P1849

Type of Project: Revision to IEEE Standard 1849-2016
Project Request Type: Initiation / Revision
PAR Request Date: 06 Feb 2022
PAR Approval Date: 24 Mar 2022
PAR Expiration Date: 31 Dec 2026
PAR Status: Active
Root Project: 1849-2016

1.1 Project Number: P1849
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Project Title: Standard for eXtensible Event Stream (XES) for Achieving Interoperability in Event Logs and Event Streams
Change to Title: ~~IEEE~~ Standard for eXtensible Event Stream (XES) for Achieving Interoperability in Event Logs and Event Streams

3.1 Working Group: eXtensible Event Stream Working Group(CIS/SC/XES WG)
3.1.1 Contact Information for Working Group Chair:
Name: Moe Wynn
Email Address: m.wynn@qut.edu.au
3.1.2 Contact Information for Working Group Vice Chair:
Name: Wil van der Aalst
Email Address: wvdaalst@pads.rwth-aachen.de
3.2 Society and Committee: IEEE Computational Intelligence Society/Standards Committee(CIS/SC)
3.2.1 Contact Information for Standards Committee Chair:
Name: Bruno DiStefano
Email Address: bruno.distefano@gmail.com
3.2.2 Contact Information for Standards Committee Vice Chair:
None
3.2.3 Contact Information for Standards Representative:
None

4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: Jun 2024
4.3 Projected Completion Date for Submittal to RevCom: Jan 2025

5.1 Approximate number of people expected to be actively involved in the development of this project: 16
5.2 Scope of proposed standard: This standard defines World Wide Web Consortium (W3C) Extensible Markup Language (XML) structure and constraints on the contents of XML 1.1 documents that can be used to represent extensible event stream (XES) instances.1 A XES instance corresponds to a file-based event log or a formatted event stream that can be used to transfer event-driven data in a unified and extensible manner from a first site to a second site. Typically, the first site will be the site generating this event-driven data (for example, workflow systems, case handling systems, procurement systems, devices like wafer steppers and X-ray machines, and hospitals) while the second site will be the site analyzing this data (for example, by data scientists and/or advanced software systems). To transfer event-driven data in a unified manner, this standard includes a W3C XML Schema describing the structure of a XES instance. To transfer this data in an extensible manner, this standard also includes a W3C XML Schema describing the structure of an extension to such a XES instance. Basically, such an extension provides semantics to the structure as prescribed by the XES instance. This revision of the standard adds further extensions to the collection of extensions present in IEEE 1849-2016.
Change to scope of proposed standard: This standard defines World Wide Web Consortium (W3C) Extensible Markup Language (XML) structure and constraints on the contents of XML 1.1 documents that can be used to represent extensible event stream (XES) instances.1 A XES instance corresponds to a file-based event log or a formatted event stream that can be used to transfer event-driven data in a unified and extensible manner from a first site to a second site. Typically, the first site will be the site generating this event-driven data (for example, workflow systems, case handling systems, procurement systems, devices like wafer steppers and X-ray machines, and hospitals) while the second site will be the site analyzing this data (for example, by data

scientists and/or advanced software systems). To transfer event-driven data in a unified manner, this standard includes a W3C XML Schema describing the structure of a XES instance. To transfer this data in an extensible manner, this standard also includes a W3C XML Schema describing the structure of an extension to such a XES instance. Basically, such an extension provides semantics to the structure as prescribed by the XES instance. ~~Finally,~~ This ~~this~~ revision of the standard ~~includes~~ adds ~~a~~ further extensions to ~~basic~~ the collection of ~~such~~ extensions present in ~~extensions~~ IEEE 1849-2016 .

