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Välkommen till konferensen!

Hållbar digitalisering: Möjligheter och hinder

https://www.his.se/hd2019/

Sustainable digitalisation …

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- Coffee & networking (08:45-09:15)
- Introduction and welcome!
- **Theme #1** (09:25-10:00), Presentation + Discussion
- Coffee & networking
- Theme #2 (10:30-11:30), Presentation + Discussion
- Theme #3 (11:30-12:30), Presentation + Discussion
- Lunch & networking
- Theme #4 (13:30-14:30), Presentation + Discussion
- Coffee & networking
- Theme #5 (15:00-16:00), Discussion – Strategies for sust. digitalisation
- Summary (16:00-16:30), Summary & conclusion

Theme #1 – ***Sustainable digitalisation*** *to* ***avoid*** *unwanted* ***lock-in effects*** *through open solutions …*

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- Unsustainable digitalisation & different types of **lock-in effects**.
- Impact of different types of **IT-standards**.
- What **types of lock-in** effects do organisations need to address when IT-systems are **developed** and **procured** in different digitalisation projects?
- How can the openness cube (**dimensions** of **standards**, **software**, and **content**) support individuals and organisations to make appropriate decisions in specific projects?
- **Legislation**, **guidelines** and **recommendations** which impact on preconditions for sustainable digitalisation.

Sustainable digitalisation?

How do we steer digitalisation?

Hockenheim 2014,
by Tommi Nummelin
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via Wikimedia Commons

How do authorities drive on the digital motorway?

Challenges for sustainable digitalisation include ...

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- Organisations often need to **preserve** and **modify** their **digital assets** and **software systems** for **more than 30 years**.
- Maintenance and support contracts for **proprietary** licensed **software** are **provided for** (up to) **10 years**.
- **Digital assets** (files) **outlive proprietary software in any maintenance scenario**.
- To allow for **reuse of digital assets** over (very) long life-cycles, there is a need for effective open source software (OSS) implementations of open file format standards provided by **sustainable OSS projects**.

Unsustainable digitalisation ...
... caused by different types of lock-in ...

- Cloud lock-in
- Standard lock-in
- File format lock-in
- Transformation lock-in
- Product lock-in
- Vendor lock-in
- Trademark lock-in
- Competence lock-in
- Contract lock-in
- ...

Software, digital assets and file formats ...

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- Organisations use many different **software** applications.
- Organisations use, create, maintain, reuse, and distribute **data** and **digital assets** in many different **file formats** and other types of representations (e.g. database structures).
  - e.g. the software application LibreOffice 6 may be used to create a document that is stored in a file which is structured according to the file format PDF/A-1.
- Organisations use software applications which are deployed in different ways, including: **on premise** (sv. 'lokal installation') and as **software as a service** (SaaS) (sv. programvara som tjänst).
  - e.g. the Microsoft Office365 solution is deployed as SaaS.

*Illustrative examples of how **standards** and **software applications** are made available ...*

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- The **PDF/A-1** file format standard (ISO 19005-1:2005) is implemented in the **LibreOffice 6** application which is made available on premise ('local installation').
- The **PDF/A-1** standard is implemented in the Microsoft **Office 2016** which is made available on premise.
- The **PDF/A-3** file format standard (ISO 19005-3:2012) is implemented in the callas **pdfaPilot 8** application which is made available on premise.
- The **PDF/A-3** standard is implemented in Microsoft **Office 365** which is made available as a cloud service (SaaS).

The 'openness cube' – *Eight combinations of how **standards**, **software**, and **content** are provided ...*

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Comb.#	Standard	Software	Content	Illustrative examples ...
1	**open**	**open**	**open**	The **PDF/A-1** standard (ISO 19005-1:2005) is implemented in **LibreOffice 6** which is used to create content under **CC0**.
2	**open**	**open**	closed	**PDF/A-1** is implemented in **LibreOffice 6** which is used to create content under **traditional copyright**.
3	**open**	closed	**open**	**PDF/A-1** is implemented in **proprietary software** which is used to create content under **CC0**
4	**open**	closed	closed	**PDF/A-1** is implemented in **proprietary software** which is used to create content under **traditional copyright**.
5	closed	**open**	**open**	N/A
6	closed	**open**	closed	N/A
7	closed	closed	**open**	**PDF/A-2** (ISO 19005-2:2011) is implemented in **proprietary software** which is used to create content under **CC0**.
8	closed	closed	closed	**PDF/A-2** is implemented in **proprietary software** which is used to create content under **traditional copyright**.

