

## Data Quality Standards for Medical Records Workgroup

### International Data Quality Standards of Electronic Health Records Industry Connections Activity Initiation Document (ICAID)

Version: 1.0, 8 May 2023

IC23-005-001 Approved by the CAG 10 July 2023

#### Instructions

- Instructions on how to fill out this form are shown in red. Please leave the instructions in the final document and simply add the requested information where indicated.
- Spell out each acronym the first time it is used. For example, "United Nations (UN)."
- 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.

**Name:** Varadraj Prabhu Gurupur  
**Email Address:** [varadraj.gurupur@ucf.edu](mailto:varadraj.gurupur@ucf.edu)  
**Employer:** University of Central Florida  
**Affiliation:** IEEE, University of Central Florida

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).

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.

In this particular ICAID, we address the health data standards. There is a lack of a common convergence layer that would enable universal application interoperability of Electronic Health Records (EHR). The goal of this ICAID is to develop recommendations for a proposed family of standards that would address application interoperability to enable more entities (i.e., patients, caregivers, etc.) to have visibility for assessing the accuracy of EHR data thereby delivering higher quality medical records.

The workgroup will have the following goals:

1. Developing a method to create unique identifiers for each electronic healthcare vendor; thereby, identifying the electronic health record system used to create the electronic health record.
2. Developing a methodology allowing each electronic health record vendor to create identifiers identifying the healthcare provider responsible for creating the electronic health record.
3. Introduction of the system to measure the completeness of electronic health records.
4. Identify parameters for measuring the quality of electronic health records

#### 3.2 Related Work

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

Currently, there exists no universal standard to identify and measure the quality of electronic health records. There are organizations such as American Health Information Management Association (AHIMA), American Medical Informatics Association (AMIA), and Healthcare Information and Management Systems Society that have made a few attempts in this direction. However, these standards are not universal in nature given the fact that these organizations do not exist worldwide and have limited geographical influence.

#### 3.3 Previously Published Material

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

Gurupur, V., Hooshmand, S., Abedin, P., Shelleh, M. (2022). Analyzing the Data Completeness of Patients' Records Using a Random Variable Approach to Predict the Incompleteness of Electronic Health Records, *Applied Sciences*, DOI: 2076-3417/12/21/10746.

Gurupur, V. (2022). Key Observations in terms of Management of Electronic Health Records from a mHealth Perspective, *mHealth*, DOI: 10.21037/mhealth-21-39.

Gurupur, V., Shelleh, M., (2021). Machine Learning Analysis for Data Incompleteness (MADI): Analyzing the Data Completeness of Patient Records Using a Random Variable Approach to Predict the Incompleteness of Electronic Health Records, *IEEE Access*, Vol. 9, pp. 95994-96001. DOI: 10.1109/ACCESS.2021.3095240.

Nasir, A., Gurupur, V., Liu, X., (2016). A new paradigm to analyze data completeness of patient data, *Applied Clinical Informatics*, DOI: 10.4338/ACI-2016-04-RA-0063.

Nasir, A. \*, Liu, X., Gurupur, V., Qureshi, Z., (2017). Disparities in Patient Record Completeness with respect to the Health Care Utilization Project, *Health Informatics Journal*, DOI: 0.1177/1460458217716005.

### **3.4 Potential Markets Served**

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

The potential markets include: i) electronic health record vendors, ii) healthcare providers, and iii) organizations involved in helping with reimbursements for healthcare services.

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

This will improve the portability of electronic health records thereby improving healthcare services throughout the world.

## **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:** 06/2025

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.

The proposed deliverables are as follows:

1. Recommendations for proposed standards that help in identifying which electronic health record system created the health record i.e., a hierarchy of identification systems for identifying electronic health records.
2. Identification of different types of incompleteness associated with electronic health records and a broad framework for measuring its incompleteness.

### 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?  No

## 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 ICCOM.

None

## 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 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.).

All members of the work group will have one vote.

### **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* ([entity](#), [individual](#)), (b) *Abridged Industry Connections Activity Policies and Procedures* ([entity](#), [individual](#)), (c) Standards Committee policies and procedures accepted by the IEEE SA Standards Board, or (d) 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 (c) or (d) is chosen, then ICom approval of the use of the P&P is required.

(b) 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.

The types of entities involved are as follows: a) vendors of electronic health records, b) healthcare providers, and c) organizations involved in improving healthcare reimbursement process. Meanwhile, the work group will include the following type of individuals: i) academicians involved in healthcare informatics, ii) consultants involved in improving healthcare processes, iii) individuals working for healthcare providers and electronic health record vendors.

### **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 will be involved in the work group.

### **8.3 Initial Participants**

Provide a few 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:

<b>Individual Name</b>	<b>Employer</b>	<b>Affiliation</b>
Lee Wise	Hannibal Regional Hospital	Hannibal Regional Hospital
Hude Quan	University of Calgary	University of Calgary
Varadraj Gurupur	University of Central Florida	IEEE
Ying-Chyi Chou	Brown University	Tunghai University
Dr. Ashutosh Dutta	John Hopkins University	John Hopkins University
Niranjan U. Cholayya	Manipal Academy of Higher Education	Manipal Academy of Higher Education

### **8.4 Activity Supporter/Partner**

Indicate whether an IEEE committee (including IEEE Societies and Technical Councils), other than the Oversight Committee, 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, other than the Oversight 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.