



Multiple Intelligences Plus Strategy for Health Workforce Development in Central Sulawesi

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Abstract

Health transformation requires health human resources (HHR) with multidimensional competencies that extend beyond technical expertise, encompassing emotional, social, ethical, digital, financial, and governance capabilities. However, regional health workforce development systems remain predominantly technical and program-oriented. This study aimed to analyze the current HHR development system, identify competency gaps, and formulate a Multiple Intelligences Plus (MI+) based strategy incorporating Political Quotient (PolQ) to support health transformation at the Central Sulawesi Provincial Health Office. A qualitative descriptive case study was conducted from February to July 2026. Three key informants representing the policy, training-management, and implementation levels were selected purposively. Data were collected through in-depth semi-structured interviews, non-participant observation, and document review, and analyzed using Miles, Huberman, and Saldaña's interactive model with source and method triangulation, member checking, and an audit trail. The results showed that HHR development remained program-driven, administrative, and dominated by technical competencies, while emotional, social, creative, digital, moral, physical, environmental, financial, and political competencies were not systematically integrated. Supporting factors included leadership commitment, regulatory support, and the presence of a health training center, whereas barriers included budget limitations, uneven digital infrastructure, high workload, and resistance to change. The study formulated an eleven-dimension MI+ strategy IQ, EQ, SQ, SoQ, CQ, DQ, MQ, PQ, EnQ, FQ, and PolQ integrated into an Input–Process–Output–Outcome–Impact framework, with Financial Quotient and Political Quotient as novel dimensions. The MI+ strategy provides a holistic conceptual model for transforming health professionals into adaptive, ethical, innovative, collaborative, and governance-oriented human resources.

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1. INTRODUCTION

Health human resources (HHR) are a fundamental determinant of successful health system transformation. Achieving universal health coverage, resilient health systems, and sustainable health development depends not only on infrastructure, financing, and technology, but also on the capacity of health workers to adapt, collaborate, innovate, and translate health policies into effective services (Campbell et al., 2013; Debie, Nigusie, Gedle, Khatri, & Assefa, 2024; Zhang & Kim, 2024). Health workers are the central component of people-centered and resilient health systems, requiring competencies that extend beyond technical knowledge toward leadership, communication, teamwork, ethical practice, and continuous professional development.

The rapid transformation of health systems has created increasingly complex demands for health professionals. Digital health implementation, integrated primary care, multidisciplinary collaboration, evidence-based decision-making, and community-oriented services require health workers who possess adaptive and multidimensional competencies (Ebo, Clement David-Olawade, Ebo, Egbon, & Olawade, 2025; Edwards et al., 2026; Thacharodi et al., 2024). Nevertheless, many workforce development systems remain dominated by conventional approaches that emphasize technical knowledge acquisition and short-term training rather than comprehensive competency development and measurable changes in workplace performance (Endalamaw et al., 2024; Sutton et al., 2023; Welter, Bekemeier, & McKeever, 2021).

In Indonesia, the national health transformation agenda focuses on strengthening primary health care, referral systems, health resilience, digital transformation, and health workforce capacity. These priorities require health workers who are not only clinically competent but also capable of effective communication, collaborative practice, ethical decision-making, digital adaptation, resource management, and stakeholder engagement. However, workforce development at the regional level often remains fragmented, program-oriented, and insufficiently connected with systematic competency assessment (El-Tsana, Alvianty, Octaviani, Syahidah, & Wasir, 2025; Setiaasih et al., 2025). Geographical challenges and the uneven distribution of health workers further intensify these demands, particularly in eastern Indonesia (Muharram et al., 2024).

The health workforce development context in Central Sulawesi Province reflects this challenge. Although various training and professional development activities have been implemented, the existing approach has not fully integrated the broader competencies required for health transformation. Competency development has largely emphasized technical capability, while dimensions such as emotional intelligence, social competence, creativity, digital readiness, environmental awareness, financial accountability, and policy engagement remain insufficiently institutionalized (Endalamaw et al., 2024; Suprpto et al., 2026). Previous studies have examined health workforce competencies from specific perspectives technical competence, digital capability, emotional intelligence, and leadership but few have integrated these dimensions into a comprehensive framework combining individual capability, interpersonal competence, organizational capacity, and governance-oriented skills, and the role of political capability as a competency dimension remains particularly underexplored.