5.3 Is the completion of this standard contingent upon the completion of another standard? No
5.4 Purpose: The purpose of this standard is to provide a generally acknowledged XML format for the interchange of event data between information systems in many applications domains on the one hand and analysis tools for such data on the other hand. As such, this standard aims to fix the syntax and the semantics of the event data which, for example, is being transferred from the site generating this data to the site analyzing this data. As a result of this standard, if the event data is transferred using the syntax as described by this standard, its semantics will
be well understood and clear at both sites.
5.5 Need for the Project: The IEEE 1849-2016 XES standard offers a standardized way to export an event log (or an event stream) from an information system. This standard has now been adopted by numerous participants in the process mining field. As a result, process data can successfully be exported by information systems and imported into process mining tools. Over the years, several extensions to the standard have been proposed by participants, which further enhance the interoperability amid (process) data producers and consumers alike. A revision is needed to include these extensions into the standard.
Change to Need for the Project: ~~Currently,~~ The IEEE 1849-2016 XES ~~there~~ standard ~~is~~ offers ~~no~~ a standardized way to export an event log (or an event stream) from an information system. ~~As~~ This standard has now been adopted ~~a~~ by ~~result,~~ numerous participants ~~when~~ in ~~trying~~ the ~~to~~ process ~~analyze~~ mining ~~a~~ field. ~~running~~ As ~~information~~ a ~~system~~ result , ~~event log/stream~~ process data ~~needs~~ can ~~to~~ successfully be exported ~~in~~ by ~~some~~ information ~~ad-hoc~~ systems ~~manner.~~ and ~~Furthermore,~~ imported ~~it~~ into ~~is~~ process ~~often~~ mining tools. ~~not~~ Over ~~clear~~ the ~~which~~ years, ~~data~~ several ~~needs~~ extensions to ~~be~~ the ~~exported~~ standard ~~for~~ have ~~the~~ been ~~analysis~~ proposed ~~at~~ by ~~hand.~~ participants, ~~The~~ which ~~proposed~~ further ~~standard~~ enhance ~~is~~ the ~~meant~~ interoperability ~~to~~ amid ~~address~~ (process) ~~both~~ data ~~issues~~ producers and ~~to~~ consumers ~~result~~ alike. A revision ~~in~~ is ~~a~~ needed ~~more~~ to ~~powerful~~ include ~~analysis~~ these ~~of~~ extensions ~~event~~ into ~~log/stream~~ the ~~data~~ standard .
5.6 Stakeholders for the Standard: Engineers and scientists developing analysis techniques based on event logs and event streams for information systems, and the business users wanting to use these techniques.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?
No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project?
No

7.1 Are there other standards or projects with a similar scope? Yes
Explanation: In 2008 there was an initiative by the WfMC - Workflow Management Coalition - for a standard named BPAF - Business Process Analytics Format. BPAF is related to XES in the sense that it is a standard that describes a format for capturing events from running information systems. However, in contrast to XES, BPAF is specifically tailored towards running BPEL - Business process Execution Language - systems, which limits its applicability, and it has a restricted and known set of event attributes. As such, it resembles the MXML - Mining XML - format, which is well-known in the process mining field, but deemed to be too restrictive as well. Being too restrictive as a standard, the BPAF initiative has died.

The XBRL - eXtensible Business Reporting Language - standard claims to be a global standard for exchanging business information, but is mainly used to exchange financial information such as financial statements. As such, this standard captures only the current state of the business, whereas XES captures event logs, which is essentially historical data allowing analysis of what has happened.
Change to Explanation: In 2008 there was an initiative by the WfMC - Workflow Management Coalition - for a standard named BPAF - Business Process Analytics Format. BPAF is related to XES in the sense that it is a standard that describes a format for capturing events from running information systems. However, in contrast to XES, BPAF is specifically tailored towards running BPEL - Business process Execution Language - systems, which limits its applicability, and it has a restricted and known set of event attributes. As such, it resembles the MXML - Mining XML - format, which is well-known in the process mining field, but deemed to be too restrictive as well. Being too restrictive as a standard, the BPAF initiative has died.The XBRL - eXtensible Business Reporting Language - standard claims to be a global standard for exchanging business information, but is mainly used to exchange financial information such as financial statements. As such, this standard captures only the current state of the business, whereas XES captures event logs, which is essentially historical data allowing analysis of what has happened.

~~As far as we know, no standard for capturing data exists in related fields, like, for example, the data mining field. Basically, this is because many of the data mining tools connect directly to the database. Nevertheless, there exist some input formats (like the Weka ARFF - Attribute-Relation File Format - format or the SAS - Statistical Analysis System - SAS and JMP formats), but these are not standardized and tool specific. The PMML - Predictive Model Markup Language - standard as supported by the RapidMiner tool is a standard by the DMG - Data Mining Group - to capture predictive analysis and data mining models. As such, it captures the process of how to deal with the data instead of the data itself.~~

7.2 Is it the intent to develop this document jointly with another organization? No

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8.1 Additional Explanatory Notes: