

2020

Annual Report Cetic.br



United Nations
Educational, Scientific and
Cultural Organization

cetic.br

Regional Center for Studies on the
Development of the Information
Society under the auspices of UNESCO

nic.br

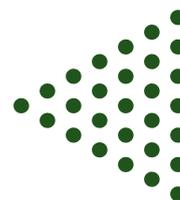
Brazilian Network
Information Center

egi.br

Brazilian Internet
Steering Committee

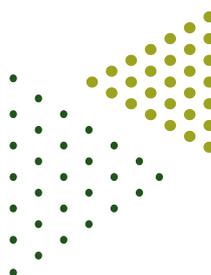
About CGI.br

The Brazilian Internet Steering Committee (CGI.br) was created with the purpose of coordinating and integrating all Internet service initiatives in Brazil, as well as promoting technical quality, innovation and the dissemination of Internet services.



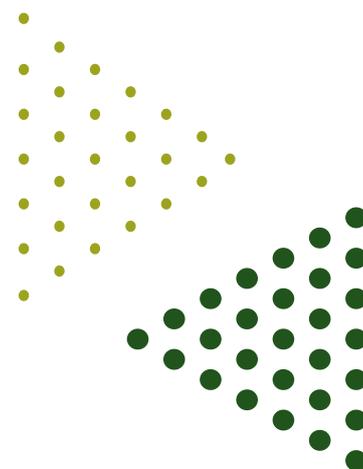
About NIC.br

The Brazilian Network Information Center (NIC.br) was created to implement the decisions and projects of the Brazilian Internet Steering Committee.



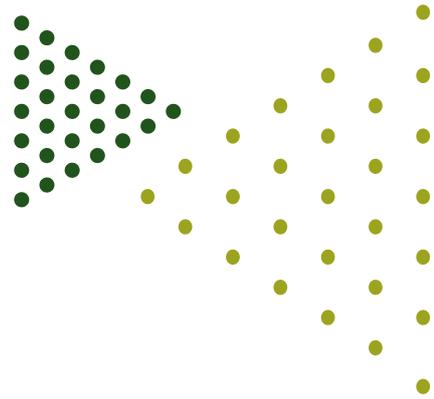
About Cetic.br

The Regional Center for Studies on the Development of the Information Society (Cetic.br) is the NIC.br department responsible for the production of indicators and statistics on the availability and use of the Internet in Brazil. In 2012, Cetic.br was approved as a UNESCO Category 2 Center with the mission of monitoring the development of knowledge and information societies in Latin America and the Portuguese-speaking countries of Africa.



CREATIVE COMMONS





04. Presentation

08. About Cetic.br

18. Introduction

25. 2020 Facts & Figures

26. Public Debates on Socioeconomic &
Cultural Implications of Digital Technologies

36. Capacity-Building & Awareness-Raising

40. Methodological Support for
Strategic Partners

44. Debating the Challenges of ICT
Measurement in International Forums:
Sharing Experiences with Data Production

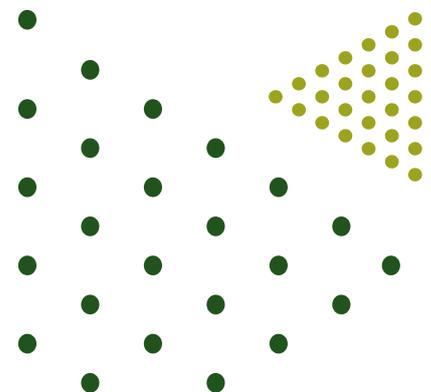
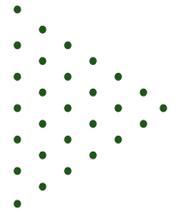
47. Accelerating SDGs through ICT

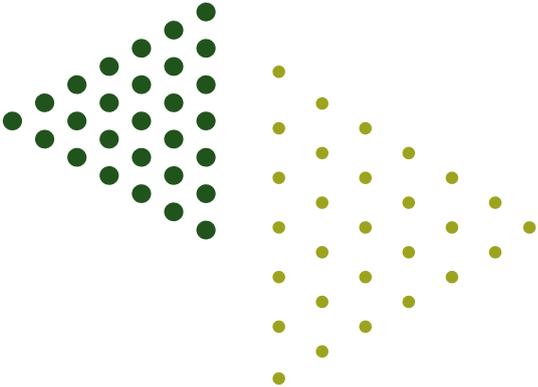
50. Cooperation Network

56. Dialogue with Stakeholders

60. Producing Knowledge about ICT

64. Publications





Presentation

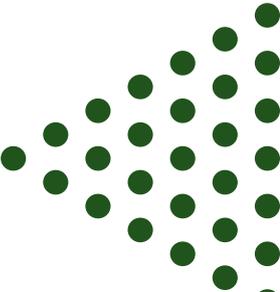
This annual report highlights the main activities of the Regional Center for Studies on the Development of the Information Society (Cetic.br), linked to the Brazilian Network Information Center (NIC.br). Cetic.br has been operating under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO) since 2012. Over these last nine years as a UNESCO Category 2 Center, Cetic.br's cooperation with UNESCO Headquarters and Field Offices has been intensifying. This can be observed in the implementation of numerous projects focused on the intersection between society and digital technologies, expanding knowledge about digitization processes and indicating possibilities for more inclusive societies.

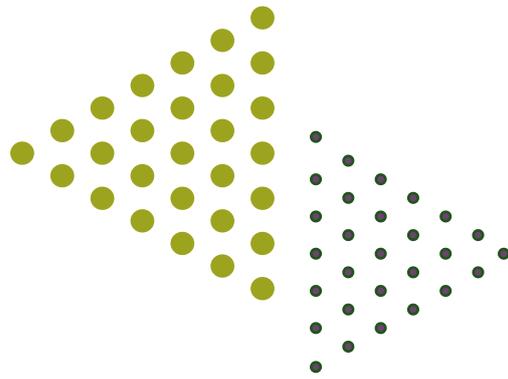
The history of Cetic.br is connected to the history of Internet governance in Brazil, which is marked by important achievements and by the consolidation of strategies to support a high-capacity, safe and quality technological infrastructure. This infrastructure is organized and operated by NIC.br, which implements the decisions and projects of the Brazilian Internet Steering Committee (CGI.br). NIC.br is also responsible for registering and publishing .br domain names on the Internet, and for allocating Autonomous System Numbers (ASN) and Internet Protocol (IP) addresses in the country. The .br domain has become one of the

largest in the world, reaching more than 4.6 million domain registrations, and follows an operating model in which the revenues it collects are given back to society via projects that help strengthen the development of the Internet in Brazil. The solid growth of the .br domain has enabled the maintenance of Cetic.br and all its projects.

With the emergence of the health crisis caused by COVID-19, the Internet and digital technologies have proven to be central and critical resources in supporting measures to cope with the pandemic and mitigate its effects. Because of COVID-19, many activities that used to be carried out in person have migrated to digital media, affecting the daily life of enterprises, the government, and citizens. As a result, the COVID-19 health crisis has highlighted digital inequalities and challenges to making the opportunities generated by the Internet available to all.

The Internet has become instrumental in everything we do and a window to the world. In terms of access to education, health, and cultural services, among other sectors, digital technologies, and in particular the Internet, have become the possible means to carry out most of our daily activities. The pandemic forced enterprises, governments, and individuals to adapt quickly to ensure the continuity of economic activities, which are now carried out in the online environment. Social





interactions also became increasingly mediated by digital technologies, significantly attenuating the high impacts of the measures adopted to combat the new coronavirus, such as social distancing.

At the same time that the pandemic accelerated the adoption of information and communication technologies (ICT), it also increased the importance of overcoming Internet connectivity and network safety challenges in the country. New technologies such as 5G, which will soon arrive in Brazil, play an important role in ensuring an Internet with higher-capacity bandwidth, lower latency, and improved mobility. Along with the technologies that are already available, the scenario that lies ahead includes adoption of applications such as the Internet of Things (IoT) and Artificial Intelligence (AI).

As for cybersecurity, migration to the digital environment has generated even greater amounts of data that is circulating and being collected and shared online, which can entail greater digital risks and potential data breaches. Therefore, it has become even more important to address issues related to security, privacy, and personal data protection. In 2020, the Brazilian General Data Protection Law (LGPD) took effect, with the purpose of regulating the processing of personal data in physical and digital media in Brazil. This law is essential to curb abuses related to the processing of personal data in the country, as well as to ensure greater

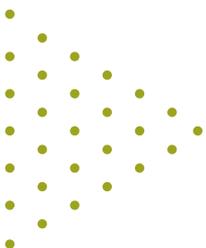
transparency regarding information held by organizations on individuals and how it is used.

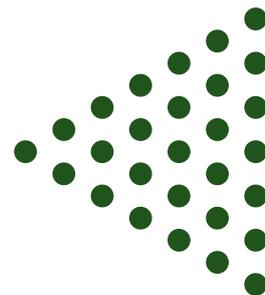
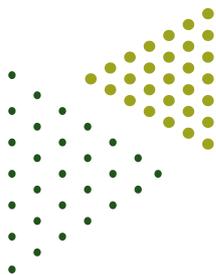
Since the beginning of the pandemic, NIC.br has also worked to support the expected increase in Internet traffic, with the quality necessary for the remote execution of daily activities. Featuring one of the world's leading groups of traffic exchange points, IX.br, in March 2020 a peak of 14 terabits per second was reached. Even though this number is significant, it is still less than half of its capacity. Another action taken to ensure greater protection of Internet users was the launch of the coronavirus section on the Internet Segura (Secure Internet) portal, which includes awareness initiatives relative to security and responsible Internet use.

With 15 years of operation, NIC.br also celebrated the ongoing and regular production of surveys on access to and use of ICT, an activity that has been carried out since 2005 by Cetic.br.

The need for data and statistics to understand the impacts of the pandemic on society highlights the importance of organizations that produce quality data to help in decision-making by both public organizations and the private sector.

Measures imposed to slow the spread of the new coronavirus, such as social distancing and the interruption of non-essential in-person activities, have also presented challenges related to data





collection in this new context. To ensure the production of robust and up-to-date data on the use of ICT during the health crisis, Cetic.br designed and implemented the ICT Panel COVID-19, which monitored the habits of Internet users during this period. In addition, a contingency plan was established to inform data users about the measures adopted to maintain data collection, including the development of innovative strategies for disseminating quality statistics. The consolidation of the Laboratory of Methodological Innovation has also allowed Cetic.br to quickly adapt to the new context, in which the ecosystem for producing reliable public statistics is more complex and dynamic.

In addition to providing up-to-date indicators on the adoption of digital technologies, Cetic.br has also worked on creating opportunities for training and reflecting on the new dynamics of digital transformation. In 2020, Cetic.br supported training through regional workshops on research methodologies for the production of ICT statistics, and open online course

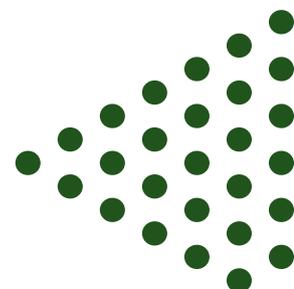
(MOOCs), “Tech for Good: The Role of ICT in Achieving the SDGs”. Furthermore, the Center began developing a new MOOC in partnership with UNESCO, to stimulate discussions about the use of Artificial Intelligence in the judicial branch. Also with the support of UNESCO, the Center has promoted discussion about and recommendations for public policies, as well as discussion about the impacts of AI in the field of culture.

In addition to producing data to monitor the Sustainable Development Goals (SDGs), new projects currently being developed also include emerging topics such as skills measurement and digital literacy, which are critical in the face of the repercussions of disinformation. Measuring the impacts of new disruptive digital technologies such as AI, IoT, cloud computing, and robotics will also be central on the research projects of the Center.

It is precisely in this area of measuring the development of inclusive information and knowledge societies that Cetic.br has been fulfilling its mission, as a center that produces and disseminates quality ICT indicators.



Demi Getschko - CEO
Brazilian Network Information
Center (NIC.br)





About Cetic.br

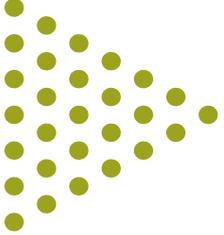
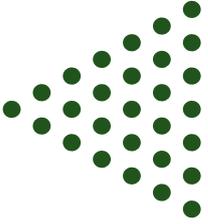
The Regional Center for Studies on the Development of the Information Society (Cetic.br), a department of the Brazilian Network Information Center (NIC.br) associated with the Brazilian Internet Steering Committee (CGI.br), was created in 2005 with the mission of producing data on access to information and communication technologies (ICT) and their use and appropriation in Brazilian society. The data collected is used in the design and monitoring of public policies that contribute to the development of the Internet, supporting digital transformation.

In 2012, Cetic.br|NIC.br became a UNESCO Category 2 Center, the first of its kind dedicated to the development of information and knowledge societies. The Center reports to the Communication and Information (CI) Sector, one of five areas covered by UNESCO. It contributes to the Organization's strategic objectives, strengthening its efforts to monitor the building of information and knowledge societies. Cetic.br|NIC.br cooperates with countries in Latin America and Portuguese-speaking countries in Africa.

MISSION

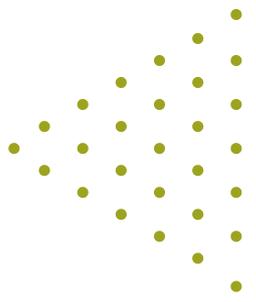
Cetic.br|NIC.br's mission¹ is to "contribute to building inclusive knowledge societies through information and communication technologies" in Latin America and Portuguese-speaking countries in Africa. The Center, which is responsible for the periodic production of indicators and statistics on the availability of ICT in Brazil, also conducts training programs in research methodologies in the regions in which it operates.

¹ <https://cetic.br/en/sobre/>



At a time when countries are facing different challenges concerning the COVID-19 pandemic, digital technologies have become crucial for the survival of enterprises, labor, education, commerce, services, etc. The pandemic has underscored their importance and has shown how they can be leveraged to build better, more inclusive, and more cooperative societies. It has also created a unique opportunity for data producers to recognize the importance of methodological innovation and cooperation at the regional and international levels to address complex problems in the domain of data production during the health crisis and to bridge existing data gaps. The production of reliable data and statistics is an essential basis for governments to make informed decisions and design evidence-based policies for sound recovery. In view of our mission to contribute to the construction of information and knowledge societies through digital technologies, Cetic.br|NIC.br has been collaborating with Latin American countries and Portuguese-speaking countries in Africa in the production of data for decision-making, with capacity-building programs, production of policy briefs, and promotion of debate about digital inclusion. The Center has also offered, in partnership with UNESCO, technical support to countries that are implementing the framework for Internet universality indicators, as well as support for the design of a new MOOC, "Artificial Intelligence for the Judiciary." These actions create synergies that support and facilitate UNESCO's lines of action and bring value to different stakeholders in the ICT ecosystem.

Alexandre Barbosa – Head of Cetic.br|NIC.br



Main Lines of Action

Cetic.br|NIC.br strives to contribute to discussions about the role of ICT data for public policies. It creates opportunities for key stakeholders to share their findings on the intersection between society and digital technologies and implications for the building of information and knowledge societies.

▶ Capacity-Building Programs for Survey Methodologies

This line of action focuses on survey methodology capacity-building programs for the production of ICT-related statistics and indicators. These programs aim to improve the availability and quality of ICT statistics and foster the production of internationally comparable data on access to and use of digital technologies. This line of action is also intended to raise awareness about the role of data in evidence-based policymaking for developing information and knowledge societies.

▶ Knowledge Center

Cetic.br|NIC.br aims to produce data through quantitative and qualitative research on ICT and to disseminate information and knowledge, including survey methodologies, indicators, data analyses, and ICT publications that contribute to the building of inclusive information and knowledge societies.

▶ Laboratory of Ideas

Cetic.br|NIC.br also serves as a multistakeholder platform for experience sharing on survey methodologies. It encourages debate among key stakeholders about the challenges inherent in measuring ICT and about emerging issues related to information and knowledge societies. Cetic.br|NIC.br promotes public debate, lectures, and discussion panels among renowned experts from government, academia, international organizations, and civil society with a view to exploring the socioeconomic implications of ICT. The Laboratory of Ideas guarantees transparency and legitimizes the Center's work.

▶ Culture and Ethics on the Internet

The social dimension of the Internet has drawn attention to topics such as culture and ethics. The Center not only produces data on ethics and the Internet, privacy and online safety, it also engages in workshops and the production of guidelines to raise awareness about these issues among parents, educators, and users in general. The ICT in Culture survey also reinforces the Center's commitment to studying the intersection between the Internet and culture.

▶ Cetic.br|NIC.br Vision of the ICT Statistical Data Production Ecosystem

Digital technologies are transforming societies by spurring profound social and economic changes. New disruptive technologies such as AI, robotics, the Internet of Things, cloud computing, biotechnology, and other technologies, create new challenges in terms of measuring their adoption and use, but at the same time, they offer numerous new alternative data sources that can be used in the data production process. In particular, Big Data from administrative sources in government and the private

sector can be an effective instrument for statistical systems. Countries are under increasing pressure to produce high-quality data in a timely manner to monitor national digital transformation policies and progress toward the Sustainable Development Goals (SDGs). Enormous amounts of data that are available at ever-increasing rates, new data sources, and institutional arrangements have reshaped the production of ICT data and statistics. Big Data, along with traditional sources such as administrative and survey data, has emerged as a

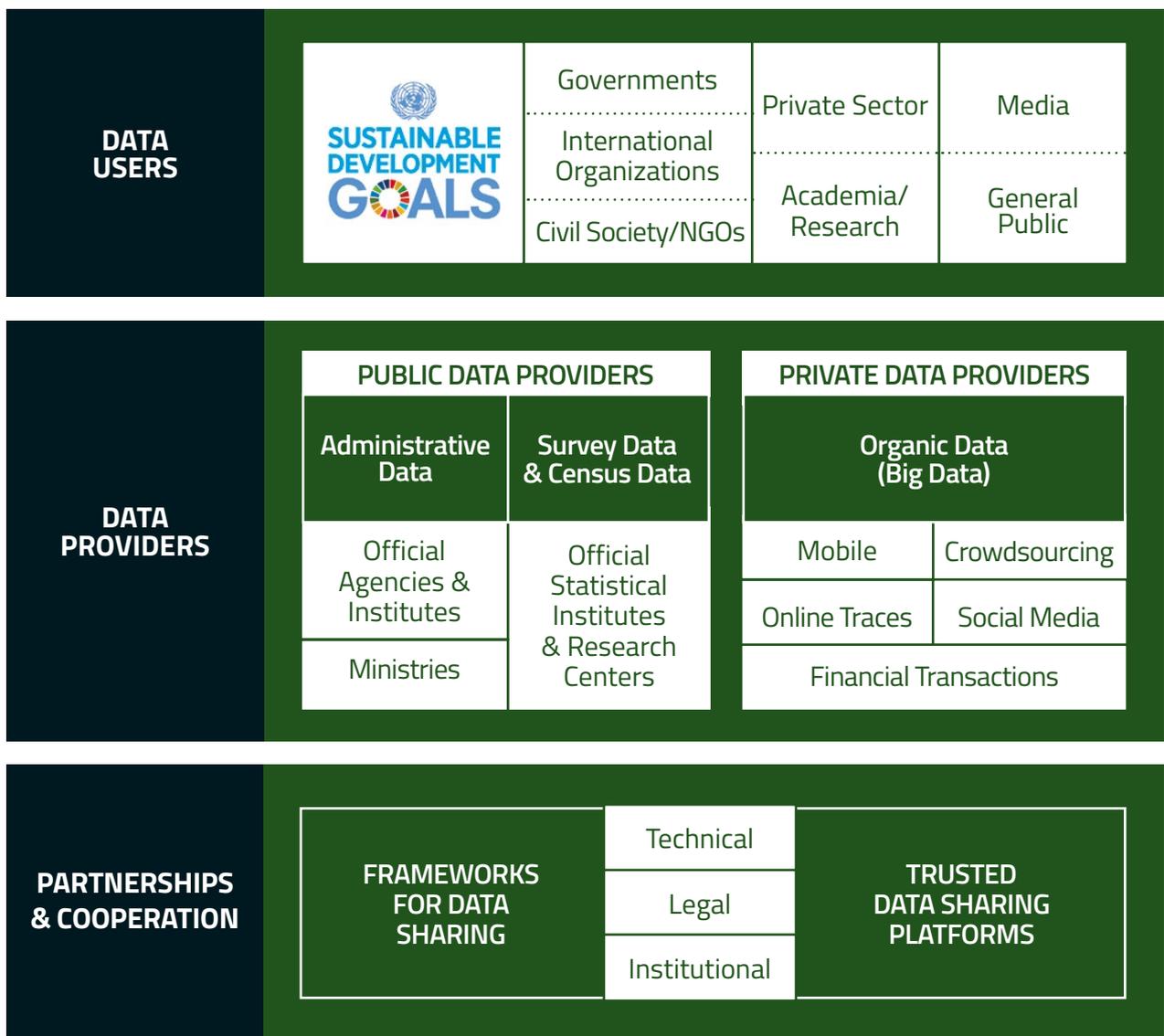


promising paradigm, shedding light on private data sources and adding complexity to the ICT data ecosystem.

