

# **DG DIGIT**

Unit.B2 (Interoperability Unit)

# Open Source Software Country Intelligence Report Germany 2023

The initial research was carried out for the ISA2 Programme by Wavestone's European Services team. This is an updated version of this report by OpenForum Europe, carried out for the Interoperable Europe initiative under the Digital Europe Programme. The report provides an overview of open source software (OSS) in Germany as of April 2023. This report was enriched with the kind contribution of the Zentrum für Digitale Souveränität der öffentlichen Verwaltung (ZenDiS).





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# Germany

# **Executive Summary**

Germany has developed a comprehensive open source policy at federal level. Where open source initiatives were previously mainly placed at the local level, the federal government coalition formed in 2021, designed a comprehensive digital strategy that emphasises the importance of open source. The establishment of the Centre for Digital Sovereignty of Public Administration (ZenDiS) in 2022 was motivated by the perceived need for increased digital sovereignty.

Prompted by the implications of a study conducted in 2019 on digital sovereignty, the German government has devised a digital strategy that includes various measures to develop its own sovereignty. Initiatives such as the code repository OpenCoDE.de, the cloud strategy, the creation of a sovereign workplace, and the regulation of online access to public services have sparked a transformation in digital governance that is now led by the federal government. This shift has reverberated across civil society and public administrations throughout the country, resulting in a renewed commitment to utilising open source solutions.

Through a network of various public and private stakeholders, Germany's open source ecosystem is well-developed and has achieved a strong presence in the country's administrative sector. The number of open source actors and vendors has increased together with the rising need of secure and sovereign digital solutions for the country's public service. While good coordination between state and federal authorities is still an ongoing process, open source initiatives also seem to be increasing at the local level. German cities have demonstrated significant interest in embracing open source despite possible lack of coordination with federal-level governance. As the current landscape continues to evolve, federal government policies are increasingly oriented towards promoting the use of open source across all public administrations.

## **Actors**

This section presents the key governmental bodies that are responsible for setting OSS policies and the main strategic players that work together with the government at all levels to raise awareness of OSS.

## Policy makers

• The Centre for Digital Sovereignty of Public Administration ("Zentrum für Digitale Souveränität der Öffentlichen Verwaltung"; short: ZenDiS)<sup>1,2</sup> was founded in December 2022 to centrally manage and steer open source development in Germany. The centre aims to enhance the digital sovereignty of German public administration in key areas: (1) the provision of secure,

<sup>&</sup>lt;sup>1</sup> Zentrum Digitale Souveränität

<sup>&</sup>lt;sup>2</sup> Zentrum für Digitale Souveränität der Öffentlichen Verwaltung

stable, and scalable open source software solutions; (2) improved awareness of open-source software (OSS) as a modern, stable, secure, and sovereign alternative and (3) the promotion of OSS in public administration.<sup>3</sup>

- The Federal Ministry of the Interior, Building and Community (BMI)<sup>4</sup> is responsible for modernising the state and government administrations. Open administration and open government fall under the domain of public services and administrative reform. The BMI published a press release endorsing the use of OSS in 2019.<sup>5</sup> It promotes open source alternatives to specific software.
- Within the BMI, the Federal CIO<sup>6</sup> is responsible for the operational management of information technology and digitisation of the federal administration which includes developing the federal government's e-government/IT and IT security strategy and management. The Federal CIO has launched several initiatives that support open source software.
- The Federal Office for Information Security (BSI)<sup>7</sup> the national cyber security authority—shapes information security in digitisation through prevention, detection, and reaction for government, business, and society. The BSI has published its strategic position on the use of OSS, highlighting technical and strategic benefits.<sup>8</sup>
- The federal government ("Bundesregierung")<sup>9</sup> has politically anchored the push for more open source, e.g. in the Digital Strategy or the Coalition Agreement.

