



METHODS AND PROTOTYPING ADVANCES FOR GEOSPATIAL DIGITAL TWINS WITHIN THE DIGITAL TWIN FACTORY

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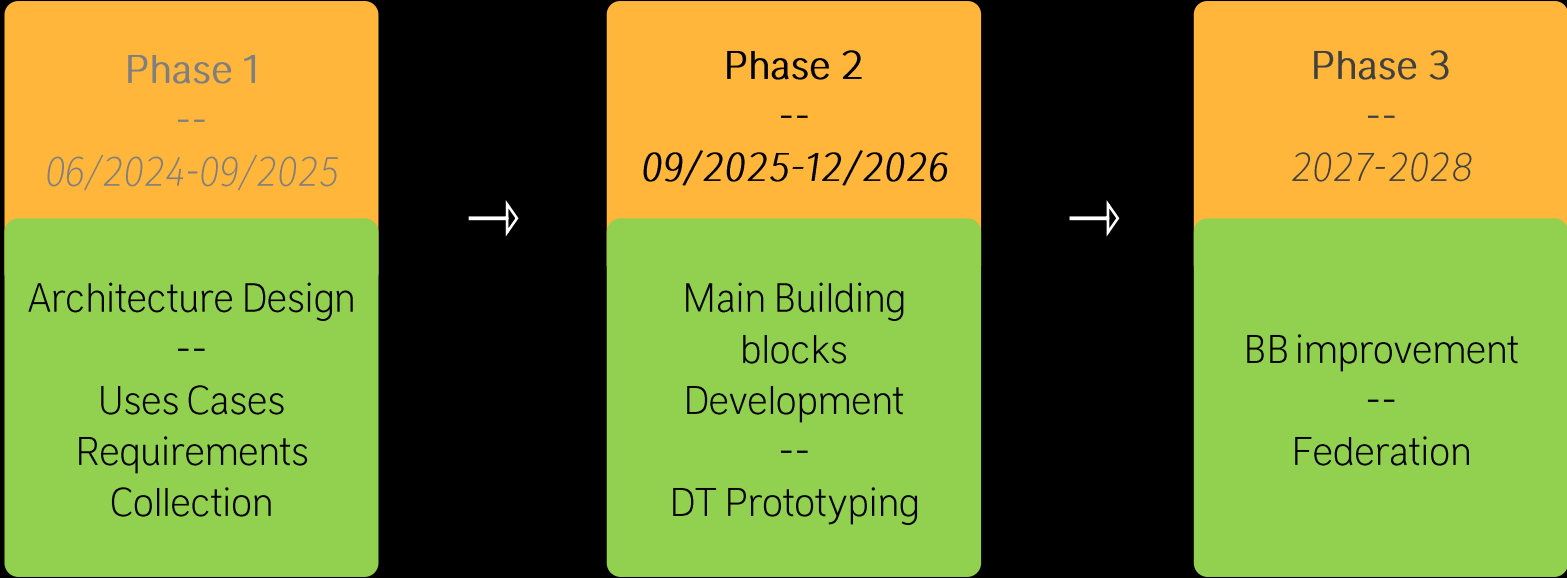
WORKSHOP NUTS 2026/05/27



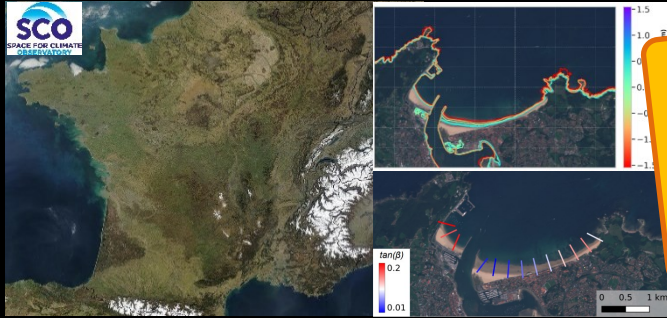
DTF R&D PROJECT

DTF : shared toolbox with advanced algorithms to support the community in building their own Thematic & Local digital twins

- ➔ Interoperable building blocks (portability, generic orchestration, standard API)
- ➔ Benefit from CNES fields of expertise (methods, algorithms, and uncertainty quantification)

