

RITHMS Project: How Digital Technology Can Help Protect Cultural Heritage from Illicit Trafficking

Michela De Bernardin, Riccardo Giovanelli, Madison Leeson, Arianna Traviglia
Centre for Cultural Heritage Technology (Italian Institute of Technology)

CONSORTIUM

- 4 Police Forces
- 2 Border Authorities
- 1 School of Police
- 4 Research Organisations
- 5 SMEs
- 2 Not-for-profit Associations
- 1 EU Organisation

OBJECTIVES

- Understand the criminal phenomenon of **CULTURAL HERITAGE TRAFFICKING**
- Provide Law Enforcement Agencies with new, tailored technological tools
- Operationalise the collected knowledge and the developed technologies
- Promote cooperation to tackle illicit trafficking

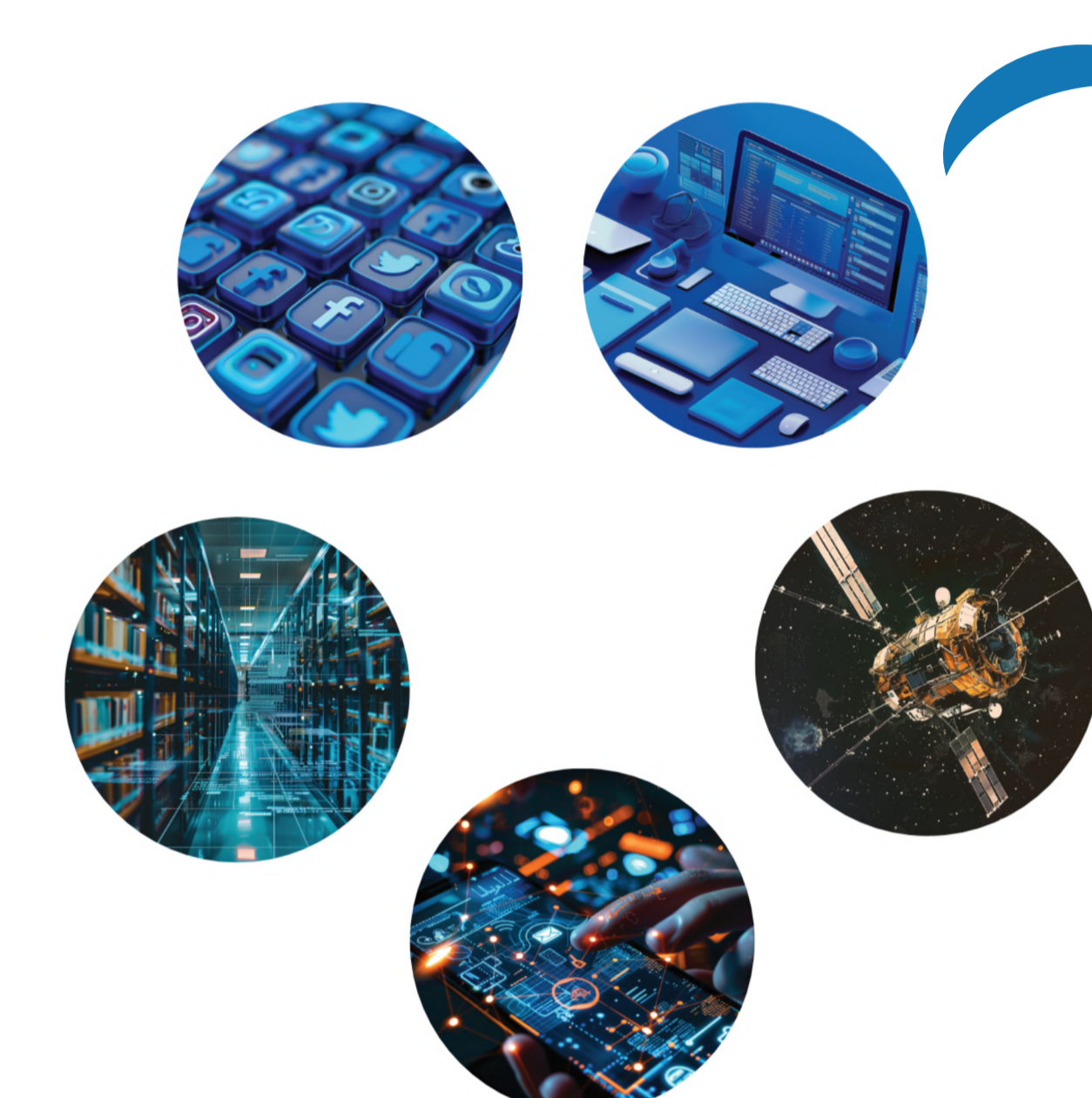


DATA CLEANING & KNOWLEDGE GRAPH



DATA CORRELATION & SOCIAL NETWORK ANALYSIS

SOCIAL NETWORK GRAPH



DATA COLLECTION

1. Public websites
2. Social Media platforms
3. Repositories and databases of stolen/recovered cultural goods
