



Digital Storytelling about the São Paulo Independence Monument: between Lost Memories and Italian Legacy

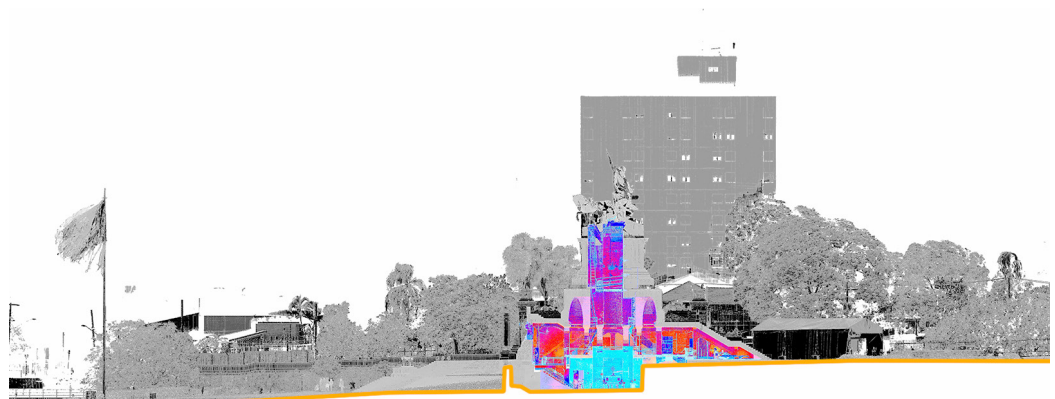
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Abstract

The Monument to the Independence of Brazil, also called the Ipiranga Monument, is a sculptural ensemble in granite and bronze belonging to the Independence Park in São Paulo in Brazil. It was initially conceived as a monument then it became a cenotaph of the emperor Dom Pedro I and only later a tomb for him and the two wives. It represents an important period for the democratic path of the country. It was envisioned by two Italian masters: architect Manfredo Manfredi was responsible for the design of the structure and artist Ettore Ximenes was in charge of the sculptural ensemble. The Monument was inaugurated as part of the celebrations of the centenary of independence in 1922, although it was only completed four years later. Since then, the story of the monument was slowly forgotten by the public becoming a true example of lost memories. This project aims at valorising the identity of the ensemble by awareness increasing activities at different layers in cooperation with Italian entities such as the *Circolo Italiano* and the General Consulate of Italy in São Paulo and local partners (USP university and SP Municipality). The cooperation outputs were the dissemination activities of the historical research and the digital documentation of the monument (carried out through scan to BIM process) by both in presence and online actions meant to be key moments for cultural revitalization of the site. Historical memories were thus fostered to prevent important pieces of a country's history from being forgotten by the population.

Parole chiave

Digital storytelling, Digital techniques, Scan to BIM, Cultural Heritage memories, Awareness



Introduction

This contribution wants to highlight by means of digital technologies, the story about the Monument to the Independence of Brazil, located in São Paulo, on the banks of the Ipiranga stream, in the historic place where Dom Pedro I would have proclaimed Brazil's independence from the United Kingdom of Portugal, Brazil and the Algarves on September 7, 1822. The Monument was inaugurated as part of the celebrations of the centenary of independence in 1922, although it was only completed four years later. Made of granite, the monument is adorned with several bronze statues representing important moments of the historic events that sealed the nation's destiny (fig. 1). Since the end of the 19th century, the region has been associated with Brazil's independence in a symbolic way [Barro, Bacello 1979]. In 1881 a discussion about building a monumental palace (nowadays Ipiranga Museum) in the area prompted the government to use lotteries to raise money for the project. The Italian architect Tommaso Gaudenzio Bezzi's design was ultimately chosen, and the construction works started in 1885 under the direction of master builder Luigi Pucci [Salmoni, Debenedetti 1981]. The border garden, created by Belgian Arsène Puttemans in 1907 and opened that year, served as its finishing touch [Goes 2021]. The Independence Monument was constructed on the opposite side of Ipiranga Park a few years after the Ipiranga Museum opened (international competition in 1917).



