Digital Policy Office

XML SCHEMA DESIGN AND MANAGEMENT GUIDE
PART III: XML SCHEMA MANAGEMENT GUIDE

[G55-3]

Version 1.5

Jul 2024

The Government of the Hong Kong Special Administrative Region
of the People's Republic of China

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15   Prepared By:_____ XML Coordination Group

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17   Doc. Effective Date: 1 January 2006

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Amendment History				
Change Number	Revision Description	Sections Affected	Revision Number	Date
	Updates to consultation draft issued in July 2003		1.0	24-Nov-03
1.	Amended that a project team may seek exemption approval from the Project Steering Committee when the joined-up service involves multiple bureaux and departments (B/Ds).	2.4		
2.	Amended that when a Common Schema is retired, all its versions will be moved to a separate section in the Central Registry.	3.1, 3.6		
3.	Clarified that it is recommended new projects use the latest version of a Common Schema, and the maturity level only applies to that latest version.	3.2, 3.9		
4.	Added that the review to promote a Common Schema to level 1 would not be triggered until there are more B/Ds that have adopted that Common Schema since the last review.	3.2		
5.	Emphasized that B/Ds should adopt any suitable Common Schemas, including those at Level 0.	3.2		
6.	Clarified that a B/D may indicate its maturity preference on a Common Schema although it has no immediate need of using the Common Schema.	3.2		
7.	Emphasized that B/Ds can send experienced XML adopters to join XMLCG.	3.3.1		
8.	Section 3.4.3 modified to say that the Common Schema Task Force (CSTF) is responsible for assessing whether a Common Schema can fulfill the specified business requirement	3.4.3, 3.4.4		
9.	Emphasized the importance for Project Registries to adopt a common data dictionary format.	4		
10.	Emphasized that B/Ds should share a common culture and vision in relation to Common Schemas and be ready to compromise when trying to agree on Common Schemas.	3.5		
11.	Clarified that it is not necessary to enhance existing Project Schemas to adopt latest versions of Common Schemas unless there are new business needs.	3.9		
12.	Clarified that the Interoperability Framework Standing Office can also initiate a retirement request.	3.6		

Amendment History				
Change Number	Revision Description	Sections Affected	Revision Number	Date
13.	Emphasized that human judgment is required to determine the relevance of Common Schemas.	5.4.1		
	Major updates to version 1.0 issued in November 2003		1.1	01-Jul-04
14.	Renamed organization name from ITSD to OGCIO	Whole document		
	Major updates to version 1.1 issued in July 2004		1.2	2-Nov-04
15.	Revised to differentiate the meanings of Common Schema and data element to avoid confusion.	2.4, 3.2, 5.4.1		
16.	Changed the Common Schema review period from every 6 months to every 6 to 12 months.	3.1, 3.2, 3.8		
17.	Amended to clarify that only the information model is counted when counting whether a Common Schema is in use.	3.2		
	Major updates to version 1.2 issued in November 2004		1.3	4-Jan-06
18.	Minor version number upgraded to 1.3 according to annual review requirement of S&M [G57].	Whole document		
19.	Minor revision in light of OGCIO Circular No. 2/2015 regarding "Structured Systems Analysis and Design Methodology (SSADM)" and "Rapid Application Development (RAD)".		1.4	30-Mar-15
20.	Renamed organization name from OGCIO to DPO	Whole document		
	Major updates to version 1.4 issued in March 2015		1.5	25-Jul-24

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1. Introduction

1.1. Objectives

As described in Part I of this guide (Overview), project teams implementing joined-up services should adopt industry standards and Common Schemas where applicable, and contribute project-defined data elements that have potential for reuse by other projects for concerted alignment. Project teams are also encouraged to share Project Schemas among themselves to maximize their reuse.

This part of the guide describes how data elements that have potential for reuse are aligned concertedly to yield Common Schemas. Both the alignment process and the organization that manages the alignment are described.

This part of the guide also describes some considerations for the management of Project Schemas (and their related controlled vocabularies).

The registry plays an important role in facilitating the sharing of reusable schemas. A Project Registry facilitates the sharing of Project Schemas whereas the Central Registry facilitates the sharing of Common Schemas. The last section of this part of the guide describes how Common Schemas (i.e. the information models and the corresponding XML Schema Definition (XSD) code of the concertedly aligned data elements) and related controlled vocabularies are managed in the Central Registry. A similar approach may be adopted for the management of Project Schemas.

1.2. Structure and Audience

The audience of this part of the guide (i.e. part III) is expected to have read part I (Overview) and fully understands the strategy and overall mechanism for enhancing data interoperability.

Section 2 of this part of the guide reviews the data interoperability measures and proposes a usage policy for the Common Schemas. This section should be read by all project teams and all other parties involved in the concerted alignment of data elements, namely the Common Schema Liaison Officers, the Interoperability Framework Coordination Group (IFCG) Standing Office and the XML Coordination Group (XMLCG).

Section 3 covers how the data elements submitted for concerted alignment are handled. This section should be read by all project teams and those parties involved in the concerted alignment of data elements. Project teams can get a better understanding of their role as a contributor of reusable data elements.

Section 4 covers the considerations for managing Project Schemas. This section should be read by all project teams.

Section 5 describes the Central Registry and should be read by all project teams in order to understand how they may best utilize the Central Registry.

2. Review of Data Interoperability Measures

2.1. Development and Use of Common Schemas as a Means to Enhance Data Interoperability

As explained in Part I of this Guide (Overview), data interoperability can be enhanced by **service-wide reuse of information models** where appropriate, and one way to enhance the reusability of information models is to **conduct concerted data alignment** for data elements that has potential for reuse across B/Ds.

The concertedly aligned data elements are then managed in the form of carefully specified information models together with their corresponding XSDs, collectively referred as Common Schemas.

2.2. Objectives of the Concerted Data Alignment Exercise

The objectives of the concerted data alignment exercise is to gain B/Ds' consensus on how specific data elements should be defined and then represented when they are exchanged between B/Ds.

This representation does not necessarily correspond to how that data element is maintained in a B/D's internal system; it is the representation of a data element that B/Ds agree to :

- generate in the form of (before they send a piece of data to another B/D or external parties); and

- accept in the form of (when they receive a piece of data from another B/D or external parties).

If the aligned representation does not correspond to how a data element is maintained in a B/D's internal system, the B/D would have to perform data conversion between the transmitted data and the data maintained in its internal system.

2.3. A B/D's Role in the Development and Use of Common Schemas

A B/D is expected to contribute / cooperate in the following ways :

- **suggest what data elements should be aligned concertedly** : the project teams working for B/Ds are highly recommended to identify from their projects those data elements that have potential for reuse in other projects and submit the information models of these data elements for concerted alignment;

- **provide business requirements during the data alignment process so that the aligned information model can address as many B/D's requirements as possible** : B/Ds are highly recommended to participate directly in the alignment of specific data elements that they intend to use;

- **participate in consensus making bodies to collaboratively derive solutions and resolve conflicts** : B/Ds are highly recommended to nominate Common Schema Liaison Officers to provide requirements and comments during the data alignment process, they should also nominate experienced XML adopters to join the XMLCG to help steer the data alignment processes; and

- **adopt Common Schemas (i.e. the concertedly aligned data elements)** : When the Common Schemas are well established, a B/D should adopt a Common Schema if it can fulfill the project's requirement, taking into consideration the definition, representation, and usage contexts of the Common Schema.

2.4.   Usage Policy Governing the Use of Common Schemas

In principle, B/Ds should adopt the concertedly aligned Common Schemas, where appropriate. However, the establishment of Common Schemas may take time to evolve and become effective. For example, the identification of a new Common Schema may induce fine-tuning in the semantic definition or the content restriction of an existing Common Schema to differentiate the two. The more Common Schemas we have developed and the more experience we accumulate in the development and use of Common Schemas, the more effective will we become in enhancing data interoperability.

As we are at an embarking stage of the concerted data alignment exercise, a more flexible Common Schema usage policy may be more effective in promoting the use of Common Schemas. We can assign maturity levels to the Common Schemas to indicate their actual or perceived reusability, and project teams should take this maturity level into consideration when deciding whether to adopt a Common Schema.

The maturity levels are proposed to be :

0 – agreed in principle : B/Ds have generally agreed on the definition, representation, and usage context[1] of the concerned Common Schema, but among those B/Ds that believe the data element might be applicable to their business, the majority anticipate that they require further investigation and analysis before adopting the Common Schema

1 - recommended for reuse : B/Ds have generally agreed on the definition, representation, and usage context of the concerned Common Schemas, and among those B/Ds that believe the data element might be applicable to their business, the majority anticipate that they are ready to adopt the concerned data element in most of their future projects

2 - matured for reuse : B/Ds have generally agreed on the definition, representation, and usage context of the concerned Common Schema, and among those B/Ds that believe the data element might be applicable to their business, the majority anticipate that they are ready to adopt the concerned Common Schema in most of their future projects. In addition, the concerned Common Schema has already been used in some projects and the information model of this data element has remained stable for a certain period.

