
Dynamic Open-Close Strategy through Open PI Map

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Abstract: Recent studies in innovation management emphasize combining openness and closure, yet how this balance is operationalized remains unclear, especially in university-centered ecosystems. This study examines how the transition from open exploration to collaboration is structured, based on the Open Principal Investigator Map (PI Map) and the Global Japanese Researcher Connectivity (GJRC) platform.

The PI Map serves as an open interface enabling broad, non-exclusive exploration, expanding potential connections. These interactions are then refined through a multi-stage selection process, including screening and invitation, leading to focused, small-scale workshops for deeper collaboration.

The findings show that dynamic open–close strategy is not a simple temporal shift, but a structured process linking open exploration with selective engagement. This study contributes by reframing the strategy as relationship design and offers practical insights for building sustainable co-creation platforms.

Keywords: dynamic open–close strategy; open innovation; university innovation ecosystems; PI Map; GJRC; relationship design; selective engagement; co-creation; knowledge networks; international collaboration

1 Introduction

In recent years, with the advancement of open innovation, organizations have increasingly sought to create value through knowledge collaboration with external actors. In particular, universities and public research institutions are expected to contribute to social and economic value creation while maintaining the public nature of knowledge. In this context, the ability to dynamically combine openness and closure—referred to as a dynamic open–close strategy—has emerged as a critical issue (Chesbrough, 2003; Enkel et al., 2009).

However, much of the existing research remains conceptual, focusing on openness and closure as abstract constructs, and does not sufficiently explain how these strategies are

designed and operationalized in practice. This gap is particularly evident in university-centered innovation ecosystems, where it is essential to connect diverse actors, form effective collaborative relationships, and translate them into sustained value creation.

To address this issue, this study aims to clarify the implementation mechanism of a dynamic open–close strategy by analysing the case of an international co-creation platform based on the Principal Investigator Map (PI Map), namely the Global Japanese Researcher Connectivity (GJRC) platform.

2 Dynamic open–close strategy in university innovation ecosystems

Open innovation research has demonstrated that the inflow and outflow of external knowledge are critical for innovation (Chesbrough, 2003). At the same time, it has been pointed out that simply increasing openness does not necessarily lead to value creation (Laursen and Salter, 2006). Accordingly, recent studies have emphasized the importance of dynamically combining openness and closure as a strategic approach (Enkel et al., 2009).

In the context of university-centered innovation ecosystems, this issue becomes even more complex. Universities are expected to maintain the public nature of knowledge while simultaneously generating value through collaboration with industry and society. As a result, their role has evolved from that of knowledge-producing institutions to central actors that connect diverse stakeholders within innovation ecosystems. In our own institutional practice, we not only facilitate collaborative research with industry and society but also provide a variety of programs and mechanisms to support ecosystem formation.

The University Castle Town model proposed by Oshima and Konno (2025) conceptualizes universities as institutional anchors that support the creation, circulation, and utilization of knowledge (Etzkowitz and Leydesdorff, 2000; Carayannis and Campbell, 2009). In this model, universities design spaces for co-creation and coordinate relationships among diverse actors. Innovation is understood to progress through the following stages:

- Opportunity
- Collaboration
- Intellectual Property
- Startup / Business Creation

This study focuses in particular on the transition from Opportunity to Collaboration and examines how open exploration and selective relationship formation are structured and implemented.

Figure 1 illustrates the basic structure of the dynamic open–close strategy. It conceptualizes the innovation process as a structured transition from an open exploration phase to a selective collaboration phase. In the open phase, broad and non-restrictive access generates diverse connections and exploratory opportunities. However, not all connections lead to value creation; therefore, a selection process—referred to as a

selection boundary—filters these interactions based on specific criteria. Only those selected move into the closed phase, where intensive interactions enable the deepening of collaborative relationships.

Thus, innovation is not achieved through openness alone, but through the combination of open exploration and selective relationship formation.

