



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.*

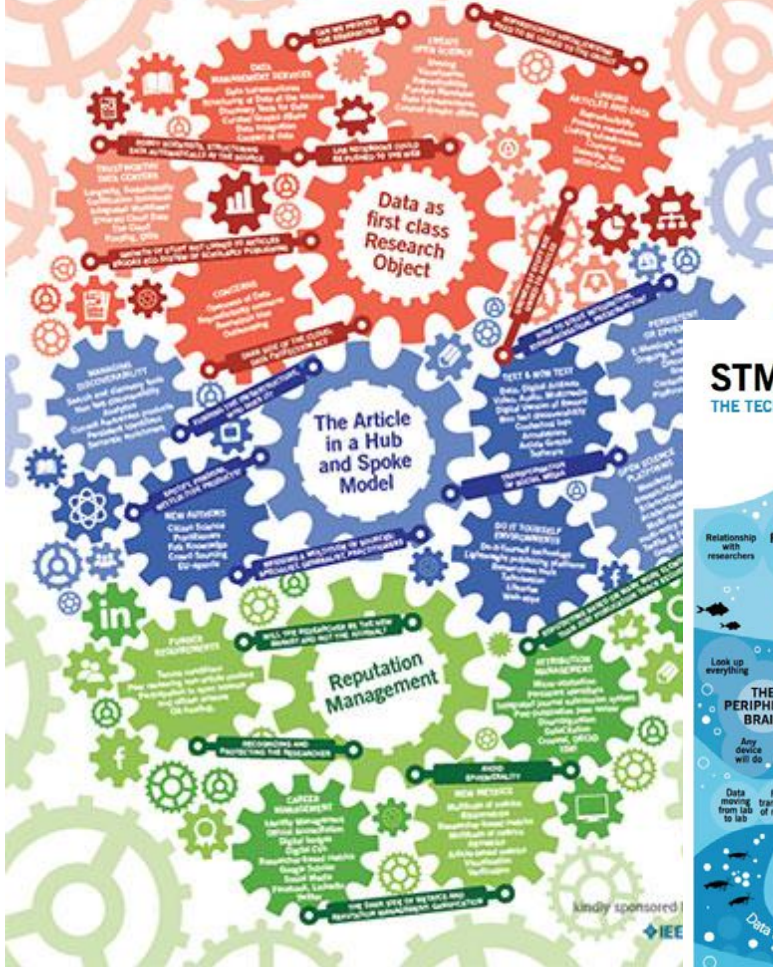
We focus on quality, trust and integrity in the research process, and on the provision of a simple and intuitive user experience.

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: Outlook 2020 THE TECHNOLOGY FLOODGATES ARE OPEN



Data

Privacy

STM Tech Trends for 2023

TECH TRENDS

WORLD TOUR 2023

ON BASS
COLLABORATE ON
INFRASTRUCTURE

ON GUITAR
TRUST AND
INTEGRITY

ON USUALS
OPEN SCIENCE

ON SAX
A GOOD USER
EXPERIENCE

SHARED INFRASTRUCTURE

- Interoperability Standards
- Cybersecurity
- Platform Syndication
- Easy Access
- RA21

- Cross Industry
- Open Publishing Platforms
- Make Infrastructure Connect and Open
- Optimize for Big Data and AI

- Data Integrity
- Fact-based Science versus Fake Science
- Ethics for Data Use
- Trust and My Data
- Privacy and Complexity

- Reproducibility
- Open Publishing Platforms
- Workflow Systems
- publish all Research Artefacts
- Research Data

- Make It Easy for the User
- Personalisation
- Decentralised Identity Management
- Barrier Author Metadata

SHARED INFRASTRUCTURE

- Share in the Cloud
- Amazon Webservices
- 5G: Ubiquitous Speed and Access
- Infrastructure for Plan-S
- Blockchain

THE COLLABORATORS

DIVERSITY IN A MULTI-USER ENVIRONMENT

AUTHOR READER DOCTOR ENGINEER CITIZEN PARENT YOUNG RESEARCHER POLICY MAKER FUNDER

BASSLINE INFRASTRUCTURE

- Collaboration on platforms for:
 - cost reduction
 - Transparency
 - revenue up?
- Collaboration on:
 - Peer Review transparency and accountability
 - Better user experience
 - Research data
 - Platform standards
 - Blockchain and Open Badges
- Make Infrastructures connect and open
- Efficiency drivers:
 - 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 (my) Data
- Data Integrity, Integrity in Data Use
 - Privacy versus personalisation
 - Ethics, Trust
- Privacy and Complexity

