

Mapping between core data models (ISA vs. IMI)

Hideaki Takeda National Institute of Informatics <u>takeda@nii.ac.jp</u>



Core vocabulary v2.2

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- 48 core class terms
 - person, address, facility, location, date, ...
- 206 core property terms

 name of person, birth date, birth country, …
- Multi format
 - rdf schema, xml schema and documents for human

http://imi.ipa.go.jp/ns/core/2/

Meaning of mapping between core data models

- Semantic mapping
 - Showing relationship between elements which are semantically equivalent
 - Syntactical mapping can be generated by using Semantic mapping as a guide
- Syntactical mapping
 - Data can be transferred through the mapping



Core Vocabulary Identifier	💌 Link 💌	Mapping relation	🔻 Dat 🗖	🕇 Identifier 🛛 🖿	~									
Address	Link	Has close match	IMI	<u>ic:住所型</u>										
AddressAddressArea	Link	Has narrow match	IMI	ic:町名										
AddressAddressArea	Link	Has narrow match	IMI	ic:丁目	Identifier	Link	Has exact match	IMI	<u>ic:ID型</u>					
AddressAddressArea	Link	Has narrow match	IMI		IdentifierIdentifier	Link	Has exact match	IMI	<u>ic:識別値</u>		Develop	Demonstration 1154	Personal Units of the second match	Denses U.S. Har marked by DM
AddressAddressArea	Link	Has narrow match	IMI	ic:番地	IdentifierIssueDate	Link	Has no match	IMI			Person	Person Link	Person Link Has exact match	Person Unk Has exact match IMI
Address Address Area	Link	Has narrow match	IMI	<u>io:몸/진</u> io:문	IdentifierIssuingAuthority	Link	Has related match	IMI	ic:ID体系.発行者		PersonAddress	PersonAddress Link	PersonAddress Link Has exact match	PersonAddress Link Has exact match IMI
AddressAddressArea		Has narrow match		10.75	IdentifierIssuingAuthorityURI	Link	Has broad match	IMI	ic:ID体系.URI		PersonAlternativeName	PersonAlternativeName Link	PersonAlternativeName Link Has broad match	PersonAlternativeName Link Has broad match IMI
AddressAddressID	Link	Has exact match	IMI		IdentifierType	Link	Has no match	IMI		_	PersonBirtrivame	PersonDirtrivame Link	PersonDirunivame Link Has po metab	PersonBirdiname Link Has po match IMI
AddressAdminUnitL1	Link	Has close match	IMI	<u>ic:国</u>	- Input	Link	Has no match	IMI			PersonCountry/Offlirth	PersonCountryOfBirth	PersonCountry/OffPirth Link Has avant metch	PersonCouptryOfRith Link Has avant match IM
AddressAdminUnitL2	Link	Has close match	IMI	<u>ic:都道府県</u>	InputDescription	Link	Has no match	IMI		_	PersonCountryOfDeath	PersonCountryOfDeath Link	PersonCountryOfDeath Link Has no match	PersonCountryOfDeath Link Has no match IM
AddressFullAddress	Link	Has exact match	IMI	<u>ic:表記</u>	InputName	Link	Has no match	IMI		_	PersonDateOfBirth	PerconDateOfBirth Link	PersonDateOfBirth Link Has exact match	PersonDateOfBirth Link Has exact match IM
AddressLocatorDesignator	Link	Has narrow match	IMI	<u>ic:ビル番号</u>		Link	Has no match	IMI		-	PersonDateOfDeath	PersonDateOfDeath Link	PersonDateOfDeath Link Has exact match	PersonDateOfDeath Link Has exact match IM
AddressLocatorDesignator	Link	Has narrow match	IMI	ic:部屋番号	Jurisdiction	Link	Has no match	IMI			PersonFamilyName	PersonFamilyName Link	PersonFamilyName Link Has exact match	PersonFamilyName Link Has exact match IM
AddressLocatorName	Link	Has narrow match	IMI	 ic:ビル名	JurisdictionIdentifier	Link	Has related match	IMI	io:国籍コード		PersonFullName	PersonFullName Link	PersonFullName Link Has exact match	PersonFullName Link Has exact match IMI
AddressPOBox	Link	Has related match	IMI	ic:方書	JurisdictionName	Link	Has related match	IMI		_	PersonGender	PersonGender Link	PersonGender Link Has exact match	PersonGender Link Has exact match IMI
AddressBostCode	Link	Has exact match	IMI	·····································		Link		IMI	はは、日刊		PersonGivenName	PersonGivenName Link	PersonGivenName Link Has exact match	PersonGivenName Link Has exact match IMI
	Link		TRAT			Link	Has bread match	INI	<u>10.从八王</u> :		PersonIdentifier	PersonIdentifier Link	PersonIdentifier Link Has broad match	PersonIdentifier Link Has broad match IMI
		nas narrow match	11/11			Link		INI	10:1生//打		PersonPatronymicName	PersonPatronymicName Link	PersonPatronymicName Link Has no match	PersonPatronymicName Link Has no match IMI
AddressPostName	Link	Has narrow match	IMI		LegalEntityAlternativeName	Link	Has no match	IMI	, statistic m		PersonPlaceOfBirth	PersonPlaceOfBirth Link	PersonPlaceOfBirth Link Has narrow match	PersonPlaceOfBirth Link Has narrow match IMI