Dynamic Open–Close Process Model

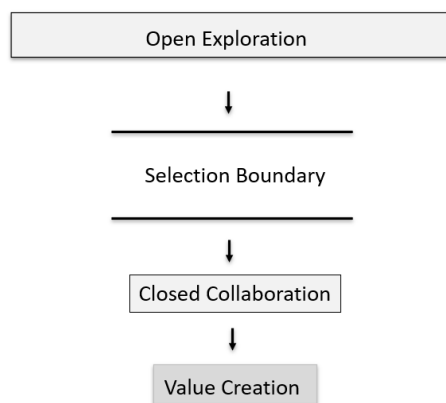


Figure 1 Dynamic open–close process model.

3 PI Map as an open interface

The PI Map is an information platform developed on a pilot basis since 2024 in the San Francisco Bay Area, led by the Consulate-General of Japan in San Francisco in collaboration with the Japan Society for the Promotion of Science (JSPS) San Francisco Office, science and technology fellows at the consulate, and local research communities. It provides a list of Japanese principal investigators (PIs) based in the region (Consulate-General of Japan in San Francisco, 2024).

As shown in Table 1, the PI Map organizes information on individual researchers—including their affiliations, research fields, and related links—and makes it publicly accessible and openly available (Consulate-General of Japan in San Francisco, 2024). Japanese PIs active overseas, particularly those with strong ties to Japan, possess extensive international experience and networks, representing valuable human capital for Japan. Strengthening connections with such researchers is expected to contribute not only to national capacity but also to the broader global science and technology ecosystem.

The PI Map enables non-exclusive access that is not dependent on specific organizations or existing networks, allowing both domestic and international stakeholders to freely explore and connect with researchers. Conventional researcher matching often relies on limited personal networks or closed referral systems, which constrain the scope of potential connections. In contrast, the PI Map functions as an open interface that facilitates broad exploration, significantly expanding opportunities for co-creation.

Table 1 Overview of PI information listed in the PI Map

<i>Name</i>	<i>Title</i>	<i>Affiliated University</i>	<i>Affiliated Department/Faculty</i>	<i>Research Field/Area</i>	<i>Related URL Link</i>
AAA	Professor	University of CCC	School of Engineering	Artificial Intelligence	https://www.XXXXX
BBB	Associate Professor	Institute of DDD	Department of Physics	Quantum Physics	https://www.YYYYY

These characteristics correspond to the Opportunity layer in the UCT model, positioning the PI Map as a foundational mechanism for generating diverse points of connection among actors in the innovation ecosystem.

4 From PI Map to GJRC: Designing the next action

4.1 GJRC Platform Design and Conceptual Framework

We propose the GJRC platform as an initiative to foster international collaborative research and co-creation, building upon the PI Map. This initiative goes beyond simple researcher matching and aims to form an innovation ecosystem through the development of sustained collaborative relationships.

As illustrated in Figure 2, the concept is structured as a process that begins with natural dialogue among researchers and evolves into joint research, industry collaboration, and talent circulation. Rather than facilitating one-off connections, this design emphasizes the evolution of relationships over time.

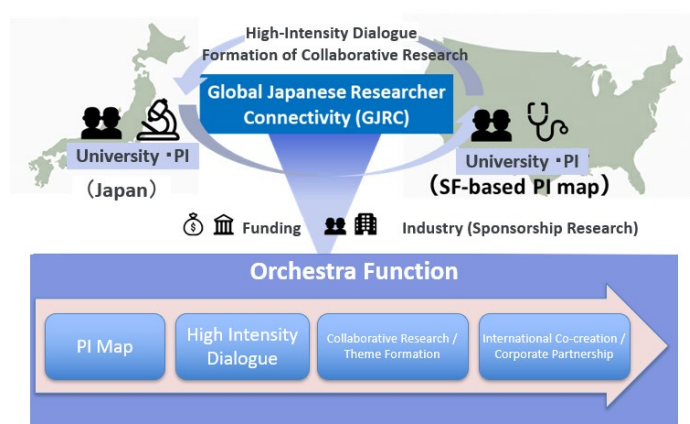


Figure 2 Global Japanese Researcher Connectivity (GJRC) concept

Furthermore, as shown in Figure 3, this concept is operationalized through a co-creation workshop involving Japanese and U.S.-based researchers. The workshop is designed as a two-day program aimed at building sustained research relationships, rather than generating short-term outcomes or ad hoc collaborations.