## Strategic players

- Dataport<sup>10</sup>: Dataport is a collaborative, multi-state institution and an IT service provider for public administration. Its structure and collaboration with public administration is regulated by a public state contract. Representatives of the owners—organised in the Board of Directors—set the long-term strategic direction.<sup>11</sup> In 2019 it created the dPhoenixsuite which has been constantly updated since.<sup>12</sup>
- IT-Planungsrats<sup>13</sup>: The IT Planning Council is a central political steering body between the federal government and the states in matters of information technology and the digitalisation of administrative services.<sup>14</sup> The resolutions of the IT Planning Council provide the federal

<sup>&</sup>lt;sup>3</sup> Organisationskonzept Zentrum für Digitale Souveränität (Arbeitstitel)

https://www.bmi.bund.de/EN/home/home\_node.html

<sup>&</sup>lt;sup>5</sup> https://www.bmi.bund.de/SharedDocs/pressemitteilungen/DE/2019/09/digitale-souveraenitaet-oeff-verwltg.html

<sup>&</sup>lt;sup>6</sup> https://www.cio.bund.de/Webs/CIO/DE/cio-bund/cio-bund-node.html

<sup>&</sup>lt;sup>7</sup> https://www.bsi.bund.de/DE/Home/home\_node.html

<sup>&</sup>lt;sup>8</sup> FLOSS (Free/Libre Open Source Software)

<sup>&</sup>lt;sup>9</sup> Bundesregierung

<sup>10</sup> Dataport

<sup>&</sup>lt;sup>11</sup> Organe

<sup>12</sup> Phoenix-Werkstatt

<sup>&</sup>lt;sup>13</sup> Aufgaben | IT-Planungsrat

<sup>&</sup>lt;sup>14</sup> Zusammensetzung | IT-Planungsrat

government and the states with a binding basis for joint federal digitisation activities. Its working group on Cloud Computing and Digital Sovereignty was strongly involved in defining the use of open source in the country's Digital Strategy.<sup>15</sup>

- KGSt<sup>16</sup>: The Kommunale Gemeinschaftsstelle für Verwaltungsmanagement (KGSt) is a professional association for municipal management jointly supported by cities, municipalities, and counties with its headquarters in Cologne. With over 2400 municipalities and institutions as members, the KGSt acts as a cooperation agent and service provider for cities.<sup>17</sup> It has led a project on the use of open source in cities and supported experiments around the subject at local and federal level.<sup>18</sup>
- The Open Source Business Alliance e.V. (OSB Alliance)<sup>19</sup> is a not-for-profit business association that represents more than 200 companies from the open source industry. Research institutions and public administrations are also part of the OSB Alliance community. The OSB Alliance organises and promotes events such as conferences, webinars, and meetings and informs regularly about the latest updates on the topic of OSS and technological news on their website. Working groups within the OSB Alliance initiate activities and policy proposals and act as a forum for further discussion. These activities are directed at the federal level and state level. The OSB Alliance also supports research projects around the strengthening of OSS in the public sector and puts out papers and statements about current legislative initiatives.
- Govdigital eG<sup>20</sup>: A nationwide cooperative for the integration of IT solutions in the public sector, founded in 2019. With 28 members ranging from city administrations to service providers, the cooperative aims to create better joint development and implementation of IT services across public administrations. It has been put in charge of developing "opencode.de".
- Vitako<sup>21</sup>: The Federal Working Group of Municipal IT Service Providers, Vitako, functions as a
  consultant and operational partner for municipalities. They serve as the primary point of
  contact for associations and decision-makers at all levels, addressing any inquiries related to
  the utilisation of information technology within the municipal sector.

# Policy and legal framework

This section summarises the main open source software related policies and legal acts in Germany, including the first known milestone in this domain. The list is presented in a chronological order, starting from the most recent milestone.

<sup>&</sup>lt;sup>15</sup> AG Cloud Computing und Digitale Souveränität | IT-Planungsrat

