STANDING COMMITTEE ON INFORMATION TECHNO LOGIES

PLENARY
Seventh Session
Geneva, June 10 to 14, 2002

IPDL STANDARDS DEVEL OPMENT

Document prepare d by the Secretariat

1.   The Standards and Documentation Working Group (SDWG) of the Standing Committee on Information Technology (SCIT) has, as one of its ongoing tasks, the development of standards to enable all Member States to participate in a globally cohesive IPDL system (see document SCIT/SDWG/1/9, Annex III, Task No. 10). The SDWG also instructed the WIPO Secretariat to convene a SCIT Task Force to ensure the involvement of Member States in the expedition of these tasks. In order to enab le the Task Force to begin its work, the Secretariat convened two informal standards workshops that included representatives of Member States together with industry experts.

2.   The focus and aims of the first workshop, as well as the report cont aining the findings and recommendations of the second workshop designed to increase the effective participation of Member States in the global Intellectual Property Digital Libraries (IPDLs) environment, is annexed to this document.

3.   The SCIT Plenary is invited to note the contents of this document and its Annex.

[Annex follows]

ANNEX

REPORTOFTHESECONDINFORMALWORKSHOPON
INTELLECTUALPROPERTYDIGITALLIBRARIES(IPDL)STANDARDIZATION
(Geneva,February25toMarch1,2002)

BACKGROUND

1.   InJuly2000theSCITPlenaryapprovedtheestablishmentofaSCITTaskForceto
supporttheIPDLProject(seedocumentSCIT/5/10,paragraph59) .Inordertoenablethe
TaskForcetobeginitswork,theSecretariatconvenedtwoinformalstandardsworkshopsthat
includedrepresentativesofMemberStatestogetherwithindustryexperts.

2.   Thefirstworkshop(Geneva,July2001)conductedananalysisandrecommendedthat
uponconcludingdevelopmentoftheWIPOIPDLsystem,theWIPOIPDLprogramshould
focusontheextensionandcoordinationofstandards,proof   -of-conceptvalidationprojects,
andrelatedinfrastructuretocomplementthesestandardsandtosupportIPDLsofMember
States.

3.   Thesecondworkshop(Geneva,February2002),thesubjectofthisreport,moves
forwardbyrecommendingaspecificsetofsimplepreli   minarysteps,describedbelow,that
immediatelyraisetheprofileoftheIPDLenvironment,stabilizeitscentralmissionofrobust
long-termaccess,andstrategicallypositionittoadapttoevolvingtechnologyandWIPO
standards.Inparticular,theserec   ommendationsextendthoseofthefirstworkshopbycalling
forestablishmentofaglobalserviceregistryanddevelopmentofsimple,inexpensive
prototypeimplementationstoserveasproofs   -of-conceptforthenotionsofpersistent
identifiersandresource   location.

INTRODUCTION

4.   TheglobalIPDLenvisions,asanimportantuseofWIPO   NET,acoherentsetofIPDLs
thatgloballydistributeanappropriatebalanceofresponsibility,authority,andindependence
amongautonomousbutinteroperatingnat   ionalIPDLs.OneapplicationoftheglobalIPDLis
auser -friendlysystemthatpermitseffectivecross   -searchingofthedifferentdatacollections
providedinvariousIPDLs.

5.   TheuseofagreedstandardsintheIPDLenvironmentiscriticalas   moreIPofficeswish
tomaketheirdataavailableusingalternativesearchsystemsorinasearchenvironmentmore
fullycustomizedtosuitlocalrequirementsandconditions.   AsforeseenbytheSCIT,the
burdenofprovidingandmaintainingtimely,compreh   ensiveaccesstocentrallyloadeddatais
toogreattobebornebyanyonenationalorregionalofficeortheInternationalBureau.

6.   Afullystandards -basedapproachisthemostpragmaticwayinwhichuser   -friendly
interfacestocross -collectionIPsearchcanbemaintainedinthelongterm.   Itpermitsdatato
resideascloselyaspossibletoitsmostauthoritativeandup   -to-datesource.Italsoallows

multipleinterfacestobebuiltandtailoredtolocalorregionalaudiences,whichmakesit
easierforsitestobeindependentofthespecificfeatures,serviceavailabilityandfunding
situationofjustoneinterfaceprovider.

