

PROGRAM OF COOPERATION
between the BRAZILIAN SPACE AGENCY
and the GERMAN AEROSPACE CENTER e.V.
to FURTHER DEVELOP THE SATELLITE FIRE MONITORING PROGRAM
(SAFIM)

The Brazilian Space Agency (AEB) and the German Aerospace Center (DLR), hereinafter referred to as the “Parties” of this Program of Cooperation (PoC),

RECALLING the Framework Agreement between the Federal Republic of Brazil and the Federal Republic of Germany on scientific research and technological development, signed in 1996;

RECALLING the Agreement between the Brazilian Space Agency (AEB) and the German Aerospace Center (DLR) on Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes, signed on February 14, 2002;

RECOGNISING the importance of scientific and technological advancement in fire monitoring in meeting the global challenges of Biodiversity and Climate Change;

RECOGNISING the potential for collaboration between Brazil and Germany to enhance the understanding of the relationships between fire in the environment and its impact on climate and biodiversity;

CONFIRMING their mutual interest in developing scientific, technological and academic cooperation in their areas of expertise;

AWARE that DLR has an ongoing scientific research program called FIREBIRD to build satellites specifically designed to monitor vegetation fires and estimate their atmospheric emissions and that this information may be valuable to several environmental monitoring programs in Brazil;

RECOGNIZING that AEB-INPE and DLR share complementary interests in the advancement of remote sensing sciences through observational research and the development of satellites algorithms and climate models that enhance the understanding of the vegetation, carbon and climate systems;

have agreed on the following:

ARTICLE 1 - DEFINITIONS AND INTERPRETATIONS

PoC – stands for Program of Cooperation, meaning this agreement in its entirety and any future written amendments, modifications and supplements agreed by the signatories (Parties and Implementing Institution) to this document.

Data – means remotely sensed data, ground data and other ancillary data (e.g., meteorological, environmental) to support SAFIM.

Satellite Fire Monitoring Program (SAFIM or Monitoring Program) – means the scientific co-operation to monitor vegetation fires over Brazil using satellite and ground data from selected areas, particularly in the Cerrado.

The German FireBIRD constellation mission – means DLR’s scientific program, i.e. the constellation of two combined German satellites to detect vegetation fires, comprising of the existing TET-1 satellite and the future BIROS satellite (planned for 2015). So far, there is no such operational system in orbit.

Intellectual Property Rights – Intellectual property rights as defined in Article 2 of the Annex to the Agreement between AEB and DLR in Cooperation in Exploration and Use of Outer Space for Peaceful Purposes, signed on February 14, 2002.

ARTICLE 2 - THE PARTIES AND IMPLEMENTING INSTITUTIONS

2.1. The Parties to this PoC are:

(a) The Brazilian Space Agency (AEB), under the Brazilian Ministry of Science, Technology and Innovation, with headquarters at SPO – Setor Policial, Área 5, Quadra 3, Bloco A, CEP 70610200 Brasília, DF, Brazil; and

(b) The German Aerospace Center (DLR), the national aeronautics and space center of the Federal Republic of Germany, with headquarters at Linder Hoehe, 51147, Cologne, Germany.

2.2. The Implementing Institutions of this PoC are:

(a) The National Institute for Space Research (INPE), under the Brazilian Ministry of Science, Technology and Innovation, and part of the National System for the Development of Space Activities (SINDAE) which is coordinated by AEB as leading remote sensing and atmospheric science institution, has an ongoing cooperation with the German Federal Ministry of the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) to develop joint initiatives that can be relevant to the objectives of the Action Plan to Prevent and Control Deforestation and Fire in the Cerrado (PPCerrado), coordinated by the Brazilian Ministry of the Environment (MMA). INPE has also the Operational Fire System, the Amazonian Goss Deforestation Monitoring Project (PRODES) and the PPCerrado.

(b) DLR Institute of Optical Sensor Systems, located at 12489 Berlin-Adlershof, Germany

(c) DLR Remote Sensing Data Center (DFD), located at 82234 Wessling, Germany.

2.3. It is understood that the aforementioned Implementing Institutions DLR Institute of Optical Sensor Systems and DLR Remote Sensing Data Center have no legal independence at all.

2.4. If deemed necessary to ensure a more efficient implementation of this PoC, “Third Parties” may be invited to join SAFIM with the written consent of AEB and DLR. Third Parties will commit to abide by the terms and conditions of this PoC through a Letter of Commitment (LoC) to be shared among AEB and DLR.

