



City of  
Ljubljana



# Processing invasive alien plants into useful products and input material for industry

APPLAUSE - from harmful to useful with citizens' led activities

EUI Capacity building event, site visit

5. 7. 2023, Ljubljana, Zala Strojin Božič, M.Sc.





Invasive alien plants are **often overlooked by public authorities at local, national and European level**. According to the Institute for European Environmental Policy, invasive alien species (both plants and animals) **cost EU at least 12,5 billion EUR a year**.

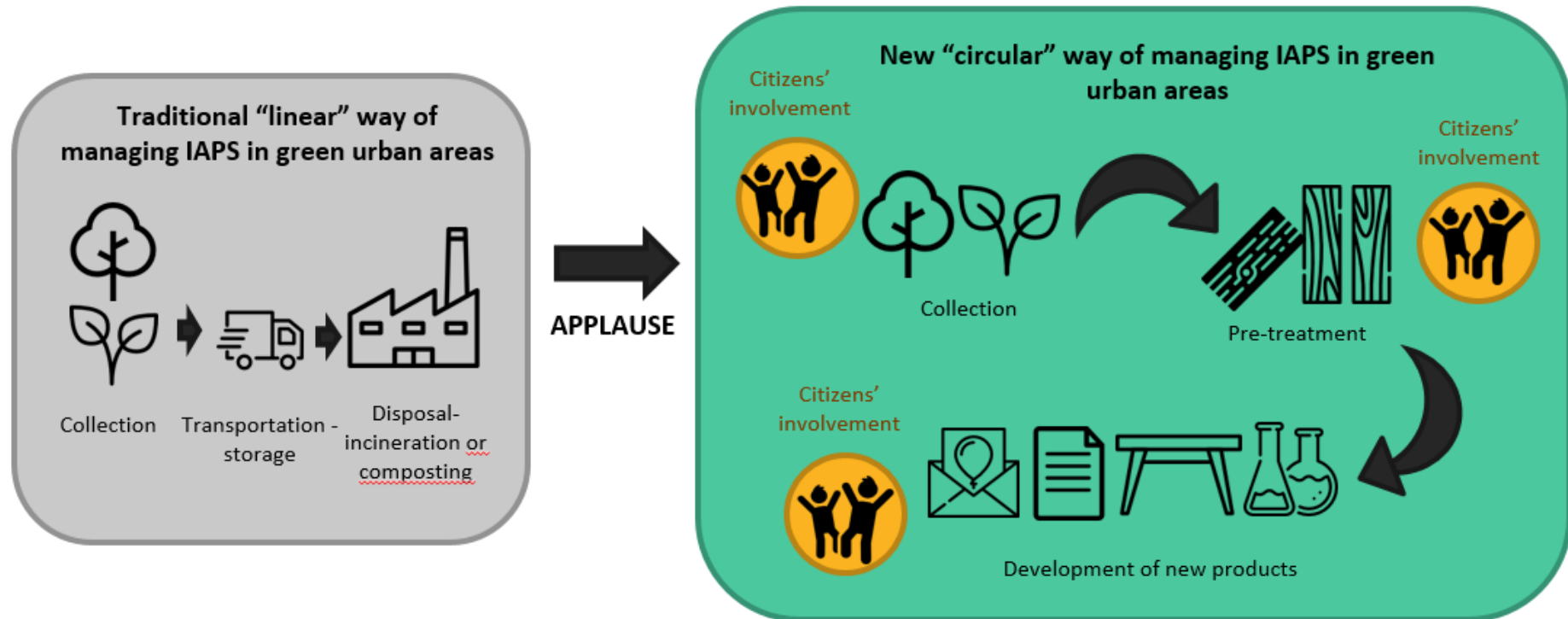


Giant Hogweed Photo Bristol live

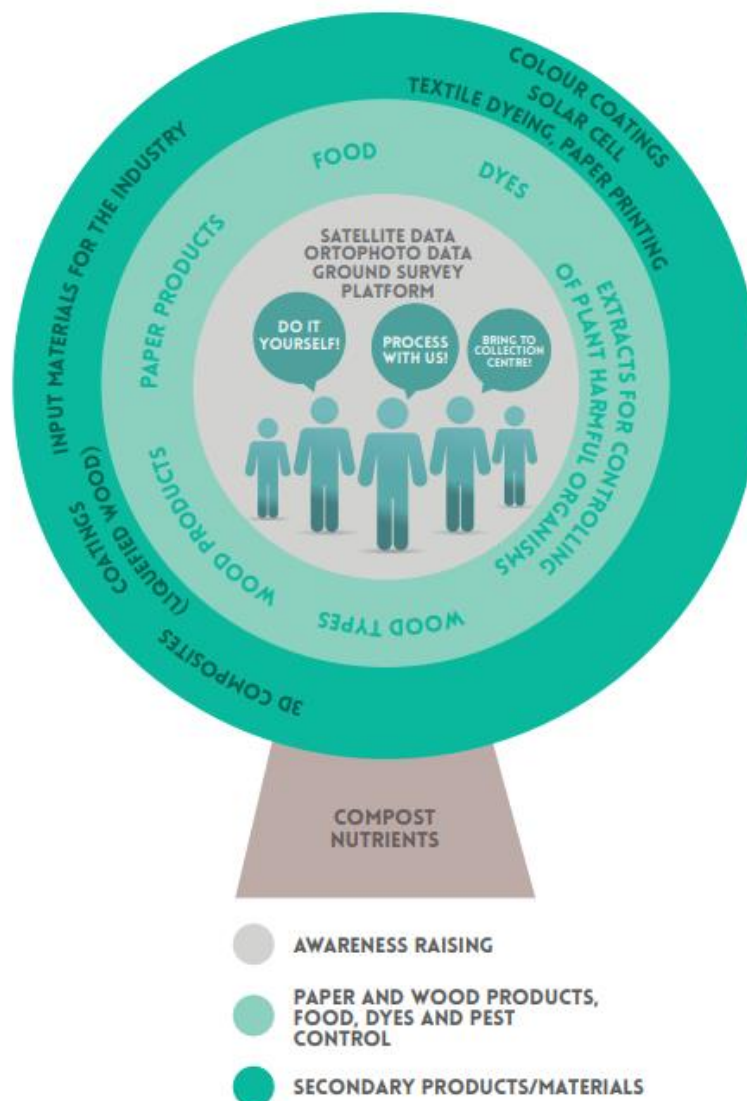


Japanese knotweed Photo slate.com

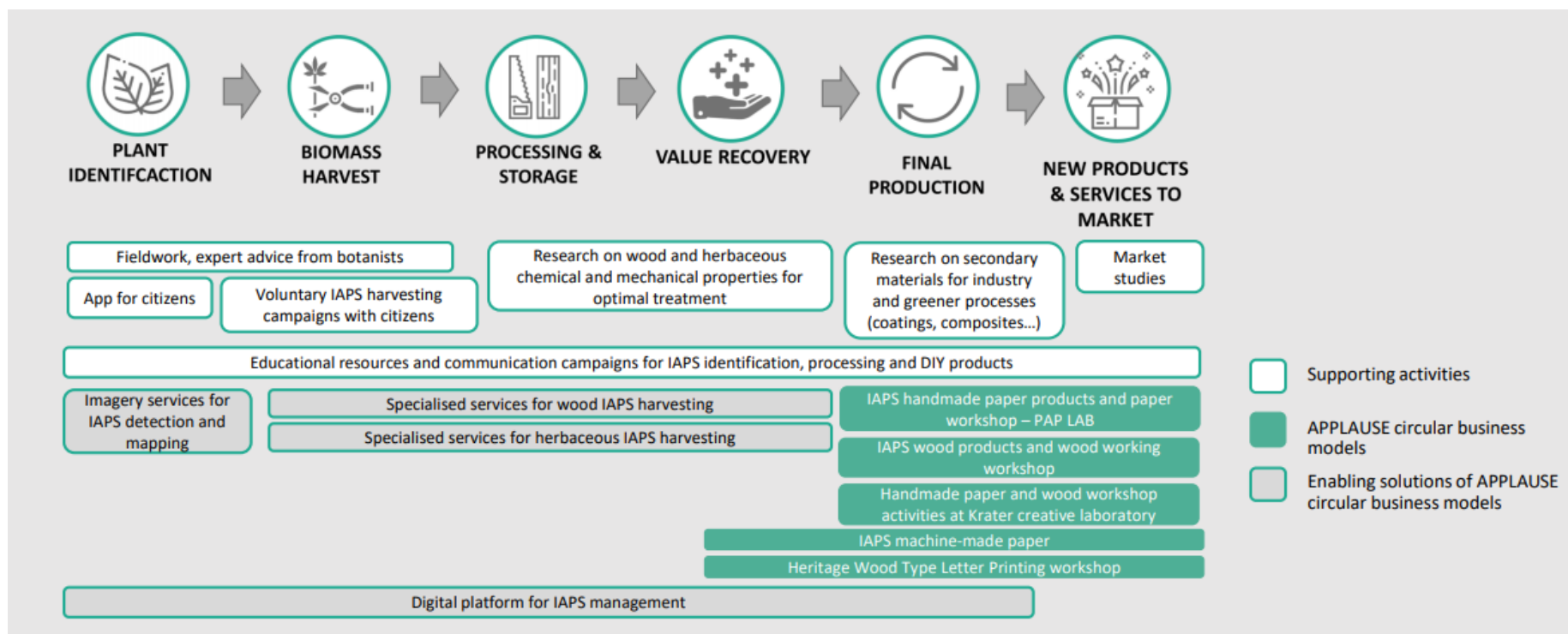
# Solution



# Processing invasive alien plants



# Processing invasive alien plants





- New approach in city management – setting up independent, **cost-effective business models** (resource recovery).
- New skills within public administration – making **better decisions**.
- **New participative model** – citizens involvement based on 3 levels of engagement, which are adopted to citizen's interests and motivations. Increased diversity of educational tools for citizens (DIY catalogue, cookbook, recipe book on pest control, recipe book on dyes, 3D plant prints, videos, festival, collection point, app for plant identification ...)
- Development of **new green technologies**, e.g. pilot enzymatic processing of IAPS fibres instead of chemical and digital tools for IAPS identification and management, processing wood residues into recyclable 3D composites = zero waste principle.



