



Paradiplomatic Information Infrastructure: Towards Strengthening Local–Global Collaborative Networks for Local Governments in Indonesia

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Abstract

The rise of paradiplomacy has prompted local governments across countries to become increasingly active in establishing international relations to support regional development. However, the success of local-level international cooperation depends not only on global networks but also on local governments' ability to identify, evaluate, and select partners that align with regional development needs. Existing paradiplomacy literature has largely focused on the motivations, forms, and outcomes of local government international cooperation, while the processes of partner searching and matching remain relatively overlooked. This article aims to develop the concept of Paradiplomatic Information Infrastructure (PII) as a foundation for strengthening local-global collaborative networks for local governments. The study employs a conceptual design grounded in a literature review and document analysis of paradiplomacy, transnational city networks, inter-city learning, and digital governance. The synthesis reveals that international networks serve as spaces for learning and knowledge exchange. At the same time, digital governance offers the potential to expand local governments' access to information about the competencies, track records, and opportunities for cooperation of global actors. The article argues that PII can enhance local governments' partner-matching capacity and reduce reliance on personal relationships and informal mechanisms, thereby fostering more effective, inclusive, and sustainable international cooperation.

Keywords: *Paradiplomacy, Information infrastructure, Transnational city networks, e-government, Partner matching*

INTRODUCTION

Over the past two decades, paradiplomacy has evolved from promoting trade, investment, and friendly relations to cooperation on sustainable development, climate change, technology transfer, and policy learning. Local governments no longer merely implement central policies; they also establish direct relationships with subnational governments, international organizations, the business sector, and global city networks (Eppler et al., 2024; Harakan & Taufik, 2023). This agenda expansion has heightened the need for international partners whose competencies and experience align with local development priorities.

However, existing paradiplomacy literature focuses primarily on why local governments engage in international relations, the forms such activities take, and the outcomes of cooperation (Paquin, 2018; Riyanto et al., 2025). International partners are generally assumed to be readily available when cooperation begins. Consequently, the pre-partnership stage—the process of identifying, assessing, and matching potential partners to local needs—has received limited attention. Yet the quality of partner selection determines the relevance of programs and learning opportunities, as well as the sustainability of cooperation.

This gap is also evident in practice. Collaborations stemming from national-level directives can face misaligned priorities and coordination challenges (Riyanto et al., 2025; Syuryansyah, 2024). In Indonesia, limited operational scope and information constraints lead local governments

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to rely on central government facilitation, personal relationships, and informal networks ([Karim et al., 2024](#)). Although digitalization has begun through the Foreign NGO/CSO Information System (SINGO), the system primarily supports reporting and monitoring of established partnerships rather than the initial identification of potential partners ([Kwek et al., 2026](#)). The core issue is not merely a lack of international opportunities but the absence of infrastructure capable of transforming scattered information into a targeted partner-matching process.

Information-related issues are also tied to disparities in capacity across regions. Regions with international relations units, experienced staff, and global networks find it easier to identify opportunities, whereas resource-constrained regions tend to accept partners introduced by third parties. Consequently, opportunities for collaboration are not always evenly distributed, and partner selection may be driven more by access than by suitability. The pre-partnership phase must therefore be understood as a crucial component of paradiplomacy capacity.

This article introduces the concept of Paradiplomatic Information Infrastructure (PII) to describe the information infrastructure linking local development needs with the competencies of global actors. PII integrates perspectives from the literature on paradiplomacy, transnational city networks, inter-city learning, and digital governance. Its objective is to identify the key dimensions that enable local governments to engage in proactive, transparent, needs-based partner matching. As a preliminary framework, this concept requires further operationalization and empirical testing.

LITERATURE REVIEW

The development of PII draws on three bodies of literature: paradiplomacy; transnational city networks and inter-city learning; and digital governance. While these fields explain different aspects of subnational international cooperation, they have not yet been meaningfully integrated to address the partner-seeking phase.

Paradiplomacy: Motivations, Forms, and Outcomes of Cooperation

Research on paradiplomacy shows that local governments engage in international activities to attract investment, expand trade, strengthen identity, facilitate cultural exchange, and enhance institutional capacity ([Eppler et al., 2024](#); [Harakan & Taufik, 2023](#); [Paquin, 2018](#)). Forms of engagement have broadened beyond sister-city or sister-province arrangements to include transnational city networks, cross-border cooperation, technology transfer, and participation in global governance. Outcomes vary: some regions successfully acquire resources and knowledge, while others face obstacles related to regulations, vertical coordination, and institutional capacity ([Karim et al., 2024](#); [Syuryansyah, 2024](#)).

