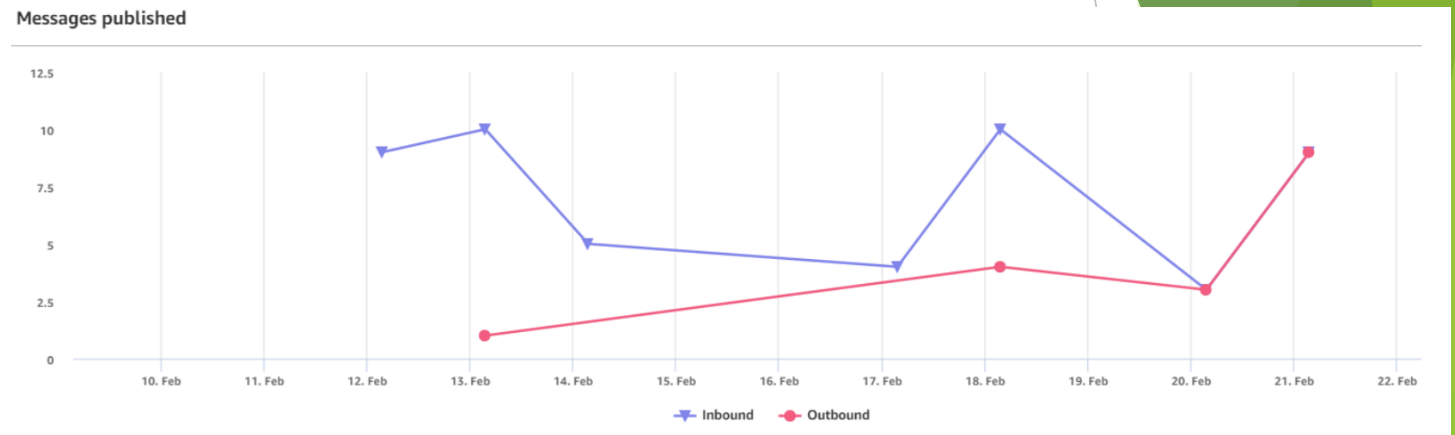
▶ Email notification

Performance Analysis

Solution	Lowest	Highest	Average
SOS button	35s	75s	56s
Virtual button	23s	65s	41s

*Each solution's response time has been measured 20 times

Summary and Conclusions

- Project that covers numerous aspects:
  - Communication technologies
  - Server Infrastructure
  - IoT SOS solution

- Functional prototype with a small investment

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