



The International Treaty

ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE



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<p>INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE</p> <p>SECOND TECHNICAL CONSULTATION ON INFORMATION TECHNOLOGY SUPPORT FOR THE IMPLEMENTATION OF THE MULTILATERAL SYSTEM OF ACCESS AND BENEFIT SHARING OF THE INTERNATIONAL TREATY</p> <p>Rome, 2-3 December 2008</p> <p>Background, Rationale and Guiding Principles</p>

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I. Introduction

1. Following the First Session of the Treaty's Governing Body, the Interim Secretariat received a number of requests from Contracting Parties and their relevant national institutions, as well as from international institutions that had signed agreements with the Treaty in accordance with Article 15 and non-government stakeholders, for advice and assistance in implementing various aspects of the Multilateral System of Access and Benefit-sharing. These included primarily: the role of information systems regarding plant genetic resources made available with the Multilateral System; the preparation and issue of Standard Material Transfer Agreements, as foreseen in the Treaty; and reporting on such actions. In these initial contacts, it became apparent to the Interim Secretariat that a number of these stakeholders would welcome the availability of information tools to support the implementation of the Multilateral System.
2. The Interim Treaty Secretariat accordingly convened an informal technical stakeholder consultation in Rome, on 13 and 14 February 2007, as a forum to discuss ways in which information technology (IT) could support, simplify and, as far as possible, automate and reduce the transaction costs of the processes involved in the Multilateral System. It was attended by Providers and Recipients in both the public and the private sectors and Government agencies, as well as International Institutions holding materials in the Multilateral System, and managers of information systems on plant genetic resources for food and agriculture.
3. The consultation made a number of recommendations regarding information technology support to the implementation of the Multilateral System, and identified a number of IT tools that could be rapidly developed and deployed, to support Providers and Recipients in implementing the Multilateral System. These could greatly reduce transaction costs. It recognised that the development of computerised systems, which Providers might use to receive requests for materials, and generate the appropriate Material Transfer Agreements—as well as similar off-line systems—to be put at the disposal of whoever wished to use them on a voluntary basis, would be an important resource in the coherent development of the Multilateral System. It stressed the importance of ensuring that these could be integrated into existing information systems and of testing them in real-world situations, and recommended that collaboration therefore be sought with institutions with appropriate capacity and resources.
4. The Interim Secretariat therefore initiated, with Bioversity International, a pilot study for the development of a set of prototype IT modules, including an on-line Ordering Tool Kit (OTK). A stand-alone application to assist Providers in completing and Standard Material Transfer Agreement, was developed by Cirad for the Treaty Secretariat (Gene-IT), specifically for small genebanks with no easy internet access.
5. These IT modules were demonstrated during the Second Session of the Governing Body, and aroused a formidable interest and positive feedback from Contracting Parties and institutions holding plant genetic resources in the Multilateral System. The Work Programme and Budget 2008/09, adopted by the Governing Body, foresaw follow-up

work and consultations in the present biennium. There have also been further requests for IT support from stakeholders in this biennium.

