



MONITORING MOVEMENT

Problem

- Habitat and infrastructures are exposed to stress never seen before
- This will not fade out in the near future
- Monitoring is key to ensuring safety of our environment
- There are no tools to continuously monitor structural deformations on a large scale

A growing concern

- All development finance institutions now rely on climate-proof screening
- Worldwide cost of insurance due to extreme climate events soared from 10 Bill.USD/yr in the 90's to 45 Bill.USD/yr. in the period 2010-2015
- In 2017 only :
 - California created the Climate-safe Infrastructure group to review infrastructures
 - Canada changed its construction norms due to permafrost thaw and snow variation
 - French surveillance authority proposed to change 80 construction norms due to extreme events
- Bondo landslide (Switzerland) in August 2017 is considered by the GIEC as the first of many due to warming of Western Alps

Solution : the Geocube



Excellence

A network of satellite-based sensors monitoring millimetre deformations



Easy

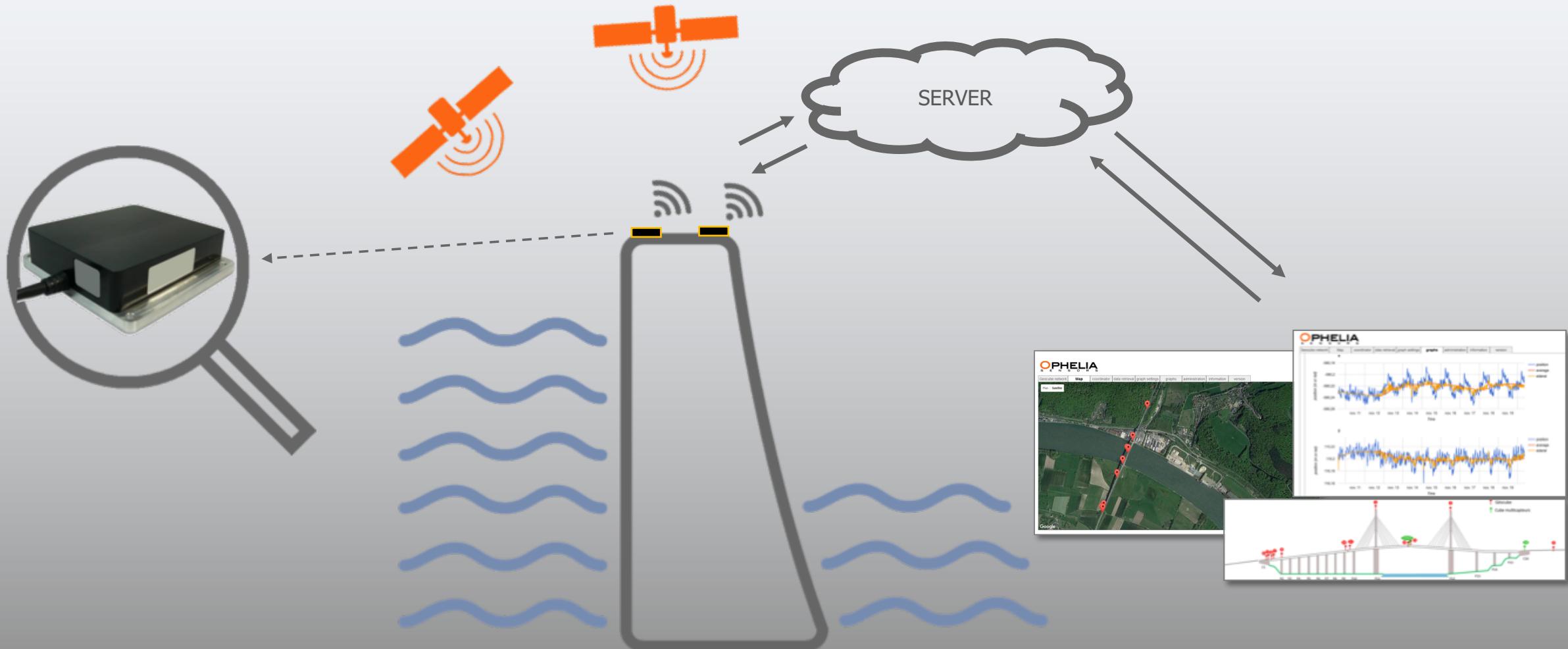
Integrated robust technology, maintenance free, calibration free and extremely easy to setup