7.   Thisdocumentarticulatesthecoreissuestoberesolvedinestablishingacoherentsetof
IPDLstocom   prisetheglobalIPDL,aswellastheconsensusrecommendationsofthe
workshopparticipants. Ofcentralconcernisreliableaccessanddiscoveryusingstandards
andcommonagreements,allbuiltoneachoffice'sbasiccommitmenttokeepingitsidentifiers
persistent.

SUMMARYOFTHEDISCU   SSIONSOFTHEWORKSHOP

PolicyforPersistent,ReliableIdentifiers

8.   Everylibrary,digitalorotherwise,needsawaytouniquelyandpermanentlyidentify
everyobjectinitsholdings.Asaconditionofincl   usionintheglobalIPDL,werecommend
thateachlocalIPDLberequiredtostate,asanorganizationalvalue,acommitmenttopair
eachIPobjectaccessiblethroughthedigitallibrarywithanidentifierthatwillbepermanently
anduniquelyassociatedwit   htheobject,suchthatthecombinationoflocalidentifierand
IPDLnumberwillbegloballyunique.Thisisaserviceissue,notatechnologyissue.A
short,writtenstatementdeclaringorganizationalpolicyformaintainingthesepersistent
identifiers isrequiredofeachIPDL.

ImplementationofResolutionServiceforIdentifiers

9.   Inordertoprovideabasic,reliableaddressingschemefortheglobalIPDL
environment,thepersistentidentifierwillalwaysredirecttotheobjectwheneverit   ismoved,
andwillneverbereassignedtoadifferentobject.Thisredirectioncapabilityamountstolittle
morethanmaintainingordinaryURLredirectiontables.IndividualIPDLsshouldimplement
accessobjectsandrelatedservicesusingARKs.Forthe   globalIPDL,theseidentifierswill
havetheform

        http://localhostname/ark:/ipdlnumber/localname

Forexample,

        http://uspto.gov/ark:/12045/us8479931

RecognizingthatmostIPdocumentsalreadyhavewell   -definedidentifiersbasedonWIPO
standards,some guidelinesfortheirconstructionaregiveninAppendixI.

WIPOIPDLServiceRegistry

10.   InordertoestablishtheServiceRegistryasspecifiedinthereportoftheFirst
WorkshoponIPDLStandardization,werecommendthatWIPOcreateandma   intaina
databasebycollectingmachine -readableIPDLsummariesfromtheindividualIPDLs.We
furtherrecommendthatoneapplicationofthisdatabaseshouldbetoautomaticallycreatea
web-accessibledocumentatawell   -knownweb -basedaddress.ThisdatabasewouldbecomeFor
thedefinitivelistofIPDLsand   *ipdlnumbers* .

11.   WebelievethattheglobalIPDLwillultimatelyneedadynamic,machine   -accessible
mechanismfordiscoveringservicesavailableatindividualnodes.Suchamechanismmight
becon structedfollowingtheW3CWebServicesDescriptionLanguage(WSDL)
(W3C WSDL).NotethatWSDLitselfisnotstandardizedbytheW3Catthistime,butitat
leastprovidesanXML   -basedformatfordescribingnetworkandIPDLservices.

12.   Thisre gistryshouldcontainonerecordforeachIPDLnode.Eachrecordwillinclude
anARKthatidentifiestheIPDLitself,theIPDLnumber,andthekinds   -of-documentsit
serves.Overtime,informationconcerningcollections,contentandserviceavailabilitya   re
likelytobeadded.SeeAppendixIIforadditionaldetails.IndividualIPDLsareresponsible
fortheaccuracyoftheinformation,astheypossessthemasterdatarecordthatWIPO
periodicallyharvests. Themachine -readableformatforregistryrecords   isspecifiedin
AppendixII.

PartitioningofIPDomains

13.   Inordertosimplifythetaskofworkingwiththediversityofintellectualproperty,we
adopttheprincipleofpartitioningdataintoseparateintellectualpropertydomains.By
consideringonedomainatatime(e.g.,patents,trademarks,industrialdesigns,etc),weintend
tofocusonseparateareasforwhichWIPOalreadyhaswell   -knownsemanticsuntilsuchtime
astheresultsfromseveraldomainscanbecombined.