OUR OPEN SCIENCE SONG

- Workflow systems for Open Science
 - For researcher and customer
- Open Publishing Platforms
- Publish ALL research artefacts
- 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 output
 - New library services
 - Google chat

A GROOVY USER EXPERIENCE

- Customer wears many hats
- Got used to Multiple Users
 - Disconnect buyers and users
 - Who is the user?
 - Can she be a machine?
 - Include the baffled user
- Author-based publishing (from journals to article privacy)
- Access (open, universal, easy)
- Personalization
- Decentralised Identity Management



TECH TRENDS WORLD TOUR 2023

ON BASS
COLLABORATE ON
INFRASTRUCTURE

ON GUITAR
TRUST AND
INTEGRITY

ON DRUMS
THE
COLLABORATORS

ON VOCALS
OPEN SCIENCE

ON SAX
A GOOD USER
EXPERIENCE

REPRODUCIBILITY

OPEN PUBLISHING PLATFORMS

WORKFLOW SYSTEMS

PUBLISH ALL RESEARCH ARTIFACTS

RESEARCH DATA

DATA INTEGRITY

ETHICS FOR DATA USE

FACT-BASED SCIENCE VERSUS FAKE SCIENCE

TRUST AND MY DATA

PRIVACY AND COMPLEXITY

MAKE IT EASY FOR THE USER

PERSONALISATION

DECENTRALISED IDENTITY MANAGEMENT

BARRIER AUTHOR METADATA

SHARED INFRASTRUCTURE

- Interoperability Standards
- Cybersecurity
- Platform Syndication
- Easy Access
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DIVERSITY IN A MULTI-USER ENVIRONMENT

AUTHOR

READER

DOCTOR

ENGINEER

CITIZEN

PARENT

YOUNG RESEARCHER

POLICY MAKER

FUNDER

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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

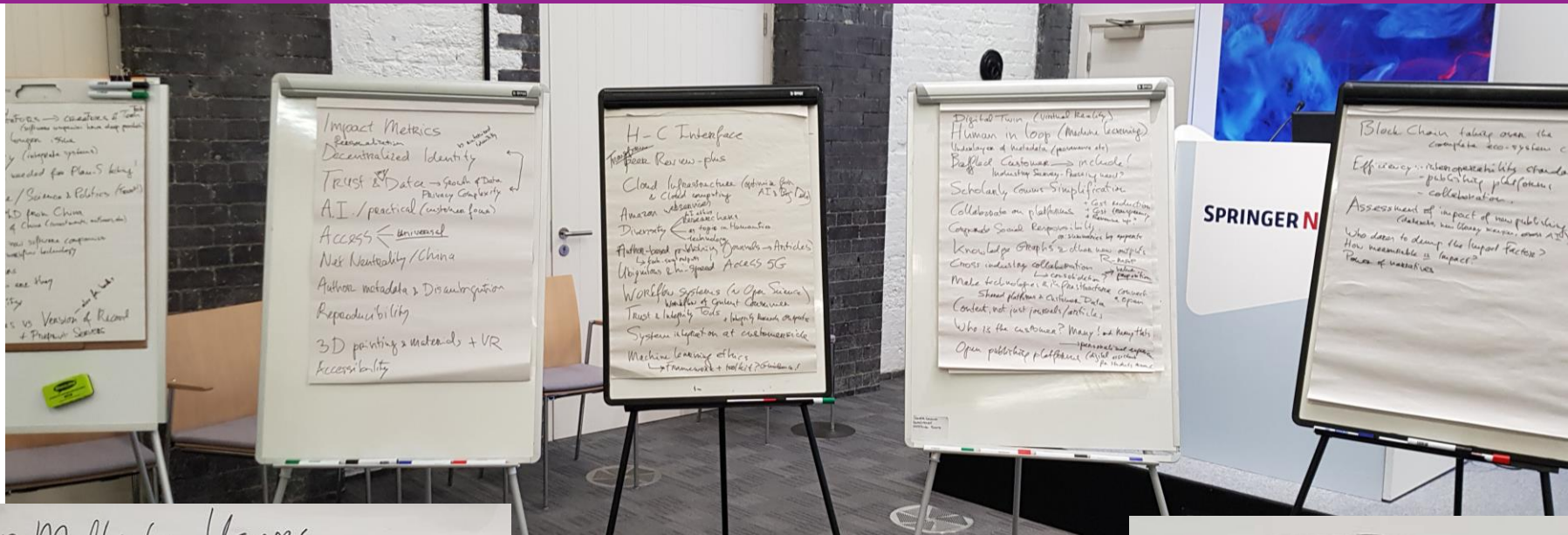
Bring and take

Collaboration at work

Attendees exchange views using the Delphi-methodology



- Technology forecasting
- From 1950s by Rand Corp
- Panel of experts
- Goal: consensus



① Multiple Users

- disconnect buyers - users
- who is the user?
- a machine?