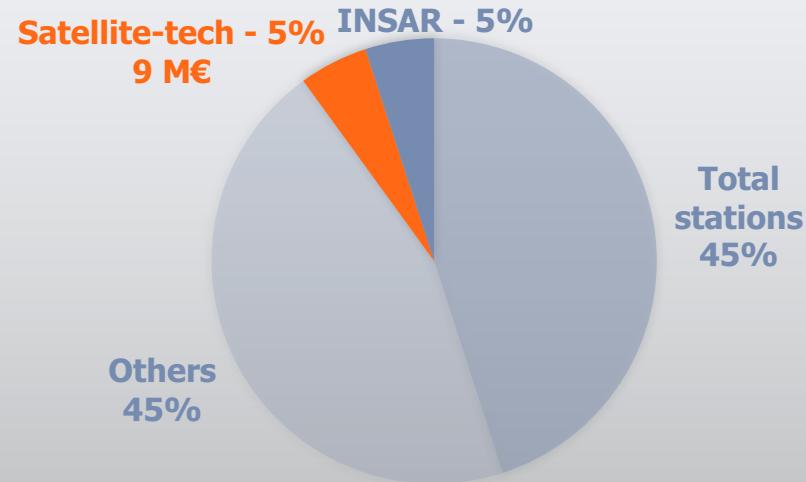
Cost effective

Cost of monitored point is one sixth of existing satellite-based technologies

A Geocube system



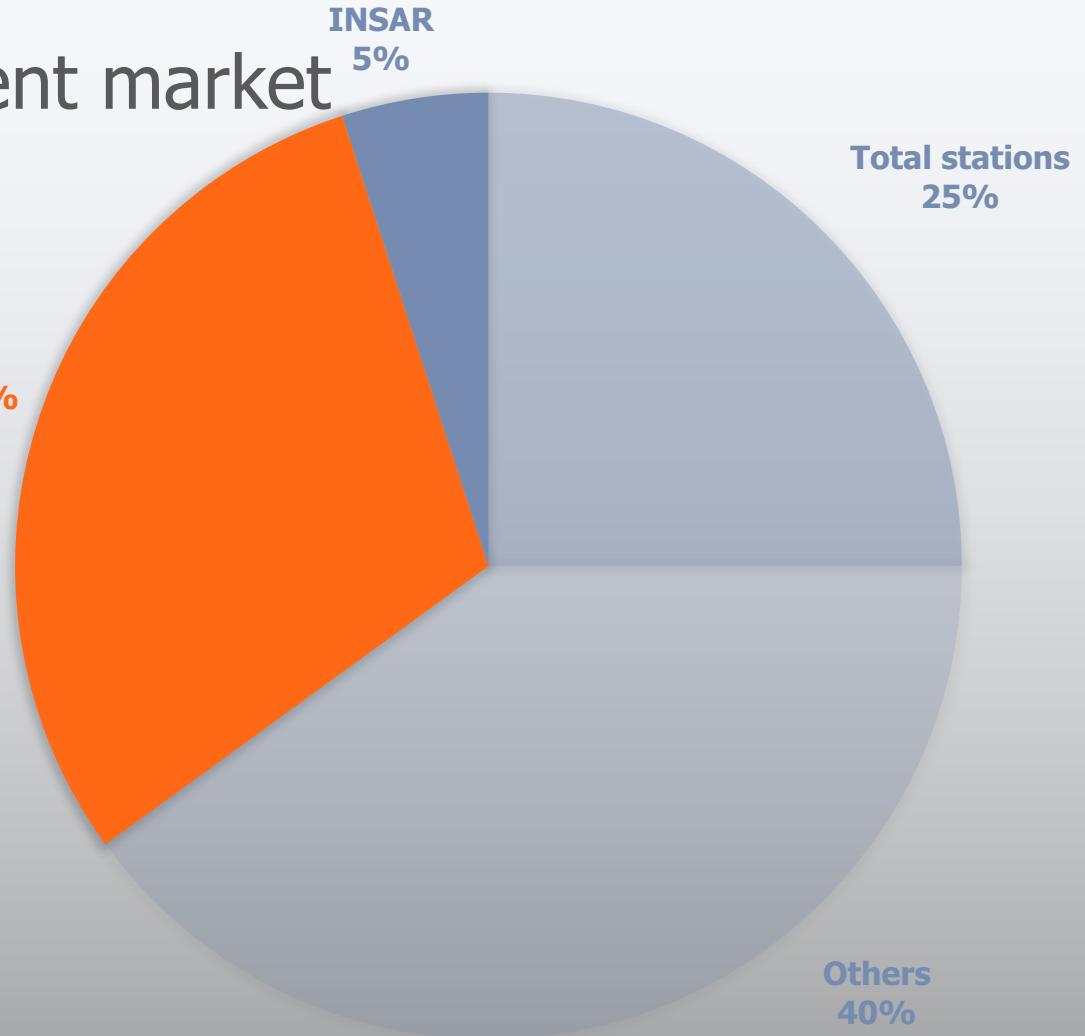
Structural Health Monitoring equipment market



