

ISO/IEC JTC 1 "Information technology"

Secretariat: ANSI

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## JTC 1/SC 32 Business Plan 2022

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### Description

This document is circulated for review and consideration at the November 2022 JTC 1 Plenary.

# Business Plan for JTC 1/SC 32: 2021-2022

## **Period covered:**

October 2021 through October 2022, with Chair's remarks and achievements to October 2022.

## **Submitted by:**

Karl Schendel, JTC 1/SC 32 Chair  
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## **Executive Summary**

SC 32 progresses its program of work via four (currently) active Working Groups. Each WG establishes its work priorities as part of its project plan, which is approved at the SC 32 Plenary. The active areas of work can be broadly summarized as Business Operational View (WG 1, E-Business); metadata ontologies and registries (WG 2, Metadata); SQL and GQL (WG 3, Database Languages); and data usage definitions and use cases (WG 6, Data Usage).

The SC has placed an emphasis on knowledge sharing and cooperation among its WG's, as well as liaisons with other SC's and TC's involved in related areas. Cross-WG information sharing has been hampered somewhat by the continued emphasis on virtual meetings. We have returned to a hybrid / face-to-face mode for the 2022 SC 32 Plenary, and one of the WG's (WG 3) is using a mix of virtual and face-to-face in calendar 2022. The other WG's have preferred to remain in a virtual mode for the time being.

## **1. Chair's remarks**

SC 32 participants continue to progress a wide range of projects, as shown below. These projects range from revisions of standards for relatively mature technologies to new standards for emerging technologies. Participants include major vendors, academics, experts from joint initiatives such as the LDBC (Linked Data Benchmark Council), and users, including government agencies. Contributions are received from North America, Asia, Australia, and Europe—a resource that is beneficial to the quantity and quality of the standards. These strengths stand against substantial risks of shifting priorities and support within participating organizations, as well as competition from other standards development organizations.

**SC 32/WG 1** continues to advance its e-Business standards development work, and its focus remains the Business Operational View (BOV) aspects of all types of business transactions based on ISO/IEC 14662, Open-edition Reference Model (a freely available standard). The BOV standards development work of SC 32/WG 1 (specified in the ISO/IEC 15944 series of eBusiness standards) addresses operational aspects of Open-edition of implementation, registration of scenarios and scenario components as business

objects of a business transaction. The parts of ISO/IEC 15944 include those dealing with accounting and economic ontology, identification of external constraints of jurisdictional domains on business transactions, a consolidated eBusiness Vocabulary, privacy protection requirements, coded domains, traceability framework, information life cycle management (ILCM), privacy-by-design (PbD), and cross-border data flows (CBDF). These BOV standards not only facilitate the ability to support applicable legal and regulatory requirements for e-Business, but also facilitate the IT-enablement of the same.

The ISO/IEC 14662 Open-edition Reference Model standard also serves as the basis for the high-level "*Memorandum of Understanding (MOU) concerning standardization in the field of electronic business*", signed among ISO, IEC, ITU, and UN/ECE, with full participation of international user groups.

The focus of work for the past year has been on new parts of 15944, and revising some of the existing parts. WG 1 also produced a revision of ISO/IEC 5218, Codes for the representation of human sexes.

**SC 32/WG 2** has a very full work schedule. WG 2 continues to make good progress on its program to refactor, clarify, and extend its existing metadata standards (ISO/IEC 11179, Metadata registries), including multiple parts of ISO/IEC TR 19583, Concepts and usage of metadata. WG 2 has published two parts of ISO/IEC 21838 on top-level ontologies, and has two more parts in DIS stage. Eight parts of the latest revision of 11179 are in DIS stage. Projects in the committee stage include a part of TR 19583, several parts of ISO/IEC 19763 Metamodel frameworks, and work on ISO/IEC 6523 (organizational identification) and ISO/IEC 5394, Criteria for concept systems.

Plans for 2023 include replacement / reassignment of key resources lost to retirement, continued advance of the 11179 refactoring, additional ontology work, and progression of the metamodel framework projects.

WG 2 monitors the ongoing work in WG 6 (Data Usage), which may benefit from metadata extensions describing allowable data usage by data consumers. The Working Group also watches developments in the areas of data security and data privacy, to determine if metadata describing security and privacy settings for Big Data are needed. At present, no concrete requirements have been identified; monitoring continues.

