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Service Innovation for Sustainable Urban Mobility: The Case of Bike Itaú and Its Role in Brazil's Micromobility Ecosystem

MARIA DO CARMO RODRIGUEZ
UNIVERSIDADE PRESBITERIANA MACKENZIE (MACKENZIE)

DIMÁRIA SILVA E MEIRELLES
UNIVERSIDADE PRESBITERIANA MACKENZIE (MACKENZIE)

GILBERTO PEREZ
UNIVERSIDADE PRESBITERIANA MACKENZIE (MACKENZIE)

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Introduction

The urban sustainable mobility poses increasingly complex challenges in the face of accelerating urbanization, environmental impacts of transportation systems, and the urgent demand for social inclusion. Within this evolving context, Mobility as a Service (MaaS) emerges as an innovative paradigm that integrates multiple transportation modes into a single, user-centered, digitally supported platform. By offering personalized, coherent, and low-emission mobility solutions, MaaS aims to transform the way people move in cities, fostering accessibility, efficiency, and environmental responsibility (Rindone, 2022).

MaaS is designed to consolidate public transport, shared mobility services, and on-demand modes into a unified service package. This integration enables users to plan, book, and pay for multimodal journeys through a single digital interface, improving the efficiency and convenience of urban travel. By reducing dependence on private automobiles, MaaS contributes directly to the objectives of sustainable mobility, including lower carbon emissions, better use of urban space, and increased transport equity (Savastano et al., 2023). However, MaaS implementation has encountered significant barriers. These include governance fragmentation, lack of interoperability among systems, unequal access to digital platforms, and behavioral resistance from users accustomed to car ownership (Basu & Ferreira, 2021).

Recent studies indicate that beyond its environmental benefits, MaaS can also generate social value by improving access to mobility for marginalized populations, since that equity and accessibility are embedded in system design from the beginning (Savastano et al., 2023; Rindone, 2022). The success of such systems relies on effective coordination among actors within the transport ecosystem, including operators, regulators, platform developers, infrastructure providers, and end-users. This requires an adaptive and collaborative governance model, capable of mediating diverse interests and ensuring the alignment of technological innovation with social inclusion (Le Pira et al., 2021).

From a technical standpoint, the literature emphasizes the importance of integrated network design and decision-making models that allow for the assessment of trade-offs between different stakeholder priorities. The complexity of MaaS systems demands robust methodologies that address both physical aspects (e.g., infrastructure, vehicles, equipment) and intangible elements (e.g., data, digital services, platform governance) in constructive collaboration with sustainability objectives (Rindone, 2022).

User acceptance remains a critical factor in the adoption of MaaS, particularly in suburban or low-density areas. Studies have shown that price sensitivity, service reliability, and the inclusion of electric vehicles are key drivers of adoption (Brezovec & Hampl, 2021). Market segmentation and conjoint analysis indicate a latent demand for more sustainable and flexible shared mobility services, but only when these services are tailored to the specific needs and behaviors of diverse consumer groups.

This multiplicity of approaches reveals that MaaS should not be understood merely as a technological innovation or business model. Rather, it constitutes a dynamic and multi-level service ecosystem, where diverse actors co-create value through the coordination of services and information exchange (Le Pira et al., 2021). In such an ecosystem, users, transport providers, public authorities, platform operators, and infrastructure developers share responsibilities and benefits, shaping the urban mobility experience collaboratively.

Here in this case study, we show the MaaS solution was developed by Itaú through the partnership with Tembici, a company dedicated to transforming urban mobility in Latin America.

Value Creation: Urban Mobility as a Service and Tembici technological innovation

In the early 2010s, Brazilian urban centers faced a paradox. On one hand, economic growth and urban expansion have generated demand for increasingly mobile lifestyles. On the other hand, the prevailing transportation model, centered on private cars, poor-quality public transit, and infrastructural deficits, had reached an unsustainable limit. In cities like São Paulo and Rio de Janeiro, daily congestion, air pollution, and lengthy travel times disproportionately affected lower-income populations and placed enormous pressure on public systems. Traditional mobility solutions, designed mainly around roads and motorized transport, were no longer fit for purpose.

