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Impact Analysis Report v.1

WP6 – Communication, dissemination, exploitation, and sustainability

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Contents

Executive Summary	5
List of Abbreviations	6
List of Tables	7
List of Figures	7
1 Introduction	8
1.1 Aim	9
2 Methodology	9
2.1 Approach to Impact Assessment	9
2.2 Limitations and Challenges	10
2.3 Ethical Considerations	10
2.4 Evaluation Criteria and Indicators	11
3 Areas of Impact & RITHMS’ Objectives with KPIs	12
3.1 Security.....	15
3.2 Cultural Heritage Trafficking Prevention	16
3.3 Societal, Regulatory, Legislative, & Forensic Implications.....	18
3.4 Scientific & Technological Advancement	22
3.4.1 AI-Based Digital Evidence	22
3.4.2 Social Network Analysis for Criminal Investigations.....	22
3.4.3 Technological Impact of the RITHMS Development.....	22
4 Stakeholder Analysis	23
5 Key Exploitable Results & RITHMS’ Outcomes with KPIs	28
5.1 RITHMS’ Expected Outcomes and Impacts	29
6 Impact Assessment	33
6.1 Stakeholder Engagement and Project Impact	34
6.1.1 Sensitisation and Awareness.....	34
6.1.2 Building Collaborative Networks	34



6.1.3	Recognition and Validation.....	35
6.2	Website Impact Analysis.....	36
6.2.1	Website Traffic Analysis	36
6.2.2	Distribution of Website Visitors	36
6.3	Social Media Impact Analysis.....	36
6.4	Areas for Improvement.....	37
6.4.1	Enhancing Website Accessibility	37
6.4.2	Content Diversification	37
6.4.3	Emphasising Project Progress	37



Executive Summary

In the framework of WP6, Task 6.1 aims to continuously assess the project's progress towards the achievement of the expected outcomes and the identified long-term impacts, as specified in RITHMS impact pathway (G.A. Sect. 2). RITHMS impact will be assessed and monitored through its interlinked dimensions: i) impact on EU security; ii) Cultural Heritage trafficking prevention; iii) societal, regulatory, legislative, & forensic impact; iv) scientific/technological impact.

The current deliverable will set the parameters of the impact assessment throughout the project and provide the first evaluation of RITHMS progress.



List of Abbreviations

AMON	Anti-Money Laundering Operational Network
BVD	Big Data Value Association
CARIN	Camden Assets Recovery Inter-Agency Network
CEN	European Committee for Standardisation
CENELEC	European Committee for Electrotechnical Standardisation
CEPOL	European Union Agency for Law Enforcement Training
CH	Cultural Heritage
CoE	Council of Europe
COSI	Standing Committee on Operational Cooperation on Internal Security
cPPP	contractual Public-Private Partnership
DG HOME	Directorate-General for Migration and Home Affairs
DG JUST	Directorate-General for Justice and Consumers
DG TAXUD	Directorate-General for Taxation and Customs Union
EAA	European Association of Archaeologists
ECPN	European Crime Prevention Network
ECISO	European Cyber Security Organisation
EMF	European Museum Forum
EOS	European Organisation for Security
EP-LIBE	European Parliament's Committee on Civil Liberties, Justice, and Home Affairs
ETSI	European Telecommunications Standards Institute
EU	European Union
EU-LISA	European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice
EUROJUST	European Union Agency for Criminal Justice Cooperation
GEO	Group on Earth Observations
ICOM	International Council of Museums
ICOMOS	International Council on Monuments and Sites
I(C)T	Information (and Communications) Technology
IEC	International Electrotechnical Commission
IP	Intellectual Property
ISO	International Organization for Standardization
ITU	International Telecommunication Union
KER	Key Exploitable Result
KPI	Key Performance Indicator
LEA	Law Enforcement Agency



LEWP	Law Enforcement Working Party
NEMO	Network of European Museum Organisations
NGO	Non-Governmental Organisation
OC	Organised Crime
OGC	Open Geospatial Consortium
OSCE	Organization for Security and Co-operation in Europe
REA	European Research Executive Agency
R&D	Research & Development
SEE	South-East European
SEO	Search Engine Optimisation
SNA	Social Network Analysis
TDL	Trust in Digital Life
UNESCO	United Nations Educational Scientific and Cultural Organization
UNIDROIT	International Institute for the Unification of Private Law
UNODC	United Nations Office on Drugs and Crime
WCO	World Customs Organization
WP	Work Package

List of Tables

Table 1. RITHMS' Objectives with KPIs.

Table 2. Provisional Distribution and Characterisation of RITHMS' Stakeholders.

Table 3. Overview of RITHMS' Key Exploitable Results.

Table 4. RITHMS' Outcomes with KPIs.

Table 5. Stakeholder Analysis Based on LinkedIn Insights (November 2022 – July 2023).

List of Figures

Figure 1. Overview of the 4 Core Opportunities Offered by RITHMS, 4 Corresponding Risks, and 4 Drawbacks of Underusing RITHMS' Technology.



1 Introduction

RITHMS project is an aspiring undertaking aimed at enhancing the operational capabilities of law enforcement agencies to protect and preserve cultural heritage. The project was designed in response to the escalating challenges posed by the growing sophistication and complex nature of illicit trafficking in cultural goods. Through its global approach, which incorporates extensive research, technological innovation, outreach efforts, and training initiatives, RITHMS project intends to make a tangible contribution to the fight against the illicit trade of cultural property and towards the safeguarding of our heritage.

Trafficking in cultural goods has become a matter of significant concern worldwide, as valuable artefacts, artworks, and historical objects resulting from thefts, looting, and smuggling activities are fuelling a lucrative market. Organised criminal networks have been profiting from the illicit trade, recognising its high profitability and relatively low risks. The consequences of this trend are devastating, slowly leading to the permanent loss of cultural heritage and the erosion of collective identity and historical legacy.

Recognising the urgency and seriousness of the situation, RITHMS project was conceived as a collaborative effort involving law enforcement agencies, academic institutions, technology experts, and cultural heritage organisations. Its overarching goal is to develop a comprehensive and successful strategy and equip the police, customs, and border authorities with an innovative digital resource capable of supporting their investigations and monitoring activities.

This Impact Analysis report aims to evaluate the results and overall efficacy of RITHMS project, providing insight into the progress made, challenges encountered, and potential long-term benefits derived from this ambitious initiative. By assessing both the research dissemination and uptake and the technological outputs of the project, this document intends to offer a broader understanding of its impact on combating the transnational and multifaceted phenomenon of illicit trafficking in cultural goods.

This **first version** of the Impact Analysis will set the criteria to be followed for the full assessment of the project's impact reported in the **final version** of the Impact Analysis (**D6.2, M36, PU**). The data collected until now and here presented will also be integrated in the new report, providing a valuable resource for policymakers, law enforcement, cultural property protection organisations, and stakeholders involved in combating such illicit activities. The information detailed in the deliverable will, potentially, become instrumental in informing their decision-making processes, developing powerful strategies, and implementing effective measures against cultural heritage crimes.



1.1 Aim

The main goal of the current analysis is to provide a more in-depth understanding of the expected impacts of the project, as well as describe and evaluate the means and tools to achieve them. Along with its subsequent version, which will be produced at the end of the project, it aims to make a significant contribution to the refinement and enhancement of EU strategies, policies, and collaborative efforts in the ongoing fight against such detrimental criminal activities.

2 Methodology

2.1 Approach to Impact Assessment

'Impact assessment can be defined as the process of identifying the future consequences of a current or proposed action' (Becker, 2001: 311). The impact assessment of the RITHMS Project is a crucial step in evaluating the outcomes and effectiveness of this ambitious initiative. To ensure a comprehensive analysis, a systematic and structured methodology has been employed, encompassing various components of the project. The approach to impact assessment involves both qualitative and quantitative criteria, aiming to provide a clear understanding of the project's impact on combating trafficking in cultural goods.

The methodology involves the following steps:

- 1. Data Collection:** Gathering relevant data and information from various sources, including project reports, documentation, interviews, surveys, and case studies. This step ensures the availability of comprehensive data to evaluate the impact of the RITHMS project accurately.
- 2. Impact Identification:** Identifying and categorising the expected impacts of the RITHMS project based on the predefined Objectives and KPIs outlined in Chapter 3 and in the light of the foreseen short/medium/long-term Outcomes and KPIs outlined in Chapter 5. This step provides a framework for assessing the specific impacts and allows for a focused analysis.
- 3. Evaluation Framework Development:** Developing an evaluation framework that aligns with the identified Objectives and KPIs. This framework serves as a guideline for assessing the project's results and effectiveness, ensuring consistency and clarity throughout the impact assessment process.
- 4. Data Analysis:** Analysing the collected data using appropriate qualitative and quantitative techniques. This includes conducting statistical analyses, identifying trends and patterns, and interpreting the results in relation to the predefined Objectives and KPIs. The analysis provides insights into the project's achievements and challenges.
- 5. Impact Assessment:** Assessing the project's impact based on the analysed data and findings. This assessment involves evaluating the extent to which the predefined Objectives and KPIs have



been achieved, identifying gaps or areas for improvement, and providing recommendations for future actions.

