



# Fires in Portugal

Geospatial and legal solutions

Forest fire events are a frequent phenomenon during the summer months, but increasingly frequent at other times of the year.

In 2017, Portugal registered the worst year in the field of wild fires. With a burned area, of around 440.000 ha [ICNF, 2017] and the tragic dead of more than a hundred human beings.

Added to the destruction of family houses and companies premises, only between 14 and 16 of October, with direct losses of around 270 million euros.

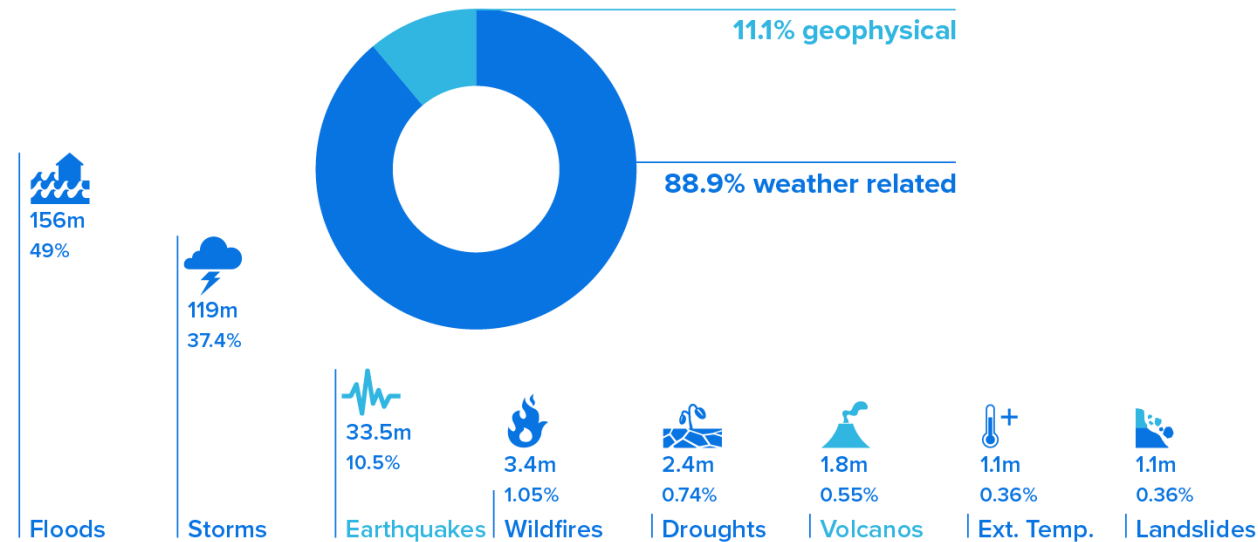


The climate change is making extreme weather events more frequent. Meanwhile population growth and ageing is pushing more people into the cities abandoning rural areas.



In 2021 23,7 million individuals were displaced due to disasters.