**SC 32/WG 3** has taken the next generation of the multipart SQL standard ISO/IEC 9075 into DIS stage. A major new Part in this next generation specifies SQL support for property graph data. The property graph work continues to receive lively contributions from a broad spectrum of experts. All remaining CD comments were resolved during an intensive two-week hybrid WG meeting in June (Berlin); the WG believes that it has a very solid DIS candidate for all eleven Parts of 9075.

A large amount of behind the scenes work was done on the XML DTD that drives the production of the 9075 text. (The same DTD and process is used for all WG3 projects,

such as 39075). Significant enhancement include enablement of more collaborative editing, reducing the reliance on a single Editor; automated generation of cross-Part references, enabling hot-linking and correcting numerous referencing errors; automated generation of more informational Annexes, including implementation-defined and -dependent Annexes; enhanced presentation of "subroutine" Subclauses; and significantly enhanced internal cross-checking within a Part to ensure correct references with correct formatting.

Related to the SQL property graph feature is a new standalone Graph Query Language (GQL) standard, ISO/IEC 39075. Work on GQL is moving well. A CD comment round was completed earlier in the year, and a CD2 round is in progress. We expect to see DIS for GQL in the first half of 2023.

A new project that has entered CD stage is a new part of the Guidance series, ISO/IEC 19075-10, describing the SQL Model. WG3 is doing preliminary work on a proposed ISO/IEC 29075, specifying function libraries for advanced statistical and analytic capabilities.

WG 3 continues to monitor the ever-changing state of the database industry to identify additional capabilities suitable for standardization. One such area is SQL for streaming data; WG 3 is closely monitoring ongoing discussions taking place at a national body level. Those discussions are advancing steadily, if slowly. If consensus is reached that there is a desirable way forward, WG 3 is prepared to take ownership.

**SC 32/WG 6** is gaining momentum as it completes its second full year of existence. Its program of work includes two standards in the area of Data Usage. ISO/IEC 5207 will address definitions and use cases, while ISO/IEC 5212 will address guidance for data usage. WG 6 had hoped to see these documents enter at least CD stage in 2022; unfortunately, challenges in finding the correct technical approach as well as resource issues (including the illness of an Editor) has held back progress. Progress has been much better in the last few months and the WG believes that it has hit its stride.

WG 6 believes that these two projects merely scratch the surface of possible and relevant standards in its scope of work. The SC has directed WG 2 (metadata) and WG 3 (database languages) to be alert to opportunities in their respective areas that would support the concepts being developed by WG 6.

## **JTC 1/SC 32 Statement of scope**

Title: Data Management and Interchange

Area of Work: Standards for data management within and among local and distributed information systems environments. SC 32 provides enabling technologies to promote harmonization of data management facilities across sector-specific areas. Specifically, SC 32 standards include:

- a. reference models and frameworks for the coordination of existing and emerging standards;
- b. definition of data domains, data types, and data structures, and their associated semantics;
- c. languages, services, and protocols for persistent storage, concurrent access, concurrent update, and interchange of data;
- d. methods, languages, services, and protocols to structure, organize, and register metadata and other information resources associated with sharing and interoperability, including electronic commerce.

## 2. Existing work and achievements

Achievements since the last report:

The following projects have completed and been published or are in Stage 60 – Publication Stage:

