



## Digital Publishing in Engineering Research & Development

### Abstract

As an individual in a company or as part of the international science community the need arises to **communicate/disseminate your work results** among your peers. Today the communication and/or dissemination will primarily be **digital** and in most cases still traditionally based on writing. Other means of digital communication (voice, graphical, video, data centered) are possible, but not the main focus of this lecture. A company would have (hopefully) defined its product centered communication strategies and standards. Information will primarily be *pushed* through the organization as need to know requires. Corporate research results are archived and kept secret, protected by patents, or shared with the international science community. In the international science community, the information is rather *pulled* by researchers in literature reviews. For this reason, researchers make their results publically available in established databases and/or consider alternative means of dissemination through the Internet. The report gives **engineering students** an overview of the various modern **digital publishing concepts** and provides students with a **hands-on experience** ranging from scientific writing (also in preparation for their **Master Thesis**) to publishing strategies for their own **career development**, be it in **industry or academia**.

## 1 General Concepts

<https://en.wikipedia.org/wiki/Publishing>

<https://en.wikipedia.org/wiki/Dissemination>

<https://en.wikipedia.org/wiki/Advertising>

[https://en.wikipedia.org/wiki/Academic\\_publishing](https://en.wikipedia.org/wiki/Academic_publishing)

[https://en.wikipedia.org/wiki/Research\\_and\\_development](https://en.wikipedia.org/wiki/Research_and_development)

<https://en.wikipedia.org/wiki/Engineering>

Internal Engineering Communication and Workflow

[https://www.researchgate.net/publication/48340421\\_Engineering\\_Workflow\\_The\\_Process\\_in\\_Product\\_Data\\_Technology](https://www.researchgate.net/publication/48340421_Engineering_Workflow_The_Process_in_Product_Data_Technology)

[https://en.wikipedia.org/wiki/Document\\_management\\_system](https://en.wikipedia.org/wiki/Document_management_system)

[https://en.wikipedia.org/wiki/Requirements\\_engineering](https://en.wikipedia.org/wiki/Requirements_engineering)

[https://en.wikipedia.org/wiki/Configuration\\_management](https://en.wikipedia.org/wiki/Configuration_management)

[https://en.wikipedia.org/wiki/Product\\_data\\_management](https://en.wikipedia.org/wiki/Product_data_management)

<https://de.wikipedia.org/wiki/Produktdatenmanagement>

[https://de.wikipedia.org/wiki/Standard\\_for\\_the\\_exchange\\_of\\_product\\_model\\_data \(STEP\)](https://de.wikipedia.org/wiki/Standard_for_the_exchange_of_product_model_data_(STEP))

External Corporate Communication

[https://en.wikipedia.org/wiki/Corporate\\_communication](https://en.wikipedia.org/wiki/Corporate_communication)

[https://en.wikipedia.org/wiki/Press\\_release](https://en.wikipedia.org/wiki/Press_release)

## 2 Academic/Technical Dissemination and Publishing

### Conference, Workshop, Lecture

[https://en.wikipedia.org/wiki/Academic\\_conference](https://en.wikipedia.org/wiki/Academic_conference)

[https://en.wikipedia.org/wiki/Poster\\_session](https://en.wikipedia.org/wiki/Poster_session)

<https://en.wikipedia.org/wiki/Proceedings>

### Scientific Journal

[https://en.wikipedia.org/wiki/Scientific\\_journal](https://en.wikipedia.org/wiki/Scientific_journal)

[https://en.wikipedia.org/wiki/Scientific\\_journal#Publishing\\_process](https://en.wikipedia.org/wiki/Scientific_journal#Publishing_process)

[https://en.wikipedia.org/wiki/Scholarly\\_peer\\_review](https://en.wikipedia.org/wiki/Scholarly_peer_review)

Journal Metrics:

[https://www.fzt.haw-hamburg.de/pers/Scholz/aast/AAST\\_M\\_JournalMetrics\\_14-12-06.pdf](https://www.fzt.haw-hamburg.de/pers/Scholz/aast/AAST_M_JournalMetrics_14-12-06.pdf)

<https://en.wikipedia.org/wiki/Altmetrics>

### Trade Journal

[https://en.wikipedia.org/wiki/Trade\\_magazine](https://en.wikipedia.org/wiki/Trade_magazine)

### Book

[https://en.wikipedia.org/wiki/History\\_of\\_books#E-books\\_and\\_the\\_future\\_of\\_the\\_book](https://en.wikipedia.org/wiki/History_of_books#E-books_and_the_future_of_the_book)