6. In building on the work of the Interim Secretariat and in the period since the Second Session of the Governing Body, the Secretariat has further developed two distinct but related aspects of information management in the context of the Multilateral System:
 - It has worked with potential Providers and Recipients of material from the Multilateral System, in order to better identify user needs for IT modules aimed at simplifying and automating the use of the Standard Material Transfer Agreement, and to develop and test prototypes; and
 - It has promoted discussions among managers of information systems and databanks providing information on the plant genetic resource they hold, in order to identify improvements they may wish to make, so as to play their role in the implementation of the Multilateral System. Many of the institutions providing such information systems and databases are themselves important Providers of Plant Genetic Resource for Food and Agriculture within the Multilateral System, and the interface between any IT modules related to the implementation of the Multilateral System, and their information systems, has been an important area of study.
7. The Secretariat has constantly sought informal feedback from Contracting Parties, and from administrators and users of collections of Plant Genetic Resource for Food and Agriculture. This feedback has helped to better define and attend to Contracting Parties guidance, administrator preferences and user needs. This feedback has been applied to three ongoing areas, namely:
 - Potential partnerships for the development and deployment of IT modules, particularly in the interface with information systems regarding plant genetic resources in collections, have been pursued, including with the Global Crop Diversity Trust and Bioversity International for the development of the Global Information on Germplasm (GIG) project (see document IT/GB-3/TITC-2/08/Inf.2).
 - The two prototypes (the OTK and Gene-IT) have been further developed and tested, including in relation to the integration of the OTK into existing systems. They are described in detail in document IT/GB-3/TITC-2/08/3.
 - A number of legal issues regarding international contracts in a digital environment have been considered, in relationship to the implementation of the Standard Material Transfer Agreement in a shrink-wrap or click-wrap mode.
8. This technical consultation falls within the Workprogramme and Budget 2008/09. It builds upon the First Technical Information Technology Consultation, and work undertaken since then. It aims to take stock of developments until now, and identify ways forward. As a technical meeting, it will not address policy issues and decisions that only the Governing Body can address. The present document sets out the background and the rationale for the development of IT tools in general, and the principles that guided the Treaty Secretariat in further developing the draft IT modules.

II. Rationale for the development of IT tools

9. Article 10 of the Treaty states that “Contracting Parties agree to establish a Multilateral System, which is efficient, effective and transparent”. Efficiency, effectiveness and transparency all require adequate communication and information to facilitate the functioning of the MLS. The reduction of transaction costs as a key aspect of efficiency can be greatly facilitated through the use of IT tools. At a practical level, the development and use of IT tools has therefore been considered as a means of reducing transaction costs and achieving efficiency, effectiveness and transparency of the Multilateral System.
10. The principles of efficiency, effectiveness and transparency apply in three areas of the operation of the Multilateral System where different actors utilize IT tools, namely exchange of information relevant to the use of PGRFA, support to the operation of the SMTA, and support to the Governing Body in monitoring the implementation of the MLS. The following subchapters describe these three different areas of potential application of IT tools by different actors at different levels.

A. THE EXCHANGE OF INFORMATION RELEVANT TO THE USE OF PLANT GENETIC RESOURCE FOR FOOD AND AGRICULTURE

11. Information exchange is a key function within the Treaty, as it greatly increases the value of the plant genetic resources themselves, and the effectiveness of plant-breeding. Article 13.2 of the Treaty commits Contracting Parties to making available “information which shall, inter alia, encompass catalogues and inventories, information on technologies, results of technical, scientific and socio-economic research, including characterization, evaluation and utilization, regarding those plant genetic resources for food and agriculture under the Multilateral System. Such information shall be made available, where non-confidential, subject to applicable law and in accordance with national capabilities. Such information shall be made available to all Contracting Parties to this Treaty through the information system, provided for in Article 17”.
12. Article 17.1 of the Treaty accordingly provides that “Contracting Parties shall cooperate to develop and strengthen a global information system to facilitate the exchange of information, based on existing information systems, on scientific, technical and environmental matters related to plant genetic resources for food and agriculture, with the expectation that such exchange of information will contribute to the sharing of benefits by making information on plant genetic resources for food and agriculture available to all Contracting Parties.”.
13. The collections of International Institutions that have concluded agreements with the Governing Body under Article 15 of the Treaty are crucial elements of the Multilateral System. Information on their collections is characteristically available through on-line data management systems that also provide substantial technical information, in order to enable potential Recipients to identify the Plant Genetic Resource for Food and Agriculture they need. Many of them already have invested heavily in their data management functions, and

there have therefore been discussions to see how they can, according to their own needs and priorities, modify their systems to reflect the Multilateral System.