The recommended usage policy for Common Schemas is that when project teams implement the information exchange interface between B/Ds or between a B/D and an external party, they are required to adopt matured Common Schemas (i.e. those with maturity level 2) that match with their project requirements, taking into consideration the definition, representation, and usage context associated with the Common Schemas. If a project team decides not to adopt matured Common Schemas whose definition, representation, and usage context match with its project requirement, it is required to seek exemption approval from the Head of its IT Management Unit (ITMU). In a joined-up service involving multiple B/Ds, each project team should seek exemption approval from its corresponding Head of ITMU. Alternatively, if the Project Steering Committee, which comprises senior technical representatives as well as senior user representatives, of a joined-up project grants approval for exemption, then individual project teams need not seek exemption approval separately. Nevertheless, the project teams should report the approved exemption to the IFCG Standing Office. This arrangement is consistent with the IF compliance policy.

The introduction of maturity levels to Common Schemas has implication on the Common Schema management processes, which will be explained in the next section.

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[1] The usage context of a Common Schema corresponds to the usage rules and business contexts specified for that Common Schema.

3. Common Schema Management

3.1. Overview of the Common Schema Management Processes

Basically, a request for creating or changing a Common Schema would have to go through a consensus making process involving all interested B/Ds before the Common Schema would be registered in the Central Registry.

The parties involved in the consensus making process are the Common Schema Task Force, the Common Schema Liaison Officers, the XML Coordination Group (XMLCG), and the IFCG Standing Office. During the process, a Common Schema Task Force develops the candidate Common Schema. The Common Schema Liaison Officers are nominated by B/Ds to reflect individual B/D's requirements and to provide comments on the candidate Common Schemas. They also help to determine the Maturity Level of Common Schemas. The XMLCG provides final decision of either approving or rejecting candidate Common Schemas (i.e., draft information models for data elements) submitted for concerted alignment. The IFCG Standing Office, which is staffed by the Digital Policy Office, provides operational support throughout the process. The roles of these parties are elaborated in section 3.3.

Upon receiving a Common Schema Creation / Change Request, the IFCG Standing Office will invite the stakeholders of the concerned data element to join hands with the IFCG Standing Office to form a Common Schema Task Force to handle the request and, where appropriate, propose candidate information model and XSD (referred to collectively as **candidate Common Schema**) for the concerned data element.

The candidate Common Schema proposed by the Common Schema Task Force would be passed to all Common Schema Liaison Officers for comment. The Common Schema Liaison Officers are expected to check whether the definition, naming and usage contexts of the data element are appropriate and, if their B/D needs to use that data element in their business, whether their B/D can exchange data in accordance with the representation (including usage rules) of the data element at system interfaces that interact with the systems of other B/Ds or external parties. The Common Schema Liaison Officers would also be requested to indicate their preference on the maturity grading for that candidate Common Schema. Considerations for indicating such preference are explained in section 3.2

When all comments from the Common Schema Liaison Officers have been addressed by the Common Schema Task Force, the XMLCG will review the candidate Common Schema and decide to approve it or not.

Apart from the Common Schema itself, all controlled vocabularies associated with that Common Schema need to go through the same consensus making process.

In the process of developing a candidate Common Schema, or revising a candidate Common Schema in response to comments from the Common Schema Liaison Officers, the Common Schema Task Force may encounter conflicts which it fails to handle. Under such circumstances, the Common Schema Task Force may recommend technical options and seek advice or support from the XMLCG.

Approved Common Schemas (or simply **Common Schemas**) and their associated controlled vocabularies will be published in the Central Registry.

The Common Schemas are reviewed periodically (every 6 to 12 months) to assess whether its maturity level may be promoted to a higher level. The review mechanism is explained in section 3.2.

As time goes by, new versions of Common Schemas may emerge and co-exist with older versions. The IFCG Standing Office will answer to enquiries over the latest two versions of a Common Schema,

1   but Change Requests will only be handled for the latest version. Project teams are recommended to
2   use the latest version of a Common Schema instead of an older version, where appropriate.

3   In some rare cases, a particular Common Schema may become obsolete. In these cases, project teams
4   may request to retire a Common Schema. The Common Schema Liaison Officers have to be
5   consulted before the retirement request is submitted to the XMLCG for endorsement. When a
6   Common Schema is retired, all versions of the Common Schema will be moved to a separate section
7   for Retired Common Schemas in the Central Registry.

8

3.2.   Assigning Common Schema Maturity Levels

10   Each Common Schema is associated with a maturity level indicating the maturity / reusability of that
11   Common Schema. The maturity levels can be 0-agreed in principle, 1-recommended for reuse, or 2-
12   matured for reuse.

13   Newly published Common Schemas are either graded as level 0 or level 1 depending on B/Ds'
14   preferences indicated through their Common Schema Liaison Officers. A newly published Common
15   Schema is either a new Common Schema or a new version of an existing Common Schema created
16   upon a Common Schema Creation / Change Request, as described in section 3.4.

17   In the case of updating an existing Common Schema, the maturity level of the new version will be re-
18   graded according to the process described in this section, regardless of the maturity level of the
19   previous version. Since only the latest version of a Common Schema is recommended, only the
20   maturity level of the latest version needs to be considered. The maturity level of the previous version
21   is invalidated and modified with a qualifier notifying new projects to consider using the latest version.
22   In other words, the usage policy only applies to the maturity level of the latest version of a Common
23   Schema.

24   In the process of developing a candidate Common Schema, the Common Schema Liaison Officers will
25   be requested to review the candidate Common Schema and indicate whether they support a level 1
26   maturity grading for that Common Schema. A Common Schema Liaison Officer should assess
27   whether the data element would be applicable to his B/D's business, and if so, whether his B/D is
28   ready to adopt the Common Schema.

29   The following table summarizes the conditions guiding how a Common Schema Liaison Officer
30   should indicate his preference :

31   Table 3-1: The Conditions Guiding how a Common Schema Liaison Officer Should Indicate His Preference on
32   Maturity Settings

Preference for	Conditions guiding how a Common Schema Liaison Officer should indicate his preference
Maturity Level 0	The data element is relevant to the business of the Common Schema Liaison Officer's B/D and he anticipates that his B/D requires further investigation and analysis before adopting the concerned Common Schema.
Maturity Level 1	The data element is relevant to the business of the Common Schema Liaison Officer's B/D and he anticipates that his B/D is ready to adopt the concerned Common Schema in most of its future projects.
No preference	The data element is irrelevant to the business of the Common Schema Liaison Officer's B/D

33

34   B/Ds that have nominated Common Schema Liaison Officers would be requested to express their
35   preference of maturity grading of the Common Schema through one of their Common Schema Liaison

1 Officers. If the number of B/Ds indicating a preference for level 1 is greater than the number of B/Ds
2 indicating a preference for level 0, the maturity level of that Common Schema will be published as 1.

3 A Common Schema Liaison Officer whose B/D does not have an immediate need for a Common
4 Schema may also indicate its preference as level 0 or level 1 (instead of no preference) for that
5 Common Schema, when he / she foresees the potential applicability of that Common Schema in the
6 business of the B/D in future.

7 Level 0 Common Schemas differ from Candidate Common Schemas in a way that the former have
8 been endorsed by the XMLCG, i.e. consensus has been reached among B/Ds on the data definition,
9 representation, and usage contexts. In general, B/Ds are encouraged to adopt any suitable and
10 approved Common Schemas where possible, including those at Level 0. Nevertheless, Level 0
11 indicates that although B/Ds have reached consensus on the Common Schema, most of them are not
12 readily available to adopt this format for data exchange. One possible reason is that substantial data
13 conversion effort will be required before they can convert legacy data to that format.

14 The maturity level of Common Schemas will be reviewed every 6 to 12 months and, where
15 appropriate, Common Schemas at level 0 may be promoted to level 1, and those at level 1 may be
16 promoted to level 2. The following table summarizes the criteria for triggering a promotion
17 assessment and the condition for a promotion.

18 Table 3-2: The Promotion Related Criteria Used in the Periodic Review of Common Schemas

Prevailing maturity level	Criteria for triggering a promotion assessment during the periodic review	Criteria for promotion to the next higher maturity level
0	The information model of the Common Schema is being used by at least 3 B/Ds and additional B/Ds have adopted the information model of the Common Schema since the last review	The number of B/Ds that prefer a maturity grading of 1 is greater than the number of B/Ds that prefer a maturity grading of 0
1	No additional criteria	The information model of the Common Schema is being used by at least 5 B/Ds; and The Common Schema has not been updated for the previous 6 months

19

20 If the information model of a Common Schema at maturity level 1 is in use by 5 or more B/Ds and
21 that Common Schema has not been updated for the previous 6 months, its maturity level will
22 automatically be set to 2.