6. Reporting: Summarising the impact assessment findings and recommendations in a comprehensive report. The report will serve as a valuable resource for policymakers, law enforcement agencies, cultural heritage organisations, and other stakeholders involved in countering the illicit trade in cultural goods. It aims to provide an evidence-based assessment of the project's impact and contribute to the refinement and enhancement of strategies, policies, and collaborative efforts in combating trafficking in cultural goods.

2.2 Limitations and Challenges

It is important to acknowledge the limitations and challenges associated with the impact assessment of the RITHMS project. These include:

- 1. Data Availability:** The availability of comprehensive and reliable data is crucial for a thorough impact assessment. However, due to the nature of the project and the sensitivity of the data involved, there may be limitations in accessing certain information. Efforts will be made to ensure the data collected is as robust as possible within these constraints.
- 2. Time Constraints:** Conducting a comprehensive impact assessment requires sufficient time and resources. However, time constraints may limit the depth and breadth of the analysis. The assessment will aim to balance these constraints while still providing meaningful insights.
- 3. Attribution and External Factors:** Determining the exact attribution of project results to the RITHMS project alone can be challenging. External factors, such as changes in legislation, policy frameworks, or global events, can influence the results and impact observed. These external factors will be considered and accounted for to the greatest extent possible.
- 4. Subjectivity:** Impact assessments inherently involve subjective judgments and interpretations. To mitigate this challenge, the methodology will strive to maintain objectivity by using standardised evaluation criteria (see 2.4) and involving multiple stakeholders in the assessment process.

2.3 Ethical Considerations

The impact assessment process will adhere to ethical guidelines and principles to ensure the responsible and respectful use of data and information. Confidentiality and data protection measures will be implemented to safeguard sensitive information obtained during the assessment. Informed consent will be obtained from participants involved in interviews, surveys, or any other data collection activities. The assessment will also prioritise the privacy and anonymity of individuals and organisations involved in the assessment. Any personal or sensitive information collected will be handled with utmost care and in accordance with applicable data protection regulations.

Furthermore, the impact assessment will prioritise the principles of fairness, equity, and inclusivity. It will consider the potential differential impacts on different stakeholders, including vulnerable



communities and cultural heritage custodians. Efforts will be made to engage diverse stakeholders in the assessment process, ensuring their voices are heard and their perspectives are considered.

Transparency is another important ethical consideration. The impact assessment process will be transparent and open, providing clear explanations of the methodology, data sources, and analytical techniques used. The findings and recommendations will be communicated in a clear and accessible manner to facilitate understanding and foster dialogue among stakeholders.

Throughout the impact assessment process, ethical considerations will guide decision-making to ensure the assessment is conducted with integrity and respects the rights and interests of all involved parties.

2.4 Evaluation Criteria and Indicators

To effectively assess the impact of the RITHMS project, a set of evaluation criteria and indicators will be established. These criteria and indicators will align with the predefined Objectives and KPIs outlined in Chapter 3. They will serve as benchmarks for evaluating the project's achievements and effectiveness. The evaluation criteria may include:

- **Improved Law Enforcement:** Evaluating the project's contribution to enhancing the capacity and effectiveness of law enforcement agencies in detecting, investigating, and prosecuting cases related to the illicit trade in cultural goods.
- **Strengthened International Cooperation:** Assessing the extent to which the project has fostered collaboration and information sharing among countries and international organisations to combat trafficking in cultural goods.
- **Enhanced Awareness and Education:** Evaluating the project's impact on raising public awareness about the importance of protecting cultural heritage and educating relevant stakeholders about the risks and consequences of illicit trade.
- **Policy and Legal Framework Improvement:** Assessing the project's influence on shaping policy and legal frameworks at the national and international levels to strengthen measures against trafficking in cultural goods.
- **Capacity Building:** Evaluating the project's contribution to enhancing the capacity and expertise of cultural heritage professionals, law enforcement officials, and other relevant stakeholders involved in countering the illicit trade.
- **Technological Innovation:** Assessing the project's advancement in developing ground-breaking technologies and innovative applications of existing technological tools to efficiently counter criminal activities against cultural heritage.

The selection of evaluation criteria and indicators will be based on their relevance, measurability, and alignment with the project's objectives. These criteria will guide the data collection, analysis, and



impact assessment process, providing a structured framework for evaluating the RITHMS project's impact.

By employing a comprehensive methodology, considering limitations and challenges, adhering to ethical considerations, engaging stakeholders, and establishing evaluation criteria, the impact assessment of the RITHMS project will provide valuable insights into its effectiveness in combating trafficking in cultural goods.

3 Areas of Impact & RITHMS' Objectives with KPIs

To boost the operational capacity of police forces and customs/border authorities in impeding the organised networks engaged in illicit trafficking, RITHMS is expected to achieve a significant impact in the following areas:

- **Security:** Strengthening security measures by providing LEAs with novel technology and collaborative tools to make them faster, more accurate, and more efficient in addressing the illicit trafficking of cultural goods.
- **Cultural Heritage Trafficking Prevention:** Contributing to preventing the illicit trafficking of stolen/looted cultural goods by exploring the inner mechanisms and dynamics of the phenomenon, the connections among different actors, and its overlaps with other types of organised crime. Providing LEAs with advanced, predictive technological tools and updated insights. Developing replicable strategies to counter recurring challenges and raise awareness of the importance of safeguarding cultural heritage.
- **Societal, Regulatory, Legislative, & Forensic Implications:** Broadening the overall understanding of cultural heritage crimes through interdisciplinary research, thus contributing to the development of international policies. Collaborating with the stakeholders to shape societal attitudes, promote regulatory reforms, and strengthen legislative measures. Promoting advancements in the forensic sciences that support legal investigations and the identification of offenders.
- **Scientific & Technological Advancements:** Fostering cutting-edge scientific and technological innovations to address the complexity of the criminal phenomenon. Exploiting SNA and developing a digital platform to analyse human behaviour and identify criminal networks engaged in the illicit trade.

As displayed in **Table 1**, each Area of Impact relates to one or more of the predefined Objectives to be achieved by the end of the project and measured by specific KPIs.



OBJECTIVE 1	Achieve an overall understanding of the criminal phenomenon of cultural heritage trafficking
Description	RITHMS will strive to foster cross-cutting research bringing together all the domains that are relevant to expand the current (still limited) understanding of cultural property crime (art market, criminology, law studies, forensic science, etc.) with the mission of developing a coherent, sound, and replicable methodology apt to investigate the mechanisms underpinning trafficking in its complexity and grasp its connection with other organised crime. These inputs will inform the theoretical framework underlying the SNA-based Platform and contribute to optimising its applicability to criminal investigation. SNA will achieve novel insights into the international criminal networks involved in trafficking, which in turn will strengthen our capacity to familiarise with the nature and mechanisms of this type of organised crime.
KPIs	<p>KPI O1.1 At least 1 survey to ascertain regional aspects of the trafficking of cultural assets has been completed for the 6 case-study countries and a report detailing the results published.</p> <p>KPI O1.2 At least 6 cases (one for each case-study country) of intercorrelation between cultural property crime and other forms of organised crime in international contexts have been documented and analysed.</p> <p>KPI O1.3 At least 10 of the major hurdles faced by national criminal justice systems have been perused and a report to describe them has been completed; at least 1 survey targeting LEAs and other key informants is completed.</p> <p>KPI O1.4 At least 10 different cases of AI applied to criminal investigations have been examined and thoroughly analysed; at least 10 judicial cases involving AI-based evidence have been explored.</p>
Area/s of Impact	Cultural Heritage Trafficking Prevention; Societal, Regulatory, Legislative, & Forensic Implications
OBJECTIVE 2	Provide LEAs with technological tools to boost the capability of tackling trade in cultural goods
Description	RITHMS will pursue the development of newly conceived technological tools meant to support the ability of LEAs in tracking and preventing the emergence of organised crime networks. It will provide an operational tool for enhancing criminal investigation capabilities of LEAs embodied by a technological platform developed and validated against practitioners' needs and requirements.
KPIs	<p>KPI O2.1 At least 8 different OSINT data sources are used to collect information from heritage illicit market and its actors.</p> <p>KPI O2.2 At least 4 developed software modules are integrated in the Platform.</p> <p>KPI O2.3 At least 4 LEAs use an instance of RITHMS' integrated Platform for sharing information about at least two test cases.</p>
Area/s of Impact	Security; Cultural Heritage Trafficking Prevention