<sup>16</sup> KGSt

<sup>17</sup> KGSt | Mitgliedschaft

<sup>&</sup>lt;sup>18</sup> Digitale Souveräntität

<sup>19</sup> http://www.osb-alliance.de/

<sup>&</sup>lt;sup>20</sup> Govdigital

<sup>21</sup> https://vitako.de/verein

- German government cloud strategy, 2022<sup>22,23</sup>: This policy document is part of the strategy adopted to strengthen digital sovereignty of public administration. The goal is to create common standards and open interfaces for cloud solutions in public administration in order to establish an interoperable and modular federal cloud infrastructure. Open source has an important position in this strategy as it will be privileged when creating Germany's government cloud. Further measures of the strategy focus on the use of open standards and solutions.
- Digital Strategy, 2022<sup>24</sup>: Germany's Digital Strategy for 2025 defines the main principles of Germany's digitalisation. The document strongly focuses on digital sovereignty which is to be achieved in part through the systematic use of open source. The strategy doesn't set any binding measures towards achieving this objective. It lists measurable steps such as the support given to the Sovereign Tech Fund.
- Organisational concept for a "Centre for Digital Sovereignty", 2021<sup>25</sup>: This paper describes the
  preliminary concept of ZenDiS. The concept outlines the issues currently observed, how open
  source contributes to addressing them and what challenges need to be addressed to achieve
  successful implementation. Following this, it outlines the vision, the mission and concrete
  tasks of the centre<sup>26</sup>.
- Strategy for strengthening the digital sovereignty of public administration IT of the IT-planning council: 2021<sup>27</sup>: Following a policy paper on the strengthening of digital sovereignty in 2020,<sup>28</sup> this strategy sets up the steps necessary to achieve the government's objectives in terms of digital sovereignty. Among these objectives, the strategy plans for the creation of a central coordinating office to promote OSS in public administration (the newly created ZenDiS).
- Coalition agreement 2021–2025, 2021<sup>29</sup>: In Germany, a coalition agreement regulates the medium to long-term cooperation of a coalition government during the forthcoming legislative period. The 2021-2025 agreement states that development contracts should generally be commissioned as open source, and the corresponding software should always be made public. The plan outlines a strategy for digital sovereignty which also fosters the use of open source software and open standards.<sup>30</sup>

<sup>&</sup>lt;sup>22</sup> CIO Bund - Deutsche Verwaltungscloud-Strategie

<sup>&</sup>lt;sup>23</sup> Germany's government cloud strategy: target architecture framework

<sup>&</sup>lt;sup>24</sup> <u>Digital Strategy Creating Digital Values Together</u>

<sup>&</sup>lt;sup>25</sup> Organisationskonzept Zentrum für Digitale Souveränität (Arbeitstitel)

<sup>&</sup>lt;sup>26</sup> A Centre for Digital Sovereignty | Joinup

Strategy for strengthening the digital sovereignty of public administration IT

<sup>&</sup>lt;sup>28</sup> Stärkung der Digitalen Souveränität der Öffentlichen Verwaltung

<sup>&</sup>lt;sup>29</sup> Koalitionsvertrag 2021

<sup>30</sup> Open source to be the norm in German public procurement | Joinup

- Policy paper on Strengthening the Digital Sovereignty of the Public Administration, 2020<sup>31</sup>:
   Issued following an analysis of the Cloud Computing and Digital Sovereignty working group, this policy paper sets up the fields of action to enhance sovereignty of public administration.
- Service standard for Germany's digitalised administration, 2020<sup>32</sup>: Produced by the BMI from a proposal of the National Standards Control Council, the service standard defines holistic quality principles for the digitalisation of administrative services.<sup>33</sup> It issues recommendations for the digitalisation of administrative services and is an aid for all those involved in the federal, state and local governments to implement the Online Access Act (OZG).<sup>34</sup> Openness is one of the principles recommended in these standards, with a recommendation to use open standards and open source software in public administration.
- Strategic market analysis to reduce dependencies on individual software providers, 2019<sup>35</sup>. Commissioned by the Federal Ministry of the Interior, for Building and Home Affairs. The study assessed software dependencies, analysing the software market, evaluating individual software providers, identifying potential negative consequences, and suggesting concrete action options and recommendations for the federal administration's future approach. It points out that open source software could be helpful in reaching independence while also assessing limitations to this principle.
- A key goal set out in the Digital Agenda 2014-2017<sup>36</sup>: The strategy document is to eliminate practical obstacles to the procurement of OSS in order to promote equal opportunity.
- In 2012, the Ministry of Interior published a federal guideline on migration to OSS<sup>37</sup> titled "Legal aspects of the usage, dissemination and further development of open source software". The document is intended for any governmental agency planning to migrate from proprietary software to OSS, with a focus on technical and economic criteria.
- A resolution titled "Overcoming the digital divide of society Creating an information society for all" (Digitale Spaltung der Gesellschaft überwinden Eine Informationsgesellschaft für alle schaffen)<sup>38</sup> was published by the German Parliament in June 2001. The resolution called for the increased use of OSS in the federal administration and stated that "Open Source is an important instrument that can provide for secure and stable IT solutions".

