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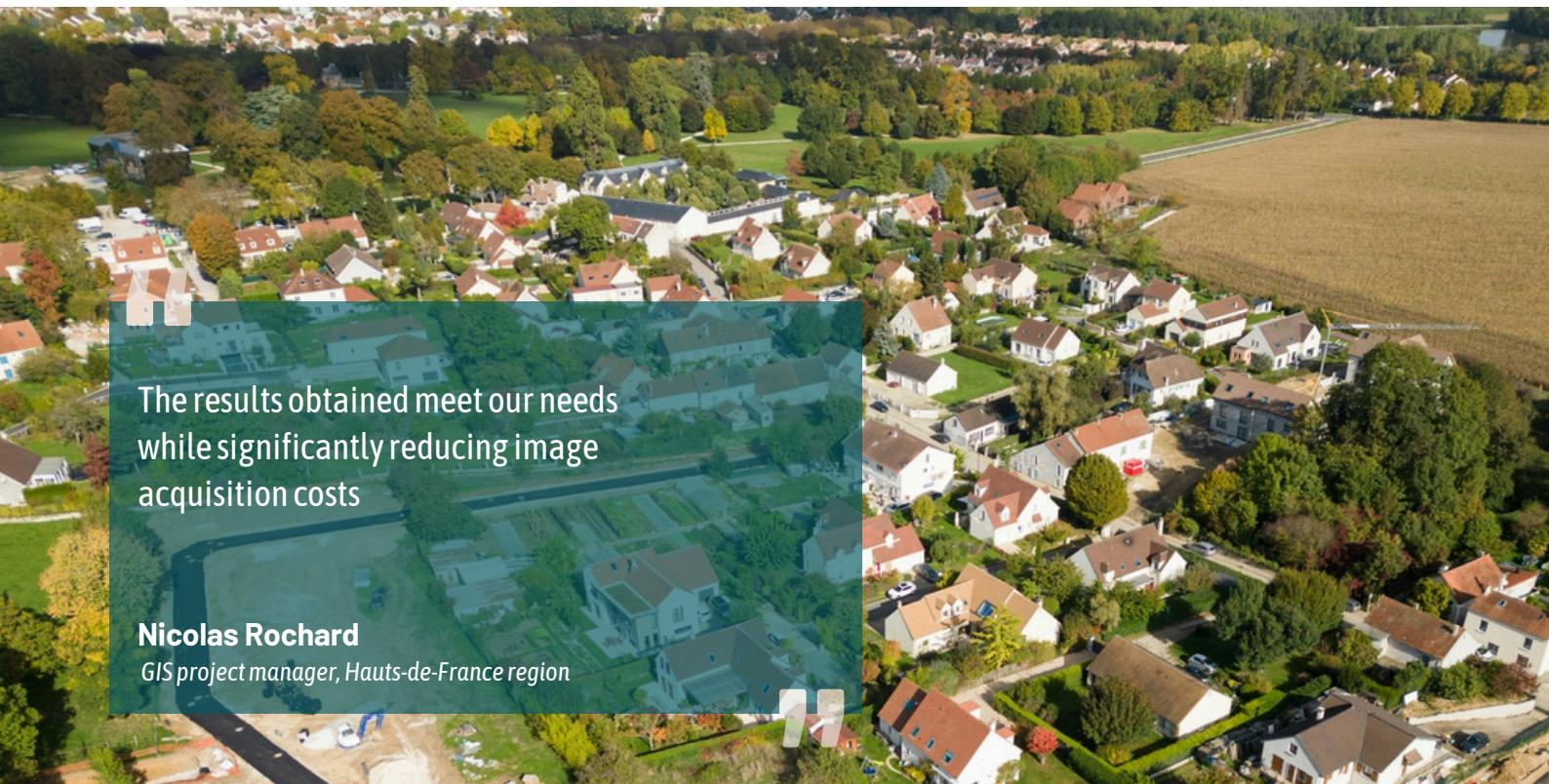


COPERNICUS4REGIONS 2025

# HOW AUTOMATIC CHANGE DETECTION BOOSTS HAUTS-DE-FRANCE'S LAND MONITORING

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Kermaph | France



✓ **Housing Estate Construction** | This aerial image shows a suburban housing development in progress. Such scenes illustrate the rapid urban expansion that local authorities must track. Without relying solely on costly aerial surveys, solutions like Kermaph's Nimbo use Copernicus satellite imagery to automatically detect and monitor these changes at a high temporal frequency. Credits: Miguel Picq on Unsplash

Faced with the need to monitor land use evolution as closely as possible, local authorities can now rely on Kermaph's Nimbo solution, which automatically detects changes on their territory at a monthly frequency based on advanced processing of Copernicus imagery.

