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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

TECHNICAL COMMITTEE

Fiftieth Session
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EXCHANGEABLE SOFTWARE

Document prepared by the Office of the Union

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1. The purpose of this document is to report on developments concerning exchangeable software and to present a proposal concerning the development of a new information document.

2. The following abbreviations are used in this document:

CAJ:	Administrative and Legal Committee
TC:	Technical Committee
TWC:	Technical Working Party on Automation and Computer Programs
TWPs:	Technical Working Parties

3. The structure of this document is as follows:

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I. PROPOSAL TO DEVELOP A NEW INFORMATION DOCUMENT

Background

4. The TC, at its forty-ninth session, held in Geneva, from March 18 to 20, 2013, reviewed the title of document UPOV/INF/16 "Exchangeable Software" and Section "1. Requirements for exchangeable software" and agreed that these texts should remain unchanged on the basis that the document concerned software that had been developed or customized by a member of the Union for UPOV purposes. However, it agreed that it would be useful to develop a separate information document that would allow members of the Union to provide information on the use of non-customized software and equipment (e.g. data loggers) that was used by members of the Union (see document TC/49/41 "Report on the Conclusions", paragraph 105).

5. The CAJ, at its sixty-eighth session, held in Geneva on October 21, 2013, agreed with the conclusions of the TC, at its forty-ninth session, that the title of document UPOV/INF/16 "Exchangeable Software" and the text of Section 1 "Requirements for exchangeable software" should remain unchanged on the basis that the document concerns software that had been developed or customized by a member of the Union for UPOV purposes; and that it would be useful for the TC to seek to develop a separate information document that would allow members of the Union to provide information on the use of non-customized software and equipment (e.g. data loggers) that was used by members of the Union (see document CAJ/68/10 "Report on the Conclusions", paragraph 30).

Proposal

6. On the basis explained above, it is proposed to develop a new information document containing information on non-customized software and equipment that has been used by members of the Union, as follows:

Title	"Software and equipment used by members of the Union" (document UPOV/INF/22)
1. Requirements	1.1. Members of the Union are invited to provide information on software/equipment for inclusion on the basis that it has been used for the purposes of plant variety protection. 1.2. Information on the following should be provided by any member of the Union proposing software/equipment for inclusion in this document: Title of software/equipment Function (brief summary) Source and contact details Category(ies) of use (see section 3, below)
2. Procedure for inclusion of software/equipment	2.1 Software/equipment proposed for inclusion in this document by members of the Union is, in the first instance, presented to the TC. 2.2 The TC will decide whether to: a) propose to include the information in the document; b) request further guidance from other relevant bodies (e.g. CAJ and TWPs); or c) propose not to include the information in the document. 2.3 In the case of a positive recommendation by the TC and, subsequently by the CAJ, the software/equipment will be listed in a draft of the document, to be considered for adoption by the Council.

3. Categories of software/equipment	To assist users, information on software/equipment is provided in the following categories: Administration of applications On-line application systems Variety denomination checking DUS trial design and data analysis Data recording and transfer Image analysis Biochemical and molecular data
4. Information on use by members of the Union	4.1 A circular is issued to members of the Union on an annual basis, inviting them to provide information on their use of the software/equipment included in this document. 4.2 The information on software/equipment use by members of the Union is indicated in the columns "Member(s) of the Union using the software/equipment" and "Application by user(s)". With regard to the indication of "Application by user(s)", members of the Union can indicate, for example, crops or types of crop for which the software/equipment is used.

7. The comments of the TC, at its fiftieth session, concerning the proposed new information document (UPOV/INF/22 "Software and equipment used by members of the Union") would be reported to the CAJ, at its sixty-ninth session, to be held in Geneva on April 10, 2014.

8. Subject to agreement by the TC at its fiftieth session, and the CAJ at its sixty-ninth session, a draft of document UPOV/INF/22 "Software and equipment used by members of the Union" would be presented for adoption by the Council, at its forty-eighth ordinary session, to be held in Geneva on October 16, 2014.