OBJECTIVE 3	Operationalise the collected knowledge and the developed technologies
Description	Besides producing the operative tools needed to enhance the ability of security practitioners to identify and prevent cultural crime networks, RITHMS will seek to trigger all the necessary steps to make the use of the SNA-based Platform operational and ensure i) its implementation during the project and ii) its longevity and exploitation after the end of it. To secure this trajectory, RITHMS will aim to actively involve the Consortium’s LEAs and train them to directly validate the Platform while working with them to warrant the maintenance, upgrade, further development, and management of the technology in the long-term – beyond the 3yrs development period – and to make sure that the results obtained using the Platform are usable in court.
KPIs	<p>KPI O3.1 The testing will be deemed successful if at least three case studies in the pilot countries have been proven successful in identifying and delineating possible networks related to the trafficking of cultural goods.</p> <p>KPI O3.2 Agreement on governing Entity bylaws reached by at least 4 partners.</p> <p>KPI O3.3 At least one case study for each target Country enables to infer the criteria that must be met for the acceptability of AI-based evidence in court. At least 5 recommendations are formulated for any of the case study countries.</p>
Area/s of Impact	Security; Societal, Regulatory, Legislative, & Forensic Implications
OBJECTIVE 4	Decomartmentalise information on illicit trafficking of cultural goods
Description	RITHMS aims to foster collaboration between all the different actors involved in halting this form of crime, starting from the recognition that the only effective way to efficiently tackle it (given its strongly organised and mobile nature) is to address it from different points of view and complementary fronts. This will bring in different perspectives in the design of the Platform that will be developed for supporting LEAs. In other words, RITHMS will seek to activate synergies that bring together very diverse expertise and positions and increase cross-national cooperation.
KPIs	<p>KPI O4.1 At least 10 LEAs from 5 EU countries and 10 institutions/research centres outside the Consortium have been involved in the project activities.</p> <p>KPI O4.2 At least 10 practical recommendations to enable legal practitioners to efficiently utilise international cooperation measures have been produced.</p> <p>KPI O4.3 At least 10 LEAs from 5 different countries outside the Consortium have been involved in the training for the SNA Platform and in RITHMS workshops.</p> <p>KPI O4.4 At least 12 posts per year on Facebook ACP/JCHC accounts, 300 followers on RITHMS’ LinkedIn account, 150 followers on RITHMS’ Twitter account, 5000 visits to RITHMS’ website, and at least 6 short videos produced for JCHC (ACP) YouTube channel with 1000 views.</p>
Area/s of Impact	Cultural Heritage Trafficking Prevention; Societal, Regulatory, Legislative, & Forensic Implications

Table 1. RITHMS’ Objectives with KPIs.



3.1 Security

The project aims to provide LEAs with enhanced tools for supporting the identification, data enhancement, and investigation of crimes related to Cultural Heritage trafficking. The impact on the security sector in the medium and longer term will be significantly wider since the investigative technologies and research results will also be more generally applicable to many other kinds of criminal investigations. RITHMS' results will inform future security research including the benefits resulting from close cooperation with law enforcement and related national agencies, both the direct Consortium partners and with respect to wider stakeholder groupings. These agencies will be involved in the project work, and this will produce opportunities for collaboration in the future.

The non-technical impact also includes the development of concept of operations approaches incorporating the SNA-based, intelligence-based approach of RITHMS. Further, it also includes the integration of technology solutions validated by the project into the normal investigative processes used by LEAs. They will benefit from the increased use of our solutions to support their successful investigation efforts. The project will also positively impact future successful prosecutions by providing further knowledge about AI-based digital evidence, complementing existing forensic chain-of-custody best practices.

Furthermore, the non-technical impact also involves deterring criminals and criminal organisations from using cultural goods as a money-generating activity given the increased possibility of being caught and successfully prosecuted.

In terms of meeting Objective 1 (Achieve an overall understanding of the criminal phenomenon of cultural heritage trafficking), the technological design and development of the RITHMS Platform is ongoing at the time of writing, according to the project initial schedule. The projected impact on LEAs' capabilities will be relevant in terms of enhanced intelligence and therefore comprehension of the internal mechanisms of criminal and non-criminal networks involved in Cultural Heritage trafficking.

At the time of writing, the technological design and development of the RITHMS Platform is ongoing, according to the initial project schedule. The design and development are related to Project Objective 2 (Provide LEAs with technological tools to boost the capability of tackling trade in cultural goods). Putting the Platform in the hands of police officers will directly contribute to objective 2 as well as objective 3. Objective 3 will also be supported by the development of novel best practices and concepts of operations based on the Intelligence-led Policing paradigm.

Some risks exist with respect to the availability of real-world, real-time, and accurate data with respect to criminal activities. The issue is that LEAs are bound by their national legislation and security concerns, which both limit the access and availability of data for the project as well as deployment time. However, RITHMS conducted a thorough legal and ethical analysis as a mitigation measure. Via



enhanced cooperation, facilitated by the RITHMS project, agencies will see and reap the essential benefits of addressing investigation and data enhancement in a cooperative environment with other relevant agencies, where allowed by national legislation and the policies of their organisations. The true benefit of the RITHMS project also lies in the possibility of sharing data and cooperating within the context of national legislation with this sharing and cooperation fully controlled by the LEA organisations concerned.

Another risk is related to the testing phase: some LEAs have limited resources available to fully test the new solutions. Furthermore, not all the agencies have dedicated facilities to set up the Platform components, and there may be limited possibilities to proceed with the tests other than in “live” scenarios. This risk is mitigated by the fact that the RITHMS Consortium has previously selected “lead” LEAs as partners, committed to testing and validating the Platform. Furthermore, once the added value has been proven to our close LEA partners via testing and demonstration, further uptake of the RITHMS solutions will be possible using our demonstrations as an example.

Most importantly, ready-to-use training materials must be compiled in order to make the developed technological solutions easy to implement and to test. All too often, training materials and user manuals are not as user-friendly as necessary, but we will make sure that RITHMS training materials are helpful and well-conceived for the end users. It is key that the training materials are designed for the concept of operations in the real-life scenarios that the LEAs will encounter, and as such, RITHMS aims to ensure that this is the case.

3.2 Cultural Heritage Trafficking Prevention

The purpose of RITHMS project, overall, is to provide a disruptive contribution to the fight against the illicit trafficking of cultural property. In order to achieve a long-term impact, the Consortium must consider both enforcing reactive strategies to counter the crime more effectively (see 3.1, 3.3, 3.4) and developing proactive and preventive strategies, while boosting an apparent change within society (see also 3.3.). That implies a twofold path: a strong collaboration with the LEAs – within and beyond the Consortium – and an engaging attitude towards the public. The essential requirement to foster both aspects is a robust advancement in the knowledge and understanding of the phenomenon.

RITHMS project, thanks to its interdisciplinary approach which takes advantage of the multifaceted background of the Consortium, is bringing together different research competencies, methods, and skills to explore the mechanics, features, causes, trends, and scope of the different crimes feeding the chain of the illicit trafficking of cultural goods.

In the framework of WP2 activities, the partners are working on the available international literature and collecting, through interviews and workshops with LEAs and other stakeholders (customs, public



prosecutors, researchers, and art market professionals), first-hand data related to stolen objects, trafficking routes, volume, and modus operandi of criminal networks.

A first critical and detailed overview of the topic has been produced in D2.1 – Report on current and emerging threats against CH (Task 2.1), providing LEAs with a clearer picture of the current context of action, while D2.3 – Report on trends and foreseen development of illicit trade in cultural goods in case-study countries (Task 2.2) is under preparation. This report will focus on 6 sample countries (namely, Bosnia and Herzegovina, Bulgaria, Italy, Moldova, Netherlands, Romania, and Spain) to explore and contrast national and international characteristics of the phenomenon, identify potential risk-sensitive areas within those countries, and underline interconnections of criminal activity across countries.

Another relevant advancement in the knowledge base on illicit trafficking in CH will be achieved in the ongoing Task 2.3, which focuses on the poly-criminal nature of the phenomenon and its intersections with the trafficking of other commodities, such as firearms and drugs, and with other crimes, like terrorism financing, conflict financing, ‘grand corruption’, and money-laundering. The final report (D2.4) will offer a crucial insight by analysing and correlating the interdependencies between cultural property crimes and other forms of organised crime.

On the other hand, the very testing and validation phase of the SNA Platform (WP5) will provide new elements for the study of such criminal networks, thus contributing to edit or fine-tune the previous research results by detailing: i) trafficking routes of known looting; ii) the size, scope, and diffusion of the art/antiquities market in the case-studies countries (with a focus on the online market and social media as a result of data collection foreseen in WP3); and iii) the actors.

The updated and refined information resulting from research and validating tasks will provide a solid basis on which LEAs can not only re-shape their operational practice aimed at tackling criminal conduct more efficiently (see 3.1), but also develop preventive strategies to disrupt potential criminogenic situations. The implementation of specific predictive features in the RITHMS Platform (Task 4.3) will further boost the impact of the project with respect to criminal prevention.

Besides engaging the LEAs by first collecting input data and then providing fully validated knowledge to inform their operational methodology and preventive procedures, RITHMS will also foster international collaboration among the different categories of stakeholders to facilitate information-sharing and support the issuing of international standards and policies attentive to prevention measures (i.e., Task 6.7).

As already highlighted, another pillar of the Consortium’s pathway to impact is the involvement of civil society in the fight against the illicit trade in cultural goods (Task 6.4). Accurate information provided by RITHMS research will be made appealing and accessible with the intention of broadening



public awareness of the phenomenon. The ultimate goal is reducing the 'at-all-costs' market demand for ancient objects and alerting collectors to the risk of unprovenanced artworks.