(Lundell & Gamalielsson, 2018)

Open Source Software (**OSS**) **projects** promote competition and sustainable development ...

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- Software that complies with the Open Source Definition (opensource.org/osd) and is made available under a software licence which has been approved by the Open Source Initiative (OSI, opensource.org) constitute **Open Source Software** (**OSS**).

- **OSS** is typically provided as **OSS projects** on open collaborative platforms under one (or a few) widely used OSS licences (including different versions of GPL, Apache 2.0, MIT, BSD, EPL 1.0 & MPL 2.0).

- **60%** of 200 **widely deployed OSS projects** are provided under the OSI-approved **GPL-family of licences** (different versions of AGPL, GPL and LGPL), perhaps unsurprising as "GPL licensing can promote competition" (Gamalielsson & Lundell, 2017)

Equal treatment (sv. 'likabehandling') presupposes open standards ...

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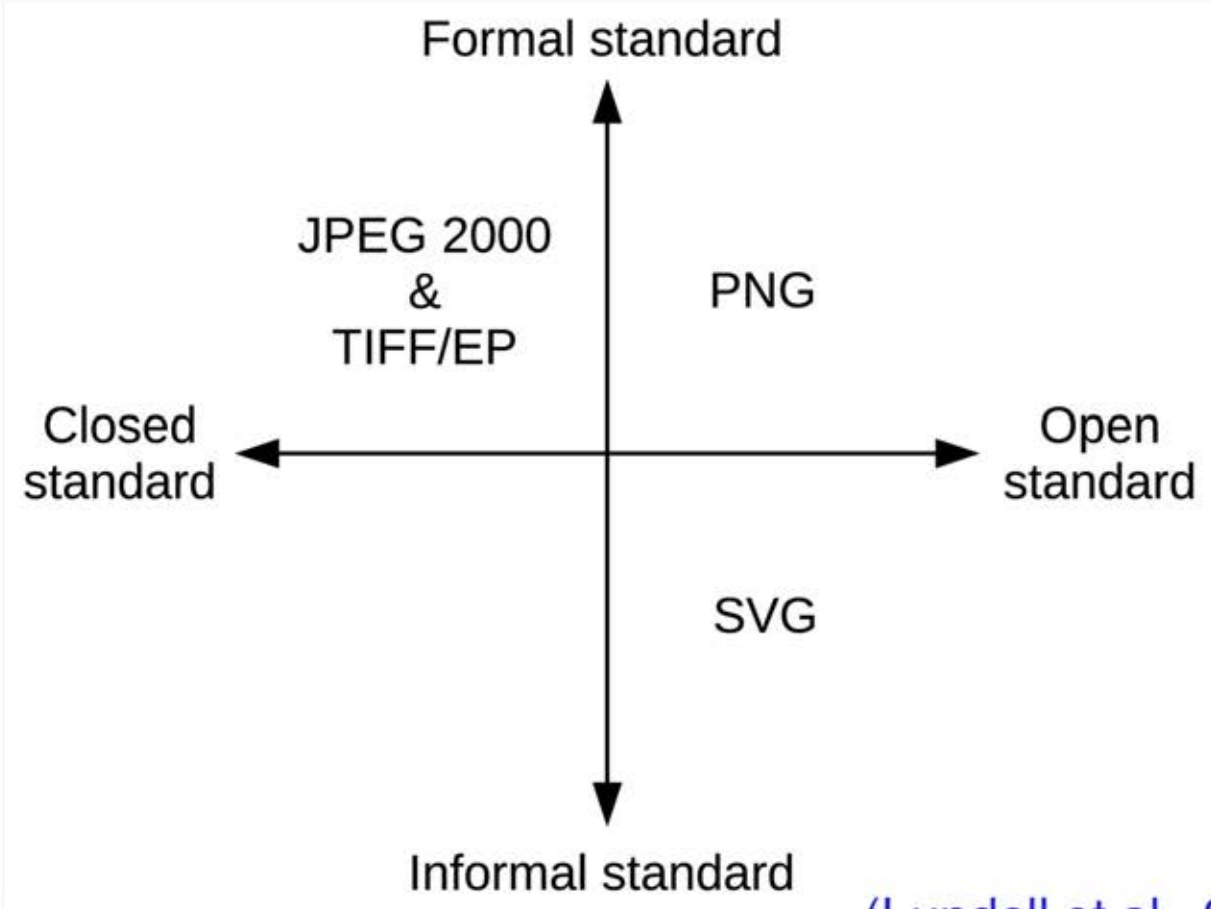
- **Open standards** and **open file formats** (as defined in EIFv1.0) are **competition neutral** and do not discriminate against any type of software licence.

