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DESIGNING A PLATFORM FOR META-FRAMEWORK OF CO-CREATION: A PRELIMINARY MOCKUP

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ABSTRACT:

Heritage co-creation is a complex undertaking that involves the formation of cultural clusters and the collaborative creation of cultural value. However, implementing such co-creation is challenging due to various impact factors, and current technological approaches do not enable the formation of cultural clusters and co-creation simultaneously. To address this issue, this paper proposes a solution that incorporates the concept of meta-design with Web 3.0 enabling technologies to build a regenerative system that does not impose restrictions on the target audience and can be reseeded through user-generated content (UGC). The paper describes the method, process, and structure of a preliminary mock-up for co-creation, which includes a forum for communication and formation of cultural clusters, and a learning management system(LMS) that guides design-driven creation and facilitates the use of the co-design toolkits.

1. INTRODUCTION

The co-creation of value in cultural heritage has evolved from traditional cultural clusters to more inclusive platforms that engage a broader range of stakeholders. Traditional cultural clusters tend to focus on cultural dissemination, tourism, and economic development within an institutionalized context, within the optimization of organizational structure to enhance the value development effect (Fernando et al. 2012; Moreno-Mendoza et al. 2021; Moreno-Mendoza et al. 2019). The progress of ICT technologies has facilitated the involvement of more stakeholder groups, particularly indigenous groups in heritage conservation (Woodley et al. 2013) and public engagement in collective memory heritage (Liew et al. 2020). Moreover, it is also significant in co-creation research that social media platforms have emerged as a key avenue for public participation in heritage management (Duffy et al. 2019). Regarding the participation of local groups, cultural heritage-related activities can contribute to local cultural resilience against marginalization and the sustainable development of cultural communities (Liew et al. 2020).

However, there is still untapped potential for ICT technologies to facilitate co-creation team building. While emerging internet platforms are adept at collecting heritage information, they lack the necessary processes for value creation. In contrast, traditional cultural cluster platforms prioritize value co-creation but are limited in engaging with a broader range of stakeholders. Involving new stakeholder groups in these platforms poses a number of challenges, such as limited accessibility for minority groups (Giglitto et al. 2019), discretization of citizen participation datasets, and an imbalance of geographical resources for value co-creation.
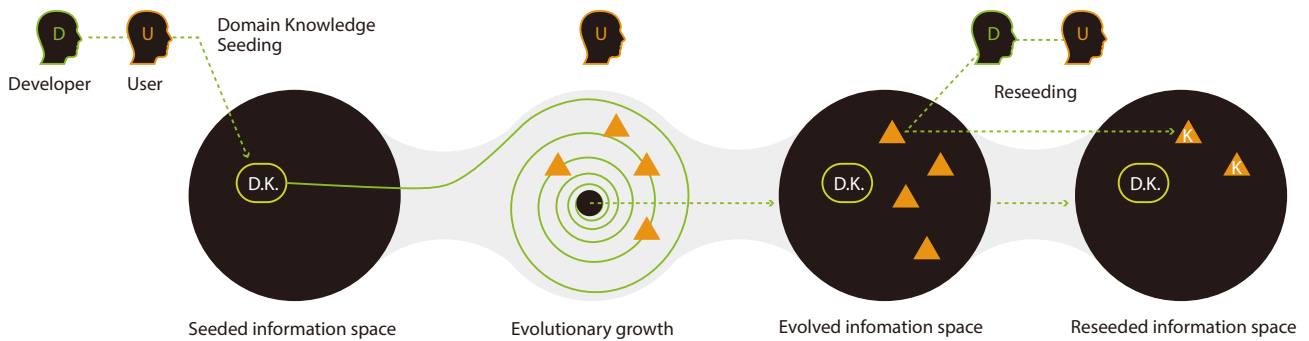
Furthermore, specific value co-creation varies depending on several factors and may result in diverse processes and outcomes. Stakeholder groups are formed around different types of heritage and objectives, and as research progresses, more subgroups of stakeholders are identified (Bossen et al. 2012; Dindler et al., 2010). Specific practices of territories face challenges in

accessing professional resources and training technical staff (Avram et al. 2020). To address this issue, some researchers have developed co-design toolkits for value co-creation that are tailored to specific co-creation goals, such as interactive heritage experience(Petrelli et al., 2013).