To involve the public and foster fair art trade, RITHMS Consortium is engaged in a variety of activities, such as social media communication, articles publication in specialised magazines, short videos production, thematic exhibitions organisation, and contribution to international training courses targeting both graduates and professionals to boost specific expertise in countering criminal activities involving CH.

Overall, the project's activities working towards this Area of Impact falls under the scope of Objective 1 (KPIs O1.1, O1.2), Objective 2, and Objective 4 (KPIs O4.1, O4.4).

3.3 Societal, Regulatory, Legislative, & Forensic Implications

It is not easy to predict the societal, regulatory, legislative, and forensic consequences of novel technology use and development, for several reasons. There are significant epistemological questions concerning the measures to be used to identify impact and whether or to which degree these can be quantified. Moreover, the temporal horizon of any measure of impact is difficult to determine, leading to a possible over-emphasis on short-term consequences – such as the ones that can be produced in the three-year period of the project execution or immediately after the end of the project and up to five years – and the neglect of potentially much more sensitive long-term outcomes. However, as Stahl and Leach (2022: 1-2) put it, 'the problem of predicting possible impacts of social or technical developments is not new. Conceptual and epistemological issues have been already addressed to identify environmental, social or other impacts arising from other technologies, such as biotechnology or nanotechnology. The AI field can therefore build on existing experience when considering suitable governance arrangements.' In fact, we now have not only social impact assessment but also environmental impact assessment, scientific and technological impact assessment, and security impact assessment as well. Still, one of the major sub-fields of impact assessment continues to be societal impact assessment.

We define societal impact assessment as 'the process of identifying the future consequences of a current or proposed action which are related to individuals, organizations and social macro-systems' (Becker, 2001: 311). Regulatory and legislative impact assessments are systematic approaches to critically assessing the positive and negative effects of RITHMS' outputs on proposed and existing legislation, soft-law regulations, and non-regulatory alternatives. Last, we define forensic impact assessment as the process followed to ensure that the forensic evidence provided by RITHMS to the criminal courts meets the standards the Forensic Regulator considers appropriate. The intended effect is to ensure that the evidence on which individuals are convicted or acquitted is correct and to maintain the confidence of the public and the judiciary in the use of evidence produced by the RITHMS Platform.



That the novel technology developed by RITHMS will have an impact on society, broadly speaking, as well as on law and regulation and legal and police practice, is not in question. Our attention turns instead to how far this impact will be positive or negative, for whom, in which ways, in which places, and on what timescale. To put it another way, we may safely dismiss the debate over whether the RITHMS technology will have an impact. Instead, we need to focus on who, how, where, and when this impact - whether positive or negative - will be felt.

Adapting from Floridi et al. (2018), to frame these inquiries in a more substantial and useful manner, we outline here the key societal, regulatory, legislative, and forensic benefits that the RITHMS technology offers as 4 short/medium-term Outcomes (see 5.1):

- *who we can become*: better prepared security practitioners (Outcome 2);
- *what we can do*: thanks to improved and validated tools, skills, and training materials (Outcome 3);
- *what we can achieve*: improved evidence-based policymaking against trafficking in cultural goods, robust research methodologies, improved intelligence, and understanding of the mechanisms behind organised crime activities related to the trafficking of cultural goods both offline and online, modus operandi, and a possible nexus with terrorist financing (Outcome 6);
- *how we can interact with one another and the outside world*: through improved cooperation between European Police Authorities, Border Guards and Customs Authorities, as well as with specialised researchers and international actors, in tackling this form of crime, promoting societal cohesion (Outcome 4).

These are the four fundamental tenets of the understanding of the societal, regulatory, legislative, and forensic impact that RITHMS can produce.

But there are other aspects to consider as well. Any circumstance where a new technology is introduced has the opportunity to enhance human nature and its potential, but it could also result in lost opportunity costs due to underuse and risks from misuse and excessive use. For what can be characterised as misguided, society may employ the RITHMS technology less than its full potential because of fear, ignorance, unfounded worries, or excessive reactivity. Significant opportunity costs could result from this, including overzealous or ineffective regulation, inadequate investment, or a backlash from public opinion. As a result, society might not completely reap the advantages offered by the RITHMS technology. These risks include well-intentioned actions gone wrong, which are largely the result of unforeseen consequences. However, we must also consider the risks associated with inadvertent overuse or wilful misuse of the RITHMS technology, grounded, for example, in misaligned incentives or malicious intent. The possibility of social progress represented by the aforementioned opportunities must be weighed against the risk of malicious manipulation enabled or enhanced by RITHMS, not forgetting that a broad risk is that the RITHMS technology may be underused out of fear of overuse or misuse.



We summarise these complementary aspects in the figure below. We offer a more detailed explanation in the text that follows.

HOW RITHMS COULD BE USED (OPPORTUNITIES)	HOW RITHMS COULD BE OVERUSED OR MISUSED (RISKS)	HOW RITHMS COULD BE UNDERUSED (LOST OPPORTUNITIES)
To enhance the ability of security practitioners	Devaluing human skills	Lack of confidence or competence Unsolved technological and usage problems
To improve and validate new tools, skills, and training materials	Removing human agency and responsibility	Lack of thoughtful preparation, implementation, and operation of RITHMS technology
To improve evidence-based policymaking against HC, robust research methodologies, more accurate intelligence pictures, and understanding of OC	Reducing human control and human rights compliance	Overzealous or ineffective regulation Public and/or institutional mistrust
To improve cooperation between European LEAs, Border Guards, and Customs Authorities, and within specialised researchers and international actors	Eroding trust	Low investment Privacy and data protection concerns

Figure 1. Overview of the 4 Core Opportunities Offered by RITHMS, 4 Corresponding Risks, and 4 Drawbacks of Underusing RITHMS' Technology.

Who we can become. RITHMS may easily mean more investigative efforts spent more intelligently. The “smart” automation of police work may free up more time for other investigative pursuits and more efficient and productive work. The risk in this case is double: on the one hand, the obsolescence of some old skills and the emergence of new ones with insufficient experience; on the other hand, the pace at which this is happening and the unequal distributions of the costs and benefits that result. A very fast devaluation of old skills can produce a quick disruption of police work. The deskilling in a sensitive, skill-intensive domain such as law enforcement may create dangerous vulnerabilities in the event of AI malfunction or an adversarial attack.

What we can do. We will be able to investigate more, better, and faster in the fight against heritage crime, thanks to the support provided by RITHMS technology. Responsibility is essential in view of what sort of technology we develop and how LEAs will use it. Obviously, the corresponding risk is the absence of such responsibility. This may happen because we have the wrong socio-political framework, but also because of a “black box” mentality, according to which all AI systems, even if they should only be used as a support for decision-making, are seen as being beyond human understanding, and hence control.



What we can achieve. The use of RITHMS technology presents a great opportunity for radically enhancing what criminal intelligence is capable of in the fight against CH trafficking. More automation may support more ambitious goals. Human intelligence augmented by the RITHMS Platform could find new solutions to old and new problems, facilitating a more efficient distribution of resources. Precisely because such technology has the potential to be so powerful and disruptive, it also introduces proportionate risks. If we rely on the use of AI technologies to augment our own abilities in the wrong way, we may delegate important tasks and above all decisions to autonomous systems that should remain at least partly subject to human supervision and choice. This in turn may reduce our ability to monitor the performance of these systems (by no longer being ‘in the loop’) or preventing or redressing errors or harms that arise (‘post loop’). It is also possible that these potential harms may accumulate and become entrenched as more and more functions are delegated to artificial systems. It is therefore imperative to strike a balance between pursuing the ambitious opportunities offered by AI to improve the gathering of criminal intelligence and what we can achieve, on the one hand, and, on the other hand, ensuring that we remain in control of these major developments and their effects.

How we can interact. The problem of effectively fighting heritage crime has shown increasingly higher degrees of coordination complexity, meaning that it can be tackled successfully only if a significant number of stakeholders co-design and co-own the solutions and cooperate to bring them about. RITHMS, with its data-intensive, algorithmic-driven solution, can hugely help to deal with such coordination complexity, supporting more societal cohesion and collaboration between agencies and individual agents. Legal and ethical transgressions could have severe consequences for the legitimacy of law enforcement practice and the public trust therein, eroding trust within stakeholders.