23 If the information model of a Common Schema at maturity level 0 is in use by 3 or more B/Ds and
24 additional B/Ds have adopted the information model of the Common Schema since the last review, the
25 Common Schema Liaison Officers of B/Ds would be requested to indicate whether they support a
26 promotion of the maturity grading of that Common Schema. The Common Schema Liaison Officers
27 should take into consideration the conditions mentioned in Table 3-1 when indicating their preference.
28 If the number of B/Ds that prefer a maturity grading of 1 is greater than the number of B/Ds that prefer
29 a maturity grading of 0, the maturity level of that Common Schema will be re-graded as 1. If a
30 Common Schema fails to be re-graded to level 1 because more B/Ds prefer a grading of level 0 in a
31 review process, the review on the same Common Schema would not be triggered (i.e. B/Ds would not
32 be requested again to indicate their maturity preferences) in future, until the number of B/Ds that have
33 adopted the information model of the Common Schema is increased since the last review.

34 When the maturity level of a Common Schema is set to 1, the distribution of B/Ds' preferences on the
35 maturity level could be published so that project teams have more supporting information in deciding

1 whether to adopt a Common Schema. Such distribution information may be expressed as the
2 percentage of B/Ds that preferred 0, 1, or had indicated no preference.

3 Note that the change in maturity of a Common Schema should not affect the existing Project Schemas
4 that have chosen NOT to adopt the Common Schema. For instance, it is not necessary to enhance a
5 Project Schema to adopt a Common Schema of which the maturity is promoted to 2, unless the
6 enhancement is driven by new business requirements.

7 Figure 3-1 shows the condition for transition from one maturity level to the next

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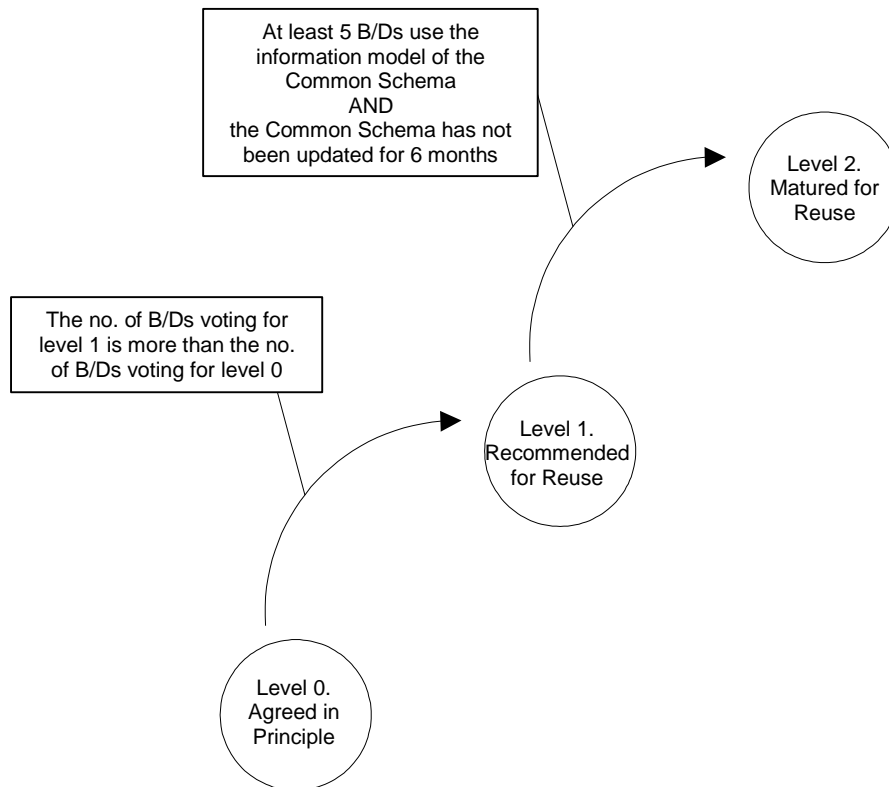
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10 Figure 3-1: Common Schema Maturity Levels

11 There is no demotion path for a Common Schema. However, a Common Schema can be retired or its
12 existing version will be updated by a newer version, which can more accurately and relevantly
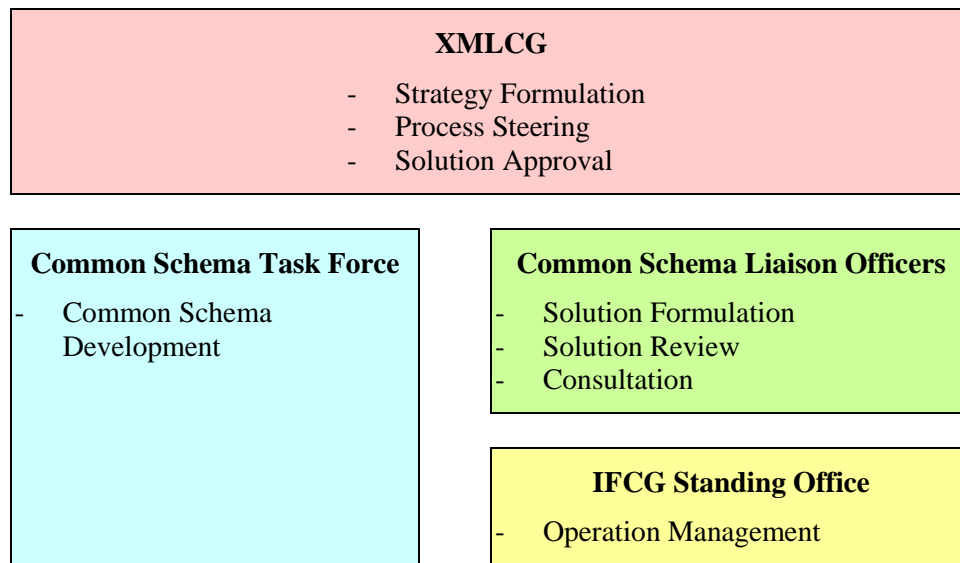13 represent new business requirements.

3.3. The Parties involved in the Management of Common Schemas

15 The XMLCG, the Common Schema Liaison Officers, the Common Schema Task Forces, and the
16 IFCG Standing Office are involved in the management of Common Schemas. Figure 3-2 summarizes
17 the functions of each body.

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XMLCG
- Strategy Formulation - Process Steering - Solution Approval

Common Schema Task Force	Common Schema Liaison Officers
- Common Schema Development	- Solution Formulation - Solution Review - Consultation

IFCG Standing Office
- Operation Management

2 Figure 3-2: Management Bodies and their functions

3.3.1. XMLCG

4 The XMLCG is convened by the Digital Policy Office. It comprises :

5 - Members from B/Ds that are involved in joined-up projects; and

6 - Advisors from major XML user organizations in the HKSAR.

7 B/Ds are welcome to send experienced XML adopters to join the XMLCG. B/Ds that intend to join
8 the XMLCG may contact the IFCG Standing Office.

9 The functions of the XMLCG, in the context of enhancing data interoperability, are summarized as
10 follows :

11 Table 3-3: Details of the Functions Provided by XMLCG in relation to enhancing data interoperability

Functional Area	Details
Strategy Formulation	• Set the strategies for enhancing data interoperability • Derive the mechanisms and methodologies for enhancing data interoperability, including mechanisms for Common Schema management
Process Steering	• Supervise the Common Schema management processes • Provide ruling on technical options proposed by the Common Schema Task Forces to resolve conflicts between B/Ds
Solution Approval	• Review and approve candidate Common Schemas • Review and approve controlled vocabularies that are used by Common Schemas • Review and approve Common Schema retirement requests

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3.3.2. Common Schema Liaison Officers

14 The Common Schema Liaison Officers are nominated by B/Ds to reflect individual B/D's
15 requirements and comments on the candidate Common Schemas.

16 The Common Schema Liaison Officers may provide their input either during the Common Schema
17 Review Phase (i.e. after the Common Schema Task Force has produced a candidate Common Schema),

1 or at the Common Schema Development Phase (i.e. during which a candidate Common Schema is
2 developed) by participating directly in the Common Schema Task Forces that are of interest to them.

3 The Common Schema Liaison Officers also help to determine the maturity grading of Common
4 Schemas.

5 A B/D may nominate one or more Common Schema Liaison Officers to provide requirements and
6 comments.

7 The functions of the Common Schema Liaison Officers are summarized as follows:

8   Table 3-4: Details of the Functions Provided by Common Schema Liaison Officers

Functional Area	Details
Solution Formulation	• Join specific Common Schema Task Forces to help develop Common Schemas that are of interest to the Common Schema Liaison Officer's B/D
Solution Review	• Review candidate Common Schemas to ensure relevant Common Schemas meet a B/D's business requirement
Consultation	• Help to determine the maturity grading of Common Schemas • Provide inputs during the harmonization process • Assess whether Common Schema retirement requests should be honoured • Assess whether controlled vocabulary Change Requests should be honoured

9

3.3.3. Common Schema Task Force

11 Common Schema Task Force refers to the collaborative effort to handle individual Common Schema
12 Creation / Change Request. When a request is received, the IFCG Standing Office will invite the
13 following parties to join hands with the IFCG Standing Office to organize a Common Schema Task
14 Force to handle the request :

15 -   the Submitting Group / project team;

16 -   all Common Schema Liaison Officers (Liaison Officers are encouraged to join if their B/D is a
17   potential user of the concerned data element); and

18 -   if the request involves an existing Common Schema, the project teams using the concerned
19   Common Schema.