2015 – 175 M€



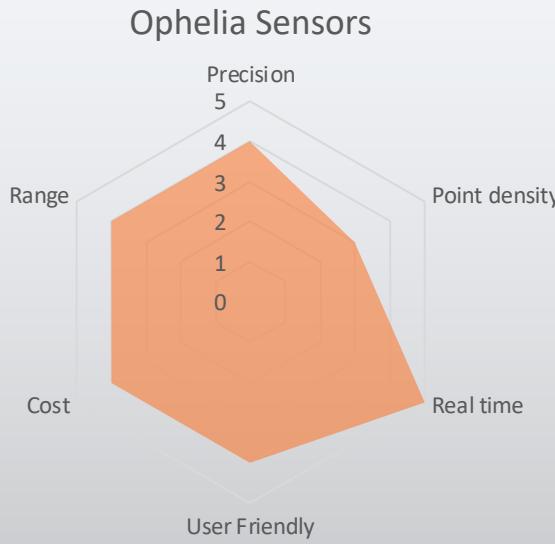
Satellite-tech - 30%
255 M€



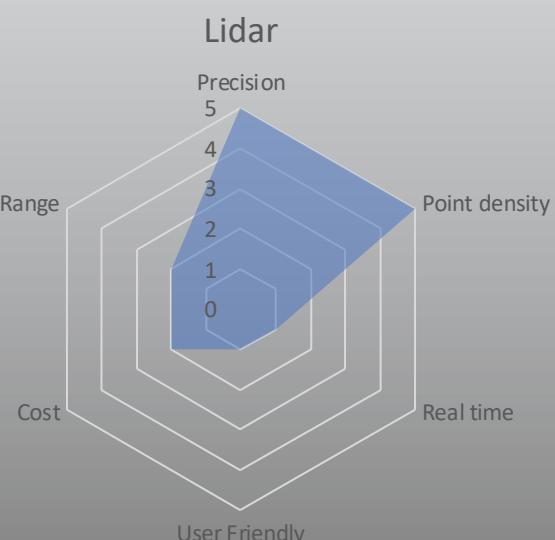
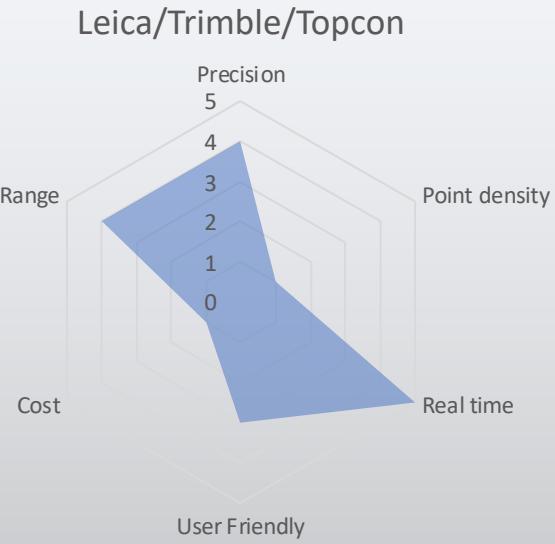
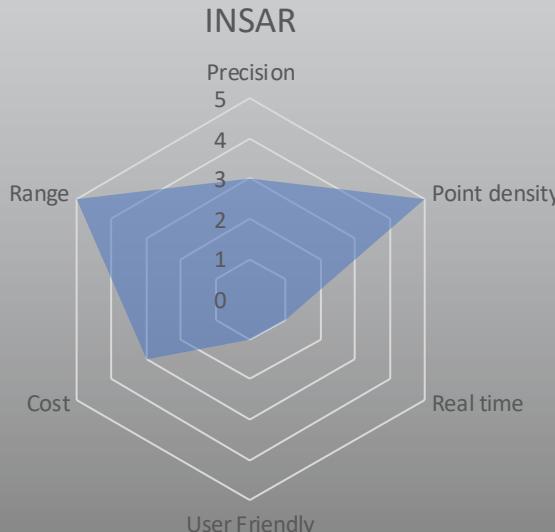
2022 – 850 M€