A monitoring system that will offer data on the evolution of the research and its intended and unforeseen repercussions must be designed and institutionalised once the opportunities, risks, and costs of RITHMS in terms of societal impact have been identified. Monitoring interventions is crucial because, more often than not, decisions for interventions are carried out differently than how they were originally formulated. KPIs are designed as a set of quantifiable measurements used to gauge the Consortium’s overall performance. Some of them are relevant for measuring the societal, regulatory, legislative, and forensic impact:

- **Enhanced ability of security practitioners** (Outcome 2): stemming from Objective 3 - KPI O3.1
- **Improved and validated new tools, skills, and training materials** (Outcome 3): stemming from Objective 3 - KPI O3.1 and Objective 4 - KPI O4.3
- **Improved evidence-based policymaking against CH trafficking** (Outcome 6): stemming from Objective 3 - KPI O3.3
- **Increased cooperation** (Outcome 4): stemming from Objective 2 - KPI O2.3 and Objective 4 - KPIs O4.1, O4.2



3.4 Scientific & Technological Advancement

3.4.1 AI-Based Digital Evidence

As part of the research underpinning the whole RITHMS project and performed in Work Package 2, a task (Task 2.5) is devoted to the assessment of the use of digital evidence resulting from AI-based techniques, with special regard to Machine Learning models, in criminal investigations. The very recent developments in the field of Generative AI, with the widespread availability of Large Language Models like ChatGPT makes this research task even more relevant and its future impact greater. As the final research results from this task will be available at the end of Year 2 of the project, its scientific significance can only be estimated at the time of writing. However, the ongoing research on the legal and forensic requirements for AI-based evidence, its verification, and validation will open new venues of research and favour the development of future best practices for forensic analysts, investigators, and the Courts. Verification (demonstrating that the AI tool operates consistently and produces repeatable, valid results) and validation (ensuring that the evidence is genuine and authentic) are critical processes when the (potential) digital evidence is produced by any AI-based tool. Advancements in this specific field will have wide impacts on the forensic field. Guidelines developed by the project could also be the base for the development of future international standards based on the results of this task, easing the cross-border exchange of evidence.

Moreover, the scientific results will lead to improved acceptance of AI-based digital evidence in judicial processes and by Courts. The contributions will also inform the software of the RITHMS Platform in terms of future developments. Impacts will cross-over with the security ones, as improving acceptance in Court of AI-based evidence will open the field to more effective investigations. This task is connected to KPI O1.4 – At least ten cases of AI applied to criminal investigations are examined and analysed; at least 10 judicial cases involving AI-based evidence have been explored. At the time of writing, this KPI seems to be attainable by the end of the task.

3.4.2 Social Network Analysis for Criminal Investigations

Social Network Analysis (SNA) is the underpinning approach of the RITHMS project and its main result, RITHMS' intelligence Platform. Task 2.6 studied SNA applications and produced a final deliverable. The results achieved in this task, together with the advancement carried out in WP4, will shape the final technological development of the RITHMS Platform and other, third parties' tools that could be built in the future. Papers and conference participation will convey the scientific impact of RITHMS research in this field (partners attending conferences until now: IIT, VTT, ESICEE, RINI, BE, and UDC; the first papers are under preparation).

3.4.3 Technological Impact of the RITHMS Development

Social Network Analysis techniques have already been applied to Organised Crime and other kinds of investigations for several decades. However, the technology that RITHMS will offer Law Enforcement



Agencies will heavily improve the effectiveness. The RITHMS SNA Platform will increase the level of automation in the creation of a meaningful Social Network Graph and supply investigators with a rich view of the social interactions and relations in criminal and quasi-criminal networks. RITHMS will mostly automate a process that in the past has been largely carried out manually by individual analysts, i.e., the creation of a graph representing social relations, including such attributes of the connections as directionality and importance (parametrised by an assigned weight). RITHMS is developing data ingestion modules and AI-based cleaning and correlation based on a standardised ontology that will accelerate the creation of a clear picture of the criminal phenomenon. The impact on the efficiency of investigations will not be limited to the realm of Cultural Heritage crimes but it has the potential to be applied to several other typologies of Organised Crime (e.g., cybercrime, traditional OC, human trafficking, corruption networks, etc). RITHMS will introduce innovative aspects in the way the graph is built. The core knowledge about social correlations and links will be the result of the blending of different data sources rather than a single one. For instance, in a famous corruption case, social connections were studied by building a weighted Social Network Graph starting from a corpus of email messages exchanged inside the organisation. The links in the graph were weighted based on the number and frequency of email messages exchanged; the resulting scenario provided the investigators with several useful leads. However, a multiplexed graph like that resulting from the RITHMS Platform would be much more useful and able to direct investigative insights. Successful demonstration of the RITHMS technology will be exploited in the wider sense, possibly by incorporating the technologies in different products.

4 Stakeholder Analysis

RITHMS aims to engage several target groups and stakeholders to ensure the effective exploitation of its results and the accurate dissemination of its academic and technological outputs. These groups play a vital role in maximising the impacts of the project by acting as multipliers, helping to spread across their networks the advancements achieved by the partners.

It is noteworthy that the RITHMS Consortium itself comprises relevant stakeholders, particularly the LEAs, who will benefit the most from the project's impact.

Police & Border Authorities (Areas of Impact: Security, Cultural Heritage Trafficking Prevention)

This includes all Law Enforcement Agencies (LEAs) in the EU and neighbouring countries, as well as their respective networks. Additionally, prominent EU and international police agencies like Europol, Interpol, and Frontex are also important stakeholders.

Police & Border Authorities have a critical role in addressing cultural heritage trafficking. Regular physical meetings should be organised to demonstrate the benefits of the novel technology and collaborative tools. Additionally, workshops, training sessions, or information-exchange platforms on the topic could also prove to be beneficial.



Active involvement of Police & Border Authorities ensures that the developed tools align with their operational needs, making them more receptive to implementation. Collaboration with international police agencies will extend the impact of the project beyond national borders, facilitating coordinated efforts to combat illicit trafficking of cultural goods.

Industry in the Cultural Heritage Sector (Area of Impact: Cultural Heritage Trafficking Prevention)

This involves antique dealers and managers of galleries, libraries, archives, and museums (GLAM). Their involvement is crucial for ensuring the project's outcomes are implemented effectively in the cultural heritage domain.

Engaging the Cultural Heritage Sector industry requires building awareness about the importance of safeguarding cultural treasures. Regular physical or online meetings (in the form of consultative workshops and roundtable discussions, for example) can be organised to understand their perspectives and challenges.

Collaboration with the Cultural Heritage Sector industry ensures that the developed strategies align with real-world challenges. Their implementation of project outcomes will strengthen efforts to prevent the trafficking of stolen cultural goods and raise awareness about the need for cultural heritage protection.

ICT Sector (Area of Impact: Scientific & Technological Advancements)

This involves ICT developers, software houses, and IT security service providers who contribute their expertise in developing innovative solutions to address the challenges of cultural heritage crime.

Engaging the ICT Sector involves demonstrating how their expertise can address the complexity of cultural heritage crime. Information sharing on the importance of the topic can attract developers and IT security providers to contribute their skills and ideas to the project.

Involvement of the ICT Sector ensures the development of novel technological innovations to combat cultural heritage crime.

Techno-Industrial Associations (Area of Impact: Societal, Regulatory, Legislative, & Forensic Implications)

These include Digital Innovation Hubs and Competence Centres that play a vital role in promoting technological advancements. Trade associations like Confindustria also have a significant role.

Engaging Techno-Industrial Associations involves establishing partnerships with Digital Innovation Hubs and Competence Centers. Consultative meetings and policy consultations can foster collaboration in creating regulatory reforms and strengthening legislative measures.

Collaborating with Techno-Industrial Associations ensures that the project's findings contribute to the development of international and regulatory policies. Their involvement will help the promotion of advancements in forensic science to support legal investigations and the identification of offenders.



EU Policy Makers, Agencies, and Specialised Bodies (Areas of Impact: Societal, Regulatory, Legislative, & Forensic Implications, Cultural Heritage Trafficking Prevention)

This category includes EUROJUST, CEPOL, EU-LISA, EP-LIBE, COSI, LEWP, UNIDROIT, DG JUST, DG HOME, DG TAXUD, and other relevant entities that shape policies, provide guidance, and support the project's objectives.

Engaging EU Policy Makers, Agencies, and Specialised Bodies requires direct communication channels and participation in relevant conferences and meetings. Regular updates and reports can keep them informed about the project's progress and its potential impact on cultural heritage crime.

Involvement of EU Policy Makers and Agencies ensures that the project's research informs the development of international policies related to cultural heritage protection and law enforcement practices. Collaborating with specialised bodies like EUROJUST and CEPOL strengthens the implementation of legislative measures and promotes effective police cooperation in combating cultural heritage trafficking.

Standards Organisations (Area of Impact: Societal, Regulatory, Legislative, & Forensic Implications)

Key organisations like CEN and CENELEC, ISO, IEC, ITU, ETSI, and National Standardisation Bodies contribute to setting and maintaining standards related to cultural heritage protection and law enforcement practices.

The project's findings and technological advancements should be presented to these organisations to inform the development and maintenance of relevant standards.

Collaboration with Standards Organisations ensures that the project aligns with established cultural heritage protection and law enforcement practices. Their endorsement and integration of project outcomes into standards contribute to more effective measures for combating cultural heritage crime.

International Organisations (Area of Impact: Societal, Regulatory, Legislative, & Forensic Implications)

Council of Europe, UNODC, and WCO are important international bodies involved in combating organised crime.

Building partnerships with bodies like UNODC and WCO will help the dissemination of project outcomes and promote international cooperation in combating organised crime related to cultural heritage. Engaging International Organisations includes their active involvement in physical / online meetings and workshops as well as providing regular updates (newsletters, for example) regarding the progress of the project.

Collaboration with International Organisations strengthens the project's impact on a global scale. Partnering with the Council of Europe, UNODC, and WCO enhances the implementation of international policies and initiatives, amplifying the reach and effectiveness of the project's results.