Fig. 1. Opposite views of the Independence Monument in São Paulo, Brazil. Photographs by the authors.

The process of investigation on the Monument started in 2018 after the completion of the 3D survey of the Ipiranga Museum. It was carried out by DIAPReM centre of the University of Ferrara to provide the future professionals in charge of the restoration of the building with reliable 3D database, following the experience of the digital documentation of the Ipiranga Museum [Balzani et al. 2021], completely restored and re-opened in 2022. Building Information Modelling tools were used in addition to the 3D survey by a scan to BIM process, taking into account the knowledge requirements for data representation and visualization throughout the project phase as well as the later requirements for knowledge, management, usage, and improvement by multidisciplinary teams [Parrinello et al. 2019]. The dissemination activities were the main tasks defined by the project's partners. They aimed at valorising the cultural aspects of the site, dealing with both memories' conservation and future preservation of the monument always within the scientific reliability of the research [Palombini 2017]. The collected material was then organized in an online platform (in Portuguese language) able to describe, to a wider public, the main outputs and future steps. The emotional impact of a narrative method to dissemination, particularly for historical and cultural contexts, is a potent way to increase learning potential [Dickey 2006]. Only through continuous discussions, publications, seminars, technology transfer events and preservation activities it could be possible to transfer to future generations not only the monument but also the cultural inheritance that it guards.

Archival research: discovering the entire story

The research was initially centred on the archival research, which was conducted through traditional methods described by a wide literature [Moore et al. 2016, Godfrey 2011, Timothy 2012] and based on 3 types of sources:

- Written (books, letters and local historical newspaper)
 - Oral (interviews and public discussions)
 - Iconographic (pictures, paintings, sculptural objects available at the Ipiranga National Museum).
- The investigations were carried out in cooperation with the Department of Cultural Heritage of the São Paulo Municipality (Núcleo de Monumentos e Obras Artísticas NMOA) which played a crucial role in order to access libraries and public archives. Moreover, the USP Department of Architecture and Urban Planning colleagues were able to identify additional sources of examination taking advantage of the local net of researchers. The gathered data allowed the identification of each development step of the area and the monument, small and major interventions, and the related motivations. This resulted in a fascinating story about the past of the monument and therefore the needed to disseminate an almost forgotten tale.

The Italian legacy

The call for bids for the 'Monument Commemorating Brazil's Independence' was published in the newspaper *O Estado de São Paulo* in September 1917, and had an international character, demonstrating that the São Paulo elites were willing to expand the scope of the centenary proposals to other countries [Monteiro 2019]. The participation of foreign artists would make the work and the city better known worldwide. The call was translated into four languages and sent to the Brazilian consulates in Buenos Aires, New York, Lisbon, Rome and Paris, to be published in their respective periodicals. The deadline for artists to submit their designs, plans, models and budgets was September 7, 1918, but it was extended to December 1919 due to the war conflicts in Europe, thus allowing more people to participate [Monteiro 2017]. After much delay, the judging commission reached a verdict: Ettore Ximenes and Manfredo Manfredi were chosen as the winners of the competition. For the jury, the classic sculptured of the monument, among other qualities, had the merit of having been designed by one of the main Italian artists of the early twentieth century. Author of works in various cities around the world, Ximenes proved to be a clear choice for those who imagined São Paulo among the most important cities in the world.

After working in Italy, the United States and Russia, Ximenes arrived in Brazil in 1919 to create the Monument. He remained in the country until 1926, where he sculpted various works in homage to characters from the Brazilian elite [Venturi, Fleres 1928].