## THE CHALLENGE

To comply with new environmental, economic, and utility regulations, local authorities must update their land use and utility grid cartographic documentation on a more regular basis than before. The issue is that, to date, they have primarily relied on administrative declarations, which are often incomplete, incorrect, and slow to be issued, as well as high-resolution photographs from airborne acquisitions, which are very expensive. Local authorities thus need a solution that is at the same time able to provide information on land evolutions on a more frequent basis, that documents them with sufficient reliability, and that can do so at a contained cost. Either to directly report on changes or to spot the areas where airborne photographic acquisitions must be performed in priority to streamline flight plans. Kermap's change detection process effectively meets these requirements.

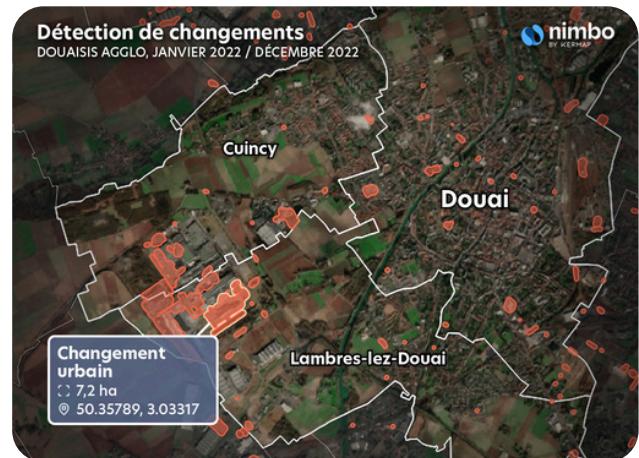
## THE SPACE SOLUTIONS

To meet the new land use monitoring needs of local authorities, Kermap has developed a change detection process using its Nimbo solution.

Based on proprietary AI processing of Copernicus imagery, Nimbo provides a homogeneous, cloud-free satellite visualization of the entire world, updated monthly. This approach enables Kermap to offer a range of high-resolution land monitoring products at very high frequencies and in an automated way.

The Nimbo solution has been utilized to develop a change detection model applicable to any territory, enabling comparisons between two or more dates. Changes in land cover are automatically identified, with an accuracy of 2.50m per pixel, thanks to the application of super-resolution processes. These enhancements improve object identification, thereby enhancing the original resolution of Copernicus imagery (10m per pixel).

Applying this change detection model to Nimbo's monthly composites yields high-frequency information on the evolution of the territory over a chosen period. Continuous updating of the composites also enables near-real-time monitoring, providing the most recent information on changes in the area of interest.



↙ **The satellite change detection** solution developed by Kermap helps the Hauts-de-France region closely monitor changes in land occupation such as new housing estate construction. Credits: Kermap

Once detected, the Nimbo detection model automatically interprets changes. This provides localized information on the areas concerned, cross-referenced with the type of change observed, ranging from natural to built-up status or vice versa.

### THEMATIC AREA



Territorial  
Management and  
Urban Planning

### REGION OF APPLICATION



Hauts-de-France

### SENTINEL MISSION USED



S1, S2

### COPERNICUS SERVICE USED



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## THE BENEFITS AND THE BENEFICIARIES