20 The role of the project teams and the Common Schema Liaison Officers in the Common Schema Task
21 Force is mainly to provide business requirements and to agree on an information model. The IFCG
22 Standing Office will translate the information model into XSD and will deal with subsequent logistics.

23 The functions of a Common Schema Task Force are summarized as follows:

24   Table 3-5: Details of the Functions Provided by the Common Schema Task Force

Functional Area	Details
Common Schema Development	• Conduct requirement / impact analysis and harmonization process over the Common Schema Creation / Change Requests • Propose technical options for XMLCG consideration when conflict arises • Gather and address comments from Common Schema Liaison Officers and the XMLCG • Encode information models as XSD

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1 ### 3.3.4. IFCG Standing Office

2 The IFCG Standing Office is staffed by the Digital Policy Office to provide support in the
3 implementation of the IF, including the concerted alignment of data elements.

4 The functions of the IFCG Standing Office, in the context of Common Schema management, are
5 summarized as follows :

6 Table 3-6: Details of the Functions Provided by IFCG Standing Office in relation to Common Schema
7 Management

Functional Area	Details
Operation Management	• Execute and manage the Common Schema management processes • Signal anomalies of the Common Schema management process to XMLCG • Act as core members of Common Schema Task Forces • Manage the Central Registry and its content, including their management information • Periodically assess the maturity level of Common Schemas and promote relevant ones to a higher level • Provide advice to B/Ds and their business partner on the use of Common Schemas

8

9 ## 3.4. Handling Requests to Create or Change a Common Schema

10 ### 3.4.1. Components of a Request

11 Project teams are encouraged to identify from their projects the data elements that have potential for
12 reuse in other projects and submit these data elements for concerted alignment. To achieve this, the
13 project team should submit a request to the IFCG Standing Office.

14 After receiving the request, the IFCG Standing Office will form a Common Schema Task Force and
15 will perform any necessary harmonization with existing Common Schemas to generate either a new
16 Common Schema or a new version of an existing Common Schema.

17 The following list describes the components of the Request :

Mandatory : - The proposed information model of the data element. The information model should spell out the definition, naming, representation, usage rules, etc. of the data element. The data dictionary attributes mentioned in section 5.4 should be used where relevant, in particular the identifying, definitional, contextual and representational attributes should be specified where relevant.

- Controlled vocabularies associated with the data element

- Suggested business contexts for the data element based on the context categories specified in Part II (XML Schema Design Guide) to illustrate the e-government services and usage contexts for which this data element would be reusable

- Samples of business documents from which the data element is derived

- Brief description of the joined-up project from which the data element is derived

- B/Ds and external parties involved in the joined-up project from which the

data element is derived

- Industry standards, Project Schemas, and Common Schemas that has been considered in the process of defining the data element

Optional :   -   Project Schema derived from the proposed information model

          -     The original Common Schema, if any, based on which this information model is customized and a brief description of the changes

1

3.4.2.   The Phases in Handling a Change or Creation Request

3 The processing of a Common Schema Creation / Change Request can be divided into three Phases,
4 namely 1) Common Schema Development Phase, 2) Common Schema Review Phase, and 3)
5 Publication Phase.

6 The following table provides a summary of each of the phases involved in the handling of a Creation /
7 Change Request

8 Table 3-7: Summary of the 3 Phases in the Handling of a Creation / Change Request

Phase	Major Steps
Common Schema Development Phase	• Preliminary assessment of request • Requirement / impact analysis and harmonization • Creation of candidate Common Schema
Common Schema Review Phase	• Review of candidate Common Schema by the Common Schema Liaison Officers • Review and approve / reject candidate Common Schema by the XMLCG
Publication Phase	• Publication of Common Schema and associated controlled vocabularies

9

10 There may be cases where comments from the Common Schema Liaison Officers or the XMLCG may
11 cause the process to return from a Review Phase to a Development Phase. There is no hard rule on
12 how many iterations should be allowed. The Common Schema Task Force should pragmatically
13 assess the situation and decide on the appropriate action to take on a case-by-case basis.

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1   *3.4.3.   Detailed Process Flow*

2   Common Schema Development Phase

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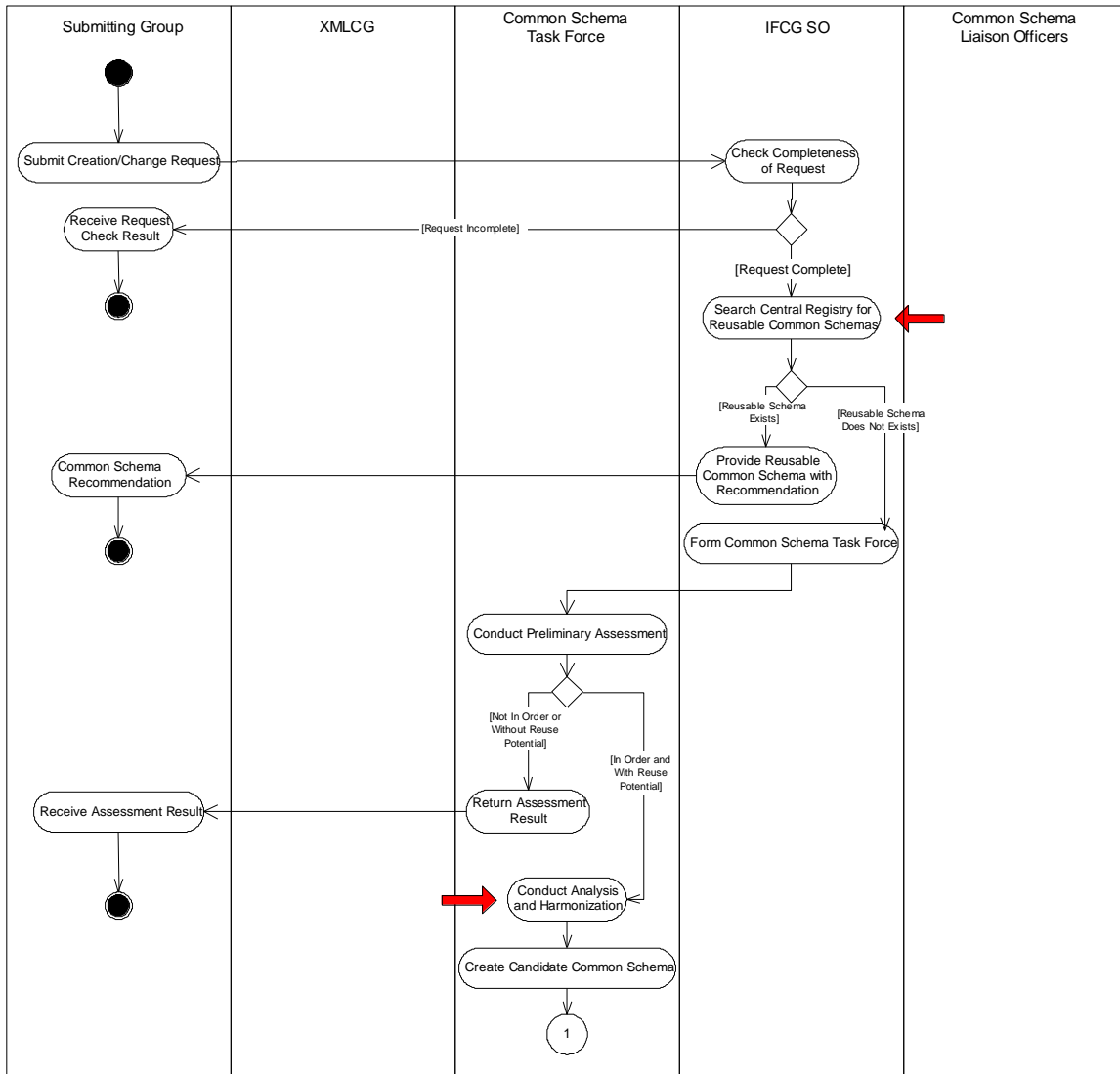
4   Figure 3-3: Common Schema Development Phase

5   **Remarks**: Red arrow implies the activities require access of the Central Registry

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1   <u>Common Schema Review Phase</u>