|                                     |                                                                                                                                                                |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO/IEC 19075-9:2022                | Information technology — Guidance for the use of database language SQL - Part 9: Online analytic processing (OLAP) capabilities                                |
| ISO/IEC 5218:2022                   | Information technology — Codes for the representation of human sexes                                                                                           |
| ISO/IEC 9075-1:2016/<br>Cor 1:2022  | Information technology — Database languages — SQL — Part 1: Framework (SQL/Framework) — Technical Corrigendum 1                                                |
| ISO/IEC 9075-2:2016/<br>Cor 2:2022  | Information technology — Database languages — SQL — Part 2: Foundation (SQL/Foundation) — Technical Corrigendum 2                                              |
| ISO/IEC 9075-3:2016/<br>Cor 1:2022  | Information technology — Database languages — SQL — Part 3: Call-Level Interface (SQL/CLI) — Technical Corrigendum 1                                           |
| ISO/IEC 9075-4:2016/<br>Cor 2:2022  | Information technology — Database languages — SQL — Part 4: Persistent stored modules (SQL/PSM) — Technical Corrigendum 2                                      |
| ISO/IEC 9075-9:2016/<br>Cor 2:2022  | Information technology — Database languages — SQL — Part 9: Management of External Data (SQL/MED) — Technical Corrigendum 2                                    |
| ISO/IEC 9075-10:2016/<br>Cor 1:2022 | Information technology — Database languages — SQL — Part 10: Object language bindings (SQL/OLB) — Technical Corrigendum 1                                      |
| ISO/IEC 9075-11:2016/<br>Cor 2:2022 | Information technology — Database languages — SQL — Part 11: Information and definition schemas (SQL/Schemata) — Technical Corrigendum 2                       |
| ISO/IEC 9075-13:2016/<br>Cor 2:2022 | Information technology — Database languages — SQL — Part 13: SQL Routines and types using the Java TM programming language (SQL/JRT) — Technical Corrigendum 2 |
| ISO/IEC 9075-14:2016/<br>Cor 2:2022 | Information technology — Database languages — SQL — Part 14: XML-Related Specifications (SQL/XML) — Technical Corrigendum 2                                    |
| ISO/IEC 9075-15:2016/<br>Cor 1:2022 | Information technology — Database languages — SQL — Part 15: Multi-dimensional arrays (SQL/MDA) — Technical Corrigendum 1                                      |

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|--------------------------|------------------------------------------------------------------------------------------------------------------------------|
| ISO/IEC TR 19583-21:2022 | Information technology — Concepts and usage of metadata — Part 21: 11179-3 Data model in SQL                                 |
| ISO/IEC 19763-16:2021    | Information technology — Metamodel framework for interoperability (MFI) — Part 16: Metamodel for document model registration |

The following projects are progressing in Stage 40 - Enquiry stage (DIS):

|                      |                                                                                                                                   |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| ISO/IEC DIS 9075-1   | Information technology — Database language SQL — Part 1: Framework (SQL/Framework)                                                |
| ISO/IEC DIS 9075-10  | Information technology — Database language SQL — Part 10: Object language bindings (SQL/OLB)                                      |
| ISO/IEC DIS 9075-11  | Information technology — Database language SQL — Part 11: Information and definition schemas (SQL/Schemata)                       |
| ISO/IEC DIS 9075-13  | Information technology — Database language SQL — Part 13: SQL Routines and types using the Java TM programming language (SQL/JRT) |
| ISO/IEC DIS 9075-14  | Information technology — Database language SQL — Part 14: XML-Related Specifications (SQL/XML)                                    |
| ISO/IEC DIS 9075-15  | Information technology — Database language SQL — Part 15: Multidimensional arrays (SQL/MDA)                                       |
| ISO/IEC DIS 9075-16  | Information technology — Database languages SQL — Part 16: Property Graph Queries (SQL/PGQ)                                       |
| ISO/IEC DIS 9075-2   | Information technology — Database language SQL — Part 2: Foundation (SQL/Foundation)                                              |
| ISO/IEC DIS 9075-3   | Information technology — Database language SQL — Part 3: Call-Level Interface (SQL/CLI)                                           |
| ISO/IEC DIS 9075-4   | Information technology — Database language SQL — Part 4: Persistent stored modules (SQL/PSM)                                      |
| ISO/IEC DIS 9075-9   | Information technology — Database language SQL — Part 9: Management of External Data (SQL/MED)                                    |
| ISO/IEC DIS 11179-1  | Information technology — Metadata registries (MDR) — Part 1: Framework                                                            |
| ISO/IEC DIS 11179-3  | Information technology — Metadata registries (MDR) — Part 3: Metamodel for registry common facilities                             |
| ISO/IEC DIS 11179-30 | Information technology — Metadata registries (MDR) — Part 30: Basic attributes of metadata                                        |
| ISO/IEC DIS 11179-31 | Information technology — Metadata registries (MDR) — Part 31: Metamodel for data specification registration                       |
| ISO/IEC DIS 11179-32 | Information technology — Metadata registries (MDR) — Part 32: Metamodel for concept system registration                           |