14. In particular, information relevant to the legal status of an accession within the Multilateral System may include (1) whether it is the Multilateral System; (2) whether it is Material under Development, in terms of the SMTA; (3) any applicable special restrictions; (4) whether it was received from the Multilateral System, and, if so, from where and under which Standard Material Transfer Agreement; and (5) whether the material is governed by the alternative payment option of Article 6.11.
15. On-line information systems have a crucial role to play in documenting what is available in the Multilateral System. The availability of such information is an important step in concretizing facilitated access under the Treaty. Some International and national institutions or regional networks have already developed functionalities in their on-line data management systems to allow providing such information. For instance, in Germany, the key instrument identifying Material in the Multilateral System is the National Inventory for Plant Genetic Resources (PGRDEU), which includes data of PGRFA gathered through a reporting infrastructure established in the framework of the National Programme. A case study on this approach has been prepared and submitted as an information document for this technical consultation (see document IT/GB-3/TITC-2/08/Inf.1). The data structure and the exchange format, which is based on the European network of *ex situ* National Inventories (EURISCO) exchange format, has been expanded by one field, “MLS status”, to indicate which accessions are in the MLS. This approach has recently been extended to the whole European network.
16. In the same way, the Global Information on Germplasm (GIG) project aims to make information about germplasm collections around the world readily available, through the development of a global system for accessing and managing accession-level data in support of conservation and use, by linking up national, regional and international genebank databases.

B. IT TOOLS TO SUPPORT THE IMPLEMENTATION OF THE STANDARD MATERIAL TRANSFER AGREEMENT

17. A mechanism such as that of SMTA operations, which takes place repeatedly according to standardized forms and procedures, can be vastly enhanced through the use of modern IT tools. Given the specific mandate of the Secretariat, the work of the secretariat has been limited to this particular track, which deals with the automatization of the MLS. This track involves three different areas, namely facilitation of Secretariat functions, facilitation of the use of SMTAs by the users, and facilitation of reporting obligations under the SMTA.

Facilitation of Secretariat functions

18. The day-to-day operations of the Multilateral System generate a large number of actions, many of which have implications for the workload and efficiency of the Treaty's

- secretariat. In the first nine months of the function of the System, more than 100,000 transfers were reported only by the CG system alone. A major functional responsibility of the Secretariat results from the receipt and storage of information that is to be provided to the Governing Body.
19. The Secretariat is required to process and store certain information, and IT technology can reduce the transaction costs of this by (1) helping to promote common standards, and hence inter-operability of data sources; (2) encouraging users to supply data in machine readable form, greatly reducing data-entry costs; and (3) promoting the use of IT technologies, rather than paper-based actions. The practical relevance of these questions for the Secretariat is not minor. As a simple and hypothetical measure, one may theoretically estimate the time to receive and record a paper Material Transfer Agreement at 30 minutes. One may also estimate the time required to convert non-compatible electronic data at 15 minutes an Standard Material Transfer Agreement. If only 5,000 paper records and 10,000 non-compatible records must be processed annually, a full-time clerk would be employed for nine months annually. This workload is probably underestimated, and managerial staff-time has not been costed.
 20. The Secretariat has begun receiving data on Standard Material Transfer Agreement in different and incompatible formats. Manual storage of data is a non-option, without considerably expanding the Treaty's staff. It is not sustainable in the long run. To this must be added the extra staff time that would be needed to collate incompatible data in order to report to the Governing Body, and to support the Third Party Beneficiary if and when necessary. Electronic processing and storage seems to be the most efficient and cost-effective way.
 21. A central objective in the Secretariat's work on IT technologies therefore relates to managing its own tasks. By making it easier to fulfill the tasks inherent in the operations of the Multilateral System, and provide information to the Governing Body, and, if required, to the Third Party Beneficiary, IT tools represent a sound management response to reducing the costs of the Secretariat budget in the long term.