4. Mobile data records
5. Satellite imagery analysis

RITHMS DIGITAL PLATFORM features:

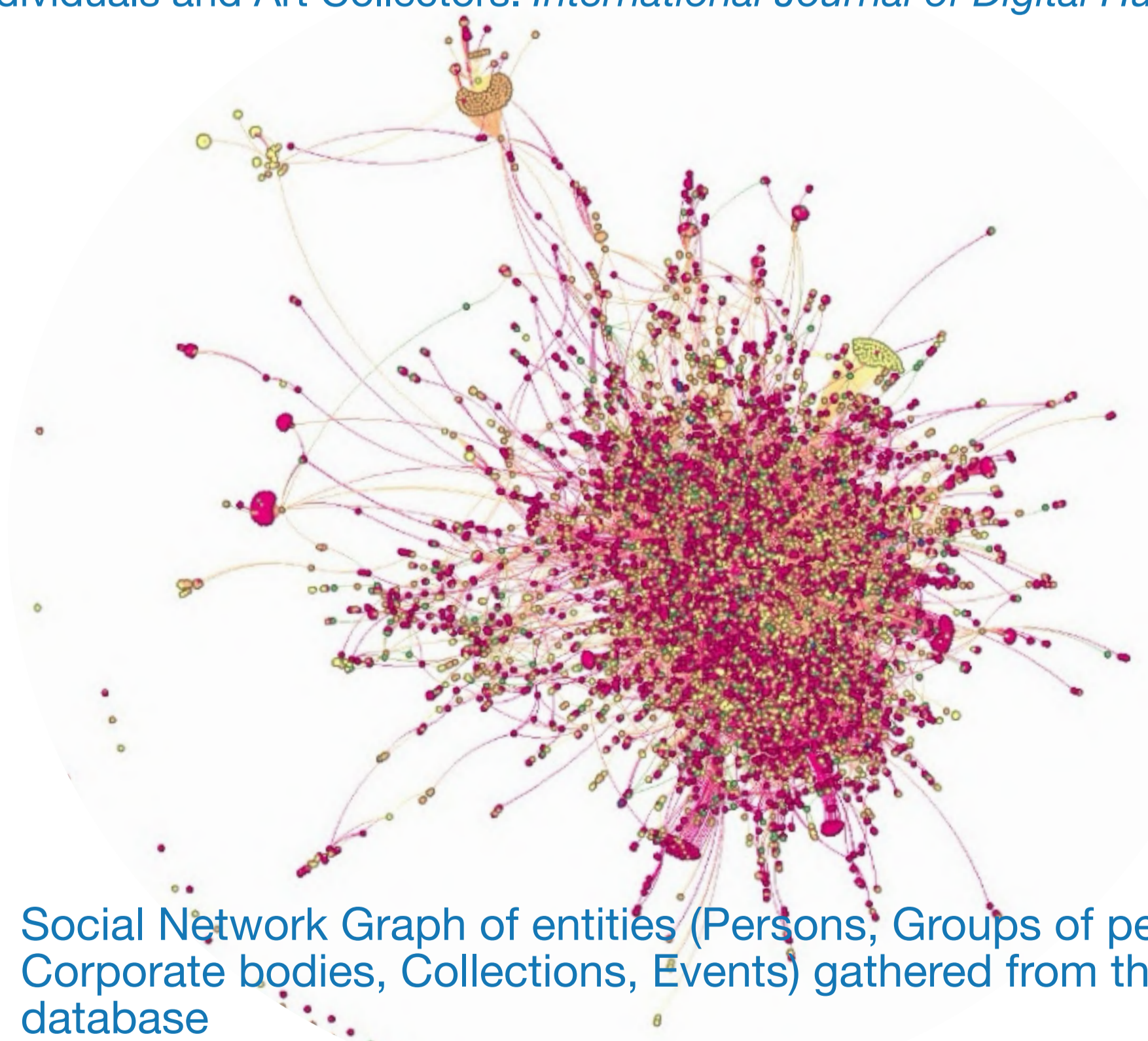
- Interoperable
- Multifunctional (with multiple analysis and query tools available)
- Deployed only at segregated Law Enforcement Agencies (LEAs) premises
- Powered by **Social Network Analysis (SNA)**: a method of mapping, studying, and visualising relationships among entities)
- Capable of **identifying, evaluating, and analysing relations and connections** between criminal and non-criminal actors involved in the trafficking of cultural goods
- Capable of integrating LEAs restricted data with the collected **Open Source Intelligence (OSINT)** data (i.e., websites, social media, repositories)
- Capable of providing LEAs with **enhanced intelligence on criminal networks** to steer the investigations
- Capable of providing LEAs with a large, continuously **updated provenance database** of cultural property