This paper proposes an approach to address the complex issues of cultural cluster composition and co-creation practices by incorporating meta-design theory. The proposed approach involves building a meta-layer framework for a value co-creation platform and demonstrating the platform's design process along with a preliminary mock-up. The meta-layer framework, based on meta-design theory, aims to structure the platform for cultural cluster composition. Moreover, the approach includes a learning system that utilizes co-design toolkits to cluster groups and facilitates design-driven co-creation projects..

2. METHOD AND TECHNICAL SOLUTION

This paper proposes a solution to the challenges faced in the co-creation of heritage value by introducing a meta-layer framework based on meta-design theory. The concept of meta-design theory, as defined by Fischer and Scharff in 2000, is used to create a system that evolves with user-generated content without user role specification. The concept of meta-design is used to create a system architecture that evolves with the non-definitive user roles and problem-solving knowledge in a complex and changing socio-technical environment. This is achieved through a meta-design system incorporating a base platform that continuously reseeds itself with user-generated content. The platform implements a meta-framework through three main functional modules that address the two main issues previously described. These include a module to load static information, a web-based learning management system for design-driven co-design, and a forum for cultural cluster formation.

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Figure 1. Evolution and reseeding model of meta-design information structure (Fischer and Giaccardi, 2004)

The platform is constructed using Web 3.0 technologies and features semantic analysis to generate taxonomic tags for user-generated content. The platform will not be accessed by new-generation internet applications such as avatars, in order to minimize computational and local storage data and reduce the carbon footprint generated by the internet.

3. DESIGN OF PRELIMINARY MOCKUP

The preliminary mock-up design process incorporates user profile analysis of cultural producers of the co-creation community to systematise functions and services. This, along with the UGC reseeding structure of the meta-design information system, formed the basis of the mock-up. Simulating user usage scenarios clarified the details of the user interacting flow for functions, thereby establishing the interaction structure of the entire platform.

3.1 User profile analysis

Traditional cultural heritage co-creation issues necessitate the involvement of stakeholders, primarily cultural institutions, as the principal cultural producers. Based on the content of The World Heritage and Intangible Cultural Heritage regulations, the cultural producers can be categorised into six distinct categories that can be involved in the co-creation process:

1. Meta-level framework designers;
2. Design-driven project leader, planner, manager, and other team representatives involved in cultural heritage co-creation;
3. Researchers in the field of cultural heritage content;
4. Stakeholders (investors, institutions, etc.) interested in cultural heritage co-creation development;
5. Cultural heritage owners (indigenous people, cultural heritage agents, private cultural heritage managers, intangible cultural heritage inheritors, etc.);
6. Government representatives in charge of cultural heritage co-creation projects;

Figure 2. User profile analysis and functional area division

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alongside the addition of meta-level framework designers as the primary users of the platform:

7. Creators, operational maintainers, and content Builders of the platform;

Through constructing a user profile for the seven intended users, three major functional areas were identified(See Figure 2): Area A, static web pages for introductory information presentation; Area B, a learning system; and Area C, a communication forum for multiparty collaboration.

The identification of target user groups is instrumental in guiding the planning and functional partitioning of the platform. However, it is not intended to restrict user types or constrain how they may use the platform. With the increasing intensity of heritage co-creation research, there is a corresponding increase in the diversity of cultural institutions and producers of different forms of culture. Consequently, the user base of the platform is expected to become more heterogeneous due to differences in regulatory frameworks or physical conditions in different regions. This heterogeneity can be effectively addressed through the variable definition of user identity roles in the meta-design information structure. This affords users the flexibility to adapt the content obtained from the platform to their specific needs.

