

XES Standard

Eric Verbeek

Overview

Standard for XES – eXtensible Event Stream
– for achieving interoperability in event logs
and event streams.

XXES

Extensible Event Stream

Goal

- Facilitate export of event logs and event streams from an information system to an analysis tool
 - like, for example, a process mining tool

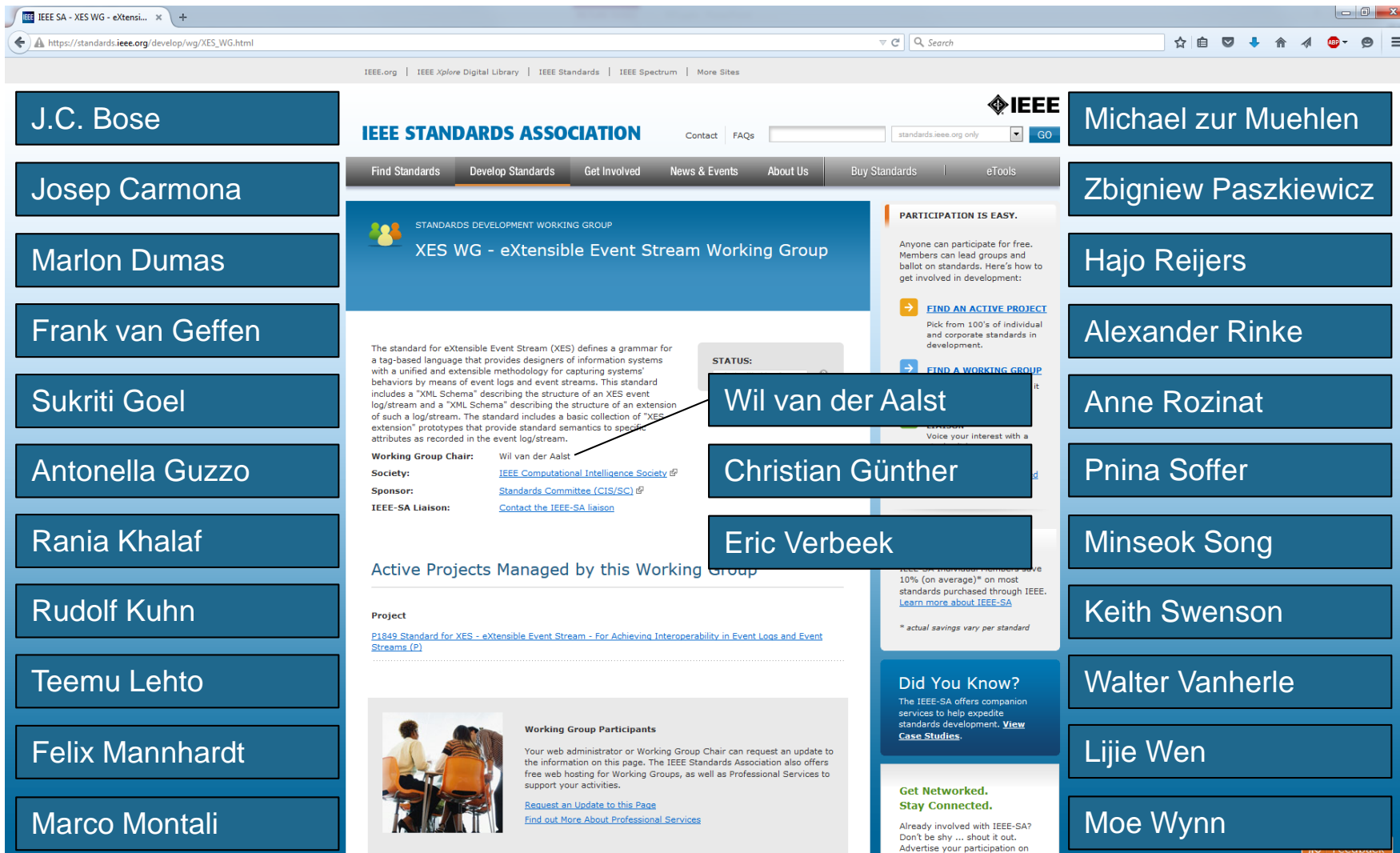


Scope

- To define a grammar for a language capturing event logs and event streams
 - XML Schema for event logs and event streams
 - XML Schema for extensions
 - Basic extensions