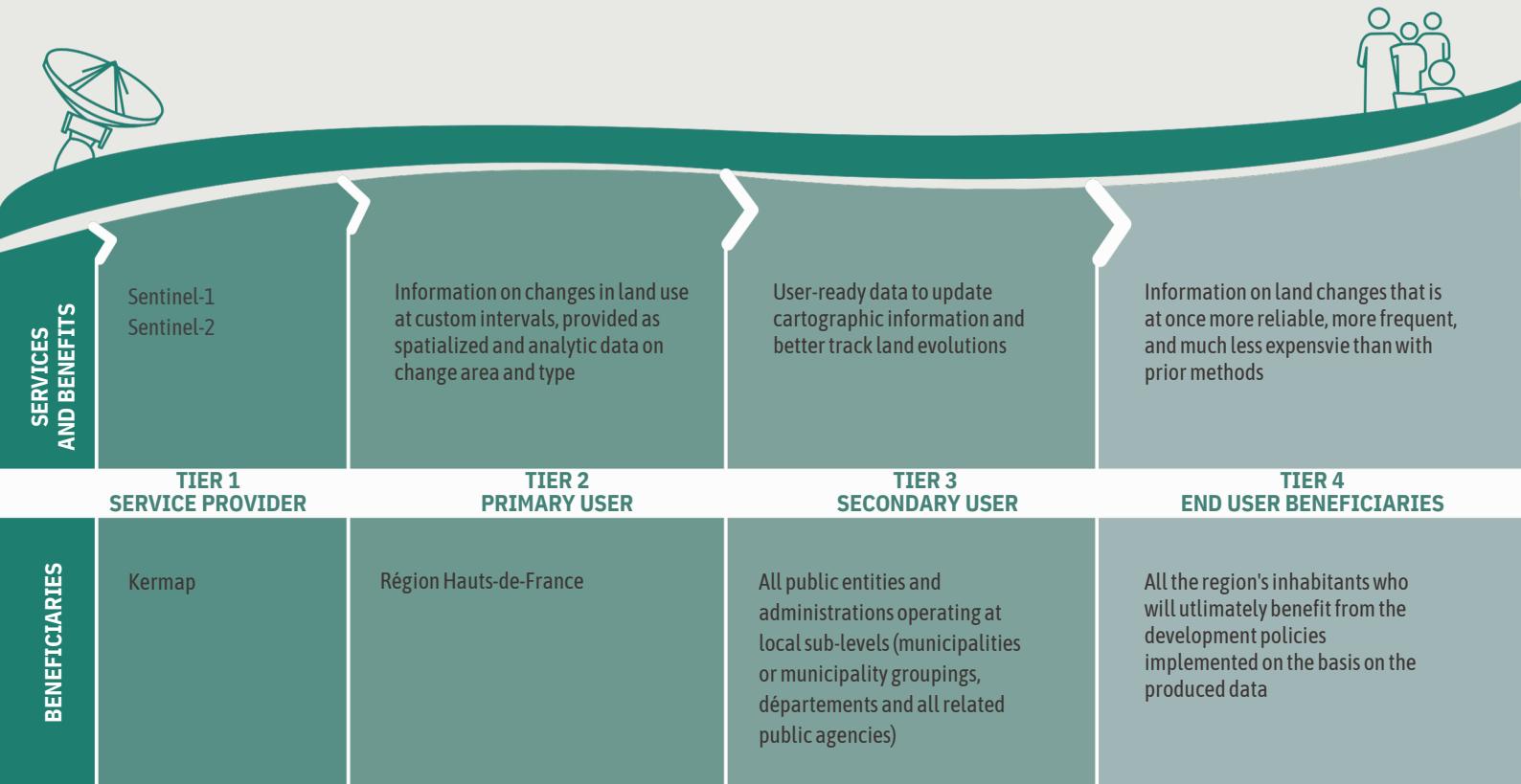
Local authorities from municipal to regional levels are seeking reliable, high-frequency information on land evolution for various purposes:

- As part of land take regulation compliance in France designed to curb new building in natural or farming areas. Kermapping's change detection helps municipalities closely track land use trends through near-real-time monitoring of new construction, automated and spatialized, producing more recent and tangible insights
- As part of the new regulation on utility grid anti-damage cartographic standards (PCRS) coming into force in 2026. Kermapping's change detection enables local authorities or public services

responsible for producing up-to-date orthophotography base maps to obtain reliable, extensive information on areas that need to be updated, thereby optimizing flight plans.

- As part of routine land use/land cover cartographic updating, Kermapping helps relevant local authorities to ensure these documents are regularly updated, with improved quality and at reduced costs.

First comparisons with ground data have demonstrated that Kermapping's process improves change identification by 40%, a crucial data input for beneficiaries at all decision levels.



### EU POLICY / DIRECTIVE



Climate Action Policy

### TYPE OF SERVICE PROVIDER



Commercial Service

### TYPE OF FUNDING SOURCE



EU Research Programme  
National Space Programmes

### USAGE MATURITY LEVEL



4



## A FUTURE WITH COPERNICUS

Following up on the robustness of its results, Kermapping's change detection has earned very significant commercial traction on the French market in H1 2025. Kermapping now plans to roll out its change detection offering globally to meet the increasing demand for urban development monitoring worldwide. This plan will be supported through the global coverage and monthly updates provided by our Nimbo solution, backed by Copernicus's Sentinel imagery. Other prospects for change detection development include forest monitoring to support public and corporate efforts to comply with upcoming EUDR regulations.



## DID YOU KNOW?

Nimbo's monthly world views developed by Kermapping are available through the Earth Online platform (<https://maps.nimbo.earth>) for everyone to explore, visualize, compare, and analyze land evolutions worldwide.



### Acknowledgements

Kermapping thanks the stakeholders in the Copernicus Challenge that helped fund the solution's development: CNES (Centre national d'études spatiales), Aerospace Valley and the European Commission, as well as the first testers and users of the solution at the GIP Atgeri and Région Hauts-de-France.



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