ARTICLE 3 - SCOPE AND PURPOSE

3.1. The objective of this PoC is to define the terms and responsibilities of the signatories (Parties and Implementing Institution) to this PoC to use best efforts in carrying out a joint satellite fire monitoring program, herein referred to as SAFIM, to monitor vegetation fires over Brazil using satellite and ground data from selected areas in Brazil, particularly in the Cerrado. This PoC thus contributes to one of the aims of PPCerrado, i.e. to better understand and to quantify the occurrence of vegetation fires and their impact on the environment and climate using data from the existing TET-1 satellite, as well as the planned BIROS satellite,

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to be launched in 2015. These satellites combined constitute the German FireBIRD constellation mission.

3.2. This PoC sets out the arrangements between DLR and AEB concerning the reception, processing and use of the FireBIRD data as input data for SAFIM.

ARTICLE 4 - RESPONSIBILITIES OF THE PARTIES AND IMPLEMENTING INSTITUTIONS

4.1. AEB and DLR will jointly do their best efforts to fulfil the following responsibilities:

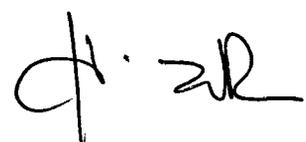
- (a) defining the access and use of the satellite data to meet the objectives of SAFIM;
- (b) making the practical arrangements for the Monitoring Program, in accordance with the Brazilian or German legislation or the signatories' statutes (as applicable), and ensuring that the satellite data is limited to the scope of this PoC as defined in Article 2.1 and includes no other activities;

4.2. INPE, as the Brazilian implementing institution, will be responsible for:

- (a) Collecting the data following (a) and (b) above (4.1);
- (b) Maintaining a long-term archive (for at least the duration of this PoC) of the data collected, for which identical copies are to be held by INPE and DLR Remote Sensing Data Center (DFD);
- (c) Making the data available to researchers involved in SAFIM or subsequent activities, as deemed appropriate and agreed by AEB and DLR beforehand;
- (d) Coordinating the analysis of the data and publication of results;
- (e) Using and distributing the raw and/or processed FireBIRD data made available by DLR Remote Sensing Data Center (DFD) or directly received at INPE's ground station, to be used for the purposes of SAFIM;
- (f) Verifying that the technical and organizational requirements for the reception of FireBIRD data in Brazil as outlined in the technical Annex No. 1 "Baseline Requirements for Ground Station NNN", which forms an integral part of this Cooperation Agreement, are met, and otherwise providing their best effort to fulfill the requirements or develop a suitable solution in close co-ordination with DLR Remote Sensing Data Center (DFD);
- (g) Receiving and, as the case may be, processing and/or storing of FireBIRD data in Brazil and transferring it to DLR as described in Annex No. 2 "Scope of Work" which forms an integral part of this Cooperation Agreement. Further details shall be defined in a dedicated implementing arrangement if necessary; and
- (h) Communicating the results from this cooperation to MMA and to BMUB, in particular their application to ongoing initiatives, and specifically for the PPCerrado.

4.3. DLR Institute of Optical Sensor Systems and DLR Remote Sensing Data Center (DFD), as implementing institutions, will use best efforts to fulfil the following responsibilities:

- (a) the planning, implementation and operation of the FireBIRD mission;
- (b) the operation of the scientific instrumentation and data collection systems on the FireBIRD satellites; and
- (c) making available to INPE the raw and/or processed data, as appropriate, acquired by FireBIRD over Brazil as timely as possible.



ARTICLE 5 – FINANCIAL OBLIGATIONS

5.1. This PoC is not an authorization to proceed on any effort.

5.2. AEB, INPE and DLR -, in common agreement will each bear their own expenses, arising from and relating to their involvement in SAFIM, including but not limited to travel and accommodation costs during the planning and execution of the Program, as well as any other cost that may arise from data analysis and publications.

5.3. There will be no transfer of funds or other financial obligation between DLR, AEB and INPE under this PoC.

5.4. DLR, AEB and INPE agree that the fulfilment of the tasks pursuant to this PoC shall depend on funds and resources available to the Parties in accordance with respective financing and resource management procedures.