The Multiple Intelligences Plus (MI+) framework is proposed as an applied competency framework to address this gap. Based on the perspective that human capability cannot be represented by cognitive ability alone, MI+ integrates multiple dimensions relevant to contemporary health work, including Intelligence Quotient (IQ) (Indahsari, Ratnasari, & Mustamid, 2025), Emotional Quotient (EQ) (Cheraghi, Parizad, Alinejad, Piran, & Almasi, 2025; Maity et al., 2025; Naggari et al., 2025), Spiritual Quotient (SQ) (Ghonchehpour, Parandeh Afshar, Targari, Maazallahi, & Azzizadeh Forouzi, 2025;

Ikhwan, Rohmad, Tobroni, & Zukhrufin, 2025), Social Quotient (SoQ) (Boetto, 2026), Creative Quotient (CQ), Digital Quotient (DQ) (Branco, Chagas, Lopes, Pisa, & Silva, 2025), Moral Quotient (MQ), Physical Quotient (PQ), Environmental Quotient (EnQ) (Gupta, Bhattacharyya, & Kumar, 2025; Kumar Srivastava, Deepika, & Gupta, 2026), Financial Quotient (FQ), and Political Quotient (PolQ) (Ashraf & Iqbal, 2011). In this study, MI+ is positioned not as a direct modification of Gardner's original theory of multiple intelligences, but as an operational competency framework integrating individual, interpersonal, organizational, and governance capabilities required in modern health systems.

A key contribution of this study is the introduction of Political Quotient (PolQ) as an additional strategic dimension of health workforce competency. Health transformation is not merely a technical process but also a governance process involving complex interactions among government institutions, health facilities, communities, professional organizations, and other stakeholders. Health professionals therefore require the ability to understand policy environments, recognize stakeholder interests, communicate strategically, advocate evidence-informed decisions, negotiate resources, and build collaborative networks. This study aimed to analyze the current condition of health human resource development, identify competency gaps, and formulate an MI+ based strategy incorporating Political Quotient to support health transformation at the Central Sulawesi Provincial Health Office.

2. METHODS

This study employed a qualitative descriptive case study design to obtain an in-depth understanding of the current condition of health human resource (HHR) development, identify competency gaps, and formulate a Multiple Intelligences Plus (MI+) based strategic framework to support health transformation in Central Sulawesi Province. A qualitative approach was selected because the objective was not only to describe competency conditions but also to explore the experiences, perceptions, organizational practices, and contextual factors influencing workforce development, and to formulate a context-specific strategy relevant to organizational change and health system transformation.

The study was conducted at the Central Sulawesi Provincial Health Office, Indonesia, the main institution responsible for health workforce planning, policy implementation, coordination, and competency development at the provincial level. Data were collected from 1 February 2026 to 31 July 2026, covering research preparation, instrument development, data collection, observation, document review, qualitative analysis, verification, and formulation of the strategic framework. The setting was selected because of the Provincial Health Office's strategic role in implementing health transformation policy and managing health human resources across thirteen districts and municipalities, supported by the Health Training Center (Bapelkes).

Informants were selected using purposive sampling based on the principle of information richness, considering their knowledge, experience, and involvement in workforce development. Inclusion criteria comprised a strategic role in workforce planning or development, experience in managing or implementing training programs, an understanding of workforce competency requirements, involvement in health transformation initiatives, and voluntary willingness to participate. Three key informants were selected to represent three levels of the workforce development system: the policy level (the Head of the Provincial Health Office), the training-management level (the Head of the Health Training Center/Bapelkes), and the implementation level (the Head of the

Training Section). This composition was intended to capture policy, managerial, and operational perspectives.

Data were collected using three complementary techniques: in-depth semi-structured interviews, non-participant observation, and document review. Interviews were the primary technique and followed a guide derived from the MI+ conceptual framework, exploring the current condition of the workforce development system, existing competency approaches and challenges, the relevance of the eleven MI+ dimensions, supporting and inhibiting factors, and strategic recommendations. Interviews were conducted in Indonesian, audio-recorded with permission, and transcribed verbatim. Non-participant observation focused on organizational conditions, work practices, communication patterns, and competency development activities. Document review included the Provincial Health Office Strategic Plan 2025–2029, the Regional Medium-Term Development Plan 2025–2029, workforce planning and health-personnel documents, training documents, evaluation reports, standard operating procedures, and health transformation policies.

