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MODERNIZATION OF THE INFORMATION TECHNOLOGY SYSTEM UNDER THE  
HAGUE AGREEMENT

*Document prepared by the International Bureau*

## I. INTRODUCTION

1. The information technology (IT) systems supporting the international procedures under the Hague Agreement for the International Registration of Industrial Designs (Hague Agreement) have evolved over time in accordance with the needs and demands of users. The core part of these systems, named DMAPS, came into operation in 1998 and was developed on the basis of the “Madrid Agreement and Protocol System” (MAPS), which serves the administration of procedures under the Madrid System for the International Registration of Marks.

2. Since 1998, DMAPS has been adapted to changes in the legal framework and also modified with a view to improving operations under the Hague system. As new technologies have become available, DMAPS data has been extracted and published as external databases on CD-ROM and on the pages concerning the Hague system on the WIPO website (*Hague Express*). A subsystem for the electronic publication of the *International Designs Bulletin* was developed. The image database management sub-system developed for the Madrid system (IMAPS), was extended to also assist in the administration of Hague registrations. In 2007, this subsystem was upgraded to use faster and less expensive magnetic disk storage technology rather than optical disks.

3. Currently, the automated systems which support the international procedures of the Hague system consist of the DMAPS system for the management of bibliographic and other text based data, the IMAPS system for document image management and archival, and the Publication system for the preparation of periodical bulletin and official notifications to offices and users. These loosely integrated systems are hereinafter referred to as the “*IT system*”.

4. MAPS and DMAPS run on a mainframe computer environment under an IBM Operating System (IBM mainframe platform hosted by the United Nations International Computing Center - UNICC). The IMAPS and Publication systems, which are loosely integrated with MAPS and DMAPS, run on Microsoft Windows platforms. MAPS and DMAPS have interfaces with the AIMS system of the Finance Department of the International Bureau.

## II. NEED FOR UPGRADING THE CURRENT IT SYSTEM

5. With the entry into force of the 1999 (Geneva) Act of the Hague Agreement, the Hague system embarked on a new phase of growth in membership – which is expected to progressively transform it into a truly global system for the international registration of industrial designs and to result in a corresponding increase in workload<sup>1</sup>. This historic development is taking place at a time when the ability to access data over the Internet and the introduction of new technologies has revolutionized how the users of design registration systems expect to be able to obtain information and conduct business.

6. In order to meet the challenges of geographic expansion, increased use and user expectations in the 21<sup>st</sup> century, full exploitation of the possibilities afforded by IT will be required for the necessary: (i) increase in efficiency of the administration of all aspects of the international procedure; (ii) expansion of electronic communication between the International Bureau and Offices, holders, representatives and third parties; (iii) Internet access to information recorded in the International Register<sup>2</sup> and to communications received and sent by the International Bureau (whether in electronic or paper form); and (iv) introduction of new or enhanced administrative services of interest to national or regional Offices<sup>3</sup>.

7. Similar challenges have arisen in the last few years with respect to the Madrid System for International Registration of Marks, in particular since the entry into force of the Madrid Protocol (see document MM/A/38/4).

8. Already in 2001, WIPO commissioned an external firm, OCS Consulting, to assess, *inter alia*, the suitability of the IT platform for the MAPS, DMAPS, IMAPS and publication subsystems and the capacity of those systems to absorb expected increases in registration

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<sup>1</sup> Since 1999, 18 new Contracting Parties have joined the Hague system, an increase of 62%. The European Community has announced its intention to join the Hague system effective January 1, 2008, and this is expected to result in a steep increase in the filing of international applications under the Hague system.

<sup>2</sup> The International Register offers a unique and invaluable source of raw data with regard to, at present, 46 separate jurisdictions which can be used for monitoring filing trends, tracking performance, and comparative legal study.