- An **open standard** (as defined in EIFv1.0 & SOU 2009:86) **can be implemented** and **distributed** under different licences for proprietary software and under **all** licences for OSS which are approved by the Open Source Initiative.

- "FRAND licenses create barriers for Open Source projects"

  (EC COM(2013) 455 final & SWD(2013) 224 (final)

Open *vs.* **closed** standards & Formal *vs.* informal standards

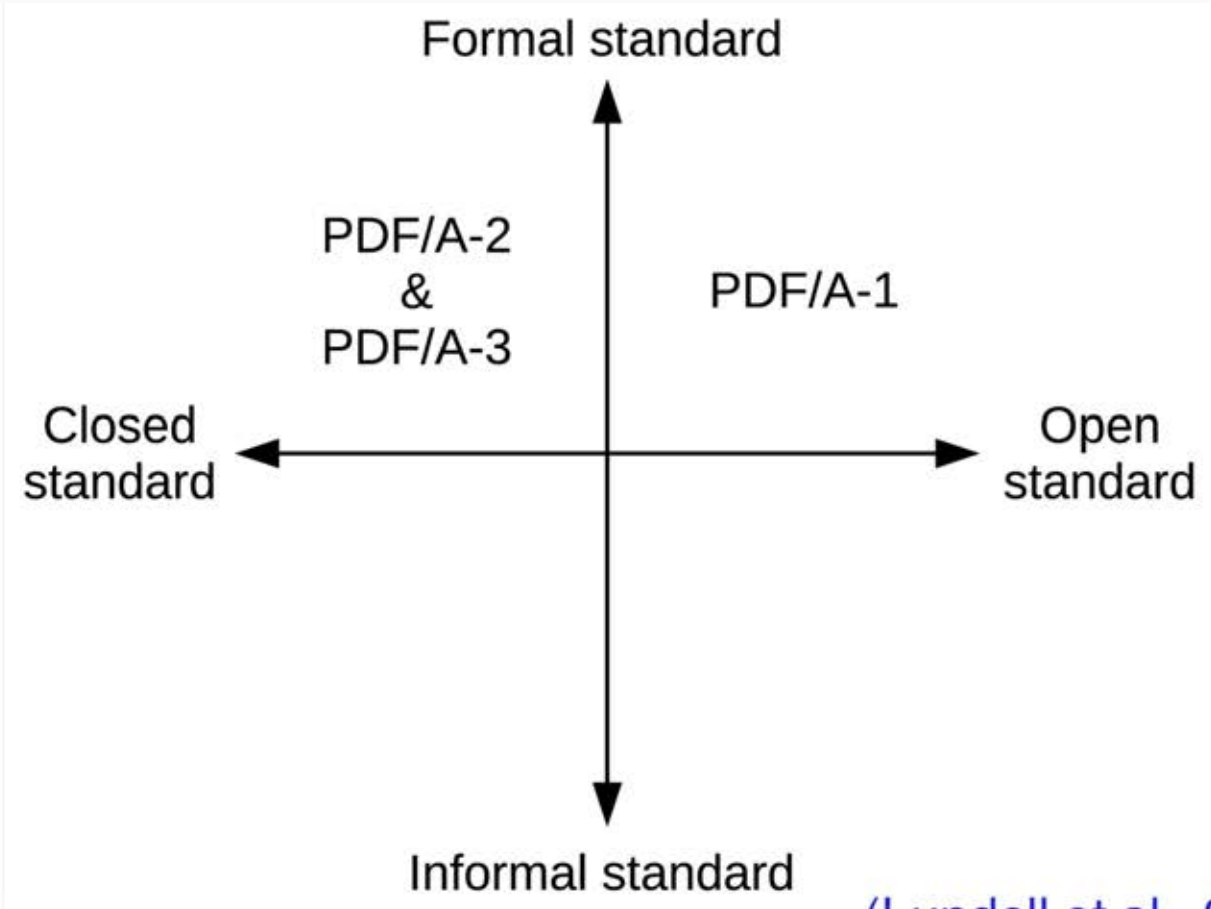


Competition neutral and sustainable digitalisation **presupposes open standards** which can be implemented for provision by OSS projects ...