<sup>&</sup>lt;sup>31</sup> Stärkung der Digitalen Souveränität der Öffentlichen Verwaltung

<sup>32</sup> OZG-Umsetzung – Onlinezugangsgesetz - Startseite - Der Servicestandard für Deutschlands digitalisierte Verwaltung ist da

<sup>33</sup> Nationaler Normenkontrollrat, 2016: E-Government in Deutschland: Wie der Aufstieg gelingen kann - ein Arbeitsprogramm

<sup>&</sup>lt;sup>34</sup> Onlinezugangsgesetz.de

<sup>35</sup> Strategische Marktanalyse zur Reduzierung von Abhängigkeiten von einzelnen Software-Anbietern

https://www.bmwi.de/Redaktion/EN/Artikel/Digital-World/digital-agenda.html

<sup>&</sup>lt;sup>37</sup> Rechtliche Aspekte der Nutzung, Verbreitung und Weiterentwicklung von Open-Source-Software Begleitdokument zum Migrationsleitfaden 4.0, Version 4.0 November 2011, Abschnitt 3.1.2 mit beispielhaftem Verweis auf Ziffer 2.3.2.1 EVB-IT System AGB 2007

<sup>38</sup> http://dip21.bundestag.de/dip21/btd/14/063/1406374.pdf

# Open source software initiatives

This section presents an overview of the main open source software related initiatives in Germany. The list is presented in chronological order, starting with the most recent initiative.

- Saxony's Administration Open Source Strategy, 2023<sup>39</sup>: This strategy defines goals on the use and implementation of open source software. The document describes six objectives, as well as the current landscape of open source use and policy in Germany.
- Schwäbisch Hall, 2001-2023 <sup>40</sup>: In 2001, Schwäbisch Hall was the first town in Germany to switch to using a GNU/Linux-based IT infrastructure. Since then, the city has continued its expansion in the use of open source while digitalising its public administration and services. <sup>41</sup>
- Dortmund's Digital Sovereignty and Open Source Coordination Unit, 2022<sup>42</sup>: After giving preference to open source in public procurement, the City of Dortmund has decided to set up an open source coordination unit.<sup>43</sup> The long-term objective of the unit will be to support open source governance and collaborate with other German cities in this effort.
- "Open CoDE", 2022<sup>44</sup>: A publicly accessible code repository and open-source platform launched in June 2022, Open CoDE serves as a collaborative space for public administration to share source code. The platform aims to enhance visibility, promote cooperation, and ensure reusability of open-source solutions in the public sector.<sup>45</sup> Public authorities and contractors can create software projects and anyone can contribute code or provide feedback through the Open CoDE GitLab or the discussion forum.<sup>46</sup> As of June 2023, Open CoDE had attracted more than 1800 users and 500 projects.
- ZenDiS's "Sovereign Workplace", 2022<sup>47</sup>: Interoperable open source software based workplace developed for the public sector, the "Sovereign Workplace" project started in mid-2022. It aims at offering a secure alternative to proprietary software, accessible through a browser-based interface independent of the operating system. It will provide productivity tools like word processing and spreadsheets, collaboration features for document editing and file management, and communication functions such as email, video, and task management. The first major release is scheduled for December 2023 and will be published on Open CoDE for feedback from the open-source community.

<sup>&</sup>lt;sup>39</sup> Open Source-Strategie der Sächsischen Staatsverwaltung - Publikationen - sachsen.de

<sup>40</sup> https://joinup.ec.europa.eu/sites/default/files/document/2012-02/city-of-schwabisch-hall.pdf

<sup>&</sup>lt;sup>41</sup> Schwäbisch-Hall use of open source | Joinup

<sup>&</sup>lt;sup>42</sup> Rat der Stadt - öffentliche Sitzung vom 15.12.2022

<sup>&</sup>lt;sup>43</sup> A new step towards Open Source for Dortmund: | Joinup

<sup>44</sup> Open CoDE

https://opencode.de/en/ueber-open-code

<sup>&</sup>lt;sup>46</sup> Explore projects · GitLab

<sup>&</sup>lt;sup>47</sup> CIO Bund - Souveräner Arbeitsplatz

<sup>&</sup>lt;sup>48</sup> Digital Sovereignty in the German Administration

- Sovereign Tech Fund, 2022<sup>49</sup>: Incubated by Sprin-D<sup>50</sup>, the agency for Breakthrough Innovations, funded by the Federal Ministry of Economic Affairs and Climate Action, this project aims at funding open digital infrastructure. It supports various open source projects in their maintenance and development.
- Stadtnavi, open-source journey planning application, 2021<sup>51</sup>: The project was part of the model city initiative "Clean Air" ("Saubere Luft"), which was funded by the German Federal Ministry of Transport and Digital Infrastructure (BMVI) from 2018 to 2021 for the City of Herrenberg. <sup>52</sup> Developed by the Trufi Association, a collaboration between German and Bolivian volunteers, the service is derived from a Finnish administration project. <sup>53,54</sup>
- "Open Source in Municipalities, a building block for more digital sovereignty", 2021<sup>55</sup>:
   Following a survey<sup>56</sup> conducted on the subject of "Open Source in municipalities", the KGSt released this report to showcase good examples and discuss open source governance.<sup>57</sup> Many municipalities see themselves as critically dependent on individual national and international software providers.
- Tenders for Open Source Software brochure, 2021<sup>58</sup>: This brochure published by Vitako, a Federal Working Group of public IT service providers in Germany, is aimed at public administrations to help them procure open source software.
- Munich City Council renewed Open Source use, 2020<sup>59</sup>: After its initial experience with LiMux<sup>60</sup>, the city council of Munich has now focused primarily on in-house developments of open source software. The city of Munich develops numerous IT services for municipal software itself.<sup>61</sup> All are implemented, maintained and operated by their developers, including specialised applications such as ISI, a planning tool for child day care and primary school places,<sup>62</sup> as well as DigiWF a central workflow automation and integration platform based on the free process framework Camunda.<sup>63</sup> The Munich City council also recently decided to create an open source hub, similar to the function of an Open Source Programme Office. The decision plans to create a sabbatical year programme within this framework to allow developers to focus on a single open source project<sup>64</sup>

<sup>&</sup>lt;sup>49</sup> Strengthening Digital Infrastructure and Open Source Ecosystems in the Public Interest

<sup>50</sup> Sovereign Tech Fund | SPRIND

<sup>51 &</sup>lt;u>stadtnavi</u>

<sup>52</sup> Sofortprogramm Saubere Luft

<sup>53</sup> Digitransit - open nationwide journey planning platform by HSL and Finnish Transport Agency

<sup>54</sup> Stadtnavi drives cleaner air with Open Source | Joinup

<sup>55</sup> Open Source in Kommunen Ein Baustein für mehr Digitale Souveränität

<sup>&</sup>lt;sup>56</sup> Open Source in Kommunen Ergebnisse einer Umfrage

<sup>&</sup>lt;sup>57</sup> Projekt: Open Source in Kommunen

<sup>&</sup>lt;sup>58</sup> http://vitako.de/wp-content/uploads/2022/05/VITAKO-Handreichung\_Ausschreibung-von-Open-Source-Software.pdf

<sup>&</sup>lt;sup>59</sup> Mehr Open Source für die IT der Landeshauptstadt München