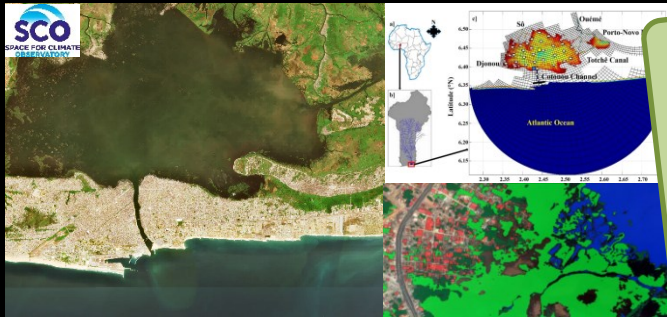


FIRST DT PROTOTYPES



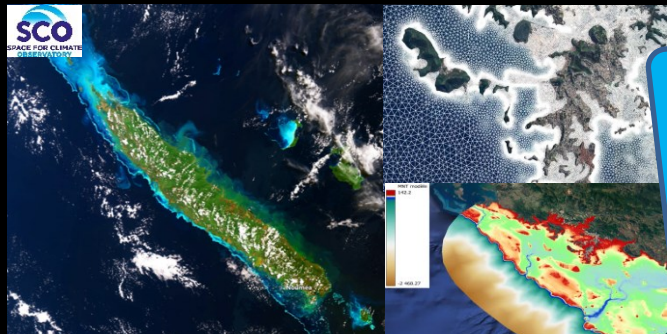
France, Shoreline (IRD, Wave n'see)

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What-now? Historical shoreline modelling, Impact assessment, adaptation strategy



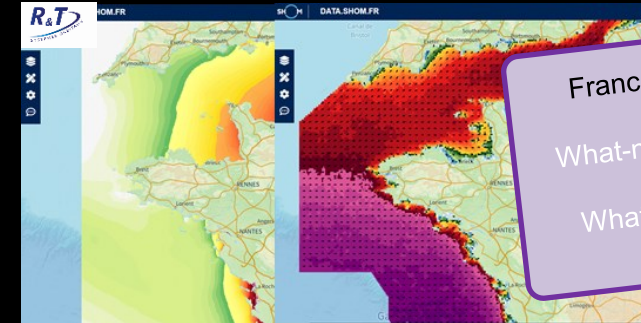
Nokoué lagoon (Benin),
Flooding/Water Quality (IRD,
CNRS/LEGOS, Snale)

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What-now? LULC, historical flood & quality
What-if? : Hydrodynamic modelling, flooding impact, spreading pollutants



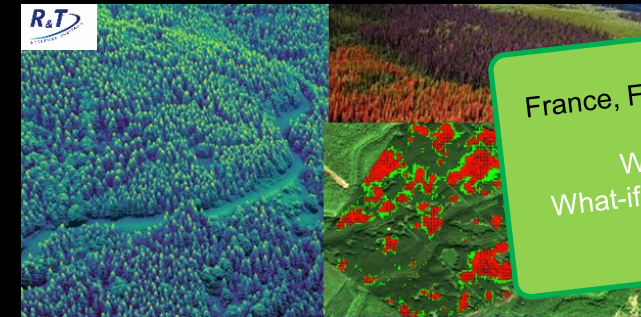
New Caledonia,
Marine Submersion (BRGM, NC gvt)

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What-now? 3D Digital Repliqua
What-if? : Marine submersion impact assessment



France, Marine submersion (SHOM)

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What-now? Multi scale & multi temporal DR
What-if? : Marine submersion impact assessment