Police Cooperation and Security in Organised Crime (Areas of Impact: Security, Cultural Heritage Trafficking Prevention)

Organisations such as ECPN, CARIN, AMON, ECSO, EOS, and cPPP focus on enhancing police cooperation and security measures in the fight against organised crime.

Engaging Police Cooperation and Security Organisations involves regular information exchange and joint meetings with other stakeholders. This will foster collaboration to address security challenges posed by cultural heritage crime.

Collaboration with Police Cooperation and Security Organisations enhances the project's reach and impact in addressing security challenges related to cultural heritage trafficking. By integrating innovative technology and collaborative tools into existing police cooperation mechanisms, the project's results can be more effectively implemented in addressing organised crime networks engaged in the illicit trade.

Cultural Heritage (Area of Impact: Cultural Heritage Trafficking Prevention)

Stakeholders in this domain include the European Association of Archaeologists (EAA), SEE Heritage Network, NEMO, ICOM, ICOMOS, EUROPA NOSTRA, EMF, UNESCO, European museums, and universities. Their involvement ensures that the project's efforts align with the common practices in the preservation and protection of cultural heritage, or even strengthen or innovate them.

Engaging Cultural Heritage stakeholders requires building partnerships with associations like the European Association of Archaeologists (EAA), ICOM, and UNESCO. Involvement in cultural heritage events and seminars will strengthen the dialogue and collaboration with universities, museums, and other relevant organisations.

Collaboration with Cultural Heritage stakeholders ensures that the project's strategies align with best practices in cultural heritage preservation and protection. Partnering with such stakeholders will strengthen the implementation of strategies to counter cultural heritage trafficking challenges and raise awareness about the significance of safeguarding cultural treasures.

AI, Big Data, and Earth Observation (Area of Impact: Scientific & Technological Advancements)

Entities like the European AI Alliance, Big Data Value Association (BVD), Trust in Digital Life (TDL), Open Geospatial Consortium (OGC), and Group on Earth Observations (GEO) bring expertise in advanced technologies and data analysis, thus contributing to the project's scientific and technological advancements.

Engaging AI, Big Data, and Earth Observation bodies involves demonstrating the potential of their technologies in addressing the combat of cultural heritage crime. Information sharing on the importance of the topic and collaboration in research projects, for example, can attract these stakeholders to contribute their expertise.



Involvement of AI, Big Data, and Earth Observation stakeholders will foster novel scientific and technological advancements. Partnering with the European AI Alliance, Big Data Value Association, and Trust in Digital Life will support the project in exploiting SNA and developing a digital platform for analysing human behaviour and identifying criminal networks involved in the illicit trade.

Table 2, below, displays a provisional overview of the different types of stakeholders engaged or in the process to be involved by the Consortium in RITHMS activities. The table will be updated and enriched year by year.

Stakeholder	Type	Scope	Role	Priority	Engagement
INTERPOL	Police & Border Authority	International	Actor/ Advisor (*)	High	Meetings/ Events
EUROPOL	Police & Border Authority	European	Advisor	High	Meetings/ Events/ Test
WCO	Police & Border Authority	International	Actor	Medium	Events/ Network
OSCE	Police Cooperation and Security in Organised Crime	European	Advisor	High	Meetings/ Events/ Network
CoE	EU Policy Makers, Agencies, and Specialised Body	International	Advisor	High	Meetings/ Events/ Network
UNIDROIT	EU Policy Makers, Agencies, and Specialised Body	International	Advisor	High	Meetings/ Events/ Network
UNODC	EU Policy Makers, Agencies, and Specialised Body	International	Actor	Medium	Events/ Network
IFAR	Cultural Heritage	International	Contributor	Low	Events/ Network
CINOA	Cultural Heritage	International	Contributor	Medium	Events/ Network
ICOM	Cultural Heritage	International	Contributor	Medium	Events/ Network
UNESCO	Cultural Heritage	International	Contributor/ Advisor (*)	Medium	Events/ Network
NEMO	Cultural Heritage	European	Contributor	Low	Events/ Network

Table 2. Provisional Distribution and Characterisation of RITHMS' Stakeholders.



Key

Type: Police & Border Authorities, Industry in the Cultural Heritage Sector, ICT Sector, Techno-Industrial Associations, EU Policy Makers, Agencies, and Specialised Bodies, Standards Organisations, International Organisations, Police Cooperation and Security in Organised Crime, Cultural Heritage, AI, Big Data, and Earth Observation,

Scope: International, European, National

Possible Role in the Pathway to Impact: Actor (RITHMS Platform User), Advisory Board Member, Contributor (Research, Policymaking, Technology)

Priority of Engagement: High, Medium, Low

Means of Engagement: Meetings, Events, Network, Research, Test

(*) potential further engagement

5 Key Exploitable Results & RITHMS' Outcomes with KPIs

RITHMS overall impact will be grounded on the achieved Key Exploitable Results (KERs). A preliminary analysis has been performed for each expected result that shows high exploitation potential and contributes directly to RITHMS' technological, scientific, or social pathway to impact. For each KER, the Consortium has provisionally defined: a) relevant WP/concept; b) IP preliminary considerations (background and foreground owners); c) planned protection strategies; and d) planned exploitation routes.

Table 3 displays the identified KERs, the partners involved in the results' achievement, and the foreseen exploitation routes.



Ref	KER	Contributing partners	Exploitation routes	
RITHMS integrated platform				
TECHNO-ECONOMIC/SCIENTIFIC	KER 1	STEM R&I (IIT, VTT, ESICEE, SatCen), STEM SMEs (STAG, RINI, HA, BE)	<ul style="list-style-type: none"> → Platform test-beds at Consortium LEAs' premises → Establishment of the RITHMS Entity → Industrial partnerships for R&D and IP licensing → Further R&D on SNA, AI/ML 	
	KER 2			Crawler (software/script)
	KER 3			Knowledge graph
	KER 4			ML-based modules
	KER 5			User interface
LEAs toolbox and roadmap for cooperation				
SOCIAL (COOPERATION, TRAINING AND POLICY)	KER 6	SSH partners (UDC, HföD, CPT, EI); All LEAs; Coordinator	<ul style="list-style-type: none"> → Cross-country partnerships to implement cooperation commitments → Large-scale pilots → Enlarging the charter community → Integration of EU policy recommendations into actionable policy documents → Training actions at European level 	
	KER 7			Policy recommendations
	KER 8			Methodology protocol
	KER 9			Training modules & manual
	KER 10			Standardisation roadmap
Scientific research results				
SSH & STEM RESEARCH	KER 11	SSH + STEM partners (IIT, ACP, UDC, HföD, CPT, EI, VTT, ESICEE, SatCen, STAG, RINI, HA, BE)	<ul style="list-style-type: none"> → Results uptake in further research advancements → Research dissemination through conferences/workshops/papers → Research networks development 	
	KER 12			Updated knowledge on the criminology of cultural property crime
	KER 13			Updated analysis of the trends and potential forecasts of crimes related to illicit trafficking in the pilots' countries
	KER 14			Advanced analysis of the involvement of cultural heritage in the context of different kinds of organised crime
	KER 15			Innovative, replicable strategies in countering illicit trafficking
	KER 16			Updated map of current hurdles in countering illicit trafficking
	KER 17			Updated overview of Social Network Analysis application to criminal investigations
	Advanced analysis of verification & validation requirements for the potential use of AI-based digital evidence in court			

Table 3. Overview of RITHMS' Key Exploitable Results.

5.1 RITHMS' Expected Outcomes and Impacts

The project will yield a substantial societal, scientific, and techno-economic impact with the final goal of contributing to disempower heritage crime. Thanks to the foreseen dissemination and exploitation measures, the use of the results by selected target groups will lead – in the short to medium term – to 6 identified Outcomes. In turn, these will ultimately enable the achievement of the Destination's impacts.

Table 4 illustrates the Outcomes the Consortium expects to deliver through the exploitation of RITHMS' KERs within 5 years from the end of the project.