It was in this context that the seeds of a new business model based on a different logic of urban movement: shared, sustainable, and digitally integrated. In 2010, Tomás Martins, then an environmental engineering student, began prototyping an idea that would later become Tembici, a company dedicated to transforming urban mobility in Latin America. His vision was grounded in the belief that bicycles, long marginalized in Brazilian transport culture, could become central to a new paradigm of Mobility as a Service (MaaS), one in which individuals would access mobility on demand, and without the need for vehicle ownership.

Before the partnership with Itaú, Tembici struggled to gain traction in a market dominated by car culture and limited cycling infrastructure. Without strong institutional backing, it faced challenges in scaling operations, building trust, and proving that bike sharing could be a viable solution for urban mobility.

The turning point came with the entry of Itaú Unibanco. As one of Brazil's most prominent private financial institutions, Itaú had begun to reposition itself around sustainability and innovation.

Itaú Unibanco stands as one of the largest financial institutions in Latin America, with a consolidated trajectory in the Brazilian banking sector and an expanding presence in strategic fields of social and environmental innovation. Traditionally rooted in financial services, the bank has increasingly positioned itself as a key actor in addressing urban and environmental challenges through targeted investments aligned with its ESG (Environmental, Social, and Governance) agenda. Among the bank's most prominent initiatives, urban mobility has emerged as a strategic pillar that connects sustainability, innovation, and citizenship. Itaú views mobility not merely as a transport issue, but as a multidimensional opportunity to generate shared value, enhancing public health, promoting inclusive cities, supporting energy transitions, and fostering economic resilience.

The alignment between Tembici and Itaú was strategic: it provided the capital, credibility, and visibility needed to scale the shared bike program from a university project to a regional mobility platform. Launched in 2011 under the name Bike Sampa, and later expanded as Bike Itaú, the project quickly gained traction in major Brazilian cities.

This strong corporate partnership also allowed Tembici to frame the bicycle not as a product to be sold, but as a service to be accessed as a shift from ownership to usability, from transaction to experience. The model was conceptually aligned with the logic of Bike as a Service (BaaS), a subset of MaaS, where bicycles are integrated into broader mobility ecosystems and offered via subscription, pay-per-use, or app-based access.

By placing the program in the broader urban discourse, sustainability, digital innovation, and smart cities, Tembici and Itaú jointly positioned Bike Itaú as a solution that served both individual needs and public interests. The co-branding with Itaú, featuring with orange bikes, prominently displaying the bank's logo, became more than functional tools: they were mobile symbols of a new urban identity. In a landscape where micromobility had little institutional support, the involvement of a major bank sent a powerful signal to users, municipal governments, and regulators alike. The bikes became trusted, visible, and aspirational, characteristics needed to shift public perception and build early adoption.

The design of the user experience reinforced this logic. The service was accessible through an intuitive mobile app, offering real-time information about bike availability and station location. Subscription models were varied and affordable, ranging from daily passes to annual memberships. The business model was aligned with emerging international trends toward integrated multimodality. In cities like São Paulo and Recife, Bike Itaú stations were strategically placed near bus corridors and metro stations, encouraging intermodal journeys and contributing to a more holistic MaaS infrastructure. In this way, the bike was positioned not as a competitor to other modes of transport, but as a connector, filling in the "last mile" gap and offering a sustainable alternative for short urban trips. The introduction of e-bikes further enhanced the service's appeal, expanding its reach to users with physical limitations, those seeking more extended travel, or those who prefer greater comfort.

The value creation process lies in transforming urban imaginaries. In cities where cycling had been stigmatized, Bike Itaú offered a counter-narrative: mobility could be light, shared, inclusive, and environmentally sound. Testimonials collected from users emphasized a sense of empowerment, health, freedom, and convenience. Municipal leaders began to reference the program in strategic mobility plans. The company also embedded metrics and reporting mechanisms to quantify and communicate its value. Annual impact reports included avoided CO_2 emissions, health indicators, and usage patterns by neighborhood. These data reinforced the case for public support and policy alignment, particularly around climate targets and urban sustainability goals.

As Bike Itaú evolved, so did its strategic narrative. What began as a sponsorship initiative became a mobility platform; what started as micromobility infrastructure became part of a broader conversation on Mobility as a Service (MaaS) or Bike as a Service (BaaS). This evolution positioned Tembici, and Itaú by extension, as key players in the transition to more sustainable, inclusive, and digital urban transport systems in Latin America.