### New displacements by disasters: breakdown by hazards (2008-2020)





**When people leave their homes behind, land registry offers critical protection of their property rights.**



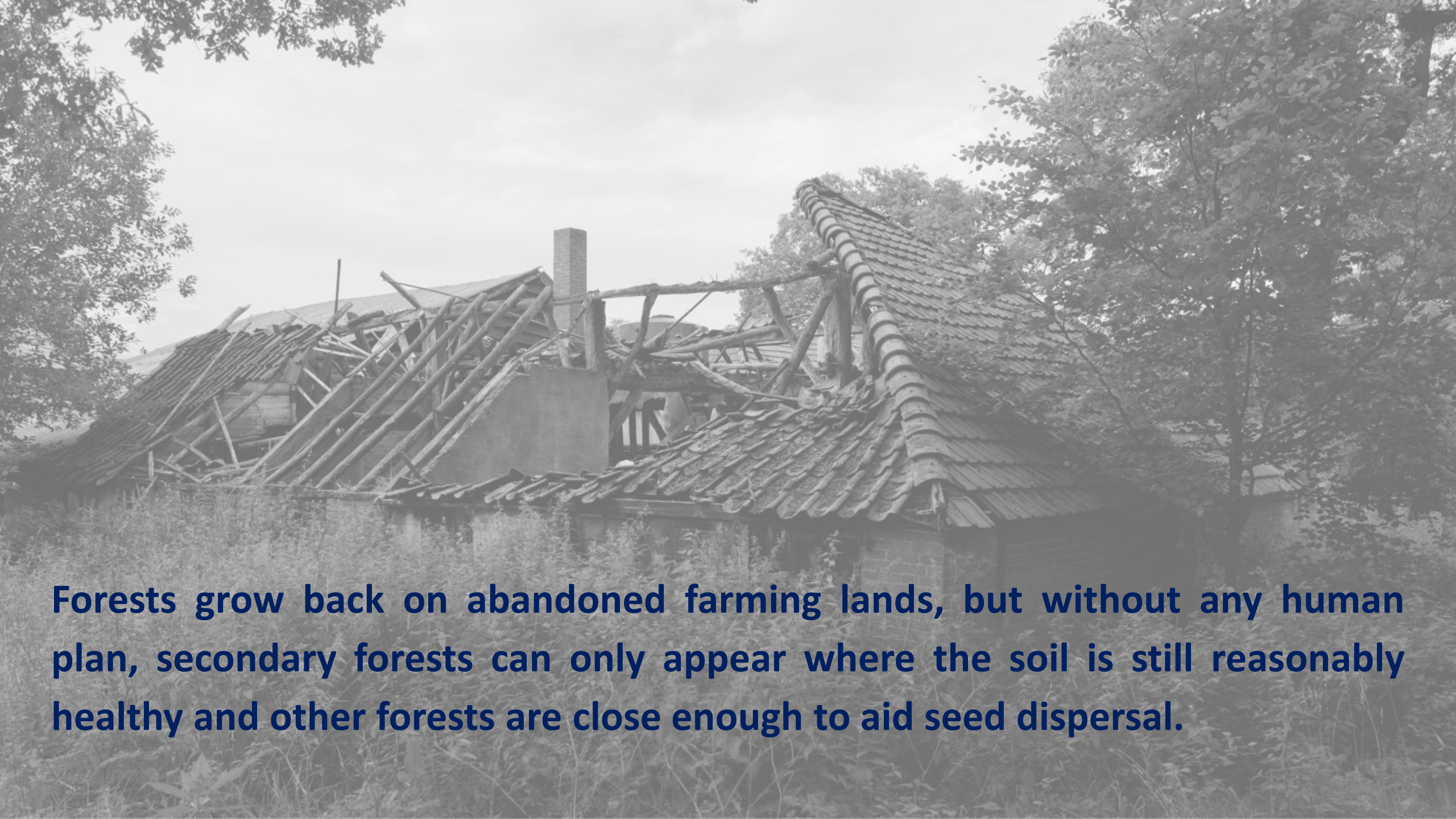
**The key to effective response, reconstruction efforts, and building long-term resilience for disaster-affected communities is to recognize the continuum of land units tenure arrangement that exist prior to a disaster.**

**Land tenure and property rights issues should be addressed as early as possible because without clear rights to a given parcel of land, programs based on compensations, rebuilding infrastructure or resettling displaced populations will be subject to conflict, delay, lack of transparency and increased costs.**

**Post-disaster assessments and evaluations reveal that tenure insecurity and weak formal land administration systems, including poor and/or outdated land register records, increase the difficulty of restoring land, housing, and property to victims of disaster (GAO 2013; Caron 2009; Lyon 2009).**







**Forests grow back on abandoned farming lands, but without any human plan, secondary forests can only appear where the soil is still reasonably healthy and other forests are close enough to aid seed dispersal.**



**Cities are getting closer to forests. Deforestation of land that is then converted to non-forest use such as farms or urban use.**



# The territorial planning



**Obtain geospatial  
data of land units  
focus on  
interoperability  
with registries**



**Collect and add  
multiple layers of  
information**



**Predict and  
mitigate future  
disasters**



**Environmental data such as the footprint on natural ecosystems that support biodiversity, the existence of green spaces, water resources, the type of climate, pollution levels, slope, landscape aspects and disaster risks.**

**Even some of the quantitative and qualitative data relating to soil conditions such as the thickness of the profile, the nature of the parent material, clay and organic matter content, pH, biomass production, agricultural suitability, etc..**



# EU forest strategy for 2030

Besides the support to protect and restore forests, and socio-economic functions of forests such as promotion of sustainable forest bioeconomy for wood products, the strategy also focuses on forest monitoring, reporting and data collection, also in the development of research and innovation to improve our knowledge on forests.