OUTCOME 1	Robust research methodologies, improved intelligence, and understanding of the mechanisms behind organised crime activities related to trafficking of cultural goods both offline and online, modus operandi, and a possible nexus with terrorist financing.
<p>Thanks to the direct outcomes of RITHMS and the continuation of the development of the SNA-based Platform, security practitioners within and beyond the Consortium will be equipped with i) new, effective means to detect criminal networks and understand their mechanisms at a granularity and complexity inconceivable before now, with a constant update of information and rationalisation of the investigation methodology on which to build intelligence. The Methodology Protocol made available will make sure that even countries with beginner-level expertise in this type of crime will be able to tackle it by adopting the measures prescribed within and building up national databases of individuals and criminal networks; ii) with a new, robust reference model of criminal behaviour – based on the analysis of criminological/legal aspects, art market mechanisms, and due diligence/provenance research – to use in their investigations that will underpin and inform all future research in the domain.</p>	
KPIs	
<p>KPI Out 1.1. N° of national LEAs setting up a dedicated database of individuals and criminal networks: at least 5 EU and 1 of the neighbouring countries’ national LEAs – previously without Art Crime related archives – set up a specific database based on RITHMS Platform results and connected to it;</p> <p>KPI Out 1.2. N° of national LEAs and research institutions adopting RITHMS Methodology Protocol: at least 5 EU and 1 of the neighbouring countries’ members uptake the innovative Methodology Protocol;</p> <p>KPI Out 1.3. N° of criminological/Cultural Heritage papers (research advancements) published after the end of the project as results of RITHMS Platform’s implementation achievements: from 4 to 10.</p>	
OUTCOME 2	<p>Enhanced ability of security practitioners to</p> <ul style="list-style-type: none"> • identify organised crime networks involved in trafficking in cultural goods and to detect their illicit business models, including financial aspects and money laundering activities in this sector; • detect and prevent the emergence of organised crime networks involved in trafficking in cultural goods and to respond to the threat of existing organisations.
<p>At its final operative stage and when fed by a larger investigations’ datasets from newly attracted participating countries, RITHMS Platform, boosted in its efficiency, will be able to identify a variety of networks involved in the trade of cultural goods and to model forecasts for those at an early stage. RITHMS Platform’s end-users will have better and immediate access to a global network of information, thus speeding up research and investigative processes and ensuring the flow of continuous updates. LEAs will be able to use RITHMS Platform outputs as intelligence and exchange operational information with other police counterparts to track down and stop trafficking networks and criminal organisations. RITHMS’ prediction functionalities will serve to raise early alerts on new potential networks and trigger new investigations to stop them from developing further.</p>	
KPIs	



<p>In the <u>three years following the end of the project</u>: for Consortium LEAs: KPI Out 2.1. N° of investigations carried out with the support of RITHMS Platform: at least 5 real investigations have been carried out by LEAs who adopted RITHMS Platform; KPI Out 2.2. N° of organised crime networks detected: at least 7 organised crime networks detected by LEAs who adopted RITHMS Platform; For other EU LEAs: KPI Out 2.3. N° of LEAs beyond the Consortium that have integrated the RITHMS Platform in their investigation activities: at least 10 LEAs.</p>	
OUTCOME 3	<p>Improved and validated tools, skills, and training materials (including the lawful court-proof collection of crime evidence) for European Police Authorities, Border Guards, and Customs Authorities to tackle criminal activities related to the trafficking of cultural goods.</p>
<p>RITHMS Platform will be output at a fully validated stage of operation, which will be further extended after the end of the development period: it will thus generate valuable results during and after the life of the project. Through training material developed during the project life, RITHMS will provide new skills to LEAs other than those involved in the project willing to get on and use the RITHMS Platform functionalities. Studies compiled in RITHMS about court-proof collection of AI-based crime evidence and intelligence will provide country-specific recommendations that, after the project's end, will be expanded by the new Entity/Foundation and further fine-tuned for each national LEA outside the Consortium that has adopted RITHMS Platform.</p>	
KPIs	
<p><u>Validation</u>: KPI Out 3.1. N° of LEAs authorities beyond the Consortium that will provide feedback to validate the versions of RITHMS Platform licensed after the Beta: at least 5 LEAs will collaborate to validate. <u>Skills and training materials</u>: KPI Out 3.2. N° of training sessions organised beyond the project's duration: at least 15 LEAs from 15 different countries outside the Consortium have been involved in at least 1 training and 1 workshop per year on the use of RITHMS Platform; KPI Out 3.3. Availability of specialised training material for N° LEAs: the training material produced by RITHMS have been shared with at least 15 LEAs from 15 different countries outside the Consortium. <u>Lawful court-proof collection of crime evidence</u>: KPI Out 3.4. N° recommendations for N° countries formulated: at least 15 EU countries have received in total 5 recommendations each on the criteria that must be met for acceptability of AI-based evidence in court; KPI Out 3.5. N° AI-involving judicial cases for N° states explored: at least 5 judicial cases involving AI-based evidence for each of the 15 EU countries.</p>	
OUTCOME 4	<p>Improved cooperation between European Police Authorities, Border Guards, and Customs Authorities, as well as with specialised researchers and international actors, in tackling this form of crime.</p>
<p>Within RITHMS Platform, European Police Authorities, Border Guards, and Customs Authorities will find a safe environment to collaborate and bring together further information that will feed the Platform and generate more evidence. The future RITHMS Entity will keep incorporating IT and SSH researchers and LEAs that will continue developing the Platform. Their close cooperation will ensure the maintenance of the functionalities and the broadening of the collaborative network to external end-users and other LEAs.</p>	



KPIs	
<p>KPI Out 4.1. N° of new collaborations among LEAs: at least 5 operative international collaborations among LEAs have been triggered by the adoption of RITHMS Platform and training programmes;</p> <p>KPI Out 4.2. N° of joint Police/Borders operations: at least 4 operative collaborations in cross-border cases between Police and Border authorities have been triggered by the adoption of RITHMS Platform and training programmes;</p> <p>KPI Out 4.3. N° of roundtables organised for the exchange of operational data and analytical information within the Entity and with external organisations, Border authorities from neighbouring countries, and EU institutions: at least 1 roundtable organised per year.</p>	
OUTCOME 5	Improved databases on stolen/trafficked cultural goods.
<p>Existing databases on stolen/trafficked cultural goods, like those available to LEAs and to security and heritage practitioners, will be improved and enhanced by evidence about networks extracted by the RITHMS Platform, adding a new layer of information that could lead to new investigations. In addition, RITHMS Platform has been designed to include several modules of data collection and software development; this will ensure a high interoperability level of the final product that will enable end-users to plug the information stored and generated by RITHMS system into their own platforms. RITHMS Platform will also always be available as a stand-alone product for end-users lacking proprietary tools.</p>	
KPIs	
<p>KPI Out 5. N° of LEAs' databases improved and fed by RITHMS Platform results: at least 10 EU LEAs and/or security/heritage practitioners' databases have been fed and improved by the data collected through RITHMS Platform.</p>	
OUTCOME 6	Improved evidence-based policymaking against trafficking in cultural goods.
<p>Information provided as output by RITHMS Platform and the Consortium partners' field research will underpin the process of policymaking against trafficking in cultural goods, providing national and EU policymakers with much-needed information on the formation process of criminal networks and on their trajectories and bestowing them with a deeper understanding of the nature of the phenomenon required to design effective measures to counter it.</p>	
KPIs	
<p>KPI Out 6.1. N° of policy recommendations issued by RITHMS project and the Entity Network based on the evidence provided by RITHMS Platform: at least 20 recommendations on countering the illicit trafficking in Cultural Heritage are issued;</p> <p>KPI Out 6.2. N° of policy recommendations based on RITHMS Platform outputs are adopted by EU policymakers: at least 5 recommendations on countering the illicit trafficking in Cultural Heritage are adopted.</p>	

Table 4. RITHMS' Outcomes with KPIs.



With its ambitious goals and well-defined steps to go beyond current state-of-the-art techniques, RITHMS has been conceived to achieve a high long-term impact on cultural crime detection and prevention: its unified approach combines all the fundamental elements for creating a true transformation in the sector. Thus, RITHMS contributes directly to the following expected impacts identified in the Destination '*Better protect the EU and its citizens against Crime and Terrorism*' defined in the Work Program and rooted in the Horizon Europe Strategic Plan 2021-2024:

- RITHMS SNA Platform, the major technological output of the project, **provides LEAs with the cutting-edge information analysis** that they need to **efficiently fight criminals and terrorists** that are often conversant on **novel technologies**, including social media and other internet platforms, equipping LEAs with an apparatus that enables them to efficiently harvest the highest quantity of information in the shortest time possible and analyse it at a speed and granularity unmatched by traditional investigation;
- as a result of the use of the SNA Platform, LEAs will be able to **improve the collection of forensic and lawful evidence**, thus **increasing their capabilities to apprehend criminals and terrorists**; the work carried out during the project will ensure that the police intelligence data gathered can be **accepted as evidence in court**;
- the ability provided by the SNA Platform to investigate social structures and thus reach **improved intelligence will enhance the capacity of LEAs to detect criminal organised networks**, while its predictive module will provide the extra ability to foresee their formation even before they are consolidated, thus supporting the **prevention** of this crime; the attentive communication campaign that will be maintained during the project will generate sufficient **deterrent** momentum as online and auctions communities will be more informed of the risks incurred in purchasing, selling, or trading cultural objects with shady provenance.

6 Impact Assessment

This comprehensive impact assessment report delves into the level of engagement and interest of stakeholders in the RITHMS project during its initial months of activity. The report highlights notable successes and areas for improvement in communication, dissemination, events, and engagement with EU policymakers and LEAs.

As the project has not yet fully entered the operational and developmental phases of its activities, the focus of the impact analysis is primarily on stakeholders engagement through project communication channels (social media and website) and participation in various initiatives (events, conferences, and seminars).



6.1 Stakeholder Engagement and Project Impact

6.1.1 Sensitisation and Awareness

RITHMS project has shown remarkable success in raising awareness about the critical issues related to cultural heritage protection and illicit trafficking. The engagement activities have been geared towards sensitising stakeholders, policymakers, and the public about the dire consequences of cultural heritage crimes. Through engaging posts and content on social media, the project has succeeded in garnering attention and sparking discussions on the importance of preserving cultural heritage.