<sup>3</sup> A more sophisticated IT platform may allow the International Bureau greater flexibility in tailoring certain of its services to the needs of individual national or regional offices: e.g., the compilation and publication of industrial design information, i.e., a gazette, and the maintenance of databases used to search for pending and recorded industrial design registrations for purposes of clearance, examination, opposition, invalidation and enforcement.

activity as well as to identify alternative hardware and database management systems that might be considered in anticipation of the possible upgrading or replacement of the current ones at some point in the future. The study by OCS Consulting concluded that those IT systems supported business effectively and with low operational risk and should be able to cope with the expected growth in workload. However, as a long-term recommendation, the study suggested that, at some time in the future, WIPO might wish to consider the convenience of migrating MAPS and DMAPS to a modernized technical environment.

9. In 2005-2006, the International Bureau examined the business requirements of the Hague system and decided that it would be important to offer users and electronic filing facility in respect of industrial design applications under the system. Technologically, fast and secure means of e-filing meeting these requirements to a reasonable extent can be offered nowadays. As a result, the International Bureau will provide for such a facility as from January 1, 2008. This facility will also allow the International Bureau to better cope with the growth in filings under the Hague system that is likely to result from the accession of the European Community to the Geneva Act, which is expected to take effect as from the beginning of 2008.

10. In addition, in early 2007, WIPO commissioned a consulting firm, Sogeti SA Switzerland, to reassess the state and effectiveness of the Madrid and Hague IT system, to update the work done by OCS Consulting and to recommend, as appropriate, alternative solutions for its enhancement or replacement, including an assessment of the costs and risks associated with each. The specific terms of reference were as follows:

- to review operations under the procedures of the Madrid and Hague systems and determine the level of automation and user satisfaction before proposing options to enhance the technology;
- to identify any functional gaps in the IT system;
- to assess the long-term suitability of the current technical platforms hosting the IT system;
- to identify any risks to the continued secure operation of the IT system and make recommendations for the mitigation of such risks;
- to assess alternative technical platforms and make recommendations on strategies for the modernization of the IT system, taking into account the possibilities of alternative hardware and database management systems.

11. The following section summarizes the key findings, risks, modernization alternatives and recommended approach identified in the report prepared by Sogeti. The complete report, “WIPO MAPS DMAPS Final Report,” can be consulted on the WIPO website at the following address: <http://www.wipo.int/hague/en/>. A paper copy is available to members of the Hague Union upon request.

### III. SUMMARY OF THE SOGETI REPORT

#### Key Findings

12. MAPS and DMAPS were well designed, building efficient and effective business functions based upon integrated workflow tools, interactive programs and modular programs for the elaboration of business and data logic.
13. MAPS and DMAPS support the business activities of the International Bureau for the administration of procedures under the Madrid and Hague systems effectively and with low operational risk. The IBM mainframe platform, on which MAPS and DMAPS operate, is inherently scalable and robust with respect to internal operations.
14. Operation managers and internal users are satisfied with the features available in MAPS and DMAPS, for the internal activities related to their operational responsibilities. However, some functional weaknesses have been identified in specific areas relating, in particular, to the translation and classification of trademarks, text handling and e-Business.
15. MAPS and DMAPS are not well positioned to implement mainstream e-Business functionality (for example web services) and present a number of technical constraints for improving translation, text management, data analysis and search tools. The existing IBM mainframe platform also presents difficulties for the integration of standard office automation tools and document management products.
16. Running MAPS and DMAPS on an IBM mainframe platform is a relatively expensive way to operate what is essentially only a medium size system. MAPS and DMAPS are dependent on software licenses for the Adabas and Natural applications, which are more expensive when written for an IBM mainframe platform as opposed to other platforms such as UNIX. Consequently, similar performance and reduced operational costs could be achieved through a migration to UNIX.
17. While the services provided by the UNICC via its IBM mainframe platform hosting are available 24 hours a day, seven days a week, the application of MAPS and DMAPS only run from 7 a.m. until 10 p.m. Due to the broad geographical distribution of the new prospective users (Offices, holders, representatives) of the MAPS/DMAPS systems in the context of e Business, those systems must be available 24 hours a day, seven days a week.
18. MAPS and DMAPS have the same origin in MAPS and share core functionalities. Any change from the IBM mainframe platform with respect to MAPS will necessarily affect DMAPS to the same extent. For conversion purposes, specific DMAPS features would represent some 30% of the total MAPS features.