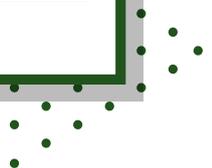
A wide range of data providers must work in collaboration to produce relevant data for monitoring progress towards the SDGs. Traditional national statistical agencies may

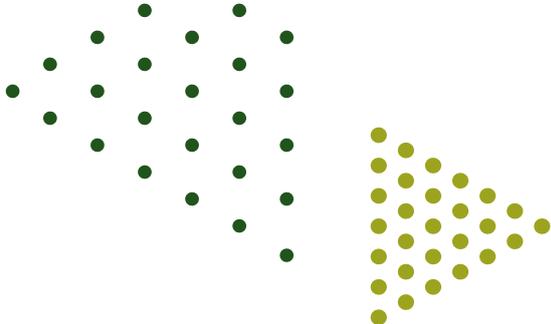
not be able to provide timely, reliable, and well-disaggregated data that meet policy design and monitoring needs. Cetic.br|NIC.br has developed a new layered model for ICT data production (see Figure 1) that brings new data providers and data sharing opportunities to the existing ecosystem.

FIGURE 1: STATISTICAL DATA PRODUCTION ECOSYSTEM



Source: Cetic.br (2020)





The top layer consists of data users and their specific needs. Statistical data is useful to all stakeholders (governments & policymakers, international organizations, civil society organizations, the private sector, academia, the media, and the general public) and will contribute to the design of new policies and products, conveying messages for raising awareness, and producing studies and academic research.

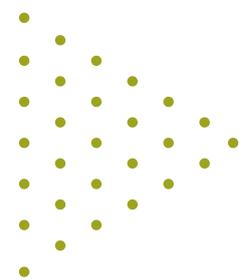
The middle layer consists of traditional national statistical systems and administrative data from governments (Public Data Providers) and a wide range of new private-sector data sources (Private Data Providers).

The bottom layer represents new data-sharing opportunities through partnerships supported by trusted data platforms and agreements. These platforms aim to mitigate challenges faced by data producers who are using privately owned data sets, enabling secure use in a trustworthy manner in compliance with personal data protection regulations. The *trusted data collaboratives* concept was adopted by the United Nations Statistical Division (UNSD) in 2017, at the 4th International Conference on Big Data for Official Statistics.² It addresses the use of Big Data and its integration with other sources, such as administrative data, geospatial data, and traditional survey and census data.

The diversity of relevant stakeholders from the public and private sectors who have great potential for production of ICT data and statistics will require the development of appropriate technical, legal, and institutional frameworks. Public and private data providers will need to conduct technical and commercial negotiations to enable data sharing.

Interacting directly with various data users, Cetic.br|NIC.br plays a key role in the new ecosystem and in identifying new ICT data needs. The Center also has close ties with national statistical offices and other data-producing institutions in Latin America and Portuguese-speaking countries.

In Brazil, Cetic.br|NIC.br works in close collaboration with the National Telecommunications Agency (Anatel), a national regulatory agency; the Brazilian Institute of Geography and Statistics (IBGE), the national statistical office; the Ministry of Science, Technology and Innovation (MCTI), the Ministry of Communications (MCOM); and other relevant ministries in areas such as education, health, and culture. Besides cooperating with different levels of government, Cetic.br|NIC.br also works with academia, international organizations, and civil society organizations, and is able to produce sound, up-to-date data for policymaking and research.



² This conference took place in Bogota, Colombia, in November 2017. (<https://unstats.un.org/unsd/bigdata/conferences/2017/default.asp>)

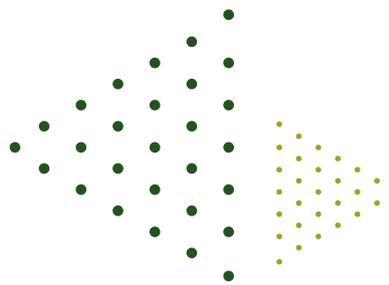


▶ Data Production Process at Cetic.br|NIC.br: An End-to-End Quality Approach

Cetic.br|NIC.br's data production process is based on best practices outlined by national centers of excellence and international statistical quality assurance frameworks. The Center has developed an end-to-end quality approach that includes every phase of the process, from planning to dissemination and evaluation. These processes are aligned with processes at the levels 1 and 2 as defined by the Generic Statistical Business Process Model – GSBPM 5.1 (UNCE, 2019)³ and follow the recommendations of the United Nations National Quality Assurance Frameworks Manual for Official Statistics (UNDESA, 2019)⁴. The GSBPM is a sound and robust framework that defines a set of well-defined processes to help statistical organizations to produce quality statistics. It provides harmonized terminology, process quality assessment, and improvement. This set of processes includes specification of needs, design,

building, data collection, processing, analysis, dissemination of products, and evaluation. Cetic.br|NIC.br is a world-renowned reference for ICT data production. Its work is supported by a multistakeholder group of experts whose invaluable contributions during the planning and data analysis stages provide legitimacy and enhance transparency.

Data production macro phases are summarized in Figure 2. Cetic.br|NIC.br has optimized resources and fostered innovation, strengthening links between data users and producers. The process involves an approach that engages stakeholders from various sectors throughout the critical phases. Experts participate in the planning phase, defining methodological approaches and indicators, and in the data analysis phase of the data production process. Methodological rigor and transparency are positively correlated with quality data production.



³ For more information on the Generic Statistical Business Process Model – GSBPM 5.1, see <https://statswiki.unece.org/display/GSBPM/GSBPM+v5.1>

⁴ For more information on the United Nations National Quality Assurance Frameworks Manual for Official Statistics, see <https://unstats.un.org/unsd/methodology/dataquality/>

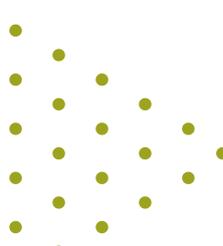
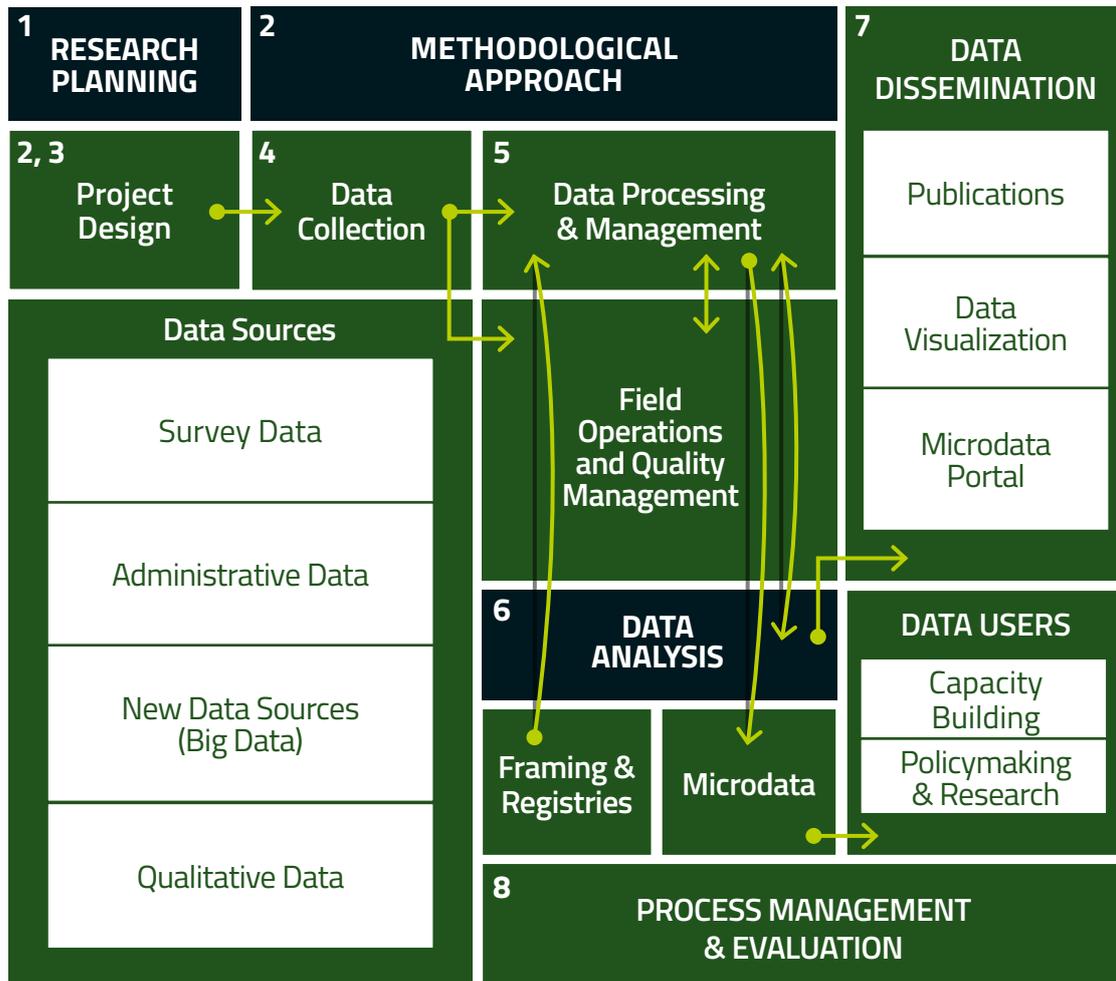


FIGURE 2: CETIC.BR'S DATA PRODUCTION PROCESS



NOTES:

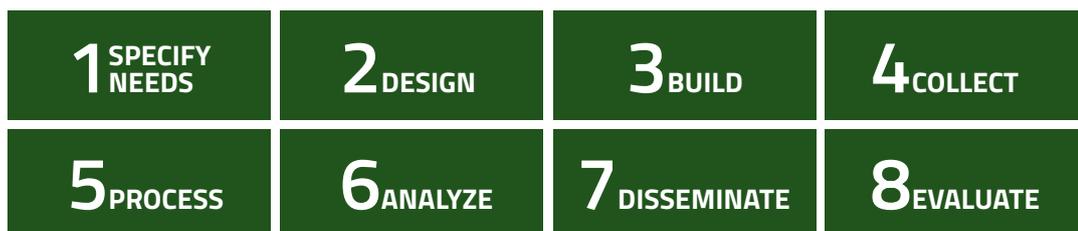
A) ■ 1, 2, 3, 6 Multistakeholder:

These processes rely on multistakeholder groups made up of experts from government, international organizations, academia and research institutes, private sector and civil society organizations.

B) ■ "N" GSBPM CORRESPONDENCE

Process 'n' is aligned to levels 1 and 2 of the GSBPM Version 5.1 (Please see Note C).

C) Level 1 of the GSBPM as defined by United Nations Economic Commission for Europe - UNECE (Version 5.1, January 2019).*



Source: Cetic.br (2020)

*Source: <https://statswiki.unecce.org/display/GSBPM/GSBPM+v5.1>

Cetic.br|NIC.br’s methodological approach spans all phases of every research and survey project, from planning to data analysis and sharing. It guides decisions about quantitative and qualitative methodological strategies, framing, sample design and selection, data collection tools, questionnaire design and testing, and field control.

A summary of data types and collection strategies is shown in Table 1. The probability sample design and selection for all quantitative survey projects rely on data sources from official registries that represent the populations of interest.

Cetic.br|NIC.br’s surveys are designed to guarantee uniform data collection and an understanding of concepts across

interviewers, interviewees, and field supervisors. Guidelines and methodological definitions are crucial to the training of field staff. Research teams monitor each data collection step. Quality control guides every action, ensuring accurate results.

Alternative data sources such as Big Data and administrative data are increasingly being used to complement traditional survey data in the production of public statistics. Unstructured data such as those extracted by web scraping tools are also being incorporated in the process. Cetic.br|NIC.br also increasingly uses case studies, focus groups, and in-depth interviews for qualitative studies on how digital technologies impact society.

TABLE 1: METHODOLOGICAL APPROACH & DATA COLLECTION STRATEGIES

APPROACH	QUANTITATIVE		QUALITATIVE
	STRUCTURED <i>(Designed Data)</i>	UNSTRUCTURED <i>(Organic Data)</i>	
TYPE OF DATA	Probabilistic survey data National census data Administrative records	Big Data Sensor & transaction data Web data	Convenience sample <i>(qualitative data)</i>
DATA COLLECTION STRATEGIES	Structured interview* Secondary data use <i>(data sharing agreements)</i>	Data analytics tools Web scraping	Cognitive interviews Focus groups In-depth interviews Case studies

***TYPES OF INTERVIEWS BEING CARRIED OUT BY CETIC.BR:**

*CAPI: Computer-assisted personal interviewing;
CATI: Computer-assisted telephone interviewing;*

*CASI: Computer-assisted self-interviewing;
CAWI: Computer-assisted Web interviewing.*

Source: Cetic.br (2020)

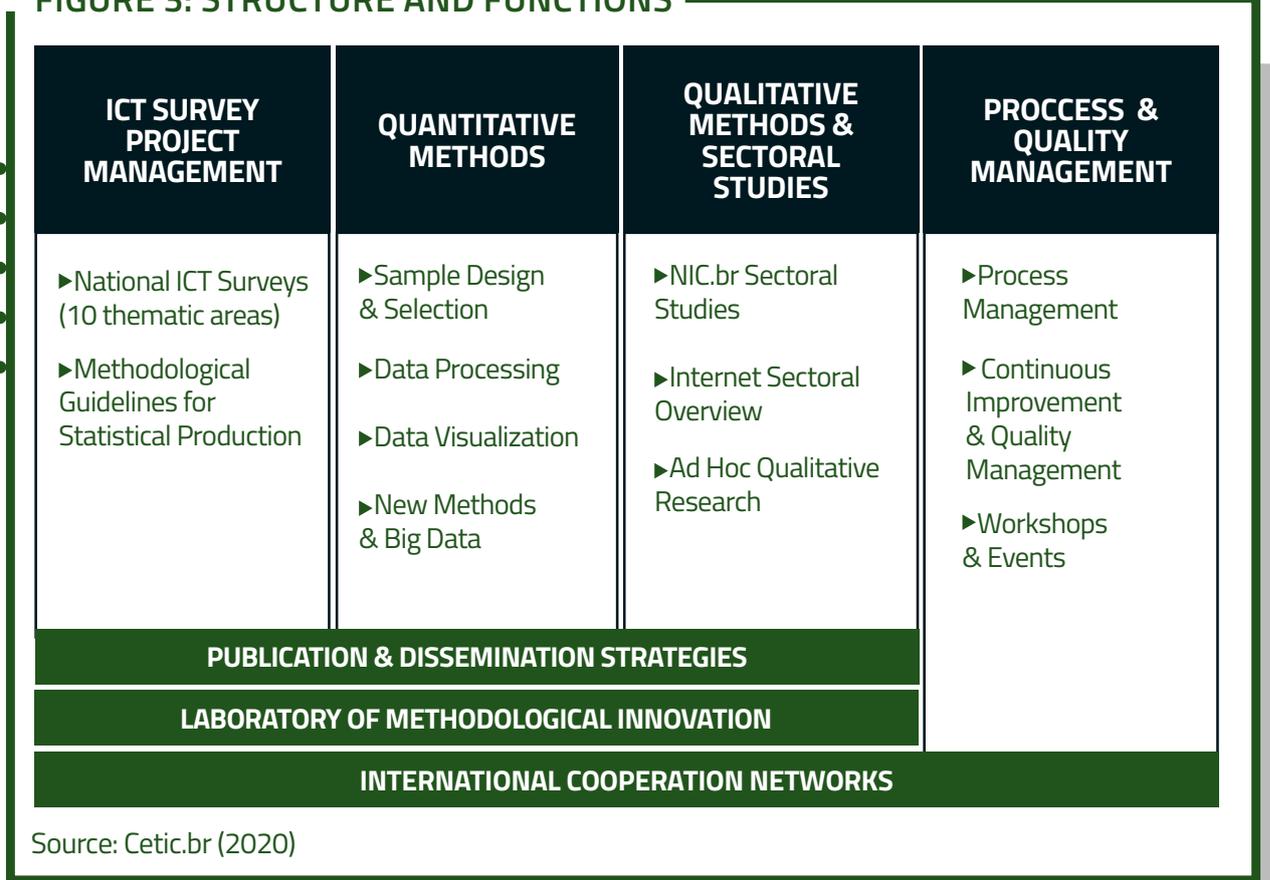
Data dissemination and capacity-building programs are two important elements of Cetic.br|NIC.br’s data production process. Cetic.br|NIC.br regularly publishes reports on the ICT survey projects, offers a data visualization portal, and provides microdata to policymakers and researchers. Cetic.br|NIC.br also offers

capacity-building programs on quantitative and qualitative methodologies used for the production of ICT-related statistics. These programs address theoretical and practical concepts, stimulating debate among researchers, policymakers, and representatives from the private sector, civil society, and international organizations.

▶ Structure and Functions

As shown in Figure 3, Cetic.br|NIC.br’s structure includes four areas: ICT Survey Project Management; Quantitative Methods; Qualitative Methods and Sectoral Studies; and Process and Quality Management.

FIGURE 3: STRUCTURE AND FUNCTIONS



Under this structure, Cetic.br|NIC.br publishes periodic demand-side ICT data based on stand-alone surveys (households, businesses, schools, healthcare facilities, cultural institutions, and non-profit

organizations) and sectoral studies on ICT and the Internet. Cetic.br|NIC.br also publishes supply-side indicators, such as through a nationwide survey on Internet service providers (ISPs) and E-government.

Introduction



The COVID-19 pandemic has triggered important changes in our everyday life and has accelerated ongoing digital transformation processes globally, forcing societies to look at the digital environment in a different way. From living and working to studying, it has been possible to witness unprecedented digital transformations for individuals, organizations, and governments, making the world more digital than ever before.

Since the beginning of the pandemic, digital technologies have shown the potential to accelerate the shift towards more intensive use of the Internet as a crucial platform to mitigate the effects of the pandemic. In Brazil, right after the outbreak of the new coronavirus, the country experienced a surge in Internet traffic, reaching a daily peak of 14 terabits per second in the Internet exchange points operated by the Brazilian Network Information Center (NIC.br). The pandemic has underscored even more the importance of digital technologies for the performance of enterprises, labor, education, commerce, services, etc.

According to the World Bank (2020)⁵, digital technologies have revealed their potential to support governments in the fight against COVID-19 in three ways: i) governments can use digital technologies to provide official, trustworthy and timely information and advice about the pandemic; ii) online platforms have connected millions of

students and workers to their schools and offices, allowing them to keep up their activities from home to contain the spread of the virus; and iii) digital technologies like Artificial Intelligence (AI) can help diagnose and monitor the infectious virus. In addition, digital technologies have been crucial in expediting the development of vaccines and developing contact tracing applications. The pandemic has offered many examples of how technologies can be leveraged to build better, more inclusive, and more cooperative societies.

Despite the difficulties and uncertainties created by the pandemic for the government, all sectors of the economy and society as a whole, in 2020 the Center was able to adapt its processes to avoid interruptions to its data production in Brazil and capacity-building activities in the regions where it operates. The year 2020 was challenging for national statistical offices (NSOs) and other data producers around the globe, because the pandemic substantially affected their activities throughout their data production processes. Nevertheless, the pandemic has created a unique opportunity for data producers to recognize the importance of methodological innovation, data sharing, and national, regional and international cooperation in addressing complex problems in the domain of data production for official statistics.

⁵ <https://blogs.worldbank.org/developmenttalk/how-does-digital-technology-help-fight-against-covid-19>





▶ COVID-19, the Digital Divide and Inequalities

The digital transformation is taking place everywhere, but it certainly is not happening in the same way for everyone. In many countries from the Global South, there are still significant proportions of their populations that are not yet participating in and benefiting from the digital transformation. In these countries, access to information and communication technologies (ICT) is not evenly distributed across their territories.

On the one hand, geographical disparities in access to and use of the Internet occur within country's regions and between urban and rural areas, reflecting persistent socioeconomic disparities. The impact of the pandemic on digitally excluded citizens is enormous. The coronavirus has revealed how fragile our systems and policies are in the context of socioeconomic disparities in many countries, especially when it comes

to the digital environment and Internet broadband connectivity. The challenges to digital inclusion are not new, and still have not been resolved.

On the other hand, human rights are increasingly being exercised online. Therefore, having access to the Internet is essential for all citizens to fully exercise their rights in the online environment. In a time of coronavirus and social distancing measures, the Internet has become even more important to ensure continuity of our daily life. This situation sends a clear message to governments, the ICT industry, and Internet providers: They should engage in joint efforts in effective dialogues on how the digital transformation and COVID-19 should lead to a multistakeholder approach, so that governments can cooperate to more effectively build forward in a post-COVID-19 world and ensure an inclusive digital transformation.