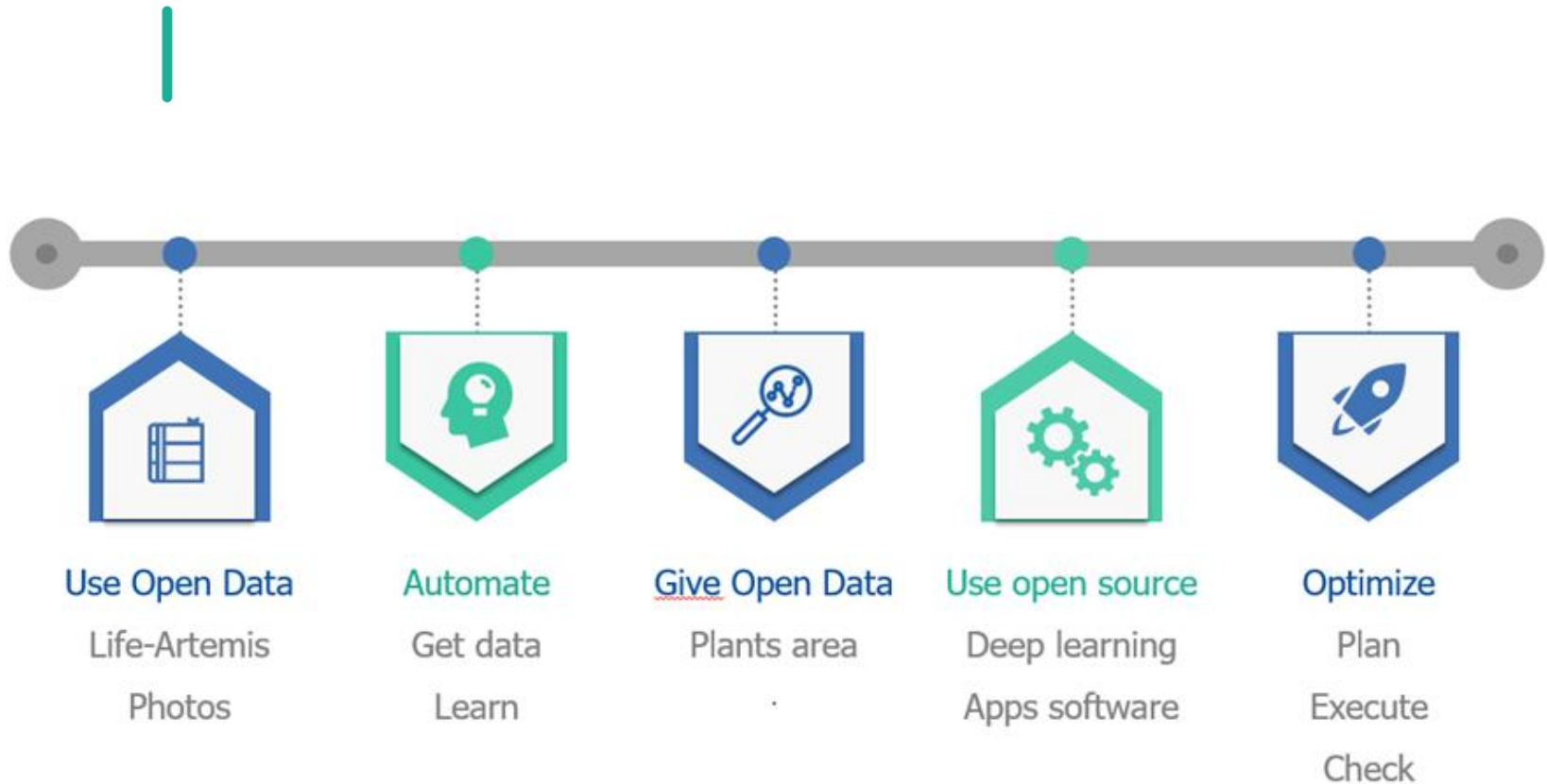




- The capacity to **bridge ecology** (effectively eradicating IAPS), **community** (through the involvement of citizens), **culture** (reviving old craft traditions) and **economy** (locally producing new circular products out of waste) in an innovative and collaborative way.
- **65 ways** of processing IAPS into useful products and input materials for industry.
- **3,274 citizens trained** on the IAPS identification, collection and processing.
- **375 undergraduate and postgraduate students** gained new knowledge that will improve their employment possibilities, new business models development and implementation.
- **Platform** – several modules - 30,000 data for 121 plant species on 20,000 growing sites.
- 8 new materials, 33 new recipes, 5 new methods and 2 new processes were developed. The results already gained **1 patent, 1 is still in the process of verification.**



# Applause Connected With Digital World







Platform for the identification and life-long monitoring of IAPS was introduced. The developed Platform consists of **back-office applications** and **public application** that both work upon the same, unified database. Platform is deployed to IT platform of the City of Ljubljana and combined with other spatial data of City of Ljubljana (aerial photos, parcel plans). Unified IAPS Database with lifelong activities registry was finalized by adding **software module to export open data**. We have gained **30,000 data for 121 plant species on 20,000 growing sites**.