<sup>&</sup>lt;sup>60</sup> LiMux - the IT evolution - An open source success story like never before | Joinup

it@M · GitHub

https://github.com/it-at-m/isi-frontend#readme

<sup>63</sup> DigiWF

<sup>64</sup> https://risi.muenchen.de/risi/sitzungsvorlage/detail/7532900

- OSB Alliance Forum for Digital Sovereignty Open Source in the Public Sector, 2020<sup>65</sup>: The
  "Open Source as a Driver for Digitalisation, Sovereignty and Innovation in the Public Sector"
  project which was carried out from 2017 until 2020, was continued in 2021 through the Forum
  for Digital Sovereignty project. It aimed at increasing the use of open source in German public
  administrations. Several publications, which helped define the organisation's
  recommendations, were issued through this forum.
- Schleswig-Holstein open source strategy, 2012-2023: The German state of Schleswig-Holstein has gradually increased its use of free and open source since 2012. In collaboration with Dataport, the state started using GNU/Linux for its administration operating systems. <sup>66</sup> Since then, it has participated in the Open Government Partnership which entailed creating an Open Data platform, and a source code repository. The repository is used for sharing the state's public administration code. <sup>68</sup> Schleswig-Holstein is also supporting the funding of ZenDiS. <sup>69</sup> Additionally, the state has developed its "Pillars of the digitally sovereign open source workplace" for its administration, focusing on the use of open source software. <sup>70</sup> It includes an integration of GNU/Linux and LibreOffice and the dPhoenix suite (developed by Dataport) as well as prospects on telephony, identity, and specific software needs. <sup>71</sup> Overall, Schleswig-Holstein has defined a clear strategy towards open source.
- Open Source testing tool for evidence records, 2019<sup>72</sup>: The Federal Office for Information Security (Bundesamt für Sicherheit in der Informationstechnik, BSI) launched a testing tool for evidence records in May 2019. The source code is publicly available, thus allowing for the reuse of the free test tool component. The test tool complies with various European guidelines and standards, as well as eIDAS Regulation.
- IT contract handbook, 2018<sup>73</sup>: Produced by the OSB Alliance, it acts as a guide for public administrations to facilitate the procurement of open source software. The handbook addresses the specific nature of the EVB-IT contracts<sup>74</sup> (Ergänzende Vertragsbedingungen für die Beschaffung von IT-Leistungen) created by the KoopA ADV body which has given way to the IT-Planungsrats.<sup>75</sup>

<sup>65</sup> Forum für digitale Souveränität - Open Source im Public Sector | OSBA

<sup>&</sup>lt;sup>66</sup> More and more open source in Schleswig-Holstein

<sup>67</sup> Second National Action Plan 2019 - 2021

<sup>68</sup> Explore projects · GitLab

<sup>69</sup> Step towards more independence in administration

<sup>&</sup>lt;sup>70</sup> Linux-Arbeitsplatz für die öffentliche Verwaltung

<sup>&</sup>lt;sup>71</sup> Säulen des digital souveränen Open-Source-Arbeitsplatzes

<sup>72</sup> https://github.com/de-bund-bsi-tr-esor/ERVerifyTool

<sup>&</sup>lt;sup>73</sup> https://osb-alliance.de/wp-content/uploads/2018/10/201805 OSBA Handreichung EVB-IT.pdf