Less renowned in Brazil, Manfredo Manfredi began his studies at the Rome Academy of Fine Arts in 1880. In 1884 he was awarded second prize in the architectural competition for the monument in honour of Victor Emmanuel (*Altare della Patria*). When the winning architect Giuseppe Sacconi died in 1905, Manfredi, Gaetano Koch and Pio Piacentini were appointed to oversee the completion of the monument [Buscioni, Borsi 1983]. Manfredi and Ximenes were bound by friendship and mutual esteem, a fact evidenced by the commission that Ximenes gave to Manfredi for the design of his house in Rome (*Villino Ximenes*, 1905).

The Monument hybridization

Due to technical difficulties the monument was inaugurated still unfinished in 1922 and completed years later (fig. 2). The official handover took place quietly, on 7 September 1923, with a small note in the *Correio Paulistano* newspaper. The 1926 was identified as the official year of the opening of the site to the public. It was evident that the delay in the delivery of the monument influenced the way it was received by the people of São Paulo. The monument was designed as a set of sculptures in granite and bronze, representing three spheres of executive power (federal, state and municipal).

On the front, the *Independence or death* panel shows a group of men on horses, and it was inspired by the homonymous painting by Pedro Americo, who conceived the artwork in

Florence in 1888 (Fig. 3). On the left, sculptures represent the *Inconfidentes Mineiros* (led by *Tiradentes*, who intended to establish the Republic in Brazil). On the right, sculptures depict the Pernambuco Revolutionaries, men who also fought for the implantation of the Republic [Carvalho 1990].

In 1952, a pyre with a symbolic fire was inaugurated in the monument. The same year work began on the Imperial Crypt inside the Monument and in 1954, the remains of Empress Leopoldina were placed there. In 1972, the remains of Pedro I were placed in it, and in 1982, the remains of Amelia of Leuchtenberg. In 2000, the Department of Historical Heritage (DPH) designed a way to access the inside of the monument (opened in 2001), where the crypt where the remains lie, also known as the Imperial Chapel, closing the process of hybridization of the original monument. Since then three different campaigns of restoration tried to maintain the ensemble in good conditions even if the lack of effective maintenance and bad design choices are affecting the state of conservation of the structure.



Fig. 2. A century of modifications on the Monument as a story to be transferred to future generation. Elaboration by the authors.

Digitisation of the monument

For more than five years, the University of Ferrara's DIAPReM laboratory has collaborated on training initiatives with the University of São Paulo. The distribution of an integrated multidisciplinary and multiscale strategy that permits the implementation, exploration, and improvement of the findings of the research activity established on the cultural heritage in Brazil is the result of this ongoing international interchange [Balzani et al. 2017]. Since 2017, three major digital documentation projects have been carried out within the framework of this cooperation network, involving the Ipiranga Museum, the Independence Monument and the Independence Park, which includes the Casa do Grito building.



Fig. 3. Detail of main panel *Independence or death* (left), a derivative representation of Pedro Américo's 1888 painting (right). Creative Commons.

The end result was a massive 3D point cloud database with more than 250 billion registered coordinates covering an area of 850 meters by 200 meters, making it likely one of South America's largest digital repositories for cultural heritage. The primary objectives of this effort were successfully met when a cheap dataset was made available for restoration and preservation needs, and at the same time, public knowledge of the history of this region was raised through technology via the <www.ipirangadigital.org website>.