The Platform for the identification and life-long monitoring of IAPS was one of the finalists for the best improvement in Slovenian public administration (initiative Korak naprej 2020).





## Experts

274,99 km<sup>2</sup>  
> 200 species

## Business

Cost  
Quality Control

## City Managers

Growth control  
Material supply  
Activities Plans

## Citizens

Raise awareness  
Activation



# Platform - Mobile app for data collection



## Survey in the field

Details. Photos.



## Provide parameters

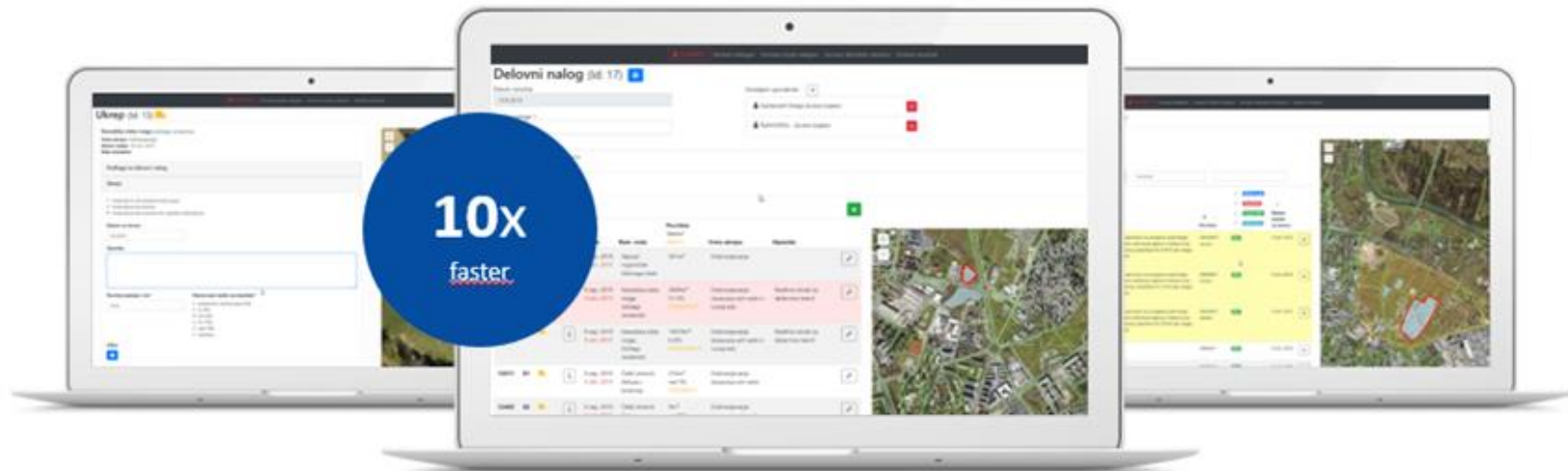
Science. Business.



## Locate

Actions. Measure.





Activities planning are automated: minimizing effort and improve quality.  
Execution: real-time view, verified by photos, bringing latest growth information