Value Configuration: From Vision to Execution

Since the launch of the Bike Itaú program in 2011, the bank has expanded its engagement through additional ventures in electric mobility, green financing, urban partnerships, and smart mobility ecosystems.

Once the foundational narrative of Bike Itaú was established, a vision for cleaner, more democratic urban mobility, supported by a strong institutional sponsor, emerged: the next challenge was how to translate that vision into a consistent, scalable, and adaptable service across multiple cities. This is the stage of value configuration, where abstract commitments to sustainability and innovation must be operationalized through decisions about technology, partnerships, governance, logistics, and user experience.

In this phase, tensions arose between narrative coherence and organizational complexity, which needed to be addressed in practice, often through iterative experimentation.

At the core of the Bike Itaú model lies a hybrid public-private operational logic. Unlike traditional public transport systems, which are often fully subsidized and managed by municipalities or entirely private services that maximize shareholder value, Bike Itaú emerged from a third space: concession-based agreements between local governments, the operator Tembici, and the corporate sponsor Itaú Unibanco. These agreements allowed for the use of public land, such as sidewalks and parks, to install docking stations in exchange for the provision of public goods: low-cost, low-carbon urban mobility.

Each city developed its regulatory framework for the operation of the service. In São Paulo, the municipal secretariats for transport and mobility impose standards for safety, spatial distribution, and multimodal integration. In Salvador and Porto Alegre, contracts included equity criteria, requiring the system to serve not only affluent areas but also neighborhoods with limited access to public transportation. These intergovernmental arrangements reflect a dynamic environment in which public objectives and private capacities are negotiated in real time, with implications for service design and delivery.

To deliver on this promise, Tembici developed a sophisticated operational infrastructure. The logistics involved in managing thousands of bikes and hundreds of stations across multiple metropolitan areas are non-trivial. They include predictive maintenance, fleet redistribution, battery charging for electric models, vandalism prevention, and customer service, all of which had to be finely tuned to local usage patterns, weather conditions, and topographies. The backbone of this system was real-time data architecture, enabled by IoT sensors, GPS tracking, and centralized dashboards, which allowed operators to monitor and respond to disruptions as they occurred.

An essential innovation in this configuration process was the company's adoption of digital interfaces and platform thinking. The Bike Itaú app served as the primary gateway for users to register, locate bikes, make payments, track usage, and even report issues. It was designed to be simple, intuitive, and responsive, thereby lowering the barrier to entry and aligning the service with the logic of Mobility as a Service (MaaS). The platform was also architected for integration with other transport systems, paving the way for future interoperability with bus and metro networks via open APIs. By building this MaaS-compatible infrastructure, Tembici positioned Bike Itaú not as a stand-alone solution, but as part of an intermodal, digitally mediated transport ecosystem. This

was especially relevant for the evolving needs of urban commuters who increasingly expect seamless transitions between mobility modes. Moreover, it redefined the very logic of micromobility: not as a fragmented, opportunistic business, but as a structured component of the urban transport matrix.

To ensure quality and continuity of service, Tembici established robust internal governance systems. These included dedicated departments for operations, technology, user experience, sustainability, and government relations. Externally, formal governance mechanisms were instituted with city governments, typically in the form of technical committees, periodic performance reviews, and transparent reporting obligations. These arrangements were critical for maintaining legitimacy and continuity in politically volatile environments where changes in municipal leadership can disrupt long-term projects. Key Performance Indicators (KPIs) were central to this governance architecture. Tembici tracked and disclosed a wide range of indicators, including average daily rides, bike availability per station, CO_2 emissions avoided, demographic segmentation of users, and system uptime. These metrics were not merely internal control tools; they served as instruments of accountability and narrative reinforcement. For Itaú, they were incorporated into annual sustainability reports and ESG disclosures.

Another important dimension of value configuration was community engagement. While the service was digital by design, it actively sought to build trust and legitimacy on the ground. In Recife, a local initiative named "Pedala Comunidade" involved residents from underserved neighborhoods in co-designing station locations. In São Paulo, the company partnered with NGOs to deliver workshops on cycling safety and maintenance, specifically targeting women, young people, and older adults. These actions demonstrated a commitment to inclusion and a recognition that technology alone is insufficient to foster behavioral change.