9. Subject to adoption of document UPOV/INF/22 by the Council, the Office of the Union would issue a circular to the designated persons of the members of the Union in the TC, inviting them to provide information regarding non-customized software and equipment used by members of the Union for inclusion in the document. A draft format of the questionnaire for the Circular is attached as Annex I to this document.

10. The TC is invited to:

(a) consider the proposal to present document UPOV/INF/22 "Software and equipment used by members of the Union" for adoption by the Council at its forty-eighth ordinary session, to be held in Geneva on October 16, 2014, as set out in paragraphs 6 to 8 of this document;

(b) note that the comments of the TC, at its fiftieth session, on the proposed new information document UPOV/INF/22, will be reported to the CAJ, at its sixty-ninth session, to be held on April 10, 2014; and

(c) subject to adoption of document UPOV/INF/22 by the Council at its forty-eighth ordinary session, to be held in Geneva on October 16, 2014, agree to issue a circular to the designated persons of the members of the Union in the TC, inviting them to provide information regarding non-customized software and equipment used by members of the Union, as appropriate, as set out in paragraph 9 of this document.

II. REVIEW OF DOCUMENT UPOV/INF/16 "EXCHANGEABLE SOFTWARE"

Software proposed for inclusion in document UPOV/INF/16 "Exchangeable software"

11. The procedure for considering software proposed for inclusion in document UPOV/INF/16 "Exchangeable software" is set out in document UPOV/INF/16 "Exchangeable Software", as follows:

> "2. Procedure for inclusion of software
>
> "Software proposed for inclusion in document UPOV/INF/16 by members of the Union is, in the first instance, presented for review by the Technical Working Party on Automation and Computer Programs (TWC). On the basis of such presentations and the experience of members of the Union, the TWC makes a recommendation to the Technical Committee on whether to include that software in document UPOV/INF/16. In the case of a positive recommendation by the TC and by the Administrative and Legal Committee (CAJ), the software will be listed in a draft of document UPOV/INF/16, to be considered for adoption by the Council. Document UPOV/INF/16 is adopted by the Council."

12. The TC, at its forty-ninth session, held in Geneva, from March 18 to 20, 2013, noted that Mexico would be invited to present its proposed exchangeable software SISNAVA and SIVAVE, as set out in Annex II to document TC/49/12 Add., at the thirty-first session of the TWC for possible inclusion in a future revision of document UPOV/INF/16 (see document TC/49/41 "Report on the Conclusions", paragraph 109).

13. The TWC, at its thirty-first session, held in Seoul, from June 4 to 7, 2013, received a presentation by an expert from Mexico by electronic means on SISNAVA and SIVAVE software, as presented in the Annex to document TWC/30/30 (see document TWC/31/32 "Report", paragraph 71).

SIVAVE software

14. Annex II to this document contains the information on the SIVAVE software proposed by Mexico for inclusion in document UPOV/INF/16 "Exchangeable software", as considered by the TWC at its thirty-first session.

15. The TWC, at its thirty-first session, agreed that the SIVAVE software proposed by Mexico was suitable for inclusion in document UPOV/INF/16 (see document TWC/31/32 "Report", paragraph 72).

16. Subject to agreement by the TC, at its fiftieth session, a revision of document UPOV/INF/16/3 concerning the inclusion of the SIVAVE software will be proposed to the CAJ, at its sixty-ninth session, to be held on April 10, 2014.

17. Subject to agreement by the TC, at its fiftieth session, and the CAJ, at its sixty-ninth session, a draft of a revision of document UPOV/INF/16/3 concerning the inclusion of the SIVAVE software will be presented for adoption by the Council, at its forty-eighth ordinary session, to be held in Geneva on October 16, 2014.

SISNAVA software

18. The TWC, at its thirty-first session, requested Mexico to provide further information on the SISNAVA software to clarify the method of determination for the crop specific limits of acceptance (sum of differences), including the role of the crop experts in this process, to be presented to the TWC at its thirty-second session (see document TWC/31/32 "Report", paragraph 73).