AddressThoroughfare	Link	Has no match	IMI		LegalEntityCompanyActivity	Link	Has close match	IMI	<u>IC:争耒裡日</u>		PersonPlaceOfDeath	PersonPlaceOfDeath Link	PersonPlaceOfDeath Link Has no match	PersonPlaceOfDeath Link Has no match IM
Agent	Link	Has exact match	<u>IMI</u>	<u>ic:実体型</u>	LegalEntityCompanyStatus	Link	Has related match	IMI	<u>ic:活動状況</u>		PersonResidency	PersonResidency Link	PersonResidency Link Has no match	PersonResidency Link Has no match IM
AgentPlaysRole	Link	Has no match	IMI			Link	Has exact match	IMI	に組織挿列		PublicService	PublicService Link	PublicService Link Has no match	PublicService Link Has no match IM
AgentProvides	Link	Has no match	IMI			LINK Link	Has exact match	TRAT	<u>10.州山州以下主力小</u>		PublicServiceChannel	PublicServiceChannel	PublicServiceChannel Link Has no match	PublicServiceChannel Link Has no match IMI
Channel	Link	Has no match	IMI			Link	Has exact match	IIVII			PublicServiceDescription	PublicServiceDescription	PublicServiceDescription Link Has no match	PublicServiceDescription Link Has no match IMI
Code	Link	Has exact match	IMI	ic:コード型		Link	Has no match	IIVII	:	_	PublicServiceFollows	PublicServiceFollows	PublicServiceFollows Link Has no match	PublicServiceFollows Link Has no match IMI
CodeContent	Link	Has exact match	IMI			Link	Has broad match	IMI		_	PublicServiceHomepage	PublicServiceHomepage Link	PublicServiceHomepage Link Has no match	PublicServiceHomepage Link Has no match IMI
Ordellist	Link Link		INI	(小歌が)10		Link	Has related match	IMI	IC: 吧物.說明		PublicServiceInput	PublicServiceInput Link	PublicServiceInput Link Has no match	PublicServiceInput Link Has no match IMI
CodeList	Link	mas exact match	IMI	<u>IC:J一下裡別.名称</u>	LegalEntityRegisteredAddress	Link	Has broad match	IMI	<u>ic:住所</u>		PublicServiceLanguage	PublicServiceLanguage Link	PublicServiceLanguage Link Has no match	PublicServiceLanguage Link Has no match IMI
CodeListAgency	Link	Has related match	IMI	ic:コード種別.発行者	Location	Link	Has exact match	IMI	<u>ic:場所型</u>		PublicServiceName	PublicServiceName	PublicServiceName Link Has no match	PublicServiceName Link Has no match IM
CodeListVersion	Link	Has no match	IMI	ic:コード種別.バージ	LocationAddress	Link	Has close match	IMI	<u>ic:住所</u>		PublicServicePhysicallyAvailableAt	PublicServicePhysicallyAvailableAt Link	PublicServicePhysicallyAvailableAt Link Has no match	PublicServicePhysicallyAvailableAt Link Has no match IMI
				2	LocationGeographicIdentifier	Link	Has close match	IMI	<u>ic:地理識別子</u>		PublicServiceProduces	PublicServiceProduces	PublicServiceProduces Link Has no match	PublicServiceProduces Link Has no match IM
DateTime	Link	Has exact match	IMI	xsd:dateTime	LocationGeographicName	Link	Has broad match	IMI	<u>ic:名称</u>		PublicServiceRelated	PublicServiceRelated Link	PublicServiceRelated Link Has no match	PublicServiceRelated Link Has no match IM
FormalFramework	Link	Has no match	IMI		LocationGeometry	Link	Has exact match	IMI	ic:地理座標		PublicServiceRequires	PublicServiceRequires Link	PublicServiceRequires Link Has no match	PublicServiceRequires Link Has no match IM
FormalFrameworkCreator	Link	Has no match	IMI		Output	Link	Has no match	IMI		_	PublicServiceSpatial	PublicServiceSpatial Link	PublicServiceSpatial Link Has no match	PublicServiceSpatial Link Has no match IM
FormalFrameworkRelated	Link	Has no match	IMI		OutputDescription	Link	Has no match	IMI			PublicServiceTemporal	PublicServiceTemporal Link	PublicServiceTemporal Link Has no match	PublicServiceTemporal Link Has no match IMI
Geometry	Link	Has exact match	IMI	ic:座標型	OutputName	Link	Has no match	IMI			PublicServiceType	PublicServiceType Link	PublicServiceType Link Has no match	PublicServiceType Link Has no match IM
GeometryCoordinates	Link	Has close match	IMI	ic:座標データ	OutputType	Link	Has no match	IMI			qq	qq Link	qq <u>Link</u> Has related match	qq <u>Link</u> Has related match <u>IM</u>
Company ODC Unitates	Link		TRAT		PeriodOfTime	Link	Has no match	IMI		_	Rule	Rule Link	Rule Link Has no match	Rule Link Has no match IMI
GeometryCKS	Link	mas exact match	11/1		<u>.</u>			_			RuleCreator	RuleCreator	RuleCreator Link Has no match	RuleCreator Link Has no match IMI
GeometryType	Link	Has exact match	IMI	<u>ic:</u> 座標データ書式							RuleImplements	RuleImplements Link	RuleImplements Link Has no match	RuleImplements Link Has no match IM
											String	String	String [Link Has exact match	String [Link Has exact match [M]