# Platform - Eradication/harvesting activities



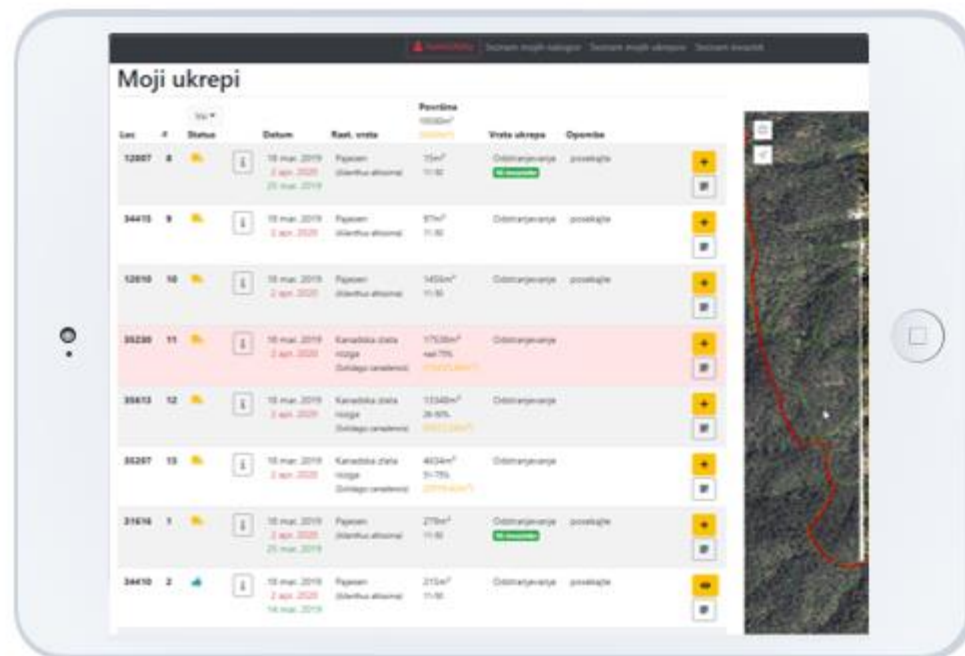
## Scheduled Tasks

List.Time request and map.

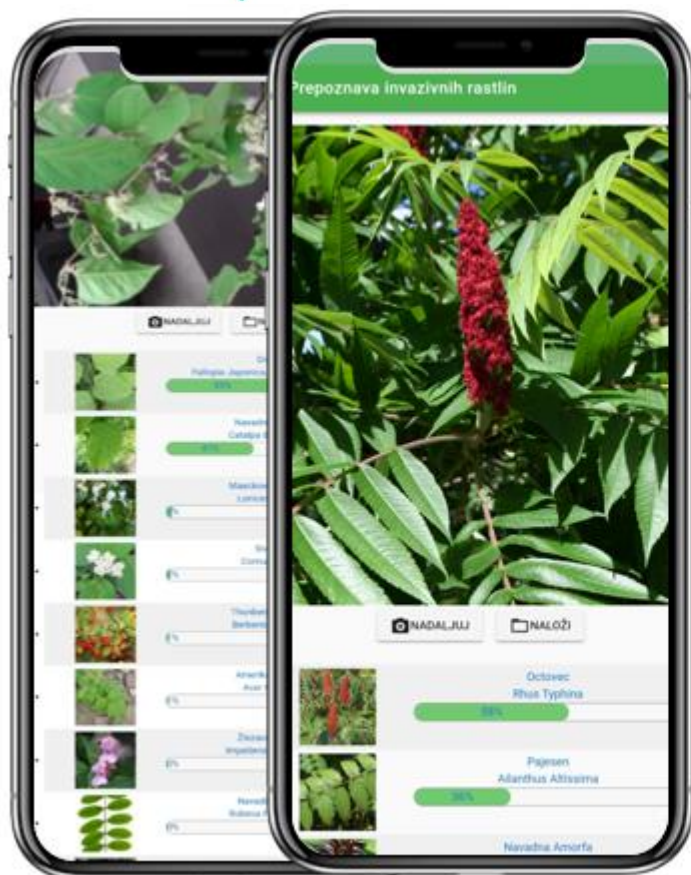


## Apps Report

Check Done. Photo.



Contact: GDi d.o.o., Ivo.Strubelj@gdi.net



## Plants description

Photos. Description



## Artificial intelligence support

Image classification suggestions



## Citizens Initiatives

Report for experts review

Contact: Gdi d.o.o., Ivo.Strubelj@gdi.net





Video: <https://www.youtube.com/watch?v=tiVdJepVB50>





Thank you for your attention.

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City of  
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