



# BRICS BRASIL

## 2019

### **Minutes of the 3rd Meeting of the BRICS Working Group on Information and Communication Technology and High Performance Computing (WG on ICT and HPC)**

**Foz do Iguaçu, Brazil, 13-15 May 2019**

The third meeting of the BRICS Working Group on Information and Communication Technologies and High Performance Computing (WG on ICT and HPC) was held on 13-15 May, 2019, at the Itaipu Technological Park, Foz do Iguaçu, Brazil. The meeting was chaired by Professor Augusto Gadelha, from Brazilian Laboratory of Scientific Computing (LNCC) and had 22 participants for all five BRICS countries (as the list of Annex I).

The meeting was comprised by seven work sessions (as the programme of Annex II). In Session 1, China summed up the initiatives already taken by BRICS on ICT and HPC, including proposals to develop a flagship project, the BRICS Innovation and Collaboration Cloud (BICC) and the Integrated Hub for BRICS Innovation Collaboration on ICT and HPC. Representatives of each country presented the current and future trends of ICT and HPC in their respective countries, indicating topics which are being pursued.

In Session 2, the delegates discussed the topics of the future BRICS call. It was examined the current topics of the 3rd Call and their relation with the priorities established by each country. The group agreed to maintain 8 of the 9 current themes and to prepare a preamble text to raise the importance of HPC and the themes, as well as the results expected from the projects selected. During this session, it was also discussed the flagship projects. Two main complementary issues were addressed. The first one was related to the strategies for Governments' support the initiative, and the second one has to do with the themes of the flagship projects. Delegates agreed to prepare a document to explain to the BRICS Senior Officials Meeting (SOM), the importance of these flagship projects, and the five topics raised in the 1st meeting were reviewed and although confirmed as priorities as proposals for the BRICS Ministers of ST&I the text for each was edited.

According to the Durban Declaration, the BRICS STI Ministers welcomed the idea of establishing an integrated Hub for BRICS Innovation Collaboration on ICT and HPC. In Session 3 and 4, the delegates debated the China and South Africa jointly drafted work plan (as in Annex III). Professor Yuan, from the Chinese delegation, clarified some aspects of this proposal, however, a more detailed proposal for the integrated Hub was required by the delegates of the WG. In this sense, the WG agreed to establish a task force composed of representatives of each of the BRICS countries which will be responsible to examine the proposal and prepare a report to be taken to the SOM, after recommendation of the WG, for a decision on the structure, governance and funding mechanisms of the integrated Hub.



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In Session 5, BRICS countries discussed the next steps of the WG. The hosting of the next WG meeting is under consideration of Russia. The confirmation will be given during the Ministerial meeting, on September 2019. The plan for next year will be based on the actions and time frame presented in the resolutions of the meeting, mentioned below:

### Resolutions:

1. The WG will prepare the text of the next BRICS Call on ICT & HPC. Brazil will be responsible for coordinating the elaboration of this text, which will be comprised by an introduction of the importance of ICT and HPC to the BRICS STI efforts, the results expected from the projects selected and the list of 8 topics, as follows:
  - Advanced Precision Medicine and Public healthcare: Wearable Device technologies, Data analytics, Prediction of Health Anomalies, HPC Simulation and services.
  - Supercomputing Co-Design Technologies for Solving Grand Challenge Problems: Modeling, Algorithms, Architectures, Parallel Programming Technologies and Tools.
  - HPC and BigData for Sustainable Development: Solving Large Scale Ecological, Climate and Pollution Problems.
  - Research in Machine Learning, AI and Big Data Analytics: Development of efficient algorithms and tools.
  - HPC for Public Digital Security including, but not limited to: user and entity behavior analytics, cybercrime detection and investigation, Internet and social networks monitoring.
  - Development of the Integrated Knowledge Space for Digital Heritage based on OpenData environment.
  - Smart Cloud Manufacturing: General Purposed Robotic Operation System to Support Heterogeneous Swarm AI including but not limited to: Distributed Collaboration Architecture; Collective Perception; Collective Autonomic Collaboration; Collective Autonomic Learning.
  - Cloud based Visual Reality/Augmented Reality/Expanded Reality Platform and Its Industrial Applications.
2. The WG will elaborate a document, in 30 days, to raise the importance of the flagship projects. This document will be presented to the STI SOM. Brazil will be responsible for coordinating the inputs of each country, as follows:
  - Digital Smart Manufacturing (elaborated by China);
  - HPC application for Life sciences, precision medicine and public health (elaborated by South Africa and Brazil);