While the literature effectively explains motivations, forms, and outcomes, it tends to treat partners merely as part of a pre-existing context. In reality, before cooperation is established, local governments need to identify potential partners—considering their areas of expertise, experience, and alignment with local issues. Therefore, access to information and network connectivity should be understood as enabling conditions for establishing cooperation.

Studies on implementation also show that signed cooperation agreements do not necessarily lead to actual programs. Coordination across levels of government, officials' technical capabilities, financing, and alignment with regional planning all influence follow-up actions ([Karim et al., 2024](#); [Prawitno et al., 2022](#)). These findings reinforce the need to assess suitability from the outset: information about potential partners must be weighed against the region's capabilities to ensure that chosen initiatives are feasible.

Transnational City Networks and Inter-city Learning

Cross-border city networks provide spaces for policy learning, experience sharing, and

joint capacity building. Research by [Picavet et al. \(2023\)](#) shows that networks can strengthen institutional arrangements, leadership, knowledge, and resources. [Enseñado \(2024\)](#) adds that learning occurs at both the individual and organizational levels and requires sustained relationships and the documentation of knowledge. Thus, the benefits of networking do not arise automatically from membership alone.

Access to and benefits from networks are shaped by an actor's position, the quality of connectivity, and the organization's capacity to absorb knowledge ([Weidenfeld & Clifton, 2025](#)). Furthermore, information on membership, thematic focus, experience, and collaboration opportunities remains dispersed across organizations ([Tortola, 2025](#)). This situation particularly disadvantages regions with limited international resources. Transnational city networks do not replace the need to strengthen institutional capacity; rather, they reduce information asymmetry and search costs, allowing regional capacity to be directed toward the most relevant partners.

From a learning perspective, networks serve two functions. First, they connect local governments with sources of knowledge and practices tested elsewhere. Second, they help adapt those experiences to the local context. Both functions require traceable information—covering the issues addressed, program mechanics, resources used, outcomes, and limitations. Without documentation, learning often stalls at the stage of visits or exchanges and fails to translate into organizational policy.

Digital Governance as Information Infrastructure

The e-government literature emphasizes that the benefits of digitalization depend on the quality, openness, and government capacity to manage information, rather than on technology alone ([Wei & Zhang, 2025](#)). In many countries, the digital capacity of local governments lags that of central governments ([Department of Economic and Social Affairs, 2024](#)). Consequently, local governments require information infrastructure tailored to their tasks, including identifying opportunities and international partners.

A practical example is the CEMR Matchmaking Platform, which enables European local governments to find partners based on specific needs and areas of cooperation ([CEMR, 2024](#)). Similarly, the EU's IURC program has connected Semarang with Sofia and Bandung with Rome based on specific development issues ([IURC, 2024](#)). However, matchmaking in Indonesia remains largely driven by external facilitation, whereas domestic systems tend to focus on governance once a partnership is established. A synthesis of these three bodies of literature highlights the need for a framework that integrates network-based learning functions with digital access during the pre-partnership stage. These institutional sources were used alongside peer-reviewed studies because they provide current, implementation-specific evidence on existing matchmaking platforms and inter-city programs that is not yet fully captured in academic literature.

Digital platforms should not be viewed merely as websites. Their value is determined by data standards, information updates, verification, access rights, the division of responsibilities, and users' ability to use search results. Outdated data can lead to incorrect decisions, while systems disconnected from government workflows will see little use. Consequently, PII encompasses both technical elements and institutional rules that safeguard the quality and use of information.

RESEARCH METHOD

This article uses a conceptual design in the form of a "model paper" ([Jaakkola, 2020](#)). This approach was chosen to develop the PII concept and clarify the relationships among regional development needs, access to information and networking, partner search and matching processes, and the formation of more relevant collaborations. Data were drawn from journal articles, international agency reports, regulations, and official cooperation program documents ([Bowen,](#)

2009). Literature searches used keywords related to paradiplomacy, transnational city networks, inter-city learning, digital governance, and partnership matching, prioritizing publications from 2023–2026 while still considering relevant foundational works.

The source search covered Google Scholar, Crossref, and the official websites or repositories of international organizations and Indonesian government institutions. The final corpus comprised 22 sources: 17 peer-reviewed journal articles, three institutional or program documents, and two Indonesian regulations. Sources were included if they directly addressed paradiplomacy, transnational city networks, inter-city learning, digital governance, partner matching, place-based development, or the legal framework for subnational international cooperation. Priority was given to publications from 2023–2026, with older works retained when they provided foundational concepts or established analytical methods. Duplicate, tangential, inaccessible, and unverifiable materials were excluded.

The analysis was conducted in two stages. First, thematic analysis was used to identify patterns and gaps across three groups of the literature (Braun & Clarke, 2006). Second, a conceptual synthesis was performed by linking complementary elements and synthesizing them into PII dimensions (Jaakkola, 2020). These dimensions were then compared with documented practices in city networking and international cooperation. Because the study did not use primary data or test hypotheses, the findings are propositional and require empirical validation.

