

ПРИРОДНИ КАТАСТРОФИ И КОНСТРУКЦИИ
NATURAL HAZARDS AND STRUCTURES



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Faculty of Civil Engineering, Blvd. Partizanski odredi No. 24 P.Box. 560,
1000 Skopje, Republic of Macedonia
e-mail: mase@gf.ukim.edu.mk; web-site: www.mase.gf.ukim.edu.mk**

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За издавачот: **Мери Цветковска, Претседател на ДГКМ**

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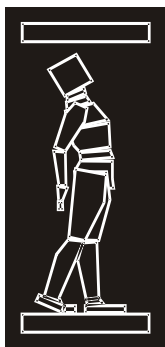
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Партизански одреди 24,
П.Фах 560, 1001 Скопје
Македонија

MASE
MACEDONIAN
ASSOCIATION OF
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ENGINEERS

Partizanski odredi 24,
P. Box 560, 1001 Skopje
Macedonia

ST - 11

mase@gf.ukim.edu.mk
http://mase.gf.ukim.edu.mk

Огнен МАРИНА¹, Ана ИВАНОВСКА-ДЕСКОВСКА², Бојан КАРАНАКОВ³, Јован
ИВАНОВСКИ⁴, Маријана ЛАЗАРЕВСКА⁵, Ана ТРОМБЕВА-ГАВРИЛОСКА⁶

КУЛТУРНОТО НАСЛЕДСТВО КАКО ПОТТИК ЗА ОДРЖЛИВ РАЗВОЈ ПРОЕКТ “ROCK”

РЕЗИМЕ

Целта на проектот ROCK е развој на иновативен и циркуларен системски пристап за обновување и прилагодливо користење на историските градски центри. Со успешно превземање на иницијатива за обновување на наследството, ќе се направи проверка на можноста за реплицирање на просторниот пристап и на успешните модели кои се однесуваат на специфичните потреби на историските градски центри. ROCK треба да ги пренесе нацртите од Примерите на Копиите, преку усвојување на дисциплинарен менторски процес и дефинирање на заеднички протокол со имплементирање на соодветни директиви.

Во овој труд се прикажани основните информации за проектот ROCK, како и дел од работните планови и очекуваните цели.

Клучни зборови: одржливост; креативни и паметни градови; културно наследство; ко-проектирање..

Ogden MARINA¹, Ana IVANOVSKA-DESKOVA², Bojan KARANAKOV³, Jovan
IVANOVSKI⁴, Marijana LAZAREVSKA⁵, Ana TROMBEVA-GAVRILOSKA⁶

CULTURAL HERITAGE AS A DRIVER FOR SUSTAINABLE GROWTH – PROJECT “ROCK”

SUMMARY

ROCK aims to develop an innovative, collaborative and circular systemic approach for regeneration and adaptive reuse of historic city centers. Implementing a repertoire of successful heritage-led regeneration initiatives, it will test the replicability of the spatial approach and of successful models addressing the specific needs of historic city centres. ROCK will transfer the Role Models blueprint to the Replicators, adopting a cross-disciplinary mentoring process and defining common protocols and implementation guidelines.

General information regarding the ROCK work plans and some of the expected added values and goals are presented in this paper.

Keywords: Sustainability; creative and knowledge cities; cultural heritage; co-design.

^{1,6} Assoc. Prof. PhD, Faculty of Architecture, University “Ss. Cyril and Methodius”, Skopje, Republic of Macedonia, ognenmarina@gmail.com, agavriloska@arh.ukim.edu.mk

^{2,3,4} Assist. Prof. PhD, Faculty of Architecture, University “Ss. Cyril and Methodius”, Skopje, Republic of Macedonia, ana_ivanovska@yahoo.com, bojankara@gmail.com, jovanivanovski@gmail.com

⁵ Assist. Prof. PhD, Faculty of Civil Engineering, University “Ss. Cyril and Methodius”, Skopje, Republic of Macedonia, marijana@gf.ukim.edu.mk

1. INTRODUCTION

The meaning of ‘Cultural Heritage’ in Republic of Macedonia has been defined on national level with the Law for Protection of Cultural Heritage (from 2004, changed on several occasions in the period from 2007-2017). According to this law, Cultural Heritage are material (tangible) and immaterial (intangible) goods, that are witnessing the human deeds of the past and the present. Because of their different values (archaeological, historical, artistic, architectural, urban, cultural, scientific etc.) they carry certain cultural and historical meaning.

Within the law, the Cultural Heritage is divided in three categories: movable cultural heritage (archaeological objects, ethnological objects, historical objects, artistic objects, archival material, library material etc.), immovable cultural heritage (monuments, sites etc.) and intangible cultural heritage (language oral tradition, rituals, folklore etc.)

The City of Skopje in its strategies and projects for protection of the nature and the living environment, studies for valorization of the protected natural sites etc., takes into consideration the CH buildings, archaeological sites etc. The planned activities for protection of natural sites are always trying not only to retain and preserve the integrity of the CH within, but also to enhance their values and include them in the tourist offers. Such is the case with the sites surrounding Skopje – Matka, Vodno, Gazi Baba etc. (for example, while working on certain areas on the Vodno hill, a project was developed for protection of the Roman archaeological site ‘Markov grad’).

In the projects within the city, in the planning of the green corridors that are supposed to allow flows of fresh air in the city, the cultural monuments are taken into consideration. Such is the example with the aqueduct in the outskirts of Skopje, project developed together with the Belgian Government and the Ministry of Culture. Within the activities for the public green spaces, special attention was dedicated to the mediaeval fortress Kale.

In general, the Cultural Heritage in the Republic of Macedonia is under the Government of the Republic of Macedonia – the Ministry of Culture. The main administrative body is the Cultural Heritage Protection Office (constituted in 2004). Other institution for protection of cultural heritage are the National Conservation Center, the National Council for Protection of Cultural Heritage as well as the National Institution – Conservation Center Skopje, in charge for all the municipalities within the city of Skopje.

2. OVERVIEW OF PROJECT ROCK

ROCK focuses on historic city centers as extraordinary laboratories to demonstrate how Cultural Heritage [CH] can be a unique and powerful engine of regeneration, sustainable development and economic growth for the whole city.

The ROCK approach to cultural heritage works on integrating two main interlinked concepts, the *creative city*, that has recognized creativity as a strategic factor for sustainable development as regards to economic, social, cultural and environmental aspects (as defined by UNESCO), and the *knowledge city*, which is characterized by a knowledge-based economy using knowledge as the prominent landmark and driver for socio-economic and technological dynamics.