Social Network Graph of sanctioned individuals and organisations, gathered from the Ukrainian War&Sanctions + War&Art databases (in red the networks of art dealers/collectors, well positioned within the main network)

[Leeson, M., Giovanelli, R., De Bernardin, M., & Traviglia, A. (2024). War, Art, and Sanctions: Social Network Analysis on the NACP's Databases of Sanctioned Russian Individuals and Art Collectors. *International Journal of Digital Humanities*, in review]

RITHMS DATA COLLECTION preliminary results:

- 47 OSINT data sources identified
- Customised **scraper software** developed for each data source
- Database of **2 million entities** (around 7 GB of information) gathered
- Data tagged according to **RITHMS domain-specific Taxonomy** and mapped to **RITHMS Ontology**
- Comprehensive **RITHMS Knowledge Graph** built
- SNA run on selected sub-sets of the consolidated data: sub-**Social Network Graphs (SNG)** explored



Social Network Graph of entities (Persons, Groups of persons, Corporate bodies, Collections, Events) gathered from the *Proveana* database

[Giovanelli, R., Leeson, M., De Bernardin, M., Ferro, S., & Traviglia, A. (2024). Social Network Analysis on the Proveana Database: Insights on the Circulation of Nazi-Looted Cultural Goods during and after WWII. *Social Network Analysis and Mining*, in review.]



This poster is part of the research conducted in the framework of RITHMS project (G.A. 101073932), funded by the European Union. Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or the Commission. Neither the European Union nor the granting authority can be held responsible for them.

Consortium: Italian Institute of Technology (with Art Crime Project APS), SAG SASU, VIT, ESI CEE, Rimgard, Houston Analytics, BEIA, SatCen, Universidade da Coruña, Bayern School of Police, European Institute Foundation, CC TPC, Spanish National Police, The Netherlands Police, Bulgarian Directorate of Border Police, Moldovan General Inspectorate of Police, Bosnia and Herzegovina Directorate of Border Police, Conceptivity.