Data were analyzed using the interactive model of Miles, Huberman, and Saldaña (Raskind et al., 2019), comprising data condensation, data display, and conclusion drawing or verification. Transcripts, observation notes, and documents were reviewed systematically; relevant information was coded iteratively and organized into thematic matrices covering the current workforce development system, competency imbalance, the relevance of MI+ dimensions, the role of Political Quotient, supporting and inhibiting factors, and development strategies. The MI+ strategy was developed through synthesis of empirical findings, competency development concepts, and the requirements of health transformation, and therefore represents a conceptual strategic framework grounded in qualitative evidence rather than a quantitatively validated predictive model.

Trustworthiness was ensured using the criteria of Lincoln and Guba credibility, dependability, confirmability, and transferability. Credibility was strengthened through source triangulation (comparing informants across organizational levels), method triangulation (comparing interviews, observation, and documents), and member checking. Dependability was maintained through systematic documentation of procedures and coding decisions, and confirmability through an audit trail demonstrating that findings derived from empirical data. Transferability was supported by detailed description of the setting, informants, and context. Because the principal researcher is a functional planner within the Provincial Health Office, an insider-researcher position was explicitly acknowledged; reflexivity, triangulation, member checking, and continuous verification were applied to maintain objectivity and mitigate potential bias.

Ethical principles were applied throughout. The study received ethical approval from the Health Research Ethics Committee of Sekolah Tinggi Ilmu Kesehatan (STIKES) Yahya Bima (No. 0090/EC/KEPK/STIKES-YB/II/2026, issued on 1 February 2026, Bima, Indonesia). All informants received information about the objectives, procedures, potential risks, and benefits of the study and provided voluntary informed consent. Confidentiality and anonymity were maintained, and the principles of respect for autonomy and non-maleficence were upheld in accordance with ethical standards for health research.

3. RESULTS AND DISCUSSION

The Central Sulawesi Provincial Health Office is a regional government unit with a strategic role in health development, including the development of health human resources. Its organizational structure follows Governor Regulation No. 57 of 2022, and it oversees thirteen districts and municipalities. Based on 2025 data, the office employed 274 personnel structural officials, functional officials, and implementing staff with

educational backgrounds ranging from senior secondary to postgraduate level. Workforce development is supported by the Health Training Center (Bapelkes) as the institution responsible for competency development, alongside other technical units and the provincial referral hospitals.

Three key informants participated, representing the policy, training-management, and implementation levels of the workforce development system, as summarized in Table 1.

Table 1. Characteristics of the key informants.

Informant code	Position	Role in HHR development
Informant I	Head of the Central Sulawesi Provincial Health Office	Policymaker and determinant of the strategic direction of HHR development
Informant II	Head of the Health Training Center (Bapelkes)	Manager and person responsible for training programs and competency development
Informant III	Head of the Training Section	Technical implementer directly involved in delivering and evaluating training

Current condition of health human resource development.

The results indicate that HHR development at the Central Sulawesi Provincial Health Office has been implemented through various education and training activities but remains predominantly oriented toward technical competencies and the fulfilment of program requirements. Informants consistently described training as program-driven and top-down rather than grounded in a systematic assessment of field needs. As one informant observed, training "has not been fully based on field needs and is still program driven," while another noted that programs largely "follow available central or annual agendas, so specific field needs are not fully met." A third informant emphasized that training "still focuses on delivering material and is not yet fully oriented toward competency change," although some competency-based programs, such as primary health center management training, had been introduced.

These accounts indicate a gap between the competencies required for health transformation and an existing approach that remains conventional and technically oriented. From a human resource management perspective, workforce development should be understood not only as the improvement of knowledge and technical skills but also as a continuous process of shaping attitudes, behaviors, adaptability, and individual capacity to achieve organizational goals. This aligns with the view that HHR development is a systematic process for improving employees' knowledge, skills, attitudes, and behaviors, and that the quality of human resources is increasingly determined by the capacity to adapt, innovate, and create added value rather than by technical ability alone. The identified gaps are summarized in Table 2.