3.2 System architecture

The following part of the article highlights the critical aspects of system functionality and design, which are fundamentally determined by the user profile(See Figure 3). To effectively execute the necessary user functions, the system must integrate both content and structural frameworks. The content framework includes all the relevant information and usage content that is essential for user requirements, while the structural framework incorporates the necessary front-end and back-end components. The back-end framework primarily consists of the meta-design information framework, which facilitates the reseeding of system content through user-generated content. Future model development experiments may optimise the output of the reseeding path in conjunction with artificial intelligence for heat calculation and semantic analysis.
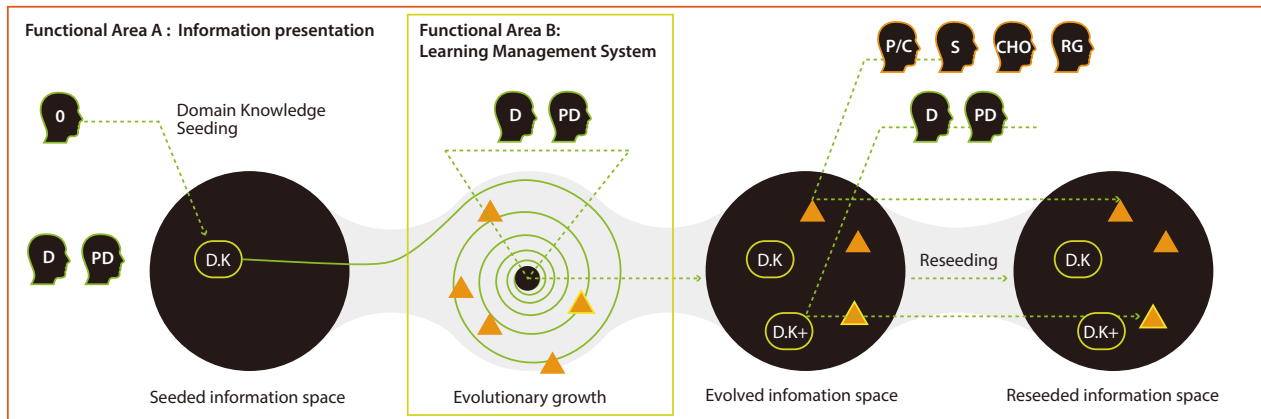
3.2.1 Area A: introductory information presentation

The objectives of Area A are three-fold:

- to provide an overview of the current research related to cultural heritage and relevant research and policies for cultural heritage development.
- to present the theoretical research content and methods used in the design of the co-creation meta-framework, while also providing a brief introduction to the content in the LMS learning system.
- to present the outcomes of LMS user outputs, nested profiles and forums. Through the provision of these functions, Area A serves as an essential platform for the dissemination of information related to cultural heritage and the co-creation of cultural experiences.

Professionally certified users can modify the information content of the static web pages on the platform as empowered users. By the meta-design information framework, after the initial domain knowledge has been seeded into the system by the model

Figure 3. Outline of system.

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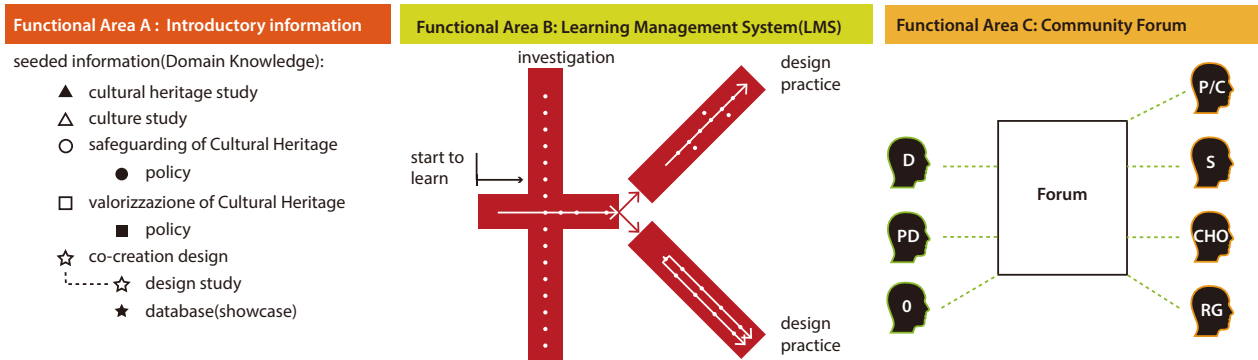
designer, empowered users can apply for co-edit to modify or add content related to heritage knowledge and co-creation methods(See Figure 4). This ongoing improvement of policies related to cultural heritage research and development in various countries provides a solid reference and advanced methods for the local-level co-creation of cultural experiences.