Text

URI

TextContent

TextLanguage

Link

Link

Link

Link

Has exact match

Has exact match

Has no match

Has no match

IMI

IMI

IMI

IMI

xsd:string

xsd:anyURI

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Mapping!

The result of mapping

- Has exact match: 30
- Has close match: 7
- Has broad match: 8
- Has narrow match: 11
- Has related match: 8
- Has no match: 46

Interpretation of "sematic mapping"

- Two views
 - Conceptual equivalence
 - Extension is the same
 - Ex. Person
 - Most of classes, some properties
 - Criteria
 - If extension is concrete, how strict range of extension is considered
 - If extension is abstract, how equivalence is interpreted

Data equivalence

- Representation as data is the same in semantics
 - Ex. AddressPostCode
- Most of properties, some classes
- Criteria
 - How strict data structure (including type and value range) is considered
 - cf. Syntactical mapping

Real World

Data World

Has exact match

Apparent equivalence

- Conceptual equivalence
 - Well-known common concepts (class and properties)
- Data equivalence
 - Common ranges
 - Data types
- Simple cases for differences in structure can be described
 - A = B.C

			E	
AddressAddressID	Link	Has exact match	IMI	<u>ic:ID</u>
AddressFullAddress	Link	Has exact match	IMI	<u>ic:表記</u>
AddressPostCode	Link	Has exact match	IMI	<u>ic:郵便番号</u>
Agent	<u>Link</u>	Has exact match	IMI	<u>ic:実体型</u>
Code	Link	Has exact match	IMI	<u>ic:コード型</u>
CodeContent	Link	Has exact match	IMI	<u>ic:識別値</u>
CodeList	Link	Has exact match	IMI	<u>ic:コード種別.名称</u>
DateTime	Link	Has exact match	IMI	xsd:dateTime
Geometry	Link	Has exact match	IMI	<u>ic:座標型</u>
GeometryCRS	Link	Has exact match	IMI	<u>ic:座標参照系</u>
GeometryType	Link	Has exact match	IMI	<u>ic:座標データ書式</u>
Identifier	Link	Has exact match	IMI	<u>ic:ID型</u>
IdentifierIdentifier	Link	Has exact match	IMI	<u>ic:識別値</u>
LegalEntity	Link	Has exact match	IMI	<u>ic:法人型</u>
LegalEntityCompanyType	Link	Has exact match	IMI	<u>ic:組織種別</u>
LegalEntityIdentifier	Link	Has exact match	IMI	<u>ic:ID</u>
Location	Link	Has exact match	IMI	<u>ic:場所型</u>
LocationGeometry	<u>Link</u>	Has exact match	<u>IMI</u>	<u>ic:地理座標</u>
Person	<u>Link</u>	Has exact match	IMI	<u>ic:人型</u>
PersonAddress	<u>Link</u>	Has exact match	IMI	<u>ic:住所</u>
PersonCountryOfBirth	<u>Link</u>	Has exact match	IMI	<u>ic:出生国</u>
PersonDateOfBirth	<u>Link</u>	Has exact match	<u>IMI</u>	<u>ic:生年月日</u>
PersonDateOfDeath	<u>Link</u>	Has exact match	IMI	<u>ic:死亡年月日</u>
PersonFamilyName	Link	Has exact match	<u>IMI</u>	<u>ic:氏名.姓</u>
PersonFullName	Link	Has exact match	IMI	<u>ic:氏名.姓名</u>
PersonGender	Link	Has exact match	IMI	<u>ic:性別コード</u>
PersonGivenName	Link	Has exact match	IMI	<u>ic:氏名.名</u>
String	Link	Has exact match	IMI	xsd:string
Text	Link	Has exact match	IMI	xsd:string
URI	Link	Has exact match	IMI	xsd:anyURI