#### Risks

19. The number of IT staff supporting MAPS and DMAPS (only three staff and two external consultants) is significantly below industry standards. As a result, what progress is made cannot keep up with the ever increasing list of new or enhanced functionalities that are needed. The absence of sufficient dedicated IT resources is a significant risk to the ongoing Madrid and Hague operations.

20. The services provided by the UNICC via its IBM mainframe platform hosting of MAPS and IMAPS, which are already relatively expensive, are likely to become more expensive over time. As other UN agencies begin to decommission their systems that are hosted on the IBM mainframe platform, there is a risk that WIPO might be obliged to pay for a greater proportion of UNICC's IBM mainframe platform costs since it is a shared service.

### Modernization Alternatives

21. The report identifies four possible approaches for the required IT modernization over the next two biennia.

*Option A – Step by Step Evolution Maintaining the Same Architecture:* This option would involve continuing to run the MAPS and DMAPS systems on an IBM mainframe platform and initiating a limited series of projects to improve internal operations.

*Option B – Step by Step Evolution Towards an Open and Flexible E-Business Information System:* This option would involve three phases, the first of which would be implemented in 2008 and 2009 and comprise the downsizing of MAPS and DMAPS to operate in a UNIX platform, so as to reduce operational costs, and a mix of high priority projects aimed at modernizing the MAPS user interface and addressing the functional deficiencies of MAPS with respect to translation, classification, text processing and e-Business. A second phase, to be implemented as from 2010, would involve partial migration of Natural interactive programs to Java and further development of the publication subsystem. The possible implementation of a third phase involving overall migration to a new technical environment would require a further assessment in early 2009.

*Option C – One to One Migration to Oracle/Java or .Net:* This option would involve rewriting MAPS and DMAPS in a Java/Oracle-Unix or .net-Windows environment on a function by function basis without undertaking a redesign exercise. Only upon completion of that conversion, a mix of projects to address the functional deficiencies identified in *Option B*, above, would be initiated.

*Option D – Rewrite from New Specifications:* This option would involve undertaking a full systems analysis exercise for the complete redevelopment of MAPS and DMAPS. Only upon completion of a revised set of system specifications, including recommendations as to the appropriate technical architecture, could a new turn-key IT system be built.

### Recommended Approach

22. Option A is unacceptable because it would not address e-Business requirements and thus not fulfil the needs and expectations of holders and their representatives, the primary users of the Madrid and Hague systems.

23. Option D is risky and expensive, as it would require the commitment and expenditure of the full amount of estimated financial resources before yielding any tangible result and not provide any tangible benefit to any users for at least three years while, moreover, no specifications would be available and compatibility with the current MAPS/DMAPS system would be difficult to achieve.

24. Option C is also risky and expensive, as it would require full investment for the technical migration before being able to bring new features to internal users, national offices and holders/representatives; moreover approximately three years would be required before such new features could be added.

25. Option B presents the best solution of the four, as it would reduce operational costs and address high priority deficiencies as early as possible, maximize the return on previous investments in IT by deferring – perhaps indefinitely – a complete rewrite of MAPS and DMAPS in a Java/Oracle-Unix or .net-Windows environment, put the least amount of strain on the available IT resources and minimize any disruption to the productivity of internal users who are quite satisfied with MAPS and DMAPS.

#### IV. PROPOSED IT MODERNIZATION PROGRAM

26. For the reasons outlined above, it has been proposed that an IT modernization program be undertaken, following the approach identified under Option B in paragraph 21, above, and involving the three categories of projects listed in Annex I, Tables 1 (Internal), 2 (E-Business) and 3 (Governance and Technical).