A georeferenced point cloud database with the necessary accuracy was intended to be produced as part of the integrated three-dimensional survey campaign for the Monument using integrated digital technologies and methodologies for data collecting (fig. 4). The survey effort had the twin purpose of both capturing the building's overall layout and enabling the analysis of its architectural and sculptural aspects at a scale of 1:20. The monumental building's richness, as well as the levels' articulation necessitated the integration of several geometric and morphometric documentation techniques to support the reading of the building's state of conservation [Giandebiaggi 2018]. Leica P40 laser scanner survey (time-of-flight technology) was used in order to do an extensive and thorough examination of the complex. Furthermore, a topographic survey (Leica Total Station TCR) was operated to build a polygonal system to support the verification and control of the mean squared deviation during the recording phase, the control of the relationship between the global and local reference system. The building, the surrounding environment, and the material characteristics were then covered by a visual survey and photographic campaign to complete the digital documentation. This was done to support understanding of the construction characteristics and the state of material and surface conservation [Cacciotti et al. 2015]. Methods and tools have been created to combine 3D survey approaches, enabling the achievement of a full acquisition of tangible assets while taking into account the objectives of the survey, the needed accuracy, and the scale of the representation [Tommasi et al. 2019]. From a process of scan to BIM (fig. 5) it was then possible to elaborate the informative 3D model of the monument which was recently donated to the Municipality of São Paulo historic archive. The Scan to BIM is currently the most effective practice for the detailed and accurate representation of historic buildings. In this case the process started with the generation of the point cloud then processed using point cloud processing software, such as Autodesk Recap, and subsequently imported into modelling software, such as Autodesk Revit. In Revit, the point cloud acted as a 'backdrop' for the creation of all building components. All the bronze sculptural pieces were imported into