ROCK aims to develop an innovative, collaborative and systemic approach to promote the effective regeneration and adaptive reuse in historic city centers by implementing a repertoire of successful heritage-led regeneration initiatives related to 7 Role Model selected cities: Athens, Cluj-Napoca, Eindhoven, Liverpool, Lyon, Turin and Vilnius. The replicability and effectiveness of the approach and of the related models in addressing the specific needs of historic city centres and in integrating site management plans with associated financing mechanisms will be tested in 3 replicator cities: Bologna, Lisbon and Skopje. The 3 Replicator Cities have selected large demonstration historic city areas that share common problems: environmental and social decay, rapid demographic change, nointegrated immigration, depopulation, micro-crimes.

In synergy with Culture for Cities and Regions H2020 project, ROCK will create collaborative protocols between Role Models and Replicators by sharing and mentoring process to investigate the

interdependence of urban design, public health, built and natural environment, cultural heritage, education, social aspects and economic development.

ROCK will transfer the Role Models blueprint to the Replicators, adopting a cross-disciplinary mentoring process and defining common protocols and implementation guidelines. ROCK will deliver new ways to access and experience Cultural Heritage [CH] ensuring environmental sound solutions, city branding, bottom-up participation via living labs, while increasing livability and safety in the involved areas. ICT sensors and tools will support the concrete application of the ROCK principles and the interoperable platform will enable new ways to collect and exchange data to facilitate networking and synergies.

ROCK has been divided into 8 work packages: WP1: Mapping and mentoring, WP2: Rock Circular Urban System, WP3: ROCK Communities of Practice, WP4: Monitoring process and Evaluation, WP5: Dissemination and Communication, WP6: Exploitation and Upscaling, WP7: Management and Coordination and WP8: Ethics requirements.

3. MAIN OBJECTIVES OF ROCK

In order to go far beyond simple conservation, restoration, physical rehabilitation of urban fabric, the general objective of ROCK is to support the transformation of the historic city Centre into a Creative and Sustainable District (characterized by clustered economies, lively creative industries or segments, adequate financial wealth and presence of markets sensitive to new artistic expressions, cultural institutions active in the promotion of new cultural events). Adopting a multi-level collaborative and systemic approach that boost the exploitation of cultural heritage as a powerful environmental catalyst for regeneration, sustainable development, and economic growth, ROCK will produce outputs related to three main domain of innovation: organizational innovation, technological innovation, social innovation.

ROCK specific objectives are:

- Enhancement of Cooperation and networking capacities of all organizations partner; Policy recommendations for tapping into the full potential of cultural heritage.
- Adoption of regeneration measures including new technologies, processes, new services and products to create new ways of map/access/appropriation to/of CH avoiding socio-environmental decay and improve safety perception.
- Effective and unconventional financial strategies with new partnership forms.
- Inclusive, Circular Heritage Chain to connect actors and activities involved.
- Effective monitoring and evaluation framework.
- Green niches innovation in heritage-led regeneration and climate change mitigation, favoring employment opportunities and local growth.

4. CONCEPT AND METODOLOGY OF ROCK

4.1 Concept

ROCK is based on the development of a shared multi-cultural, multi-heritage and multi-stakeholders city vision, which integrates heritage-led regeneration, sustainable economic development, city promotion, and knowledge sharing. All the involved cities are characterized by their high Cultural Heritage (CH) value: the Role Model cities have already experienced a transformation from Heritage cities to Creative and Knowledge-based cities, while the Replicators are currently initiating the process, developing transformation programmes, finance and engaging key-players.

Adaptive reuse aims to preserve the values of CH answering to contemporary dynamics: understanding the potentialities hidden in each monument, it will be possible to maximize CH exploitation while improving preservation in the long term perspective. The work on the historic buildings will be part of a process that will start from qualitative and quantitative assessments, taking into account the degree of

protection (protection criteria), the architectural qualities (such as the presence of significant spaces, the presence of iconic and ceremonial rooms, presence of courts) and artistic qualities (presence of important artworks), the potential of the listed characteristics and its position in relation to the core areas. This analysis will establish conservation priorities and it will identify which are the limits of transformation, always according to the previous principles and regulations.

ROCK will turn the process into action and support the transformation of the historic city center into a clustered system, the Creative and Sustainable District. The ROCK approach is based on a circular urban model in which CH already in use for specific activities, hides other unused potentialities if framed in a less specialized idea of culture, intended as a value-sharing process that must steer city changes both in terms of physical environment and of mindset. In other words, ROCK approach assumes the historic city and in particular the underused hotspots as resources to be re-introduced into a continuous positive development cycle that preserves natural capital, optimizes resource yields, reduces system risks and regenerates existing resources. Yet creating a circular urban model implies connecting “systems” that were initially separated through not only technical but also organizational and institutional solutions and changes (“multiple innovation processes”), to be adopted and adapted. The difficulty is therefore to determine how multiple socio-technical systems can interact and evolve together, how their institutions should be adapted, and how such processes should be coordinated and if possible facilitated.

To implement such process ROCK conceptualizes an innovative circular urban system model – the ROCK Circle – composed of both social and technical elements, using new technologies (or existing ones differently), including stakeholder knowledge, modifying materials flow, changing organizational practices and adapting institutions, to facilitate organizational, technological and social innovation and accelerate transition towards sustainable city growth. The transfer of a circular economy model to the urban historic environment, starts considering CH as a product to which the same principles of saving and reuse can be applied. Assuming historical centers CH transformation, adaptation and reuse into Creative and Sustainable Districts, as a key driver at its core, “ROCK circle” connects and moves sub-systems of actors, processes and technologies in several ambits (Fig. 1).

