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 journey to your Home

Servicehefte
Bolig

Sensors

Satellitedata
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 m$^2$
  • On average, 1.39 pr m$^2$ (Residential, 1.49 pr m$^2$)
  • 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