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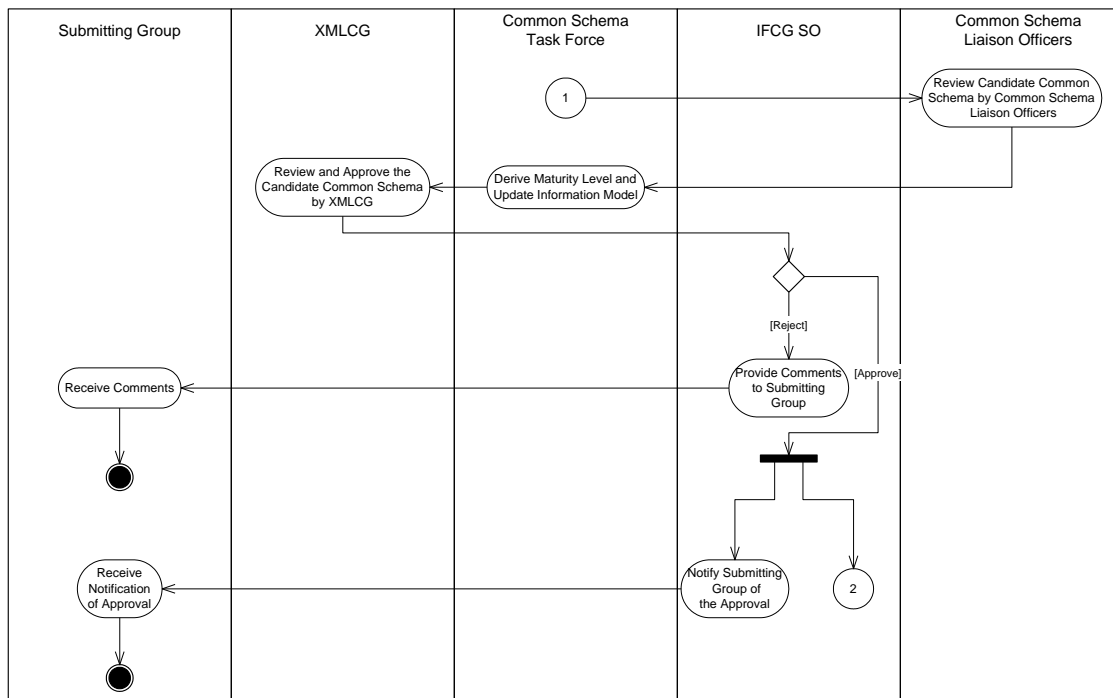
3   Figure 3-4: Common Schema Review Phase

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5

1   Publication Phase

2
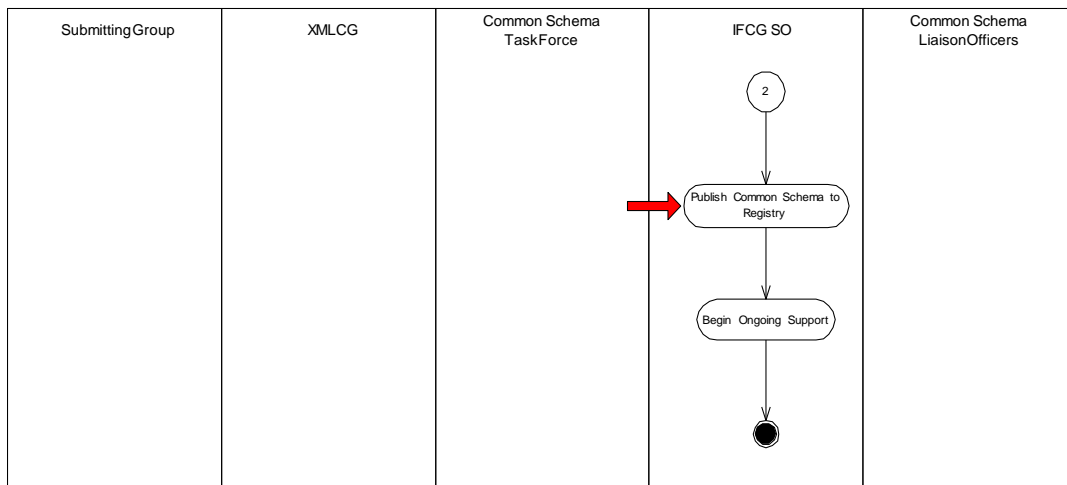
3

4   Figure 3-5: Publication Phase for Common Schema

5   **Remarks**: Red arrow implies the activities require access of the Central Registry

6

1 ### *3.4.4.   Common Schema Development Phase*

2 The objectives of the Common Schema Development Phase are to assess and analyze the Common
3 Schema Creation / Change Request, and finally create a candidate Common Schema from the request.
4 Submitting Group members and related stakeholders can take part in the schema analysis and design
5 by participating in the Common Schema Task Force.

6

7 **Input**: Common Schema Creation / Change Request

8 **Output**: Candidate Common Schema

9

10 The following tables summarize the Objectives, Parties, Prerequisites, Contents, Decisions, Registry
11 Use and Key Deliverables of major activities in this phase. Simple and intuitive activities will not be
12 covered here.

| **Submit Creation / Change Request**	
Objective	To submit a Common Schema Creation / Change Request
Party	Submitting Group
Prerequisites	Business requirements, information model
Contents	The business analyst identifies from his project the data elements that have potential for reuse in other projects and submit these data elements for concerted alignment. To trigger the concerted alignment process, the project team should submit a Request to the IFCG Standing Office.
Decision	N/A
Registry Use	N/A
Key Deliverables	Common Schema Creation / Change Request

13

Check Completeness of Request	
Objective	To check if the information documented in the Common Schema Creation / Change Request is complete. Failing the check may lead to termination of the process. Termination decision with reasons is sent to the Submitting Group.
Party	IFCG Standing Office
Prerequisites	Common Schema Creation / Change Request
Contents	IFCG Standing Office checks whether the information documented in the Common Schema Creation / Change Request is complete, i.e. no missing mandatory information.
Decision	[Request Incomplete] >>> Return Request Check Result [Request Complete] >>> Search Central Registry for Reusable Common Schema
Registry Use	N/A
Key Deliverables	Request Check Result

14

Search Central Registry for Reusable Common Schema	
Objective	To search the Central Registry for any suitable Reusable Common Schema that

	can fulfil the business requirements and information model specified in the Common Schema Creation / Change Request
Party	IFCG Standing Office
Prerequisites	Common Schema Creation / Change Request
Contents	The IFCG Standing Office then searches the Central Registry to determine whether the proposed Common Schema already exists.
	If reusable Common Schema is found with features matching with the business information requirements, the IFCG Standing Office passes the Common Schema with recommendation, e.g. schema usage recommendation, to the Submitting Group. The Submitting Group can decide whether to further apply for Common Schema creation / change.
	If no reusable Common Schema is found, the IFCG Standing Office then forms a Common Schema Task Force to conduct preliminary assessment.
	The IFCG Standing Office has to estimate the time frame required to handle the request, taking into consideration past experience and the complexity of the request. The Submitting Group should be notified of the time frame.
Decision	[Reusable Schema Exists] >>> Provide the reusable Common Schema Recommendation
	[Reusable Schema Does Not Exist] >>> Form Common Schema Task Force to conduct preliminary assessment.
Registry Use	Search the Central Registry for Reusable Common Schema that is likely to be applicable
Key Deliverables	Reusable Common Schema Recommendation

1

Conduct Preliminary Assessment	
Objective	To preliminarily assess the Common Schema Creation / Change Request before further processing
Party	Common Schema Task Force
Prerequisites	Common Schema Creation / Change Request
Contents	Common Schema Task Force verifies the information in the request :
	1. is unambiguous
	2. is accurate (i.e. can fulfil the business requirements)
	3. proposes a data element with potential for reuse
	Failing the assessment may lead to termination of the process. Termination decision with reasons is sent to the Submitting Group.
Decision	[Not in Order or Without Reuse Potential] >>> Return Request Assessment Result
	[In Order and With Reuse Potential] >>> Conduct Analysis and Harmonization
Registry Use	N/A
Key Deliverables	Preliminary Assessment Result

2

Conduct Analysis and Harmonization

Objective	Conduct Requirement and Impact Analysis and harmonize the changes
Party	Common Schema Task Force
Prerequisites	Business information requirements are enough for analysis
Contents	Common Schema Task Force evaluates the following: 1. Whether a new Common Schema should be created or whether an existing Common Schema should be modified 2. If an existing Common Schema is to be modified, what impacts will be imposed on the users of the existing Common Schema 3. If similar Creation / Change Request can be harmonized together with the current request 4. If the proposed information model can be further refined such that it can better serve the business information requirements 5. If the proposed information model can be refined or modified such that it can be more reusable and searchable Details of harmonization will be discussed in section 3.5 Request Harmonization. Common Schema Task Force should propose unambiguous data definition, suitable Business Contexts values, usage rules and other meta-data for the new information model. The usage rules may include: 1. Description of the characteristics of the Common Schema not specified in the data definition 2. Scenario in which the Common Schema is recommended to adopt which is not reflected from its business context values 3. Aspects of which the business analysts should consider when reusing the Common Schema, e.g. the cardinality of sub-elements 4. Any validation that has to be done at application level In determining the business contexts values of a data element, the scope covered by the context values should be as wide as applicable. For example, the Common Schema Task Force should first consider whether "in all contexts" could be assigned, and if this is too wide, the context values should be confined to a more restricted context (e.g. business process = import / export licencing) based on business requirements. Reference to existing Common Schemas is encouraged.
Decision	N/A
Registry Use	Retrieves similar Common Schema, looks for Common Schema examples that can be referenced
Key Deliverables	Refined / Harmonized information model

1

Create Candidate Common Schema	
Objective	Create an XSD and further refine the information model
Party	Common Schema Task Force
Prerequisites	Refined / Harmonized information model
Contents	An XSD is developed based on the refined information model.