<https://en.wikipedia.org/wiki/Self-publishing>

[https://en.wikipedia.org/wiki/Print\\_on\\_demand](https://en.wikipedia.org/wiki/Print_on_demand)

### Patent

<https://en.wikipedia.org/wiki/Patent>

[https://en.wikipedia.org/wiki/Defensive\\_publication](https://en.wikipedia.org/wiki/Defensive_publication)  
[https://en.wikipedia.org/wiki/Reverse\\_engineering](https://en.wikipedia.org/wiki/Reverse_engineering)

### **Presentation, Memo, Technical Note, Report, Specification**

<https://en.wikipedia.org/wiki/Presentation>  
<https://en.wikipedia.org/wiki/Memorandum>  
<https://en.wikipedia.org/wiki/Report>  
[https://en.wikipedia.org/wiki/Specification\\_\(technical\\_standard\)](https://en.wikipedia.org/wiki/Specification_(technical_standard))

### **Scientific and Technical Writing**

[https://en.wikipedia.org/wiki/Scientific\\_writing](https://en.wikipedia.org/wiki/Scientific_writing)  
<https://en.wikipedia.org/wiki/IMRAD>  
<https://en.wikipedia.org/wiki/Citation>  
<https://www.fzt.haw-hamburg.de/pers/Scholz/aast/ISO690.html>  
Sustainable Citation: [www.perma.cc](http://www.perma.cc) & Co  
[https://en.wikipedia.org/wiki/Technical\\_communication](https://en.wikipedia.org/wiki/Technical_communication)  
[https://en.wikipedia.org/wiki/Technical\\_writing](https://en.wikipedia.org/wiki/Technical_writing)

## **3 Open Science**

[https://en.wikipedia.org/wiki/Open\\_science](https://en.wikipedia.org/wiki/Open_science)  
[https://en.wikipedia.org/wiki/Open\\_access](https://en.wikipedia.org/wiki/Open_access)  
[https://en.wikipedia.org/wiki/Open\\_access#Colour\\_naming\\_system](https://en.wikipedia.org/wiki/Open_access#Colour_naming_system)  
[https://en.wikipedia.org/wiki/Protocol\\_for\\_Metadata\\_Harvesting](https://en.wikipedia.org/wiki/Protocol_for_Metadata_Harvesting)  
[https://en.wikipedia.org/wiki/Open-access\\_monograph](https://en.wikipedia.org/wiki/Open-access_monograph)  
[https://en.wikipedia.org/wiki/Open\\_education](https://en.wikipedia.org/wiki/Open_education)  
[https://en.wikipedia.org/wiki/Open\\_educational\\_resources](https://en.wikipedia.org/wiki/Open_educational_resources)  
[https://en.wikipedia.org/wiki/Open\\_data](https://en.wikipedia.org/wiki/Open_data)  
[https://en.wikipedia.org/wiki/Open\\_catalogue](https://en.wikipedia.org/wiki/Open_catalogue)  
[https://en.wikipedia.org/wiki/Open-source\\_software](https://en.wikipedia.org/wiki/Open-source_software)  
[https://en.wikipedia.org/wiki/Creative\\_Commons\\_license](https://en.wikipedia.org/wiki/Creative_Commons_license)  
[https://en.wikipedia.org/wiki/Current\\_research\\_information\\_system](https://en.wikipedia.org/wiki/Current_research_information_system)

## **4 Digital Preservation**

[https://en.wikipedia.org/wiki/Digital\\_dark\\_age](https://en.wikipedia.org/wiki/Digital_dark_age)  
[https://en.wikipedia.org/wiki/Digital\\_preservation](https://en.wikipedia.org/wiki/Digital_preservation)  
[https://en.wikipedia.org/wiki/FAIR\\_data](https://en.wikipedia.org/wiki/FAIR_data)  
<http://langzeitarchivierung.AeroLectures.de>

### **Available: Archives**

<https://en.wikipedia.org/wiki/Archive>  
<https://de.wikipedia.org/wiki/Repository>  
[https://en.wikipedia.org/wiki/Institutional\\_repository](https://en.wikipedia.org/wiki/Institutional_repository)

[https://en.wikipedia.org/wiki/Internet\\_Archive](https://en.wikipedia.org/wiki/Internet_Archive)  
[https://en.wikipedia.org/wiki/Web\\_archiving](https://en.wikipedia.org/wiki/Web_archiving)  
<https://en.wikipedia.org/wiki/Zenodo>  
[https://de.wikipedia.org/wiki/Deutsche\\_Initiative\\_f%C3%BCr\\_Netzwerkinformation](https://de.wikipedia.org/wiki/Deutsche_Initiative_f%C3%BCr_Netzwerkinformation)