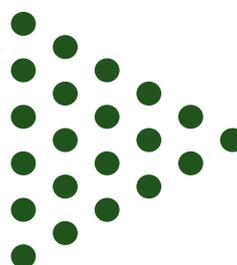


▶ Cooperation to Bridge the Data Gap

The dissemination of digital technologies and their intensive adoption by individuals and organizations are essential requirements for the development and consolidation of the digital transformation. It is mandatory to have reliable data and statistics to design evidence-based policies to ensure that the benefits of the digital transformation are accessible to all. This means that to address inequalities and

ensure that the digital transformation is inclusive, ethical, human-centric, and leaves no individual or community behind, it is necessary to have reliable data. Data and statistics are key ingredients in the successful design of policies that will support an equitable and sustainable digital transformation.

Cetic.br|NIC.br is engaged in the debate around data production using innovative



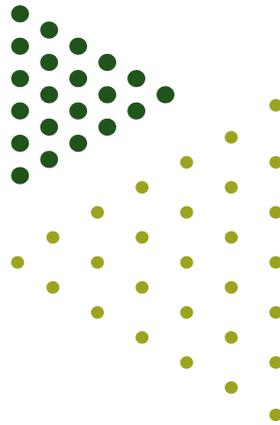
methodological approaches for data production by combining different data sources. During 2020, along with key stakeholders in the statistical data production ecosystem, Cetic.br|NIC.br has fostered knowledge and experience exchange to maintain the production of statistical data during the pandemic, and as long as the necessary social distancing measures to contain the spread of the new coronavirus last.

Among the strategies adopted by Cetic.br|NIC.br to address difficulties with collecting data during the pandemic, it is worth mentioning the following:

- Strengthening communication with society to stimulate adherence to data collection efforts that need to be maintained;
- New data collection methods: from face-to-face, to telephone or web data collection, to the use of administrative records;
- Designing innovative strategies that ensure quality in the process of production of statistics: reuse of survey samples; handling of missing data; data weighting and calibration through the use of data from other surveys that are carried out according to traditional probabilistic methods;
- Revising the timetable for the national surveys and transparent communication with data users.

More than ever, countries must develop initiatives to measure and produce policy-relevant, timely data and statistics. The pandemic created a need for innovative methodological solutions, and at the same time, measurement has moved to more complex domains such as AI, Big Data, the Internet of Things, robotics, blockchain, and trust in the digital environment. This new digital environment calls for sound measurement frameworks that not only respect internationally agreed-upon concepts, definitions, indicators, and metrics, but are also usable for emerging sources such as Big Data, administrative records, and sensor data. Moreover, new data sources offer opportunities and challenges that both data producers and statistics users must be aware of.

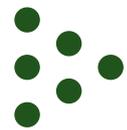
In 2020, Cetic.br|NIC.br actively participated in the international debate about frameworks for measuring various dimensions of the digital transformation and the digital economy, supporting ongoing international efforts to revise existing frameworks and discuss and propose new ones. In order to bridge the data gap, Cetic.br|NIC.br has also cooperated with countries in Latin America and Portuguese-speaking countries in Africa by providing capacity-building programs and methodological support to countries at the regional level. In this report, you will find the main activities and collaborations of the Center in 2020.



▶ Working Together to Maintain a Knowledge Repository on Measuring the Digital Transformation

Cetic.br|NIC.br has become a reference center for ICT data and statistics production, and constantly seeks innovative methodological solutions for data production, exploring new tools for data collection, analysis, and sharing. In 2020, Cetic.br|NIC.br carried out a series of

projects to enhance reliable data production on Internet adoption and to promote capacity-building on new methodologies for measuring the digital economy and the digital transformation. Building on its solid experience, the Center continued to carry out nationwide surveys, qualitative and



quantitative research, and sectoral studies to produce reliable data and ICT statistics. The Center's national sector-specific surveys enable the design, implementation, and monitoring of ICT public policies in Brazil.

All of Cetic.br|NIC.br's ICT surveys and research projects rely on the methodological support of renowned experts from academia, government, the private sector, and international and civil society organizations.

They validate indicators and data collection instruments and provide guidelines for data analysis. These experts play a crucial role in identifying new areas of investigation, improving methodological procedures, and obtaining reliable data. Cetic.br|NIC.br held nine expert group meetings in 2020, bringing together over 217 experts from various sectors at the national, regional and international levels.

Knowledge Repository: Publications on ICT Measurement

In 2020, Cetic.br|NIC.br published seven bilingual editions (Portuguese/English) of national survey projects, presenting articles and data analyses. The surveys were: ICT Enterprises, ICT Electronic Government, ICT Households, ICT in Education, ICT Kids Online Brazil, ICT Public Access Centers, ICT in Health, and the ICT Panel COVID-19. In total, these surveys provided 741 indicators on access to ICT and its use in Brazil.

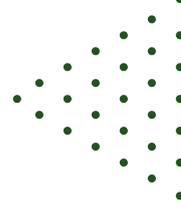
It also published two editions of the NIC.br Sectoral Studies, focusing on accessibility and the challenges to measurement in smart cities; and four editions of the Internet Sectoral Overview, focusing on Artificial Intelligence and its impacts on areas such as education, health, justice and the future of work.

▶ Methodological Innovation during the Pandemic

In order to develop alternative data collection strategies, Cetic.br|NIC.br's Laboratory of Methodological Innovation designed a pilot project for data collection through the Web with Internet users during the pandemic. A Web Panel of Internet users was implemented for a period of three months, seeking to collect information on the use of and behaviors on the Internet during the pandemic. The design of the panel seeks to reflect the socioeconomic profile of Brazilians. The data collected on the platform was weighted using traditional probability sample surveys, especially the last edition of the ICT Households survey (2019). The topics covered by this innovative project were:

- **Basic Modules:** Internet Use Features (Location and Devices); and Online activities.
- **Complementary Modules:** E-commerce; Personal Data Protection and Privacy; Remote Education; Telemedicine and Telehealth; Teleworking; Electronic Government; and Cultural Activities.

Cetic.br|NIC.br also explored new tools for data collection and sharing, and used new sources such as Big Data to complement traditional data in the production of public statistics. The Laboratory of Methodological Innovation sought to leverage new data collection methods and the provision of online microdata to foster



end-to-end innovation in data production. Great emphasis was put on the revision of existing processes and building capacity in data science and analytics, reinforcing the Center's commitment to disseminating information and knowledge and expanding the reach of its survey methodologies and results.

In 2020, Cetic.br|NIC.br continued its active participation in the debate on the information society and measurement of the digital economy. Forums hosted by the International Telecommunication Union (ITU), the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC), the United Nations Conference on Trade and Development (UNCTAD), the Organisation for Economic Co-operation and Development (OECD), and the United Nations Educational, Scientific and Cultural Organization (UNESCO) were ideal settings for discussing these issues.

Partnerships with relevant data producers are also critical to the Center's activities. Cetic.br|NIC.br currently collaborates with the Brazilian Institute of Geography and Statistics (IBGE), and international organizations such as the ITU, UNESCO, and UNECLAC. The

Center remains on the cutting edge and adopts best practices for the production of internationally comparable data.

The use of Big Data sources and web scraping techniques to produce ICT data is at the core of certain partnerships. The work done together by Cetic.br|NIC.br, the UNECLAC and the IBGE is another good example of cooperation in the measurement of the digital economy based on Big Data sources. These three organizations seek to deepen their knowledge of the dynamics of companies operating on the Internet and quantify their impact on economies to generate policy-relevant data. The partners not only discuss conceptual and methodological frameworks, but also decide on how to combine web and administrative data to produce indicators. This cooperation is expected to produce robust methodologies for combined data sources that could be disseminated to countries in the region. Additionally, Cetic.br|NIC.br and IBGE participated in an ITU working group on mobile data to produce official statistics and contributed with two chapters of the "Handbook on the Use of Mobile Phone Data for Official Statistics" to be released in 2021.



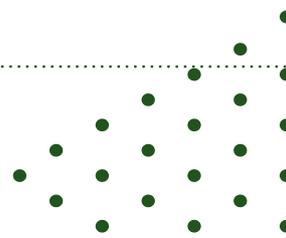
▷ Capacity-Building Activities to Meet Data Needs for Policymaking

In 2020, Cetic.br|NIC.br continued to promote capacity-building strategies, such as workshops focused on policymaking with data user communities in Brazil, Latin America, and Portuguese-speaking African countries. These workshops covered theoretical and practical survey methodology concepts, including data collection and data analysis techniques. They also fostered discussion, allowing ICT data users and producers to share information.

Designed to promote capacity-building, the 10th NIC.br Annual Workshop on Survey Methodology was noteworthy. "Reflections on Artificial Intelligence and the Future of Data Production" was the featured topic.⁶ The event was jointly organized by Cetic.br|NIC.br and the National School of Statistical Science (ENCE), which is affiliated with IBGE. The workshop highlighted the importance of new data sources for producing public statistics, and the need for rigorous data production methods and use.



⁶ <https://workshop.metodologia.cetic.br/>



10th NIC.br Annual Workshop on Survey Methodology

The Annual Workshop on Survey Methodology has been conducted by Cetic.br|NIC.br since 2010 to discuss emerging topics on ICT data production within the ICT data community. The 10th edition of the Workshop addressed the impacts of Artificial Intelligence (AI) on the future of ICT data production, and other social implications covered by five webinars: "A Humanistic and Ethical Approach to AI"; "Public Statistics on AI"; "Statistics for Citizenship"; "Alternative Approaches for Data Production in the context of COVID-19"; and "Alternative Sources for Data Production in the context of COVID-19".

Another thematic workshop in the field of ICT statistics was organized at the regional level in partnership with UNECLAC. This workshop aimed to promote an exchange of experiences between national statistical institutes and international organizations around the methodological innovations implemented to minimize the impacts of the pandemic in the production of ICT statistics in the region. The event also

promoted a debate on the production of innovative data and methodologies for the production of ICT statistics, and the use of ICT to collect strategic data for the Sustainable Development Agenda.

A partnership with UNESCO and the Institute of Electrical and Electronics Engineers (IEEE) that led to the creation of a new MOOC, "Artificial Intelligence for the Judiciary," is but one example of efforts that yielded fruitful results.

Artificial Intelligence for the Judiciary

In 2020, Cetic.br|NIC.br supported the planning of a new online training course (MOOC format) for members of the judiciary on AI and the rule of law, in collaboration with a vast network of partners. This MOOC aims to stimulate participative dialogue with judicial operators on AI-related innovations in the judicial system and court rulings concerning Artificial Intelligence. It will facilitate knowledge exchange and experience sharing among judicial operators on Artificial Intelligence and existing norms and standards in the field. The course will underline the implications of AI for human rights, highlighting existing case studies and best practices that translate ethical principles into practice in terms of the use of AI in justice systems and cases involving the impact of AI on human rights.

During 2020, the MOOC “Tech for Good: The Role of ICT in Achieving the SDGs”,⁷ which was developed by Cetic.br|NIC.br in partnership with UNESCO and the SDG Academy, was offered to 1,807 enrolled participants. This 10-week course discusses how information and communication technologies (ICT) – and, notably, the Internet – are crucial to achieving the SDGs. It highlights the rapid and dynamic growth of the Internet, Big Data, mobile phone usage, Artificial Intelligence, and other recent trends, exploring opportunities and challenges concerning ICT and the SDGs.

Finally, in addition to participating in international conferences, symposiums, seminars and technical forums and discussing methodologies and indicators for measuring the digital economy, Cetic.br|NIC.br also organized public debates in Brazil. It brought together key stakeholders on themes such as education, health, culture, Big Data, and the digital economy, fostering meaningful dialogue.

⁷ <https://www.edx.org/course/tech-for-good-the-role-of-ict-in-achieving-the-sdg>

2020 Facts & Figures

741

ICT indicators published

2,265

Media appearances

44

Field coordination supervisors

507

Field interviewers involved in data collection

9

Expert meetings (multistakeholder groups)

217

External experts involved in all ICT survey projects

70,466

Interviews carried out in all of the Cetic.br|NIC.br surveys

17

Publication of ICT surveys, NIC.br Sectoral Studies & Internet Sectoral Overview

23

Number of cooperation agreements in force

9

New cooperation agreements signed in 2020

231+
participants

Capacity-building workshop on research methodologies -Webinar Series

+1,800
participants

MOOC "Tech for Good: The Role of ICT in Achieving the SDGs" (edX Platform)

Public Debates on Socioeconomic & Cultural Implications of Digital Technologies

Cetic.br|NIC.br sponsors widespread public debates and technical meetings with key stakeholders from the government, academia, the private sector, and international and civil society organizations to discuss the socioeconomic and cultural implications of digital technologies in society and the development of information and knowledge societies. Debates are based on an interdisciplinary approach to discussing the multifaceted aspects related to access to, and use and appropriation of, technologies by different segments of society.

During 2020, the Center held public events that marked the launch of new publications and also served as a forum for discussing relevant themes, encouraging informed public debate on digital technologies and society. Several public debates organized by the Center throughout the year focused on relevant findings from the national ICT surveys conducted by Cetic.br|NIC.br. Public debates are one of the transparency mechanisms that legitimize its work on data production. Below are some of the main events that took place in 2020.

▶ AI Latin American SumMIT January 2020 – Boston (USA)

The increasing adoption of AI technologies around the world has shed light on the issue of how to unlock its potential at scale, safely and ethically, around the world, particularly in Latin America. This meeting was ultimately aimed at building collaborative relationships across Latin America for the advancement of AI research and analysis of its applications for social development in the region.

The AI Latin American SumMIT was organized by a multidisciplinary team of Latin American researchers from the Massachusetts Institute of Technology (MIT), with the collaboration of Latin American universities, research institutes, and multilateral organizations, among others. The Summit gathered leaders from government, industry, academia, and





Arquivo Pessoal

the non-profit sector from across Latin America and the Caribbean, to identify opportunities and risks related to greater adoption of AI technologies. The following discussion topics were focused on: industry and services; the state; poverty; health care; ethics; education; and climate change.

Given the relevance of this event, Cetic.br|NIC.br collaborated with MIT to support and promote this regional summit among relevant stakeholders in the region. In its role as an institutional partner, Cetic.br|NIC.br was responsible for designing, coordinating and moderating a panel to discuss the use of AI to promote and monitor sustainable development in Latin America.

The panel entitled “How can AI be Used for Promoting & Monitoring Development in Latin America?” addressed questions such as: Can we refer to Latin America as a uniform region regarding state-of-the-art technology? Are countries in the region using AI in the same way? Is the labor force prepared to use and appropriate trends in new technology? What initiatives have been taking place in the last few years? The panel welcomed representatives from different sectors to share their experiences, perspectives and initiatives related to AI and



Arquivo Pessoal

sustainable development, highlighting the potential role of technology, and commenting on challenges and opportunities to be faced in the near future.

The panel was moderated by Alexandre Barbosa, Head of Cetic.br, with specialists in the agenda.

Panelists:

- Juan Ortiz Freuler (Senior Policy Fellow, Web Foundation)
- Joana Varon (Director and Policy Strategist, Coding Rights)
- Emmanuel Letouzé (Director, Data-Pop Alliance)
- Guilherme Canela (Regional Councilor for Communication and Information, UNESCO Regional Office of Science for Latin America and the Caribbean)



▷ **Todos@Web** // Launch of the publication
 "Accessibility and Technologies:
 An Overview of Access to and Use of Information
 and Communication Technologies by Persons
 with Disabilities in Brazil and Latin America"
 May 2020 – Online



The Web Technologies Study Center (Ceweb.br) of the Brazilian Network Information Center (NIC.br), in partnership with the World Wide Web Consortium – W3C Brazil Office, organized the online event Todos@Web on Global Accessibility Awareness Day⁸. During the event, studies and publications on the use of technologies by persons with disabilities and the accessibility of technologies were launched. With the participation of experts from different areas, the event discussed accessibility innovations and hosted the launch of three publications and one study on accessibility. On this occasion,

Cetic.br|NIC.br and Ceweb.br|NIC.br launched the NIC.br Sectoral Study "Accessibility and Technologies: An Overview of Access to and Use of Information and Communication Technologies by Persons with Disabilities in Brazil and Latin America."

Speakers:

Lia Carrari (Google Research), Simone Freire (Espiral Interativa and Movimento Web para Todos), Thoran Rodrigues (BigDataCorp), Alexandre Barbosa and Tatiana Jereissati (Cetic.br|NIC.br), and Vagner Diniz, Amanda Marques and Reinaldo Ferraz (Ceweb.br|NIC.br).

⁸ https://www.youtube.com/playlist?list=PLQq8-9yVHyOYxRKp1AtRRfrKtJt_rzvT-

▶ Webinar: Digital Transformation in Brazil

// Launch of the 2019 editions of the ICT Enterprises, ICT Electronic Government and ICT Public Access Centers surveys

July 2020 – Online



Cetic.br|NIC.br launched the three publications of the 2019 editions of the ICT Enterprises, ICT Electronic Government and ICT Public Access Centers surveys during a virtual event in July 2020. At the same time, indicators from the 2nd edition of the ICT Public Access Centers survey were released. After the presentation of new data about Brazilian telecenters, experts discussed challenges to the digital transformation in Brazil and the role of digital technologies in government and enterprises in the context of the COVID-19 pandemic. The debate was moderated by Ambassador Achilles Zaluar (Brazilian Ministry of Foreign Affairs). Members of the government, the private sector and academia also participated in the webinar. More than 300 people watched the live webinar on the NIC.br channel⁹ on YouTube.



Speakers:

Daniel Cavalcanti (Ministry of Communications - MCom), Luis Felipe Salin Monteiro (Ministry of Economy - ME), Fernanda De Negri (Institute of Applied Economic Research - IPEA), Professor Delfina Soares (United Nations University - UNU-EGOV) and Henrique Faulhaber (Brazilian Internet Steering Committee - CGI.br).

⁹ Webinar available on YouTube: <https://www.youtube.com/watch?v=j4UPOOKDqCk>

► Webinars: The Digital Transformation in the Brazilian Public Sector // Online Debates on the Digital Transformation in Brazilian States and Municipalities

August 2020 – Online



The dissemination of digital technologies in the public sector can bring many benefits, such as improving efficiency and service delivery. For this to occur, it is necessary to ensure that the adoption of information and communication technologies (ICT) leads to real gains in citizens' lives, expanding the responsiveness of federal, state, and municipal agencies to their demands. In this context, and in order to encourage the debate about how the digital transformation is shaping public organizations in Brazil, Cetic.br|NIC.br promoted two webinars in August 2020. The topic of the first webinar was "The Digital Transformation in Brazilian States and the Federal District", and the second addressed the context of Brazilian municipalities.

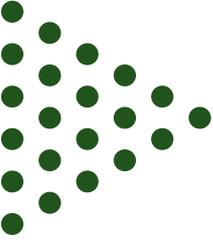
Drawing on the results of the 2019 ICT Electronic Government survey, the webinars sought to



Arquivo Pessoal

foster understanding of challenges, opportunities and disparities in implementation of digital transformation initiatives among Brazilian states and municipalities, including topics such as data analytics and Big Data, development of smart cities, electronic services, and online transparency tools. Representatives from the government, academia, international organizations, and the third sector contributed to the discussion. The webinars were broadcast on the NIC.br channel on YouTube¹⁰, and had more than 2,200 views.

¹⁰ Webinars available on YouTube: <https://www.youtube.com/watch?v=8w-sgc5cW9Y> and <https://www.youtube.com/watch?v=NHu7OZ6rtwU>



Panel: “Digital Transformation in States and the Federal District”

Speakers: Maria Alexandra Cunha (Getulio Vargas Foundation), Fabrício Marques Santos (Secretary of State of Alagoas and President of the National Council of State Departments of Administration - CONSAD), Lutiano Silva (President of the Information Technology Management Center of Amapá - PRODAP and Executive President of the Brazilian Association of Information and Communication Technology State Entities - ABEP-TIC), Thiago Ávila (Superintendent of Information and Knowledge Production of the State of Alagoas and National Coordinator of the Digital Transformation Group of the States and the Federal District - GTD.GOV), Mariano Lafuente

(Specialist in State Modernization at the Inter-American Development Bank - IDB) and Beatriz Lanza (IDB Consultant).

Panel: “Digital Transformation in Municipalities”

Speakers: Ana Carla Bliacheriene (University of São Paulo - USP), Zuleica Goulart (Sustainable Cities Program), Paulo Miranda (President of the Data Processing Company of the Municipality of Porto Alegre - Procempa), Vitor Fazio (São Paulo City Hall and Inova Cidades Forum), Daniela de Cássia (Monteiro Lobato City Hall and National Confederation of Brazilian Municipalities - CNM) and Fernanda Campagnucci (Open Knowledge Brazil).