27. These projects would be implemented in three phases, as follows:

(a) In Phase I, the high priority projects indicated in Table 1 of Annex II would be taken up. These projects would be developed and implemented in the course of the 2008/09 biennium against an estimated investment cost of 5.028 million Swiss francs. Projects C1, C2 and C3 would set the governance and architectural basis for the development of Phase I. Project C4 would provide for the downsizing of MAPS and DMAPS to UNIX – and thus allow for significant savings to the Madrid Union and Hague Union budgets, as explained below. Implementation of projects A1, A2, A3, A4, A6 and A7 would concern mainly improvements to the trademark registration procedures (translation, classification, notification, issuing of extracts, text and image handling), but would eventually also derive in benefits for the administration of the Hague system. Project A2 would enable a better analysis and monitoring of operational processes and the production of relevant statistics. Projects B1 to B6 would provide for the expansion of electronic business with offices, holders and representatives in the area of trademarks (but, again, would also eventually benefit the Hague system). Projects C5 and C6 would enable the International Bureau to test selected technologies in a pilot project with a national office. Finally, project C7 would result in technical enhancements related to the data base management.

(b) Phase II would consist of the projects indicated in Table 2 of Annex II, which would be developed and implemented in the course of the years 2010 and 2011, against an estimated cost of 1.943 million Swiss francs. These projects would involve partial migration of Natural interactive programs to Java (C8) and further development of the publication subsystem (C10).

(c) Phase III would consist of the projects indicated in Table 3 of Annex II, i.e., resulting in the overall migration to a new technical environment (C9 and C11). This phase could be developed and implemented in the course of the years 2010 and 2011, or, if they only prove to be necessary at a later time, at any such later time<sup>4</sup>. If needed and implemented in the course of 2010 and 2011, their estimated cost would be 8.292 million Swiss francs.

28. It should be noted that the migration to a UNIX platform (Project C4) would result in savings in operational costs of some 1.9 million Swiss francs per year for the Madrid and Hague Unions altogether, as from the year 2009, as the annual operational costs today amount to some 2.8 million Swiss francs and would be reduced to some 830 thousand Swiss francs.

## V. FINANCING THE PROPOSED IT MODERNIZATION PROGRAM

### Phase I (2008/09 biennium)

29. The implementation of Phase I of the IT modernization program in 2008/09 would amount to an estimated cost of 5.028 million Swiss francs, of which 4.569 million Swiss francs should be borne by the Madrid Union budget and 459 thousand Swiss francs by the Hague Union budget (see Annex II, Table 1). The proposed participation by the Hague Union budget relates to Project C4 – which, unlike the other projects of Phase I, will result in a direct benefit for the Hague Union, as it will reduce the DMAPS operational costs borne by the budget of that Union.

30. A proposal for the financing of Phase I of the IT modernization program, involving the allocation of resources from the Madrid Union budget surplus expected to accumulate by the end of 2007, is being submitted for consideration by the Madrid Union Assembly in September 2007 (see document MM/A/38/4).

31. It should be noted that the participation of the Hague Union budget in the financing of Phase I of the IT modernization program (459,000 Swiss francs) would be fully covered from Program 27 where savings in operational costs would be made in the 2008/09 biennium as a result of the migration of MAPS and DMAPS to a UNIX platform (Project C4 within Phase I) (see paragraph 28, above).

### Phase II (2010/11 biennium)

32. The implementation of Phase II of the IT modernization program in 2010/11 would amount to an estimated cost of 1.943 million Swiss francs, to be shared between the budgets of the Madrid Union (1,432,000) and the Hague Union (511,000). Proposals for the financing of Phase II will be made in the context of the preparation of the Program and Budget for 2010/11 and submitted for consideration by the Assemblies of the Madrid Union and the Hague Union in 2009.

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<sup>4</sup> As mentioned above, if Phase I delivers sufficient functional improvements in the IT system, it may not be necessary to embark on Phase III of the modernization effort, which concerns parts of the programs not involving the users.