19. The TC is invited to:

(a) consider the inclusion of SIVAVE software in document UPOV/INF/16, as set out in paragraph 15 of this document;

(b) note that, subject to agreement by the TC, at its fiftieth session, a revision of document UPOV/INF/16/3 concerning the inclusion of the SIVAVE software will be presented to the CAJ, at its sixty-ninth session, to be held on April 10, 2014, and if agreed by the CAJ, will be presented for adoption by the Council at its forty-eighth ordinary session, to be

held on October 16, 2014, as set out in paragraphs 16 and 17 of this document; and

(c) note that Mexico has been invited to provide further information on the SISNAVA software at the thirty-second session of the TWC.

Information on use by members

20. Section 4 of document UPOV/INF/16 "Exchangeable Software", provides the following:

"4. Information on use by members of the Union

"4.1 A circular is issued to members of the Union on an annual basis, inviting them to provide information on their use of the software included in document UPOV/INF/16.

"4.2 The information on software use by members of the Union is indicated in the columns 'Member(s) of the Union using the software' and 'Application by user(s)'. With regard to the indication of 'Application by user(s)', members of the Union can indicate, for example, crops or types of crop for which the software is used."

21. On January 23, 2014, the Office of the Union issued Circular E-14/014 to the designated persons of the members of the Union in the TC, inviting them to provide or update information regarding the use of the software included in document UPOV/INF/16. The information received from Croatia and Kenya in response to the Circular is included in Annex III to this document.

22. The comments of the TC, at its fiftieth session, concerning the use of software by members of the Union, will be reported to the CAJ at its sixty-ninth session, to be held in Geneva on April 10, 2014.

23. The TC is invited to:

(a) consider the proposed revision of document UPOV/INF/16 concerning the inclusion of information on the use of software by members of the Union, as set out in Annex III to this document; and

(b) note that the comments of the TC, at its fiftieth session, concerning the use of software by members of the Union, will be reported to the CAJ at its sixty-ninth session, to be held in Geneva on April 10, 2014.

III. TRANSLATION OF SOFTWARE IN DOCUMENT UPOV/INF/16/3

AIM software

24. The TC, at its forty-ninth session, agreed with the recommendation of the TWC concerning the inclusion of the AIM software from France in document UPOV/INF/16, as set out in document TC/49/12, paragraph 19. The TC requested the Office of the Union to translate the software to English of the user interfaces and user manual, on the basis that France would verify the translation provided by the Office of the Union (see document TC/49/41 "Report on the Conclusions", paragraph 107).

25. The user interfaces and user manual of the AIM software have been translated into English and have been verified by the expert from France. An expert from France will provide a presentation on the AIM software at the thirty-second session of the TWC, to be held in Helsinki, Finland, from June 3 to 6, 2014, based on the screenshots taken from the translated user interfaces and user manual. Annex IV to this document contains the cover page, preface and the contents of the user manual of the AIM software. A complete copy of the user manual is available from the UPOV website at: http://upov.int/meetings/en/details.jsp?meeting_id=31703.

Information System (IS) used for Test and Protection of Plant Varieties in the Russian Federation

26. The TC, at its forty-ninth session, held in Geneva, from March 18 to 20, 2013, agreed with the recommendation of the TWC concerning the inclusion of "Information System (IS) used for Test and Protection of Plant Varieties in the Russian Federation" in document UPOV/INF/16, as set out in paragraph 18 of document TC/49/12. The TC also requested the Office of the Union to investigate the possibility of the translation into English of the user interfaces and user manual, on the basis that the Russian Federation would verify the translation provided by the Office of the Union (see document TC/49/41 "Report on the Conclusions", paragraph 106).

27. With regard to the possible translation of the "Information System (IS) used for Test and Protection of Plant Varieties in the Russian Federation", it was agreed by the CAJ, at its sixty-eighth session, held on October 21, 2013, that the Office of the Union should arrange a telephone meeting in Russian with the IT expert of the Russian Federation in order to clarify translation requirements (see document CAJ/68/10 "Report on the Conclusions", paragraph 32).

