



Use of Sentinel 1 InSAR products for
Insurance and Properties.

Oct/Nov 2018



Established 2014



Market ready products



Insurance, Construction, Real estate appraisers, ESA, NRS, IN



LIFECYCLE of BUILDING





THE
evICI
ECOSYSTEM

Servicehefte
Bolig 



The journey to your Home



Sensors



Satellitedata



THE
eVICI
ECOSYSTEM



Maintenance, user manuals, step-by-step guides



Inventory, valuables, public and private information



Complete, living documentation. All in one place



Transparent 2-way communication on construction and progress. Ready-to-use docs on hand-over.



Fully integrated low-cost thermography and moisture sensors. Yields powerful documentation with respect to insurance.

Copernicus-data in the eVici Ecosystem





InSAR – Why?

«...early warning of subsidence will enable minor corrections, and avoid extensive damages...»

«... I can provide documentation of ground stability, when I sell my house ...»

«... differentiating between ground movement and structural movement ...»



«... urbanization, climate change, infrastructure projects can lead to unexpected consequences...»



Insurance

- **Subsidence damages not covered at present**
- **There is little or no acquired data on damages**
- **The industry wants to cover it**

To quote a large insurance company : "Unfortunate when a building gets extensive damages and nobody can help"
- **Short term**

InSAR enables risk analysis over buildings and areas
- **Long term**

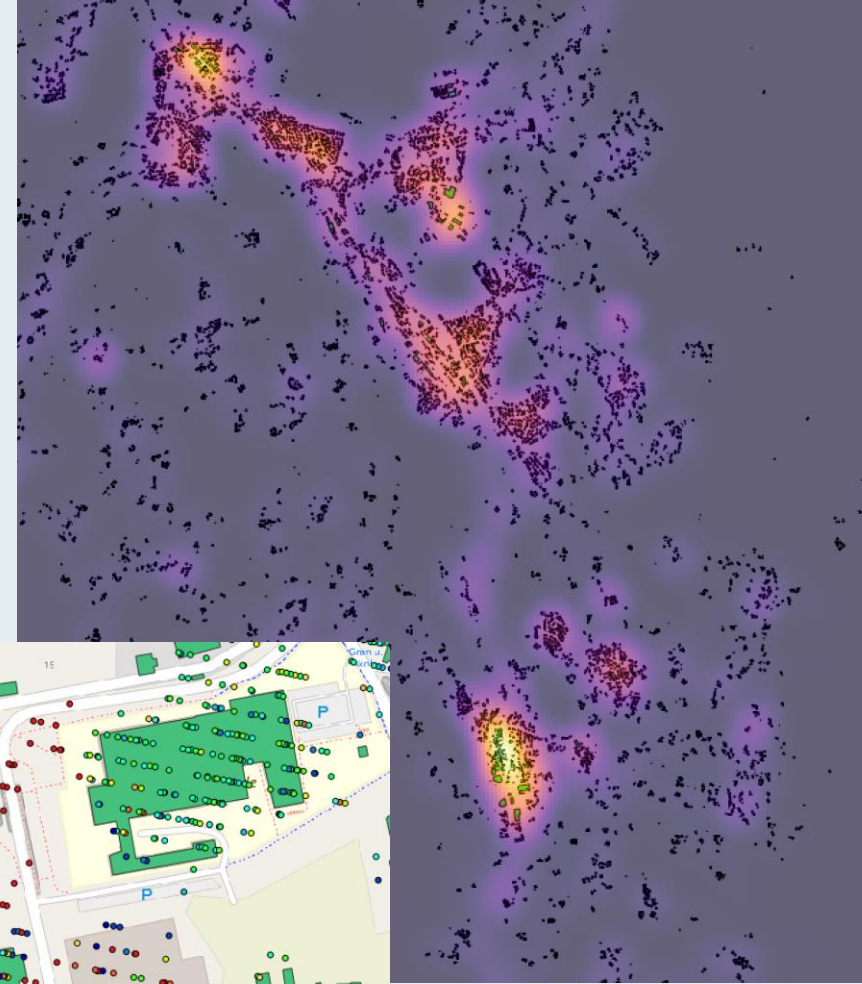
New insurance products at reasonable prices
- **Regress/Subrogation**

May be applicable in cases where subsidence is detected as a result of e.g neighboring construction work