Competition

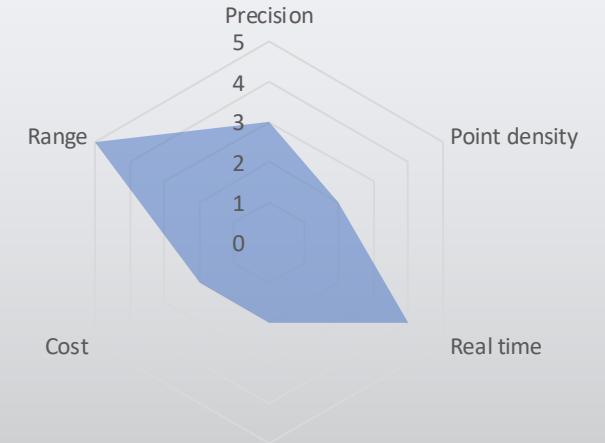
Satellite based solutions



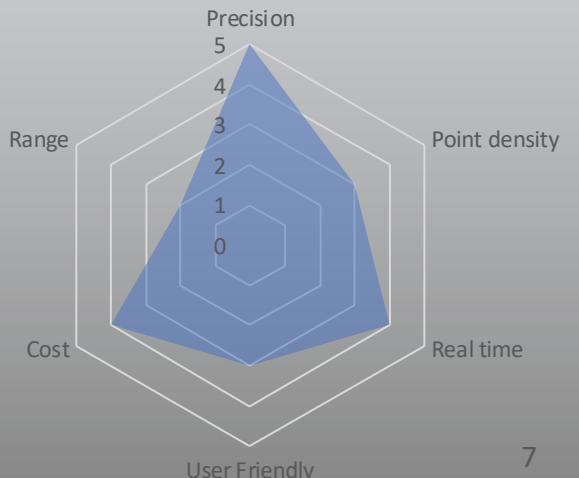
Other solutions



RTK (Teria/Orpheon/Egnos/VRS Now)



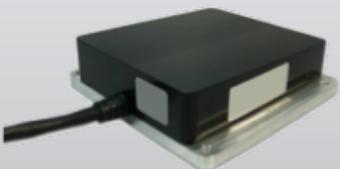
Total station



Case study : Normandy bridge

- Call for tender to monitor 6 locations on bridge with millimetric precision
- 4 year contract

Project pricing comparison



OPHELIA
SENSORS

Equipment price
≈10 k€

Submitted by

 **Cerema**

OPHELIA



leica
Geosystems

Equipment price
≈60 k€



Founders



Frédéric Verluise
CTO

Master of Sc. from École Polytechnique & Ph.D in Optics

Repeat entrepreneur, founder of Kylia in 2003, specialised in ultra-precise fibre optics

Partnered with IGN in 2013 to industrialise Geocube



Rémi Usquin
CEO

Master of Sc. from École Polytechnique
Trilingual (Sp., Eng., Fr.)

10 years of as country manager in Veolia in 3 different countries
7 years as head of R&D & Innovation in SAUR

Joined the Geocube adventure mid-2017

Market Adoption

- Phase 0 (2014-2017)

industrialisation phase and first contracts : 150 Geocubes sold

- Phase I (2018)

evangelisation through research institutes and tests in large companies : Guru phase

- Phase II (2019-2020)