The operational challenges intensified with the introduction of electric bikes (e-bikes). While these expanded the possibilities of the system, enabling longer trips, higher speed, and access for physically limited users, they also required new operational protocols. Batteries had to be charged, replaced, and monitored. New safety standards had to be met. And in some cases, cities had to update regulations to permit electric vehicles on roads cycling. Despite these complexities, the rollout of e-bikes significantly increased ridership and user satisfaction, reinforcing the system's alignment with broader energy transition goals.

Throughout this process, Bike Itaú remained committed to its Bike as a Service (BaaS) identity. The emphasis was not on selling or owning bikes, but on providing continuous access to them at anytime, anywhere, for as long as needed. This required constant attention to service reliability, user interface design, pricing strategies, and physical infrastructure. Subscription models were diversified to meet diverse needs: daily passes for tourists, monthly plans for casual users, and annual packages for frequent commuters. These options allowed for flexibility while ensuring a predictable revenue source.

In configuring value, the system moved beyond its original narrative of sustainability to embody operational excellence, urban integration, and technological foresight. It reconciled multiple demands such as efficiency, equity, responsiveness, scalability, by designing not a product, but a platform. In this sense value configuration refers to the ability to hold together competing logic within a coherent and dynamic operational model. And in doing so, Bike Itaú

positioned itself not only as a service provider, but as a strategic actor in the future of Latin American urban mobility.

Value Appropriation: Capturing and Redistributing Impact

The final dimension of a business model narrative is value appropriation, the process by which the benefits generated by a business model are captured and distributed among stakeholders. It is a stage that moves beyond creation and configuration to assess who benefits from the initiative, how those gains materialize, and which mechanisms determine access to those benefits. In the case of Bike Itaú, value appropriation occurred across multiple layers, involving diverse actors with distinct interests and capacities: the operating company (Tembici), the corporate sponsor (Itaú Unibanco), city governments, users, and broader urban society.

From a financial perspective, the bike-sharing model adopted by Tembici was never intended to be fully profitable based solely on user fees. The pricing strategy emphasized accessibility and social inclusion, offering low daily and monthly rates, with some cities subsidizing usage in strategic locations. Average ticket revenue per user was modest, especially when adjusted for operational costs, including maintenance, redistribution, staff, and infrastructure upgrades. This configuration may limit the potential for traditional return-on-investment, especially in the early years of operation. Instead, the economic sustainability of the project depended on multi-source appropriation as a huge portion of operating capital came from the corporate sponsorship agreement with Itaú Unibanco, which contributed financially and institutionally to the model.

For Itaú, the appropriation of value was primarily reputational and symbolic in nature. By associating its brand with an urban, green, citizen-focused mobility initiative, the bank reinforced its ESG positioning and fulfilled its sustainability commitments under frameworks such as the SDGs (especially goals 11 and 13). The visibility of the brand, stamped on every orange bike, docking station, and mobile app, created continuous, high-impact exposure in dense urban settings. Beyond visibility, the partnership enabled Itaú to appropriate institutional capital. In a context where banks are often perceived as distant from public life or even predatory, Bike Itaú allowed the bank to reposition itself as a public-good enabler. The initiative offered concrete, everyday interactions with citizens, not through financial products, but through mobility services.

Tembici, in turn, appropriated value not only through licensing fees and performance-based subsidies but also through the use of data. The system collected extensive user information: trip origins and destinations, time of use, frequency, seasonality, preferences for manual versus electric bikes, and more. This data was a strategic asset. It enabled the company to optimize its operations, negotiate better terms with municipalities, and develop new services. More importantly, it positioned Tembici as a knowledge broker in the mobility ecosystem, able to inform public policy, influence urban design, and co-develop strategies with transportation authorities.