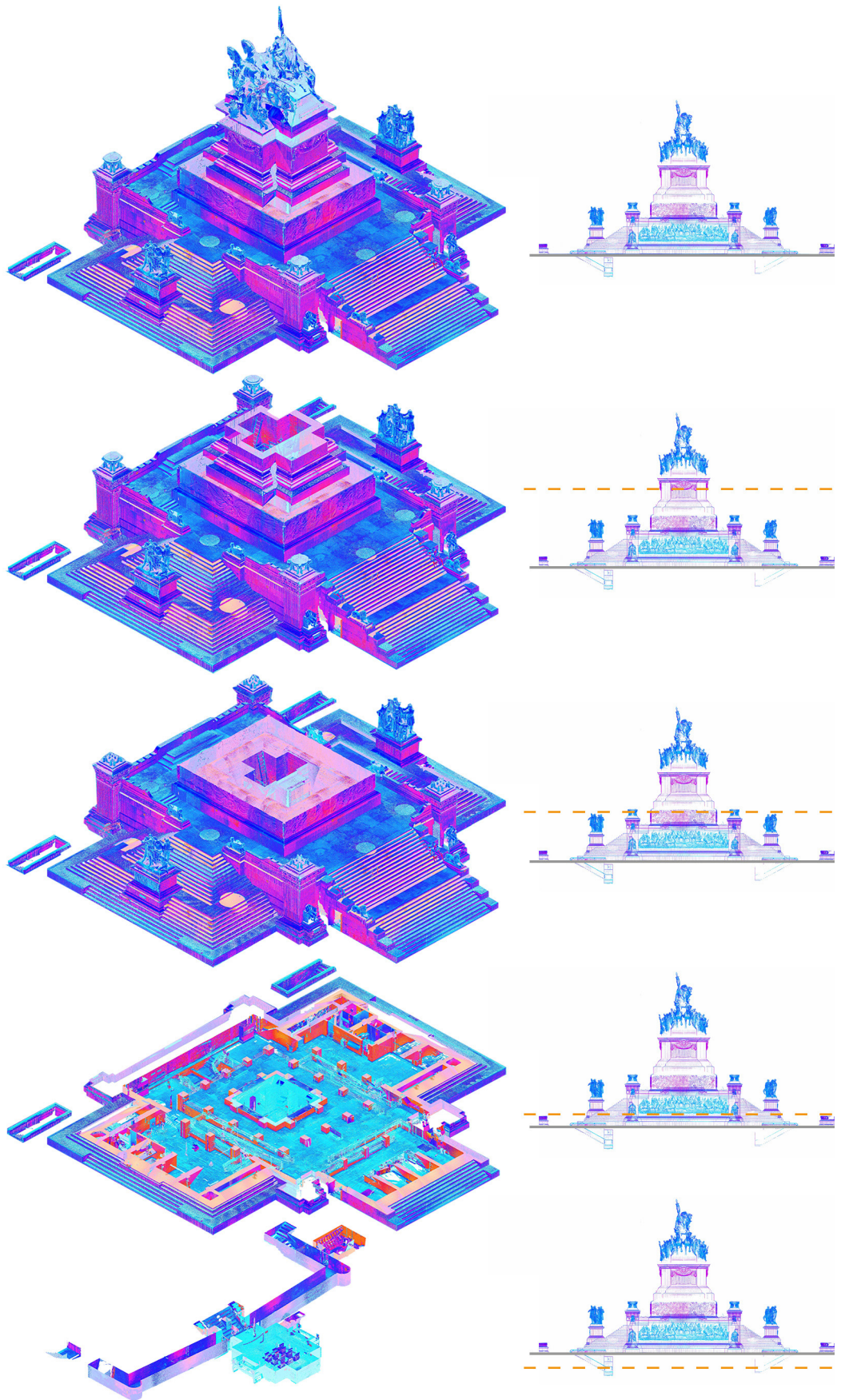


Fig. 4. Sections of the point cloud of the Monument that can explain also to the public the complex inner space of the building. Graphic elaboration by the authors.

the BIM model as 3D mesh entities. This model could become easily a 4D BIM scheduling data in accordance with the time dimension.

This would enable restoration projects of the monument to plan their feasibility in a way that could prevent conflicts. The definition of the Monument first comprehensive digital database took into account the documentation requirements for the future architectural and sculptural restoration, the project for new accessibility to the crypt and a much larger digitisation project for valorisation and enhancement of the site.

Cultural Heritage storytelling: an open discussion

The field of digital storytelling has undoubtedly attracted a new branch in the research field on Cultural Heritage. Despite the fact that there were a few examples of interactive narration existing prior to the digital era (interactive books, role-playing games, etc.), the interaction is the most unusual element that the digital era has contributed into narrative structure [Goodson et al. 2010]. Cultural heritage storytelling is explicitly designed to affect the real world (increasing the user's knowledge and making him/her somehow different) as opposed to traditional

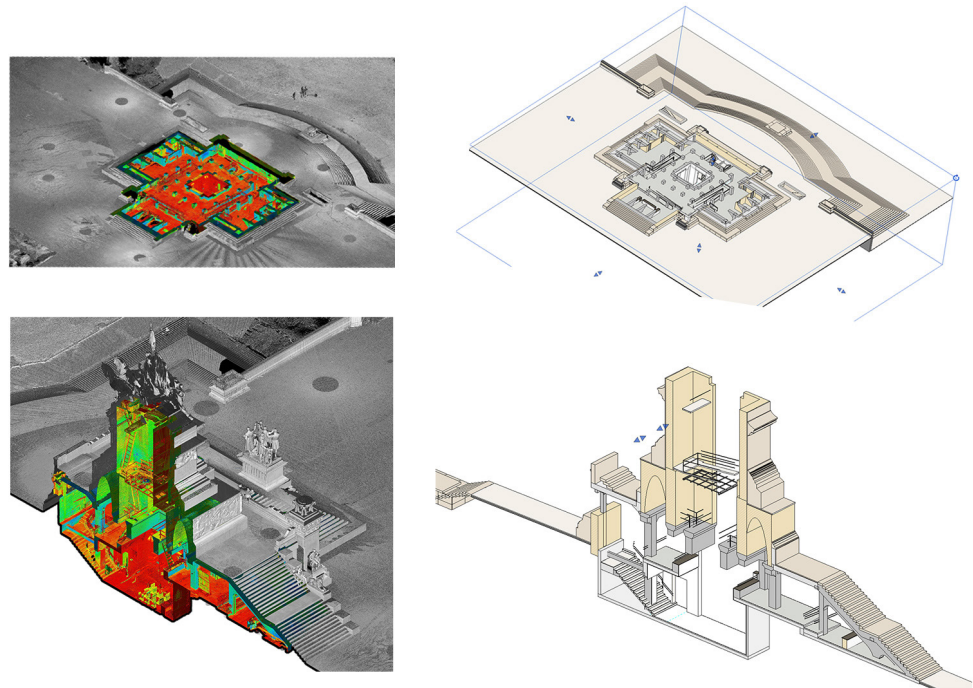


Fig. 5. Images of the BIM model of the Monument (right) elaborated working within the point cloud database (left) environment in this case described by RGB data. The BIM model was built by Revit Software. Graphic elaboration by the authors.

