

**Big Data Governance Focus Group**  
**Industry Connections Activity Initiation Document (ICAID)**

Version: 1.0, 25 November 2021

IC21-011-01 Approved by the IESS SMDC 13 December 2021

## Instructions

- Instructions on how to fill out this form are shown in red. It is recommended to leave the instructions in the final document and simply add the requested information where indicated.
- **Shaded Text** indicates a placeholder that should be replaced with information specific to this ICAID, and the shading removed.
- Completed forms, in Word format, or any questions should be sent to the IEEE Standards Association (IEEE SA) Industry Connections Committee (ICCom) Administrator at the following address: [industryconnections@ieee.org](mailto:industryconnections@ieee.org).
- The version number above, along with the date, may be used by the submitter to distinguish successive updates of this document. A separate, unique Industry Connections (IC) Activity Number will be assigned when the document is submitted to the ICCom Administrator.

## 1. Contact

Provide the name and contact information of the primary contact person for this IC activity. Affiliation is any entity that provides the person financial or other substantive support, for which the person may feel an obligation. If necessary, a second/alternate contact person's information may also be provided.

**Chair: Alexander Kraus**

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**Employer:** The ODI

**Affiliation:**

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

## 2. Participation and Voting Model

Specify whether this activity will be entity-based (participants are entities, which may have multiple representatives, one-entity-one-vote), or individual-based (participants represent themselves, one-person-one-vote).

The participation and voting model will be individual based.

### 3. Purpose

#### 3.1 Motivation and Goal

Briefly explain the context and motivation for starting this IC activity, and the overall purpose or goal to be accomplished.

There are a number of global efforts focused on access to massive amounts of data sourced from individuals and enterprises<sup>1</sup>.

Companies are even financially motivated to increasing their pursuit of big data driven technologies, seeing returns up to 40% per annum from their big data based investments.<sup>2</sup> Key advances in data governance are the first step to facilitating this level of growth and exchange as the current framework is not nearly comprehensive enough for the advances being made in the technology sector. The most discussed aspect of data governance seems to be around defining data governance, i.e. defining data processes, procedures, responsibilities, policies etc., while not addressing implementation and monitoring with nearly the same volume.<sup>3</sup>

Data governance as a whole is, presently, a vague topic and requires considerable discussion to create a coherent structure for various markets to increase interoperability across and within disciplines.

The goal of this focus group is to provide clarity on :

1. What constitutes data governance? Here, we seek to offer a working definition, so to come to grips with data governance from a definition point of view.
2. The technical definition of “data governance” and where this definition will be applicable, e.g. IoT, AI, Privacy etc.
3. Identifying the key issues prevalent in the current framework of data governance and transactions,
  - a. Including issues around ethical sharing and usage of data,
  - b. Standardisation of methods of collection, organisation, storage etc.
4. Identifying potential solutions to the identified issues,
5. Further anticipating issues that would arise in the world of data science.

The resulting discourse will cumulate in an “expert report” with the goal of shedding further light on what constitutes data governance and also enhancing the quality of existing data governance frameworks as well as the tools and standards involved in order to enable practical and sustainable business models and practices for market participants .

#### 3.2 Related Work

<sup>1</sup> Deloitte State of AI in the Enterprise Survey, 2nd Edition, 2018

<sup>2</sup> Alhassan, Ibrahim, et al. “Data Governance Activities: An Analysis of the Literature.” Journal of Decision Systems, vol. 25, no. sup1, 2016, pp. 64–75., doi:10.1080/12460125.2016.1187397.

<sup>3</sup> *Ibid.*

Provide a brief comparison of this activity to existing, related efforts or standards of which you are aware (industry associations, consortia, standardization activities, etc.).

Existing standards fail to address larger scale representation of data transactions across various organisations or conglomerates. They also inadequately address data governance.

ISO/IEC 38505-1:2017<sup>4</sup> for example addresses the governance of contemporary and potential use of data created, collected or controlled by IT systems within an organisation and is directly implicated in management and decisions relating to company data; but fails to address big data challenges. Equally, ISO 8000-61:2016<sup>5</sup> concerns data quality management and provides methods to keep the quality of information and data consistent and further improved. ISO 27701<sup>6</sup> concerns privacy of information management, which includes nearly a dozen sub-standards hinging on security techniques and management systems which are less related to the motivation of this standardization group’s work.