<sup>74</sup> CIO Bund - EVB-IT Archiv

<sup>&</sup>lt;sup>75</sup> <u>Aufgabenüberführung für den IT-Planungsrat</u>

- NextCloud in the German government, 2018<sup>76</sup>: The government opted for an OSS solution with the cloud firm, NextCloud<sup>77</sup>, in 2018. It is an open source file sync and online collaboration technology. NextCloud provides the federal government with a cloud platform that protects data from third parties and is compliant with the GDPR.
- Dortmund city citizens' initiative, 2018<sup>78</sup>: It was created in 2018 to encourage the city to move to Free and Open Source Software (FOSS) on account of the clear benefits it offers over proprietary software.
- FOSS Backstage conference, 2017 present<sup>79</sup>: A conference about everything open source,
   FOSS Backstage has been held annually since 2017. It focuses on issues related to community management, vendor neutrality and leading projects without discretionary power and features talks and panels on the subject of open source in public administration.
- Ucloud4schools, 2017<sup>80</sup>: Schools and vocational colleges in Cologne, Aachen, Essen and other towns are using open source-based cloud eLearning and collaboration software. The cloud service, Ucloud4schools, is based on the NextCloud open source cloud services solution. In 2017, 3,000 users had migrated to the system.
- Schul Cloud (School Cloud)<sup>81</sup>, 2016: Funded by the Ministry of Education and launched in late 2016, the Schul Cloud is a teaching and learning infrastructure that is made available as OSS. Schul Cloud provides the technical basis for teachers and students to use modern digital innovation in any class. It is actively updated on GitHub.<sup>82</sup>
- German Federal Pension Insurance (Deutsche Rentenversicherung Bund) uses Linux, 2016<sup>83</sup>:
   This body started using Linux servers and Apache solutions on its x86 and mainframe computers in 2016.
- France and Germany Joint Declaration on Innovation and Technology, 2016<sup>84</sup>: The Joint Declaration reads: "Open source software is a powerful engine for innovation. Germany and France will ensure that their industries derive maximum benefit from open source software."

  The strategic players (CNLL<sup>86</sup> and OSBA<sup>87</sup>) in both countries continue to endorse and highlight the impact that this statement had on the development of OSS.

<sup>&</sup>lt;sup>76</sup> https://www.techradar.com/news/german-government-goes-open-source-with-open-source-cloud-firm-nextcloud

<sup>77</sup> https://nextcloud.com/

<sup>78</sup> http://blog.do-foss.de/beitrag/stadt-dortmund-untersucht-potenziale-einer-freien-software-strategie/

<sup>79</sup> FOSS Backstage

<sup>80</sup> https://www.ucloud4schools.com/

https://app.schul.cloud/

<sup>82</sup> https://github.com/hpi-schul-cloud/

https://joinup.ec.europa.eu/news/open-source-largest-ger

https://www.de.digital/DIGITAL/Redaktion/DE/Downloads/deutsch-franzoesische-digitalkonferenz-erklaerung-fr.pdf

<sup>&</sup>lt;sup>85</sup> Authors' translation from: Le logiciel libre est un moteur puissant en faveur de l'innovation. L'Allemagne et la France veilleront à ce que leurs industries tirent le plus grand bénéfice possible du logiciel libre.

<sup>86</sup> https://cnll.fr/

<sup>&</sup>lt;sup>87</sup> http://osb-alliance.de/

- Leipzig, 2014<sup>88</sup>: Close to 4,000 workstations migrated from Microsoft Office to Apache OpenOffice and LibreOffice in the German city of Leipzig in 2014.
- Federal Office for Radiation Protection uses OSS and proprietary software, 2013<sup>89</sup>: The Office started using open source products such as GNU/Linux (openSUSE) and MySQL for the operation of the ODL monitoring network in 2013. The rest of the infrastructure is made up of OSS running on a Windows operating system.
- Munich City Council, 2003<sup>90</sup>: In 2003, the city authorities switched to an OSS application on its computers. The project came to be known as LiMux, running until 2013, and over 15,000 computers and laptops of public employees migrated to the Linux-based software solution. Nevertheless, in 2017, the city decided to fully revert to using Windows Microsoft Office by 2020.
- OSiP (Online-Sicherheitsprüfung), 2001<sup>91</sup>: The German federal states of Thuringia, North Rhine Westphalia, Baden-Württemberg, Hamburg, and Hesse have been using OSiP since 2001, a system for performing security checks for staff access to sensitive areas, such as airports, nuclear plants, and ports. The system, built on OSS components<sup>92</sup>, has now become part of the portfolio of the Federal IT Cooperation, making it accessible to all federal states<sup>93</sup>.

<sup>88</sup> https://joinup.ec.europa.eu/collection/open-source-observatory-osor/news/leipzig-switching-open

<sup>&</sup>lt;sup>89</sup> Windows und Open Source für mehr Strahlenschutz - cio.de

<sup>&</sup>lt;sup>90</sup> Open source | TechRepublic

<sup>91</sup> OSiP - Online-Sicherheitsprüfung | Joinup

<sup>92</sup> German states adopt open sour... | Joinup

<sup>93</sup> Online-Sicherheitsprüfung (OSiP) | MHKBD.NRW