Working Group



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STANDARDS DEVELOPMENT WORKING GROUP
XES WG - eXtensible Event Stream Working Group

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→ **FIND AN ACTIVE PROJECT**
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→ **FIND A WORKING GROUP**
Voice your interest with a

STATUS:

The standard for eXtensible Event Stream (XES) defines a grammar for a tag-based language that provides designers of information systems with a unified and extensible methodology for capturing systems' behaviors by means of event logs and event streams. This standard includes a "XML Schema" describing the structure of an XES event log/stream and a "XML Schema" describing the structure of an extension of such a log/stream. The standard includes a basic collection of "XES extension" prototypes that provide standard semantics to specific attributes as recorded in the event log/stream.

Working Group Chair: Wil van der Aalst
Society: [IEEE Computational Intelligence Society](#)
Sponsor: [Standards Committee \(CIS/SC\)](#)
IEEE-SA Liaison: [Contact the IEEE-SA liaison](#)

Active Projects Managed by this Working Group

Project
[P1849 Standard for XES - eXtensible Event Stream - For Achieving Interoperability in Event Logs and Event Streams \(P\)](#)

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XES Standard Proposal

Recirc
• Jul 7

Approved
• D03
• Sep 26

Draft
• Sep 30

Published
• 1849-2016
• Nov 11



Published XES Standard

- **DOI:** [10.1109/IEEESTD.2016.7740858](https://doi.org/10.1109/IEEESTD.2016.7740858)

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1849-2016 - IEEE Standard for eXtensible Event Stream (XES) for Achieving Interoperability in Event Logs and Event Streams

Status: **Active - Approved**

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Abstract:

A grammar for a tag-based language whose aim is to provide designers of information systems with a unified and extensible methodology for capturing systems behaviors by means of event logs and event streams is defined in the XES standard. An XML Schema describing the structure of an XES event log/stream and a XML Schema describing the structure of an extension of such a log/stream are included in this standard. Moreover, a basic collection of so-called XES extension prototypes that provide semantics to certain attributes as recorded in the event log/stream is included in this standard.

- DOI: [10.1109/MCI.2017.2670420](https://doi.org/10.1109/MCI.2017.2670420)

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Abstract:

Presents information on the development of IEEE Standard 1849, the XES Standard.