	The usage rules for the Common Schema are also supplemented in this activity.
Decision	N/A
Registry Use	N/A
Key Deliverables	Candidate Common Schema

1

3.4.5. Common Schema Review Phase

The objectives of the Common Schema Review Phase are for the Common Schema Liaison Officers and the XMLCG to review the candidate Common Schema, and for the XMLCG to approve the candidate Common Schema.

Input: Candidate Common Schema including the refined information model and the XSD

Output: Approved candidate Common Schema / Comments on the candidate Common Schema

The following tables summarize the Objectives, Parties, Prerequisites, Contents, Decisions, Registry Use and Key Deliverables of major activities in this phase. Simple and intuitive activities will not be covered here.

Review Candidate Common Schema by **Common Schema Liaison Officers**	
Objective	Common Schema Liaison Officers review and comment on the candidate Common Schema and indicate their preferences on the maturity level
Party	Common Schema Liaison Officers
Prerequisites	Candidate Common Schema
Contents	When a complete candidate Common Schema is produced, the Common Schema Task Force will request the Common Schema Liaison Officers to review the candidate Common Schema and to indicate whether its maturity level should be set to 1 (Recommended for reuse) or 0 (Agreed in principle) The Common Schema Liaison Officers review the candidate Common Schema and provide comments in the following areas : 1. the integrity of the candidate Common Schemas : The Common Schema Liaison Officers are expected to check whether the definition, naming and usage contexts of the candidate Common Schema are appropriate and, if their B/D needs to use that data element in their business, whether their B/D can exchange data in accordance with the representation (together with usage rules) of the candidate Common Schema at system interfaces that interact with the systems of other B/Ds or external parties. 2. the maturity level of the Common Schema : The Common Schema Liaison Officers would also be requested to indicate their preferences on the maturity grading for that candidate Common Schema. Considerations for indicating such preference are explained in section 3.2 All the above comments will be sent to Common Schema Task Force for evaluation. If room of improvement is raised by the Common Schema Liaison Officers, the process will loop back to the Development Phase and the Common Schema Task Force should refine the candidate Common Schema
Decision	N/A
Registry Use	N/A
Key Deliverables	Comments from Common Schema Liaison Officers

1

Review and Approve the Candidate Common Schema by XMLCG	
Objective	XMLCG reviews the candidate Common Schema and decides to approve or reject the schema
Party	XMLCG
Prerequisites	Candidate Common Schema which has taken into consideration comments from the Common Schema Liaison Officers
Contents	The XMLCG reviews the integrity of the candidate Common Schemas and approves it if appropriate.
Decision	[Approve] >>> IFCG Standing Office notifies Submitting Group of the Approval and proceeds to Publication Phase [Reject] >>> IFCG Standing Office provides Comments to Submitting Group
Registry Use	N/A
Key Deliverables	Approved Candidate Common Schema

2

3.4.6. Publication Phase

4 The objective of this phase is to publish the approved Common Schema and related information in the
5 Central Registry. After the publication, the ongoing support of the Common Schema begins.

6

7 **Input**: Approved candidate Common Schema

8 **Output**: Common Schema and related controlled vocabularies published in the Central Registry

9

10 The following tables summarize the Objectives, Parties, Prerequisites, Contents, Decisions, Registry
11 Use and Key Deliverables of major activities in this phase. Simple and intuitive activities will not be
12 covered here.

13

Publish Common Schema to Registry	
Objective	Publish the approved Common Schema and associated controlled vocabularies to the Central Registry for user reference
Party	IFCG Standing Office
Prerequisites	Candidate Common Schema is approved
Contents	Publish the XSD, information model, and associated controlled vocabularies to the Central Registry. If a new version of an existing Common Schema is published, all registered users of all previous versions should be notified. The modified Common Schema may be reused by other Common Schemas; in such cases, the registered users of those Common Schemas should also be notified. (Note : There is no need to change those Common Schemas unless the users themselves find a business need to do so.) Take appropriate actions to handle the older version of the Common Schema, e.g. qualify its maturity level to indicate that the old Common Schema now has a newer version. All older versions should be accessible to project teams. The way to handle older versions is implementation dependent.

Decision	N/A
Registry Use	Publication of Common Schema and related information
Key Deliverables	Common Schema, management information and relevant controlled vocabularies published in the Central Registry

1

3.5. Request Harmonization

This section intends to further explain the harmonization procedures. The purpose of request harmonization is to take related Common Schema Creation / Change Requests submitted by different domains, plus the requirements from members of the Common Schema Task Force, identify differences and similarities between the requests / requirements and relevant Common Schemas, and produce a single, cross-domain solution. The formulated Common Schema can cover all the business requirements of the related requests and Common Schemas. The harmonization is very critical in the Common Schema Management Process. Hence particular attention is given to it.

The harmonization process comes under the Common Schema Development Phase. It begins when the Common Schema Task Force has completed the preliminary assessment and has conducted requirement and impact analysis. Harmonization focuses on business requirements and identification of similarities and differences. The similarities can be grouped or merged together, while the differences may appear as optional parts in the new Common Schema.

Consultation of the Common Schema Liaison Officers may be required during the process. This consultation aims at gathering more specific requirements / comments for the harmonization.

It is seldom possible to produce a Common Schema that perfectly fits the existing systems of all B/Ds. However, without agreeing on Common Schemas, it is almost impossible to effectively implement and deliver joined-up e-government services. There has to be compromises among B/Ds and these compromises have to be managed in a pragmatic way in the harmonization process. B/Ds should share a common culture and vision in relation to Common Schemas.

3.5.1. Detailed Harmonization Flow

The following diagram illustrates in details what steps are included in the harmonization process.
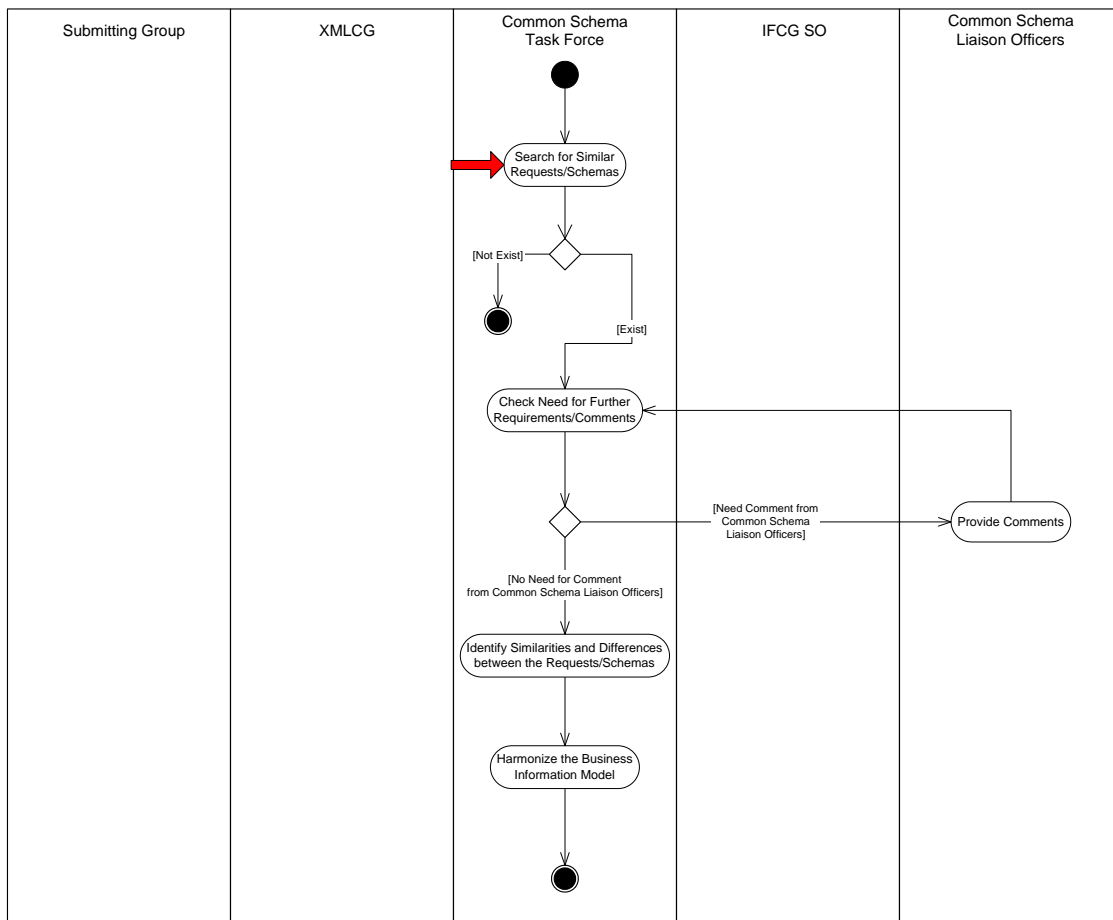
1   Harmonization Process