5.5. In case AEB, INPE or DLR cannot bear the cost of their own participation, each Party will provide written notice to the other Party which will then jointly decide how to proceed further.

ARTICLE 6 – DATA AND INTELLECTUAL PROPERTY RIGHTS

6.1. This PoC does not affect the ownership of the Parties' and Implementing Institution's Intellectual Property Rights, which will remain the property of each Party or Implementing Institution or its licensors. No license to use Intellectual Property Rights of a Party is granted or is implied by this PoC except the rights expressly granted in this PoC;

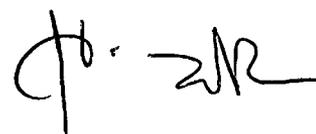
6.2. For the purposes and duration of collaboration under this PoC only, AEB, INPE and DLR obtain from each other a royalty-free, non-exclusive and non-transferable right to use the results achieved under this PoC;

6.3. All results achieved by a Party or the Implementing Institution in the course of the collaboration under this PoC, including inventions or knowledge, whether patentable or not, know-how or protected or unprotected software shall belong to that Party or Implementing Institution. Patent applications will be filed by and in the name of the inventing Party or Implementing Institution at its own costs and expenses. The Participants shall keep each other informed of such patent applications; and

6.4 In case of Intellectual Property Rights resulting from inventions, patentable or not, for which the origin cannot be clearly credited to one Party and to the Implementing Institution, shall be in co-ownership between these Parties and the Implementing Institution notwithstanding any contrary agreement. The Parties and the Implementing Institution will enter into negotiations on a case by case basis in order to reach an agreement. If the Parties and the Implementing Institution cannot reach a common agreement after such negotiations with regard to such Intellectual Property Rights, the Parties and the Implementing Institution will share equally the benefits, fees, costs and expenses resulting from application and maintenance of the Intellectual Property Rights, unless the Parties and Complement Institution decide otherwise by common agreement.

ARTICLE 7 – CONFIDENTIALITY

7.1. Each Party and Implementing Institution agrees that while this PoC is in force, and at any time thereafter, Confidential Information will be kept secret and confidential and will

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not be disclosed to others, unless deemed necessary for the purposes of this PoC, or if requested by force of law and/or regulatory authorities. In the latter case, the concerning Party or Implementing Institution will inform the others, in writing, that the Confidential Information is required to be disclosed.

7.2. The obligation of confidentiality set forth herein shall not apply to information which: (i) is published or becomes published or otherwise is or becomes generally available to the public through no breach of this PoC by the receiving Party or Implementing Institution; or (ii) the receiving Party or Implementing Institution can show that it was in its possession prior to receipt of the information from the disclosing Party or Implementing Institution; or (iii) is independently developed by the receiving Party or Implementing Institution as demonstrated by competent documentary evidence, or (iv) becomes available to the receiving Party or Implementing Institution from an independent source without breach of agreement or violation of law.

7.3. Each Party and Implementing Institution agrees that none of the Data or Input Materials for SAFIM is considered to be Confidential Information unless otherwise specified by any law or regulatory authority. In this case, the concerning Party or Implementing Institution will inform the others, in writing, which Data should be regarded as Confidential Information.

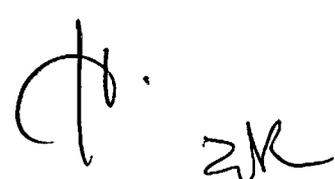
ARTICLE 8 - CROSS WAIVER OF LIABILITY

8.1. For the purposes of this PoC, all the Parties and Implementing Institution agree to a cross-waiver of liability. AEB, INPE and DLR hereby waive any claim against the others, employees of the others, the others' related entities (including, but not limited to, contractors, subcontractors, grantees, or investigators), and employees of the others' related entities, for any personal injury to the waiving parties' employees or the employees of their related entities, or for damage to, or loss of, the waiving parties property or the property of its related entities, arising from or related to activities conducted under this PoC, when such injury, damage, or loss arises through negligence or otherwise, except in the case of gross negligence or wilful misconduct. This cross-waiver will apply only if the person, entity, or property causing the damage is involved in activities under this PoC and the person, entity, or property damaged is damaged by virtue of its involvement in such activities under this PoC.

8.2. AEB, INPE and DLR further agree to extend this cross-waiver to its related entities by requiring them, by contract or other formal agreement, to waive all claims against the others, related entities of the others, employees of the others, and employees of their related entities, for injury, damage, or loss arising from or related to activities conducted under this PoC.