The IEEE itself can look back at a host of standards on which this group can build upon :

IEEE 1455	Standard for Message Sets of Vehicle/Roadside Communications
IEEE 1609.0	Guide for Wireless Access in Vehicular Environments (WAVE) Architecture
IEEE 1609.11	Standard for Wireless Access in Vehicular Environments (WAVE)-- Over-the-Air Electronic Payment Data Exchange Protocol for Intelligent Transportation Systems (ITS)
IEEE 1609.2	Standard for Wireless Access in Vehicular Environments--Security Services for Applications and Management Messages
IEEE 1609.2.1	Approved Draft Standard for Wireless Access in Vehicular Environments (WAVE) - Certificate Management Interfaces for End-Entities
IEEE 1616	Standard for Motor Vehicle Event Data Recorder (MVEDR)
IEEE P2144.2	Standard for Functional Requirements in Blockchain-based Internet of Things (IoT) Data Management
IEEE P2894	Guide for an Architectural Framework for Explainable Artificial Intelligence
IEEE P2933	Standard for Clinical Internet of Things (IoT) Data and Device Interoperability with TIPPSS - Trust, Identity, Privacy, Protection, Safety,

<sup>4</sup> “Iso/Iec 38505-1:2017.” ISO, 31 Mar. 2017, www.iso.org/standard/56639.html.

<sup>5</sup> “Iso 8000-61:2016.” ISO, 17 Nov. 2016, www.iso.org/standard/63086.html.

<sup>6</sup> “Iso/Iec 27701:2019.” ISO, 5 Aug. 2019, www.iso.org/standard/71670.html.

	Security
IEEE P2957	Standard for a Reference Architecture for Big Data Governance and Metadata Management
IEEE P3800	Standard for a data-trading system: overview, terminology and reference model
IEEE P7001	Transparency of Autonomous Systems
IEEE P7002	Data Privacy Process
IEEE P7004	Standard for Child and Student Data Governance
IEEE P7005	Standard for Transparent Employer Data Governance
IEEE P7012	Standard for Machine Readable Personal Privacy Terms
IEEE P9274.4.2	Recommended Practice for Cybersecurity in the Implementation of the Experience Application

While all the above standards are somewhat related they insufficiently cover the issues of interest to this group. The report to be proposed as a product of this group will be original and cover a much larger ground than what has so far been standardised. Looking specifically at the list of IEEE standards, it is evident that the previous work is largely detailed about various technical aspects, including management systems and architectures (IEEE 1609.0, IEEE P2144.2, IEEE P3800 etc.). The standards that may result from this group’s discussions would be a little closer to the lines of IEEE P2933, which focuses on clinical IoT, interoperability, privacy, trust, identity, protection, safety and security. These and the other listed IEEE standards will help guide the discussion and assist in keeping the focus on areas yet to be considered, or areas with little coverage. Some may even be cited as baselines or examples to follow, such as the standard for Data Privacy Process (IEEE 7005) and the Standard for Machine Readable Personal Privacy Terms (IEEE P7012).

### **3.3 Previously Published Material**

Provide a list of any known previously published material intended for inclusion in the proposed deliverables of this activity.

Stratagems and designs are amongst the most researched aspects of data governance. One particular example is Khatri and Brown, 2010, with their paper titled “Designing Data Governance”.<sup>7</sup> This entails a more fundamental outlook on decision making and who is making said decisions, as opposed to smaller scale “day-to-day” descisions.

Logically, following the creation and implementation of a framework, there needs to be a review and analysis of the current governance structure and a breakdown of future research required in data governance. Abraham, Schneider & Brocke 2019 would be a valuable paper to use in the discussions. This paper identifies 5 research areas pertinent to future data

<sup>7</sup> Khatri, Vijay, and Carol V. Brown. "Designing data governance." Communications of the ACM 53.1 (2010): 148-152.

governance over 15 research questions, drafting a conceptual framework with overviews of antecedents, scoping parameters and mechanisms of governance with the goal of helping practitioners achieve sufficient data governance in an organised and structured manner.<sup>8</sup>

A specific data governance model would prove beneficial to use as an example and to build more concrete statements, avoiding unnecessary hypotheticals. One way to break down a data governance model would be to look at three components- data quality, responsibilities and decision areas to build a matrix.

Essentially creating a matrix for data instead of a human team. Findings from this paper were intended to assist intra-company data governance models (Wende 2007).<sup>9</sup>

Further application of the governance model can be achieved through referencing a detailed breakdown of data governance models applied in various industries e.g. pharmaceuticals, IT, etc. (Panian 2010).<sup>10</sup> A study by Weber, Otto & Osterle 2009 based on governance of Information Technology (IT), presents the first instance products of community action research on 6 international companies from varying industries and may also be applicable. The study presents a common data governance model focusing primarily on 3 components- data quality roles, decision areas and responsibilities.<sup>11</sup>

While much more has been published, these studies mainly address the specifics of governance models, and usually look at three components of general data governance- quality, responsibility and decision areas. They have a particular focus on data management within the company.

