

THE PLATFORMIZATION OF SCIENCE: LATTES PLATFORM AT A CROSSROADS?

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1 INTRODUCTION

The spread of digital platforms has also encompassed the scientific field. In this Discussion Paper, we focus our analysis on the Lattes Platform – a public initiative developed endogenously in the late 1990s which was very innovative – since it is a representative case of a scientific platform and is a paramount tool for the Brazilian scientific system. Although there are many academic studies published using data provided by the Lattes Platform, we identified a lack of official reports and articles that address Lattes as a digital platform and its adequacy in the context of the platform economy. In doing so, not only do we dialogue with the latest literature on scientific “platform infrastructuring”, but we also provide new insights for policy-making considering that both the early-stage technology choices made by the National Council for Scientific and Technological Development – CNPq (early adopter) and the constant budget cuts for its maintenance and upgrading have strongly affected the Lattes Platform’s trajectory. Consequently, the Lattes Platform may be locked-in to a technological trajectory that could lead to the stagnation of its functionalities, threatening its relevance in the long run.

The Discussion Paper shows that the Lattes Platform is crucial for the science and technology (S&T) community in Brazil. Its importance goes beyond *vitae* showcases of Brazilian scholars, as we exemplify through the multilevel analysis synthesized in table 1 and through the many studies that used its data to provide a big picture of the Brazilian National Innovation System.

Lattes is also a relevant source of information for policy decision-making based on pieces of evidence as argued; however, despite its originality and criticality, it seems that CNPq was not able to keep pace with the technological development of the new generation of platforms, such as the inclusion of advanced machine-learning algorithms to generate feedback effects and dashboards of analyses that could be automated, integrating data about talent, capabilities, and opportunities to enable real-time strategic decision-making.

TABLE 1
Multilevel analysis of Lattes Platform

Layer	Component	Description
Socio-economic	Ownership	Governmental
	Governance	Managed through the "Terms and Conditions", which stipulate that the company collects and stores personal information from users to be used for supporting policy making and evaluation, sharing data with third parties except for personal data
	Business model	Public funding
	Market scope	National
	Economic effect	Network effect
	Infrastructure	Criticality and invisibility
	Path dependence dynamics	Lock-in effect
Techno-cultural	Technological components	Protocols; operational bases; warehouse bases; and web information repositories
	User/usage	Based on the stimuli to join the platform, mainly because having updated information is a precondition for accessing public funding and scientific research
	Content	UGC (user-generated content) with low standardization (pre-determined categories for metadata)
	Open innovation mechanism	Open data
Networked-scholar	Networking components	Absent
	Knowledge sharing	Based on the free access to scholars' curricula vitae (e.g., DOI for publication) and Research Groups' information; search mechanism based solely on research name
	Identity	User identity is conveyed through the profile and there are indirect reputation indexes (e.g, productivity grants, citations, impact factor, etc.)

Authors' elaboration.

2 PATH DEPENDENCE

The Lattes Platform maintains its infrastructural characteristic in the Brazilian context due to its criticality. However, launching only the open data strategy hindered the platform, for example, from providing research IDs (already occupied by ORCID), communication functionalities (taken over by Academic Social Networks (ASN) such as ResearchGate or even more conventional social network as LinkedIn), or even new useful functions within the restricted e-portfolio proposal. The Lattes Platform fulfilled its function of providing information about scholars and the scientific communities to the government and S&T institutions. It became a critical platform for all Brazilian scholars, who registered and showcased their e-portfolios. Its success, however, could be the reason for its stagnation

(lock-in!). Lattes was an early adopter of a new generation of technologies and organizational models but it was not prepared for the digital transformation that has accelerated since the 2010s, with the explosion of big data, the use of algorithms to order this same data, and the formation of collaborative platform ecosystems.

3 BUDGETARY CONSTRAINTS

The Lattes Platform's business model is based on public funding as it offers free-of-charge services. After it was launched, there were drastic budget reductions – the average expected budget for 2000-2003 was BRL 4.29 million and for 2017-2019, it was five times less – and this reduction tendency was worsened from 2016, probably as a result of the

approval of the Constitutional Amendment (95A), capping public spending for 20 years. There is no public evidence demonstrating that CNPq has a well-developed strategy to maintain and upgrade the Lattes Platform, as in its most recent Strategic Plan there is no mention about the platform at all.

4 CROSSROADS

Overcoming the budgetary constraints and dealing with technological modernization to escape path dependence are the challenges facing the Lattes Platform directly. These two obstacles stand in the way of the platform and need to be overcome so that it redefines its new trajectory in the reality of the infrastructuralization of platforms. As it is currently a critical infrastructure, the Lattes Platform would have to be updated to stop relying solely on its enforcement power and, let's say, win over users (scholars and S&T agencies) for the service it provides. We do not believe that this necessarily implies transforming the Lattes Platform into an ASN; rather it needs to be updated and incorporate new tools that allow, for example, feedback mechanisms for users (complying with the Brazilian General Personal Data Protection Law), not for surveillance purposes). There are studies on Lattes Platform usability concerned with the aspects of user performance and satisfaction which show that system inconsistencies affect users' experiences; also, Google Trends data presented show that more and more ASN are being searched in Brazil.

What the Lattes Platform seems to confirm is that we are witnessing a historic moment in which public infrastructures fragment and are complemented or supplanted by private infrastructures.

5 POSSIBLE SCENARIOS?

Although it is reasonable to celebrate the Lattes Platform as a Brazilian heritage for science and technology, the combination of the lock-in effect and the

budget cuts for its maintenance and modernization jeopardize the Platform. From that, we envision three possible scenarios. In the first one, without adequate investment for its modernization and inclusion of new functionalities, users would start to overcome the lock-in through migration to other new platforms with better services offer. Little by little, the Platform would lose relevance and wither away. In another negative scenario, even with inadequate investments, CNPq would be able to maintain the mandatory use of the Lattes Platform. However, given the predictable low cost for users of having more than one platform, multihoming would be established: this way, users would use Lattes due to its enforcement and would adopt other platforms for their value/convenience. In this scenario, the Lattes Platform would become a sort of "zombie": dead for users and live for CNPq. Finally, in a more positive scenario, with adequate budget and investments, Lattes Platform would be modernized and would start to attract all groups towards its ecosystem for the value it delivers.