We must not neglect data related to legal certainty.

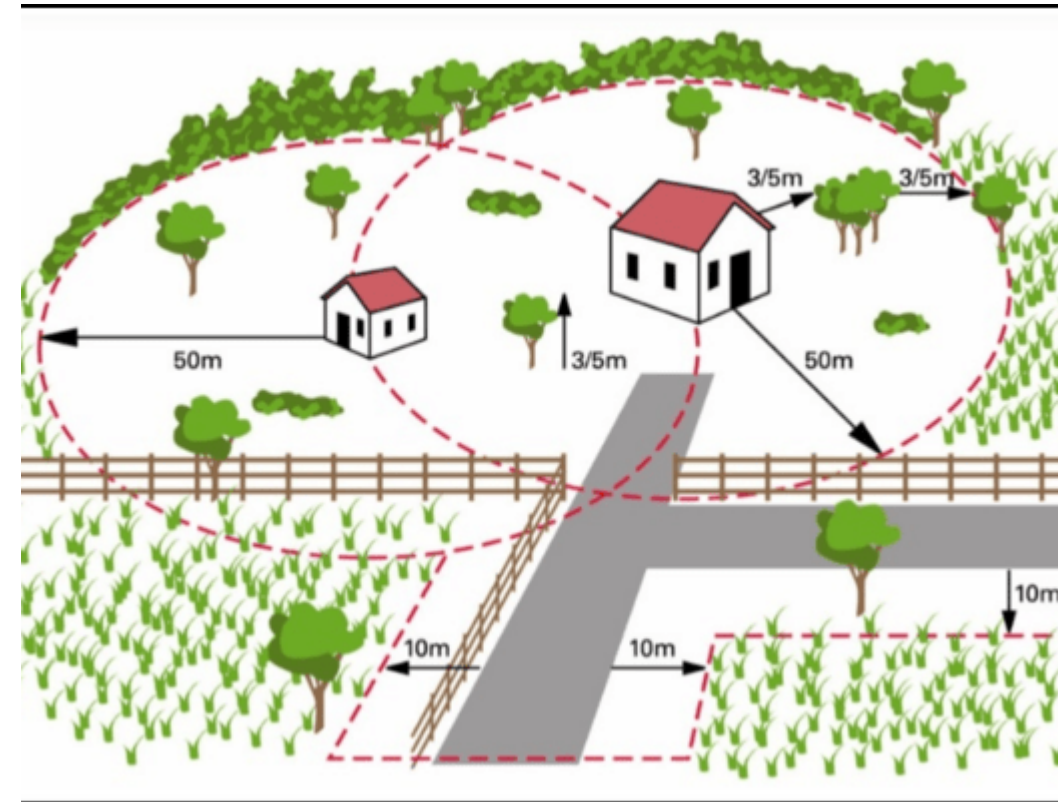




# Some measures

In Portugal, the simplified cadastre project and studies to avoid the excessive fractioning of rural properties have contributed to the knowledge of the territory.