▶ Webinar: Cetic.br 15th Anniversary // Launch of the 2019 editions of the ICT Households, ICT in Health, ICT in Education and ICT Kids Online Brazil surveys

November 2020 – Online



CETIC.BR 15TH ANNIVERSARY:
MEASURING DIGITAL TRANSFORMATION
AND PERSPECTIVES FOR BUILDING
INCLUSIVE SOCIETIES

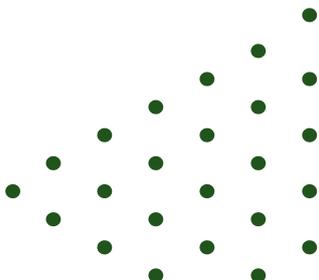
.....
23 - 24 November 2020

cetic.br nic.br cgi.br



Digital technologies, in particular the Internet and mobile devices, have come to play a central role in facilitating social distancing measures. They support telework, e-commerce, remote education and access to emergency public services,

but are also important in coping with the pandemic, making information widely available, tracking the spread of the disease through Artificial Intelligence, and delivering healthcare via telemedicine.



While Internet access has become an essential service for the well-being of citizens, there is growing concern about the risks inherent to this new scenario. It is vital to reflect on matters such as privacy and protection of personal data, surveillance, transparency of algorithms, and disinformation. In addition to the multistakeholder efforts required to face these challenges, digital skills play an important role in building greater resilience among citizens.

To commemorate its 15th anniversary, Cetic.br|NIC.br hosted two days of online events¹¹, on November 23 and 24, to promote discussions connecting evidence accumulated during its fifteen years of data production to the challenges of ICT public policies in this period. The event also marked the launch of the 2019 editions of the ICT Households, ICT Kids Online Brazil, ICT in Education and ICT in Health surveys.

Webinar I: “Digital Health in Focus: Lessons from the Pandemic and Future Trends”

Keynote: Daniel Luna (Chief Information Officer, Hospital Italiano de Buenos Aires).

Panelists: Alison Gillwald (Executive Director, Research ICT Africa), José Eduardo Krieger (Professor, University of São Paulo Medical School / Head, Genetics and Molecular Cardiology Laboratory of the Heart Institute - HC-FMUSP) and Sonia Jorge (Executive Director, Alliance for Affordable Internet - A4AI / Head of Digital Inclusion, Web Foundation).

Moderator: David Novillo (Program Manager and Unit Leader, World Health Organization Regional Office for Europe).

Webinar II: “Remote Education and the COVID-19 Outbreak: Challenges to Ensuring Rights and Promoting Well-Being”

Keynote: Divina Frau-Meigs (Professor, Sorbonne Nouvelle University).

Panelists: Daniela Trucco (Social Affairs Officer, Social Development Division of ECLAC), Dorothy Gordon (Chair, Information for All Programme, IFAP-UNESCO) and Jasmina Byrne (Chief, Policy Office of Global Insight and Policy of UNICEF).

Moderator: Marlova Jovchelovitch Noletto (Director and Representative of UNESCO in Brazil).

▶ Series of Workshops & Debates: “Numbers in Life”

August-November 2020 – Online

IDEIAS #emcasacomseco

A Vida nos Números
HORIZONTES

Com **Demi Getschko** (engenheiro elétrico e Diretor-Presidente do Núcleo da Informação e Comunicação do .br - NIC.br), **Daniilo Santos de Miranda** (filósofo e Diretor Regional do Sesc de São Paulo) e **Fernando Antonio de Almeida** (médico e Vice-Reitor na PUC-SP).

Mediação de **Fernando José de Almeida** (filósofo e professor titular do curso de pós-graduação em Educação: Currículo, na PUC-SP). Apresentação de **Gustavo Torrezan** (artista visual e pesquisador no Centro de Pesquisa e Formação do Sesc de São Paulo).

¹¹ List of videos available on: <https://www.youtube.com/playlist?list=PLQq8-9yVHyOZs04BW2496fThvnstMvae0>

The aim of the series of workshops “Numbers in Life” was to stimulate reflection on the influence of numerical data on life. The discussion focused on scientific thinking, readings and interpretation of graphs, charts, numerical and statistical data relating to situations we live in our daily life.

The series of workshops were organized by the Pontifical Catholic University of São Paulo – PUC-SP; Brazilian Social Service of Commerce – Sesc; and the Regional Center for Studies on the Development of the Information Society – Cetic.br|NIC.br.

“Data Literacy in a Hyperconnected World”

The first workshop focused on visual-numeric literacy, with a focus on the concepts, development, and use of statistical data.

Professors: Maria Helena de Sousa (PhD in Education from Pontifical Catholic University of São Paulo) and Pedro Nascimento (PhD in Statistics from the University of Southampton).

“Maps of Brazil: Interpreting Cartographic and Geographic Data”

The second workshop focused on cartographic and geographic data. It provided the foundation on how to read, write and interpret these types of data in our contemporary socioeconomic context, and to build narratives through different forms of communication.

Professor: Douglas Santos (PhD in Social Science from Pontifical Catholic University of São Paulo).

The following debates focused on numbers in the expression of life and beyond, based on connections that value culture and scientific thinking in reading the reality and the current socioeconomic context.

Debate: “Health in Numbers”

Considering the context of the COVID-19 pandemic, the debate focused on the presentation and contextualization of

actions in the health sector from the available data perspective, and how data can impact public policies in the sector.

Keynote: Paulo Saldiva (Professor in the Department of Pathology, University of São Paulo - USP).

Moderator: Fernando Almeida (Pontifical Catholic University of São Paulo – PUC-SP).

Debate: “Artificial Intelligence and the Internet of Things”

Keynote: Marcelo Zuffo (Professor at the Polytechnic School of USP).

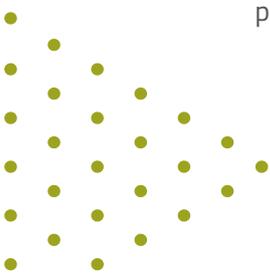
Moderator: Alexandre Barbosa (Cetic.br|NIC.br).

The debate focused on the challenges and opportunities brought by the digital transformation and how this transformation is increasingly demanding new digital skills, computational and numerical thinking. There was also discussion on the challenges that Artificial Intelligence and the technologies associated with the Internet of Things (IoT) pose to professionals and citizens of the 21st century. The main ongoing research projects developed in the laboratories of the University of São Paulo in these areas and their social impacts, as in the area of health, were presented and discussed.

Debate: “Numbers in Life: Future Horizons”

Panelists: Danilo Santos de Miranda (Regional Director, Social Service of Commerce – Sesc), Fernando Antonio de Almeida (Vice-Rector, PUC-SP), Demi Getschko (CEO, NIC.br).

Moderator: Fernando Almeida (PUC-SP). The debate focused on future technological scenarios and how the deployment of new disruptive technologies like Artificial Intelligence will require new governance models, including data governance, in a hyperconnected world. It also fostered reflections on the relationship between numbers and computational thinking, highlighting the importance of numeric and data literacy in our lives.



▶ **Webinar: “Data, Innovation and Statistical Production during the COVID-19 Pandemic”** – In partnership with UNECLAC
October 2020 - Online



This event was jointly organized by Cetic.br|NIC.br and the Division of Productive and Business Development and the Statistics Division of UNECLAC, in cooperation with the Knowledge Transmission Network and the Digital Agenda for Latin America and the Caribbean (eLAC). It aimed to promote the exchange of experiences among national statistical institutes in Latin America and the Caribbean. The workshop focused on methodological innovations implemented to minimize the impacts of the pandemic on the production of regular ICT statistics in the region.

The event made it possible to increase knowledge about the strategies adopted in this period, such as migration to computer-assisted telephone interviews (CATI system), methods for collecting data in telephone or web formats and user panels, and the use of alternative data sources, such as administrative data and Big Data. The webinar also served to disseminate statistical principles and reference methodological guides produced by ECLAC and Cetic.br|NIC.br, and the best practices of the national statistical institutes in the region.

▶ Webinar: “Smart Sustainable Cities and Frontier Technologies in Latin America”

December 2020 - Online



Cetic.br|NIC.br, together with the ITU Telecommunication Standardization Sector (ITU-T), conducted the webinar “Smart Sustainable Cities and Frontier Technologies in Latin America” on December 8. During the event, a NIC.br Sectoral Studies publication on the theme of smart cities was launched; this was the first joint activity of Cetic.br|NIC.br and ITU-T under the terms of a recently signed Memorandum of Understanding (MoU).

The webinar¹² explored the best practices of smart sustainable cities in implementing frontier technologies in Latin America. The opening remarks were by Demi Getschko, CEO of NIC.br, and Chaesub Lee, Director of the ITU-T. The session was moderated by Cristina Bueti, Advisor of the ITU-T. The event brought together experts from six countries and different sectors to share best practices for smart sustainable cities.

Speakers: Martín Olmos (Undersecretary of Information and Communications Technology, Argentina), Katrina Naut (Former Ambassador of the Dominican Republic), Ana Maria Meiners, (Mayor of Esperanza, Argentina), Javier Torner Ruiz de Temino (Coordinator of the Urban Lab, UN-Habitat, Mexico), Alexandre Barbosa (Head of Cetic.br|NIC.br, Brazil), Tania Marcos (Head of Smart Sustainable Cities, Spanish Association for Standardization – UNE, and Vice-Chairman of United for Smart Sustainable Cities – U4SSC), Daniela Naufel Schettino (General Coordinator of Telecommunications Infrastructure Projects of the Ministry of Communications, Brazil) and Pere Fuset (Counsellor for the Digital Agenda and Electronic Administration, València, Spain).

¹² https://www.youtube.com/playlist?list=PLQq8-9yVHyOb9u3jfB4W5F_wSF6MG7mHe

Capacity-Building & Awareness-Raising

Cetic.br|NIC.br's capacity-building programs aim to bring together the main stakeholders involved in the production, analysis and use of ICT indicators in public policies, academia, and sectoral market analysis. These programs are targeted to data producers and users, such as national statistical institutes, ministries, regulatory agencies, international organizations, and academic institutions. In addition to disseminating technical knowledge about survey methodology, these programs are a forum for promoting debate about the importance of ICT statistics for evidence-based policymaking and discussing new measurement possibilities, while enhancing the use of ICT in this process.

In addition to regular capacity-building and awareness-raising activities about the importance of ICT statistics, in 2020, the Center continued to offer its massive open online course (MOOCs) about ICT and sustainable development. This pioneering initiative sought to promote awareness and capacity-building about the role of ICT in implementing and measuring the 2030 Agenda and the Sustainable Development Goals. Offered in an open and free format, the course engaged multiple stakeholders related to the intersection between ICT and sustainable development during a 10-week discussion.

▶ MOOC // "Tech for Good: The Role of ICT in Achieving the SDGs"

This online course, offered in a MOOC format through the edX Platform¹³, is a joint initiative by Cetic.br|NIC.br, UNESCO and the SDG Academy. Designed as a self-paced course, it provides students with a set of 10 modules that address ICT as a critical component for achieving the SDGs. By the end of 2020, more than 6.000 participants were enrolled in the MOOC.

The course brings together thought leaders and changemakers from all regions of the world in fields related to ICT and sustainable development. It addresses the role of ICT in achieving the SDGs in four important areas: i) how digital technologies are empowering billions of people around the world by providing access to education, healthcare, banking, and government services; and how ICT is being used to inform smarter, evidence-based policies to



improve people's lives in fundamental ways; ii) how these technologies can be used for measuring and monitoring the achievement of the SDGs; iii) new challenges that technology can introduce, such as privacy, data management, risks to cybersecurity, e-waste, and the widening of social divides; and iv) ways in which stakeholders are coming together to answer big questions about what our future will look like in a hyper-digitized world.

¹³ <https://www.edx.org/course/tech-for-good-the-role-of-ict-in-achieving-the-sdg>

▷ MOOC // “AI for the Judiciary”

The use of Artificial Intelligence in judicial systems is being explored by judiciaries, prosecution services and other domain-specific judicial bodies around the world. Considering rapid developments in this field, challenges and opportunities related to harnessing AI in judicial systems and their implications for human rights and the rule of law must be included in discussions among stakeholders from the judicial ecosystem.

In 2020, UNESCO, in cooperation with Cetic.br|NIC.br and the IEEE, started the planning of an online training course in the form of a MOOC in response to needs expressed by UNESCO Member States, judges and other stakeholders. This MOOC will be available in the last quarter of 2021 in the six UN official languages and Portuguese.

▷ 10th NIC.br Annual Workshop on Survey Methodology // “Reflections on Artificial Intelligence and the Future of Data Production”

October 2020 - Online



Celebrating its 10th edition, the NIC.br Annual Workshop on Survey Methodology, co-organized by the National School of Statistical Sciences (ENCE) of the Brazilian Institute of Geography and Statistics (IBGE), was conducted entirely online in a series of five webinars¹⁴ that addressed the impacts of Artificial Intelligence on the future of ICT data production and other social implications. From October 5 to 9, 19 renowned experts, including researchers, public policymakers, and representatives of civil society and international organizations, gathered online to deliver

this webinar series. Attendance saw a daily average of 231 participants from 25 countries. Compared to 2019, this year’s online workshop was open to the public, which allowed six times more participants and twice as many nationalities.

On the first day, the opening remarks were delivered by Demi Getschko, CEO of NIC.br, and Professor Maysa Magalhães, Director of ENCE. Conducted in English with simultaneous interpretation in Spanish and Portuguese, each webinar consisted of a keynote presentation, followed by case study presentations.

¹⁴ List of videos available on: https://www.youtube.com/playlist?list=PLQq8-9yVHyOapv7KiYpw_hMHdZPWDMaYE

Webinar I: “A Humanistic and Ethical Approach to AI”

Speakers: Sasha Rubel (UNESCO), Sacha Alanoca (The Future Society), María Paz Canales (Derechos Digitales) and Edson Prestes (Federal University of Rio Grande do Sul - UFRGS).

To begin the program of the 10th edition, this webinar addressed the ethical issues that must be considered in the design of AI. The debate on this cross-cutting theme set the stage for the following days.

Webinar IV: “Alternative Approaches to Data Production in the Context of COVID-19”

Speakers: Francesca Perucci (UNSD), Andres Gutierrez Rojas (UNECLAC), Eduardo Rios (IBGE) and Marcelo Pitta (Cetic.br|NIC.br).

Webinar II: “Public Statistics on AI”

Speakers: Luis Aranda (OECD), Pierre Montagnier (OECD), Evyatar Kirschberg (CBS Israel) and Mark Uhrbach (Statistics Canada).

This webinar addressed the measurement model for AI that was developed by the OECD, as well as measurement experiences conducted by the national statistical organizations of Israel and Canada, which shared the learning and challenges faced in their experiences of measuring AI.

Webinar V: “Alternative Sources for Data Production in the Context of COVID-19”

Speakers: Frauke Kreuter (Maryland Population Research Center), Lorena Barberia (University of São Paulo) and João Porto de Albuquerque (Warwick University).

The last two webinars addressed data production in the context of COVID-19. The focus was alternative approaches (Webinar IV) and alternative sources (Webinar V) that have been used by national statistical offices, research centers and academia to produce relevant data during the pandemic.

Webinar III: “Statistics for Citizenship”

Speakers: Alan Smith (Financial Times), Denise Britz (ENCE) and Natália Mazotte (Open Knowledge Brasil).

The third webinar highlighted the relevance of data communication and data literacy for understanding and analyzing statistics that are fundamental for citizenship and are woven into our daily lives.

► Online Class: “Basic Statistics Course, Database and Graphics for the Unified Health System in the State of Alagoas, Brazil”

February 2020 – Maceió (Brazil)

On February 17 and 18, a training course on health informatics was given to 38 public health managers in the state of Alagoas. Prof. Dr. Denise Britz do Nascimento Silva and Mayra Pizzott presented basic concepts regarding data collection, data quality and basic statistics, and also addressed the importance of the data for public servers and managers in the Unified Health System of the State of Alagoas.



Arquivo Pessoal

▷ “UNICEF Regional Workshop on Artificial Intelligence and Children in Latin America and the Caribbean”

March 2020 - São Paulo (Brazil)

Cetic.br|NIC.br supported UNICEF and the Government of Finland in organizing the workshop “Artificial Intelligence and Children in Latin America and the Caribbean” in São Paulo. The two-day event aimed to discuss the impacts of AI systems on children, and featured a series of global consultations with governments, businesses, civil society, and children to develop policy guidance on AI for children. Similar workshops were organized on other continents to obtain a global perspective. Overall, 47 key actors from the Brazilian government, NGOs, international organizations, and the private sector joined the workshop.

The objectives of the workshop were to:

1. Better understand the needs and challenges of governments and businesses in Latin America and the Caribbean with regard to child rights and AI policymaking and implementation.
2. Gather regional inputs on policy guidance so that it can be most useful to governments and businesses.
3. Raise awareness among stakeholders and identify champions to push forward the child rights agenda, including governments and private companies.



Arquivo Pessoal

The dialogue among stakeholders promoted by this regional workshop helped UNICEF develop a draft policy guide¹⁵ on how to promote children’s development in AI strategies and practices, which was launched in August 2020. The guide aims to bring a balanced perspective to the policy table, with clear and usable principles for implementing AI that supports child rights.

More information on:
<https://www.unicef.org/globalinsight/featured-projects/ai-children>

¹⁵ <https://www.unicef.org/globalinsight/reports/policy-guidance-ai-children>

Methodological Support for Strategic Partners

In 2020, Cetic.br|NIC.br continued to work alongside strategic partners in the area of ICT-related statistics production, data provision and sharing, data analysis, and capacity-building on survey methodologies and innovative methods of data collection. Based on a multistakeholder approach, Cetic.br|NIC.br works in close cooperation with important partners from relevant areas of government (regulators, national statistical offices, and various ministries), academia, research institutes, and international organizations to develop an ICT

measurement ecosystem that allows for the production of sound and updated data for policymaking and research. Cetic.br|NIC.br also provides technical support and capacity-building programs to decision-makers and data producers in Latin America and Portuguese-speaking countries in Africa.

Cetic.br|NIC.br is also an active player in the international arena. In recent years, the Center has been cooperating with some national statistical offices in Latin America and with ECLAC, UNESCO, ITU, and OECD in the area of measurement, indicators, and survey methodologies.

► UNESCO Internet Universality Indicators

The UNESCO Internet Universality Indicators were designed to enable stakeholders to assess Internet development at the country level and offer policy improvement recommendations, all in accordance with UNESCO's ROAM-X principles: R - Human Rights; O - Openness; A - Accessibility to All, M - Multistakeholder Participation; and X - Cross-Cutting issues.

Brazil was the first country to complete an assessment based on the ROAM-X principles. Cetic.br|NIC.br prepared the national assessment report, which was launched at a UNESCO-led event in 2019. Originally published in English, the Brazilian report was also translated into Portuguese.¹⁶ The Center has also shared the Brazilian experience in the process of implementing the indicators through technical meetings with countries such as Germany, France, Tunisia and Peru.

Throughout 2020, Cetic.br|NIC.br participated in numerous virtual meetings to disseminate the results of the Brazilian report and support implementation in other countries.



¹⁶ Assessing Internet Development in Brazil: Using UNESCO's Internet Universality ROAM-X Indicators (<https://cetic.br/pt/publicacao/assessing-internet-development-in-brazil-using-unesco-s-internet-universality-roam-x-indicators/>)

The main events included:

- **IGF 2020 Pre-Event #16:** UNESCO's launch of the Internet Governance Forum (IGF) Dynamic Coalition on Internet Universality ROAM-X Indicators and presentation of national assessments. UNESCO organized a 5-hour special pre-event on the Internet Universality ROAM-X Indicators (IUIs) at IGF 2020 to showcase the national assessment results from 21 countries across the five continents, sharing cases of good practices and the lessons learned from conducting assessments of the IUIs at a national level. UNESCO also took advantage of this pre-event to launch a Dynamic Coalition on Internet Universality ROAM-X indicators. In addition to this event, and as invited by the Multistakeholder Advisory Group (MAG), UNESCO reported to the IGF plenary on the major outcomes of the IUI assessment event, in order to provide information to national policymakers about fostering policy changes.
- **Panel at the 2020 International Conference on Theory and Practice of Electronic Governance (ICEGOV):** "The ROAM-X Indicators: A UNESCO Tool for Evidence-Based National Internet Policies," on September 25, 2020. The panel provided an overview of the development of this new policy instrument, which has been endorsed by UNESCO's Member States. The participants shared experiences and findings from ongoing implementation in a subset of the over 20 countries currently using the framework, presented a case for more countries to use this new policy tool, and showed them how to do so.
- **RightsCon 2020:** "Advancing Human Rights in Digital Age by Assessing R.O.A.M Indicators at Country Level." On July 31, 2020, UNESCO convened an online session during RightsCon 2020 to present the national assessment results and describe the impacts of the Internet Universality Indicators on advancing human rights [<https://en.unesco.org/news/unesco-advocates-internet-universality-indicators-advancing-human-rights-rightscon-2020>]

▶ UNESCO Regional Consultation on Artificial Intelligence

On August 3 and 4, Cetic.br|NIC.br participated in a virtual regional consultation on the first draft of the *Recommendation on the Ethics of Artificial Intelligence*¹⁷, developed by UNESCO. As part of the global consultation process carried out by UNESCO, this consultation gathered the views of 70 specialists from 17 countries in Latin America

and the Caribbean, encompassing a wide array of sectors and areas of knowledge, including civil society organizations, the public and private sectors, academia, and the UN system itself. This meeting followed an online consultation about the document, in which Cetic.br|NIC.br also had a chance to contribute.