28. A telephone meeting in Russian with an IT expert of the Russian Federation was organized by the Office of the Union on December 3, 2013, in order to clarify translation requirements for the "Information System (IS) used for Test and Protection of Plant Varieties in the Russian Federation" software. It was concluded from the meeting that the translation of the user interfaces of the software would be technically very difficult as the software is designed only to deal with data written in Russian language and, therefore, it would be necessary to rewrite the entire program of the software in order to create an English version of the user interfaces. It was also reported that a user manual that would be suitable for translation did not exist. However, it was proposed by the IT expert from the Russian Federation that some English screenshots be created for presentation to the TWC at its thirty-second session, in order to explain how the software works.

29. The TC is invited to:

(a) note that an expert from France will make a presentation on the AIM software at the thirty-second session of the TWC, based on the English translation of the software, as set out in paragraph 25 of this document;

(b) note that the translation of the user interfaces of the "Information System (IS) used for Test and Protection of Plant Varieties in the Russian Federation" software would be technically very difficult; and

(c) agree that selected screenshots in English of the software "Information System (IS) used for Test and Protection of Plant Varieties in the Russian Federation" be presented to the TWC at its thirty-second session, in order to explain how the software works, as set out in paragraph 28 of this document.

[Annexes follow]

DRAFT

SOFTWARE AND EQUIPMENT USED BY MEMBERS OF THE UNION

Please submit the information by completing the columns as appropriate.

INFORMATION SUBMITTED BY (NAME OF MEMBER OF THE UNION):	

Category*	Title of software/equipment	Function (brief summary)	Source & contact details	Member(s) of the Union using the software/equipment	Application by user(s)
e.g. (a)	XXX	xxxxxxx	Name Title Name of the organization Mailing address Tel/Fax number Email address	(state/organization)	e.g. (crops)

* Please indicate one from the list below:

(a) Administration of applications
(b) On-line application systems
(c) Variety denomination checking
(d) DUS trial design and data analysis
(e) Data recording and transfer
(f) Image analysis
(g) Biochemical and molecular data

[Annex II follows]

ANNEX II

SOFTWARE PROPOSED FOR INCLUSION IN DOCUMENT UPOV/INF/16 "EXCHANGEABLE SOFTWARE"
(Information provided by Mexico on February 25, 2013)

(a) Administration of applications

Program name	Programming language	Function (brief summary)	Source & contact details	Condition for supply	Member(s) of the Union using the software	Application by user(s)
SIVAVE	Database: Mysql 5.1 PHP Version 2.5.9 Ajax. Javascript. Routines are integrated with Java Applets and several Java Archives (JARS). Complements: Zend Optimizer 3.3 Compilers: Zend Studio ScriptCase	Allows for the real-time dissemination of the status of proceedings concerning applications for breeders' rights in Mexico.	Mexico: E-mail: enriqueta.molina@snics.gob.mx/ eduardo.padilla@snics.gob.mx	Written application and justification of need for use.	MX	All crops

[Annex III follows]

ANNEX III

PROPOSED REVISION TO DOCUMENT UPOV/INF/16 "EXCHANGEABLE SOFTWARE"
(Information regarding the use of the software provided by Croatia and Kenya in reply to Circular E-14/014: appears highlighted)

(a) Administration of applications

Date added	Program name	Programming language	Function (brief summary)	Source & contact details	Condition for supply	Member(s) of the Union using the software	Application by user(s)
	ZAJVKA	SQL Windows	Information on applications (name and address of applicants, proposed denomination, date of application etc) and registration (denomination, date of registration)	Russian Federation: State Commission of the Russian Federation for Selection Achievements Test and Protection, Valentin Sherbina, Chief of IT Department E-mail: gossort@gossort.com	Only available in Russian	RU	all crops

