STM Tech Trends 2023 WorldTour

Our Band is playing: the Open Science Song

STM’s FIRST ASIA PACIFIC MEMBERS MEETING
Hong Kong – June 6, 2019
Eefke Smit – STM Director Standards and Technology
IJsbrand Jan Aalbersberg – Chair STM STEC
Standards and Technology Committee (STEC)
Standards and Technology Committee

The Standards and Technology Committee (STEC) supports STM’s members in their mission to advance research worldwide. We serve science and society by developing standards and technology in order to:

1. make access to and use of research outputs easier,
2. make doing Open Science easier, and
3. improve entire process of scholarly communication.

We focus on quality, trust and integrity in the research process, and on the provision of a simple and intuitive user experience.
STEC Members

• IJsbrand Jan Aalbersberg (chair) - Elsevier
• Nisha Doshi - Cambridge UP
• Gerry Grenier - IEEE
• Liz Marchant - Taylor & Francis
• Jonathan Morgan - ACS
• Jay Neil - Wiley
• Jan Reichelt - Clarivate
• Heather Ruland Staines - MIT Press KFG
• John Sack - Highwire
• Henning Schoenenberger - SpringerNature
• Chris Shillum - Elsevier
• Jasper Simons - APsychA
• Sara Zimmerman - JAMA
STM Tech Trends

(https://www.stm-assoc.org/standards-technology/tech-trends-2023/)
STM Tech Trends for 2019 and 2020
STM Tech Trends for 2023
STM Tech Trends for 2023

Diversity in a Multi-User Environment

Bassline Infrastructure
- Collaboration on platforms for: interconnectivity
- Transparency, revenue opportunities
- Collaboration on: trust and integrity tools
- Make infrastructure connect and open

Riffing on Trust and Integrity
- Trust and Integrity tools
- Check research outputs on integrity
- Science and politics are dangerous
- Make infrastructure connect and open

Our Open Science Song
- Workflow systems for Open Science
- Reproducibility
- Growth of Research Data
- Impact of new output types:
  - Data
  - AI
  - New library services

A Groovy User Experience
- Customer wears many hats
- Get used to Multiple Users
- Discover new technologies
- Author-based publishing
- Switch to open access

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Advancing Technology for Humanity

IEEE
Advancing Technology for Humanity
STM Tech Trends: The Process
Yearly **Future Lab** brainstorm in December; this year at Springer Nature in London

Variety of publishers

Technology

Innovation

Product development

Business development

Strategy

Mostly repeaters

Bring and take

Collaboration at work
Attendees exchange views using the Delphi-methodology

- Technology forecasting
- From 1950s by Rand Corp
- Panel of experts
- Goal: consensus
A room full of views
(also chaos and desperation at times)
An Editing Committee processes the session’s outcome in Jan-Mar

- Heather Staines, Hypothesis
- Renny Guida, IEEE
- Jasper Simons, APA
- Liz Marchant, T&F
- Sameer Shariff, Impelsys
- IJsbrand Jan Aalbersberg, Chair
- Eefke Smit, STM (S&T)
- Matt McKay, STM (Comms)
- Stu Design, graphics

Tech Trends sponsor: IEEE
STM Tech Trends: The Content
TECH TRENDS WORLD TOUR 2023

ON BASS
- Collaborate on infrastructure
- Cross industry
- Make infrastructure platforms

ON DRUM
- On trust and integrity
- Fact-based science vs fake science
- Ethics for data use
- Make it easy for the user

ON KEYBOARD
- Optimizing for big data and AI
- Data integrity
- Privacy and complexity
- Personalisation

ON SAX
- Shared infrastructure
- Interoperability standards
- Cybersecurity
- Make infrastructure connect and open

SHARED INFRASTRUCTURE
- Interoperability standards
- Cybersecurity
- Platform syndication
- Easy access

DIVERSITY IN A MULTI-USER ENVIRONMENT

BASSLINE INFRASTRUCTURE
- Collaboration on platforms for:
  - Open access
  - Transparency
  - Revenue ops
- Collaboration on:
  - Peer review, transparency, and transportability
  - Better user experience
  - Research data
  - Platform standards
  - Blockchain and Open badges

RIFFING ON TRUST AND INTEGRITY
- Trust and Integrity tools
- Check research outputs on integrity
- Trust vs fake science
- Science and politics are dangerous

OUR OPEN SCIENCE SONG
- Workflow systems for open science
- Peer review: plus transform it
- From content facilitators to creators of tech tools
- Reproducibility
- Growth of research data
- Impact of new output types:
  - Data
  - AI
  - New library services
  - Google staff

A GROOVY USER EXPERIENCE
- Customer wears many hats
- Get used to multiple users
- Disconnect layers and users
- Who is the user?
- Can I be a machine?
- Include the batched user