NetworkAccessPr otocols

14.   SignificantprogresshasbeenmadeindefiningthevisionandbasisfortheGlobal
IntellectualPropertyDigitalLibrary,followingtheworkoftheFirstWorkshoponIPDL
Standardization.Thisprogress,whencoupledwithcontinuedprototypingefforts,will
demonstratethatimplementingadigitallibrarybasedoninternationallyrecognizedstandards
isanefficientandeffectivestrategyformeetingtheintegratedinformationdissemination
requirementsoftheIPDLenvironment.   Wereco mmend:(a)thattheSimpleObjectAccess
Protocol(SOAP)beexploredasthemechanismfortheexchangeofinformationbetween
applicationsattheIPDLnodes(W3CSOAP);(b)thatthecontentexchangedbetweennodes,
ascarriedbySOAP,beconstructedinX   ML(W3CXML);and(c)thatthecontentexchanged
betweennodesasXMLmessagesbeencodedusingUnicode.

SearchandRetrievalConcepts

15.   Thefollowinglogicalconceptswillneedtobeconsideredinconstructingan
XML-basedsyntaxforsearch   andretrieval:

- ServiceStatus
- UserIdentificationandAuthentication
- Search
- Retrieval
- AdditionalServices
- Confidentiality,includingconfidentialityofusersearchparameters

TheseconceptsarelargelycapturedintheXMLEncodingRules(XER)   forrepresenting
searchandretrievaldatastructures.XERiscurrentlyanISOstandard   (ISO XER).

RECOMMENDATIONS

16.   TheparticipantsintheSecondWorkshoponIPDLStandardizationmadethefollowing fiverecommendations.

(i)   *Commitmentto PersistentIdentificationandAccessforCoreCollectionObjects.* Thedistinguishedfactorbetweenadigitallibraryandawebsiteisaservicecommitmentto manageidentifierswithenoughcarethatacorecollectionobject,oncefoundandsaved,can thenreliablyberetrievedusingthatsameidentifierindefinitelyintothefuture.Such identifiersarealsothebasisforreliable,automatedIPDLinteroperation.Asaconditionof inclusionintheglobalIPDL,eachlocalIPDLshalladopt,asanorganiza   tionalvalue,a commitmenttomakeeachsuchobjectretrievablebyuserswithaunique,permanently assignedidentifier.EachIPDLshallmaintainandpublishanexplicitstatementofthat commitmentonitsIPDL.

(ii)   *MechanicsandFormofPersistentIde   ntifiers.* EachIPDLshallestablish procedurestoensurethateachpersistentidentifierisneverreassignedtoadifferentobjectand isalwayscorrectlyresolvednomatterhowoftentheobjectismoved.Thetechnological burdenofthisrequirementisl   ow,butexampletechniquesarediscussedbelow.EachIPDL shallmakeitscoreobjectsavailableviaURLsthatconformtotheArchivalResourceKey (ARK)persistentidentifierscheme.TheInternationalBureaushouldcreateandmaintaina small,proof -of-conceptcentralizedidentifierresolutionservicethattakesanincoming identifierrequestandforwardsittotheappropriateIPDL.

(iii)   *RegistryofIPDLsintheGlobalIPDLSystem.*   Inordertocreateaformal, ongoingregistryofIPDLsandservices,eachIPDL,duringitslifetime,willmakeavailablea permanent *IPDLsummary* atafixedweb   -basedaddress.Thissummarywillalwaysreturnan up-to-date,machine -readabledescriptionoftheIPDLanditsservices.Itwillincludeatleast theIPDLname,its assigned *ipdlnumber*,andthekindsofdocumentsitserves.Overtime, otherelementswillbeincorporatedtosupportadditionalinter   -IPDLfunctionality.TheIPDL registryitselfisformedandupdatedbyperiodicallyharvestingalltheIPDLsummariesan   d collectingtheminoneplace(e.g.,asadynamicdocumentoradatabase).Thisestablishesthe mostbasicpieceofinfrastructurecalledforinthefirstworkshopreport.