Facilitating the use of the Standard Material Transfer Agreement

22. As the Multilateral System becomes operational, one of the main challenges before the Governing Body and its Secretariat is to advise and assist Providers and Recipients of plant genetic resource for food and agriculture to use the Standard Material Transfer Agreement, and efficiently implement the Multilateral System, with the lowest possible transaction costs.
23. The Secretariat has received a substantial number of requests for such support. Contracting Parties, the International Agricultural Research Centres (IARCs) of the Consultative Group on International Agricultural Research (CGIAR), as well as other relevant International Institutions, have also expressed the need to seek a common understanding of the procedures to be followed, by both Providers and by Recipients of plant genetic resources. Although some of those procedures may involve matters that may need to be referred to the Governing Body, there has been general recognition that IT tools could help

automate and standardize the use of the Standard Material Transfer Agreement without preempting any decision that the Governing Body may wish to take. It is therefore proposed that the present Technical IT Consultation should not address or preempt any policy decisions that are to be taken by the Governing Body.

24. In this context, there is evidence that potential Providers and Recipients of plant genetic resources, especially in developing and least developed countries, are finding the operations of the Standard Material Transfer Agreement overly complex, difficult and laborious, and that this is slowing down the development of the Multilateral System. Many such users do not regularly work with contracts (such as the Standard Material Transfer Agreement) and have underlined the usefulness of tools that could make it easier for them to apply the SMTA.
25. There is an urgency to promote appropriate solutions, in order to prevent mistakes hardening into practice, creating confusion, and undermining trust in the Multilateral System. It is unfortunately clear, according to information that the Secretariat is receiving that the Standard Material Transfer Agreement is being used incoherently in a number of jurisdictions. The use of the Standard Material Transfer—the main vehicle of the Multilateral System—is at present confused to an extent where this poses a potential risk to the System, through amplification of technical incoherence, legal uncertainty and policy confusion.
26. IT tools can play a major role in supporting the coherent, correct, legally certain, and harmonized use of the Standard Material Transfer Agreement in different jurisdictions.
27. Providers of materials from the Multilateral System are the key players in the use of the Standard Material Transfer Agreement, and can most benefit from the availability of IT tools that help them perform their roles most efficiently, in ways consistent with the Treaty and its Multilateral System. Well designed IT tools can:
 - Make them aware of, and help them comply with, their rights and obligations;
 - Automate and facilitate the preparation of Standard Material Transfer Agreements;
 - Automate the preparation and submission of reports; and
 - Support their management of information regarding Standard Material Transfer Agreements they have entered into.

Reporting obligations under the Standard Material Transfer Agreement

28. In addition, IT tools can assist users of the Standard Material Transfer Agreement in fulfilling their reporting obligations, which include the provisions of Articles 5e [information given by a Provider to the Governing Body about Material Transfer Agreements entered into]; 6.4b [notification by a Provider that material has been transferred to a subsequent recipient]; 6.5c [the notification of the Governing Body, by a Provider, about Material Transfer Agreements entered into, in the specific case of Plant Genetic Resource for Food and Agriculture under Development] and 6.11h [notification by a Recipient of having opted for payment in accordance with this article], and in *Annex*

2, paragraph 3 [reports on payment due]; *Annex 3*, paragraph 4 [notification by the Recipient of a decision to opt out of the alternative payment scheme provided for in Article 6.11]; and in *Annex 4* [signed declaration of having opted for the alternative payment scheme provided for in Article 6.11].

29. Much of this information may be of prime importance to the Third Party Beneficiary in initiating dispute settlement, should that become necessary, including to establish, when required, evidence of the chain of contractual rights and obligations. The Governing Body may therefore wish to give guidance in due course on the precise information it wishes to receive. Any IT tools developed should be flexible enough in how they are designed so as to be able to implement any such decisions the Governing Body may take. For example, the draft IT modules that have been further developed following their presentation to the Second Session of the Governing Body are without prejudice to any future decisions of the Governing Body on these matters, since special care has been taken in the preparation of the drafts that they are designed in such a flexible way as to be able to accommodate any decisions which the Governing Body may wish to take on relevant procedures or contents (see section III below and IT/GB-3/TITC-2/08/3).