② Data Integrity

- privacy vs. personalisation
- Ethics, Trust

③ AI/Machine Learning, Research Flow

also for internal systems

④ Collaboration via Cloud across Industry

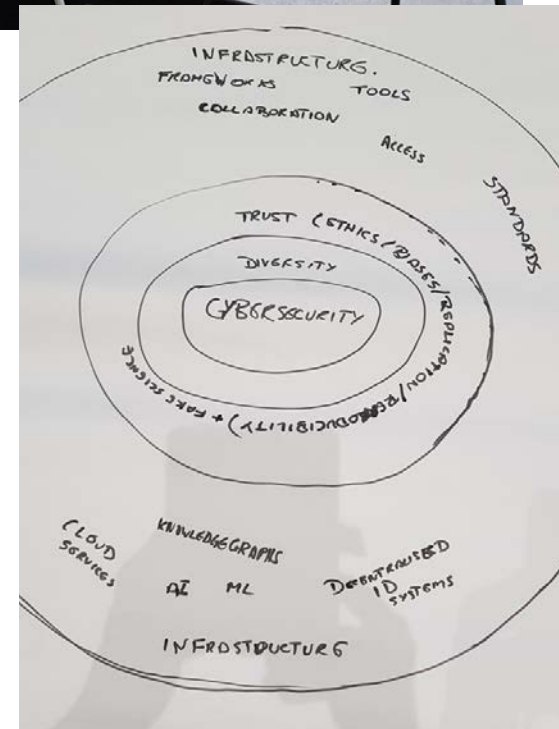
- peer review
- blockchain
- platform standards
- Research Data
- user experience

⑤ Trust & Integrity

- SciHub

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

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Decentralised Identity Management
Better Author Metadata

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Share in the Cloud
Amazon Webservices
5G: Ubiquitous Speed and Access
Infrastructure for Plan-S
Blockchain

THE COLLABORATORS

DIVERSITY IN A MULTI-USER ENVIRONMENT

AUTHOR READER DOCTOR ENGINEER CITIZEN PARENT YOUNG RESEARCHER POLICY MAKER FUNDER

BASSLINE INFRASTRUCTURE

- ▶ **Collaboration on platforms for:**
 - ▶ cost reduction
 - ▶ Transparency
 - ▶ revenue up?
- ▶ **Collaboration on:**
 - ▶ Peer Review transparency and accountability
 - ▶ Better user experience
 - ▶ Research data
 - ▶ Platform standards
 - ▶ Blockchain and Open Badges
- ▶ **Make Infrastructures connect and open**
- ▶ **Efficiency drivers:**
 - ▶ Interoperability standards
 - ▶ Publishing platforms
 - ▶ Collaboration

RIFFING ON TRUST AND INTEGRITY

- ▶ Trust and Integrity tools
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OUR OPEN SCIENCE SONG

- ▶ Workflow systems for Open Science
 - ▶ For researcher and customer
- ▶ Open Publishing Platforms
- ▶ Publish ALL research artefacts
- ▶ 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 output
 - ▶ New library services
 - ▶ Google chat

A GROOVY USER EXPERIENCE

- ▶ Customer wears many hats
- ▶ Got used to Multiple Users
 - ▶ Disconnect buyers and users
 - ▶ Who is the user?
 - ▶ Can she be a machine?
 - ▶ Include the baffled user
- ▶ Author-based publishing (from journals to article privacy)
- ▶ Access (open, universal, easy)
- ▶ Personalization
- ▶ Decentralised Identity Management





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 Machine Learning
- ▶ 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**

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Audience.....ARE YOU READY..??

Follow this link:

<https://www.youtube.com/watch?v=V2fGAHH-TPo&feature=youtu.be>

Stay tuned; on a stage near you:

- Video: <https://www.youtube.com/watch?v=V2fGAHH-TPo&feature=youtu.be>
 - 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