Table 2. Summary of health human resource development gaps.

Aspect	Current condition	Expected condition	Gap level
Development system	Programmatic and administrative	Competency- and need-based	High
Training planning	Top-down and activity-based	Training-needs-assessment-based	High
Technical competency (IQ)	Dominant	Balanced with other dimensions	Moderate
Emotional and social competency	Not yet optimal	Empathic, communicative, collaborative	High
Digital competency	Uneven and limited	Digitally adaptive and data-driven	High
Training evaluation	Output-oriented	Outcome- and performance-oriented	High
Policy implementation	Fragmented at regional level	Integrated into planning and evaluation	High

Competency gaps and the relevance of the MI+ dimensions.

Analysis of the interviews revealed a consistent imbalance between technical (hard-skill) and non-technical (soft-skill) competencies. Development that is relatively well established relates to intellectual and moral aspects, whereas emotional, social, creative, digital, financial, environmental, and political dimensions have not received proportional attention. Informants noted that HHR development "still focuses more on technical competence than on adaptation, communication, and leadership," that "emotional, collaboration, and leadership aspects are not yet a core part of the training curriculum," and that "training methods are still relatively uniform and do not accommodate the diverse needs of participants." These findings echo evidence that successful service delivery in modern health organizations depends not only on analytical ability but also on emotional regulation, social interaction, ethical judgment, and digital capability (Cheraghi et al., 2025; Ebo et al., 2025; Maity et al., 2025).

Examined dimension by dimension, the eleven MI+ competencies were all judged relevant to health transformation. The Intelligence Quotient (IQ) remained the most dominant focus of current development, oriented toward knowledge, technical skills, and program administration. The Emotional Quotient (EQ) communication, empathy, emotional regulation, and stress management was considered essential for patient-centered care but was not developed systematically; interpersonal communication training had occurred previously but was not sustained (Naggar et al., 2025). The Spiritual Quotient (SQ), expressed as integrity, dedication, professional ethics, and moral responsibility, had grown within the working culture but was not yet structurally embedded in competency development (Ghonchehpour et al., 2025; Ikhwan et al., 2025). The Social Quotient (SoQ) and Creative Quotient (CQ) were recognized as increasingly important for cross-professional collaboration and service innovation, yet collaboration was still hampered by sectoral ego and innovation depended largely on individual initiative (Boetto, 2026).

The Digital Quotient (DQ) emerged as a priority dimension for health transformation and service digitalization; although digital literacy was improving and e-learning had begun, capability remained uneven and constrained by infrastructure limitations (Branco et al., 2025; Edwards et al., 2026; Thacharodi et al., 2024). The Moral Quotient (MQ) and Physical Quotient (PQ) were seen as foundational for professionalism and work resilience, with high workload and fatigue affecting performance. The Environmental Quotient (EnQ) was considered relevant to sustainable health services waste management and sanitation training had occurred, but environmentally responsible behavior was not yet institutionalized (Gupta et al., 2025; Kumar Srivastava et al., 2026). Finally, the Financial Quotient (FQ) and Political Quotient (PolQ) were regarded as important within the health bureaucracy: FQ relates to budget planning, resource efficiency, and program accountability, whereas PolQ concerns advocacy, strategic communication, networking, and cross-sector collaboration capabilities that informants agreed were decisive for program success but were not yet part of structured development (Ashraf & Iqbal, 2011). The key findings and strategic implications for each dimension are presented in Table 3.

Table 3. MI+ dimensions: key findings and strategic implications.

Dimension	Key interview finding	Strategic implication
IQ	Development dominated by technical knowledge and program administration	Balance evidence-based reasoning with other dimensions
EQ	Communication, empathy, and emotion management not developed systematically	Patient-centered communication and stress management
SQ	Integrity and professional ethics present but informal	Structured strengthening of values and professionalism
SoQ	Collaboration underway but limited by sectoral ego	Interprofessional teamwork and coordination
CQ	Innovation depends on individual initiative	Build a culture of creativity and service innovation
DQ	Digital literacy improving but uneven	Digital health readiness and data-driven practice
MQ	Moral integrity valued but not consistently reinforced	Accountability and integrity-based work culture
PQ	High workload and fatigue affect performance	Occupational health and workload management
EnQ	Environmental awareness not yet institutionalized	Sustainable, environmentally responsible services
FQ	Financial literacy not a development focus	Budgeting, resource efficiency, and accountability
PolQ	Advocacy and networking decisive but unstructured	Advocacy, negotiation, and stakeholder collaboration

Supporting and inhibiting factors.