This leaves a “gap in the market” for interoperable management across companies for a more streamlined market where data transactions are concerned. Engaging in discussion would also bring about many more studies to be referenced in the final report, however these 5 listed studies provide a versatile starting point for the group.

### **3.4 Potential Markets Served**

Indicate the main beneficiaries of this work, and what the potential impact might be.

In 2020, the Data Governance market as a whole was valued at US\$ 1.81B and is expected to be valued at US\$5.28B by 2026, resulting in a projected compound annual growth rate (CAGR) of over 20.83% between 2021 – 2026. Cisco for example reports approximately 5 quintillion bytes of daily data production further emphasising the need for comprehensive data governance.<sup>12</sup> The recent Covid-19 pandemic has increased data usage considerably, particularly in emerging nations.

<sup>8</sup> Abraham, Rene, Johannes Schneider, and Jan Vom Brocke. "Data governance: A conceptual framework, structured review, and research agenda." *International Journal of Information Management* 49 (2019): 424-438.

<sup>9</sup> Wende, Kristin. "A model for data governance—Organising accountabilities for data quality management." (2007).

<sup>10</sup> Panian, Zeljko. "Some practical experiences in data governance." *World Academy of Science, Engineering and Technology* 62.1 (2010): 939-946.

<sup>11</sup> Weber, Kristin, Boris Otto, and Hubert Osterle. "One size does not fit all---a contingency approach to data governance." *Journal of Data and Information Quality (JDIQ)* 1.1 (2009): 1-27.

<sup>12</sup> Mordor Intelligence, 2021, Data Governance Market - Growth, Trends, COVID-19 Impact, and Forecasts (2021 - 2026)

Data governance serves various markets, namely: Artificial Intelligence (AI), Internet of Things (IoT), Consumer Goods Software and Electronics and the Automotive Industry.

AI is dependant entirely on data collection, organization and transfer. As the technological world ventures further towards automation, the AI solutions across various companies need to be interoperable and compatable for scaleable commercial application, hence stakeholders in AI development will need generalized standards over the framework of data management. The importance of a coherent management framework extends, extensively, to stakeholders in the IoT, autonomous vehicles space and the automotive industry; due to the plethora of parts and softwares required to interact with eachother for a functional product. This would cover everything from speakers, GPS, cruise control, vehicle information and diagnostics to the identification of vehicles on the road- speed traps and much more.

The AI field, specifically Deep and Machine Learning, Natural Language processing and Machine Vision, is growing at exponential rates, demonstrating itself to be a revolutionary market with massive market players such as Google LLC, Apple Inc, Facebook and Microsoft investing large sums into the research and development of Artificial Intellegence. The global AI market, in 2020, was valued at US\$62.35B and is projected to have a CAGR of 40.2% in the time period of 2021-2028<sup>13</sup>.

To gauge the size of IoT can be challenging due to its generality, but a useful example would be to look at specifically IT, Telecom, Sustainable Energy, Manufacturing etc. This sector of IoT was valued at US\$308.97B in 2020. Unlike the AI sectors previously mentioned, demand of IoT solutions suffered at the hands of the global pandemic across all regions. The market is projected to grow to be worth US\$1,854.76B by 2028 at with a CAGR of 25.4% across the 9 years.<sup>14</sup>

Moving beyond data organization standards, the definition and discussion of data governance and what constitutes ethical governance is core to the future of ICT development. Identifying problems in the current data transaction practices of large conglomerates, for example the e-commerce sector, is in favour of consumers and smaller practices aiming to protect the privacy of the individual. Distinct standards around transparency of data transactions may even help larger conglomerates, in the public eye, by taking greater steps in ensuring the privacy of data taken from the millions of individuals using their various systems.

### **3.5 How will the activity benefit the IEEE, society, or humanity?**

This standardization protocol puts the IEEE centre stage for key questions of data governance, showing the relevance and importance of the organization. Change is imminent, this activity will help govern large packets of data, without which consumers and the previously mentioned

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<sup>13</sup> Grand View Research, 2021, Artificial Intelligence Market Size, Share & Trends Analysis Report By Solution, By Technology (Deep Learning, Machine Learning, Natural Language Processing, Machine Vision), By End Use, By Region, And Segment Forecasts, 2021 - 2028.