2

3   Figure 3-6: Harmonization Process

4   **Remarks**: Red arrow implies the activities require access of the Central Registry

5

6   *3.5.2. Major Activities*

7   The following tables summarize the Objectives, Parties, Prerequisites, Contents, Decisions, Registry
8   Use and Key Deliverables of major activities in this process:

Search for Similar Requests / Schemas	
Objective	Search for similar Common Schema Creation / Change Requests, similar requirements from members of the Common Schema Task Force, and Common Schemas for harmonization
Party	Common Schema Task Force
Prerequisites	Requirement / Impact analysis begins
Contents	Similar Common Schema Creation / Change Requests should be checked before the harmonization process can proceed.
	Below are some guidelines for searching similar Common Schema Creation / Change Requests:
	1. The requests had not been approved
	2. The requests propose a similar structure / data type as that of the current request

| | 3. The requests share similar usage, e.g. in terms of business contexts

The Common Schema Task Force should also try to find compatible Common Schemas in the Central Registry, which can provide additional reference material to the harmonization. Moreover, these compatible Common Schemas can be harmonized with the requests if appropriate.

Section 5.4.1 provides considerations for searching the relevant Common Schemas.

Members of the Common Schema Task Force should also voice out their individual requirements over the concerned data element. |
|---|---|
| Decision | N/A |
| Registry Use | Search for compatible Common Schemas |
| Key Deliverables | Similar Common Schema Creation / Change Request, compatible Common Schemas, similar requirements from members of the Common Schema Task Force |

1

Identify Similarities and Differences between the Requests / Schemas	
Objective	To identify similarities and differences between the similar Creation / Change Requests, similar requirements from members of the Common Schema Task Force, and the compatible Common Schemas
Party	Common Schema Task Force
Prerequisites	Enough requirements / comments have been gathered
Contents	Similarities and differences (e.g. data restrictions or structure of the data elements) are identified.
Decision	N/A
Registry Use	N/A
Key Deliverables	Similarities and differences among similar Creation / Change Requests and compatible Common Schemas

2

Harmonize the Business Information Model	
Objective	Harmonize the relevant requests / requirements / Common Schema into a single information model
Party	Common Schema Task Force
Prerequisites	Similarities and differences among similar Creation / Change Requests, similar requirements from members of the Common Schema Task Force, and compatible Common Schemas are identified
Contents	Create a new information model based on the harmonization guidelines below:

1. Similarities across the requests / schemas are grouped or merged in the new information model

2. Differences across the requests / schemas can appear as optional components in the new information model

3. After consulting relevant parties, data structures that are no longer necessary for the cross-domain solution can be omitted in the new information model

4. The new business contexts should cover all those required by the requests |

	/ schemas
Decision	N/A
Registry Use	N/A
Key Deliverables	Harmonized Information Mode

3.6. Handling Requests to Retire a Common Schema

Upon receiving a request from a project team for retiring a Common Schema, the IFCG Standing Office should assess the justification made by the project team and the impact of the proposed retirement and, if considered appropriate, consult the Common Schema Liaison Officers and all registered users of the Common Schema. (Like a project team, the IFCG Standing Office can also initiate a retirement request where appropriate.) If the Common Schema Liaison Officers indicate no objection, taking into consideration the views of the registered users of the Common Schema, the request should be submitted to the XMLCG for approval. If the retirement is approved by the XMLCG, all versions of the Common Schema will be removed from the Approved Common Schema section in the Central Registry, and transferred to the Retired Common Schema section. All users of the Common Schema will be notified.

In principle, if the Common Schema is in use by multiple B/Ds or the maturity level is at 1 or above, there should be little reason for retiring the Common Schema.

3.7. Handling Requests to Change Controlled Vocabularies

Upon receiving a request from project teams to change certain controlled vocabularies (e.g., a code list), the IFCG Standing Office should assess which Common Schemas are affected (i.e. which Common Schemas have used the controlled vocabulary) and consult the Common Schema Liaison Officers and all registered users of the affected Common Schemas. If the Common Schema Liaison Officers indicate no objection, taking into consideration the views of the registered users of the affected Common Schemas, the request should be submitted to the XMLCG for approval.

3.8. Periodic Review of the Maturity Level of Common Schemas

The Common Schemas with maturity level at 0 or 1 should be reviewed periodically (every 6 to 12 months) to assess if their maturity level can be promoted to the next higher level. The review should be conducted in accordance with the criteria specified in section 3.2

3.9. Support of Multiple Versions of Common Schemas

A Common Schema may have multiple versions published in the Central Registry if the Common Schema has undergone approved changes. In respect of support on these different versions, the IFCG Standing Office will only handle Creation / Change Request against the latest version of the Common Schema and will only answer questions regarding the latest two versions of the Common Schema.

Although multiple versions of a Common Schema will be accessible from the Central Registry, it is recommended that new projects use the latest version of a Common Schema, when appropriate.

Note that it is not necessary to enhance an existing Project Schema to synchronize with the latest versions of the Common Schemas adopted by the Project Schema. The enhancement of an existing Project Schema should be driven by business needs, e.g. to update a Project Schema to meet new business requirements.

3.10. Registration of the Reuse of Common Schemas

Once project teams decide to adopt a certain Common Schema, they should register the reuse of that Common Schema. During reuse registration, project teams have to provide the following information:

1   •   Project name and description
2   •   Business contexts of the joined-up project using the Common Schema
3   •   Related B/Ds or business groups
4   •   Contact information for the project (e.g. contact officer, officer's post, telephone number,
5   email address)
6

4. Project Schema Management

During project development, project teams are highly recommended to establish a Project Registry to facilitate the management of modelling artifacts (i.e., the process and information models, the XSDs, and the controlled vocabularies) produced in the design process.   The Project Registry serves as a single point of reference for the different project teams working for different business partners involved in the same joined-up service. The project teams may negotiate among themselves and appoint one party to manage the Project Registry. This management office can be a standing office serving the entire life cycle of the joined-up service. Since Project Schemas are an integral part of a project's system documentation, just like design specification, source code, etc., the Project Registry should sustain throughout the project maintenance stage, supporting all subsequent enhancements to the project.

Since Project Schemas may affect a system's future integration with the systems of other B/Ds and external parties, project teams are recommended to share Project Schemas with other B/Ds and external parties where relevant.

Such sharing also allows other project teams working on similar initiatives to share best practices and reusable schemas, thus maximizing the reuse of schemas.

In order to maintain a consistent way for searching reusable data elements in Project Registries, project teams are highly recommended to use the data modelling spreadsheet provided in the Central Registry to organize the dictionary of data elements. It is important for projects to adopt a common data dictionary format to ease searching, access, and understanding of Project Schemas by different project teams. At least, the project team should use the same data element attributes specified in Section 5.4 when it chooses to develop its own data dictionary instead of using the spreadsheet provided in the Central Registry.

Project teams should also ensure that the content of their Project Registries are up-to-date.

To facilitate the sharing of Project Schemas among e-government project teams, project teams are recommended to register their projects on a centrally maintained list of XML projects. This list provides links to the Project Schemas and other information of various joined-up service projects for reference by all parties.

If a project has adopted process models and information models / XML schemas from industry standards (e.g. xCBL has been adopted for e-procurement) and has defined no additional Project Schema, then project teams do not necessarily have to setup their own Project Registry. In such cases, they may register their project on the centrally maintained list of XML projects mentioned above and specify that they have adopted a particular version of an industry standard in their project.

5. The Central Registry

5.1. Objects Registered in the Central Registry

The following types of objects are registered in the Central Registry:

1. Common Schemas (i.e. the information model and XSD of the concertedly aligned data elements) with associated administrative information (such as maturity level, which projects are using that Common Schema, etc.)

2. Controlled Vocabularies used by the Common Schemas

3. XML Projects

Within the Central Registry, the Common Schemas are maintained using a data dictionary.

5.2. Functions of the Central Registry

The Central Registry is mainly used by e-government project teams. The information in the Central Registry is maintained by an administrator, which is staffed by the IFCG Standing Office.