|                      |                                                                                                                                                                                      |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO/IEC DIS 11179-33 | Information technology — Metadata registries (MDR) — Part 33: Metamodel for data set registration                                                                                    |
| ISO/IEC DIS 11179-35 | Information technology — Metadata registries (MDR) — Part 35: Metamodel for model registration                                                                                       |
| ISO/IEC DIS 11179-6  | Information technology — Metadata registries (MDR) — Part 6: Registration                                                                                                            |
| ISO/IEC DIS 15944-21 | Information technology — Business operational view — Part 21: Application of Open-edl business transaction ontology in distributed business transaction repositories                 |
| ISO/IEC DIS 21838-3  | Information technology — Top-level ontologies (TLO) — Part 3: Descriptive ontology for linguistic and cognitive engineering (DOLCE)                                                  |
| ISO/IEC DIS 21838-4  | Information technology — Top-level ontologies (TLO) — Part 4: TUpper                                                                                                                 |
| ISO/IEC DIS 15944-1  | Information technology — Business operational view — Part 1: Operational aspects of open-edl for implementation                                                                      |
| ISO/IEC DIS 15944-10 | Information technology — Business operational view — Part 10: IT-enabled coded domains as semantic components in business transactions                                               |
| ISO/IEC DIS 15944-12 | Information technology — Business operational view — Part 12: Privacy protection requirements (PPR) on information life cycle management (ILCM) and EDI of personal information (PI) |
| ISO/IEC DIS 15944-9  | Information technology — Business operational view — Part 9: Business transaction traceability framework for commitment exchange                                                     |

The following projects are progressing in stage 30 - Committee stage (CD/DTR/DTS):

|                      |                                                                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO/IEC CD 19075-10  | Information technology — Guidance for the use of database language SQL — Part 10: SQL model                                                                       |
| ISO/IEC CD 39075.2   | Information Technology — Database Languages — GQL                                                                                                                 |
| ISO/IEC CD 19763-1   | Information technology — Metamodel framework for interoperability (MFI) — Part 1: Framework                                                                       |
| ISO/IEC CD 19763-10  | Information technology — Metamodel framework for interoperability (MFI) — Part 10: Core model and basic mapping                                                   |
| ISO/IEC CD 5394      | Information technology — Criteria for concept systems                                                                                                             |
| ISO/IEC CD 6523-1    | Information technology — Structure for the identification of organizations and organization parts — Part 1: Identification of organization identification schemes |
| ISO/IEC DTR 19583-24 | Information technology — Concepts and usage of metadata — Part 24: 11179-3:2013 Metamodel in RDF                                                                  |

|                     |                                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO/IEC CD 15944-17 | Information technology — Business operational view — Part 17: Fundamental principles and rules governing Privacy-by-Design (PbD) requirements in EDI and collaboration space context |
| ISO/IEC CD 15944-18 | Information technology — Business operational view — Part 18: Common principles for identification and rules for use of identifiers in business transaction                          |
| ISO/IEC CD 15944-19 | Information technology — Business operational view — Part 19: Guidelines on cross-border data flows (CBDF): requirements for business transactions (including personal information)  |
| ISO/IEC CD 15944-8  | Information technology — Business operational view — Part 8: Identification of privacy protection requirements as external constraints on business transactions                      |

The following projects are in stages 00 or 10 (Preliminary / Proposal):