Implementation of MI+ based HHR development was shaped by factors originating from both the internal and external environment of the organization. Supporting factors included leadership commitment, regulatory and policy support, the presence of the Health Training Center (Bapelkes), rising awareness among health workers of the need for multidimensional capacity, and the national health transformation agenda. Inhibiting factors included budget limitations, uneven digital infrastructure, high workload, resistance to change, conventional training methods, and the absence of integrated multidimensional competency development. These factors are summarized in Table 4.

Table 4. Supporting and inhibiting factors in MI+ based HHR development.

Supporting factors	Inhibiting factors
Leadership commitment and regulatory support; presence of the Health Training Center (Bapelkes); national health transformation policy; rising awareness of the need for competency development; and demand for improved workforce quality.	Budget limitations; uneven digital infrastructure; high workload; resistance to change; conventional, activity-based training; and the absence of integrated multidimensional competency development.

From an organizational-change perspective, these findings indicate that the success of HHR development depends not only on the quality of training programs but also on organizational readiness to create an environment that supports learning and competency development. Organizations with strong leadership commitment adopt new approaches more readily than those that retain conventional work patterns, consistent with the principles of the learning organization, which emphasize a learning culture, individual capacity development, and continuous learning. The national health transformation policy provides a significant opportunity to develop more adaptive and innovative human resources, although resource, infrastructure, and organizational-capacity constraints must be addressed for MI+ based development to be implemented optimally (Debie et al., 2024; El-Tsana et al., 2025).

An MI+ based strategy and the proposed conceptual model.

Synthesizing the findings, the study formulated a strategy directing HHR development toward a more holistic, integrated, and sustainable competency system. Rather than focusing on technical competence alone, the strategy integrates the eleven MI+ dimensions into workforce planning and development, and translates them through education and training, coaching, mentoring, digital and project-based learning, on-the-job training, knowledge sharing, and competency-based evaluation. Crucially, evaluation is shifted from measuring participant satisfaction toward assessing competency improvement and organizational impact, because informants reported that satisfaction with training was relatively high while measurable competency gains remained limited.

The strategy is operationalized through a conceptual model that embeds the MI+ dimensions within an Input–Process–Output–Outcome–Impact (IPOOI) framework, as presented in Table 5. The model links individual competency development to organizational performance, quality of care, and the goals of health transformation, and requires strong policy support, capable leadership, mentoring systems, continuous evaluation, and integration into career-development planning.

Table 5. The MI+–IPOOL conceptual model for HHR development.

Stage	Key elements
Input	Health transformation policy and regulation, leadership commitment, budget and resources, the Health Training Center (Bapelkes), the HHR management system, and identified competency needs
Process	Integration of the eleven MI+ dimensions (IQ, EQ, SQ, SoQ, CQ, DQ, MQ, PQ, EnQ, FQ, PolQ) through education and training, coaching, mentoring, digital and project-based learning, on-the-job training, knowledge sharing, and competency-based evaluation
Output	Health workers who are competent, adaptive, innovative, ethical, collaborative, and digitally literate
Outcome	Improved workforce performance, quality of care, program effectiveness, organizational governance, and community satisfaction
Impact	Realized health transformation, strengthened regional health system, and improved population health status

DISCUSSION

The findings confirm that current HHR development in Central Sulawesi remains oriented toward hard skills, whereas health transformation demands broader, multidimensional competencies. This is consistent with human capital theory, which frames human resources as a strategic asset developed through investment in education, training, and competency, and with contemporary evidence that workforce quality increasingly depends on adaptability, collaboration, innovation, and value creation rather than technical ability alone (Endalamaw et al., 2024; Sutton et al., 2023). It also aligns with global directions in workforce development that pair technical proficiency with teamwork, communication, ethics, digital readiness, and leadership (Campbell et al., 2013; Zhang & Kim, 2024).