8.3. The Parties and the Implementing Institution will ensure that all Third Parties will also be embraced by this cross-waiver through signature of the Letter of Commitment as referred to in paragraph 2.4 of this PoC.

8.4. Nothing in this cross-waiver of liability will be construed to create the basis for a claim or suit where none would otherwise exist.

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ARTICLE 9 – APPLICABLE LAW; DISPUTE PROCEDURE

9.1 The law of the Federal Republic of Germany shall apply. The application of the United Nations Convention on Contracts for the International Sale of Goods of April 11, 1980 (GISG) is hereby excluded.

9.2. The Parties and the Implementing Institution will endeavour in good faith to resolve any disputes in the first instance through the designated representatives for each Party or Implementing Institution, as referred to in Article 10.

9.3. In the event that the dispute cannot be resolved under paragraph 9.1, the matter will be referred to a senior management level and thereafter to the chief executive of each Party.

9.4. Any disputes referring to the involvement of and to the actions performed by a Third Party that may be required to take part in the implementation of this PoC shall be resolved in the first instance by the Party or the Implementing Institution responsible for bringing in the Third Party directly with the Third Party and only then settled with the other Party.

ARTICLE 10 – DESIGNATED REPRESENTATIVES

10.1. Designated institutional and technical representatives from AEB and INPE, and DLR, are responsible for ensuring the effective implementation of the activities planned for the SAFIM, as detailed in Article 4.

10.1.1. The designated institutional and technical representatives nominated from DLR, AEB and INPE are as follows:

For DLR:

Institutional Representative
Prof. Dr. Heinz-Wilhelm Hübers
DLR-Institute of Optical Sensor Systems
Rutherfordstraße 2
12489 Berlin
Phone: +49 30 67055-300
Fax: +49 30 67055-303
E-mail: Heinz-Wilhelm.Huebers@dlr.de

Technical Representative
Dr. Eckehard Lorenz
DLR Institute for Optical Systems
14489 Berlin
Rutherfordstrasse 2
Phone: +49 67055-515
Fax: +49 67055-532
E-mail: eckehard.lorenz@dlr.de

For AEB:

Institutional Representative
Prof. José Raimundo Braga Coelho
Brazilian Space Agency (AEB)
SPO Área 5 Quadra 3 Bloco A
70610-200 Brasília, DF

Phone: +55 61-3411-5500
Fax: +55 61- 3411-5523
E-mail: presidencia@aeb.gov.br

For INPE:
Institutional Representative
Dr. Leonel F. Perondi
National Institute for Space Research (INPE)
Av. dos Astronautas, 1758
12227-010 São José dos Campos, SP
Phone: +55 12-3208-6035
Fax: +55 12- 3208-7389
E-mail: director@inpe.br

Technical Representative
Dr. Alberto Setzer
National Institute for Space Research (INPE)
Av. dos Astronautas, 1758
12227-010 São José dos Campos, SP
Phone: ++55 121 3208-6464
Fax; +55 12 3208-6652
E-mail: alberto.setzer@cptec.inpe.br

The Implementing Institutions may change their representatives at any time by giving each other prior written notice, upon consultation with the Parties. The designated technical representatives are not entitled to legally represent their respective Parties.

ARTICLE 11 - DATA SHARING AND PUBLICATIONS

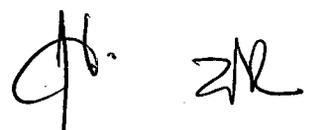
11.1. All data generated by SAFIM will be made available to all jointly agreed Party and Implementing Institutions and will be analysed cooperatively. Rules of data sharing and distribution will be detailed in a data protocol to be formally agreed upon by AEB, DLR and the Implementing Institutions.

11.2. Results jointly generated will be published by the corresponding generating Party or Implementing Institutions. These generating Party or Implementing Institutions will agree beforehand on the content of such publications and will provide each other with drafts of the proposed publication. These drafts can only be objected for serious reasons. If no objection is received four weeks after the receipt of the draft by any Party or Implementing Institution, consent is assumed.

11.3. Each Party or Implementing Institution has the right to publish information generated, respecting the provisions set forth in Article 7. The publishing Party or Implementing Institution will inform the others of this publication beforehand.