C. SUPPORT FOR THE GOVERNING BODY IN MONITORING THE OPERATION OF THE MULTILATERAL SYSTEM

30. Article 19.3a of the Treaty lists, as the first function of the Governing Body, to “provide policy direction and guidance to monitor, and adopt such recommendations as necessary for the implementation of this Treaty and, in particular, for the operation of the Multilateral System”. Resolution 2/2006 of the Governing Body “requests the Secretary of the Treaty to review the implementation and operation of the Standard Material Transfer Agreement, and report to the Governing Body”.
31. To date, information on the operations of the Multilateral System is largely anecdotal. There is little precise, quantitative and empirically verified data on what is happening in the System, on which the GB can base itself, in monitoring and reviewing the operation of the System. Following Resolution 2/2006 of the First Session of the Governing Body, and para. 65 of the Report of the Second Session of the Governing Body, the Secretary has twice requested information on Plant Genetic Resource for Food and Agriculture that Contracting Parties have brought into the Multilateral System, by the Circular State Letters of 3 November 2006 and of 9 June 2008. A few Contracting Parties have already provided information, at differing levels of detail.
32. The development of appropriate IT tools to support the use of the Standard Material Transfer Agreement, as well as cooperation with relevant information system managers, with agreed data-structures, could greatly simplify the task, while providing better quality data to the Governing Body.

33. Such information could include, as a minimum:
- Information on what Plant Genetic Resource for Food and Agriculture are in the Multilateral System;
 - Information on Standard Material Transfer Agreements that have been entered into;
 - Information on challenges or problems that users of the Multilateral System encounter; and
 - Information on best practices.
34. Major contributions to providing the Governing Body with a reliable and coherent picture of the operations of the Multilateral System would result from:
- The diffusion of IT technologies that facilitate the provision by Providers and Recipients of the information required by the Standard Material Transfer Agreement;
 - The development of common formats, datasets and reporting formats to be used by major information systems.

III. Development of prototype IT modules related to the Standard Material Transfer Agreement

A. GENERAL PRINCIPLES

35. The following are the general principles that have guided the Secretariat:
- Stakeholder Consultations have been and will continue to be used to provide a constant feedback loop, to ensure any tools developed meet the user needs.
 - IT modules supporting the Standard Material Transfer Agreement are developed as a service to potential users, and their use is voluntary. The options given in the Standard Material Transfer Agreement—shrink-wrap, click-wrap and signed paper agreements—all remain valid.
 - IT modules are not intended to substitute or to duplicate any existing systems, but are designed to integrate as easily and seamlessly as possible into existing systems, if the system operators wish, and it should be possible to tailor them to specific user requirements, within overall efficiency and cost considerations.
 - Information provided through IT modules can and will not be used to track individual accessions, but merely to support the information needs of the Governing Body and the Third Party Beneficiary.
 - Special care has been taken in the design of the draft IT modules not to preempt any decisions of the Governing Body, and the modules are thus entirely flexible vehicles able to transport the information decided by the Governing Body in accordance with the procedures to be decided by the Governing Body.
 - The key role and autonomy of distributed information system managers is recognized and fully taken into account. Since they operate all existing systems, any new tools should plug into those existing systems without any adaptation costs for information

system managers. The IT modules would thus be intended to save information system managers duplicative development efforts and costs in making their system MLS compatible, by providing easily adaptable plug-ins and toolkits for their continued autonomous operation of their own systems.

36. Those principles have been translated concretely in the development of the draft modules, by using three practical criteria, namely flexibility of use; user friendliness; and cost-effectiveness. A major challenge is to balance the application of those criteria. The Experts in the present meeting may wish to comment on the relative weight to give to those criteria.

Flexibility of use

37. Potential users have different demands, technological capabilities and existing systems and a range of interface scenarios of existing systems with the IT tools being developed is necessary for smooth and flexible implementation. Each administrator can choose—for identification, ordering and reporting—within a range of options from paper-based reporting to integrated, real-time, online systems.
38. Potential users with sophisticated genetic resource information systems—especially in developed countries and in large-scale international genebanks—are already trying to integrate implementation of the Standard Material Transfer Agreement into their systems. IT solutions need to integrate easily and seamlessly into these systems, without major expenditures or modifications.
39. Special attention needs to be given to potential users with no easy on-line connections or information systems: a standalone application, GENE-IT, has been developed, through which they can manage their Standard Material Transfer Agreements.
40. The development of IT tools should not preempt any policy or legal decisions by the Governing Body, and their design should be flexible enough to respond to any Governing Body decisions, including on reporting procedures. For that reason, a further flexibility has been built into the IT tools under development, which gives the discretion to the Provider to decide precisely which elements of information to report to the Governing Body. In due course, the Governing Body may decide which elements of information to require.