¹⁷ Source: <https://unesdoc.unesco.org/ark:/48223/pf0000373434>

▶ UNCTAD Survey on E-Commerce

Cetic.br|NIC.br has been part of an international coalition led by the United Nations Conference on Trade and Development (UNCTAD) that aims to measure the impact of the pandemic on electronic commerce. Based on initial research conducted in Switzerland, the project developed comparable indicators for online consumption habits in Brazil, China, Germany, Korea, Italy, South Africa, Switzerland, Russia and Turkey.

The results were released on October 9, 2020, in a webinar hosted by UNCTAD.



Speakers included Shamika Sirimanne, Director of the UNCTAD Division on Technology and Logistics; Torbjörn Fredriksson, head of the ICT Analysis Section of the UNCTAD Division on Technology and Logistics; and Alexandre Barbosa, Head of Cetic.br|NIC.br.

The main findings¹⁸ of the survey are available at the UNCTAD website.

▶ G20 Digital Economy Task Force

Cetic.br|NIC.br worked alongside the Ministry of Foreign Relations and the Ministry of Science, Technology and Innovations on the formulation of the Brazilian contribution to measuring the digital economy for the Digital Economy Task Force of the G20 countries.

This contribution was presented at an online event hosted by the Saudi presidency on May 4. Cetic.br|NIC.br had the chance to speak about its approach to measuring the digital economy and its main projects on this subject, specifically the ICT Enterprises survey and methods for collecting data on e-commerce from Big Data sources.

OECD developed the report "A Roadmap toward a Common Framework for Measuring the Digital Economy"¹⁹, which contained the results of the discussions and contributions of the participants.

A ROADMAP TOWARD A COMMON FRAMEWORK FOR MEASURING THE DIGITAL ECONOMY

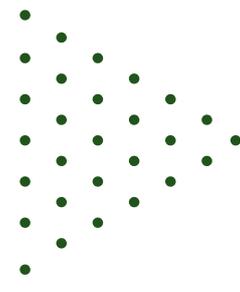
Report for the G20 Digital Economy Task Force

SAUDI ARABIA, 2020

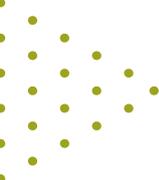


¹⁸ COVID-19 and E-commerce. Findings from a survey of online consumers in 9 countries (https://unctad.org/system/files/official-document/dtlstictinf2020d1_en.pdf)

¹⁹ A roadmap toward a common framework for measuring the Digital Economy (<http://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf>)



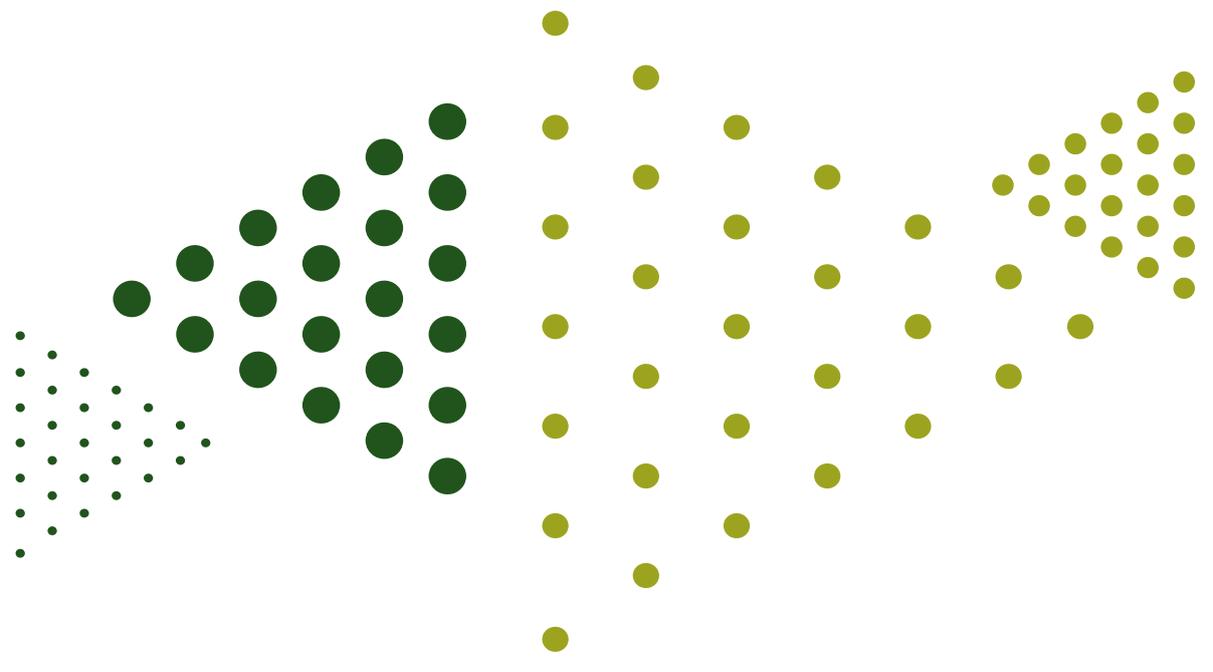
▶ UNDESA & UNECLAC Regional Expert Meeting on the Role of Digital Technologies on Social Development



On August 5, Cetic.br|NIC.br participated in a regional meeting, “Socially Just Transition toward Sustainable Development: The Role of Digital Technologies on Social Development and Well-Being of All”²⁰, organized by the United Nations Department of Social and Economic Affairs (UNDESA) and the Economic Commission for Latin America and the Caribbean (UNECLAC).

The meeting was part of a global event organized by UNDESA, in collaboration with UNCTAD and ITU, with the objectives of analyzing the role of digital technology in social development and compiling policy recommendations that will allow progress

in the transition toward sustainable development, while supporting post-pandemic reopening, through technology. The results were used as input for a future report by the United Nations Secretary General and the 59th Session of the Commission for Social Development (CSocD59). Cetic.br|NIC.br highlighted the need to develop digital government and access to broadband, while also discussing the lessons learned from COVID-19 in terms of the impact of digital technologies on social development in the region, including the use of these technologies for the social inclusion of vulnerable groups.



²⁰ United Nations Department of Economic and Social Affairs: <https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/UNDESA-subtheme-4-Monic-Duhem.pdf>

Debating the Challenges of ICT Measurement in International Forums: Sharing Experiences with Data Production

Cetic.br|NIC.br is dedicated to the systematic production of indicators and statistics about ICT access and use in Brazil in various sectors of society. With 15 years of experience, the Center adopts the methodological recommendations established by international organizations that work with the measurement and analysis of ICT statistics, enabling the

comparison of its indicators with those of other countries. Cetic.br|NIC.br also contributes to the development of these recommendations and actively participates in discussions held in various national and international forums dedicated to ICT methodologies and indicators, which focused on their review and definition. Some of those events are highlighted below.

▷ Working Party on Measurement and Analysis of the Digital Economy (MADE), Organisation for Economic Co-Operation and Development (OECD)

September-November 2020 – Online

Since 2011, Cetic.br|NIC.br has been an active participant in the OECD Working Party on Measurement and Analysis of the Digital Economy (MADE). The goal of this working party is to share countries' experiences with measuring the digital economy, including tools and methodologies to produce relevant data for public policymaking. Participants in MADE are OECD member countries and invited experts. It is also a forum for debate about the socioeconomic impacts of new disruptive technologies on the digital economy and their contribution to economic growth and well-being.

In 2020, MADE meetings were virtual and were organized as a webinar series meant to provide MADE delegates with the opportunity to thoroughly discuss the work of MADE. The webinars included topics such as: AI measurement in ICT usage surveys; measuring cloud services in business statistics; measuring teleworking during the time of COVID-19; firms going digital; measuring well-being in the digital age; updates on the work of the OECD Advisory Group on Measuring GDP in a Digitalized Economy; and measuring the value of data and dataflows.

▶ Expert Group on ICT Household Indicators (EGH) and Expert Group on Telecom/ICT Indicators (EGTI), International Telecommunication Union (ITU)

September 2020 – Online

The mission of the expert groups on ICT Household Indicators (EGH) and Telecommunication/ICT Indicators (EGTI), which are led by the International Telecommunication Union (ITU), is to bring together representatives from various countries to discuss ICT indicators to measure ICT supply and demand, based on the methodological framework developed by the ITU. The expert groups share experiences through an online forum and meet in person once a year (which happened online in 2020, due to the pandemic).

The EGH and EGTI group meetings are open to ITU members, targeting experts from ministries, regulatory agencies, and national statistical offices. The 8th EGH meeting occurred back-to-back with the 11th EGTI meeting, with the participation of 378 professionals from 99 countries, as well as ITU Telecommunication Development Sector (ITU-D) members, other UN agencies, and regional organizations.

The discussions focused on ways forward in advancing measurement and data collection on different topics. This year's agenda included items related to measurement of ICT skills and better ways to measure Internet use, the latter

presented by Winston Oyadomari from Cetic.br|NIC.br. In addition, they featured the experience of one country, the Philippines, with an ICT survey, and the presentation of the revised *Manual for Measuring ICT Access and Use by Households and Individuals*. The meeting also included discussion of the future work of EGH, including identification of topics that required further review and discussion related to indicators derived from household surveys of ICT access and use.

In 2020, Cetic.br|NIC.br also participated in the Expert Group Meetings (EGM) to discuss the proposal for the development of a new composite index (ITU Index), linking digital technologies to the Sustainable Development Goals (SDGs); and replacing the ICT Development Index (IDI). Meetings were held in February (in Geneva), in April and September (online) and were chaired by Alexandre Barbosa, Head of Cetic.br|NIC.br.



Arquivo Pessoal



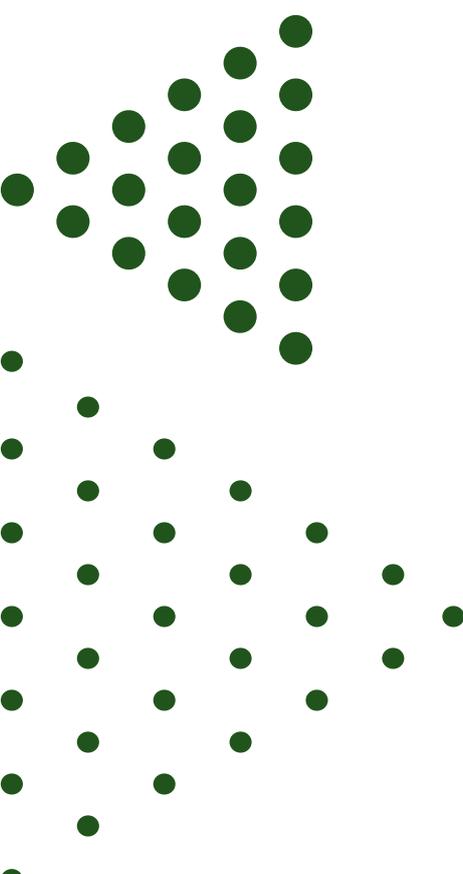
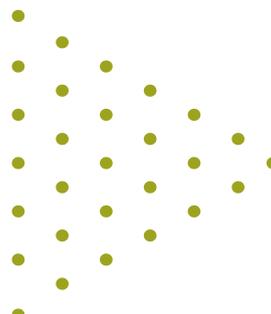


▶ Expert Group for the Review of the OECD Recommendation on the Protection of Children Online

February – June 2020 – Switzerland (online)

As part of the review of the implementation of the 2012 Recommendation of the OECD Council on the Protection of Children Online, Cetic.br|NIC.br participated in the multistakeholder expert group established by OECD to guide this work. The first consultation of the expert group was held in Zurich in October 2018. Based on the outcomes of analytical work and the Zurich consultation, the delegates agreed in November 2018 that the Recommendation needed updating.

In 2019, OECD organized a second consultation with experts to present and exchange views on relevant national and international developments in previously identified priority areas, and discuss proposed revisions. In 2020, Cetic.br|NIC.br participated in three virtual expert meetings of the group (February, March and June). The revised document was submitted to the Working Party on Data Governance and Privacy in the Digital Economy (DGP) and the Committee on Digital Economy Policy (CDEP) in November 2020. The document is expected to be formally approved in early 2021.



Accelerating SDGs through ICT

CONTRIBUTIONS TO THE 2030 AGENDA



SDG 3 | Good Health and Well-Being

Cetic.br|NIC.br's contributions to SDG 3 range from producing ICT statistics in the health sector, to engaging in the development of international frameworks, to building capacity for policymakers and other stakeholders in the use of statistics for policy design.

In addition, Cetic.br|NIC.br has contributed to the development of studies, publications, workshops and capacity-building for key stakeholders in Brazil, Latin America and Africa. Part of this work has been done in partnership with strategic partners in the field of ICT and health. Cetic.br|NIC.br cooperated with the Pan American Health Organization (PAHO) in the development of ICT indicators for the health sector and ICT survey methodologies, which complemented

the methodological guide *Measurement of Digital Health: Methodological Recommendations and Case Studies*.

Another key collaborative effort focused on Latin American and Caribbean countries was a joint initiative with the Inter-American Development Bank (IDB). The aim was to develop capacities to carry out quality surveys on the use of ICT in healthcare facilities. This partnership also developed a survey module on privacy and data protection during the pandemic. Overall, the goal was to support the generation of regionally comparable indicators and their use for decision-making in the health sector. Cetic.br|NIC.br also assisted experts from public administration in the Brazilian and Uruguayan governments, providing technical support to sustain ICT survey projects.



SDG 4 | Quality Education

Cetic.br|NIC.br's contributions to SDG 4 range from producing ICT statistics in the education sector, to engaging in the development of international frameworks, to building capacity for policymakers and other stakeholders in use of statistics for policy design.

Regarding knowledge production, Cetic.br|NIC.br conducts yearly ICT in Education and ICT Kids Online Brazil national surveys, measuring key indicators for access to and use of ICT, and digital skills, among students, teachers and principals. In addition, the

ICT Households survey measures digital skills in the general population, following the ITU guidelines. These sources are capable of informing progress on Target 4.4 ("Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"), particularly Indicator 4.4.1 ("Proportion of youth and adults with ICT skills, by type of skill").

Regarding efforts to support ICT and education data production globally, in 2020, the UNESCO Institute for Statistics and Cetic.br launched the "Practical Guide to Implement Surveys

on ICT Use in Primary and Secondary Schools,” in English, Spanish and Portuguese versions. The guide is a key aid for producing relevant national data on ICT in schools and on using that information for decision-making.

With regard to the impact of the COVID-19 pandemic on education, Cetic.br|NIC.br also supported the state government of São Paulo in providing timely and accurate ICT statistics

for the planning the educational response to school closures. The Center also developed quick-response technical collaboration with Portuguese-speaking African Countries (PALOPs), first supporting Cabo Verde’s educational contingency plan, and later participating in the multistakeholder group that designed the monitoring strategy for the educational response to the pandemic in Mozambique.



SDG 9 | Industry, Innovation and Infrastructure

The Center’s initiatives in knowledge production directly contribute to measuring SDG 9, via nationwide surveys measuring ICT adoption in enterprises, households, and by Internet service providers. These surveys are critical to understanding both supply of and demand for ICT goods and services, which are key aspects of innovation and infrastructure in the digital economy.

Cetic.br|NIC.br also participates regularly in international working groups devoted to the definition of international frameworks for measuring the digital economy, such as those promoted by the Organisation for Economic Co-operation and Development (OECD), the International Telecommunication Union (ITU), and the United Nations Conference on Trade and Development (UNCTAD), fostering the production of comparable

indicators among countries. In particular, Cetic.br|NIC.br’s activities directly contribute to monitoring Target 9.c, which focuses on increasing access to ICT and providing universal and affordable access to the Internet in least-developed countries.

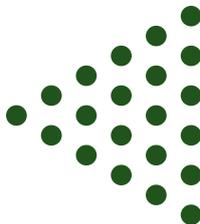
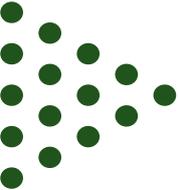
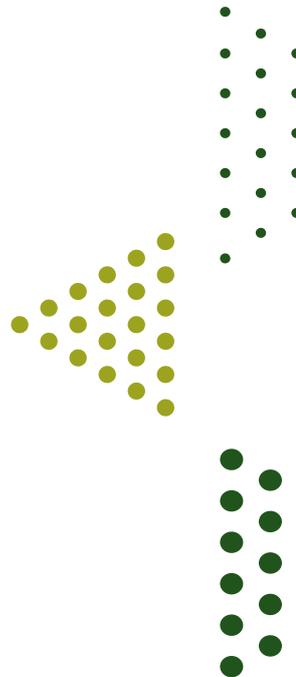
In addition, Cetic.br|NIC.br produces regular publications with a focus on the innovative use of technologies and the digital transformation. Capacity-building strategies developed by the Center also contribute to raising awareness about emerging issues such as Artificial Intelligence and innovative data collection methods using Big Data. Among the main related activities in 2020 were the 10th NIC.br Annual Workshop on Survey Methodology (focused on AI), and international projects focused on Big Data and the digital economy in partnership with the Economic Commission for Latin America and the Caribbean (ECLAC).



SDG 16 | Peace, Justice and Strong Institutions

One of the Center’s contributions to SDG 16 occurs via the ICT Electronic Government survey, which delves into the digital transformation in the public administration of Brazilian states and cities, providing key inputs to digital

government policies. This survey includes modules containing indicators on citizens participation and engagement, access to information, transparency, and the use of ICT for urban management, which are related to smart cities.



In addition, Cetic.br|NIC.br monitors the transformations in the health and education sectors, measuring advances, barriers, and innovations in embracing digital innovations and ICT solutions, and the overall system's readiness, all key elements for advancing SDG 16. The ICT Enterprises survey provides useful inputs for policies promoting innovative ICT solutions in business, of particular importance in the context of the pandemic.

Another contribution to SDG 16 occurs via a massive open online course (MOOC), "AI for the Judiciary," which is currently in the design phase, in partnership with UNESCO and IEEE. To be launched in 2021, this MOOC seeks to build capacities in members of the judiciary globally, both for understanding the implications of AI from an ethics and human rights perspective and raising awareness of the main AI-powered tools available for their use.



SDG 17 | Partnerships for the Goals

In addition to publishing more than 600 ICT indicators collected in the pre-pandemic period, Cetic.br|NIC.br created the ICT Panel COVID-19, presenting 103 indicators designed to monitor Internet use during the COVID-19 outbreak.

Big Data sources and web scraping algorithms were also among the innovative strategies implemented in partnership with international organizations. The Center also published two Sectoral Studies covering emerging issues such as smart cities and accessibility, as well as four editions of the Internet Sectoral Overview, dedicated to the socioeconomic effects of AI, among other publications.

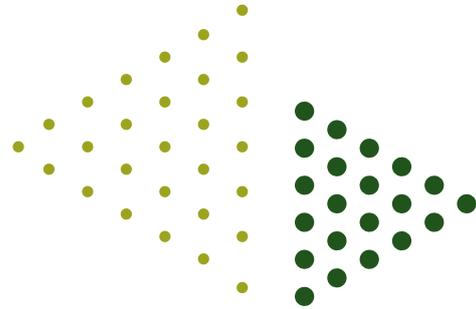
As a laboratory of ideas, Cetic.br|NIC.br engaged in relevant public debates on the digital transformation – 8 webinars organized by the Center and 9 webinars as a guest participant. Throughout the year, the Center promoted 9 press conferences and held 9 expert meetings, bringing together a network of 217 renowned experts.

Cetic.br|NIC.br is actively engaged in cooperative initiatives with national and international organizations that play a key role as supporters, conveners and facilitators in the implementation of the 2030 Agenda for Sustainable Development. In 2020, Cetic.br|NIC.br carried out cooperative activities with the following:

- UNESCO Headquarters,
- UNESCO Regional Office for Science in Latin America and the Caribbean,
- UNESCO Field Office Brazil,
- UNESCO Institute for Statistics (UIS),
- UNICEF Headquarters NYC,
- UNICEF Children in Latin America and the Caribbean (LACRO),
- UNICEF Brazil,
- United Nations Economic Commission for Latin America and the Caribbean (UNECLAC),
- International Telecommunication Union (ITU),
- Pan American Health Organization (PAHO),
- The UN Conference on Trade and Development (UNCTAD).
- Organisation for Economic Co-operation and Development (OECD),
- Inter-American Development Bank (IDB).
- Alliance for the Digitalization of Education in Latin America (ADELA Network),
- Brazilian government (ministries and regulatory agencies),
- Multiple stakeholders from academia,
- Private sector,
- Other civil society organizations.