Coding consistency was addressed through iterative comparison. Initial themes were repeatedly checked against the full corpus, overlapping labels were merged, and each proposed PII dimension was retained only if it was supported across more than one source group. The emerging framework was also compared with documented practices in the CEMR Matchmaking Platform and the IURC program. This procedure reduced the risk that the four dimensions reflected a single source or an isolated example, though it did not replace independent empirical validation.

FINDINGS AND DISCUSSION

Paradiplomatic Information Infrastructure is a set of data, access mechanisms, learning processes, and institutional arrangements that provide information on the competencies, track records, and opportunities for cooperation among global actors. This infrastructure helps local governments proactively identify, evaluate, and match partners based on development needs, rather than relying primarily on personal relationships or informal mechanisms. PII is not a substitute for diplomacy, negotiation, or institutional capacity; rather, it serves as an enabling condition that strengthens partner matching during the pre-formation stage of international relationships.

Table 1. Paradiplomatic Information Infrastructure Dimension

Dimension	Operational Definition	Contribution to Partner Matching
Partner Competency and Track Record Data	Structured data on the profiles, expertise, capacity, experience, and program outcomes of potential global partners.	Provides an objective basis for assessing whether a partner's competencies match local development needs.
Search and Matching Mechanisms	Features or procedures for searching, filtering, comparing, and proposing cooperation based on local needs.	Enables local governments to proactively search for partners and expand access beyond their existing networks.
Learning and Knowledge Transfer	Documenting, storing, and sharing good practices and lessons learned from previous	Transforms experience into organizational knowledge that can be reused in future

	cooperation.	cooperation.
Institutional Integration and Policy Alignment	Connects partner information to local priorities, planning documents, and local government decisions.	Ensures that selected partners are relevant and increases the likelihood of sustainable implementation.

These four dimensions are interdependent. Data provides the substance for the search mechanism; the search mechanism transforms data into partner options; learning stores interaction outcomes as institutional memory; and policy integration links the entire process to development priorities. Without these connections, a digital platform risks becoming a passive database, and collaboration risks stalling at the signing of a memorandum of understanding.

Partner Competency Data and Track Records

The first dimension provides structured data on prospective partners' profiles, areas of expertise, collaboration experience, institutional capacity, and program track records. This information is crucial because the success of policy transfer depends on aligning issues with the parties' respective experiences ([Enseñado, 2024](#)).

Currently, information on city networks remains fragmented and difficult to compare ([Tortola, 2025](#)). In Indonesia, this situation exacerbates reliance on informal relationships and central government facilitation ([Karim et al., 2024](#); [Syuryansyah, 2024](#)). An open, verifiable database could mitigate these barriers. Partner profiles should go beyond names and addresses; they should showcase competencies, priority areas, experience, outcomes, and points of contact.

Data quality must be maintained through standardized formats, clear sourcing, update dates, and periodic verification. Records should include program types, implementation regions, past partners, funding sources, outputs, outcomes, and challenges. This information enables local governments to compare candidates more equitably. However, data management must also address security, authorization, and limits on public disclosure.

Search and Matching Mechanism

The second dimension transforms data into a process for searching, filtering, comparing, and proposing partnerships. Local governments need the ability to start with a specific problem or priority sector and then identify actors with relevant experience and capacity. This mechanism lowers search costs and reduces reliance on decisions based solely on historical ties, administrative considerations, or fleeting opportunities ([Tortola, 2025](#); [Weidenfeld & Clifton, 2025](#)).

In Indonesia, [Government Regulation \(PP\) No. 28 of 2018](#) and [Minister of Home Affairs Regulation \(Permendagri\) No. 25 of 2020](#) govern the approval, coordination, and implementation of partnerships once potential partners have been identified. However, neither regulation provides specific tools for finding and comparing potential partners. Consequently, a matching function within the PII could expand access for regions that lack global networks or robust international resources.

The process can begin by defining local issues, establishing criteria, identifying candidates, vetting track records, assessing compatibility, and initiating communication. The system does not usurp political decision-making or negotiations; rather, it provides preliminary evidence to ensure decisions are more accountable. Users also need to understand the rationale behind specific recommendations so that the matching process does not become an opaque, automated procedure.

Learning and Knowledge Transfer

The third dimension involves documenting best practices, challenges, outcomes, and lessons learned from the collaboration. While international networks can accelerate policy learning, knowledge often remains siloed with specific officials and is lost during bureaucratic rotations (Enseñado, 2024; Picavet et al., 2023). PII needs to transform individual experiences into organizational knowledge that other local governments can search, evaluate, and reuse.