Phase III (2010/11 or beyond)

33. As indicated in paragraph 27(c) above, the projects under Phase III may prove to be unnecessary and a decision regarding Phase III will only be taken if and when those projects prove to be necessary. A further study will be undertaken in early 2009 before any proposals regarding the financing of Phase III of the IT modernization program is made. The estimated investment cost of Phase III, 8.292 million Swiss francs, would also be shared between the budgets of the Madrid and the Hague Unions. Depending on the outcome of the study and based thereon, proposals will be made in the context of the preparation of the Program and Budget for 2010/11 and submitted for consideration by the Assemblies of the Madrid Union and the Hague Union in 2009.

34. *The Assembly is invited to:*

*(i) take note of the proposed IT modernization program as described in paragraphs 26 to 28, above, and approve the implementation of Phase I of that program in 2008/2009;*

*(ii) take note that the participation of the Hague Union budget in the financing of Phase I of the IT modernization program to be implemented in 2008/09 will be fully covered within the proposed Program and Budget for the 2008/09 biennium;*

*(iii) take note that proposals for the implementation and financing of Phase II and, possibly, Phase III of the IT modernization program will be submitted for consideration by the Assembly in 2009.*

[Annexes follow]



## ANNEX I

## PROJECTS

Table 1: Internal

Seq.	Project	Description	Category
A1	Translation	Update translation tools to replace in-house translation tools with commercial ones.	Operational
A2	Classification	Update Nice classification tools by integrating database of accepted goods and services into classification procedure. Make the tools available on the Internet.	Operational
A3	Irregularity Letters and Notifications	Update the letter generation process to produce more understandable documents.	Operational
A4	Trademark Last Status	Create tools to show the goods and services protected within a given designated Contracting Party, and show how these change over time.	Operational
A5	Monitoring and Statistics	Create tools to monitor and analyze operational processes. Create statistics for internal and external use.	Analytical
A6	Office Automation	Integrate internal administrative tasks into the MAPS/IMAPS system, e.g., importing Word documents, e-mails, etc. directly into MAPS/IMAPS.	Operational
A7	IMAPS Enhancements	IMAPS enhancements (e.g., search capabilities, new document formats, tighter integration with MAPS, ...).	Operational

Table 2: External

Seq.	Project	Description	Category
B1	e-Payment, e-Billing	Create e-Billing (for extracts from the International Register) and e-Payment (for other transactions) for holders.	e-Business
B2	e-Modification	Allow holders to submit transactions electronically and to further automate their processing within MAPS.	e-Business
B3	e-Status	Allow holders to monitor the status of their communications to WIPO.	e-Business
B4	Electronic Communication: Offices → WIPO	Enhance the transmission of information from national offices to WIPO.	e-Business
B5	Electronic Communication: WIPO → Holders/Reps	Enhance the transmission of information from WIPO to holders and representatives.	e-Business
B6	Electronic Communication: WIPO → Offices	Create tools that enhance collaboration between WIPO and national or regional offices with respect to the international procedure.	e-Business

Table 3: Governance and Technical

Seq.	Project	Description	Category
C1	Project Organization and Change Management	Put procedures into place which will facilitate the implementation of these projects.	Governance
C2	Requests for Proposal and POC <sup>1</sup>	Requests for Proposal (tenders) and Proof of Concept of technical solution.	Governance
C3	SOA <sup>2</sup> and Tools	Create the IT architecture (SOA) and provide the necessary tools for its use.	Architecture
C4	Downsizing on Unix	Migrate MAPS and DMAPS from the UNICC mainframe to a UNIX environment.	Downsizing
C5	Pilot with an Office	Pilot project with a single national office based on direct access to MAPS. (SOA+BPM <sup>3</sup> +e-Business +Portal <sup>4</sup> +RIA <sup>5</sup> )	Conversion
C6	Complete Architecture + BPM + Middleware	Adapt the IT architecture and BPM processes based on experience with Pilot (C5) to allow expansion to other interested offices.	Conversion
C7	DBMS <sup>6</sup> and Technical Enhancements	Improve the database design of MAPS and resolve any technical issues.	Conversion
C8	Remaining BPM, Portal and RIA	Migrate business logic from Natural to Java, but retain Adabas.	Conversion
C9	Remaining Interactive Web Services	If needed, define processes and develop a new user interface with common technology for WIPO and national or regional offices.	Conversion
C10	Publication	Modernize the publication process including the replacement of the legacy Visual Basic programs.	Architecture
C11	Remaining Java / Oracle Conversion	Migrate the remaining Natural /Adabas programs to Java/Oracle if and when needed, but not before 2010.	Conversion