Theoretically, the study extends Gardner's concept of multiple intelligences. While Gardner emphasized that individuals possess diverse forms of intelligence to be developed according to context, the MI+ framework operationalizes and expands this idea for the health sector, adding digital, moral, physical, environmental, financial, and political dimensions relevant to contemporary health development. The inclusion of Financial Quotient and Political Quotient constitutes a central novelty: FQ strengthens resource planning, efficiency, and program accountability, while PolQ strengthens policy advocacy, strategic communication, networking, and cross-sector collaboration capabilities repeatedly identified by informants as decisive for the success of health programs (Ashraf & Iqbal, 2011).

Practically, integrating the eleven MI+ dimensions provides a more comprehensive approach than models focused solely on technical competence, enabling holistic, adaptive, and sustainable development. Implementation can proceed through competency mapping based on the MI+ dimensions, transformation of training curricula to develop both technical and non-technical competencies, strengthened learning methods (coaching, mentoring, digital learning, project-based and collaborative learning), and competency- and performance-based evaluation. Supported by policy, leadership, a learning-organization culture, and digital technology, MI+ can function not only as an individual competency concept but also as an organizational strategy for improving the quality of health services (Ebo et al., 2025; Setiaasih et al., 2025; Suprpto et al., 2026).

As the model was derived from qualitative evidence in a single provincial setting, it is best regarded as a conceptual contribution requiring further empirical and quantitative validation.

4. CONCLUSION

This study demonstrates that health workforce transformation in Central Sulawesi Province requires a paradigm shift from technical competency development toward multidimensional capability building. The current HHR development system has operated through various education and training activities but remains program-driven, administrative, and dominated by technical competencies, leaving emotional, social, creative, digital, moral, physical, environmental, financial, and political dimensions insufficiently integrated. Competency gaps were identified at the conceptual, competency, implementation, and systemic levels, and the application of MI+ remained partial. To address these gaps, the study formulated a Multiple Intelligences Plus strategy enriched with Financial and Political Quotients and embedded in an Input–Process–Output–Outcome–Impact framework, offering a holistic, need-based, integrative, adaptive, and sustainable conceptual model for regional health workforce development within the national health transformation agenda.

It is recommended that regional government and the Central Sulawesi Provincial Health Office institutionalize the MI+ framework within workforce planning by shifting from activity-based training toward competency- and needs-based development guided by training-needs assessment, integrating non-technical competencies particularly emotional, social, digital, financial, and political capabilities into structured programs, and adopting outcome-oriented evaluation that measures competency improvement and workplace performance. The Health Training Center (Bapelkes) is encouraged to develop multidimensional, competency-based training through blended, experiential, and case-based learning, coaching, and mentoring, while health workers are encouraged to continuously strengthen non-technical capacities. Because this study produced a conceptual framework derived from qualitative evidence in a single provincial setting, future research should develop operational implementation models, test the MI+ approach quantitatively across broader health service settings, and design instruments to measure multidimensional competencies.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Amsal contributed to conceptualization, methodology, investigation and data collection, formal analysis, interpretation of findings, writing the original draft, and supervision. Budiman contributed to conceptualization, methodology, investigation and data collection, formal analysis, interpretation of findings, and writing, reviewing, and editing the manuscript. Hamidah contributed to methodology, investigation and data collection, formal analysis, interpretation of findings, and writing, reviewing, and editing the manuscript. Zhanaz Tasya, Ahmad Yani, and Sudirman contributed to interpretation of findings and writing, reviewing, and editing the manuscript. Munawir H. Usman contributed to investigation and data collection, interpretation of findings, and writing, reviewing, and editing the manuscript. Rajindra contributed to interpretation of findings and writing, reviewing, and editing the manuscript. All authors approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

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DECLARATION OF ARTIFICIAL INTELLIGENCE USE

The authors used generative artificial intelligence (AI)-assisted technology solely to improve the language quality, sentence structure, readability, and overall organization of this manuscript, including translating and paraphrasing selected text to enhance clarity while preserving the original scientific meaning. The authors reviewed and verified all content and remain fully responsible for the accuracy, originality, and integrity of the manuscript.

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