#### **Traceable: Persistent Identifiers**

[https://en.wikipedia.org/wiki/Persistent\\_identifier](https://en.wikipedia.org/wiki/Persistent_identifier)  
[http://www.doi.org/driven\\_by\\_DOI.html](http://www.doi.org/driven_by_DOI.html)  
[https://en.wikipedia.org/wiki/Digital\\_object\\_identifier](https://en.wikipedia.org/wiki/Digital_object_identifier)  
[https://de.wikipedia.org/wiki/Uniform\\_Resource\\_Name](https://de.wikipedia.org/wiki/Uniform_Resource_Name)  
[https://en.wikipedia.org/wiki/Archival\\_Resource\\_Key](https://en.wikipedia.org/wiki/Archival_Resource_Key)

#### **Readable: PDF/A**

[http://www.fzt.haw-hamburg.de/pers/Scholz/ewade/2013/PDF\\_A\\_101\\_An\\_Intro\\_Final.pdf](http://www.fzt.haw-hamburg.de/pers/Scholz/ewade/2013/PDF_A_101_An_Intro_Final.pdf)  
Creating and Validating PDF/A (<http://repository.profscholz.de>)

### **5 Building a Machine Readable Web Page**

<https://en.wikipedia.org/wiki/HTML>  
<https://wiki.selfhtml.org>  
Embedding Scientific Metadata (to make the page machine readable)  
[https://de.wikipedia.org/wiki/Dublin\\_Core](https://de.wikipedia.org/wiki/Dublin_Core)  
Highwire Press Metadata for Google Scholar  
Metadata for Social Media: Twitter, Facebook, LinkedIn, general  
CoinS (for Mendeley)  
<https://de.wikipedia.org/wiki/COinS>

### **6 Advanced Use of a Repository**

<http://repository.profscholz.de> and <http://library.profscholz.de/>  
<https://en.wikipedia.org/wiki/Classification>  
DDC: [https://en.wikipedia.org/wiki/Dewey\\_Decimal\\_Classification](https://en.wikipedia.org/wiki/Dewey_Decimal_Classification)  
<https://deweysearchde.pansoft.de/webdeweysearch/executeSearch.html?&query=629.13&catalogs=DNB&catalogs=GBV>  
RVK: [https://de.wikipedia.org/wiki/Regensburger\\_Verbundklassifikation](https://de.wikipedia.org/wiki/Regensburger_Verbundklassifikation)  
<http://nbn-resolving.org/urn:nbn:de:gbv:18302-aero2017-12-20.012>  
Keywords (Free and Controlled Vocabulary):  
Keywords, German (GND); Keywords, English (LCSH); Keywords, free  
Catalog Entries:  
German National Library (DNB), TIB, GVK, WorldCat  
Google Scholar, SCOPUS, Web of Science  
DataCite, CrossRef  
OpenAIRE, BASE, CORE  
Dissemination for Altmetric Entries:  
<https://www.fzt.haw-hamburg.de/pers/Scholz/arbeiten/Altmetric-Info.html>

## 7 Dissemination with Academic/Professional Social Media

Facebook, Twitter, YouTube, Instagram, ...

XING, LinkedIn

Research Gate

Social Bookmarks

<https://en.wikipedia.org/wiki/Mendeley>

## 8 Hands On Experience

The students select a very special and narrow topic of their interest. Doing a formalized literature review on the topic, the students become very quickly an expert in this research question.

- a) Writing, Publishing and Disseminating a Digital Research Paper
  - Publishing: Repository (e.g. Zenodo), one of several PrePrint Servers, or ...
  - Observing rules of technical writing (2), possibilities of Open Science (3), hints on for digital preservation (4) and library science (6).
- b) Writing and Disseminating a Machine Readable Web Page (5) and trying semi-automatic dissemination (7).
- c) Making the new lecture a topic in itself, the group of students will try out various possibilities of internal and external corporate communication (1) at HAW Hamburg.

*Die starke Nutzung von **Wikipedia** als Quelle ist hier nur als erster Einstieg in die Thematik und als einfache Darstellung der Sachverhalte zu sehen. Ein eigenes Vorlesungsskript wird ausgearbeitet werden, welches sich in wissenschaftlich üblicher Weise auf vornehmlich primäre Quellen stützen wird.*