(iv)   *PrototypeSearchandRetrieval.* Inordertosuccessfullyadaptexistingst   andards forbasicsearchandretrievalinthecontextoftheglobalIPDL,theInternationalBureauand officesofMemberStates,possiblythroughaSCITTaskForce,musteventuallysupportthe developmentofacoresetofcommonIPDLdataelementsandstan   dardstosupportfullIPDL interoperability. Prototypingcross -collectionsearchisessentialtothisdevelopment.There isnorelevantstandardthatfullymeetstherequirementsforIPDLsearchandretrievalatthis time,butthebasicconceptsaresta   tedinthenextsection.

(v)   *StandardsValidation.* Fullyanalyzingastandardsuchasthatenvisionedfor IPDLinteroperationisacomplexundertaking.Toprovideameasureofconfidencewithout undueeffort,werecommendadoptingthevalidationthres   holdusedbytheInternet EngineeringTaskForce(IETF),namely,thesuccessfulinteroperationofthreesystems developedindependentlyfromthewrittenstandard   .

17.   Informationondefinitions,namingconsiderations,IPDLdescriptionsandbibli   ography
arecontainedinAppendicesItoIV.

[Appendicesfollow]

APPENDIXI

DEFINITIONS

ArchivalResourceKey(ARK) -aschemeforcreatingidentifiersthatsupport persistence:accesstotheobject,tometadata,andtopolicystatementsfromanidentified provider.ARKshavetheadditionalpropertyofbeingvalidURLs.

DigitalLibrary(DL) -anelectronic,network -basedrepositoryofobjects,combined withdefinedmechanismsforlocating,navigatingandretrievingindividualobjects.Digital librariesag reetoadoptacertainlevelofadministrativecommitmenttoofferandmaintain dataandservicesthroughthelibrary.SCIT/1/5definesaDigitalLibraryasìanorganized collectionofelectronicinformationdisseminatedtoadesignatedcommunitythroughnetwork technologiesprovidingeasyaccesstodata.î

DistributedSystem -anelectronic,network -basedcollectionofsitesdistributedviathe Internet,allofwhichareabletointeroperateusingcommonlyagreed -uponprotocolsand messageformats.

ExtensibleMarkupLanguage(XML) -amarkuplanguageforrepresentingstructured data.

HypertextTransferProtocol(HTTP) -thecommunicationprotocolimplementedby WorldWideWebserversandclients(orbrowsers).

IntellectualPropertyDigitalLibrary(IPD L) -adigitallibraryinwhichthecontent consistsofIPObjects.SCIT/1/5statesthatadigitallibraryprovidesìaccesstotimelyand completecollectionsofintellectualpropertyrecordsmaintainedbyotherintellectualproperty offices.î

InternetE ngineeringTaskForce(IETF) -thebodyresponsibleforInternetstandards.

IPDomain -aspecifictypeofintellectualproperty,includingpatents,trademarks, copyrights,industrialdesigns,traditionalknowledgeandothers.

GlobalIPDL -thecoherent collectionofindividualIPDLswhichinteroperatethrough commonprotocols,messagesandcontent.

Identifier -Anassociationbetweenanameandanobjectwhichmaybeusedto unambiguouslyrefertoanIPobjectwithinthescopeoftheglobalIPDL,madem anifestby metadatathatcharacterizetheobject.

IPObject -thelogicalabstractnotionofanintellectualpropertydocument,e.g.,a patent,trademarkdocument,industrialdesign,etc., theobjectisconsideredtobedistinctfrom aparticularrepresent ationofthedocumentortheindividualcomponentsofthedocument.

Metadata -DatawhichdescribeanIPobject,andwhichmightbeusedasabasisfor locatingorcharacterizingtheIPobject.Metadatamightbeincludedinthedocumentitself, butnotallmetadataassociatedwithanIPobjectwillnecessarilybecontainedinthe document.

Protocol -anycommunicationspecificationfortheexchangeofinformationbetween computersorcomputerapplications.

SimpleObjectAccessProtocol(SOAP) -aprotoc olspecificationforinvokingmethods onservers,services,componentsandobjects.