11.4. No Party or Implementing Institution has the right to publish information or data generated by the other Party or Implementing Institution without their prior written consent.

11.5. Each Party or Implementing Institution shall refrain from publishing scientific/technical details concerning inventions whenever this could be detrimental to any efforts to obtain Intellectual Property Rights.



ARTICLE 12 – COMMENCEMENT, AMENDMENTS AND TERMINATION

12.1. Effective Date and Duration

This PoC will come into effect upon signature (“Effective Date”) by AEB, INPE and DLR and will remain in force for three (3) years unless terminated earlier under the provisions of paragraph 12.4.

12.2. Amendments

This PoC may be extended or amended at any time by mutual agreement of the signatory parties to this PoC, communicated in writing and signed by all.

12.3. Notice

Any notice exchanged by the signatories in connection with this PoC will be in writing and will only be considered delivered upon written acknowledgement of receipt by the addressee signatory parties.

12.4. Termination

(a) Any signatory party may withdraw from this PoC at any time by giving 28 calendar days prior written notice to the others.

(b) Upon termination of this PoC, the following will be continuing responsibilities:

Article 6 – Data and Intellectual Property Rights

Article 8 – Cross Waiver of Liability

Article 9 – Dispute Procedure

Article 13 – EXPORT CONTROLS

The Parties and Implementing Institutions agree to abide by all relevant export control regulation when exchanging technical equipment or technical information. Prior to exchanging export controlled equipment or technical data, the disclosing Party or Implementing Institution shall notify the receiving Party or Implementing Institutions sufficiently in advance to give the receiving Party enough time to establish a Technology Control Plan or to reject receipt of the controlled items.

Article 14 – MISCELLANEOUS

14.1. This PoC is not intended to constitute, create, give effect to, or otherwise recognize a joint venture, partnership, or formal business entity of any kind.

14.2. The rights and obligations of the Parties and Implementing Institution under this PoC are limited to those expressly set forth herein.

14.3. Should any provisions of this PoC become invalid, this shall not affect the remaining provisions of the PoC. The invalid provision shall be replaced by another which comes closest to the intentions of the Parties and Implementing Institutions when entering into this PoC.

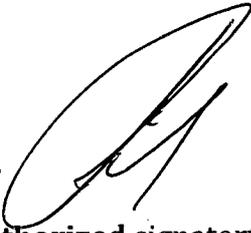
14.4. No provision in this PoC shall be construed as providing for the sharing of profits or losses arising out of the efforts of the Parties or a Party or the Implementing Institution.

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The foregoing represents the understanding reached between the signatories parties on the matter referred to therein.

Annexes:

- No. 1 "Baseline Requirements for Ground Station NNN"
- No. 2 "Scope of Work"

Signed by ~~Prof. Dr.~~ Dr. Hubert Reile) i.V. 
For and on behalf of)
German Aerospace Center) Authorized signatory
Date)

Signed by Dr. Prof. Dr. Heinz-Wilhelm Hübers) i.V. 
For and on behalf of)
German Aerospace Center) Authorized
Date 13-05-2016) signatory

Signed by Prof. José Raimundo Braga Coelho) 
For and on behalf of)
Agência Espacial Brasileira) Authorized
Date 16-03-2016) signatory

Signed by Dr. Leonel F. Perondi) 
For and on behalf of)
Instituto Nacional de Pesquisas Espaciais) Authorized
Date 16-03-2016) signatory

International Cooperation



Deutsches Zentrum
für Luft- und Raumfahrt
German Aerospace Center

DLR e. V. International Cooperation
51170 Cologne, Germany

Dr. Rozane da Fonseca e Silva
Head International Cooperation Office
National Institute for Space Research
Av. dos Astronautas, 1758, Jd. da Granja
12227-010 - São José dos Campos, SP
BRAZIL

Your reference

Your letter

Our reference

Your correspondent Coers Conny

Telephone 02203 601 2669

Telefax 02203 601 3907

E-mail conny.coers@dlr.de

23 May 2016

Cooperation to Further Develop the Satellite Fire Monitoring Program – SAFIM

Dear Dr. da Fonseca e Silva,

Please find attached the signed original of the Program of Cooperation between AEB and DLR to Further Develop the Satellite Fire Monitoring Program (SAFIM).

With best regards

A handwritten signature in black ink that reads 'Conny Coers'.

Conny Coers
International Cooperation