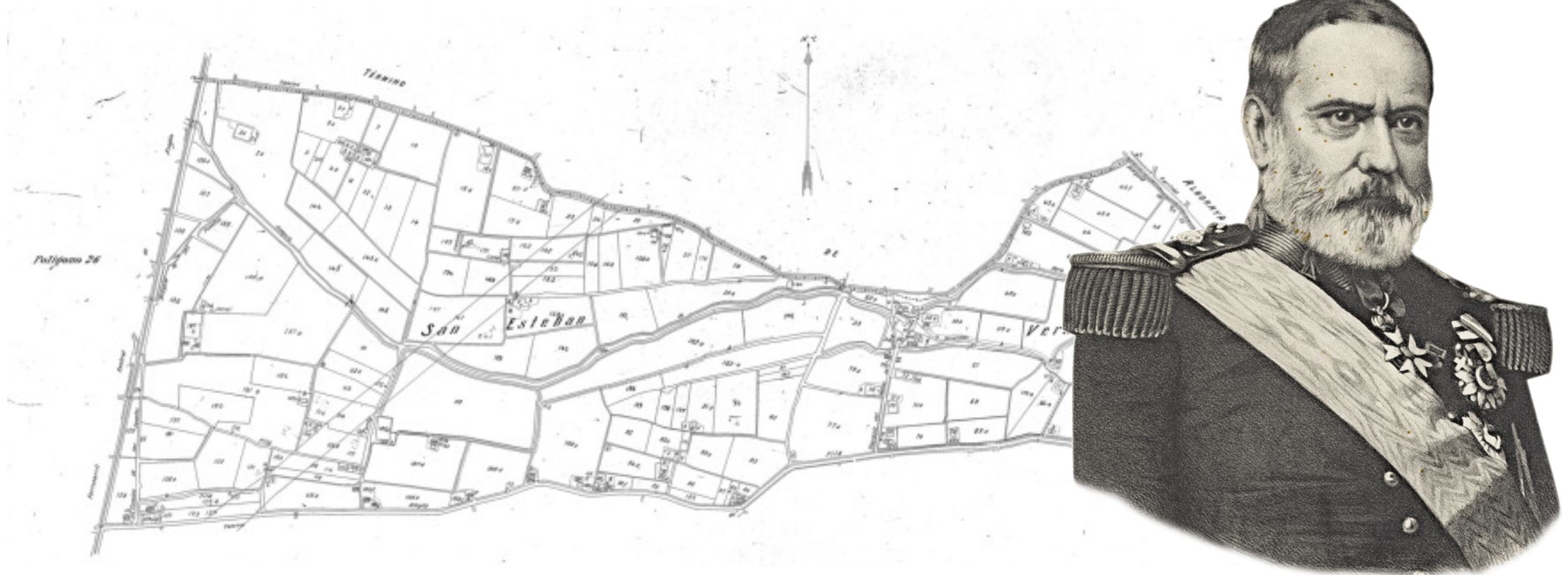
The land register can provide tenure information in order to owners clean up their land.





# Cadaster

It is unquestionable that cadastre, topography and statistics are the three major elements around the science of governing.



**Filipe Folque – 1856 – Politician, Military and Mathematician**



# Cadaster

- ❖ 1930 – 1995: Geometric Cadastre of Rural Properties in a few municipalities;
- ❖ 1995 – (...): Land Cadastre (Decree Law n.º 172/95, 18 of July);
- ❖ 2006: Creation of the National System for the Exploration and Management of Cadastral Information;
- ❖ 2017: Simplified cadastral information system.



# Interoperability



**The general bases of the public policies of soil, land use and urban planning are established by Law nº 31/2014, of May 30, which interconnects the register with the other entities.**