<sup>14</sup> Fortune Business Insights, 2021, Internet of Things (IoT) Market Size, Share & COVID-19 Impact Analysis, By Component (Platform, Solution & Services), By End Use Industry (BFSI, Retail, Government, Healthcare, Manufacturing, Agriculture, Sustainable Energy, Transportation, IT & Telecom, Others), and Regional Forecast, 2021-2028.

sectors would lose out considerably, as without standardisation of data governance, there is limited development and usage of a larger technological web. This in turn decreases connectivity and could diminish the quality and effectivity of future technologies, potentially resulting in decreased privacy & safety. Further, successful implementation of said guidelines could result in increased presence of the IEEE in the respective fields, potentially increasing memberships and business oppurtunities.

#### **4. Estimated Timeframe**

Indicate approximately how long you expect this activity to operate to achieve its proposed results (e.g., time to completion of all deliverables).

**Expected Completion Date:** 12/2023

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICCom and the responsible committee of the IEEE SA Board of Governors. Should an extension be required, please notify the ICCom Administrator prior to the two-year mark.

#### **5. Proposed Deliverables**

Outline the anticipated deliverables and output from this IC activity, such as documents (e.g., white papers, reports), proposals for standards, conferences and workshops, databases, computer code, etc., and indicate the expected timeframe for each.

Group report – White Paper encompassing:

1Q 2022

1. Background on data governance
2. A formal definition of data governance

3Q 2022

3. Most important issues identified by the group
4. Short summary of potential issues to arise

2Q 2023

5. Potential solutions to the identified issues
6. Recommendations for standards to be drafted

A workshop, to review the report and create an actionable plan on how to apply the potential solutions that were discussed.

#### **5.1 Open Source Software Development**

*Indicate whether this IC Activity will develop or incorporate open source software in the deliverables. All contributions of open source software for use in Industry Connections activities shall be accompanied by an approved IEEE Contributor License Agreement (CLA) appropriate for the open source license under which the Work Product will be made available. CLAs, once accepted, are irrevocable. Industry Connections Activities shall comply with the IEEE SA open source policies and procedures and use the IEEE SA open source platform for development of open source software. Information on IEEE SA Open can be found at <https://saopen.ieee.org/>.*

Will the activity develop or incorporate open source software (either normatively or informatively) in the deliverables?:

## 6. Funding Requirements

Outline any contracted services or other expenses that are currently anticipated, beyond the basic support services provided to all IC activities. Indicate how those funds are expected to be obtained (e.g., through participant fees, sponsorships, government or other grants, etc.). Activities needing substantial funding may require additional reviews and approvals beyond ICom.

No funding requested

## 7. Management and Procedures

### 7.1 Activity Oversight Committee

Indicate whether an IEEE Standards Committee or Standards Development Working Group has agreed to oversee this activity and its procedures.

**Has an IEEE Standards Committee or Standards Development Working Group agreed to oversee this activity?:** No

If yes, indicate the IEEE committee's name and its chair's contact information.

**IEEE Committee Name:** Committee Name

**Chair's Name:** Full Name

**Chair's Email Address:** who@where

Additional IEEE committee information, if any. Please indicate if you are including a letter of support from the IEEE Committee that will oversee this activity.

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

### 7.2 Activity Management

If no Activity Oversight Committee has been identified in 7.1 above, indicate how this activity will manage itself on a day-to-day basis (e.g., executive committee, officers, etc).

Interested experts are to participate in the group meetings at regular intervals, approximately once a month, to advance the goal of standardising data governance. The chair and vice-chair will lead the charge during discussion.

### 7.3 Procedures

Indicate what documented procedures will be used to guide the operations of this activity; either (a) modified baseline *Industry Connections Activity Policies and Procedures*, (b) Standards Committee policies and procedures accepted by the IEEE SA Standards Board, or (c) Working Group policies and procedures accepted by the Working Group's Standards Committee. If option (a) is chosen, then ICom review and approval of the P&P is required. If option (b) or (c) is chosen, then ICom approval of the use of the P&P is required.

*Abridged Industry Connections Activity Policies and Procedures*



## 8. Participants

### 8.1 Stakeholder Communities

Indicate the stakeholder communities (the types of companies or other entities, or the different groups of individuals) that are expected to be interested in this IC activity, and will be invited to participate.

Stakeholders involved in the IC activity will include individuals from the data field of various perspectives, namely data scientists, AI governance specialists, IT Lawyers and Executives (CEO, CIO etc.) of various data transfer companies. While the participants will be acting as individuals, they are involved with companies such as Kilroy Blockchain, BT, Turkcell, Thales, GM, Continental, BMW, Privately SA etc.

### 8.2 Expected Number of Participants

Indicate the approximate number of entities (if entity-based) or individuals (if individual-based) expected to be actively involved in this activity.