UniversalResourceLocator(URL) -theaddressingschemefortheWorldWideWeb.
WebServicesDescriptionLanguage(WSDL) -anXML -basedspecificationschemafor describingtheoperationalinformationofaWebservice.
XMLEncodingRules(XER) ñtheISOstandardXML -basedspecificationfor representingtheinformationinASN.1encodeddatastructures.TheZ39.50protocolis describedinASN.1,soXERgivesanXMLrepres entationfortheZ39.50dataunits.
Z39.50 ñtheNISOstandardcommunicationsprotocolforsearchandretrieval.

[AppendixIIfollows]

APPENDIXII

NAMINGCONSIDERATION S

ThisAppendixdiscussessomeoftheissuesthatIPDLsmayneedtoaddressin constructing ARKidentifiernamesforIPobjects.

AlthoughtherearebenefitsintermsofpermanencethatanARKidentifiergainsfrom beingsemanticallyopaque,withinthespecializedrealmofIPitmaybeworthwhiletotradeit forlimitedsemantictransparency.In   particular,ARKidentifiersthatdisclose,intheir composition,certainkeyinformationelementstoindividualIPDLsupportofficescanbring manyadvantagestosystemssupportstaffwhomayalreadybeburdenedbythecommitment topersistence. Thesema ntictransparencydescribednextisnotsuitableforallproviders, sinceitcanbeahelpinsomeinstancesandaburdeninothers.Alternatively,theremaybe valueinadoptingidentifiersfromalready   -existingstandards(e.g.,UniformResourceNames [URN],DigitalObjectIdentifiers[DOI])andapplyingARKfunctionalitytothem.

ThefollowingidentifiercomponentsarebasedonWIPOStandardsandcommon establishedpracticeinIPoffices,mostofwhichhaveindividualcollectionslimitedtoasingle IP domain(suchaspatents).Withinthesecollections,documentsaregenerallyidentifiedand organizedbymeansofthefieldsassociatedwithINIDCodesasdescribedinWIPOStandards ST.9,ST.60,andST.80.WIPOStandardST.1[ST.1]specifiesthefourST.   9INIDCodes [ST.9],whicharebothnecessaryandsufficienttouniquelyidentifyapatentpublication(ST.1 doesnotexplicitlyassignanordertothesefourfields).Thus,tocreateatransparentARK containingthesefields,thesuggestedformforapat   entpublicationisoftheform:

http://ark.wipo.int/ark:/12345/pt/oc/kc/nnnnnnnnnn/ccyymmdd

where:

- 12345istheIPDLNumber(NAAN   [1],inARKterms),
- patentistheliteralstringìptî,
- *oc*istheST.3codeoftheissuingofficeororganization,
- *kc*i stheST.16kind -of-documentcode,
- *nnnnnnnnnn*isthe1to10numeric   -digitST.6publicationnumber(ST.6is currentlyunderrevisionandthenumberofdigitsmaybeexpandedinthefuture), and
- *ccyymmdd* istheST.2dateofpublication.

Fortrademarks andindustrialdesigns,andusingfieldsdescribedinST.60[ST.60]and ST.80[ST.80],therecommendedtransparentARKisoftheform:

http://ark.wipo.int/ark:/12345/*domaih oc*/*nnnnnnnnnn*/*ccyymmdd*

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[1]NameAssigningAuthorityNumber

where:

- 12345istheNameAssigningAuthorityNumber(N   AAN)oftheIPDL,
- *domaii*stheliteralstringìtmîorìidî,
- *oc*istheST.3codeoftheissuingofficeororganization,
- *nnnnnnnnnn*istheregistration,application,ordesigndocumentnumber,and
- *ccyymmdd*istheST.2dateofpublication.

[AppendixIIIfollows]

APPENDIXIII

IPDLSUMMARYDESCRIP TIONS

ThisAppendixproposesamachine   -readableIPDLsummaryrecord.Itwillincludeat leasttheIPDLísname,its *ipdlnumber*   ,andthebroaddomainsofcoverage.Itisretrieved withaURLofthisformat:

http://*localhostname*/ark:/*ipdlnumber*/?