[Annex II follows]

<sup>1</sup> Proof of Concept: verifying that the proposed technical architecture performs according to specifications.  
<sup>2</sup> Service Oriented Architecture: an architecture that uses loosely coupled services to support the requirements of business processes and users.  
<sup>3</sup> Business Process Management.  
<sup>4</sup> Portal: a Web interface which provides individualized access to users based on their security profile.  
<sup>5</sup> Rich Internet Application: a Web application that has the features and functionality of traditional desktop applications.  
<sup>6</sup> Data Base Management System.

## ANNEX II

## ROADMAP

Table 1: Phase I 2008/2009 (high priority)

Seq.	Project	Madrid Optimized Cost in Swiss francs	Hague Optimized Cost in Swiss francs	Madrid + Hague Optimized Cost in Swiss francs
C1	Project Organization and Change Management	48,000	0	48,000
C2	Requests for Proposal and POC	48,000	0	48,000
C4	Downsizing to Unix	1,070,913	458,963	1,529,875
C3	SOA and Tools	72,000	0	72,000
A1	Translation	124,500	0	124,500
A2	Classification	124,500	0	124,500
A4	Trademark Last Status	240,000	0	240,000
A6	Office Automation	48,000	0	48,000
A7	IMAPS Enhancements	48,000	0	48,000
A3	Irregularity Letters and Notifications	480,000	0	480,000
C5	Pilot with an Office (includes B4 and B6) <sup>1</sup>	599,200	0	599,200
A5	Monitoring and Statistics	340,000	0	340,000
C6	Complete Architecture + BPM + Middleware	150,000	0	150,000
C7	DBMS and Technical Enhancements	240,000	0	240,000
B1	e-Payment, e-Billing	240,000	0	240,000
B2	e-Modification	336,000	0	336,000
B3	e-Status	240,000	0	240,000
B5	Electronic Communication : WIPO → Holders/Reps.	120,000	0	120,000
	Total	4,569,113	458,963	5,028,075

<sup>1</sup> See Annex I, Table 2.

Table 2: Phase II 2010/2011

Seq.	Project	Madrid Optimized Cost in Swiss francs	Hague Optimized Cost in Swiss francs	Madrid + Hague Optimized Cost in Swiss francs
C8	Remaining BPM, Portal and RIA	1,191,960	510,840	1,702,800
C10	Publication	240,000	0	240,000
	Total	1,431,960	510,840	1,942,800

Table 3: Phase III (if needed)<sup>2</sup>:

Seq.	Project	Madrid Optimized Cost in Swiss francs	Hague Optimized Cost in Swiss francs	Madrid + Hague Optimized Cost in Swiss francs
C9	Remaining Interactive Web Services	1,526,000	654,000	2,180,000
C11	Remaining Java / Oracle Conversion	4,278,400	1,833,600	6,112,000
	Total	5,804,400	2,487,600	8,292,000

Table 4: Total Investment (Phase I + Phase II + Phase III)

Madrid Optimized Cost in Swiss francs	Hague Optimized Cost in Swiss francs	Madrid + Hague Optimized Cost in Swiss francs
11,805,473	3,457,403	15,262,875

[End of Annex II and of document]

<sup>2</sup> Primary Determining Factor: useful life of the Natural/Adabas software.