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XES Certification Proposal

RfC1
• Jun 7

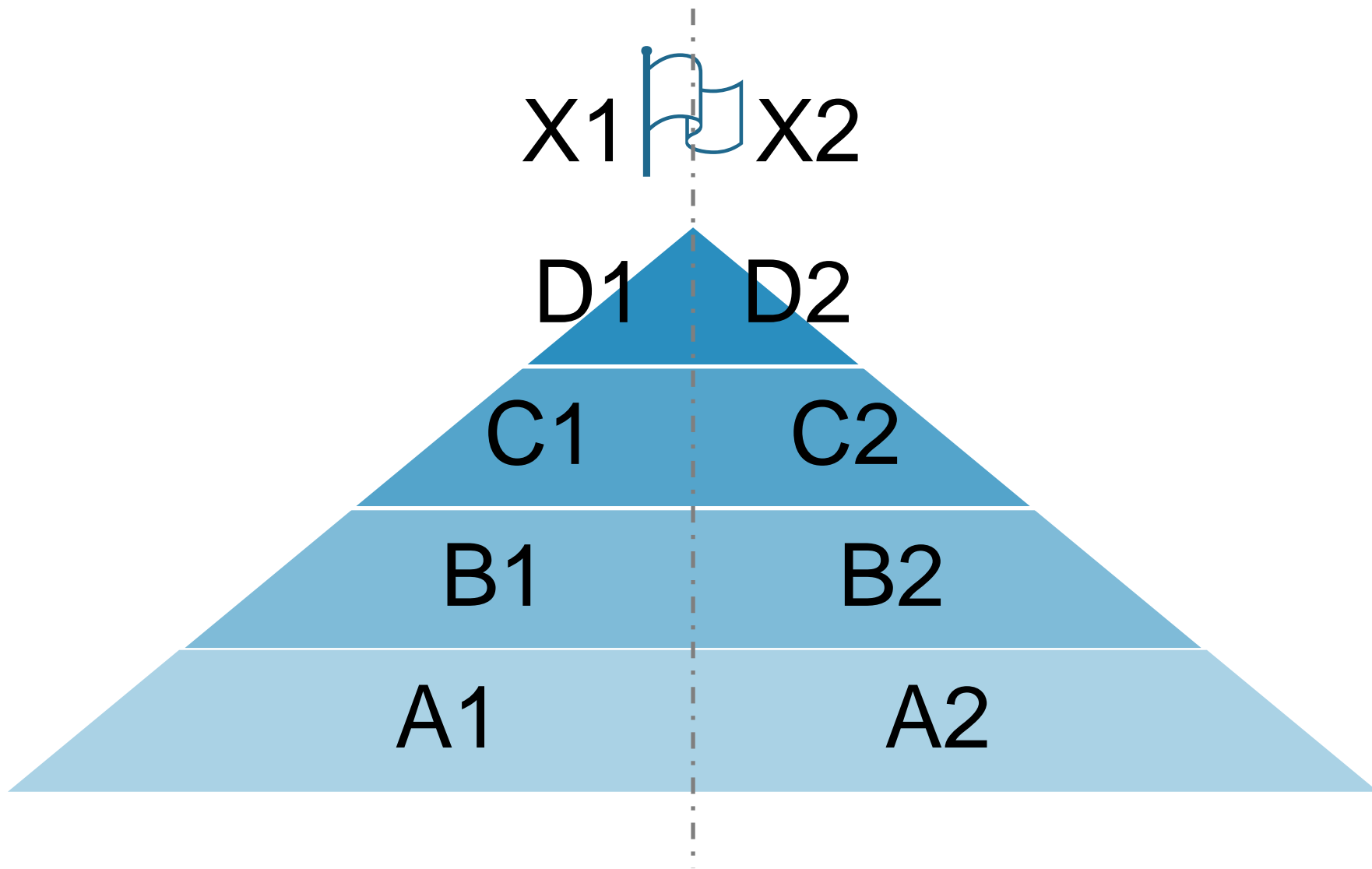
RfC2
• June 21

RfA
• Jul 5

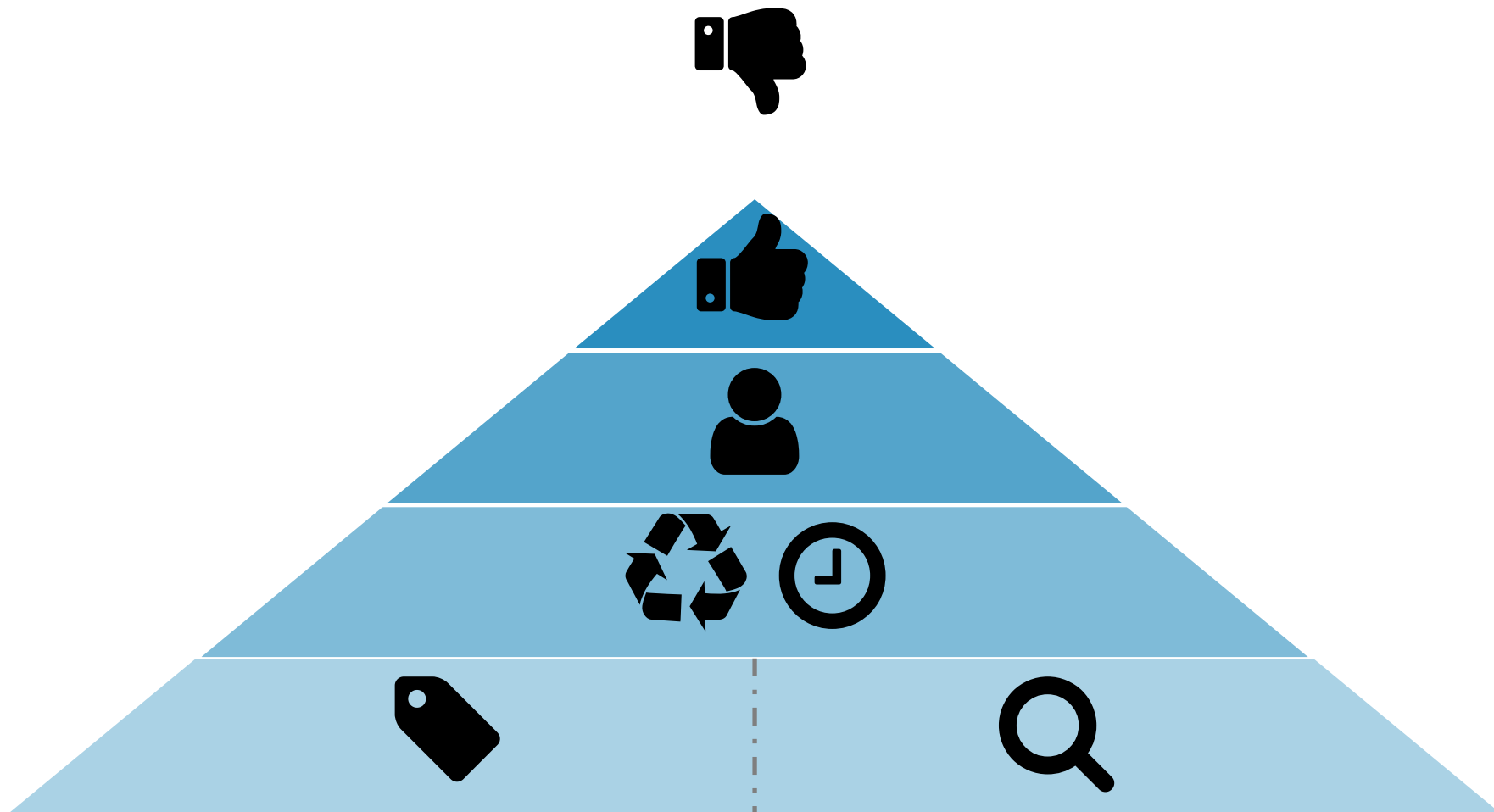
Approved
• Jul 19



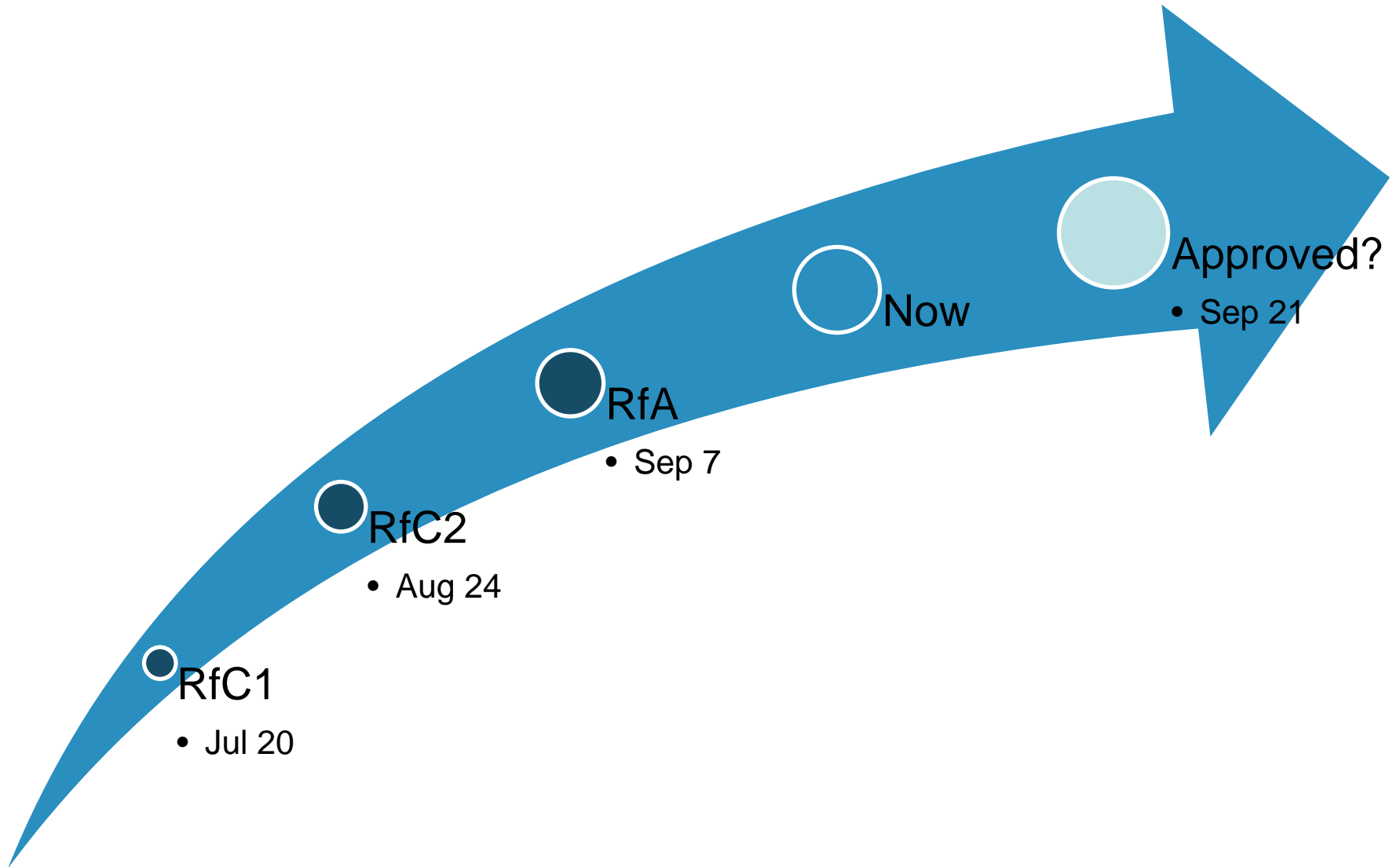
XES Certification



XES Certification

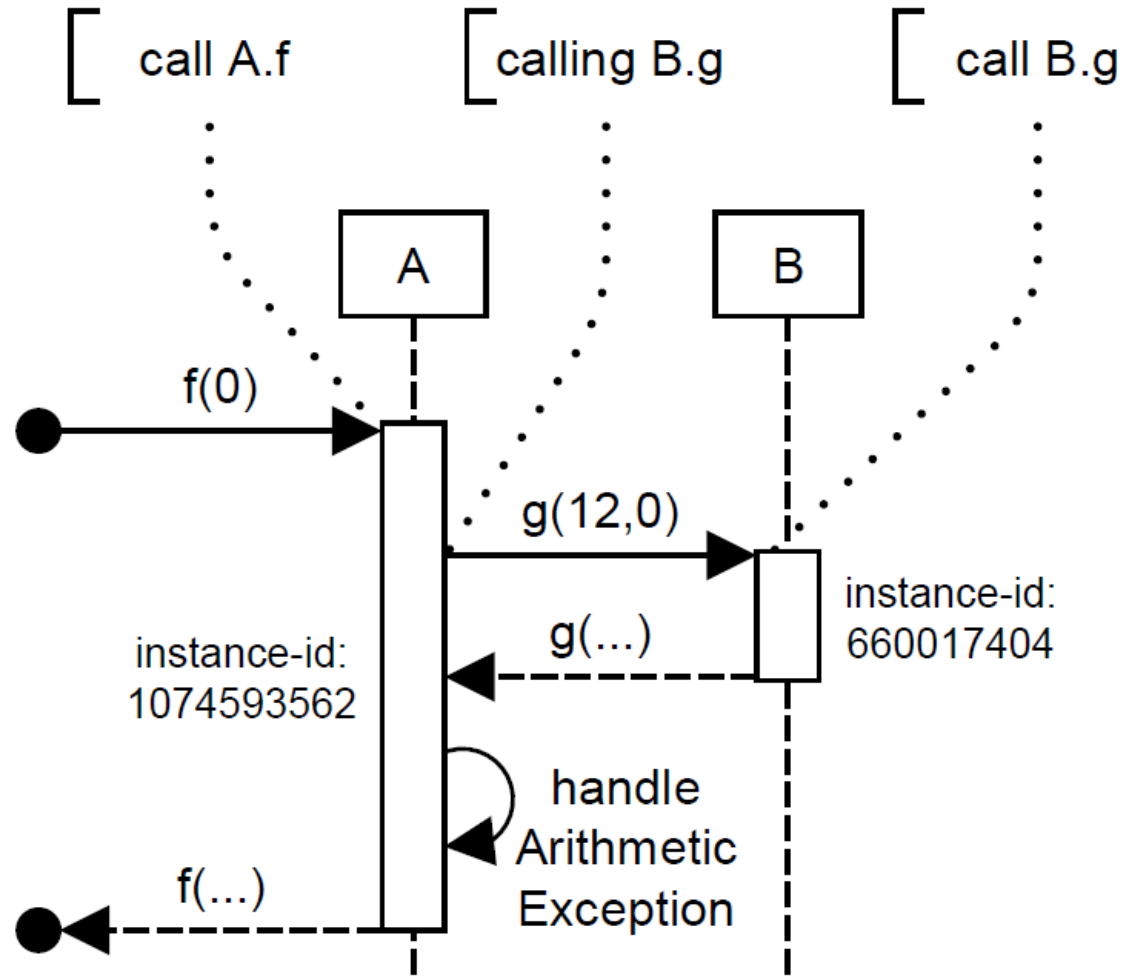