LMS user outputs are part of a user's personal profile and are presented with the user's authorisation. The presentation of user-generated content is static content information for non-creators and is included in Area A, but not considered part of the system's domain knowledge. The forum function is nested within this section to facilitate the exchange of results between different users..

3.2.2 Area B: learning management system(LMS)

Area B of the learning management system has a diverse range of functions:

- to foster a deeper understanding and acquisition of knowledge pertaining to cultural heritage conservation and development.
- to enhance users' understanding and utilization of co-creative cultural experiences and meta-level framework design. The practical application of this knowledge is facilitated through the organization of tasks, which are systematically dismantled through the design practice process.
- granted the autonomy to tailor these tasks' content to their specific situation's demands.
- to upload their practice task assignments and generate output reports at the conclusion of both the research and design practice phases.

The Area B of the learning management system incorporates a mechanism for system reseeding, which can be enacted at a later stage. This involves an assessment of the relevance of user-generated content, which is achieved through semantic analysis of users' propensities to adapt and submit assignments. The system then extracts relevant content, including case studies for

research and co-creation experiences, which is subsequently provided to subsequent users.

The reseeding process can also be implemented in the LMS section through the use of a popular taxonomy, or folksonomy(See Figure 4). Users are given the option to tag self-uploaded content or content from static pages, thereby contributing to the semantic analysis of relevance. In the backend, high-frequency tag points can be added to user tweets, which can be used as updated content for learning or practice tasks. Alternatively, the tag system can be employed to bookmark static information pages, facilitating easier organization of information according to users' needs.

3.2.3 Area C: community forum

Function Area C comprises several distinct functions. One such function involves posting project recruitment information, which targets local government representatives, development stakeholders, or cultural heritage owners. These stakeholders may use the platform to openly recruit planning or design proposals for cultural heritage development projects from users of the platform and the broader Internet community. Users are then able to comment on and respond to these recruitment messages, thus engaging in dialogue regarding potential collaborative efforts.

In addition, Function Area C supports private conversations between individual users, as well as group conversations among multiple users. It also provides partial functional support for Function Area A, specifically public comments and replies.

Function Area C can also be leveraged to analyze trends in co-creation by measuring high-frequency vocabulary in the content of recruitment messages(See Figure 4). This allows for the extraction of additional guidance information on the content of LMS learning and practice, thus enabling a more tailored approach to knowledge acquisition and application..
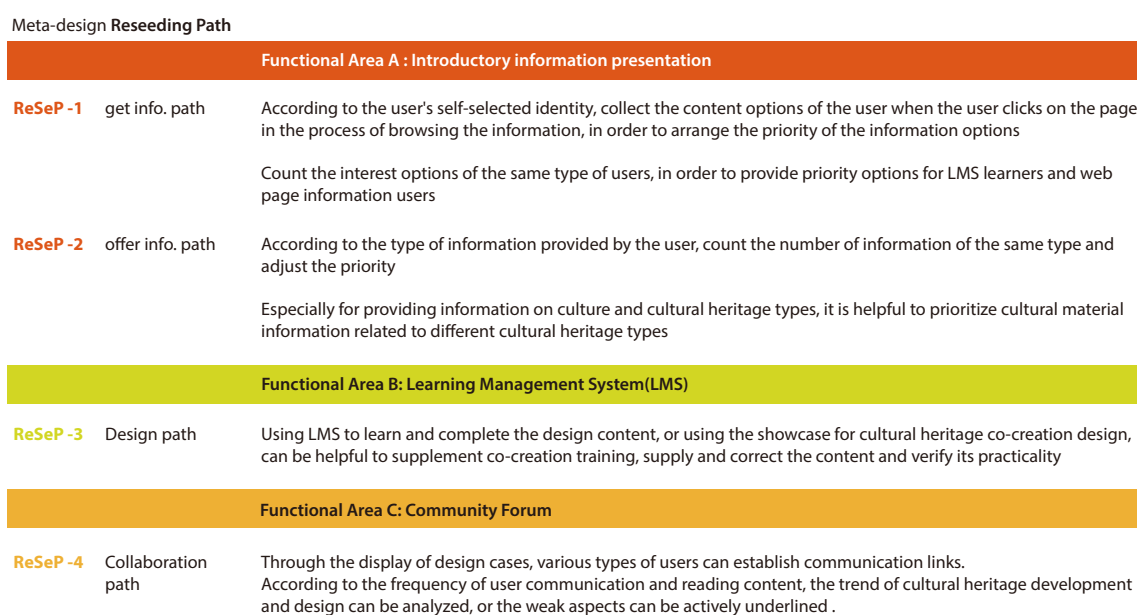
Meta-design **Reseeding Path**