User friendliness

41. Special attention has been paid to developing tools that address requirements of as wide a range of potential users as possible. In this context, it is clear that user needs often extend well beyond those strictly related to management of the Standard Material Transfer Agreement. It is therefore likely that they need to have tools that are flexible enough to add functions not of direct interest to the Secretariat.
42. For example, the ordering application:

- Can be fully integrated with any kind of accession database, to enable users to order material, while at the same time fulfilling their reporting obligations; or
 - Can be added by a provider as a simple toolkit to its existing data management system.
43. Special attention has also been paid to clear and simple interfaces, particularly for Gene-IT, to respond to the needs of small users. In response to feedback from Contracting Parties and other users, a functionality has been added to Gene-IT, to support local management of information on Standard Material Transfer Agreements.
44. This Consultation is an opportunity for further feedback on other functionalities that could be included, when possible, in the further development of the tools.

Cost efficiency

45. At all times, the Secretariat has sought the simplest, most parsimonious and cost-effective procedures, including when providing alternative options. User feedback has been sought to check if potential users have the necessary resources, and recurrent transactions cost have been reduced to a minimum, so the resources available are used in the most productive way, both from the point of view of the individual stakeholder, and within the context of the development of the Multilateral System as a whole.

B. LEGAL ISSUES

46. Particular attention has been given to legal issues and implications that arise in the context of online acceptance of private contracts in a digital environment. The Standard Material Transfer Agreement specifically foresees the conclusion of contracts in the digital environments, by foreseeing click-wrap and shrink-wrap acceptance of Material Transfer Agreements. Electronic communications have the potential to improve the efficiency of the Multilateral System, to reduce transactions costs, and to facilitate access by previously remote users. For this to be possible, special attention must be paid to data integrity; establishment of online identity of the parties to the contract; secure data transmission; confidentiality in data management; service provider liability; and applicable law in the online environment.
47. Data integrity in a click-wrap mode (electronic “signature”) and the ability to uniquely identify legal persons in the online environment are two interrelated aspects of establishing legal certainty for international contracts in the digital environment. This issue has been considered in the design of the IT modules by establishing a PID (persistent unique identifier) server for parties to Standard Material Transfer Agreements.
48. As in many internet-based functions, strict encryption industry standard functions are foreseen, in electronic data-transmission, and in data-storage.
49. Confidentiality is a function of data-management, and the Governing Body may wish to take the necessary decisions to forego any use of data beyond that inherent in the role of

the Third Party Beneficiary, or for aggregated reporting on Multilateral System operations, through Data Warehouse methodologies that avoid human manipulation of data.

50. Should intermediate, third bodies who are not a Party to an SMTA (for example, regional networks) provide a reporting function or service—that is, should they undertake to report on behalf of Providers—similar confidentiality questions will need to be resolved. Moreover, a further legal question that must be taken into account is the liability of any such body reporting on behalf of Providers, for transmitting data, for storing it, and for its accuracy, as appropriate, in particular in the context of any dispute settlement procedures that may be initiated by the Third Party Beneficiary.
51. Finally, the issue of applicable law for the transfer of material under a contract accepted through an online electronic transaction requires further examination since, besides the Provider and Recipient, the servers through which the transaction is processed may be located in different jurisdictions.

IV. CONCLUSION

52. In addition to technical feedback, the advice of the experts in the Second IT Consultation is particularly sought on the following issues:
 - The relevance of the guiding principles;
 - The relevance of each criterium used in the technically implementation of these guiding principles;
 - The relative weight to give to each of the criteria; and
 - Further possible criteria of importance to stakeholders.