SW Event Ext. Proposal



SW Event Extension

- Software events



Action points

- XES Certification
 - Certify existing tools
- XES Software Extensions
 - Software Event (to be approved)
 - Software Communication (to be proposed)
 - Software Telemetry (to be proposed)
- Provide data sets via 4TU data center

New data sets

December 7 Felix Mannhardt

- Sepsis Cases- Event Log

February 6 Boudewijn van Dongen

- BPI Challenge 2017

April 21 Maikel Leemans

- NASA Crew Exploration Vehicle (CEV) Software Event Log

April 21 Maikel Leemans

- Apache Commons Crypto 1.0.0 - Stream CbcNopad Unit Test Software Event Log

XES Certification

Proposal on how to obtain a
certification for your tool

Tools supporting XES

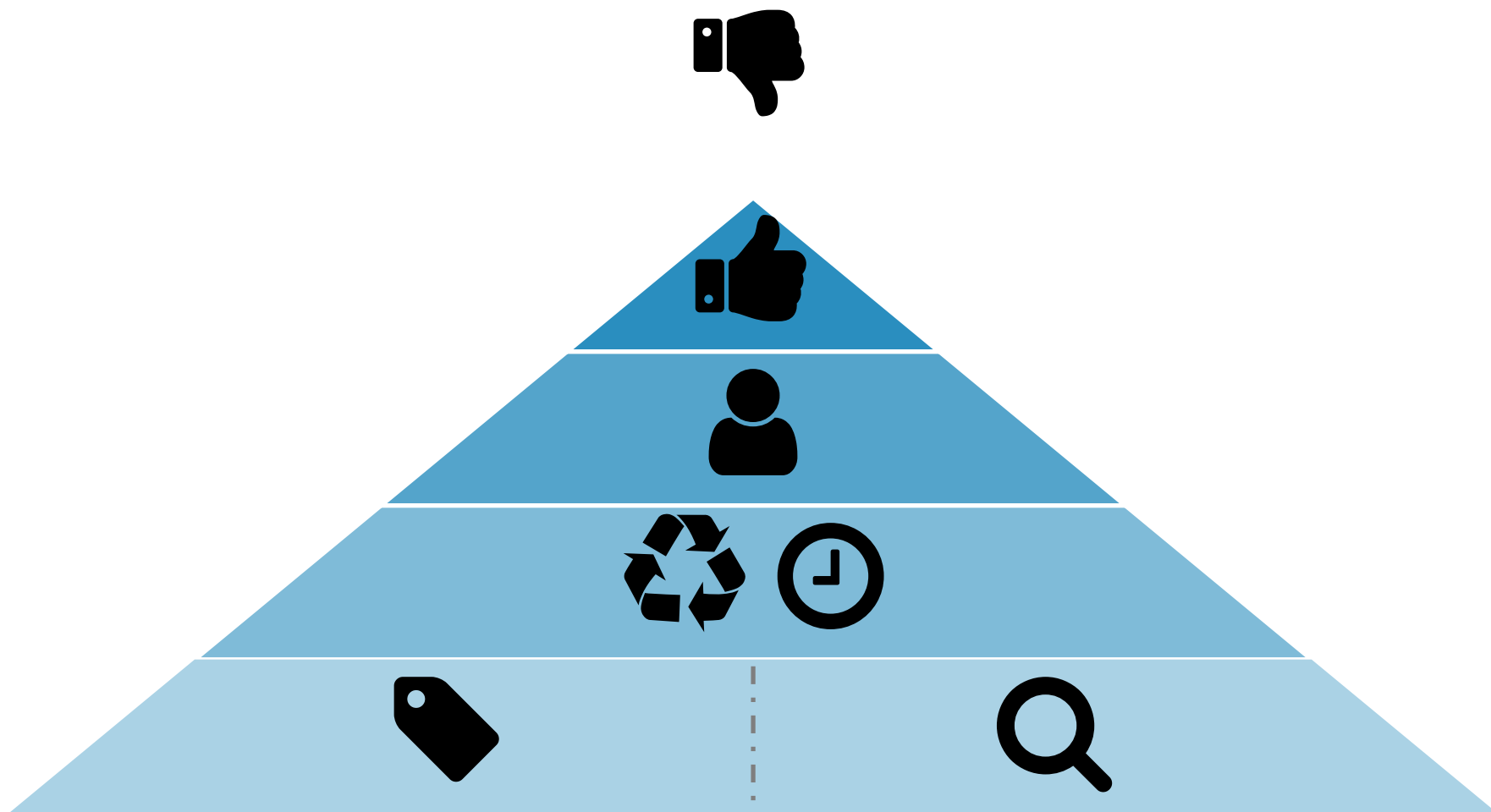
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- Disco
- Icris Process Mining Factory
- Minit
- myInvenio
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- ProM Lite
- QPR Process Analyzer
- RapidProM
- Rialto Process
- SNP Business Process Analysis
- ...