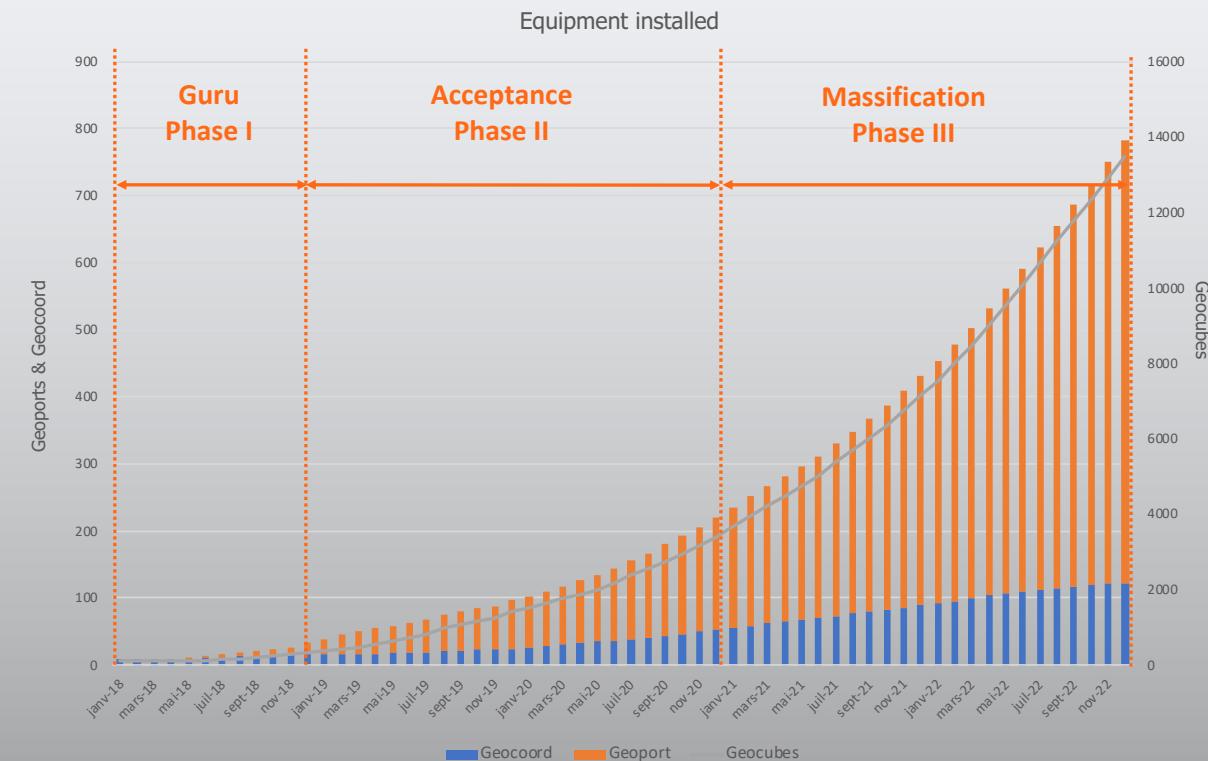
broadening of large projects with major clients : Adoption phase

- Phase III (2021-2022)

technology trickles down to smaller companies & projects
replacement of older technologies : Diffusion Phase

- Phase IV (after 2022)

project developments allow gradual use in other fields (mines, oil&gas, fixed positioning grid) : Diversification phase



"Phase 0" projects deployed (2016-2017)