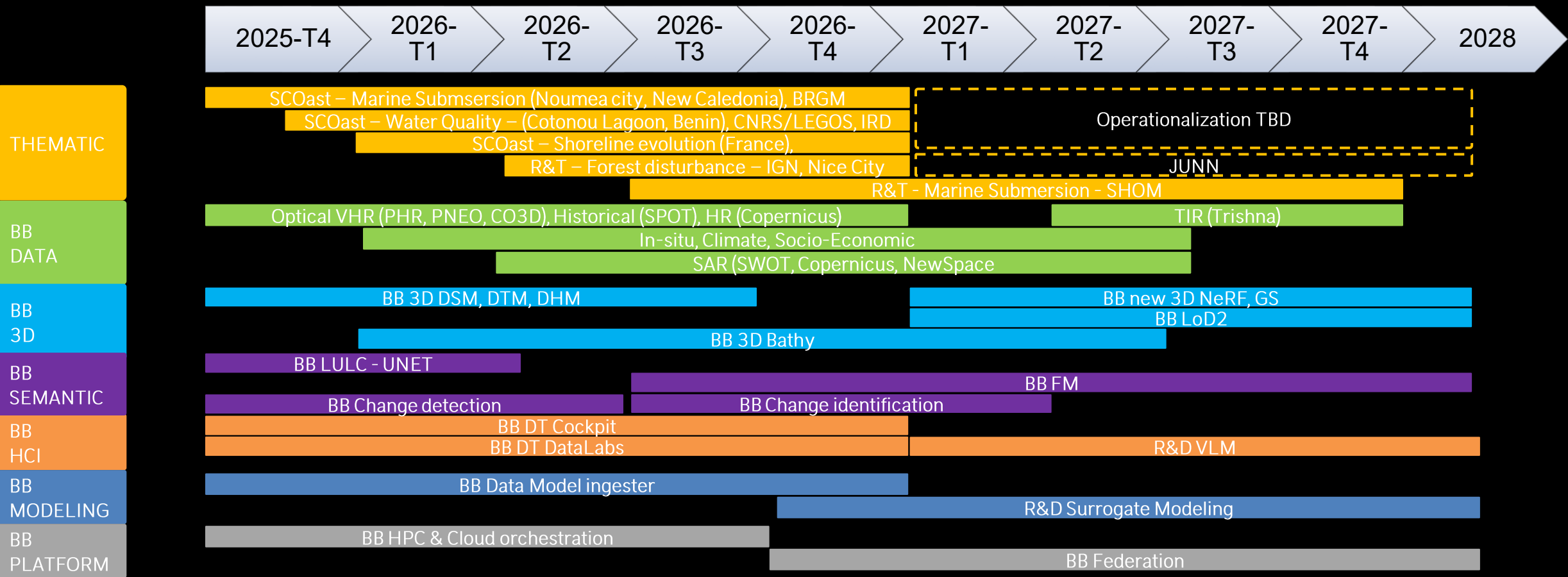


France, Forest monitoring (IGN, Nice city)

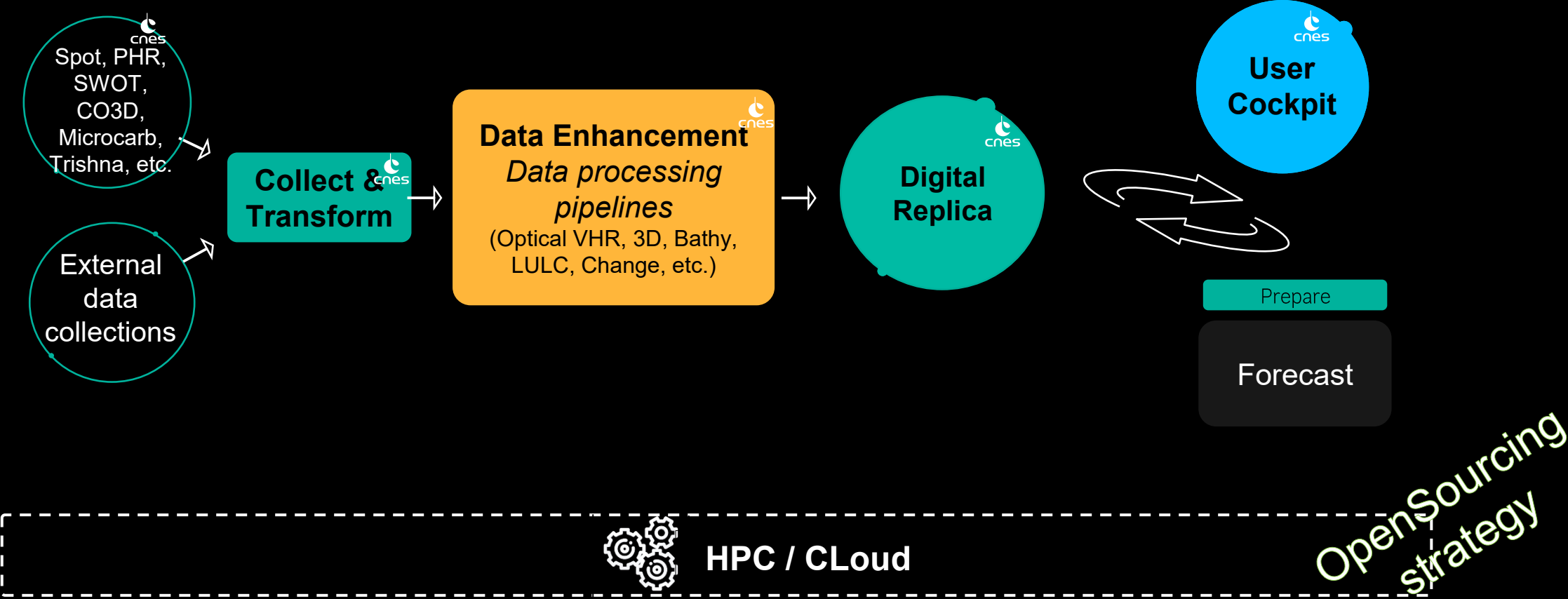
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What-now? Multi modal DR
What-if? : Forest disturbance mitigation strategies