(b) On-line application systems

(c) Variety denomination checking

(d) DUS trial design and data analysis

Date added	Program name	Programming language	Function (brief summary)	Source & contact details	Condition for supply	Member(s) of the Union using the software	Application by user(s)
	DUSTNT	FORTRAN 90	General program for analysis of data from DUS trials. Includes facilities for COY analysis and a wide range of multivariate analysis techniques	United Kingdom: Dr. Sally Watson Email: sally.watson@afbini.gov.uk		GB	Herbage, Pea (Field & Veg), Parsnip, Swede, Onion, Brussels Sprout, Winter Oilseed Rape, Sugar Beet, Faba Beans, Spring Oilseed Rape, Kale, Linseed
						CZ	Oilseed Rape, Grasses and Luzerne
						EE	Grasses and Legumes
						VN	Maize, Flowers, Rice, Tomato, Potato, Soybean, Vegetables, and other species
						KE	Maize
	GAIA	Windev	Computes comparisons of varieties for management of reference collections	France: Email: christophe.chevalier@geves.fr		FR	Sorghum, Sugar Beet, Maize, Wheat, Barley, Oat, Rape, Sunflower, Triticale, Pea
						HR	Barley, Maize, Wheat, Soybean
						CZ	Maize, Wheat, Barley, Oat, and Pea

(e) Data recording and transfer

Date added	Program name	Programming language	Function (brief summary)	Source & contact details	Condition for supply	Member(s) of the Union using the software	Application by user(s)
	SIRIUS	Windev	Hand-Held Data Capture Software	France: Email: christophe.chevalier@geves.fr		FR	Sorghum, Sugar Beet, Maize, Wheat, Barley, Oat, Rape, Sunflower, Triticale, Pea, Herbage

(f) Image analysis

Date added	Program name	Programming language	Function (brief summary)	Source & contact details	Condition for supply	Member(s) of the Union using the software	Application by user(s)
	AIM	Windows	Image processing software	France: E-mail: christophe.chevalier@geves.fr		FR	rapeseed, sunflower, hydrangea, flax, peas, carrot, maize, winter wheat, orchids

(g) Biochemical and molecular data

[Annex IV follows]

TC/50/8

ANNEX IV

(in English only)

A.I.M.

User Guide

Image Analysis

Preface

***AIM* facilitates** the processing of images, using third-party software (ImageJ).

***AIM* enables** you to: establish a framework for your studies (date, client, species, device);
carry out processing operations and obtain results (in one click);
archive the following in a database:
your series of images;
your processing operations (ImageJ macros);
your results files;
your individual measurements;
your clustered measurements (grouped by variety, image, etc.).
calculate new measurements (for example: convert pixels to millimeters);
cluster results (by variety, image, series) and to present them (filtered, in table format, in the form of a graph, for export into Excel,…).

***AIM* simplifies** processing operations for users by encapsulating them (automatic execution, one click) through the integration of history functions (traceability), rights management (user or super user), color management (UPOV, RHS, …..) and by displaying results in the form of a graph (curve, histogram).

***AIM* facilitates** multi-user, multi-workstation usage of the same project (study), as well as the sharing of processing operations (ImageJ macros) or results between partners (bodies, companies,).

The field of imaging is becoming an increasingly integral part of our studies and professional projects on a daily basis. The tools available on the market are frequently expensive and too specialized.
AIM will facilitate the processing of images, performed using ImageJ software, while offering significant flexibility with regard to the subjects studied (plant, medical, spatial, industrial,…).

Some examples of image processing performed using series of GEVES images:

- *Surface measurements, height and width of grains.*
  (back-lit table, corn, 2009)
- *Surface spread of fungus on leaves.*
  (scanner, wheat, 2010)
- *Surface measurements, height and width of leaves.*
  (scanner, rape seed cotyledons, 2010)
- *Surface measurements, height and width of flower petals.*
  (scanner, flax, 2010)
- *Ground coverage of plants.*
  (camera in field, peas, 2011)
- *Kinetics of seed imbibition and germination.*
  (Jacobsen table, multiple species, 2011)
- *Surface and perimeter measurements to define the thickness of leaves.*
  (scanner, carrot tops, 2011)
- *Quantification, labeling of colors on leaves and flowers.*
  (back-lit table, peas and orchids, 2012)

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