... since **data** and **files** (in many usage scenarios) need to be **maintained beyond** the life-cycle for the **application initially used to create the files**

(Lundell et al., 2015, 2018)

Open *vs.* **closed** standards & Formal *vs.* informal standards



Competition neutral and sustainable digitalisation **presupposes open standards** which can be implemented for provision by OSS projects ...

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(Lundell et al., 2015, 2018, 2019)

Maintenance of data in software as a service (SaaS) may require **patent licences** ...

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- "Customer must obtain its own patent license(s) from any third party H.265/HEVC patent pools or rights holders before using Azure Media Services to encode or decode H.265/HEVC media."

  (Online Services Terms June 1, 2019, p. 36)

  "Kunden måste erhålla dess egna patentlicens(er) från tredje parts H.265/HEVC-patentgrupper eller rättighetsinnehavare innan de använder Azure Media Services för att koda eller avkoda H.265/HEVC-media."

  (Villkor för onlinetjänster 1 juni 2019, p. 37)

- **Can** a customer obtain such licences for a SaaS? And if so **how**?

Selected legislation, guidelines & recommendations ...

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- Policy för utveckling av programvara, Agency for Digital Government, DIGG, Dnr. 2019-136, 8 May.
- European Interoperability Framework for pan-European eGovernment Services, EIF 1.0, 2004, European Commission, Version 1.0, ISBN 92-894-8389-X.
- Against lock-in: building open ICT systems by making better use of standards in public procurement, European Commission, COM(2013) 455 final & SWD(2013) 224 final, 25 June 2013.
- Tallinn Declaration on eGovernment, EU, EU2017.EE, 6 October 2017.
- Rättsligt uttalande om röjande och molntjänster, eSam, Dnr. VER 2018:57, 23 October 2018.
- Checklista inför beslut om molntjänster i offentlig sektor, eSam, 31 October 2018.
- Riktlinje för öppen källkod, Försäkringskassan, Dnr. 15918-2018, Version 1, 17 December 2018.
- Open IT-Standards, Kammarkollegiet, 7 March 2016, Dnr. 96-38-214.
- Förstudierapport: Webbaserat kontorsstöd, Kammarkollegiet, Dnr. 23.2-6283-18, 22 Feb. 2019.
- IT-standarder, inlåsning och konkurrens: En analys av policy och praktik inom svensk förvaltning, Uppdragsforskningsrapport 2016:2, Konkurrensverket, ISSN: 1652-8089.
- Slutbetänkande av E-delegationen, SOU 2015:66, ISBN 978-91-38-24322-0.
- Regeringens strategi för standardisering, Bilaga till regeringsbeslut UD2018/12345/HI, 26 July 2018.
- Internationell utblick öppen programvara inom statsförvaltningen, Regeringskansliet, March 2016.
- The Netherlands in Open Connection, Ministry of Economic Affairs, Hague, November 2007.
- Open Standards Principles, Updated 7 September 2015, HM Government, U.K. Gov.

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- Gamalielsson, J. & Lundell, B. (2017) On licensing and other conditions for contributing to widely used open source projects: an exploratory analysis, In Proceedings of the 13th International Symposium on Open Collaboration (OpenSym '17), ACM, New York, ISBN: 978-1-4503-5187-4.
- Lundell, B. & Gamalielsson, J. (2018) Sustainable digitalisation through different dimensions of openness: how can lock-in, interoperability, and long-term maintenance of IT systems be addressed?, In OpenSym '18, ACM, New York, ISBN 978-1-4503-5936-8.
- Lundell, B., Gamalielsson, J. & Katz, A. (2015) On implementation of Open Standards in software: To what extent can ISO standards be implemented in open source software?, International Journal of Standardization Research, Vol. 13(1), 47-73.
- Lundell, B., Gamalielsson, J. & Katz, A. (2018) On Challenges for Implementing ISO Standards in Software: Can Both Open and Closed Standards Be Implemented in Open Source Software?, In Jakobs, K. (Ed.) Corporate and Global Standardization Initiatives in Contemporary Society, IGI Global, Hershey, pp. 219-251.
- Lundell, B., Gamalielsson, J. & Tengblad, S. (2016) IT-standarder, inlåsning och konkurrens: En analys av policy och praktik inom svensk förvaltning, Uppdragsforskningsrapport 2016:2, Konkurrensverket, ISSN: 1652-8089.