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DTF BUILDING BLOCKS ROADMAP OVERVIEW



DTF DEMO, CORE PRINCIPLE



TAKE-AWAY MESSAGES



DTF : advanced & interoperable building blocks designed to facilitate the creation of thematic, local & very high resolution digital twins



**Support research and the industrial network in national and European activities.
Promote technology transfer for the development of application services based on spatial data**



Open Science, Open to collaborations 😊

OPEN SOURCE CNES TOOLS

Stereo => DSM

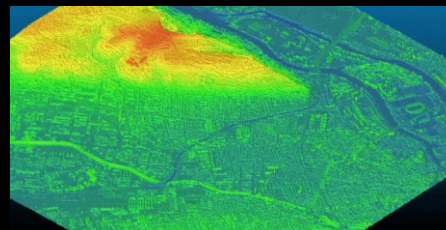
<https://github.com/CNES/cars>



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DSM => DTM + DHM

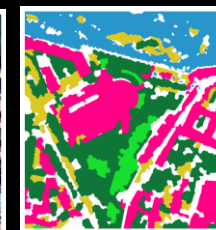
<https://github.com/CNES/bulldozer>



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Land Use

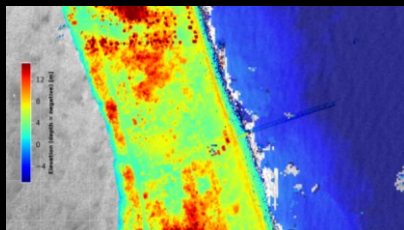
<https://github.com/CNES/slurp/>



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Images/Videos => Bathymetry

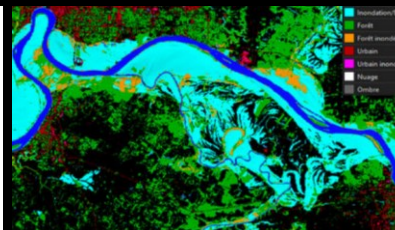
<https://github.com/CNES/S2Shores>



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Sentinel-1 => Flood Maps

<https://github.com/CNES/floodml>



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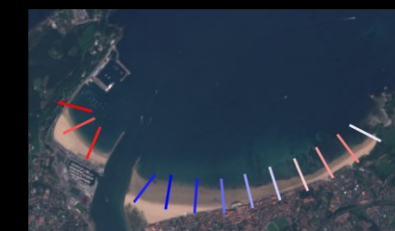
To be released on <https://github.com/CNES/>



VHR change detection

Picanteo

A dedicated coastal customized version will follow



Shoreline and derived products
End 2026

+ 30 years of processed data
over metropolitan France