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- Integrated Precision Farming (elaborated by Brazil);
  - Large Scale Multi-Agent based Simulation of Virtual Society (elaborated by Russia);
  - Digital Earth modeling (elaborated by India);
3. The WG will establish a task force composed of representatives of each of the BRICS countries, which will be responsible to examine the proposal and prepare a report to be taken to the SOM, after recommendation of the WG, for a decision on the structure, governance and funding mechanisms of the integrated Hub. The task force as appointed by the BRICS WG ICT and HPC is as follows:
- Brazil: Augusto Gadelha;
  - Russia: Vladimir Voevodin;
  - India: Sanjay Wandhekar;
  - China: Yuan Xuefeng (coordinator);
  - South Africa: Happy Sithole.



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### Annex I – List of participants

3rd Meeting of the BRICS WG on ICT and HPC

#### List of participants

Country	Name	Position	Institution
Brazil	Alba Cristina Magalhães Alves de Melo	Full Professor	Department of Computational Science of University of Brasília - UnB
Brazil	Philippe Olivier Alexandre Naveaux	Full Professor	Institute of Informatics of Federal University of Rio Grande do Sul - UFRGS
Brazil	Antônio Tadeu Azevedo Gomes	Technologist	National Laboratory of Scientific Computing - LNCC
Brazil	Augusto Gadelha Vieira	Director	National Laboratory of Scientific Computing - LNCC
Brazil	Fábio André Machado Porto	Specialist	National Laboratory of Scientific Computing - LNCC
Brazil	Adhvan Novais Furtado	Researcher	SENAI/CIMATEC
Brazil	Carlos Eduardo Higa Matsumoto	General Coordinator of Multilateral Cooperation	Ministry of Science, Technology, Innovation and Communication
Russia	Vladimir Abramov	Senior Research Officer	Central Economics and Mathematics Institute of the Russian Academy of Science
Russia	Albert Bakhtizin	Director	Central Economics and Mathematics Institute of the Russian Academy of Science
Russia	Viktor Gergel	Director	Institute of IT, Mathematics and Mechanics of Nizhni Novgorod State University
Russia	Victor Stepanenko	Leading Research Officer	The Research Computing Center of Lomonosov Moscow State University



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India	Sh. Kshitij Kushagra	Scientist E/ Additional Director	Ministry of Electronics and IT
India	Sh. Naveen Kumar	Scientist D/ Joint Director	Ministry of Electronics and IT
India	Raj Kumar Sharma	Scientist-E (Director Grade)	International Multilateral and Regional Cooperation (IMRC) of Department of Science and Technology
India	Sanjay Wandhekar	Senior Director	Centre for Development of Advance Computing (CDAC)
China	YUAN Xuefeng	Professor	Guangzhou University
China	PANG Shengyong	Associate Professor	Huazhong University of Science and Technology
China	HUANG Anguo	Associate Professor	Huazhong University of Science and Technology
China	GONG Xueqing	Professor	East China Normal University
South Africa	Happy Sithole	Director	Centre for High Performance Computing (CSIR)
South Africa	Bruce Bassett	Head	African Institute for Mathematics (AIMS)
South Africa	Charles Mokonoto	Director for Cyber Infrastructure	Department of Science and Technology