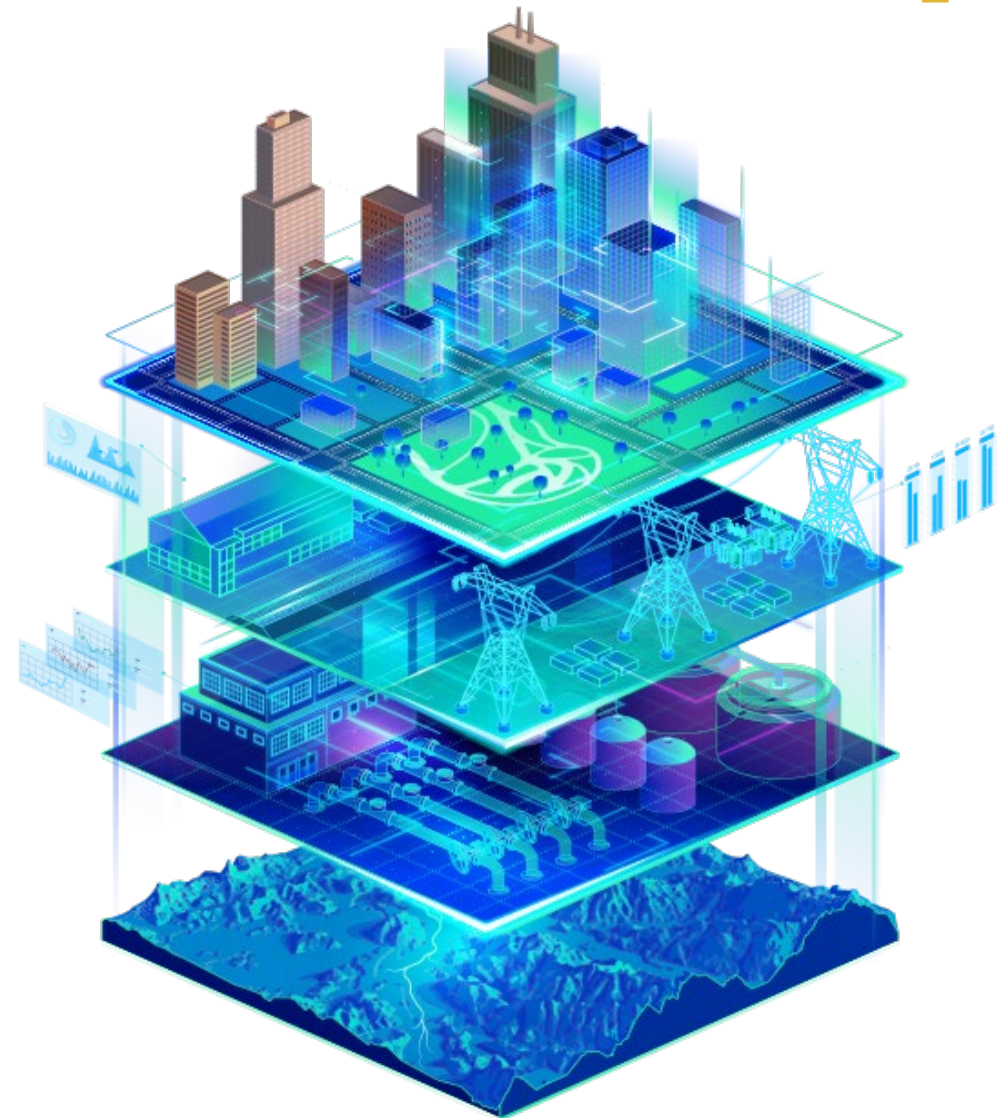
**The facts that affect rights in rem relating to a specific property or impose an encumbrance on it, under the terms of the law, are subject to land registration, as well as geo-referencing and tax identification.**

# Digital Twins

The term was first used in 2002 by Michael Grieves, a researcher in advanced manufacturing processes at the Florida Institute of Technology.

A digital twin is a virtual representation of reality, through models that simulate physical objects, processes or locations.

Digital twins connect the natural world and the digital world through the ability to collect and process data from the real environment.





# **Integrated Rural Fire Management System**

**Decree-law n.º 82/2021, 13/11**

**A new regime that introduces the aggregate management of rural territories and the mobilization of the agricultural and livestock sectors for an integration of prevention with suppression, recognizing that the adoption of good practices in landscape planning and management, namely the execution and maintenance of fuel management lanes, the elimination and reuse of leftovers, for instance, can be decisive for prevention.**

# The role of land registry



- We are renewing our land registry system and rethinking what the land registry role should be in Portugal.
- Now, the land register cannot be understood only as a register of rights. It should also be a record of duties.
- We are convinced that we are asked to have more information, with more quality – several layers of knowledge that allow data to be collected to monitor fires, floodplains and other disasters.
- We will be able to identify terrains where disasters are recurrent. Identify frequencies of occurrences and their rationale.
- And then we'll be able to really prevent it.



[irn.justica.gov.pt](http://irn.justica.gov.pt)