6.1.2 Building Collaborative Networks

The project's active participation in international events and conferences has played a crucial role in establishing collaborative networks with stakeholders, LEAs, and policymakers. Through these high-profile engagements, RITHMS has effectively showcased its expertise and cutting-edge technologies in combating illicit trafficking. This has not only elevated the project's profile but also facilitated meaningful connections and potential collaborations for future initiatives.

One such significant event was the Project Policy Seminar in Brussels co-organised by DG HOME and REA, to which RITHMS received an invitation. This provided a valuable opportunity for the project to interact with policymakers, align its objectives with European policies, and contribute to the development of policy frameworks. Collaboration with policymakers is essential to enhance the project's impact and ensure the integration of its outcomes into broader policy initiatives.

Moreover, RITHMS' presence at the International Conference on the Nicosia Convention in Riga, organised by the Council of Europe, further solidified its contribution to combatting looting and illicit trafficking. Engaging with esteemed Advisory Board Members during this conference bolstered the project's reputation and demonstrated its potential for affecting positive change in the realm of cultural heritage protection.

Additionally, RITHMS actively participated in various other events such as the World Border Security Congress (Skopje), the *II Interministerial Course on the Protection of Cultural Heritage* (Spain), and the CL3 Horizon Europe event (Galicia, Spain). These engagements provided valuable opportunities for disseminating project information, forging connections with stakeholders, and reinforcing the project's position as a successful case in combating illicit trafficking.

Furthermore, the project's involvement in international events like the World Border Security Congress and other national events with LEAs (such as the National Police of Moldova and the Brigade of Cultural Heritage of the Spanish National Police) has paved the way for valuable future collaborations.

By showcasing RITHMS' potential in assisting LEAs in combatting illicit trafficking in cultural goods, these engagements have created opportunities to establish formal partnerships with law enforcement



organisations. This will enable LEAs to access and utilise RITHMS' digital Platform to enhance their operations.

RITHMS' active engagement in international events has significantly contributed to its network expansion, collaboration with policymakers, and potential partnerships with LEAs. The project's presence in these forums has not only raised awareness about its innovative approach but also strengthened its position as a collaborative platform in the fight against illicit trafficking of cultural goods. RITHMS has the potential to create a comprehensive repository of information related to illicit trafficking of cultural goods. This repository will be invaluable for law enforcement agencies, policymakers, and cultural heritage experts in understanding the patterns and trends of such crimes. By collaborating with relevant authorities to integrate existing databases, RITHMS can enrich its capabilities and establish a centralised hub for cultural heritage crime-related data.

6.1.3 Recognition and Validation

The positive media coverage and articles about RITHMS in various newspapers and online platforms have added to the project's credibility and validation. Recognition from the media and the broader community has reinforced the significance of the project's goals and highlighted its potential to combat cultural heritage crimes effectively.

In this project's initial communication phase, the focus has been on narrating the meaning of Social Network Analysis and its role in combating illicit trafficking of cultural heritage. Various publications, such as articles, interviews, and press releases, have been crafted to raise public awareness about the issue, emphasising the importance of safeguarding cultural heritage for future generations. Concurrently, specific efforts have targeted law enforcement agencies, policymakers, and the scientific community, providing them with in-depth information on utilising Social Network Analysis to counter illicit trafficking and sharing perspectives on its implementation in enforcement operations. Due to the early stage of technical-scientific development, a broader and more inclusive communication approach has been adopted to engage a wide audience and create awareness about the importance of preserving cultural heritage. This strategic approach has resulted in increased engagement and exposure of the project to a diverse audience, attracting potential supporters and collaborators for future endeavours.

The project's appearance in reputable national and international newspapers and magazines is pivotal for recognising its strategic objectives and validating its relevance. This media exposure grants the project credibility and visibility on a broader scale, underscoring the importance of its goals and reinforcing its legitimacy in the eyes of the public, stakeholders, and potential collaborators. The recognition and validation achieved through media publications serve as a testament to the project's potential impact and effectiveness in combating cultural heritage crimes, particularly illicit trafficking of cultural artifacts. Experts, authorities, and the broader community acknowledge and appreciate the project's endeavours. Furthermore, such media exposure can attract the attention of key stakeholders,



policymakers, and institutions, opening possibilities for partnerships and support that can further enhance the project's success.

6.2 Website Impact Analysis

6.2.1 Website Traffic Analysis

The RITHMS project website has been a significant platform for disseminating information about the project, its objectives, and achievements. The analysis of website traffic reveals that most visitors access the website through direct entries (409), followed by search engines (120) and social networks (57).

6.2.2 Distribution of Website Visitors

The project website has received visitors from various countries, with Italy (205), the United States (197), and the United Kingdom (120) being the top three sources of website traffic. This indicates the global interest in the project's activities and its relevance in different regions. The website experienced higher traffic during the months of April and May, correlating with the presence of multiple events and conferences during that period. This reinforces the idea that engagement spikes when there are relevant and timely activities taking place.

6.3 Social Media Impact Analysis

RITHMS has witnessed exponential growth in social media followers on platforms like LinkedIn, Twitter, and Instagram. The project's engaging content and relevant posts have attracted a diverse audience interested in cultural heritage preservation and combating illicit trafficking.

Analysis of social media engagement indicates that posts related to illicit trafficking data, awareness messages, and participation in international events receive the highest impressions, clicks, and reactions. The audience's engagement with such content underscores the significance of the project's initiatives in combatting cultural heritage crimes.

Stakeholders from various sectors have shown interest in the project, with Research and Development (R&D) professionals, NGOs & Policy Makers, and Cultural Heritage experts being the most engaged segments. The project's ability to appeal to diverse stakeholder groups enhances its potential for broad impact.

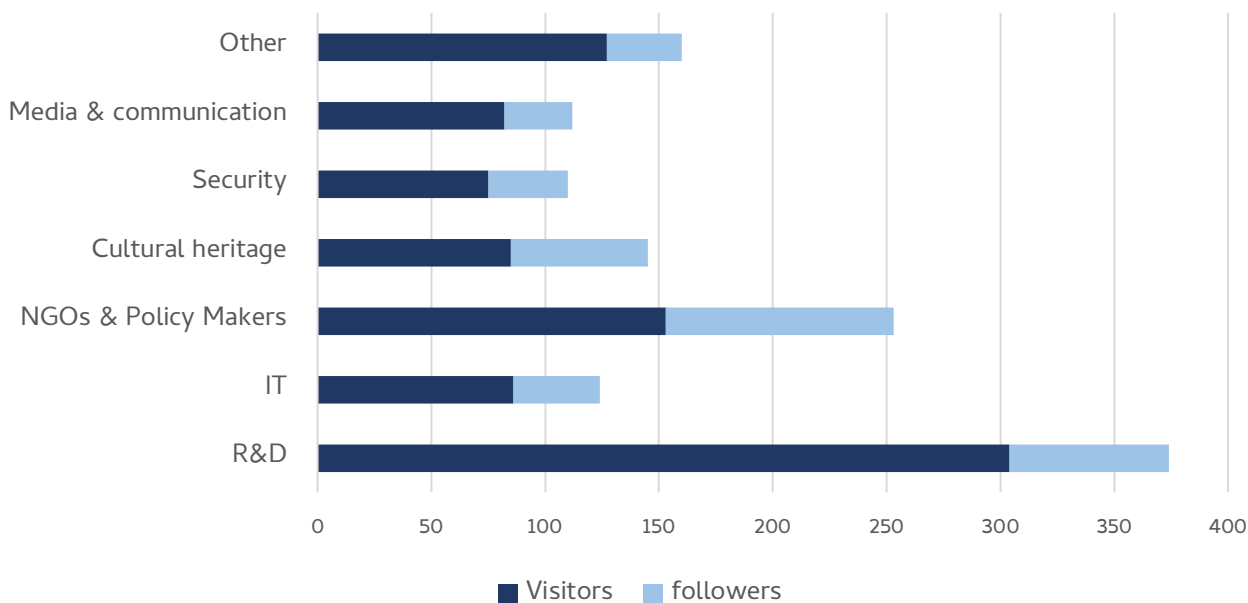


Table 5. Stakeholder Analysis Based on LinkedIn Insights (November 2022 – July 2023).

6.4 Areas for Improvement

6.4.1 Enhancing Website Accessibility

To further increase website traffic and engagement, the project should focus on improving website accessibility through partner websites, cross-promotion, and SEO strategies.

6.4.2 Content Diversification

While the project's current social media content has been engaging, incorporating diverse content formats, such as videos, infographics, and interactive elements, can attract a wider audience and enhance the user experience.

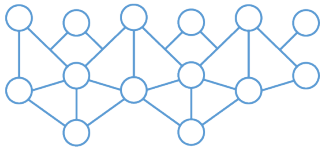
6.4.3 Emphasising Project Progress

As the project progresses and tangible results are achieved, highlighting these accomplishments on social media and the website can reinforce the project's credibility and impact.



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