The Central Registry provides the following core functions:

1. Facilitates the administrator to register Common Schemas and their associated controlled vocabularies

2. Facilitates the administrator to maintain administrative information associated with the Common Schemas (e.g. the maturity level of a Common Schema)

3. Facilitates the registration of projects using a particular Common Schema

4. Facilitates the registration of XML projects. The information registered include the project's namespaces, the location of the project's Project Registry (if it is openly accessible), and the industry standards adopted by the project

5. Facilitates project teams to access Common Schemas and their associated controlled vocabularies

6. Facilitates project teams to check whether a namespace is in use by another project

5.3. Implementing the Central Registry

The content of the Central Registry can be stored in many ways ranging from a collection of spreadsheets and files to a database. The content can be presented as static content over the Web or they can be presented as dynamic content generated in response to a user enquiry.

Since the Central Registry is mainly for human use, it should provide a convenient user interface. The sophistication of the user interface very much depends on the volume and nature of information being maintained in the registry. Programmatic interfaces such as UDDI or ebXML Registry Service are considered beyond the scope of this context.

5.4. Data Element Attributes Maintained in the Common Schema Data Dictionary

The attributes of a data element maintained in the Common Schema data dictionary are listed in the following table. Most of these attributes come from the information model of that data element.

The attributes can be broadly classified into the following categories :

1   -   identifying : attributes that are applicable for the identification of a data element

2   -   definitional : attributes that describe the semantic aspects of a data element

3   -   contextual : attributes that describe the business contexts where the data element would be
4   applicable

5   -   representational : attributes that describe representational aspects of a data element

6   -   administrative : attributes that describe management and control aspects of a data element

7

8   The last 2 columns indicate, for each data element, whether the content associated with that attribute:

9   -   is adapted from the original request that suggested the creation of that Common Schema; and

10 -   has to be agreed by the Common Schema Liaison Officers and the XMLCG.

11

Attribute Name	Description	Adapted from original request	Common Schema Liaison Officers and XMLCG consulted
Identifying			
Dictionary Entry Name	Official name of the Entry. Contains object class, property term, and representation term. Used to generate schema tag name		
Object Class	Identifies a set of ideas, abstractions, or things in the real world that can be identified with explicit boundaries and meaning, and whose properties and behaviour follow the same rules.	Y	Y
Property Term	Identifies a peculiarity common to all members of an object class	Y	Y
UID	A language independent unique identifier of a particular version of a data element		
Business Terms	the synonym terms under which the data element is commonly known as and used in business. A data element may have several business terms.	Y	Y

Attribute Name	Description	Adapted from original request	Common Schema Liaison Officers and XMLCG consulted
Version	The version identifier of the model having syntax "M.m". Evolution of a data element may develop different versions of information model, which are stored as separate dictionary entries and identified by different UIDs. The different versions of information model may share the same Dictionary Entry Name and definition. "M" stands for major version number. Change of major version number indicates structural change of schema. An old system using the data element needs to be upgraded before it can exchange data that is based on the new version. "m" stands for minor version number. Change of minor version number indicates adding of optional element / attribute. An old system using the data element does not need any upgrade in order to exchange data that is based on the new version.		
BIE Type	3 possible types of BIE: BBIE, ASBIE, ABIE.	Y	
Definitional			
Definition	Statement that expresses the essential nature of a data element and permits its differentiation from all other data elements.	Y	Y
Contextual			
Business Process Classification	The Business Process classification to which the information model of this data element is specific. (e.g. "health and safety clearance of cargo").	Y	Y
Service / Product Classification	The classification of products or services to which the information model of this data element is specific (e.g. "explosive materials" as defined in UNSPSC [Universal Standard Product and Service Specification]).	Y	Y
Industry Classification	The vertical industries of the business partners to which the information model of this data element is specific (e.g. "water transport" as defined in ISIC [International Standard Industrial Classification]).	Y	Y
Geopolitical	The geographical location to which the information model of this data element (e.g. an address) is specific (e.g. a region as defined in ISO 3166.2).	Y	Y
Official Constraints	The legal and governmental constraints to which the information model of this data element is specific (e.g. Laws of Hong Kong Cap. xxx, Civil Service Regulation No. xxx).	Y	Y

Attribute Name	Description	Adapted from original request	Common Schema Liaison Officers and XMLCG consulted
Represen-tational			
Representation Term	A description of how the data is represented (e.g., 'text', 'code', 'date'). The actual representation is the combination of a value domain, data type, and, if necessary, a unit of measure or a character set (i.e. a combination of restrictions and supplementary components).	Y	Y
Cardinality	Number of occurrence of the aggregated data element within its Object class in the form of "x..y" (e.g. optional element with maximum occurrence of 1 is 0..1, optional element with no limitation on the maximum occurrence is 0..*).	Y	Y
Core Component Type	The Core Component Type of which the BBIE is based. Applicable to BBIE only.	Y	
Primitive Data Type	Primitive data type of the data element (e.g. string, number, date, etc). Applicable to BBIE only.	Y	Y
Restrictions	Limitation on the data element described in textual form (e.g. maximum length, permissible values defined using an enumeration or a controlled code list).	Y	Y
URI to Schema Structure	URI to a document with a diagram representing the structure of the schema visually. It can optionally contain XML sample for the schema.	Y (The structure of the data element is adapted from the original information model)	Y (Consulted on the structure of the data element)
Details of Supplementary Components	The following details for each necessary supplementary component, depending on the scenario and the representation term used : - Name of the supplementary component (e.g. the currency code associated with an amount). Used to generate XML attribute name - Default value of the supplementary component if no value is specified in the XML document - Permissible values allowed other than the default value	Y	Y
Usage Rules	General rules on the use of the schema (e.g. Chinese content handling). Specific rules regarding the use in particular business process should be described in the project's documentations.	Y	Y
Administra-tive			

Attribute Name	Description	Adapted from original request	Common Schema Liaison Officers and XMLCG consulted
Related Data Elements	UID Reference to other Common Schemas (the specific versions of other Common Schemas to be exact) that this element is based on.	Y	
Maturity Level	Reuse recommendation of the schema. 3 levels exist: 0 – Agreed in principle, 1 – Recommended for reuse, and 2 – Matured for reuse.		Y
Maturity Preference Distribution	Distribution of B/Ds' preference in maturity setting when the Common Schema's maturity level is set to 1., e.g. W/Z preferred level 0 X/Z preferred level 1 Y/Z abstained		
Last Updated	The date of last changes to the schema.		
Originator	B/Ds and projects that triggered the creation of this version of the schema (and their contact information)	Y	
Projects reusing the data element	B/Ds and projects that registered reuse of the schema (and their contact information)		
XSD URI	Reference to the XSD document		
Related Documents URI	Reference to documents from which definitional or representational attributes originate	Y	

1

5.4.1. Searching Criteria for Common Schema

2

3 Several steps in the management process require searching of relevant Common Schemas in the
4 Central Registry e.g. identifying relevant Common Schema during the harmonization process. Project
5 teams also need to search for reusable Common Schemas when they define data elements for their
6 projects.

7 Human judgment is required to determine which Common Schemas are relevant semantically.
8 However, the attributes in the information model may help to identify the relevant Common Schemas.
9 Keyword search may be applied on these attributes.

10 The following table suggests the attributes that may help in searching the Common Schemas.

11   Table 5-1 Searching Criteria

Searching Criteria	Attributes
Identifying Information	Business Term, Object Class, Property Term
Definitional Information	Definition
Contextual Information	All the contextual attributes
Representational Information	Core Component Type, Representation Term, Supplementary Component details
Administrative Information	Maturity Level, Projects reusing the Common Schema.

12

5.5. Information Maintained on XML Projects

Name	Description
Name of joined-up project	Name of the XML project
Description	A statement that briefly describes the nature of the project.
Business Context	Business contexts of the project
Parties involved	B/Ds and external organizations involved in the project
Project Registry URI	Reference to Project Registry
Project Registry Administrator	Project Registry Administrator Contact information including name, post, B/D, and email address
Project Namespace	The XML Namespace(s) used in the Project Schemas
Standards Adopted	The list of industry / international standards (and their versions) adopted by the project team in developing the Project Schemas

5.6. Information Maintained on Controlled Vocabularies / Controlled Code Lists

A controlled code list may be the list of permissible values allowed in the content of a particular data element (e.g. the districts in Hong Kong).

The context values of Common Schemas are also maintained as controlled vocabularies.

The information maintained for each controlled code / vocabulary list are as follows :

Name	Description
Code List Name	Name of the code list (a version independent name referenced in the information model of a data element)
Description	A statement that briefly describes the nature of the code list.
Version	The version identifier of the code list.
Last Updated	The date of last changes to the code list.
Code List values URI	Reference to a document containing all permissible values of the code list.
Responsible parties	One or more B/Ds responsible for maintaining the code list

It is important to identify the B/D(s) responsible for maintaining these controlled vocabularies / code lists. These B/Ds should inform the IFCG SO to update the Central Registry when there are changes in the code list.