Motivation

- What does it mean if two different tools support XES?
- Can one tool successfully import a XES log file that was exported by another tool?



Levels



Certification Objectives

Import

- Show an artifact, for example a discovered process model, that shows that the relevant imported attributes have been used.

• B1:   

Export

- Export the data, as loaded in the tool, to a XES event log that shows that the relevant loaded attributes have been exported.

• C2:  

Import: Logs

Real-life

- Sanitized BPIC logs
- Tools should not crash when importing these log files































Artificial

- Tools should not crash, but should furthermore show that the relevant attributes from every log were used

Real-life logs

Event log	Traces	Events	Size in KB
BPIC12	13,087	262,200	72,363
BPIC13_closed_problems	1,487	6,660	4,090
BPIC13_incidents	7,554	65,533	38,627
BPIC13_open_problems	819	2,351	1,370
BPIC15_1	1,199	52,217	40,261
BPIC15_2	832	44,354	33,616
BPIC15_3	1,409	59,681	45,673
BPIC15_4	1,053	47,293	36,131
BPIC15_5	1,156	59,083	44,961
BPIC17 – Offer log	42,995	193,849	107,557
BPIC17	31,509	1,202,267	565,373

Artificial logs

Event log	Level / Flag	Event attributes
LevelA1	A1	
LevelA2	A2	Q ( + )
LevelB1	B1	 ,  , 
LevelB2	B2	Q ( + ), 
LevelC1	C1	 , 
LevelC2	C2	Q ( + ), 
LevelD1	D1	 ,  ,  ,  ,  ,  , 
LevelD2	D2	Q ( + ),  ,  ,  ,  , 
FlagX1	X1	 (only non-standard attributes)
FlagX2	X2	Q,  (only non-standard attributes)

Process

1. Report, by vendor
 - Template
2. Demo, by vendor and XES WG rep
 - Preferably live, screencast acceptable
 - In case of issues: back to Report
3. Approval, by XES WG
 - Within 2 weeks
4. Publication, by XES WG rep
 - On the TF website

Report (1)

Tool

- Name
- Vendor
- Version
- Requested cert. level(s)
 - Import (if applicable)
 - Export (if applicable)

Meta

- Authors
- Date
- History

Report (2)

Import

- Name of import log
- Walk-through with screenshots showing that the log is imported successfully
- If artificial log: Walk-through with screenshots showing that the attributes contained in the log were used

Export

- Walk-through with screenshots showing that the current data as stored by the tool is exported successfully to a log
- Walk-through with screenshots showing that the attributes as contained in the log match the current data as stored by the tool

Discussion

Comments?



Approval?