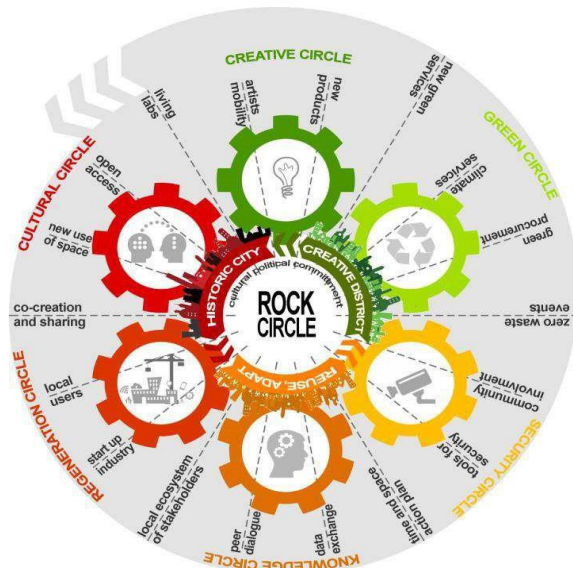


Fig. 1. Rock conceptual framework

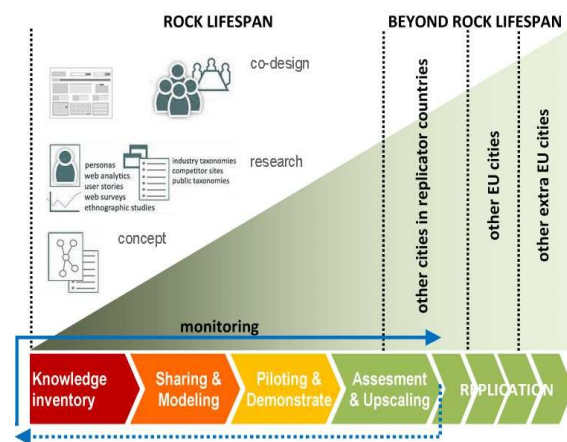


Fig. 2. ROCK process during its implementation

Thus CH becomes a “living engine”: new knowledge pathways are created to 'rethink' the ways historic cities' economy works (being made and re-made) including reducing carbon footprint and unsustainable trends in fields such as mobility, shelter, education, health, food and entertainment, while providing innovative solutions to manage climate change impacts, land use, water and air pollution - while regenerative actions are implemented to re-design the built environment and increase the usability and sustainability of CH spaces, encouraging virtuous flows within the system and creating the conditions to ensure safer, healthier and more suitable places for the communities to live and work.

Cultural Heritage at its highest utility and value, is maintained and reinforced, and progressively enhanced with the addition of new components that develop on the old ones, while attracting new resources and partnerships. The heritage-led regeneration models (assumed by Role Model cities) united to the circular urban system provide lastly important insight on the behavior of cities for the purpose of advancing effective proposals for a more human and ecologically responsible future as stated in Faro Convention (heritage communities), with the aim of increasing ownership in the process of heritage adaptive reuse and promotion with an inclusive approach for the well-being of all communities.

4.2 Project strategy

Given ROCK Circle architecture, the strategy is based on 4 core complementary phases: 1) **Knowledge Inventory**, aimed at providing a coherent and comprehensive framework of the Role Model Cities' successful experiences in heritage-led regeneration; 2) **Sharing & Modeling**, aimed at creating a linkage between the Role Models and the Replicators by assuming the lesson learned and the mentoring process as a tool to achieve a systematic set of strategies organized in a model to be implemented in the Replicator Cities; 3) **Piloting & Demonstration**, once the scenario modelling is set the Replicator Cities will implement the piloting process in the demo-sites with the aim to achieve a large transformation impacting on cross-sectorial fields; 4) **Assessment & Upscaling**, aims to monitor and measure the progress of the whole process and to give corrective inputs to maximize the replicability potential after the end of the process. These phases follow a looped structure (Fig. 2) that starting from the ROCK vision, aggregates an ecosystem of stakeholders that enable multi-level regeneration models aimed at maximizing the impacts in each Replicator City. The monitoring feedback loop will result in an iterative stream addressed to enlarge and maximize the upscale and exploitation potential of the project. In this general framework, each Replicator city defines its own regeneration thematic set, according to the blueprint based on the Role Model cities. Innovation processes are shared between cities and mainstreamed for learning and exploitation from new adopters of the concept of circular urban systems. Furthermore, ROCK will ensure long-term political commitment of actors and cities involved to the projects' goals and achievements, by signing appropriate Collaborative Agreements (i.e. the memorandum of understanding already signed between the University and the Municipality of Bologna).

4.3 Interdisciplinary consideration

ROCK consortium aggregates a large number of partners coming from different sectors and backgrounds with the aim to create interdisciplinary working team to couple the research and innovation side with the efforts of the institutional and political side to overcome the existing barriers and silos thinking approach in order to promote CH as a driver for city regeneration. These synergies will facilitate and favorite the adoption of organizational and institutional solution and changes as well as the innovation uptake on the business and industrial side. As suggested by figure 1 ROCK circle matches spatial approach (architecture and urban planning), ethnographic approach (social and anthropologic studies), financial assets (economy and politics), conservation strategies (history and restoration), environmental and technological issues (environmental science, ICT).

4.4 Positioning of the project in the spectrum from “idea to application”

ROCK aims to transfer good practices and related technologies, validated or demonstrated in relevant environments, across European cities. The project will carry out a demonstration in operational environments and a complete, qualified system for enhancing cultural heritage experiences. This approach takes existing results from the lab to the market transferring some of already working solutions (with TRL ranging from 4 to 8) with the purpose to reduce costs and speed up the process of urban regeneration. **ROCK Tools for Heritage-led regeneration, tested during the demo activities in Replicators** (see Table 1), will facilitate the development of core activities with different purposes: networking & mentoring, CCI support, safety, environmental control monitoring.

Tool name	Partner name
T1-ROCK WEB PLATFORM (networking & mentoring)	CORVALLIS
T2-CULTURAL HERITAGE EXPERIENCES (cultural & creative products)	VWG
T3-INTEGRATED CH ANALYTICS (culture heritage & people perception)	VG TU
T4-CREATIVE IG TOOLS (cultural & creative products)	JB
T5-LBA Sense - LARGE CROWD MONITORING TOOL (safety)	DFRC
T6-OUTDOOR MULTI-PARAMETER TOOL (environment & climate)	ACCIONA
T7-OUTDOOR THERMAL COMFORT (environment & climate)	UNIBO
T8-INDOOR MICROCLIMATE MONITORING (environment & conservation)	UNIBO
T9-THE CULTURE OF LIGHT (environment & conservation)	VBZ
T10-PEOPLE FLOW ANALYTICS (environment & mobility)	TU/e

Table 1. ROCK tools (technologies and solutions)

4.5 Methodology

The ROCK multi-level methodology for circular urban heritage-led regeneration will be an iterative process based on 4 core phases [PH] overlapping the different tasks developed in the work packages (WPn): PH1. Knowledge Inventory (WP1); PH2. Sharing & Modelling (WP1, WP2, WP3); PH3. Piloting & Demonstration (WP2, WP3); PH4. Assessment & Upscaling (WP4, WP5, WP6) which are described in the following paragraphs.

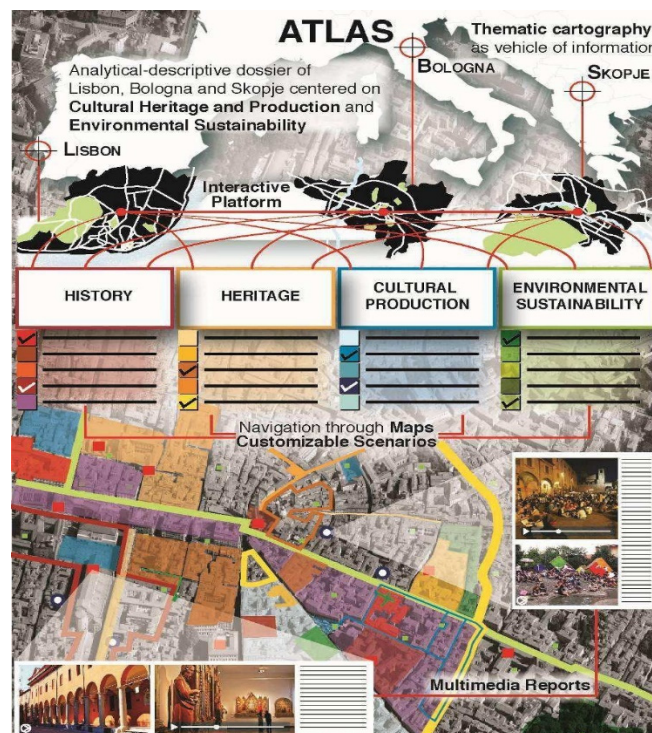


Fig. 3. Example of Atlas layout

PH1. Knowledge Inventory: based on Role Model cities' successful experiences and data set collection (including involved stakeholders, impacts at different scales, benefits for urban communities in terms of infrastructures, services, growth opportunities, management of time and costs, compliance with EU framework) and on internationally recognized case-studies, the **Open Knowledge portfolio** is aimed to

repertoire and transfer successful heritage-led regeneration approaches, classified on the basis of their results (effective financial schemes, gap closures, overcoming of shortfalls in policy, legal procedures and management structures), to Replicator cities.

During the interim call preparation phase Role Model cities have selected their most successful actions as Models (from M1 to M9). Replicator cities will contribute to the Knowledge Inventory by creating 3 specific Atlases of their historic city contexts (Fig. 3), to describe in particular the demo-sites according to 4 main themes: 1) evolution of cultural heritage and production; 2) historical and cultural heritage presence; 3) social phenomena and cultural production; 4) environmental sustainability. Both the Open Knowledge portfolio and the Atlases will feed the ROCK Interoperable Platform (Rock IP).

PH2. Sharing & Modeling: a Role Model palette (Fig. 4) is created on the basis of the set of successful strategies and solutions Replicator Cities have chosen during the call preparation phase by combining the Models (from M1 to M9).

In order to make the Models replicable, the Role Model Cities will share lesson learned in their local experiences with the Replicators, through a mentoring process (WP1) to help them benefit from practical knowledge in terms of policy-making and project implementation. To enhance knowledge exchange between cities dealing with similar challenges, ROCK will set up two types of practice-oriented peer-to-peer learning activities: mentoring visits and work-shadowing. The project, developed following the main principles of 2013 Faro Convention (signed by all Countries the three Replicator belong) will be enriched by the different profile of Replicator Cities (1 Capital city, 1 University city, 1 post-conflict city). Supported by Role Models mentoring, Lisbon, Bologna and Skopje intend to become indeed national and international examples of civic initiatives, by unpacking the convention into challenging tangible actions.

The sharing process will confirm or eventually refine the Role Model palette, by combining the Models with the Knowledge Inventory, and mix-matching and blueprinting the most promising strategies, following the WP1 Roadmap, to achieve broad transformation scenarios in the demonstration sites, leading to the modeling phase. In this phase each Model will be tested for replication by at least two Replicator cities, to identify common drivers and issues preparatory to the definition of detailed set of actions to overcome local challenges and barriers. The final model will be then developed through the multilevel methodology for circular urban heritage-led regeneration based on a spatial approach to be tested in the Replicator cities.

Combining interdisciplinary expertise (historic analysis, restoration, innovative and sustainable technologies, service design, sociology) with the evaluation of original situation of CH surroundings and the results of regeneration plans made up according to the different generated scenarios during the sharing phase, the spatial planning model will result in a mix of initiatives and physical episodes, and related “time-design”. Each initiative should be seen as a “green niche”, an incubation space for radical innovation, a way to deliver a sustainability-led cultural district into the historic city and expand niches from district level to a broader scale. The goal of the modeling phase is to create effective spatial planning models (Circular Urban System Model) and regeneration scenarios (WP2) to facilitate decision making in the identification of solutions for renovation plans of CH surroundings.

During the modeling phase ROCK will identify and analyze issues related to socio-economic and local identity linked to these culture-led regeneration practices and try to observe how all these issues affect sustainable development.

The spatial approach will be completed by the use of collaborative methods, to engage local communities in identifying assets and include their visions, knowledge and ideas into the regeneration scenarios, and by specific urban revitalization approaches through art and culture, as well as by precise analysis of the appropriate financial mechanisms.

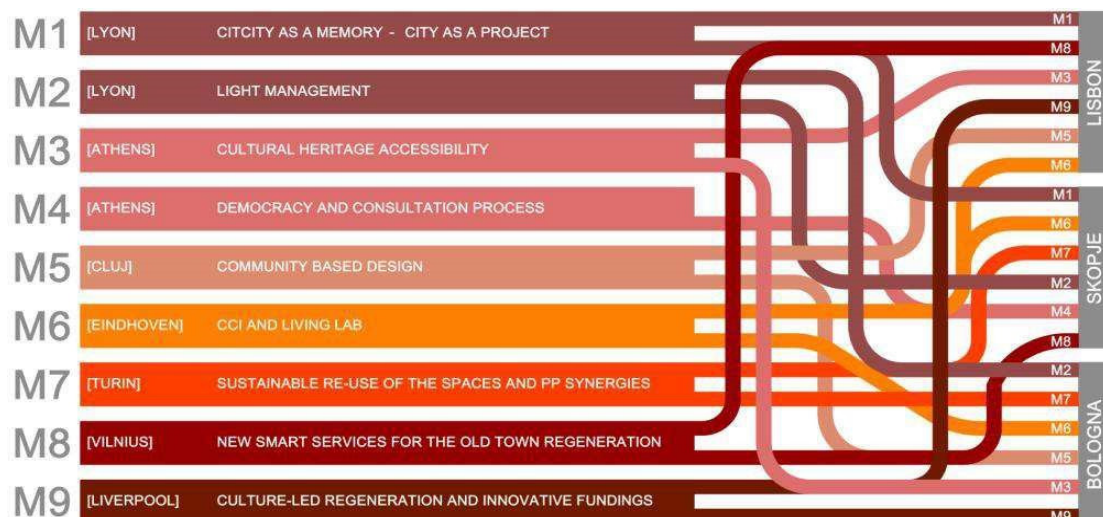


Fig. 4. Role Model Palette shows models stream to Replicators in ROCK vision

PH3. Piloting & Demonstration: the transformation of the Replicator areas into sustainable cultural districts will be based on horizontal integration, a mix of top-down planned elements and emergent, self-organized activities coalescing into a shared model of local development (beyond the visitor economy, connecting CH to other emerging industries related to the digital economy, low-carbon prospects, creative economy), resulting in **Integrated Management Plans (IMP)** balancing preservation of the historic environment with adaptive reuse and regeneration strategies.

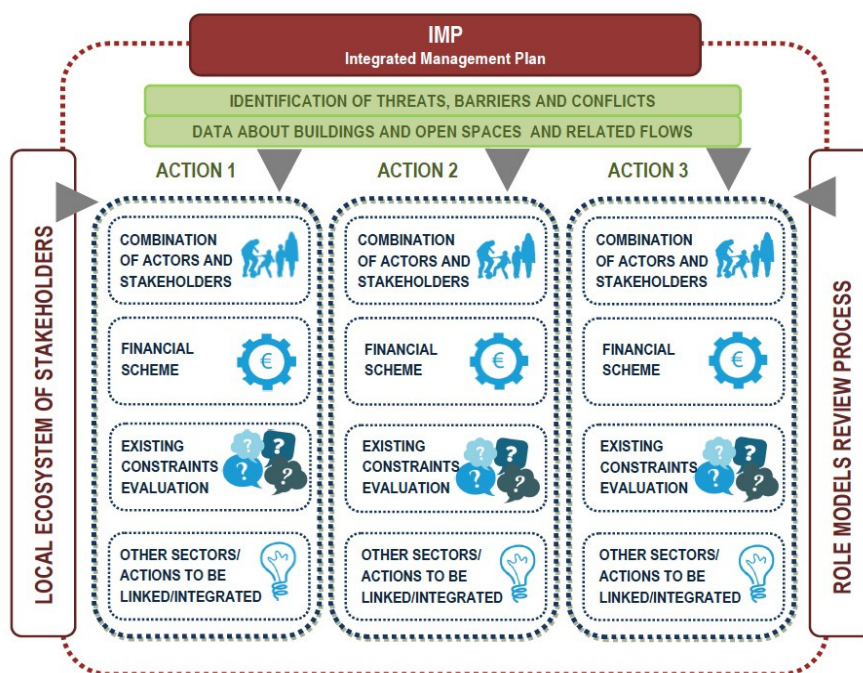


Fig. 5. ROCK Integrated Management Plans diagram

The Integrated Management Plans (Fig. 5) drafting will start with the identification of threats, barriers (regulatory, organizational, economic, social and physical) and conflicts, the coordination of demands and the cross-sectorial coordination of policies, plans and procedures for historical sites implementation. By matching "bottom-up" sustainable initiatives to improve awareness and stakeholders' engagement (niche-experiments, e.g. University students' Green Office <http://rootability.com>, entrepreneurial hub, temporary transformation of public spaces, etc.), with topdown transformation of the historic city (new cultural routes, accessibility measures and interventions, open-air urban activators, CH hotspots), ROCK will achieve heritage-led regeneration using CH key elements (buildings, monuments, open spaces,

streets, cultural spaces) as pillars to shape the process' backbone and drivers for regenerating permanently specific sites. CH sites will become also the scene for dynamic re-arrangement of temporary elements and enable flexible use for cultural initiatives and flagship events.

PH4. Assessment & Upscaling - Through the monitoring activities results and the impact measurement (WP4) it will be possible to measure the results of the implementation, with the aim to develop corrective actions, improve the process and identify further actions, and to investigate the level of sustainability (environmental, social and economic) achieved during the demonstration actions, through the application of ROCK circular urban model. All the feedback gathered in the different phases of process will be used to adjust the methodology where needed, allowing both a continuous improvement and a flexible replication. At the same time, this let Replicators cities and Role Models cities to validate the methodology during its development. This last phase will help the relationship between conservation of historic buildings and regeneration of historic cities. The results will give an understanding of the scenario in European historic areas to assess whether ROCK outcomes have improved the area and helped in revitalizing the local economy (WP6), and provide a baseline to demonstrate that adaptive reuse of cultural heritage can lead to regeneration of the whole urban area. The upscaling process will pursue spatial justice, fostering the relationship between social and spatial dimensions in regeneration processes, as a way to mitigate unjust impacts on EU cultural geographies. ROCK will contribute to replication and upscaling beyond the project partnership, by employing the working group in the Culture Forum of EURO CITIES, to establish, facilitate and maintain privileged contacts between Role Models and Replicators, to engage new cities in the market uptake initiatives linked to CH and in the dissemination activities. Learning from the project experiences, ROCK will draw opportunities for replication in Replicators' territory (pursuing opportunities linked with RIS) through dissemination events, innovative training and the interoperable platform (ROCK IP). The established international network will spread the results about the impact of the implemented measures, the economic assessment of heritage-led regeneration actions and the replication assessment, exploiting the best results obtained in the different contexts of the cities involved in the consortium with the aim to enlarge the replication at EU and Extra EU level.

5. SKOPJE ROCK ACTIONS

Skopje, for the ROCK project, has chosen a wider historical area/territory, covering several urban parts: the Skopje Old Bazaar, the Mediaeval Fortress "Kale", the open air green market, and several important buildings/architectural and urban compounds from Skopje's recent modernist legacy: the Museum of Contemporary Art, the Museum of Macedonia, the Macedonian Opera and Ballet, the University Campus etc. This rich and layered environment containing numerous cultural and religious institutions, the vibrant tissue of the bazaar, positioned in the very city center has never been previously seen as an integral cultural territory but as separate points or areas of interest.

The ROCK activities in Skopje that focus on this territory of interest are mainly divided in four different yet interconnected working groups, each covering different topic of interest:

- WG1: Skopje Cultural Archipelago (SCA)
- WG2: Art Fortress (AF)
- WG3: Common Sensing (CS)
- WG4: Skopje Urban Living Lab (SKULL)

The area involved in the project interests a high significance protected site of cultural heritage including the city fortress, the Old Bazaar, many buildings and monuments, a vibrant open air green market, a residential area, a commercial space, a cultural center, the faculties of the four Universities and a complex of museums in the former Jewish neighborhood of Skopje. The City saw a remarkable urban change in the last sixty years that created a unique collage of urban fragments from different periods reflecting the multicultural social fabric of the local community.

The area in focus of ROCK project is spread at 570.000 m² (140,4 Acres) constituted by protected area of cultural heritage of high significance, including city fortress, Old Bazaar and many buildings and

monuments of culture in the protected area, vibrant open air green market, residential area, commercial area, cultural center, faculties of the four Universities and complex of museums at the former Jewish neighborhood in Skopje. The area of interest is mainly populated with the institutions of culture and education, small and big commercial enterprises, leisure industry and small number of permanent residents (approx. 5.000 residents). There is big flux of daily visitors and tourist. There has been a constant rise of the number of tourist visiting Skopje (from 140.000 in 2011 to 220.000 in 2015) with Historic area of Skopje being the main area of interest of visitors.

ROCK vision is developed transforming the historic area with the medieval fortress into a knowledge, culture and technology driven hub. The aims are to promote creative and ICT-supported spatial practices in public spaces by bringing different stakeholders together in creative collaborative living labs, and develop innovative working and business models based on collaborative and sustainable economy.

5.1 ROCK action: “Skopje cultural archipelago”

ROCK models: M1-LYON [city as a memory – city as a project] + M2-LYON [light management] + M4-ATHENS [democracy and consultation process] + M8-VILNIUS [new smart services for the old town regeneration]

ROCK tools: T2-cultural heritage experiences; T3- integrated CH analytics; T5-large crowd monitoring tool; T6ROCK tools outdoor multi-parameter tool; T7-outdoor thermal comfort; T9-the culture of light

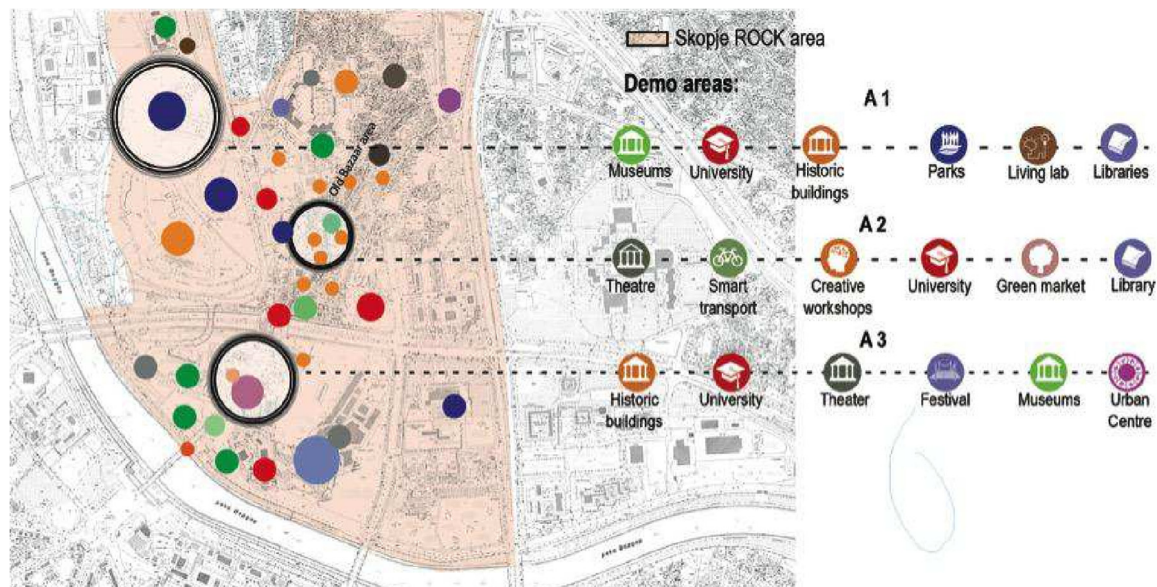


Fig. 6. Skopje cultural archipelago – urban activators

Skopje cultural archipelago (Fig. 6) is an overarching concept that integrates projects for collection and re-use of knowledge of cultural and historic heritage to promote the knowledge and creative city through **Virtual Guide** (Fig. 7) of the historic layers, the light and sounds of the Old Bazaar collected through a system of sensors and digital tools, the **Skopje Jewish quarter** (Fig. 8) a virtual model of the neighborhood and its inhabitants embedded as a web platform and mobile phone VR application to explore the life and the personal narratives within the neighborhood in the past centuries. With making visual representations of historical layers through the easily accessible medium will increase knowledge of historical artefacts and become available to all stakeholders - closer scientific and expert public to the broadest audience. Expected results are: a) creation of an integrated picture of the most significant historical layers as a contribution to the scientific study of the development of the City of Skopje intended for experts; b) spread knowledge about the cultural heritage easily available through appropriate media intended for the general public; c) identify and mark potential cultural and historic points in the tissues of the old city that still could become centripetal cores of creative processes.

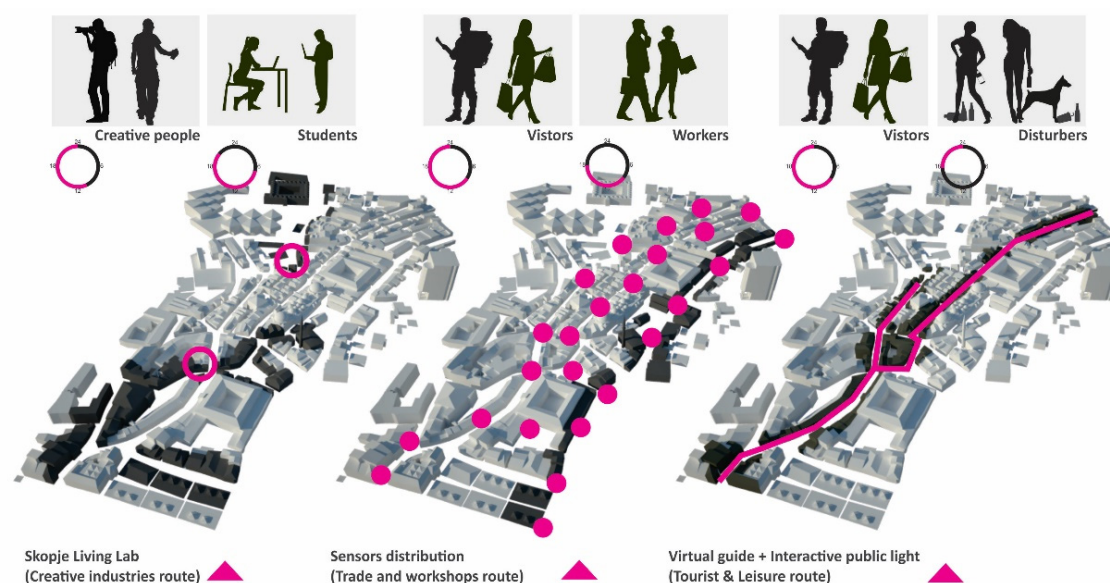


Fig. 7. Skopje cultural archipelago – virtual guide

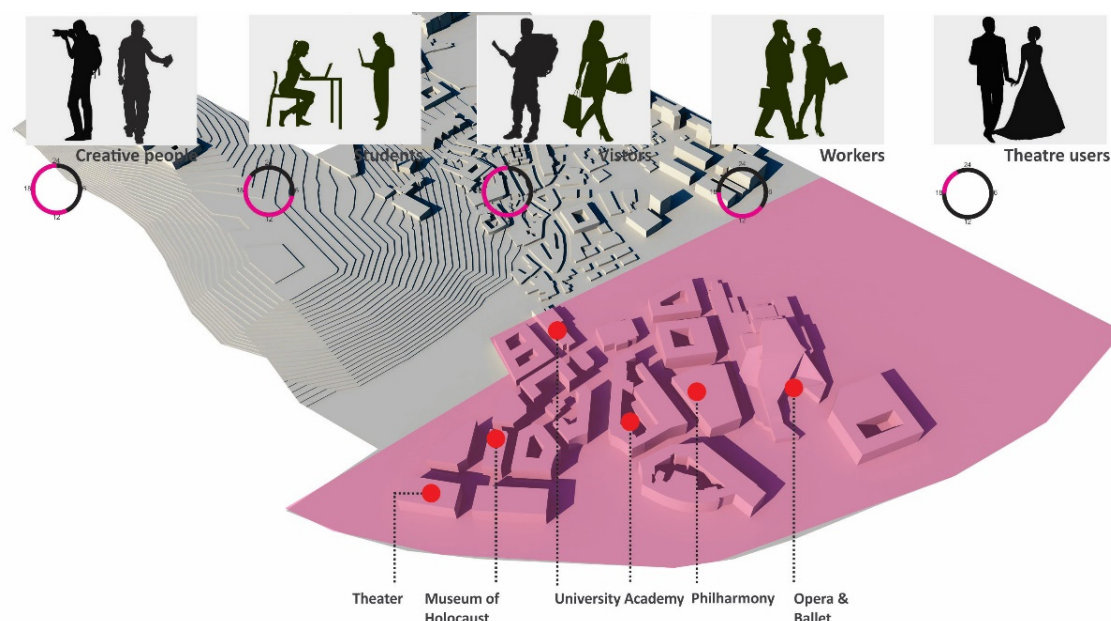


Fig. 8. Skopje cultural archipelago – Jewish quarter

5.2 ROCK action: “Art Fortress”

ROCK models: M1-LYON [city as a memory – city as a project] + M6-EINDHOVEN [CCI and living lab] + M7-TURIN ROCK models [sustainable re-use of the spaces and pp synergies]

ROCK tools: T3- integrated CH analytics; T5-large crowd monitoring tool; T6-outdoor multi-parameter tool; T10-ROCK tools people flow analytics

Art Fortress (Fig. 9) is a project for extension of the innovative art practices in the spatial realm between the Museum of Contemporary art in Skopje and Skopje Medieval fortress. It foresees an innovative re-use of the public space by the introduction of new spatial and CH related events and spaces. This action will support a knowledge transfer and networking with partner cities and organization within ROCK project that will enable the creation of the site-specific art and architecture interventions in public space. The activities within the project will demonstrate high level of inclusivity of various disciplines into recreation of the public spaces while creating new and innovative ways of using art and cultural heritage

from Medieval archaeological sites of the Fortress to the Modernist background of the Museum and through temporal events to permanent pavilions, focusing especially to the educational aspect of the program.

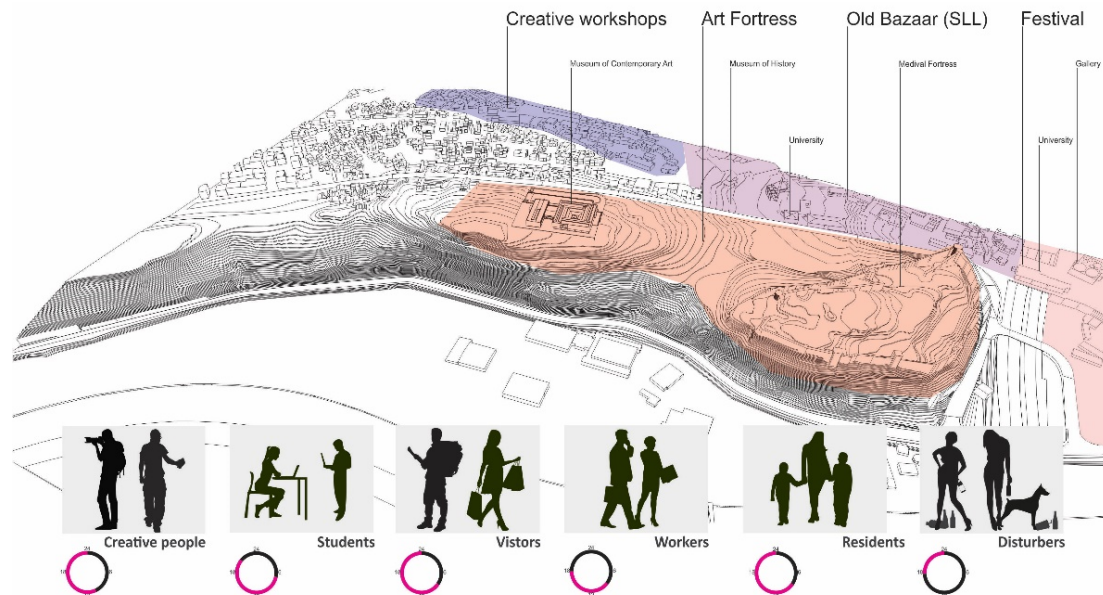


Fig. 9. Art fortress (Museum of Contemporary Art & Medieval Fortress)

5.3 ROCK action: “Common sensing” - Skopje pedestrian area

ROCK models: M2-LYON [light management] + M4-ATHENS [democracy and consultation process] + M7-TURIN ROCK models [sustainable re-use of the spaces and pp synergies] + M8-VILNIUS [new smart services for the old town regeneration]

ROCK tools: T4-creative IG tools; T6-outdoor multi-parameter tool; T7-outdoor thermal comfort; T9-the culture ROCK tools of light

Common sensing is aimed to collect various environmental and users related data with focus on the light and sounds of the public space and the interiors of the CH buildings in the Skopje’s Old Bazaar. As a condition to achieve high environmental quality, health and safety requirements for the people, light, noise and acoustic are in the focus of interest in order to establish new standards and legislative regulations. This is essential for verification and optimization of the prepared noise maps, as well as for successful preparation of action plans in local government units in Republic of Macedonia. These activities are in correlation with the general goals from the Strategic plan of the Ministry of environment and physical planning for the period 2016-2018, in the part of collection, systematization, procession, analysis and presentation of data for quality and trends in all segments of the environment. The Creation of the noise map for the proposed locations will allow a more coherent and coordinated vision for the interventions. This will support the creation of an appropriate methodology to support projects, politics and plans for their implementation on different levels of the society and practice.

5.4 ROCK action: “Skopje Urban Living Lab”

ROCK models: Eindhoven - CCI and Living Labs

ROCK tools: ECOVE consulting green economy, Julies Bicycle sustainable planning and management.

Skopje Living Lab is a project for utilizing the Old Bazaar as a traditional place of CH and commerce with introduction of contemporary “crafts” through introduction of ICT incubators, collaborative workspaces and new network of creative industry collectives, suppliers and promotion of new products and services Following the emerging shift of the transformation paradigm on global scale that moved the city towards exploring new forms of collectivity and the experience of sharing while the emergent technologies have profound effect on our perception of the everyday life by revealing a vast field of new

potentials and relations, Skopje Living Lab (SLL) will promote new and innovative approach toward the urban innovation potentials. It will introduce innovative models of work and collaboration in the green business ecosystems and networks in order to promote a sustainable and equitable economy. The SLL will work on reinforcement of local green economy ecosystems in order to allow for viable business solutions that preserve the environment and empower communities. It is expected that green business creation will provide quality jobs, bring about opportunity, mitigate climate change, preserve cultural heritage, and enable democracy & peace. The challenge and potential success of the SLL development will create the knowledge and the potential for transfer and exchange social and environmental innovation across SEE Europe and in countries still challenged with societal transformation with main goal to spark creativity & cooperation, scale up sustainable impact, retain local talent and attract international one.

6. ROCK CONSORTIUM

ROCK consortium is built to cover the needed skills and value chain to successfully address the key objectives of the project, maximizing the impact at EU level and covering relevant stakeholders working in: Municipalities, Universities, SMEs and companies, associations, data managers & developers, dissemination & networks between EU cities, development and consulting groups, etc. The consortium size is justified by the complexity of the challenge, including 32 partners from 13 countries (Fig. 10).

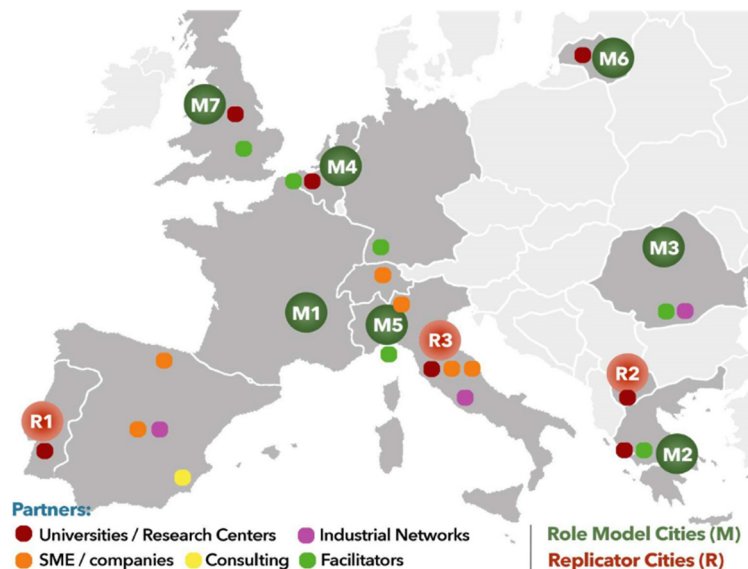


Fig.10. Consortium distribution

The project has been prepared in a cooperative and comprehensive way by all involved partners.

- All the Universities (UNIBO, ICSUL, TU/e; UniYork, UKIM, ASFA, VGTU) with their interdisciplinary expertise, constitute the knowledge of the Consortium, offering comprehensive and integrated view of historic cities and their potentialities of sustainable growth.
- Dissemination networks as EUROCITIES and ICLEI will act as an umbrella, to help co-ordinate all cities into a unified and focused force to support the sharing activities, and as a glue between the different municipalities involved.
- Development & Consulting groups (TASO, ADDMA, URBASo, FITZ) are the vision facilitators, helping the development of a unified vision and delivery plan for heritage-led regeneration, in compliance with RIS3 contributing to the creation of ROCK communities of practices.
- SMEs and Companies (ACCIONA; JB, VBZ, DFRC, VWG) are the innovators of the consortium engaged in brokering positive change in a sustainable way. They will have a key role in the piloting and demonstrating activities

- Data managers and developers as NOW and CORV will create a digital and interoperable tool to interconnect all ROCK actions and to manage all the data produced.
- Industry Driven Associations – CONF, ARIES, ECO4CLIM – represent a joined up proposition to national and international agencies which will support the exploitation of ROCK results, their marketability and upscaling, acting also as funding enablers
- Municipalities groups Role Model and Replicators Cities: the Role Model Cities will contribute to the sharing phases and to the implementation of ROCK tools/measures, while the Replicator Cities will be proactive actors in the development of the demonstration activities, and improving their capacity building on heritage led regeneration.

The project will manage the complementary synergies to pursue useful results both for industrial partners with new products, University experts with effective regeneration urban system approach and implementation strategies for decision-making.

7. CONCLUSION

Interpreting and valuing the cultural characteristics of each local context, ROCK will implement a heritage-led system wide transformation strategy to bridge the gap between heritage conservation and contemporary issues, such as sustainability, competitiveness, social cohesion and creativity, with a cross-disciplinary spatial approach. ROCK will encourage solutions for sustainable growth, testing strategies and tools to improve sustainability and resilience of the management of historic city permanent and temporary initiatives, promoting (through Living Labs, ecosystem of stakeholders, ROCK platform and eco-incubation program) the development of integrated management plan for sustainable historic urban context in order to move from a linear to a circular urban system approach able to transform underused CH into new resource for the city as a whole.

ROCK will provide new ways to access Cultural Heritage and to promote transparency and perception of shared heritage as collective property, fostering the usability of spaces to all, improving CH functions from a user perspective, defining key policy issues, integrating emerging spatial, temporal and virtual structures of the knowledge-based society, to support cohesion and develop a sense of belonging to places.

ROCK will develop and apply an innovative circular systemic approach to connect different actors, places of CH value and systems, at a European level as well as at a local level, facilitating the innovation process and the adoption of environmentally and socially sound solutions to achieve sustainable growth.

By means of innovative place data collection, mentoring, communication, branding techniques, ROCK will produce an appealing narrative of a novel model for CH-driven smart and green-oriented city growth. At local level, this will increase sense of ownership between all engaged stakeholders and potential ones. At international level, it will serve to boost, disseminate and market the unique positioning of Europe and to provide workable integrated solutions for other cities in the world to address CH as a driver for sustainable growth.

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