Cooperation Network

In 2020, Cetic.br|NIC.br strengthened its cooperation efforts with regional collaboration networks to stimulate exchange of knowledge, sharing of common frameworks for ICT data collection, and regional comparability of indicators and comparative analyses.



▶ ICT and Health

WORKSHOP “METHODOLOGICAL ASPECTS – ICT AND HEALTH URUGUAY SURVEY, 2020 EDITION”

On January 30 and 31, Cetic.br|NIC.br provided technical support to the Uruguayan Agency for the Development of Electronic Government and the Information and Knowledge Society (AGESIC) and Salud.uy, an inter-institutional program that leads the digital transformation of the health sector.

A workshop was held in Montevideo with the goal of discussing the methodological designs of the Uruguayan and Brazilian ICT in Health surveys, and to assist in achieving a higher level of regional comparability. The workshop also presented analysis of alternatives to

improve the methodological design for the 2020 edition of the ICT in Health survey in Uruguay, including sampling design, data collection methods, and questionnaires.

The workshop gathered professionals from the AGESIC Monitoring and Evaluation Department, key representatives of the Salud.uy Program, staff from the firm responsible for the survey fieldwork (Equipos Consultores), and the Cetic.br|NIC.br team. It was a new landmark in a long-term cooperation relationship between the Center and AGESIC, which enables advances in regionally comparable studies on ICT adoption in the health sector.

▶ Cooperation with the Inter-American Development Bank (IDB)

As part of an effort to produce relevant and timely data for public policy decision-making during the COVID-19 pandemic, Cetic.br|NIC.br collaborated with the Inter-American Development Bank (IDB) in the development of a survey about perceptions of privacy and attitudes about the use of ICT in the context of the health emergency. The resulting questionnaire

was implemented in Brazil and Uruguay in September 2020, and was later used in a wide array of Latin American countries, including Peru, Ecuador, Costa Rica, Panama, Uruguay, Chile, Paraguay, Honduras, El Salvador and Mexico, with the support of IDB. This regional effort will yield relevant data for cross-national comparative analyses.



▶ ICT and Education

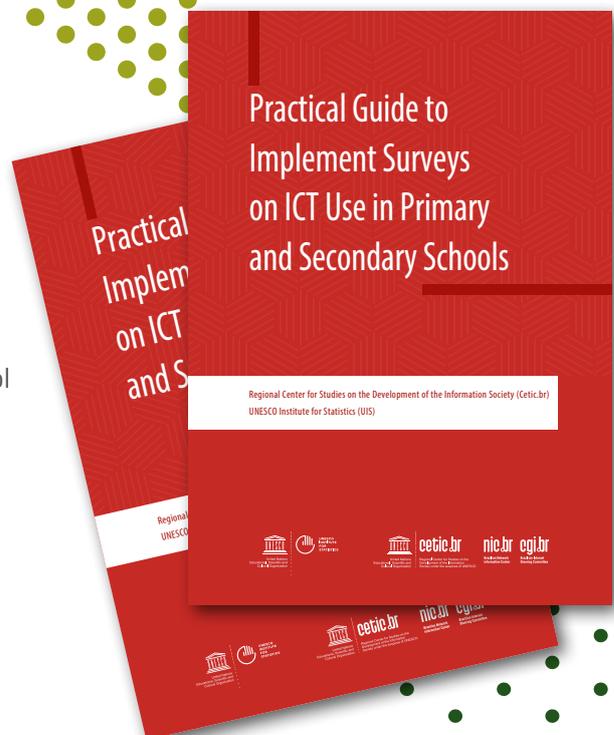
TECHNICAL COOPERATION WITH PORTUGUESE-SPEAKING AFRICAN COUNTRIES

Cetic.br|NIC.br developed a quick-response technical collaboration modality with two Portuguese-speaking African Countries, Cabo Verde and Mozambique. Along the lines of promoting the optimal use of existing statistical data to improve decision-making in response to school closures in Cabo Verde, the collaboration developed with the Ministry of Education included a diagnostic phase on the country's installed capacity, strengthening of

its educational contingency plan, and organization of a webinar for experience sharing between Brazil and Cabo Verde. In the case of Mozambique, the collaboration took place in the context of a support group composed of participants from UNICEF, UNESCO, Cetic.br|NIC.br, and relevant local NGOs to support the design and implementation of a plan to monitor the implementation of the educational and social response to the pandemic.

LAUNCHING OF THE "PRACTICAL GUIDE TO IMPLEMENT SURVEYS ON ICT USE IN PRIMARY AND SECONDARY SCHOOLS" IN THREE LANGUAGES

To support the collection of relevant data on ICT and education, the UNESCO Institute for Statistics (UIS) and Cetic.br|NIC.br jointly developed the *Practical Guide to Implement Surveys on ICT Use in Primary and Secondary Schools*²¹, which was launched in English, Spanish and Portuguese. The Guide is a step-by-step methodological reference for planning, designing and implementing surveys on the use of ICT in education. Such surveys will serve to improve policy decision-making – an especially relevant feature in the context of the current widespread use of online learning platforms and digital resources in the context of school closures related to COVID-19. As stated in the text that contextualizes the launching of this document on the UIS website, during this global education crisis, there has never been a greater need to develop education policies to help sustain learning. The development of such policies needs to be informed by relevant and timely data on ICT access and use in schools and at home, as well as about the skills that teachers, students and parents have.



²¹ Practical Guide to Implement Surveys on ICT Use in Primary and Secondary Schools (<https://cetic.br/pt/publicacao/practical-guide-to-implement-surveys-on-ict-use-in-primary-and-secondary-schools/>)

▶ ICT and Children

REPORT: "CHILDHOOD AND ADOLESCENCE IN THE DIGITAL AGE"

Childhood and Adolescence in the Digital Age: A Comparative Report of the Kids Online Surveys in Brazil, Chile, Costa Rica and Uruguay²², coordinated by ECLAC, was launched in three languages: English, Spanish and Portuguese.

As a result of the regional efforts of the Latin American Kids Online network, this document seeks to promote reflection about public policies targeting children in the digital age, providing recent data from a comparative viewpoint. The analyses in this report are based on the results of the Latin America Kids Online Network survey carried out in Brazil, Chile, Costa Rica and Uruguay. In late 2019, the Spanish version of this document was launched. In 2020, both the English and Portuguese versions were added for broader regional and global access to this relevant material. The Economic Commission for Latin America and the Caribbean (ECLAC) contributed to strengthening the efforts of this network in the Latin American region by coordinating this publication. This report was also supported by UNICEF and UNESCO.

The publication was launched during a webinar that took place on December 2. Broadcast live via NIC.br's YouTube channel with interpretation in English,



Spanish and Portuguese, this event had a live audience of 180 people, and it has been watched asynchronously by more than 1,300 people to date.

The webinar featured opening remarks by Daniela Trucco (ECLAC Social Affairs Officer), Guilherme Canela (UNESCO), Alejandra Trossero (UNICEF Children in Latin America and the Caribbean), and Fabio Senne (Coordinator of ICT surveys, Cetic.br). The report was presented by Ana Laura Martínez (Coordinator of Technical Cooperation at Cetic.br|NIC.br) and Patricio Cabello (Professor at the University of Chile), and comments were made by Sonia Livingstone (Professor in the Department of Media and Communication, London School of Economics and Political Science - LSE) and Cristobal Cobo (Senior Education Specialist at the World Bank Group).

UNESCO SYNERGIES MEETINGS

Cetic.br|NIC.br participated in two UNESCO Synergies Meetings. On July 15, Cetic.br|NIC.br presented the ICT in education survey and the "Practical Guide for Implementing Surveys on ICT use in Primary and Secondary Schools" to all the UNESCO Education Offices of Latin America and the Caribbean.

On September 21, Cetic.br|NIC.br participated in a second synergies meeting with the education-related UNESCO Offices in Latin America and the Caribbean to present the Kids Online framework and the Brazilian results for 2019, as well as Latin America Kids Online network initiatives and opportunities.

²² Kids Online surveys on Brazil, Chile, Costa Rica and Uruguay (<https://cetic.br/en/publicacao/childhood-and-adolescence-in-the-digital-age-a-comparative-report-of-the-kids-online-surveys-in-brazil-chile-costa-rica-and-uruguay/>)

IGF 2020 WORKSHOP: "SETTING CHILDREN'S RIGHTS IN THE INTERNET GOVERNANCE AGENDA"

Cetic.br|NIC.br collaborated in the organization of the roundtable "Setting Children's Rights in the Internet Governance Agenda: Balancing Risks and Opportunities"²³, held on November 16 as part of the program for the 15th Internet Governance Forum.

The panel presented the most updated evidence on how children use the Internet and the impacts of those practices on specific rights posed by the UN Convention on the Rights of the Child (UNCRC), such as access to information, freedom of expression and other civil rights, privacy and protection from harm.

The presentations were conducted by representatives of consolidated multistakeholder research networks in the field (Global Kids Online, EU Kids Online, Latin

America Kids Online, UNESCO Universality Indicators on the Internet, and child consultation to inform UNCRC) that have conducted comprehensive research with children and parents in around 40 countries.

Speakers: Sonia Livingstone, civil society, Western European and Others Group (WEOG); Guilherme Canela Godoi, intergovernmental organization, Latin American and Caribbean Group (GRULAC); Amanda Third, technical community, Asia-Pacific Group; Maria Alejandra Trossero, technical community, Latin American and Caribbean Group (GRULAC); and Patricio Cabello, government, Latin American and Caribbean Group (GRULAC).

Organizers: Fabio Senne, Alexandre Barbosa and Ana Laura Martinez (Cetic.br|NIC.br).

KIDS ONLINE DOMINICAN REPUBLIC

Cetic.br|NIC.br provided technical support to the design, implementation and analysis of preliminary results of the Kids Online survey, carried out for the first time in the Dominican Republic by the local UNICEF Office. A collaboration effort by the Kids Online Latin America network, a series of

meetings focused on sharing of experience and knowledge was held, and it featured the active involvement of researchers in Chile, Costa Rica and Uruguay who had implemented this survey in the past. The results of the first implementation in the country will be launched in 2021.

▶ ICT and Government ICEGOV 2020

On September 24, a session endorsed by UNESCO Montevideo entitled "Open Justice and Transparency in a Digital Age: Strengthening Judicial Systems to Achieve Peaceful, Just, and Inclusive Societies" took place, with the participation of six international experts, at the 2020 International Conference on Theory and Practice of Electronic Governance.

ICEGOV
2020 THEORY AND PRACTICE OF ELECTRONIC GOVERNANCE



²³ IGF 2020 – Setting Children's Rights in the Internet Governance Agenda: <https://youtu.be/7-z2GU3Ds4M>

Speakers included Magistrate Ricardo Pérez Manrique, Judge at the Inter-American Court of Human Rights and former Minister of the Supreme Court of Justice of the Eastern Republic of Uruguay; Magistrate Pedro Félix Álvarez de Benito, Director of the Department of the International Relations Service of the General Council of the Judicial Power of Spain; Gherman Welsch, Director of the Planning and Strategic Coordination Unit of the Attorney General, Public Ministry of Chile; Deputy General Secretary María Luísa Pacheco, representing the Conference

of Ministers of Justice of Ibero-American Countries (COMJIB); Alexandre Barbosa, Head of Cetic.br|NIC.br; and Guilherme Canela, UNESCO Chief of the Section of Freedom of Expression and Safety of Journalists.

This initiative is supported by the UNESCO Multi-Donor Programme on Freedom of Expression and Safety of Journalists. The program serves to further strengthen UNESCO's work at the global, regional and national levels, channeling funds toward emerging priorities and the most urgent needs to fulfill its mandate on freedom of expression.

IGF 2020 WS #207: "ENSURING TRUSTED DATA SHARING FOR MONITORING THE SDGS:

Cetic.br|NIC.br organized the workshop "Ensuring Trusted Data Sharing for Monitoring the SDGs" at the 15th Internet Governance Forum. Held on November 11, the workshop showcased a high-level discussion focused on how to maximize the benefits of data sharing, while minimizing its associated risks, such as confidentiality and privacy issues. The discussion included the challenges and opportunities posed by innovative data sources and data sharing strategies for monitoring the SDGs, while ensuring responsible and ethical use.

Speakers: Alison Gillwald, Research ICT Africa - RIA (civil society, Africa); Helani Galpaya, LIRNEasia (civil society, Asia-Pacific Group); Daniel Ker, OECD (international organization); Jaco Toit, UNESCO (intergovernmental organization); Mark Uhrbach, Statistics Canada (government); and Dominik Rozkrut, Statistics Poland (government).

Moderator: Alexandre Barbosa, Head of Cetic.br|NIC.br.

WEBINAR: DATA PRODUCTION DURING THE COVID-19 PANDEMIC

Cetic.br|NIC.br collaborated with ECLAC to organize a webinar to promote the exchange of experiences between national statistical institutes regarding the methodological innovations implemented to minimize the impacts of the pandemic on the production of regular ICT statistics in the region. The webinar represented an opportunity for the dissemination of methodological reference guides produced by ECLAC and Cetic.br|NIC.br,

and best practices of the national statistical institutes throughout the region. The subsequent debate focused on the production of data and innovative methodologies for the ICT statistics production, and the use of ICT to collect strategic data for the sustainable development agenda.

Opening remarks: Alexandre Barbosa (Head of Cetic.br|NIC.br) and Rolando Ocampo (Director of the Statistics Division / ECLAC).

► **PANEL 1: “Innovation in Statistical Production on Digitalization and Its Role in the Face of the COVID-19 Pandemic”**

Moderator: José Luis Cervera
(CEO of DevStat).

Speakers: Susana Cordeiro Guerra (President of IBGE, Brazil), Juan Daniel Oviedo (Director of DANE, Colombia), Marcelo Pitta (Coordinator of Quantitative Methods, Cetic.br|NIC.br, Brazil) and Valeria Jordán (Economic Affairs Officer, Division of Productive and Business Development, ECLAC).

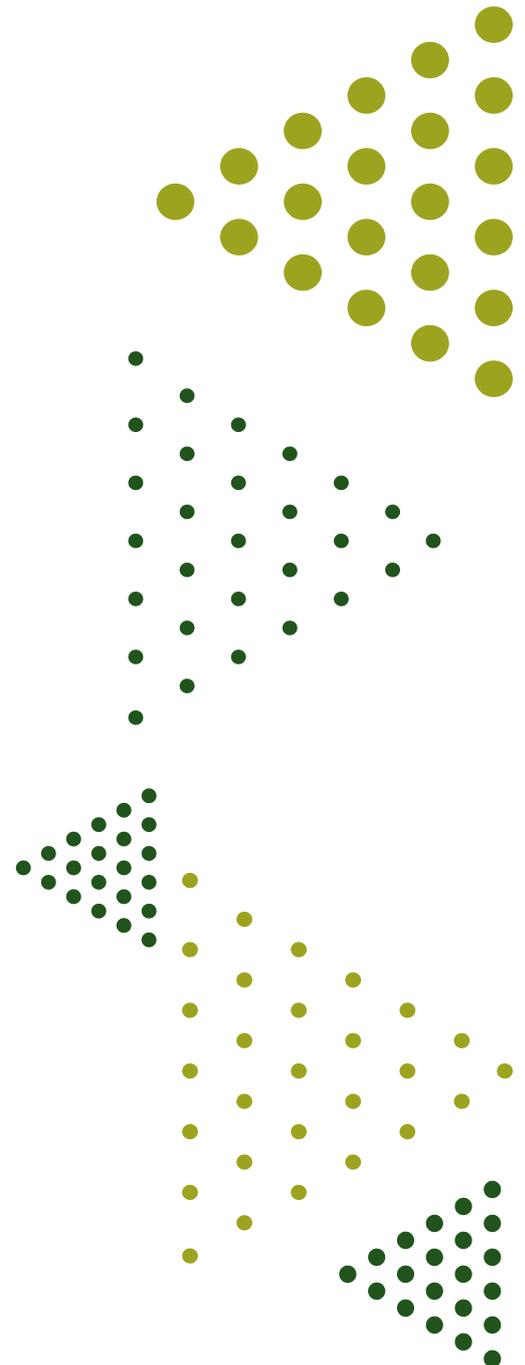
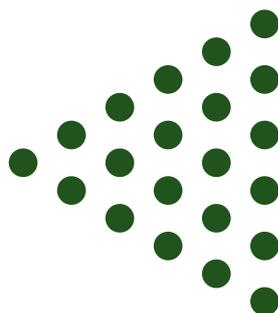
► **PANEL 2: “The Impact of the Pandemic on New Methods and Processes in Statistical Production”**

Moderator: Xavier Mancero (Head of the Social Statistics Unit, Statistics Division, ECLAC).

Speakers: Andrés Gutiérrez (regional expert, Statistics Division, ECLAC), Edgar Vielma (General Director of Sociodemographic Statistics, INEGI, Mexico) and Eduardo Rios-Neto (Director of Research, IBGE, Brazil).

Roundtable, exchange of recent experiences and reflections among National Statistical Offices in the region, based on questions from the moderators.

Participants: Sandra Quijada (National Institute of Statistics - INE, Chile), Sandra Duclós (National Institute of Statistics and Census - INDEC, Argentina) and David Sánchez (National Institute of Statistics and Census - INEC, Ecuador).



Dialogue with Stakeholders



As a key cross-cutting technology that impacts multiple sectors, ICT requires the involvement of multiple and diverse stakeholders in the development of information and knowledge societies. Dialogue among these stakeholders can be established in many ways: cooperation agreements between institutions; sharing microdata bases; participation in forums and discussion groups; and meetings to present the indicators produced by the Center.

In 2020, there were 23 ongoing cooperation agreements with government, academia and international organizations.

In addition to consolidating long-term cooperation and strengthening the Center's relationships with these organizations, these agreements allow the establishment of joint activities and the sharing of experiences, data and methodologies among institutions.

Next, we present important actions carried out by the Center in 2020 that allowed for closer ties with multiple and diverse stakeholders throughout the year, reinforcing its commitment to the dissemination of information and knowledge.

Policy Dimension

Activities

Digital Economy

In October 2020, the OECD published the report "Going Digital in Brazil",²⁴ which analyses recent developments in Brazil's digital economy, reviews policies related to digitalization, and makes recommendations for increasing policy coherence in this area. Cetic.br|NIC.br provided access to ICT data and indicators to OECD on multiple dimensions of the digital economy analyzed in the report. The report reconsiders these policies in relation to their coherence across different domains and provides recommendations for fostering synergies across government ministries, levels and institutions, based on the OECD Going Digital Integrated Policy Framework.

In 2020, the OECD also launched "Telecommunication and Broadcasting Review of Brazil 2020".²⁵ The review provides a comprehensive examination of Brazil's communication and broadcasting sectors, highlighting areas for regulatory and policy reform that can help ensure a successful and inclusive digital transformation. Cetic.br|NIC.br also contributed to the review by providing access to ICT data and indicators.

²⁴ <http://www.oecd.org/publications/oecd-reviews-of-digital-transformation-going-digital-in-brazil-e9bf7f8a-en.htm>

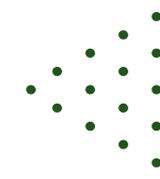
²⁵ <https://www.oecd.org/brazil/oecd-telecommunication-and-broadcasting-review-of-brazil-2020-30ab8568-en.htm>



Digital Government

In 2020, the Ministry of the Economy launched the 2020-2022 Digital Government Strategy ²⁶. Among other initiatives, the strategy's principles, goals and actions were based on workshops with experts in 2019. Cetic.br|NIC.br participated in the workshop related to digital channels and presented indicators about the demand and supply side of electronic government in Brazil.

The Brazilian Institute of Geography and Statistics (IBGE) published the 2019 Survey of Basic Municipal Information (MUNIC) and Survey of Basic State Information (ESTADIC) in December 2020. The questionnaire used for the survey received contributions from Cetic.br|NIC.br in the modules on communication and technology and governance, including the adaptation of indicators from the ICT Electronic Government survey.



ICT in Education

During the year 2020, Cetic.br|NIC.br and Ceptro.br|NIC.br participated in actions developed by the Giga Project, such as virtual meetings and the presentation of data on the Brazilian context of access to technologies in schools. The Giga Project was launched in 2019 by ITU and UNICEF with the aim of providing connectivity in schools and expanding opportunities for skills development among students. As part of the initiatives foreseen by the Giga Project, the Broadband Commission Working Group on School Connectivity was created, with the support of UNESCO, as a way of mapping the challenges and opportunities in the implementation of Internet connection in schools. The result of discussions held by the BBC Working Group on School Connectivity was the basis for launching the report, *The Digital Transformation of Education: Connecting Schools, Empowering Learners*, in which the initiatives carried out by Cetic.br|NIC.br and Ceptro.br|NIC.br in real-time monitoring of connectivity in public schools are mentioned prominently among the case studies of great relevance.