storytelling, which typically does not require the narrative world to have any impact on the real (user) world. Therefore, from a cognitive perspective, this type of narration is always interactive since it is designed to interact with the user's cultural dimension, which should alter as a result of any activity (fig. 6). The monument built to celebrate the Brazilian Independence from Portugal demands to be conserved but it is its intangible dimension that needs special care. The peculiar situation of having the tomb of the emperor inside a monument that celebrates the end of the Portuguese reign over Brazil should be told taking into account the assumption that the story's events actually live between the narrative dimension and the reality dimension, inside the user's cognitive environment and culture [Miller 2014]. The attempt to share all the digital data through the web site 'Ipirangadigital.org' aims at producing the awareness among the inhabitants related to some story elements that emerge beyond the story's confines. The website was created in Portuguese to reach the broadest audience and was launched in 2022 to commemorate the 200th anniversary of Brazilian independence, is still expanding in terms of graphics and information. It will eventually serve as a digital hub for knowledge and education.

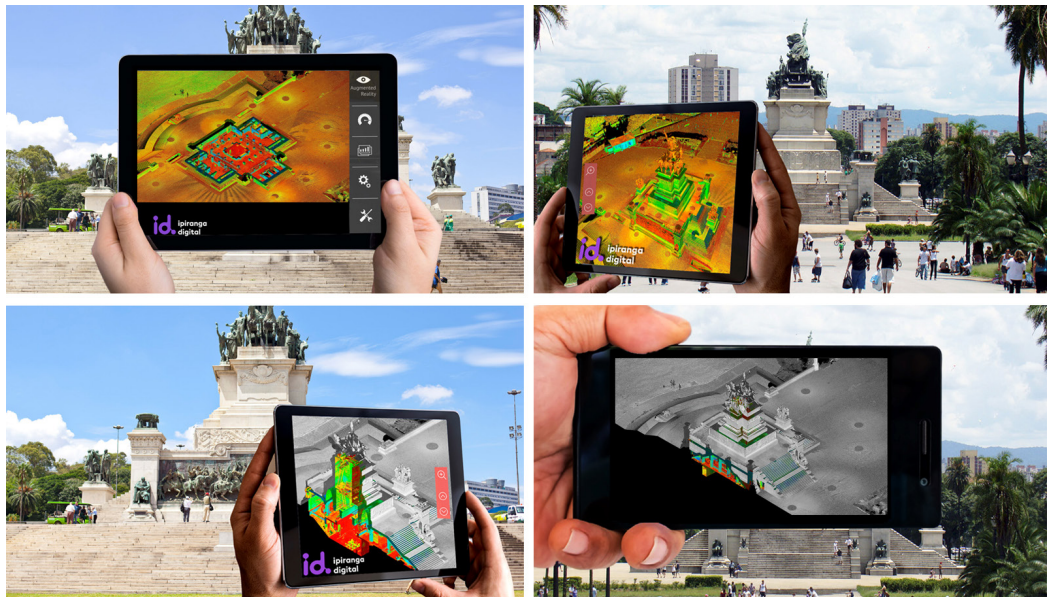


Fig. 6. Development of ready to be used tools for Cultural Heritage storytelling. <ipirangadigital.org>.

Credits

International cooperation net: DIAPReM center, University of Ferrara, UNIFE, TekneHub Technopole of Ferrara; Consorzio Futuro in Ricerca, Ferrara, Italy; Mackenzie University; Department of Historical Heritage (DPH) – SP.

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Logistics support coordinator: Guilherme Antonio Michelin (Mackenzie University).

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