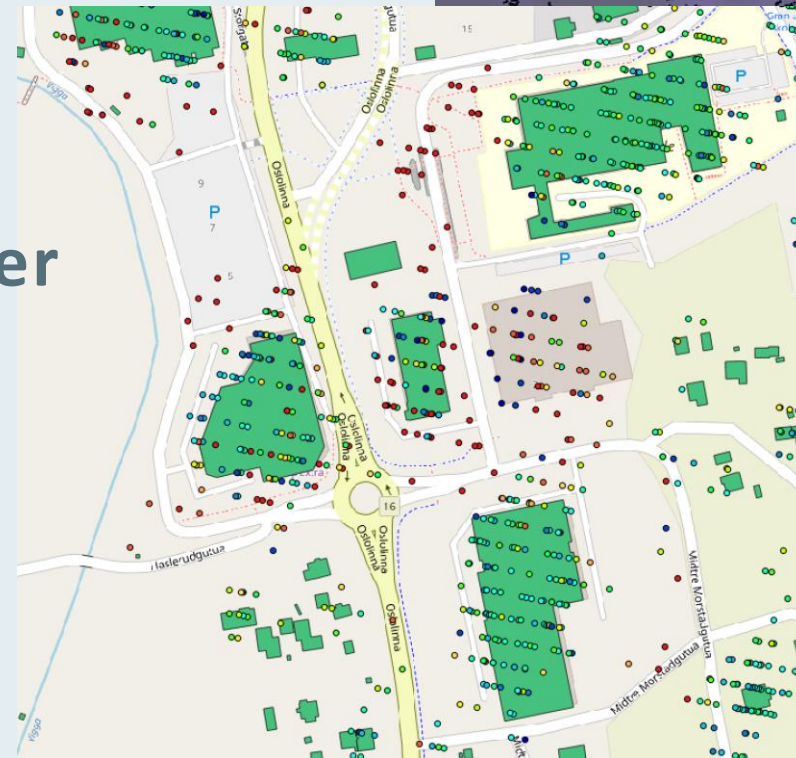


Case studies

Gran Municipality



Gran City Center



InSAR vs properties – Case study

- Case study
 - Sweep over central parts of Southern Norway.
 - Apprx 1.2 M buildings, where 87.5 % are residential homes.
- Entire Norwegian Building Stock:
 - Apprx 5.2 M buildings.
 - 250.000 buildings may potentially have movements of grave character.
- No significant difference between urban and rural areas
 - People tend to live in clusters
- Further analysis and improvements
 - Coverage
 - Point density
 - Displacement XY-plane
 - Coherence

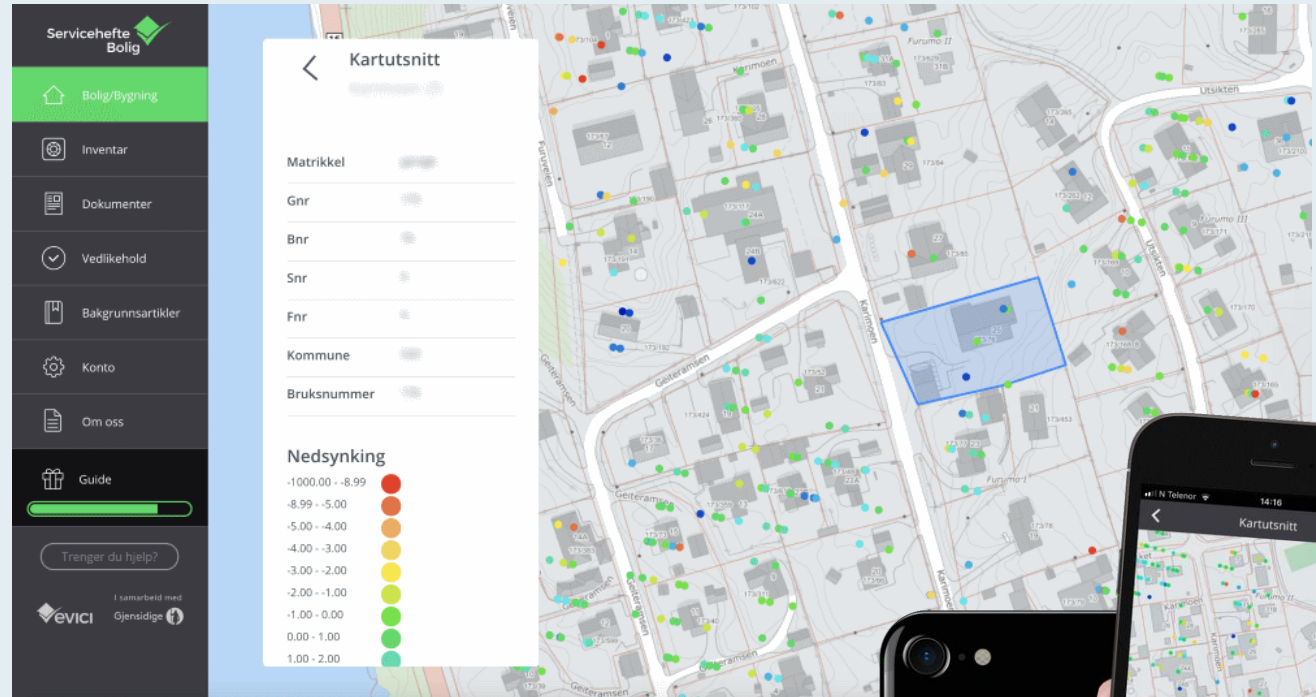


InSAR vs properties – Case study

- Coverage must be better in the long term
 - Residential and larger industrial/public buildings
- Ground movement vs Construction anomalies
 - There are occurrences of detected construction anomalies for larger buildings
 - Point density needs improvement
- Point density
 - Theoretically, 1 pt pr 100 m²
 - On average, 1.39 pr m² (Residential, 1.49 pr m²)
 - Factors:
 - Angle towards satellite
 - Topography, vegetation



InSAR in «Servicehefte Bolig»





InSAR - Conclusion

- A great need for a digital service like Servicehefte Bolig to bring building-oriented subsidence-data to their owners, real estate brokers/appraisers and the insurance industry
 - Coverage/Density needs improvement, but InSAR data can presently be provided as is – It merits publishing, despite not optimal coverage
 - www.serviceheftebolig.no
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