Has close match

- Relaxation in two views
 - Conceptual equivalence
 - Range of extension is not exactly the same
 - ex) address in between Europe and Japan
 - Data equivalence
 - Range of value is not the same
 - Ex) AddressAdminUint1 <-> ic:国 (country)

Address	<u>Link</u>	Has close match	IMI	<u>ic:住所型</u>
AddressAdminUnitL1	<u>Link</u>	Has close match	IMI	<u>ic:国</u>
AddressAdminUnitL2	<u>Link</u>	Has close match	IMI	<u>ic:都道府県</u>
GeometryCoordinates	<u>Link</u>	Has close match	IMI	<u>ic:座標データ</u>
LegalEntityCompanyActivity	<u>Link</u>	Has close match	IMI	<u>ic:事業種目</u>
LocationAddress	<u>Link</u>	Has close match	IMI	<u>ic:住所</u>
LocationGeographicIdentifier	Link	Has close match	IMI	<u>ic:地理識別子</u>

Has broad match

- Interpretation of range
 - Conceptual equivalence
 - Class hierarchy
 - Data equivalence
 - Range subsumption
 - Structural subsumption

dentifierIssuingAuthorityURI	<u>Link</u>	Has broad match	<u>IMI</u>	<u>ic:ID体系.URI</u>			is a class whose property ic:URI corresponds this property. But it means a URI either for the issuer or ID system.
egalEntityAddress	Link	Has broad match	IMI	<u>ic:住所</u>	住所		
egalEntityLegalName	Link	Has broad match	IMI	ic:名称.表記		It represents a name in Japanese. Ic:名称 ローマ字表記 is a name in roman alfabet	
egalEntityRegisteredAddress	Link	Has broad match	IMI	<u>ic:住所</u>		It is exact match if the value of ic:住所.種 別 should be ″登記住所″.	
ocationGeographicName	Link	Has broad match	IMI	<u>ic:名称</u>	名称		Compatible
PersonAlternativeName	Link	Has broad match	IMI	ic:氏名.姓名			A person has multiple names '種別' of '氏 名' shows the category of the name.
PersonBirthName	Link	Has broad match	IMI	ic:氏名.姓名			A person has multiple names '種別' of '氏 名' shows the category of the name.
PersonIdentifier	Link	Has broad match	IMI	ic:ID			

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Has narrow match

Multiple correspondence

AddressAddressArea	Link	Has narrow match	<u>IMI</u>	<u>ic:町名</u>
AddressAddressArea	Link	Has narrow match	IMI	<u>ic:丁目</u>
AddressAddressArea	Link	Has narrow match	<u>IMI</u>	ic:番地補足
AddressAddressArea	Link	Has narrow match	IMI	ic:番地
AddressAddressArea	<u>Link</u>	Has narrow match	<u>IMI</u>	<u>ic:号</u>
AddressLocatorDesignator	<u>Link</u>	Has narrow match	IMI	<u>ic:ビル番号</u>
AddressLocatorDesignator	Link	Has narrow match	IMI	ic:部屋番号
AddressLocatorName	Link	Has narrow match	IMI	<u>ic:ビル名</u>
AddressPostName	Link	Has narrow match	IMI	<u>ic:市区町村</u>
AddressPostName	Link	Has narrow match	IMI	ic:X
PersonPlaceOfBirth	Link	Has narrow match	IMI	<u>ic:出生地</u>