Cetic.br|NIC.br was also invited by the Secretariat of Education of the State of São Paulo to collaborate in the creation of a study of the appropriation of resources offered by the São Paulo Education Media Center by students in the São Paulo public school network in accessing remote learning activities during the COVID-19 pandemic. The purpose of collecting this data was to assess whether the resources made available by the Secretariat were effective, especially in the learning of students from the most vulnerable populations.

²⁶ <https://www.gov.br/governodigital/pt-br/EGD2020>

ICT in Health

In 2020, Cetic.br|NIC.br participated in the Technical Committee on Digital Health of the National Education and Research Network (CT-RNP). This forum aims to study the future of applications, products and services in digital health in several areas of research, development and innovation. Cetic.br|NIC.br has contributed more directly to the theme of accelerating the capacity of human resources in the practice of digital health, presenting indicators on the training of doctors and nurses in the area of digital health, and the challenges to its expansion.

Cetic.br|NIC.br participated in a workshop on the Digital Maturity Index (IMDS) developed by the Digital Health Strategy Management Committee of the Ministry of Health. The Center has contributed to the methodology that will be developed to calculate this index and its amplitude, using the Center's experience and the indicators in the ICT in Health survey.

Data Sharing

In 2020, Cetic.br|NIC.br signed a data sharing agreement with the São Paulo State Data Analysis System (Seade Foundation), which is the statistics agency for the government of the State of São Paulo. Seade produces policy-relevant information, research methodologies based on technological innovations, and develop joint research and data analysis. In 2020, SEADE published technical notes on access to and use of the Internet in the state of São Paulo,²⁷ and the adoption of ICT by enterprises and schools, based on Cetic.br|NIC.br microdata base.

COVID-19 Pandemic

As COVID-19 spread in Brazil, Cetic.br|NIC.br joined the efforts of the Solidary Research Network, formed by researchers from different scientific fields (humanities as well as exact and biological sciences) in Brazil and overseas to help improve standards, calibrate the focus, and improve the quality of federal, state and municipal government policies that seek to respond to the COVID-19 crisis, with the aim of helping to save lives. The network aims to improve discussions and work among public administrators, authorities, congressional representatives, journalists, the academic community, businesspersons and others who are interested in discussing directives and concrete actions that impact the lives of the population. In 2020, the network published 25 technical notes and participated in several webinars.²⁸

²⁷ <https://www.seade.gov.br/produtos2/sp-tic/>

²⁸ <https://rededesquisasolidaria.org/en/>

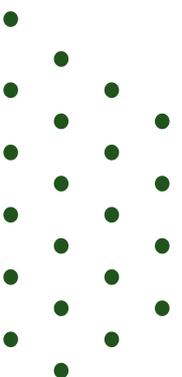
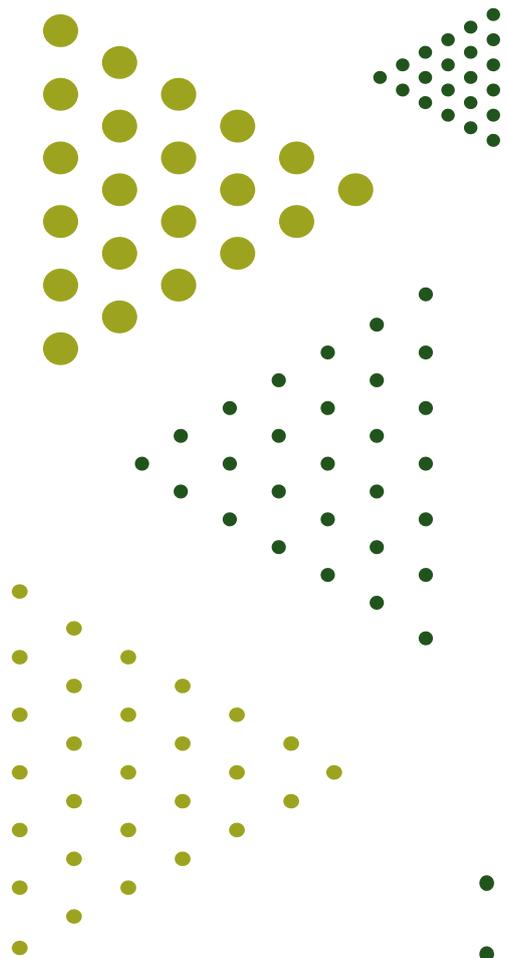
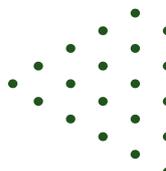
▶ Multi-Participative Process: Contributions from Different Sectors of Society

In 2020, Cetic.br|NIC.br participated in several activities organized by major private sector companies, which are increasingly relevant stakeholders in discussions about the socioeconomic and cultural implications of ICT.

The 4th Child Safety Roundtable was organized in February 2020 in partnership with Facebook and Google Brazil. The theme of the meeting was “Children, Technology and Well-Being”. The event was attended by Sandra Cortesi, Youth & Media director at the Berkman Klein Center for Internet & Society at Harvard University. She presented recent research on innovative ways to address the challenges faced by children in the digital world. The first “Pitch Day” with the experts was also held at the meeting. Specialists from different sectors presented their focus of action, how they contribute to the promotion of health and well-being in the digital context, and proposals for actions for self-care and well-being on the Internet.

In February 2020, Facebook held a roundtable on community standards in Bogota. The event was part of a series of meetings with civil society organizations and experts to discuss the implementation of the Facebook Community Standards, advances related to transparency on the platform, and creation of the External Oversight Board. The meeting brought together experts from 21 organizations in Latin America to discuss topics such as content in the context of social protests; stigmatizing words in positive contexts; news feed ranking; and policy recommendations. The External Oversight Board’s progress was also presented at the event.

In July 2020, Cetic.br|NIC.br was invited to participate in the virtual roundtable “How to Create Design with Transparency and Control for Young People,” promoted by Facebook’s Trust, Transparency and Control Labs. The purpose of the meeting was to discuss the strategies presented by the platform for the design of tools to prove the age of users in order to meet the Brazilian minimum age standards, and regulations for accessing applications and social networks. Participants were experts on the rights of children and youths whose thematic focus is the theme of the relationship between children, adolescents and technologies.



Producing Knowledge about ICT

The production and sharing of knowledge about themes related to information and knowledge societies is one of the most important lines of action of Cetic.br|NIC.br. In 2020, the Center actively participated in several academic discussion forums, at which they presented survey results and

data analyses, debated methodological challenges, promoted thematic discussions, and proposed discussion panels with important stakeholders.

Relevant events in which the Center participated in 2020 to present and share what the Center is producing are listed below.

► CULTURE AND TECHNOLOGIES

- VI International Congress on Technology and Information Organization – TOI 2020 Online, and III Symposium on Digital Curatorship: Digital Curatorship and Digitization Policies. School of Communication and Arts of the University of São Paulo – ECA-USP. São Paulo, Brazil. August 2020.
- Social Sciences in Dialogue: Inequalities in Internet Access and Use in Brazil before and during the COVID-19 Pandemic. São Paulo State University – UNESP. São Paulo, Brazil. August 2020.
- Webinar: “Museums Connect: Strategies for Social Media.” MuseumWeek. São Paulo, Brazil. September 2020.
- Brazilian Internet Forum – FIB. Workshop: “Digital Memory and Access to Culture: Communication and Reuse of Digital Collections by Brazilian Cultural Institutions.” Brazilian Internet Steering Committee – CGI.br. São Paulo, Brazil. September 2020.
- Workshop: “Debate on Cultural Management.” Research and Training Center of the Brazilian Social Service of Commerce – CPF-Sesc. São Paulo, Brazil. October 2020.
- 44th ANPOCS Annual Meeting. Working Group 22: “Internet, Politics and Culture.” National Association of Graduate Studies and Research in Social Sciences – ANPOCS. São Paulo, Brazil. December 2020.
- Seminar: “COVID-19 and the Cultural and Creative Sectors: Realities, Needs and Expectations for the Future.” Panel: “Digitization Realities and Perceptions.” Brazilian Social Service of Commerce – Sesc; United Nations Educational, Scientific and Cultural Organization – UNESCO; and University of São Paulo – USP. São Paulo, Brazil. December 2020.
- Seminar: “Debates on Culture and Impacts of COVID-19.” Roundtable: “Surveys on Culture and the Implications of the Pandemic”. Brazilian Social Service of Commerce – Sesc; United Nations Educational, Scientific and Cultural Organization – UNESCO; and University of São Paulo – USP. São Paulo, Brazil. December 2020.

► CHILDREN AND TECHNOLOGIES

- 4th Child Safety Roundtable/ IV Meeting on Well-being and Technology. Facebook/Google. São Paulo, Brazil. February 2020.
- Event: "Safer Internet Day, Together for a Safer Life." SaferNet Brazil. São Paulo, Brazil. February 2020.
- Regional meeting on Facebook content policies. Facebook. Bogotá (Colombia). February 2020.
- Berkman Klein 2020 Summer Institute. Berkman Klein Center for Internet & Society at Harvard University. Cambridge (Massachusetts, United States) June 2020.
- Webinar: "Chat: Young People and the Internet." Getulio Vargas Foundation – FGV. São Paulo, Brazil. July 2020.
- Roundtable: "How to Create Design with Transparency and Control for Young People." Facebook. São Paulo, Brazil. July 2020.
- Event: "Utopias on and off Screens." Wikimedia Chile. São Paulo, Brazil. October 2020.



Arquivo do NIC.br

► EDUCATION AND TECHNOLOGIES

- Presentation: "Technologies in Rural Schools." Research and Training Center of the Brazilian Social Service of Commerce – CPF-Sesc. São Paulo, Brazil. January 2020.
- Working Group on School Connectivity. Broadband Commission for Sustainable Development. São Paulo, Brazil. February 2020.
- Presentation: "Technologies and Learning in Brazil". Paula Souza State Center for Technological Education. São Paulo, Brazil. February 2020.
- Education in the World 4.0. Ministry of Education (MEC). São Paulo, Brazil. April 2020.
- GIGA Project: Brazil Context. United Nations Children's Fund – UNICEF; International Telecommunication Union – ITU; and Center of Study and Research in Network Technology and Operations – Ceptro.br|NIC.br. São Paulo, Brazil. May 2020.
- SBPC Basic Education Working Group Meeting. Brazilian Society for the Advancement of Science – SBPC. São Paulo, Brazil. June 2020.
- Webinar: "Pedagogical Continuity in the Context of the Coronavirus Crisis". Alliance for Digitalization of Education in Latin America and the Caribbean – ADELA. São Paulo, Brazil. June 2020.
- Launch of the survey "Juventudes, Educação e Projetos de vida" ("Youth, Education and Life Projects"). Presentation of data from the ICT in Education survey. Roberto Marinho Foundation. July 2020.
- Desviralize Project. State University of Londrina – UEL. São Paulo, Brazil. August 2020.
- V Congress on Technologies in Education – CrtI+E 2020. Federal University of Paraíba – UFPB. São Paulo, Brazil. August 2020.
- Working Group: "Future of Connectivity in Brazil." Lemann Foundation. São Paulo, Brazil. September 2020.
- Workshop: "5G Connectivity in the Amazon Region." Federal University of Pará – UFPA. São Paulo, Brazil. September 2020.

- Education and Technology: Learnings and Perspectives. CEDAC Educational Community. São Paulo, Brazil. October 2020.
- Seminar: "Present and Future of Education: Digital Exclusion and Impacts of the Pandemic." Brazilian Social Service of Commerce– Sesc Pinheiros. São Paulo, Brazil. October 2020.
- Working Group on Connectivity in Education. Innovation Center for Brazilian Education – CIEB. São Paulo, Brazil. October 2020.
- Series of debates: "Universities in Transformation." Presentation: "Digital

Learning in Brazil and the Use of Technology in Education". Faculty of Philosophy, Languages and Human Sciences of the University of São Paulo (FFLCH-USP). São Paulo, Brazil. November 2020.

- 26th CIAED – ABED International Congress of Distance Education. Presentation: "Digital Learning in Brazil and the Use of Technologies in Education." Brazilian Association for Distance Education – ABED. São Paulo, Brazil. November 2020
- Livestream: "Remote Education." Classmaker Education. São Paulo, Brazil. December 2020.

► HEALTH AND TECHNOLOGIES

- RNP Digital Health Group Meeting. National Education and Research Network – RNP. São Paulo (São Paulo State, Brazil) November 2020.
- RNP Forum. Panel: "Prospects for Digital Health after COVID." National Education and Research Network – RNP. São Paulo, Brazil. November 2020.
- Internet Festival 2020. Presentation of data from the ICT in Health 2019 survey and ICT Panel COVID-19. Internet Festival Brazil. São Paulo, Brazil. December 2020.

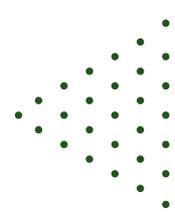
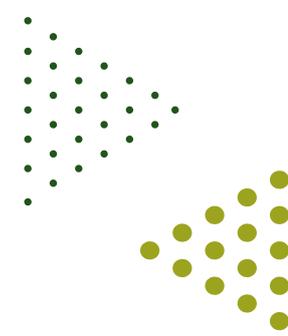
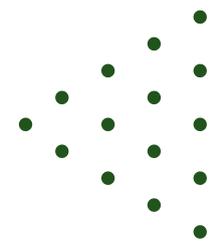
- Specialization Course in Health Informatics. Presentation of the methodology and results from the ICT in Health 2019 survey. National Council of Municipal Health Secretaries – CONASEMS and Ministry of Health. São Paulo, Brazil. December 2020.
- XVIII Brazilian Congress on Health Informatics – CBIS. Brazilian Society of Health Informatics – SBIS. São Paulo, Brazil. December 2020.

► E-GOVERNMENT

- Expert meeting of the Smart Cities Project. Renato Archer Information Technology Center and National Education and Research Network – RNP. São Paulo, Brazil. February 2020.
- International Conference on Theory and Practice of Electronic Governance – ICEGOV. Sessions: "Digital Governance Assessment Methods," "Open Justice and Transparency in a Digital Age: Strengthening Judicial Systems to Achieve Peaceful, Just, and Inclusive

Societies," "The ROAM-X Indicators: A UNESCO Tool for Evidence-Based National Internet Policies." United Nations University Operating Unit on Policy-Driven Electronic Governance – UNU-EGOV. São Paulo, Brazil. September 2020.

- 1st Law Webinar. Presentation: "Digital Law and Internet Governance." Faculty of Guarujá – FAGU. São Paulo, Brazil. November 2020.



► HOUSEHOLDS AND DIGITAL INCLUSION

- AI Latin America SumMIT Cambridge 2020. Artificial Intelligence & Machine Learning Events. Cambridge (Massachusetts, United States). January 2020.
- Webinar: "COVID-19: Public Policies and Society's Response." Solidary Research Network and Innovation and Competitiveness Observatory – OIC. São Paulo, Brazil. June 2020.
- Latin America Network Readiness & Digital Transformation Spotlight (NRI 2020). Portulans Institute and United Nations Educational, Scientific and Cultural Organization – UNESCO. São Paulo, Brazil. October 2020.
- "Segurança Legal" ("Legal Security") Podcast. Presentation of data from the ICT Panel COVID-19 on privacy. São Paulo, Brazil. October 2020.
- Series of debates: "Universities in Transformation." Presentation: "Diagnosis of the Trajectory of the Digital Divide in Brazil". Faculty of Philosophy, Languages and Human Sciences of the University of São Paulo (FFLCH-USP). São Paulo, Brazil. October 2020.
- Event: "Gaps, Debts and Achievements: What the Pandemic Reveals about the Knowledge Society in Latin America." Ministry of Science, Technology and Innovation of Argentina. São Paulo, Brazil. November 2020.

► SURVEY STATISTICS AND METHODOLOGY EVENTS

- AWS Innovate 2020. Amazon Web Services – AWS. São Paulo, Brazil. February 2020.
- Online event: "WeAreDevelopers LiveWeek 2020". WeAreDevelopers. São Paulo, Brazil. May 2020.
- Webinar: "COVID-19 and Its Impact on Statistical Operations". Partnership in Statistics for Development in the 21st Century – PARIS21. São Paulo, Brazil. May 2020.
- The Developers Conference – TDC São Paulo Online. Globalcode. São Paulo, Brazil. August 2020.
- AWS Summit Online. Amazon Web Services – AWS. São Paulo, Brazil. August 2020.
- Joint Statistical Meeting – JSM 2020. American Statistical Association – ASA. São Paulo, Brazil. August 2020.
- Conference: "Big Data Meets Survey Science" – Big Surv20. São Paulo, Brazil. November 2020.
- World Telecommunication/ICT Indicators Symposium – WTIS 2020. International Telecommunication Union – ITU. São Paulo, Brazil. December 2020.
- Methodology Seminar. Brazilian Institute of Geography and Statistics – IBGE. São Paulo, Brazil. December 2020.

Publications

The production of high-quality statistical data to monitor access to and use and appropriation of ICT is a central activity developed by Cetic.br|NIC.br. The Center carries out a set of four annual ICT survey projects related to households, education, health, and children. In addition, the Center also carries out surveys with other periodicities: enterprises, e-government, culture, non-profit organizations, Internet

service providers, and Internet public access centers. These projects cover critical areas for monitoring the development of information and knowledge societies, while also generating relevant data for monitoring achievement of the sustainable development goals and targets defined by the United Nations (UN) in its 2030 Agenda for Sustainable Development.



ICT HOUSEHOLDS

Carried out annually since 2005, the ICT Households survey aims to measure ICT use in Brazilian households, individual access to computers and the Internet, and activities developed online, among other indicators. The 2019 edition of the survey carried out interviews with almost 23,500 households across all regions in Brazil, including rural areas.

In the 2019 edition, a revised module on culture was implemented with the goal of better measuring cultural activities performed online. The survey added questions about the types of video content watched online and platforms used, as well as about listening to podcasts. In addition, questions on the origin of movies and TV series watched online were revised.

Since the 2015 edition, all of the ICT Households microdata bases and documentation have been available for download on the Cetic.br website.

Articles published in ICT Households 2019:

The Persistence of Digital Divides in Canada

Christopher Collins, Peter Jiao & Mark Uhrbach

Digital Belts in Brazil: Their Importance, Neighborhood Effects, and Elements for Public Policy Analysis

Luciano Charlita de Freitas, Rafael Cavazzoni Lima, Luis Guillermo Alarcón López, Pau Puig Gabarro, Ronaldo Neves de Moura Filho, Humberto Bruno Pontes Silva, Renato Couto Rampaso & Leonardo Euler de Morais

Mobile Internet Access: Data Caps and Access Blocking

Bárbara Simão, Diogo Moyses, Juliana Oms & Livia Pazianotto Torres

Social Protection Digitization: The Challenge of Inclusion

Cíntia Ebner Melchiori

National strategies for Artificial Intelligence: Lessons for building a Brazilian model

Priscilla Silva, Carlos Affonso Souza & Ana Lara Mangeth

Fake News: Who's Afraid of the Truth on the Internet?

Maria Renata da Cruz Duran & Bruna Carolina Marino Rodrigues



ICT KIDS ONLINE BRAZIL

The goal of the ICT Kids Online Brazil survey is to understand how the population 9 to 17 years old uses the Internet and how they deal with risks and opportunities related to its use. ICT Kids Online Brazil is fully aligned with

the methodological framework of the European network EU Kids Online and Global Kids Online.

In its seventh edition, the survey interviewed 2,954 children 9 to 17 years old and their parents or legal guardians across the country.

Since the 2015 edition, the microdata bases and documentation of the ICT Kids Online Brazil survey have been available for download on the Cetic.br website.

Articles published in ICT Kids Online Brazil 2019:

Global Kids Online: From Evidence to Impact

Sonia Livingstone & Daniel Kardefelt-Winther

Brazilian Children's Perspectives on Their Rights and Digital Technology

Amanda Third, Lilly Mood & Rodrigo Nejm

Children Use of Social Networks in Brazil, Chile, Costa Rica and Uruguay

Amalia Palma, Fernanda Rojas &

Daniela Trucco

Digital Skills and Gaps of Young People Dealing with Misinformation in Brazil

Marco Konopacki, Debora Albu,

Thayane Guimarães & Diego Cerqueira

Bullying and Cyberbullying Experiences among Children in Brazil

Josafá da Cunha, Marielly Rodrigues Mandira

& Jonathan Santo



ICT IN HEALTH

Carried out annually since 2013, the overall goal of the ICT in Health survey is to understand the stage of ICT adoption in Brazilian healthcare facilities and its appropriation by healthcare professionals (physicians and nurses).