|                                 |                                                                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO/IEC PWI 29075               | Information technology — Function libraries for advanced analytics in data management                                                                           |
| ISO/IEC NP 19583-26             | Information technology — Concepts and usage of metadata — Part 26: XML for representation of ISO/IEC 11179-3:2013 content                                       |
| ISO/IEC 19763-12:2015/AWI Amd 1 | Information technology — Metamodel framework for interoperability (MFI) — Part 12: Metamodel for information model registration — Amendment 1                   |
| ISO/IEC 19763-16:2021/AWI Amd 1 | Information technology — Metamodel framework for interoperability (MFI) — Part 16: Metamodel for document model registration — Amendment 1                      |
| ISO/IEC 19763-3:2020/AWI Amd 1  | Information technology — Metamodel framework for interoperability (MFI) — Part 3: Metamodel for ontology registration — Amendment 1                             |
| ISO/IEC 19763-6:2015/AWI Amd 1  | Information technology — Metamodel framework for interoperability (MFI) — Part 6: Registry Summary — Amendment 1                                                |
| ISO/IEC AWI 11179-34            | Information technology — Metadata registries (MDR) — Part 34: Metamodel for computable object registration                                                      |
| ISO/IEC AWI 11404               | Information technology — General-Purpose Datatypes (GPD)                                                                                                        |
| ISO/IEC AWI 19763-13            | Information technology — Metamodel framework for interoperability (MFI) — Part 13: Metamodel for form design registration                                       |
| ISO/IEC AWI 5207                | Information technology — Data usage — Terminology and use cases                                                                                                 |
| ISO/IEC AWI 5212                | Information technology — Data usage — Guidance for data usage                                                                                                   |
| ISO/IEC AWI 6523-2              | Information technology — Structure for the identification of organizations and organization parts — Part 2: Registration of organization identification schemes |

### **3. Future work and deliverables**

See the tables in Section 2.

### **4. Risks and issues**

Each of the Working Groups within SC 32 sets its own priorities and strategies for achieving objectives. The delegation of authority and responsibility to the WGs stands in contrast to the working of some other JTC 1 Subcommittees. This management style allows considerable freedom for WGs to adjust agendas and schedules dynamically, in response to varying resource availability and WG expert contributions. It does however place a considerable reliance on WG Convenors to ensure that projects are advanced and timelines are met. SC 32 has been very fortunate that its WG Convenors have been up to the challenge.

The need to operate in a fully virtual meeting environment during the pandemic has hampered progress to some degree. Starting with a hybrid WG 3 meeting in March 2022, the SC and its WG's have begun a cautious return to hybrid meetings (or face-to-face with virtual participation). Much work is still being done in a virtual mode. The expectation for 2023 is that this will continue, with the SC 32 Plenary and some WG meetings being face-to-face or hybrid, and the remainder of the WG work done in virtual mode.

Many of the standards being actively maintained by SC 32 are very old (decades), very large (thousands of pages), or both. There has been some tension caused by the changing requirements of past and present ISO house styles, which in some cases has had the effect of turning what was meant to be a minor revision, into a major editing project for which resources do not exist. Case by case cooperation with ISO/CS has alleviated much, but not yet all, of this risk. EPM turnover tends to aggravate the situation, as each new EPM has to be introduced to the unusual size and nature of many SC 32 standards.

There is always some risk that major vendors may wish to re-focus their efforts within national bodies or other standards groups, with the intention to progress the resulting standards through JTC 1 as Fast Track or PAS submissions. Happily, we have not seen any efforts to do so recently. There exists some risk that proponents of particular technologies may prefer that they be developed in an open source community and eschew formal standardization. To minimize this risk, SC 32's WGs have been working more closely with open source communities. There is a possibility that major standards such as SQL could be declared as mature and not require substantial additional effort within SC 32. There is also a possibility that major participant groups within any of the WGs may drop participation for financial, programmatic, product, or other reasons, thus damaging the viability of the WG and/or SC 32.

If SC 32 does not pursue its work aggressively, risks exist that essential capabilities will not be available in the marketplace to support important functions, or that the marketplace will produce multiple incompatible solutions in areas where common approaches and interoperability are essential to users. SC 32 must maintain a balance between the focus needed to complete existing projects, and nimbleness / responsiveness to changing market requirements.

Many new and interesting areas for standardization, such as Big Data, Internet of Things, data privacy and usage, and cloud computing span a wide range of SC and TC scope. SC 32 must be diligent in taking ownership of those aspects that match its expertise and scope, while not interfering with (and indeed, supporting) those aspects that are more appropriate to other TCs/SCs or to joint working efforts.

## **5. Opportunities**

The Internet of Things (IoT), cloud computing, Big Data, data usage and privacy, advanced analytics, approximate querying, streaming data, and semi- or un-structured data use all represent major areas of opportunity where market forces are creating demand for SC 32 standards. Some, such as streaming data, fall squarely within the SC 32 scope of work; while others, such as IoT, represent areas where SC 32 can implement standards that support architectural or reference work taking place in other SC's or TC's. SC 32 continues to work with others involved to identify specific standardization needs and respond with current and newly proposed projects.