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### Annex II – Programme

3rd Meeting of the BRICS Working Group on Information and Communications Technologies and High-Performance Computing (ICT-HPC WG)		
Time		Content
12 May Sunday (Reception)	8:00-18:00	Arrival at Foz do Iguaçu
	19:00-21:00	<p>Welcome reception and cocktail</p> <p>Venue: Itaipu Dam Sightseeing</p> <p>Welcoming notes by PTI</p>
13 May Monday (Day 1)	8:45	Departure from the Bella Italia Hotel/Bourbon Business Hotel
	9:30-10:00	<p>Registration</p> <p>Joint Opening Session – STIEP and HPC-ICT Working Groups</p> <p>Venue: César Lattes auditorium</p>
		<p><b>Flaviano Costa Masnik</b></p> <p>Interim Superintendent of the Itaipu Technology Park</p> <p>Thematic presentation: “PTI – Fostering Science, Technology and Innovation towards a sustainable regional development”</p> <p><b>Antônio Franciscangelis Neto</b></p> <p>Vice Minister of Planning, Cooperation, Projects and Control</p> <p>Ministry of Science, Technology, Innovation and Communications of Brazil</p> <p><b>Ambassador Achilles Zaluar</b></p> <p>Director of the Department for Technology Promotion</p> <p>Ministry of Foreign Affairs of Brazil</p>
	10:00-10:30	<p><b>Opening Session ICT-HPC WG</b></p> <p>Venue: Florestan Fernandes number 3 room</p>
		<ul style="list-style-type: none"> <li>- Opening statement by Brazil (5min)</li> <li>- Introduction by each BRICS country delegation (5 min)</li> </ul>



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		each) - Business Agenda by Brazil (5 min)
<b>10:30-11:15</b>	<b>Session 1: Overview of BRICS ICT-HPC initiatives already taken and current trends and roadmap of ICT and HPC</b>	Venue: Florestan Fernandes number 3 room
		- China delegate will sum up the initiatives already taken by BRICS on ICT and HPC (10 min) - Representatives of each country will present the current and future trends of ICT and HPC in their respective countries, indicating topics which are being pursued (7 min ea.)
<b>11:15-12:00</b>	<b>Session 2: Topics for Future Brics Call</b>	Venue: Florestan Fernandes number 3 room
		- Each country will present 5 topics of interest (5 min each) - Establishment of projects for future BRICS calls for joint projects based on the topics of common interest (20 min)
<b>12:00-14:00</b>	<b>Networking Lunch</b>	
<b>14:00-15:30</b>	<b>Session 3: Discussion on BICC</b>	Venue: Florestan Fernandes number 3 room
		- Discussion of the draft on “BICC – An Integrated Hub for BRICS Innovation Collaboration on ICT and HPC” forwarded by China and South Africa – role of each of the BRICS countries.
<b>15:30-15:45</b>	<b>Coffee Break</b>	
<b>15:45-16:30</b>	<b>Session 4: Modalities of Proposals</b>	Venue: Florestan Fernandes number 3 room
		- Discussion on Modalities to be followed for submitting the proposals: in this session, the details about how the joint proposals are to be arrived at, budget allocation, timelines etc. will be discussed
<b>16:30–17:00</b>	<b>Session 5: Action plan for next year</b>	



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		Venue: Florestan Fernandes number 3 room
		- Round table discussion on deciding the action plan for the next year
	<b>17:15</b>	<b>Departure to the Bella Italia Hotel/Bourbon Business Hotel</b>
<b>14 May</b> <b>Tuesday</b> <b>(Day 2)</b>	<b>8:15</b>	<b>Departure from the Bella Italia Hotel/Bourbon Business Hotel</b>
	<b>9:00-10:30</b>	<b>Session 6: Statement of the 3rd Meeting of the BRICS Working Group on ICT and HPC</b>  Venue: Florestan Fernandes number 3 room
		Discussion on the minutes of the 3rd Meeting of the BRICS WG on ICT and HPC
	<b>10:30-10:45</b>	<b>Coffee Break</b>
	<b>10:45-11:00</b>	<b>Session 7: Signature of the minutes of the 3rd Meeting of the BRICS Working Group on ICT and HPC and closing session</b>  Venue: Florestan Fernandes number 3 room
	<b>11:00-12:30</b>	<b>Institutional presentations of the Itaipu Technology Park</b>  Venue: Milton Santos room  <ul style="list-style-type: none"> <li>- Laboratory for the Automation and Simulation of Electric Systems (LASSE)</li> <li>- Center for Advanced Studies in Dam Safety (CEASB)</li> <li>- Latin American Center of Open Technologies (CELTAB) and the Living Lab for Smart Cities</li> <li>- Santos Dumont Incubator</li> </ul>
	<b>12:30-14:00</b>	<b>Networking Lunch</b>
	<b>14:00-17:30</b>	<b>FIELD VISITS (Itaipu Binational)</b>  <ul style="list-style-type: none"> <li>- Itaipu Biogas Plant</li> <li>- Itaipu Dam technical visit</li> </ul>
	<b>17:30</b>	<b>Departure to the Bella Italia Hotel/Bourbon Business Hotel</b>