Users also have appropriate value in multiple forms. At the individual level, Bike Itaú provided affordable, flexible, and often faster alternatives for short urban trips. For many, it became a key component of daily mobility, enabling access to work, study, and leisure in ways that were previously inaccessible or expensive. Survey data and usage trends indicated a substantial increase among students, self-employed professionals, and younger adults, particularly in cities with integrated transit policies. With the expansion of e-bike fleets, new user segments were reached,

including older adults and travelers with longer or more rugged routes. However, distributional asymmetries persisted as stations were initially concentrated in central or affluent areas, and cycling infrastructure, such as bike lanes, was unevenly developed across cities. These factors limited appropriation by residents of peripheral or marginalized neighborhoods, a tension noted by Meirelles and Thomaz (2024) as typical of business models navigating institutional dualities. The challenge, then, was to design mechanisms that allowed for greater inclusivity in value appropriation, such as progressive expansion of service areas, partnerships with NGOs, and pricing flexibility.

City governments also captured value from the initiative, but in more indirect or diffuse forms. While not always contributing financially, municipalities benefited from improved urban image, reduced vehicle traffic, enhanced public health indicators, and contributions toward climate goals. In some cities, the availability of shared bikes helped bridge "last mile" gaps in public transit, reducing pressure on overloaded bus and metro systems. The partnership with Bike Itaú also allowed cities to externalize risks and investments that would otherwise be required for developing their systems, creating a new governance model where public value was delivered through private capacity.

Bike Itaú's dialogue with municipal stakeholders, often through advisory councils and technical committees, enhanced policy learning and capacity building. City officials gained exposure to real-time mobility data, best practices from other regions, and novel regulatory approaches, such as geofencing, dynamic pricing, and data-sharing protocols. This represents a less visible but highly strategic form of appropriation: the institutional strengthening of urban mobility governance.

On a broader societal level, the most important appropriation of value was cultural and behavioral. Bike Itaú helped reframe bicycles as legitimate transport options, reducing stigma and reshaping public attitudes toward active mobility. The orange bikes became an integral part of the urban landscape, symbolizing a shared city and a greener future. Educational campaigns influenced partnerships, and user testimonials reinforced the message that cycling was not just functional; it was aspirational, modern, and aligned with values of sustainability, health, and freedom. Additionally, some benefits, such as reduced emissions, quieter neighborhoods, and improved traffic flow, were positive externalities dispersed across the population, regardless of direct use.

Conclusion

The Bike Itaú case offers a compelling illustration of how a major private financial institution can catalyze systemic urban transformation. What began as a corporate social responsibility (CSR) initiative with strong symbolic resonance evolved into a sophisticated public-private innovation platform, reshaping urban mobility cultures across several Brazilian cities.

The effectiveness of this strategy is evidenced in its operational metrics. Bike Itaú system had surpassed 70 million trips in 2022, demonstrating consistent growth in user adoption and contributing to the rising modal share of cycling in urban centers. Tembici, the operating partner, successfully expanded beyond Brazil, attracting international investment and scaling operations across Latin America. New regulatory frameworks, partnerships, and technological upgrades, including the introduction of e-bikes, continue to redefine the distribution and appropriation of value within this ecosystem. Among these changes, what remains constant is the centrality of

narrative: the ability to frame this transformation not only through data and scale but through lived experiences, public symbolism, and institutional credibility.

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Teaching Notes

Service Innovation for Sustainable Urban Sustainable: the case of Bike Itaú initiatives.

Teaching Case Summary

This teaching case explores Bike Itaú's role in the sustainable urban mobility sector and its contribution to reshaping micromobility ecosystems in Brazil. By adopting a narrative analysis, we show how the company solved strategic dilemmas related to value creation, configuration, and appropriation through Mobility as a Service business solutions. The case supports educational objectives related to strategy, sustainability, innovation, and collaborative governance. Designed for graduate and executive education, it includes a detailed teaching plan and discussion questions to foster critical reflection on the roles of corporations in sustainable urban transitions.

Data Sources

- Official materials from Tembici, Itaú, and Bike Itaú websites and FAQs.
- Interviews and press releases from CNN Brasil, Valor Econômico, and institutional blogs.
- Regulatory documents from municipalities and public data on micromobility.
- An analytical spreadsheet with structured entries based on a Value CCA framework (Creation, Configuration, Appropriation), including dilemmas, oppositions, premises, and syllogisms.

Educational Objectives

- Understand the business model in the mobility sector, structured using a narrative lens.
- Analyze value creation, configuration, and appropriation.
- Identify strategic tensions in scaling sustainable innovation in emerging markets.
- Evaluate trade-offs between financial and societal value in mission-driven ventures.