Thereturnedìdocumentîisaplaintextmachine   -readablerecordthatcontainsalistof elements.

name:jpo
ipdlnumber:13045
domain:pt|tm|id

Theelementsaredefinedasfollows.The   *name*isauniqueabbrevia tionintheIPDL community(similartoanairportabbreviation).The   *ipdlnumber*isagloballyuniqueARK NameAssigningAuthorityNumber.The   *domain*elementcontainsalistofdomainscovered bytheIPOffice,inanyorder;currently,itmayassumeany   ofthevalues

pt=patents
tm=trademarks
id=industrialdesigns
tk=traditionalknowledge
np=non -patentliterature
ot=other

Extensionsareanticipatedthatwillallowmoredetaileddescriptionsofeachdomain, suchasnumbersofitems,date   scovered,searchcapabilities,andsystemstatus.Forexample, detailedinformationonthepatentdomainwouldbeavailableataURLoftheform

http://*localhostname*/ark:/*ipdlnumber*/pt?

[AppendixIVfollows]

APPENDIXIV

BIBLIOGRAPHY

ARK -TheArchivalReso   urceKeyPersistentIdentifierScheme
(http://www.ietf.org/internet-drafts/draft-kunze-ark-03.txt)

DOI -DigitalObjectIdentifierSystem(http://www.doi.org);theDOIHandbook
(http://www.doi.org/handbook_2000/index.html)

IPDLSD -ReportoftheWorksh   oponIntellectualPropertyDigitalLibraries(IPDL)
Standardization(Geneva,July2to6,2001),DraftVersion1.309
(http://www.wipo.int/scit/en/ipdl/workshop/1/ipdlws01_06.htm)

ISOXER ñX.693Informationtechnology   -ASN.1encodingrules:XMLencoding   rules
(http://www.itu.int/ITU-T/studygroups/com17/languages/X.693_0901.pdf)

SCIT/4/2 -StandingCommitteeonInformationTechnologies,InformationTechnology
StrategicImplementationPlan(http://www.wipo.int/scit/en/meeting/4/2_2.pdf)

SCIT/5/10 -Sta ndingCommitteeonInformationTechnologiesPlenaryReport,FifthSession
(http://www.wipo.int/scit/en/meeting/5/10.pdf)

SCIT/SDWG/1/9 -StandingCommitteeonInformationTechnologies,Standardsand
DocumentationWorkingGroupReport,FirstSession
(http://www.wipo.int/scit/en/meeting/sdwg/1/pdf/sdwg1_9.pdf)

ST.1 -RecommendationConcerningtheMinimumDataElementsRequiredtoUniquely
IdentifyaPatentDocument(http://www.wipo.int/scit/en/standards/pdf/st_1.pdf)

ST.9 -BibliographicDataonandRelati   ngtoPatentsandSPCs
(http://www.wipo.int/scit/en/standards/pdf/st_9.pdf)

ST.60 -BibliographicDataRelatingtoMarks
(http://www.wipo.int/scit/en/standards/pdf/st_60.pdf)

ST.80 -BibliographicDataRelatingtoIndustrialDesigns
(http://www.wipo.int/scit/en/standards/pdf/st_80.pdf)

URN -UniformResourceNameSyntax,RFC2141,May1997

W3CSOAP -XMLProtocolAbstractModel(http://www.w3.org/TR/xmlp   -am/);SOAP
Version1.2Part0:Primer(http://www.w3.org/TR/soap12   -part0/);SOAPVersion1.2Part   1:
MessagingFramework(http://www.w3c.org/TR/soap12 -part1/);SOAPVersion1.2Part2:
Adjuncts(http://www.w3c.org/TR/soap12 -part2/)W3CXML -ExtensibleMarkupLanguage
(http://www.w3c.org/XML/)

W3CWSDL -WebServicesDescriptionLanguage(WSDL)1.1
(http://www.w3c.org/TR/wsdl)

XER- XMLEncodingRules(http://asf.gils.net/xer/)

ZURL -UniversalResourceLocatorsforZ39.50(http://www.gils.net/z -url.txt)

[EndofAppendixIVandofdocument]