Functional Area A : Introductory information presentation		
ReSeP -1	get info. path	According to the user's self-selected identity, collect the content options of the user when the user clicks on the page in the process of browsing the information, in order to arrange the priority of the information options
		Count the interest options of the same type of users, in order to provide priority options for LMS learners and web page information users
ReSeP -2	offer info. path	According to the type of information provided by the user, count the number of information of the same type and adjust the priority
		Especially for providing information on culture and cultural heritage types, it is helpful to prioritize cultural material information related to different cultural heritage types
Functional Area B: Learning Management System(LMS)		
ReSeP -3	Design path	Using LMS to learn and complete the design content, or using the showcase for cultural heritage co-creation design, can be helpful to supplement co-creation training, supply and correct the content and verify its practicality
Functional Area C: Community Forum		
ReSeP -4	Collaboration path	Through the display of design cases, various types of users can establish communication links. According to the frequency of user communication and reading content, the trend of cultural heritage development and design can be analyzed, or the weak aspects can be actively underlined .

Figure 4. System reseeding path.

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3.3 User scenarios

The process of user usage scenario analysis serves the purpose of refining function points and adjusting usage flow within the pre-model phase, ultimately contributing to the development of an efficient and effective system interaction structure. This analysis involves merging users with similar needs and subsequently modelling the flow of their usage scenarios(See Figure 5).

By consolidating users with shared requirements, this method enables the identification of common usage patterns, which in turn facilitates the design of a system that is well-suited to meet the needs of its target audience. The resulting modelled usage flow is intended to guide the development of an interaction structure that aligns with the desired user experience, thus promoting optimal usability and user satisfaction.
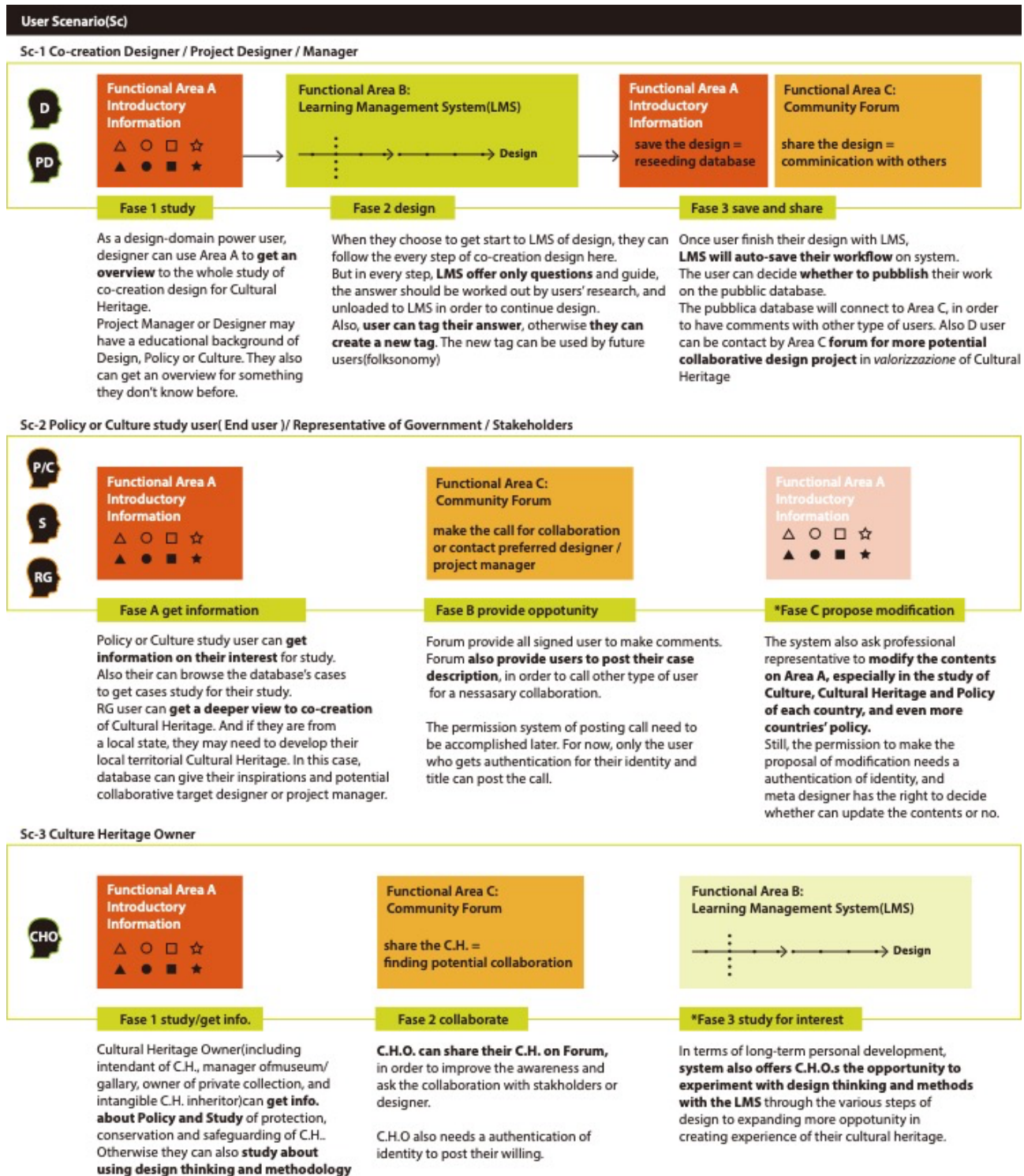

Figure 5. User scenarios.