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<b>15 May</b>	<b>8:30</b>	<b>Departure from the Bella Italia Hotel/Bourbon Business Hotel</b>
<b>Wednesday</b>	<b>9:00-12:00</b>	<b>Visit to Iguazu Water Falls</b>
<b>(Day 3)</b>	<b>12:00</b>	<b>End of the agenda</b>



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### **Annex III - DRAFT 2019 Workplan of an Integrated Hub for BRICS Innovation Collaboration on ICT and HPC**

#### 1. BASIS

In April, 2017, the 1st BRICS Working Group Meeting on Information and Communication Technology (ICT) and High-Performance Computing (HPC) was successfully held. In the meeting resolution, the working group proposed to establish a BRICS Innovation and Collaboration Cloud (BICC). A task group including the heads of the HPC facilities from each member state will develop a phased plan for implementation. They will identify the minimum resources required for the construction of the BICC, based on the existing facilities within BRICS. In July, 2018, as the coordinating country for ICT and HPC, China further improved the proposal and submitted to the 6th BRICS Science, Technology and Innovation (STI) Ministerial Meeting. At the meeting, Durban Declaration and BRICS STI Workplan (2018-2019) were adopted as two major outcomes. In Durban Declaration, the BRICS STI ministers further welcome the establishment of An Integrated Hub for BRICS Innovation Collaboration on ICT and HPC. Based on the previous work, China and South Africa jointly draft the workplan to further implement ministers' instructions.

#### 2. PREPARATION PHASE

- 2019

Guangzhou University (Guangzhou, China) will serve as the secretariat of the Hub, composed of a chief secretary and two assistants, for carrying out daily operation of the Hub;

- Jan, 2019-Feb, 2019

Each BRICS country nominates proper organization to serve as the coordinating organization for the Hub;

- Feb. 2019-May, 2019

Guangzhou University will develop a comprehensive website to serve the BRICS ICT and HPC community by providing the information about available researchers, relevant funds, research projects, research facilities and platforms in China to potential collaborators especially from other BRICS countries, and will further improve the website with additional information from other BRICS countries;

- April, 2019-June, 2019

Guangzhou University will invite experts from each BRICS country to form a Consulting Council to provide guidance for the operation of the hub;

- June, 2019-August, 2019

Under the guidance of the Consulting Council, Guangzhou University, together with the coordinating organizations from other BRICS countries will develop a detailed and agreeable development plan with at least 3 years for the Hub;

- October, 2019

Report to the 9th BRICS STI Senior Official's Meeting



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### 3. PRINCIPLE GOALS TO BE ACHIEVED IN THE DEVELOPMENT PHASE

- To hold teleconference, face-to-face meeting to discuss important issues regarding BRICS cooperation in ICT and HPC.
- To organize annual events such as BRICS Innovation Collaboration Forum or International Symposium or Workshop on ICT and HPC;
- To promote capacity building and enhance the personnel exchange in ICT and HPC;
- To identify opportunities, to provide and coordinate adequate resource for carrying out BRICS funded or pilot joint research projects;
- To actively involve and support application of BRICS Flagship Projects by coordinating adequate resources such as matching funds, expertise and HPC resources;
- To develop BRICS Innovation and Collaboration Cloud (BICC) by forming a task group to identify the minimum resources required for the construction of the BICC, based on the existing facilities within BRICS, and to develop a phased plan for implementation;
- To network Micro-Small-Medium enterprises (MSME) and facilitate technology transfer and commercialization;
- To integrate with similar hubs in other member states to form a BRICS ICT infrastructure or network for carrying out BRICS Flagship Projects as well as other joint efforts for BRICS innovation collaboration.

### 4. FINANCE

As the secretariat of the Hub, Guangzhou University will take care of the coordination work. The university will provide administrative and technical staff, office and research laboratory area, and cover other local costs of daily running of the Hub in Guangzhou, P. R. China.