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Has related match

- Complicated relationship
 - It can be matched with some conditions
 - Ex) structure is different
- Vague relationship
 - Difficult to explain the relationship in the

scheme	
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AddressPOBox Link	Has related ma IMI	ic:方書	方書		
CodeListAgenc Link	Has related ma IMI	ic:⊐ード種別. 発行者			The range of ic:⊐ード種別 is ic:⊐ード リスト型 which is a class whose property ic:発行者 corresponds this property. But the range of ic:発行者 is a class ic:実体型, not a string.
IdentifierIssuin; Link	Has related ma IMI	ic:ID体系.発 行者			The range of ic:D種別 is ic:D体系型 which is a class whose property ic:発 行者 corresponds this property. But the range of ic:発行者 is a class ic:実 体型, not a string.
JurisdictionIde Link	Has related ma IMI	ic:国籍コード			It represents a country by code.
JurisdictionNar Link	Has related ma IMI	ic:国籍	Nationality		
LegalEntityCon Link	Has related ma IMI	ic:活動状況	活動状況	The value is the structure coinsiting of name, occuring data, description, and related person.	
LegalEntityLoc Link	Has related ma IMI	ic:地物.説明			
qq Link	Has related ma IMI	ic:国籍			It represents a country in string.

Has no match

No conceptual equivalence

AddressThoroughfare	<u>Link</u>	Has no match	IMI
AgentPlaysRole	Link	Has no match	<u>IMI</u>
AgentProvides	<u>Link</u>	Has no match	IMI
Channel	<u>Link</u>	Has no match	IMI
CodeListVersion	<u>Link</u>	Has no match	IMI
FormalFramework	<u>Link</u>	Has no match	<u>IMI</u>
FormalFrameworkCreator	<u>Link</u>	Has no match	IMI
FormalFrameworkRelated	<u>Link</u>	Has no match	IMI
IdentifierIssueDate	Link	Has no match	IMI
IdentifierType	<u>Link</u>	Has no match	<u>IMI</u>
Input	Link	Has no match	IMI
InputDescription	<u>Link</u>	Has no match	<u>IMI</u>
InputName	Link	Has no match	IMI
InputType	Link	Has no match	IMI
Jurisdiction	Link	Has no match	IMI
LegalEntityAlternativeName	Link	Has no match	IMI
LegalEntityLegalIdentifier	Link	Has no match	IMI
Output	<u>Link</u>	Has no match	<u>IMI</u>
OutputDescription	<u>Link</u>	Has no match	<u>IMI</u>
OutputName	<u>Link</u>	Has no match	IMI
OutputType	<u>Link</u>	Has no match	<u>IMI</u>
PeriodOfTime	Link	Has no match	IMI
PersonCitizenship	Link	Has no match	IMI
PersonCountryOfDeath	Link	Has no match	IMI
PersonPatronymicName	Link	Has no match	IMI
PersonPlaceOfDeath	Link	Has no match	IMI
PersonResidency	Link	Has no match	IMI

PublicService	Link	Has no match	IMI
PublicServiceChannel	<u>Link</u>	Has no match	IMI
PublicServiceDescription	Link	Has no match	IMI
PublicServiceFollows	Link	Has no match	IMI
PublicServiceHomepage	Link	Has no match	IMI
PublicServiceInput	Link	Has no match	IMI
PublicServiceLanguage	Link	Has no match	IMI
PublicServiceName	Link	Has no match	IMI
PublicServicePhysicallyAvailableAt	<u>Link</u>	Has no match	IMI
PublicServiceProduces	Link	Has no match	IMI
PublicServiceRelated	Link	Has no match	<u>IMI</u>
PublicServiceRequires	<u>Link</u>	Has no match	IMI
PublicServiceSpatial	<u>Link</u>	Has no match	IMI
PublicServiceTemporal	<u>Link</u>	Has no match	IMI
PublicServiceType	Link	Has no match	IMI
Rule	Link	Has no match	IMI
RuleCreator	Link	Has no match	IMI
RuleImplements	<u>Link</u>	Has no match	<u>IMI</u>
TextContent	<u>Link</u>	Has no match	<u>IMI</u>
TextLanguage	Link	Has no match	IMI

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Summary

- Two views for mapping are not consistent
 - Need for specifying which view is used to map
 - Mapping for data type may be separated?
- Conditions for mapping type should be clarified
 - Exact matching vs. close matching
 - Exact matching vs. broad (narrow) matching
- More detailed languages are needed to describe complicated relationship (OWL?)
- Another central core model is needed???