Possible Uses of the Case

The case is suitable for:

- Graduate courses in Strategy, Entrepreneurship, Innovation, or Public Policy.
- Executive Education programs focused on Sustainability, Smart Cities, or Urban Mobility.
- Interdisciplinary workshops connecting Design Thinking, Governance, and Business Models.

It is designed to be read in advance and discussed over a 90- to 120-minute class period. Complementary materials, such as videos, infographics, or field interviews, can facilitate deeper engagement.

Suggested Teaching Plan

Preparation (prior to class):

- Read the case and annotate the three stages of Value CCA.
- Reflect on the key actors, dilemmas, and possible alternatives.

In-Class Discussion (90–120 minutes):

- Warm-up (10 min): Icebreaker on students' experience with shared bikes.
- Small Group Work (30 min): Split into three groups, each tackling one "Value" block.
- Plenary (30 min): Share group insights. Identify cross-cutting themes and tensions.
- Role Play (15 min): Each group represents one stakeholder (municipality, Tembici, Itaú, users) and negotiates a joint mobility plan.
- Wrap-up (15 min): Discuss the future of the model. Can it scale with impact?

Discussion Questions

Aligned with Roesch's (2007) pedagogical approach to teaching cases, the Bike Itaú experience provides rich material for multi-dimensional learning. It situates the case within Itaú's broader mobility agenda, providing students with a systemic perspective on how a leading financial institution leverages its assets and influence to innovate beyond banking. It enables students to explore complex themes such as business model innovation under institutional constraints, ecosystem orchestration, collaborative governance, and the application of service-dominant logic in a traditionally asset-heavy sector like urban transport.

Approaching this teaching case through business model structuration, the teacher can examine it through questions related to value creation, configuration, and appropriation. For instance:

Value Creation

- What needs and gaps did Bike Itaú aim to address?
- How did cultural and infrastructural conditions affect the adoption of bike-sharing in Brazil?
- How did Tembici leverage timing, partnerships, and technology in its launch?

Value Configuration

- How was the service model designed to address the urban mobility challenge?
- What tension arose between the interests of users, municipalities, and sponsors?
- How did Tembici's choices regarding technology and partnerships shape the service?

Value Appropriation

- What mechanisms allowed Bike Itaú to capture and redistribute value?
- How sustainable is the business model under current conditions?
- What would you recommend enhancing both social impact and financial resilience?

From a business model perspective, this case foregrounds a series of strategic tensions: between innovation and institutional inertia, between a social mission and economic sustainability,

and between operational standardization and contextual responsiveness. Students are invited to engage with the dialectics of value creation, configuration, and appropriation in an arena where not only profitability is important, but where reputational and societal returns are substantial and strategically relevant.

Ultimately, the Bike Itaú case invites students and professionals to rethink the role of financial institutions in urban development. It challenges conventional assumptions about the boundaries of firm strategy. It encourages exploration of how corporate sustainability, social impact, and long-term economic value can converge in the design of scalable, adaptive, and resilient business models. In doing so, it offers not only a narrative of past innovation but also a blueprint for future transformations in the governance and delivery of urban services.

Additionally, this teaching case can be approached through narrative analysis, since value creation in business models emerges through the articulation and resolution of tensions, oppositions, and dilemmas (Meirelles and Thomaz, 2024).

Clearly, it also demonstrates the narrative power of business models, not as instruments of consensus, but as vehicles for composing, legitimizing, and mobilizing action among divergent stakeholder interests. In this regard, several key oppositions could be explored in the Bike Itaú case, such as:

- Private ownership vs. shared access: Brazilian transportation culture has traditionally valued car ownership. Promoting bicycles as shared infrastructure required cultural reeducation and institutional backing.
- Transport as infrastructure vs. transport as service: Urban mobility was long associated with public infrastructure. Tembici introduced a platform-based logic centered on service design, experience, and convenience.
- Individual choice vs. collective benefit: The program needed to appeal to personal motivations (cost, time, health) while also demonstrating broader societal returns (less congestion, fewer emissions).

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this study, the author(s) utilized Grammarly to enhance the writing quality. Following the use of this tool, the author(s) thoroughly reviewed and edited the content as necessary, assuming full responsibility for the final version of the publication.

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