For the ICT in Health 2019 survey, 2,427 health facility managers across the country were interviewed, in addition to 1,732 physicians and 2,458 nurses affiliated with these facilities. The survey was carried out before the COVID-19 pandemic began in Brazil, which enables mapping of the digital health scenario and the preparation of the health system for the new context. To that end, the study presents data on the ICT infrastructure in healthcare facilities, the availability of health systems to record information about patients, and their levels of complexity, as well as indicators on the safety and privacy of clinical data, and the use of telehealth.

Articles published in ICT in Health 2019:

National Health Data Network: Interoperability Experience in the Healthcare Network

Jacson Venâncio de Barros, Henrique Nixon Souza da Silva, Roberta Massa Baptista, Frank James da Silva Pires & Juliana Pereira de Souza-Zinader

Data Protection in Telemedicine

Analluza Bolivar Dallari

Leveraging Artificial Intelligence to Maximize Use of Electronic Health Record Data

Shamim Nemati, Supreeth P. Shashikumar, Fatemeh Amrollahi, Tsung-Ting Kuo & Lucila Ohno-Machado

Machine Learning in Cardiovascular Medicine

Marco Antonio Gutierrez & José Eduardo Krieger

COVID-19: Information and Decisions for Adopting Lockdown

Eduardo Massad



ICT IN EDUCATION

Carried out annually since 2010, the ICT in Education survey aims to investigate ICT access, use and appropriation in Brazilian public and private primary and secondary schools located in urban and rural areas.

In 2019, the ICT in Education survey completed its 10th consecutive edition. Data collection was carried out in 1,012 schools located in urban areas, which were visited in person, and 1,403 schools located in rural areas, which were contacted by phone. A total of 16,598 school actors were interviewed, including principals, directors of studies, teachers and students. Three grades were studied in this survey: 5th year of Primary Education; 9th year of Primary Education; and 2nd year of Secondary Education.

Articles published in ICT in Education 2019:

Media Literacy: How Can Education Help Fight Disinformation?

Priscilla Silva, Carlos Affonso Souza & Ana Lara Mangeth

Innovation in the Use of Technologies in Teaching and Learning Processes?

Miguel Thompson

The Imprensa Jovem Program and Media Education in the Municipal School System of São Paulo

Carlos Alberto Mendes Lima, Isabel Pereira dos Santos & Maria Salete Prado Soares

Broadband Limits: The Role of Connectivity in the Use of ICT for the Development of Digital Skills in Brazilian Public Schools

Elisa Terezinha Betttega, Gabriela Marin & Paulo Kuester Neto

ICT and School Management within Different Federal Contexts

Catarina Ianni Segatto, Marina Exner & Fernando Luiz Abrucio



ICT ENTERPRISES

Conducted since 2005, the ICT Enterprises survey measures the adoption of information and communication technologies in enterprises with 10 or more employed persons. Its objective

is to investigate access to infrastructure, as well as use and appropriation by the private sector of new technologies, mapping their perceptions of associated benefits.

The 2019 edition of the survey, for which interviews were conducted with 7,019 enterprises, made significant changes in its scope. The e-commerce module was adjusted in order to encompass the different ways in which enterprises carry out transactions on the Internet, allowing for broader understanding of the phenomenon. It also included, for the first time, data about the adoption of emerging technologies that should have great impact on the context of digitization.

Articles published in ICT Enterprises 2019:

Exploring Alternative Data Sources to Measure the Digital Economy

Veronika Vilgis, Jorge A. Patiño & Valeria Jordan

Public Policies for Promoting the Digital Economy

Carlos Eduardo Flores de Araújo

Industry Profile and Evaluation of Public Policies: Considerations from the 2nd Brazilian Digital Games Industry Census

Luiz Ojima Sakuda, Ivelise Fortim & Pedro Santoro Zambon

E-commerce in Brazil: Challenges, Microenterprises and the Future of Logistics

Mauricio Salvador

Overview of ICT Use Indicators in Enterprises

Fernando de Souza Meirelles



ICT ELECTRONIC GOVERNMENT

Conducted every two years since 2013, the ICT Electronic Government survey investigates the supply of e-government services in Brazil. The use of ICT in the public sector can increase access to public services, making governments more transparent, in addition to enabling citizen participation. With the aim of analyzing this scenario, interviews are conducted with ICT managers and people responsible for the digital content of governmental organizations at the three levels of government (federal, state and local), the executive, legislative and judicial branches, and the public prosecutor's office.

For its fourth edition, 665 federal and state government organizations and 5,114 local governments were interviewed. The survey points to some paths toward advancement of digital government policies in the Brazilian public sector, enabling the identification of changes and stabilities in the use of technologies among federal and state government organizations and local governments in relation to previous editions.

Articles published in ICT Electronic Government 2019:

Citizenship, Technology and Digital Government: Protecting Personal Data in Data-Driven States

Miriam Wimmer

Discussing a Framework for Smart Governance in Public Sector Organizations

Gabriela Viale Pereira & Peter Parycek

The Relationship between Digital Transparency and ICT Capacity of Brazilian Local Governments

João Guilherme Frey

Information and Communication Technologies (ICT) for Open Government: Local Disparities and Inequalities

Amanda Faria Lima, Laila Bellix & Vanessa Meneguetti



ICT PUBLIC ACCESS CENTERS

The ICT Public Access Centers survey presents a mapping of information about the provision of Internet access by public access centers in Brazil that are supported by the federal government, particularly telecenters, in view of the importance of these sites in fighting digital exclusion and reducing

inequalities related to technology adoption and use in Brazil.

In its second edition, 2,839 telecenters were interviewed to map, at the national level, the operational situation of these sites, their infrastructure conditions, institutional arrangements, provision of services and activities to their users, and the participation of communities in the main decisions related to these centers.



ICT PANEL COVID-19

The health measures put in place to fight the COVID-19 pandemic affected the implementation of face-to-face surveys, prompting Cetic.br|NIC.br to develop a contingency plan²⁹ to maintain data collection during this global health crisis. This included the ICT Panel COVID-19, an experimental survey of Internet users carried out via a web panel and complemented by telephone interviews.

Released in three editions, with data collection carried out between June and September 2020, the survey investigated

activities carried out online during the pandemic, using the indicators validated by the ICT Households survey as its framework, in addition to custom-designed thematic modules, covering the following topics:

1st EDITION

- Culture
- E-commerce

2nd EDITION

- Online public services
- Telehealth
- Privacy

3rd EDITION

- Remote education
- Telework



NIC.BR SECTORAL STUDIES

The NIC.br Sectoral Studies series was launched in 2016 with the goal of discussing emerging themes relative to the interface between ICT and society.

In 2020, two publications were released. The first was *Accessibility and Technologies: An Overview of Access to and Use of Information and Communication Technologies by Persons with Disabilities in Brazil and Latin America*, which had the collaboration of the Web Technologies Study Center (Ceweb.br), and was launched at the online event “Todos@Web” on Global Accessibility Awareness Day. The second was *Information and Communication Technologies in Urban Management: Challenges for the Measurement of Smart Cities*, which was launched during the joint NIC.br and ITU-T webinar “Smart Sustainable Cities and Frontier Technologies in Latin America.”

The report on accessibility gathers unpublished data collected from 2012 to 2016 by the ICT Households survey, which

shows that the use of technologies by persons with disabilities is lower than that of the population without disabilities in Brazil. It presents national and international concepts and frameworks on the theme and includes articles from UNESCO and ECLAC members, among other specialists on the rights of persons with disabilities and the need for inclusive policies. This contributes to informed debate, which is essential to guide the development of the Internet of the future.

The report on smart cities was composed of three chapters that shed light on: the role of technologies in the development of smart sustainable cities (SSCs) in Latin American contexts; challenges related to measuring smart cities, presenting different measurement models, as well as their advantages and challenges; and possible expansion of the measurement model proposed by the ITU to the context of Brazilian cities. The publication highlighted the importance of including local issues and actors while also maintaining international comparability.

²⁹ See *Plano de contingência para as pesquisas TIC do CGI.br: Estratégia de coleta de dados durante a pandemia COVID-19* (Contingency plan for CGI.br’s ICT surveys: Data collection strategy during the COVID-19 pandemic). Retrieved on December 30, 2020, from <https://cetic.br/pt/publicacao/plano-de-contingencia-para-as-pesquisas-tic-do-cgi-br/>



INTERNET SECTOR OVERVIEW

The Internet Sectoral Overview Report explores themes related to access to and use of digital technologies in various sectors of society. The

report explores relevant data and findings from the national ICT surveys conducted by Cetic.br|NIC.br. The four reports published in 2020 are listed below.

Colaborators:

Year XII – N. 1: Artificial Intelligence: Fairness, Justice and Consequences

Diogo Cortiz (Ceweb.br|NIC.br), Nnenna Nwakanma (World Wide Web Foundation), Luiz Fernando Martins Castro (Martins Castro Monteiro Advogados and CGI.br) and Isabela Ferrari (Regional Federal Court of the 2nd Region – TRF2).

Year XII – N. 2: Use of Artificial Intelligence in Health

Edson Amaro Jr, Michel Fornaciali, Andre Batista, Murilo Gazzola, Lívia Paiva da Silva, Diogo F. C. Patrão and Marcos Freitas Jr (Hospital Israelita Albert Einstein - HIAE), Sacha Alanoca, Nicolas Guetta Jeanrenaud, Nyasha Weinberg, R. Buse Çetin and Nicolas Mialhe (The Future Society), Eneida A. Mendonça (Indiana University/Regenstrief Institute) and Bernardo Mariano Junior (World Health Organization – WHO).

Year XII – N. 3: Artificial Intelligence, Education and Childhood

Priscila Gonsales (Instituto EducaDigital), Tel Amiel (University of Brasilia – UnB), Luísa Adib Dino, Daniela Costa and Javiera F. M. Macaya (Cetic.br|NIC.br), Sandra Cortesi and Alexa Hasse (Berkman Klein Center for Internet & Society), and Jasmina Byrne and Steven Vosloo (UNICEF).

Year XII – N. 4: Artificial Intelligence and Work

David Autor, David A. Mindell and Elisabeth B. Reynolds (MIT Work of the Future), Glauco Arbix and Alvaro A. Comin (Center for Artificial Intelligence USP-IBM-Fapesp), Aiha Nguyen (Data & Society) and Mario Cimoli (Economic Commission for Latin America and the Caribbean – ECLAC).



COMMUNICATION AND INFORMATION DISCUSSION PAPER: "CHILDREN, ADOLESCENTS AND THE USE OF THE INTERNET IN SÃO PAULO AND BUENOS AIRES: STUDIES FROM A PERSPECTIVE OF GENDER EQUALITY"

In October, UNESCO Montevideo released a report on children, adolescents and the use of the Internet in São Paulo and Buenos Aires that addressed gender differences and inequalities in access to and use of ICT. The report was prepared by Cetic.br|NIC.br and the UNESCO Regional Chair on Women, Science and Technology in Latin America of the Latin American Faculty of Social Sciences in Argentina (FLACSO-Argentina).

Available in Portuguese and Spanish and based on a qualitative research method developed by Cetic.br|NIC.br and FLACSO-Argentina, this publication analyzes issues related to the uses, activities and experiences of the Internet

by children and adolescents in São Paulo and in Buenos Aires. Specifically, four dimensions relative to these experiences were explored: access, use and opportunities; self-presentation on social networks; privacy; and online violence. The results of the studies show that, in different ways, girls' and boys' online experiences are characterized by gender issues, such as their concern with self-presentation on social networks, the risks they face related to privacy matters, and the violence they experience online.

This publication sought to raise awareness among different stakeholders of the relevance of considering a gender perspective in the formulation of public policies related to the use of ICT by children and adolescents.

▶ Other ICT Survey Projects



ICT IN CULTURE

Conducted every two years since 2016, the ICT in Culture survey investigates the presence of ICT infrastructure and the use of these technologies in Brazilian cultural facilities, focusing on internal management, public relations, and

collection digitization. It also presents information about IT management in these institutions and perceptions of the contributions and challenges of computer and Internet use in cultural facilities, including archives, heritage sites, libraries, cinemas, museums, culture points and theaters.



ICT NONPROFIT ORGANIZATIONS

Conducted three times since 2012, the ICT Nonprofit Organizations survey investigates the access, use and appropriation of information and communication

technologies by organizations such as NGOs, associations, foundations and religious organizations in Brazil, in addition to mapping out characteristics and accumulated ICT skills in these facilities.



ICT PROVIDERS

Carried out four times since 2011, the goal of the ICT Providers survey is to carry out a census of Internet service

providers (ISPs) to construct a National Register of Providers that maps out the context of the Internet access provision market in the country.

▶ Published Papers

Costa, D., & Doretto, J. (2020). Limiting the digital in Brazilian Schools: Structural difficulties and school culture. In L. Green, D. Holloway, K. Stevenson, T. Leaver, & L. Haddon (Eds.). *The Routledge Companion to Digital Media and Children*. New York: Routledge, Taylor & Francis.

Coelho, I. B., Pitta, M. T., & Silva, P. L. N. (2020). Estimating state level indicators from ICT household surveys in Brazil. *Statistical Journal of the IAOS*, 36(2), 495-508.

Lima, L. P. B., & Oyadomari, W. (2020). Internet e participação cultural: O cenário brasileiro segundo a pesquisa TIC Domicílios (The Internet and cultural participation: The Brazilian scenario according to the ICT Households survey). *Revista Internet & Sociedade*, 1(1).

Lima, L. P. B. (2020). A digitalização de acervos no Brasil segundo a pesquisa TIC Cultura (The digitization of collections in Brazil according to the ICT in Culture survey). Proceedings of Annals of the 11th International Seminar on Cultural Policies.

Ribeiro, M. M., Macaya, J., Santos, M. P. R., Cunha, M. A., & Pitta, M. T. (2020). ICT usage in the context of regional inequalities. *Proceedings of the 2020 Seventh International Conference on eDemocracy & eGovernment (ICEDEG)*.

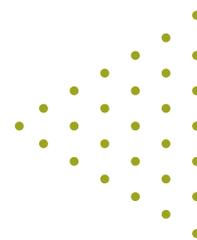
Santos, M. P. R., Pitta, M. T., & Silva, D. B. N. (2020). Representativity indicators for the survey on the use of information and communication technologies in Brazilian households. *Statistical Journal of the IAOS*, 36(2), 509-518.

Santos, M. P. R., Pitta, M. T., & Silva, D. B. N. (2020). Indicadores de representatividade na pesquisa sobre o uso das tecnologias de informação e comunicação nos domicílios brasileiros (Representativity indicators for the survey). In Instituto Brasileiro de Geografia e Estatística – IBGE. *População, território e estatísticas públicas: 20 anos do Programa de Pós-Graduação da ENCE (Population, territory and public statistics: 20 years of the ENCE Graduate Program)* (pp. 117-132). Rio de Janeiro: IBGE.

Senne, F., Portilho, L., Storino, F., & Barbosa, A. (2020). Inclusão Desigual: uma Análise da Trajetória das Desigualdades de Acesso, Uso e Apropriação da Internet no Brasil (Unequal inclusion: an analysis of the trajectory of inequalities in Internet access, use and appropriation in Brazil). *Revista de Direito, Estado e Telecomunicações*, 12(2), 187-211.

Simões, J. A., & Senne, F. (2020). Cidadania e participação online de crianças e jovens em Portugal e no Brasil (Citizenship and online participation of children and young people in Portugal and Brazil). In C. Ponte (Coord.). *Nós da Rede (Network Nodes)*. Coimbra: Edições Almedina, S. A.





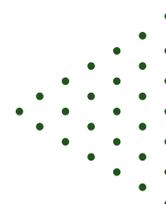
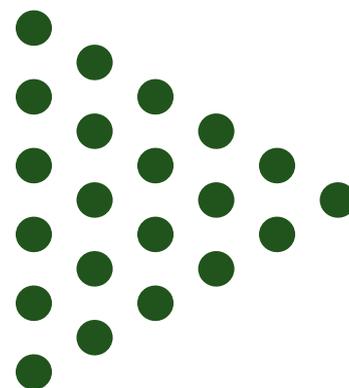
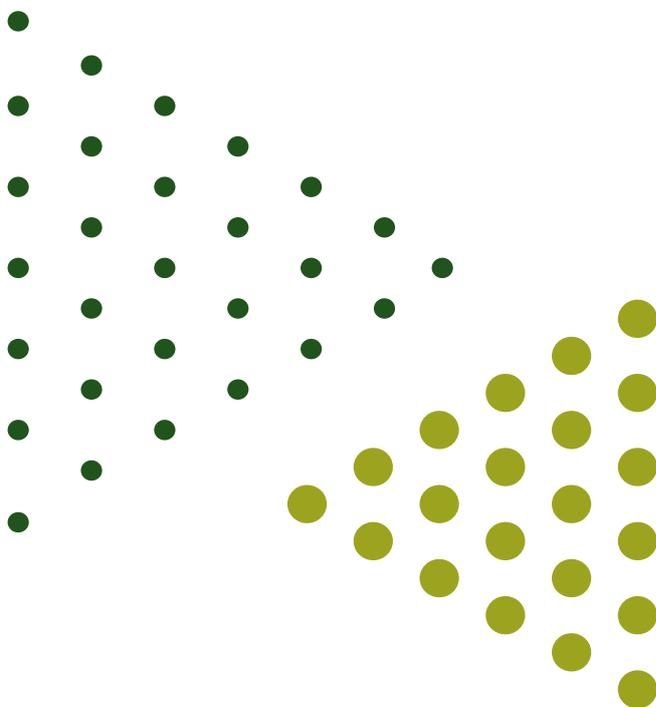
▷ BOOK CHAPTER

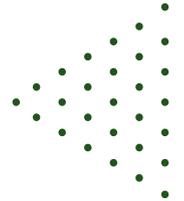
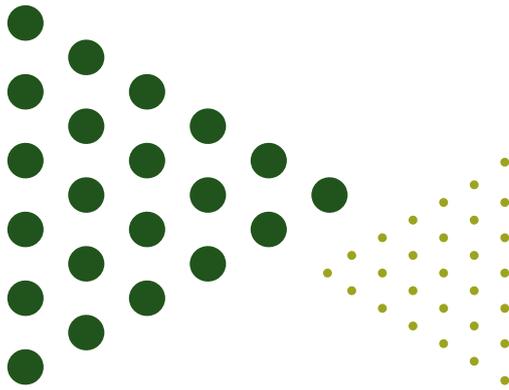
Barbovschi, M., Jereissati, T., & Macaya, J. F. M. (2020). Parental Anxieties and Double Standards in Their Discussion of Young People's Use of Social Media: Perspectives from a Qualitative Project

in Sao Paulo, Brazil. In L. Tsaliki, & D. Chronaki (Eds.). *Discourses of Anxiety over Childhood and Youth across Cultures* (pp. 347-372.). Cham: Springer International Publishing.

▷ OTHER PUBLICATIONS

Almeida, F., Torrezan G., Lima, L., & Catelli R. E. (Orgs.). (2019). *Culture, Education and Technologies in Debate* (Vol. II). São Paulo: CPF-Sesc.





Brazilian Network Information Center (NIC.br)

CEO
Demi Getschko

CFO
Ricardo Narchi

CTO
Frederico Neves

Director of Special Projects
and Development
Milton Kaoru Kashiwakura

Chief Advisory Officer to CGI.br
Hartmut Richard Glaser

Regional Center for Studies on the Development of the Information Society (Cetic.br)

Manager
Alexandre F. Barbosa

Coordination of ICT Survey
Project Management
Fabio Senne

Coordination of Quantitative
Methods
Marcelo T. Pitta

Coordination of Qualitative Methods
and Sectoral Studies
Tatiana Jereissati

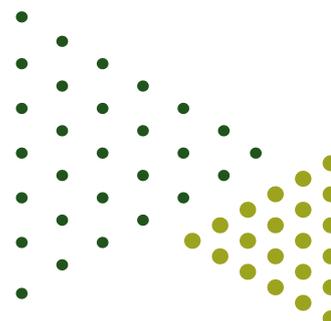
Coordination of Process and
Quality Management
Nádilla Tsuruda

Editorial Support

Translation into English:
*Prioridade Consultoria Ltda., Lorna
Simons, Luana Guedes, Luísa Caliri,
Maya Bellomo Johnson*

Photos
*Ricardo Matsukawa
(unless otherwise stated)*

Graphic Design:
Communication department/NIC.br







United Nations
Educational, Scientific and
Cultural Organization

cetic.br

Regional Center for Studies on the
Development of the Information
Society under the auspices of UNESCO

nic.br

Brazilian Network
Information Center

egi.br

Brazilian Internet
Steering Committee



Twitter: @comunicbr | Facebook: nic.br | Website: www.cetic.br

Phone: 55 11 5509 3511 Fax: 55 11 5509 3512