15-20 individuals

### 8.3 Initial Participants

Provide a number of the entities or individuals that will be participating from the outset. It is recommended there be at least three initial participants for an entity-based activity, or five initial participants (each with a different affiliation) for an individual-based activity.

Use the following table for an individual-based activity:

First Name	Last Name	Employer	Affiliation
Andrey	Glushko	Continental	Continental
Derek	Wyatt	Former Chair of the Technology Committee of House of Commons, UK	Technology Policy Alliance
Karen	Kilroy	Kilroy Blockchain	Kilroy Blockchain
Lynn	Riley	Kilroy Blockchain	Kilroy Blockchain
Zoe	Webster	BT	BT
Monika	Menz	Vossius	Vossius
Gokce	Cobansoy Hizel	Turkcell	Turkcell
Daniel	Neagu	University of Bradford	University of Bradford
Bernhard	Peischl	AVL	AVL
Lotte	Ansgaard Thomse	Grundfos	Grundfos
Boris	Schauerte	Ikea	Ikea
Kasra	Haghighi	UniqueSec	UniqueSec
Abel	Aboh	Bank of England	Bank of England
Cagla	Koroglu	Turkcell	Turkcell

Elif	Kuzeci	Bahcesehir University	Bahcesehir University
David	Fidalgo	Y-Mobility	Y-Mobility
Aape	Pohjarvita	Funzi	Funzi
Nazreen	Ebrahim	Socially Acceptable	Socially Acceptable
David	Sammon	University College Cork	University College Cork

**8.4 Activity Supporter/Partner**

Indicate whether an IEEE committee (including IEEE Societies and Technical Councils) has agreed to participate or support this activity. Support may include, but is not limited to, financial support, marketing support and other ways to help the Activity complete its deliverables.

**Has an IEEE Committee agreed to support this activity?:** No

If yes, indicate the IEEE committee's name and its chair's contact information.

**IEEE Committee Name:** Committee Name

**Chair's Name:** Full Name

**Chair's Email Address:** who@where

Please indicate if you are including a letter of support from the IEEE Committee.

## References

1. Kerry, Cameron F. "Protecting Privacy in an Ai-Driven World." *Brookings*, Brookings, 10 Feb. 2020, [www.brookings.edu/research/protecting-privacy-in-an-ai-driven-world/](http://www.brookings.edu/research/protecting-privacy-in-an-ai-driven-world/).
2. Deloitte State of AI in the Enterprise Survey, 2<sup>nd</sup> Edition, 2018
3. Alhassan, Ibrahim, et al. "Data Governance Activities: An Analysis of the Literature." *Journal of Decision Systems*, vol. 25, no. sup1, 2016, pp. 64–75., doi:10.1080/12460125.2016.1187397.
4. "Iso/Iec 38505-1:2017." *ISO*, 31 Mar. 2017, [www.iso.org/standard/56639.html](http://www.iso.org/standard/56639.html).
5. "Iso 8000-61:2016." *ISO*, 17 Nov. 2016, [www.iso.org/standard/63086.html](http://www.iso.org/standard/63086.html).
6. "Iso/Iec 27701:2019." *ISO*, 5 Aug. 2019, [www.iso.org/standard/71670.html](http://www.iso.org/standard/71670.html).
7. Khatri, Vijay, and Carol V. Brown. "Designing data governance." *Communications of the ACM* 53.1 (2010): 148-152.
8. Abraham, Rene, Johannes Schneider, and Jan Vom Brocke. "Data governance: A conceptual framework, structured review, and research agenda." *International Journal of Information Management* 49 (2019): 424-438.
9. Wende, Kristin. "A model for data governance—Organising accountabilities for data quality management." (2007).
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11. Weber, Kristin, Boris Otto, and Hubert Österle. "One size does not fit all---a contingency approach to data governance." *Journal of Data and Information Quality (JDIQ)* 1.1 (2009): 1-27.
12. Mordor Intelligence, 2021, *Data Governance Market - Growth, Trends, COVID-19 Impact, and Forecasts (2021 - 2026)*
13. Grand View Research, 2021, *Artificial Intelligence Market Size, Share & Trends Analysis Report By Solution, By Technology (Deep Learning, Machine Learning, Natural Language Processing, Machine Vision), By End Use, By Region, And Segment Forecasts, 2021 - 2028*.  
Fortune Business Insights, 2021, *Internet of Things (IoT) Market Size, Share & COVID-19 Impact Analysis, By Component (Platform, Solution & Services), By End Use Industry (BFSI, Retail, Government, Healthcare, Manufacturing, Agriculture, Sustainable Energy, Transportation, IT & Telecom, Others), and Regional Forecast, 2021-2028*.