Key reference users

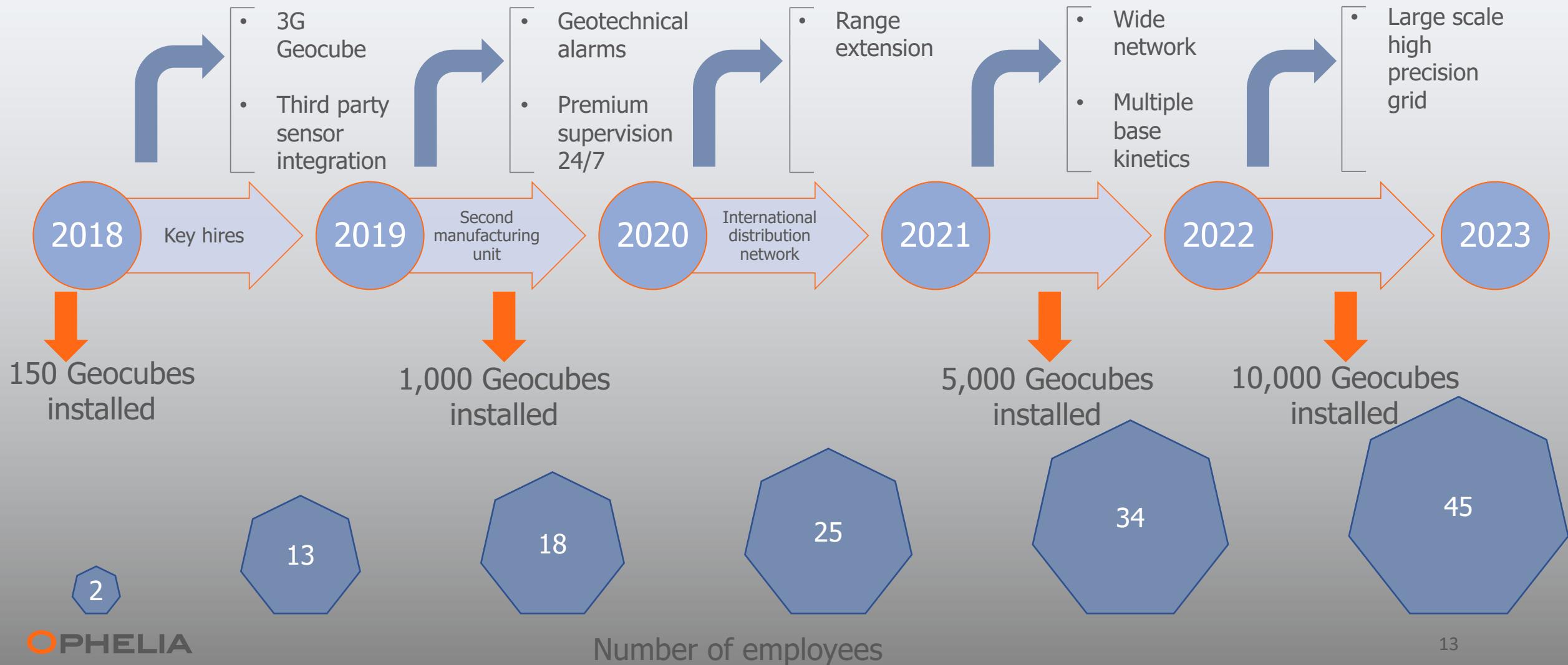
- Current key “Guru” users



- Current key pipeline

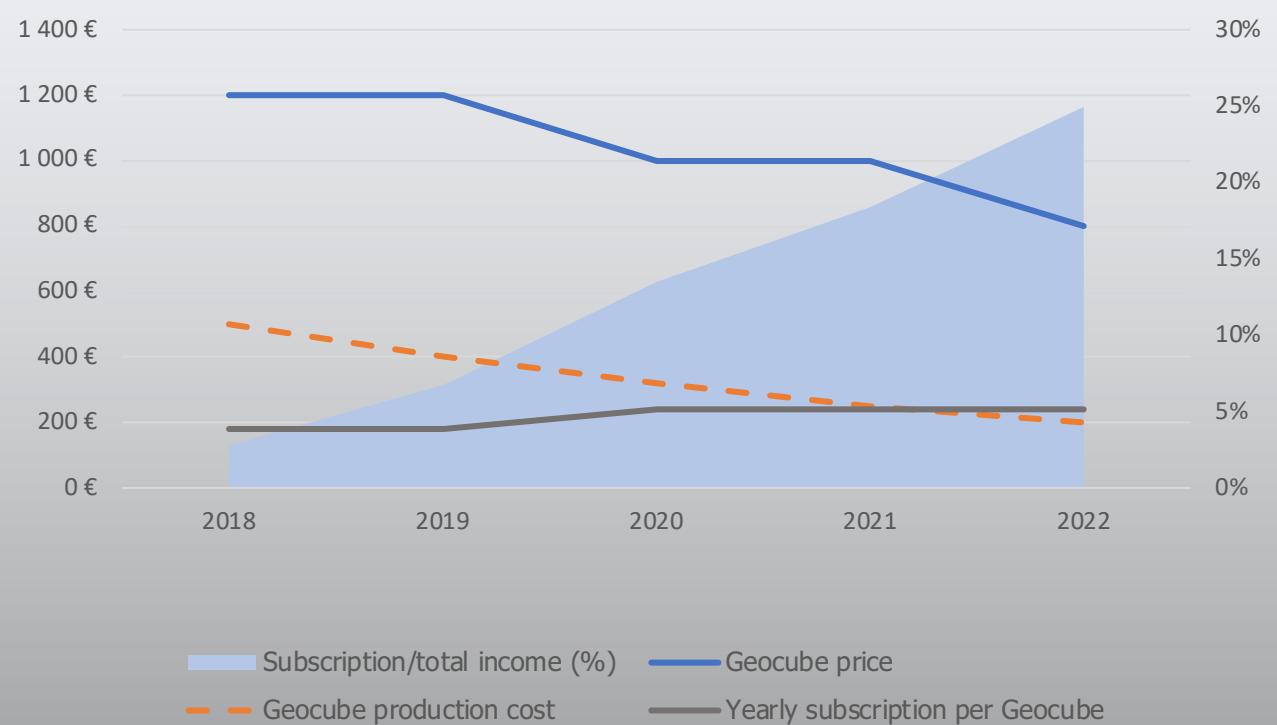


Milestones

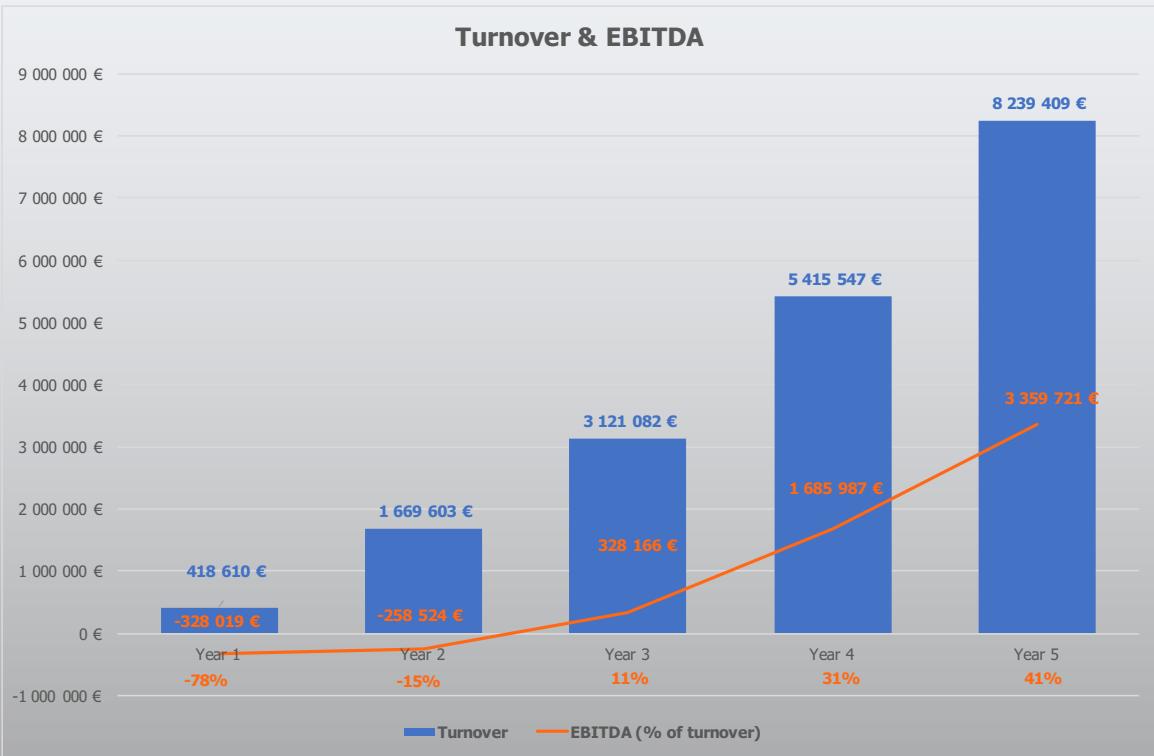


Pricing

- Hardware production costs will decrease as number of produced units rise
- Selling price is structured as :
 - hardware one shot (1200 € in 2018)
 - subscription fee (180 €/yr. in 2018)
- Subscription share in total income will increase as number of installed systems soars



Projected figures



What we are looking for



1 M€

30 months of runway



Key challenges

- setup a team of marketing, logistics and R&D experts
- build up commercially in Europe, N/S America & Asia
- develop R&D network with prominent universities & institutes
- prepare logistics for 2021 large scale deployment



Our ambition

- establish Geocube as undisputed benchmark solution
- expand notoriety with sharp marketing
- increase lead by developing new functionalities
- prepare post-2022 with ambitious R&D

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