As discussed in Section 2, innovation emerges through the transition from open exploration to selective collaboration. This section demonstrates how such a process is concretely designed and implemented.

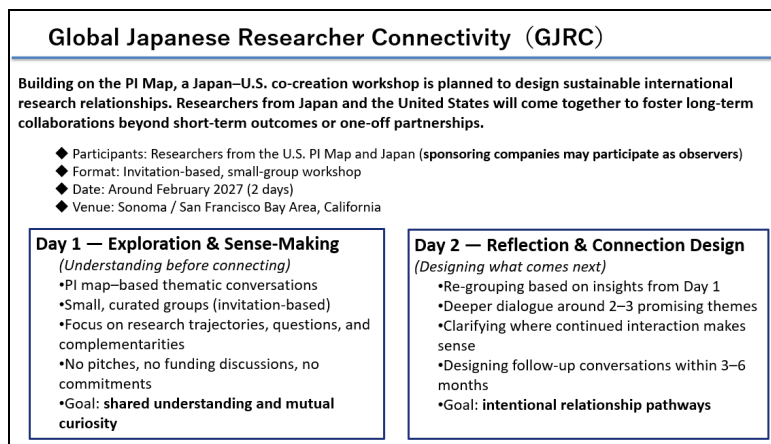


Figure 3 Concrete trial of GJRC through workshop

4.2 Open exploration through PI Map

Figure 4 illustrates how the PI Map functions as an interface connecting open exploration with subsequent selective engagement.

As shown in Figure 4, the PI Map serves as an open interface that enables broad exploration and initial connections. At this stage, access is unrestricted, allowing researchers and organizations from diverse backgrounds to freely establish points of contact.

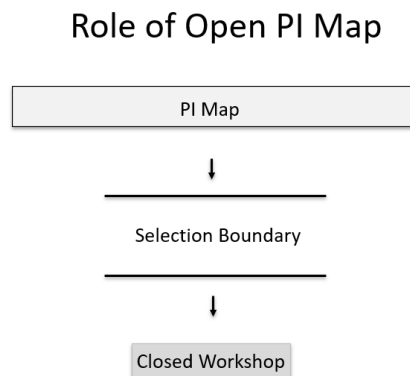


Figure 4 Role of the PI Map as an Interface for Selective Engagement

This open structure has the potential to generate more diverse and unexpected combinations compared to conventional network-dependent approaches. However, relationships formed at this stage remain largely unstructured and do not necessarily lead directly to value creation.

Therefore, while the PI Map expands opportunities for co-creation by enabling broad exploration, it does not guarantee outcomes on its own. Its effectiveness depends on how it is integrated with subsequent processes of selective engagement.

4.3 Selective engagement and relationship formation

Figure 5 shows how interactions generated through open exploration are progressively refined into focused collaborative relationships.

As illustrated in Figure 5, a wide range of initial connections is gradually narrowed through a multi-stage selection process, resulting in a limited number of high-potential collaborations. This process includes stages such as initial contact, candidate screening, and invitation, where relationships are evaluated based on their compatibility and potential value.

This funnel structure highlights that innovation does not emerge from all connections, but rather from selected relationships where resources and attention are concentrated. The selection process plays a critical role in transforming dispersed opportunities into focused collaboration.

Selected participants are invited to join small-scale, invitation-based workshops, where intensive dialogue facilitates the deepening of collaborative relationships. At this stage, the emphasis is placed not on short-term outputs but on building sustained relationships based on mutual understanding.

In particular, this initiative adopts a dialogue design that does not prioritize presentations or immediate funding opportunities. Instead, it encourages in-depth discussions on research backgrounds, problem awareness, and future directions, enabling the formation of relationships that go beyond simple information exchange.