This function also strengthens the assessment of potential partners: experience can reveal not only successes but also contextual fit and implementation risks. In this way, knowledge is treated as a collective resource rather than merely a byproduct of a program. By feeding both successful and unsuccessful experiences back into partner profiles and future search criteria, this learning function turns each collaboration into evidence for subsequent partner selection.

Institutional Integration and Policy Alignment

The fourth dimension links partner information to development priorities, planning documents, organizational capacity, and local decision-making mechanisms. The mere availability of partners does not guarantee development benefits; collaborations can stall at the Memorandum of Understanding (MoU) stage—without resulting in actual programs—if coordination is weak or misaligned with local needs (Prawitno et al., 2022; Syuryansyah, 2024). Therefore, the search for partners must begin by identifying local issues and desired outcomes.

The logic of PII moves from regional needs to identifying partners with relevant experience, aligning with the place-based development approach (Barca et al., 2012). Information on potential partners must be linked to priority sectors, medium-term development plans, responsible organizational units, available resources, and approval procedures. This integration increases the likelihood that the collaboration will be incorporated into official programs, secure budgetary support, and continue beyond changes in leadership.

Integration also requires a clear division of roles. An external cooperation unit can manage the process and inter-institutional relationships, while technical regional government agencies assess needs and substantive feasibility. The planning agency ensures alignment with development priorities, and the central government coordinates in accordance with regulations. This division of roles prevents PII from becoming a technology project isolated from organizational decision-making.

Conceptual Scope and Contributions

PII differs from general e-government initiatives, which typically focus on domestic public services, transparency, and bureaucratic efficiency. PII provides information on competencies, track records, and global collaboration opportunities to support paradiplomacy. It also differs from studies of transnational city networks, which generally examine policy learning and diffusion after relationships or memberships are established. PII's primary focus is the pre-partnership stage: identifying, evaluating, and selecting partners before collaboration begins.

PII is also distinct from the CEMR Matchmaking Platform, which primarily supports partner discovery and initial connection. PII extends beyond matchmaking by combining verified track-record data, a transparent comparison process, institutional learning from completed collaborations, and alignment with formal development planning. Its novelty lies in treating partner selection as a continuous information cycle that links pre-partnership search, implementation feasibility, and feedback for future decisions, rather than as a stand-alone directory or matching service.

Conceptually, PII links four steps: development needs shape search criteria; data and matching mechanisms generate candidates; institutional integration transforms selections into

actionable collaborations; and learning updates the data for future decisions. The expected outcome is not a greater number of partners, but rather more suitable choices, more equitable access, and programs with a higher likelihood of sustainability. These relationships remain propositions and should not be treated as proven causal links.

Implications for Model Development and Future Research

From a policy perspective, strengthening subnational international cooperation requires more than refining administrative procedures; the four dimensions of the PII framework must be developed in an integrated manner. This framework can also expand access for regions that have historically lagged in leveraging global partnerships, thereby supporting SDG 17. From a research perspective, the PII dimensions need to be operationalized as indicators and tested across various local governments. Future studies could be conducted in the Special Region of Yogyakarta—specifically involving the DPMPTSP (Regional Investment and One-Stop Integrated Service Agency) as an initial pilot site—to assess user needs and design a digital service prototype.

CONCLUSIONS

While the paradiplomacy literature has elucidated the motivations, forms, governance, and outcomes of local government international relations, it has not sufficiently addressed the processes for identifying and selecting partners. Addressing this gap is crucial, as a lack of information fosters reliance on personal connections, external facilitation, and opportunities that may not necessarily align with development needs.

This article proposes the PII as a framework comprising data, search and learning mechanisms, and institutional arrangements designed to strengthen partner matching. Its four dimensions are partner competency and track-record data; search and matching mechanisms; learning and knowledge transfer; and institutional integration and policy alignment. When implemented together, these elements can reduce information asymmetry, expand access to networks, build organizational memory, and enhance alignment of partnerships with regional priorities.

As currently conceptualized, the PII does not yet serve as a measurement instrument, nor has a causal relationship been established. Future research needs to develop indicators, assess user needs, and test its application across various regional contexts. Thus, the PII offers an initial framework for understanding that the success of paradiplomacy depends on local governments' ability to acquire and use information to identify suitable partners.

LIMITATIONS & FURTHER RESEARCH

This study has three limitations. First, it is conceptual and relies on secondary literature and documents, so it neither tests hypotheses nor establishes causal effects between the PII dimensions and cooperation outcomes. Second, the framework is developed primarily from the Indonesian context, limiting its direct generalizability to other political and administrative systems. Third, the four dimensions have not yet been validated by experts or practitioners. Future research should therefore use interviews, focus group discussions, and pilot testing with local government users to assess the framework's relevance and usability.

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