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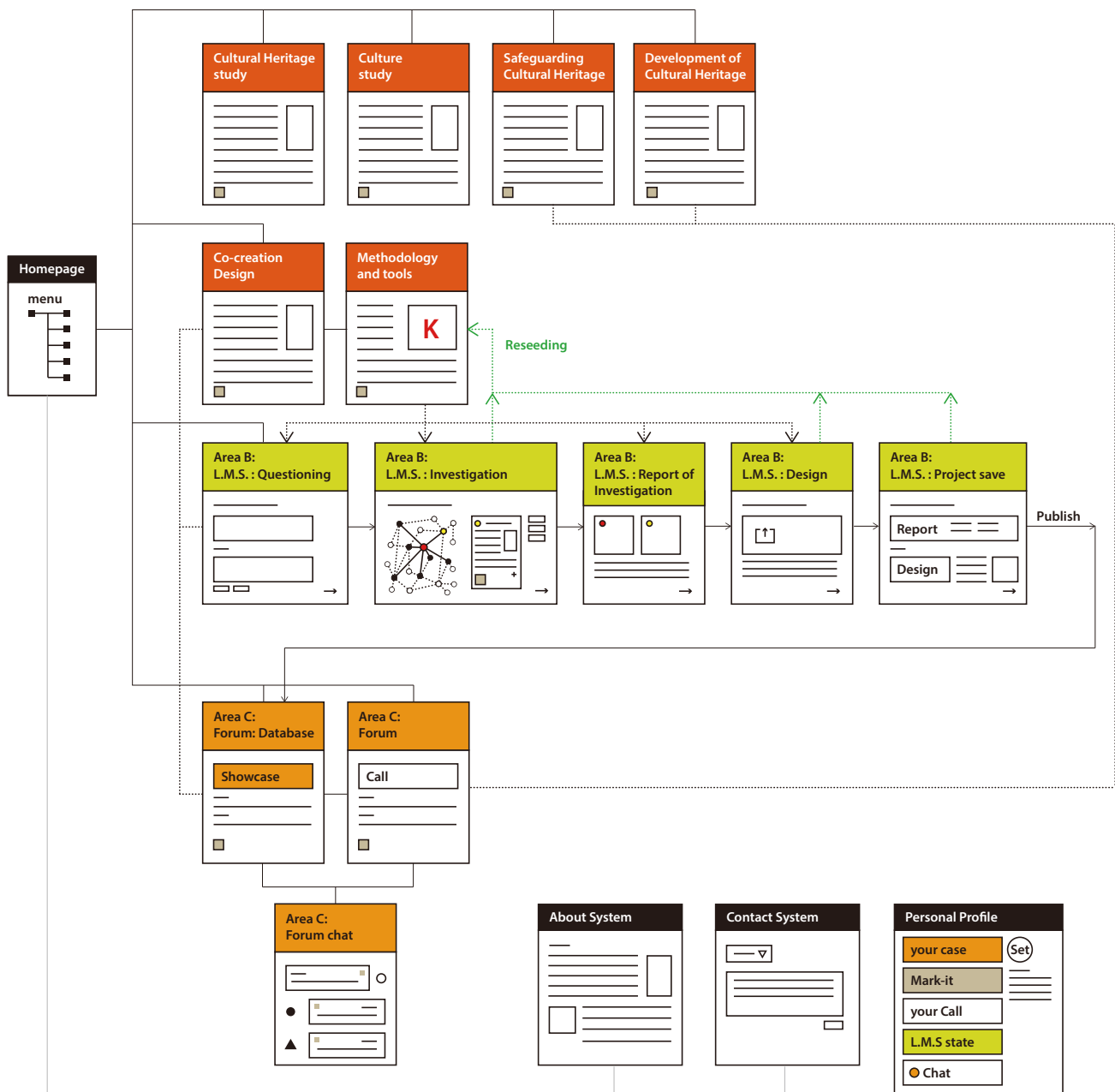
Figure 6. Outline of interface structure.

3.4 interaction structure

The system framework and user scenario simulation play an essential role in elucidating the interaction process between the user and the system, ultimately serving as a basis for constructing the web-side system interaction interface framework. The interaction process can be visualized through a series of main steps(See Figure 6).

To enhance usability and streamline navigation, the framework is supplemented by a user profile and a contact page for professional certification and maintenance. This design feature effectively separates the important common areas of the three main functional areas, making them easily accessible as separate pages. This approach promotes ease of use and enhances user experience by providing dedicated spaces for different types of content and functionality.

4. DISCUSSION

The main focus of the platform is to promote upstream value co-creation by facilitating design-driven projects and team formation through the LMS and forums. The platform is developed using enabling technologies within the framework of web 3.0. However, the preliminary mock-up had some limitations and fragmentation that needed to be addressed. In response, a new user profile role, the "0 Designer," was added to optimise the back-end planning of the system and accommodate new participant roles that may emerge as the cultural heritage ecosystem evolves.

Moving forward, future research will focus on refining the LMS content and developing an evaluation mechanism to maximise the benefits of heritage value co-creation. Additionally, the platform will be upgraded by creating a heritage information database to enhance the presentation of information and

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exploring new ways to bring diverse information into the platform to support collaboration among clusters.

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