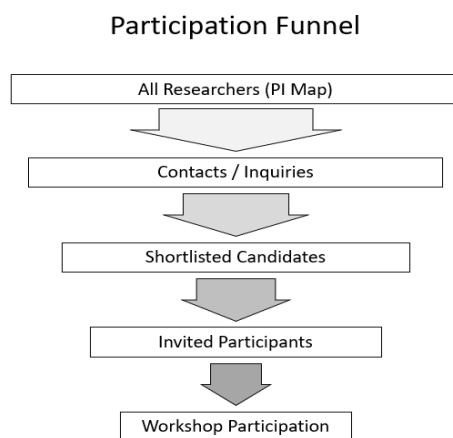


Figure 5 Participation Funnel from Open Access to Focused Collaboration.

Furthermore, the initiative has been well received within the research community, with strong interest in its potential to lead to international collaborative research and industry partnerships. The combination of public funding and sponsorship also suggests the feasibility of a sustainable operational model.

5 Discussion

The findings of this study suggest that a dynamic open–close strategy is not merely a temporal shift between openness and closure, but a structurally designed process. By integrating the conceptual model presented in Section 2 (Figure 1) with the empirical analysis in Section 4 (Figures 4 and 5), innovation can be understood as emerging from the interaction of two key processes.

First, as shown in Table 1, open interfaces generate diverse points of contact and exploration opportunities. At this stage, ensuring diversity of knowledge and actors is critical. Second, as illustrated in Figure 3, selective processes progressively narrow relationships, enabling concentrated collaboration. These findings suggest that the transition from open exploration to collaboration can be understood as a filtering process operating at the boundary between openness and closure. In this sense, innovation does not emerge from openness alone, but from the selective concentration of interactions enabled by this boundary mechanism.

Thus, open exploration and selective relationship formation are complementary processes, and their integration constitutes an effective innovation mechanism. Furthermore, this analysis reconceptualizes the open–close strategy not as a quantitative adjustment of collaboration, but as a process of relationship design. The key issue is not the number of connections, but how relationships are selected and deepened. Finally, the results highlight the role of universities as orchestrators of innovation ecosystems. Universities do not simply provide open spaces for exploration; they actively design processes for selecting and deepening relationships, thereby enabling co-creation. This suggests that the effectiveness of dynamic open–close strategies depend not only on the extent of openness, but on how boundaries are intentionally designed and managed.

6 Conclusion and implications

This study examined the implementation of a dynamic open–close strategy through the case of the PI Map and the Gjrc platform.

The results demonstrate that innovation in university-centered ecosystems depends on the structured integration of an open interface that enables broad exploration and selective processes that deepen relationships. While the PI Map expands opportunities by generating diverse connections, subsequent dialogue and workshop-based selection processes play a crucial role in transforming these connections into sustained collaboration.

The main theoretical contribution lies in reframing the open–close strategy as a process of relationship design, rather than a simple balance between openness and closure. This

perspective aligns with the UCT model, which positions universities as orchestrators of innovation ecosystems.

From a practical standpoint, the findings suggest three key design principles:

- create open interfaces to maximize exploration opportunities;
- design structured dialogue processes to support relationship formation; and
- implement selective participation mechanisms to enable focused collaboration.

These processes should be designed not independently, but as an integrated system.

Moreover, the GJRC framework is not limited to a specific region. While the PI Map was initially developed in the Bay Area, similar initiatives are expected to expand to other countries and regions. Such developments will enable the visualization of distributed researcher networks and facilitate co-creation opportunities at a global scale.

This suggests that the dynamic open–close strategy identified in this study can function as a general principle of ecosystem design, rather than being dependent on a specific institutional or cultural context. The combination of open exploration and selective relationship formation can therefore be understood as a scalable and replicable model for global co-creation.

However, this study is based on a single case, and caution is required in generalizing the findings. Future research should examine the applicability of this model across different regions and institutional contexts, including comparative and quantitative analyses.

In conclusion, this study provides a concrete framework for operationalizing dynamic open–close strategies and offers design insights for building international co-creation ecosystems in university and research contexts.

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