Reviewed by: A. Key, B. Analyst, C. Deweber

Designers: A. Brent, B. Chiu, C. Deweber

THE COLLABORATOR

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The Band: **The Collaborators**  
Playing: **Open Science Song**  
The sound: **A Good User Experience, Trust and Integrity**  
**Shared Infrastructure**
The audience

*Is diverse & wants diversity:* In hiring, in skillsets, in background, in culture, in research topics, in training, in solutions, in machine learning, in algorithms, in publishing, in content focus

*is multi-user:* Authors, editors, readers, researchers, doctors, practitioners, engineers, citizens, parents, funders, policy makers, regulators, interest groups
**OUR OPEN SCIENCE SONG**

- Workflow systems for Open Science
- Open Publishing Platforms
- Peer Review-plus (transform it)
- Reproducibility
- Practical AI (Customer Focus)

**Impact of new content/output types:**
- Preprints
- Data
- AI output
- New library services
- Google stuff
- Knowledge graphs
- Virtual Reality, parallel computational lab tests
- Living articles versus version-of-records
- Expert summaries
- The power of narratives

**Impact Metrics: Beyond the impact factor?**

- Metadata
  - Proof of Provenance
  - Author Disambiguation

- Digital Twin
A Groovy User Experience

- Customer wears many hats
- Know thy user
  - Create a personalised Experience
  - Offer a digital assistant
- Get used to Multiple Users
  - Disconnect buyers and users
  - Authors and readers
  - Scientists and Citizens
  - Who IS the user?
  - Can she be a machine?
- Author-based publishing
  (from journals to article primacy)
- Human-Computer Interface
- Access (open, universal, easy)
- Decentralised Identity
  (versus authorized identity)
- Accessibility
- Solve fragmentation at the customer side
Riffing on Trust and Integrity

- Publisher and Vendor Ethics
  - Integrity Check on Research outputs
  - Data Integrity
  - Integrity when using someone's Data
  - Corporate Social responsibility

- Communication and Education
  - Trust versus fake science
  - Include the baffled customer who finds it all too complex
  - Science and politics are a dangerous combination

- Author/Researcher Trust
  - Trust and (my) Data
  - Privacy versus personalisation

- Trust and the Machine
  - Machine Learning Ethics
  - Keep the Human in the Loop for MachineLearning
  - Practical AI (Customer Focus)
Baseline Infrastructure

- Cross-Industry Collaboration in the Cloud
  - Better user experience
  - Research data
  - Platform standards
  - Peer Review transparency and portability
  - Blockchain and Open Ledgers
- Interoperable Open infrastructures
- From content creators to facilitators of Tech Tools
- Platform Collaboration
  - Cost reduction
  - Transparency
  - Revenue up
- Integrate systems
  - Drive Efficiency
  - Interoperable standards
- Shared platforms and customer data
Tech Trends World Tour 2023

Trusted and Integrity
- Fact-based science
- Ethics for data use
- Privacy and complexity
- Make infrastructure platforms
- Make infrastructures connect and open
- Cross Industry
- Optimize for Big Data and AI
- Interoperability standards
- Blockchain and Open Ledgers
- Make it easy for the user

Diversity in a Multi-user Environment

Author

Reader

Doctor

Engineer

Citizen

Parent

Young Researcher

Policy Maker

Funder

Bassline Infrastructure
- Collaboration on platforms for: transparency, revenue, openness
- Collaboration on: access, transparency, interoperability, better user experience, research data, platforms standards, blockchain and open ledgers
- Make infrastructures connect and open
- Interoperability standards
- Publishing platforms
- Collaboration

Riffing on Trust and Integrity
- Trust and Integrity tools
- Check research outputs on integrity
- Trust vs fake science
- Science and politics are dangerous
- Trust and data
- Data integrity, integrity in data use
- Privacy versus personalization
- Ethics, trust
- Privacy and complexity

Our Open Science Song
- Workflow systems for open science
- Peer review plus transform it
- From content facilitators to creators of tech tools

A Groovy User Experience
- Customer wears many hats
- Get used to multiple users
- Connect layers and users
- Who is the user?
- Can she be a machine?
- Include the ending user

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IEEE Advancing Technology for Society

Interoperability Standards

Cybersafety

Platform Sydication

RAI21

Make it easy for the user

Personalization

Decentralized Identity Management

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Share in the cloud
Amazon Web Services
5G: Ubiquitous Speed and Access
Infrastructure for Plan-3
Blockchain
Audience……ARE YOU READY..??

Follow this link:
https://www.youtube.com/watch?v=V2fGAHHTPo&feature=youtu.bekunnje
Stay tuned; on a stage near you:

- Video: https://www.youtube.com/watch?v=V2fGAHH-TPo&feature=youtu.bekunnje
- Poster: https://www.stm-assoc.org/standards-technology/tech-trends-2023/
- Round table podcast: https://beyondthebookcast.com/stm-singing-the-open-science-song/
- An in-house presentations can be arranged!

Please email: smit@stm-assoc.org