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Unit.B2 (Interoperability & Policy Coordination)

Open Source Software Country Intelligence Report

China

2023

This research, by OpenForum Europe, was carried out for the Interoperable Europe initiative under the Digital Europe Programme. The report provides an overview of open source software (OSS) in China as of July 2023. This report is based on publicly available information that was gathered through desk research.



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China

Executive Summary

China exhibits a significant degree of engagement with open source software. In comparison to European policies, the Chinese government primarily focuses on providing substantial industrial support for the open source industry. With a history of active involvement in open source spanning over 25 years, the open source industry in China can be seen as a multifaceted collaboration between the public and private sectors, often with a blurred line between governmental and private interests. This intricately woven partnership encounters challenges, particularly concerning questions of autonomy and national security. The declared drive to develop open source alternatives to international ICT solutions has encountered obstacles during implementation. Despite numerous endeavours to promote an alternative to proprietary operating systems, the nation predominantly relies on international products.

At the national level, the relevant Ministries periodically communicate about open source matters. Through announcements, opinion pieces and white papers, they advocate for an increased adoption of open source software and a broader international presence for China. However, there are no formal procurement or reuse policies in place in China that specifically address the use of open source software in public administrations. It appears that many of the efforts to address the use of open source software in public administrations, driven by concerns about national security risks, have been solved thanks to China's significant commercial position. This influence has compelled American entities to adapt their offerings to cater to the Chinese market, therefore adapting to its administration needs.

Nevertheless, the Chinese government has provided robust support for investments and development policies, through regulation like its Ministry of Industry & Information Technology's Five-Year Plan, aimed at establishing a resilient and potent open source ecosystem. This commitment is exemplified by the China Academy of Information and Communications Technology's annual reports, which comprehensively document the evolution of China's capabilities in the open source arena. With its own domestically developed repository, operating systems, and ecosystems, the Chinese government has secured a position within international open source communities. This involvement directly bolsters the use of open source software within its own administrative systems.

At the local level, provinces have taken similar steps in terms of industrial promotion to promote the expanded adoption of open source software in their respective administrations. This underscores the potential for wider acceptance of open source practices throughout the country.

Actors

This section presents the key governmental bodies 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 Ministry of Industry & Information Technology (MIIT)¹, one of the ministries of the Chinese government, is in charge of regulation and development of the postal service, Internet, wireless, broadcasting, communications, production of electronic and information goods and the software industry. It oversees the global digital policy for the country and therefore has an influence on the Chinese regulations on open source.
- The China Academy of Information and Communications Technology (CAICT)² is an agency depending on the MIIT. It provides guidance and analysis on open source policy and is considered an important governmental actor in the remit of open source. In its role, the CAICT has been mobilised for the creation of standards and best practices for the government. It also attends open source conferences and organises its own events together with the Open Source Cloud Alliance for Industry (OSCAR).³
- Open Source Cloud Alliance for Industry (OSCAR, known as OSCAR联盟 in Chinese) - is a group within the CAICT.⁴ It was active on Github in the past, sharing projects between local actors of cloud technologies.⁵
- The Ministry of Science and Technology (MOST)⁶ is responsible for the formulation, facilitation and implementation of strategies and policies related to copyright and patents, not directly acting on open source.⁷
- The National Data Bureau⁸, created by a 2023 reform plan, has been given the responsibility of digitalisation of public services and administration.⁹ It is managed by the National Development and Reform Commission.

Strategic players

- The China Open Source Cloud League (COSCL)¹⁰ was created in 2012 by MIIT's department for software services.¹¹ It is the designated organisation for the development of China's open-source cloud ecosystem. It participated in the creation of the Mulan open source licence together with Peking University.^{12,13}

¹ [Ministry of Industry and Information Technology](#)

² [CAICT - English](#)

³ [External Report: OSCAR开源产业大会| 开源合规论坛顺利召开](#)

⁴ [2022 OSCAR Open Source Industry Conference officially launched.](#)

⁵ [OSCAR · GitHub](#)

⁶ <https://en.most.gov.cn/organization/>

⁷ <https://en.most.gov.cn/policies/regulations/index.htm>

⁸ [组建国家数据局-新华网](#)

⁹ [Reform Plan for Party and State Institutions - Center for Security and Emerging Technology](#)

¹⁰ [网站首页](#)

¹¹ [China's Open-Source Tech Development](#)

¹² <https://license.coscl.org.cn/MulanPSL>

¹³ [China's 'Mulan' becomes an international open source license. report says - CnTechPost](#)

- The China OSS Promotion Union (COPU)¹⁴ described itself as a social alliance voluntarily formed by enterprises, communities, colleges, research institutions, customers, industry organisations and supporting agencies under the guidance of government industrial administration departments. Founded in 2004, it historically follows on from the creation of the Northeast Asian OSS promotion forum.¹⁵ It is less active than in previous years, but continues promoting COPU's conferences¹⁶ Its aim was to promote development and use of Linux & OSS in China and the communication and cooperation on open source movement among China, Japan and Korea.
- China Electronics Information Industry Development Research Institute¹⁷ (CEIIDI, also known as CCID Research Institute) is a unit directly under the MIIT. It is made of 18 research institutes and 20 holding companies. CEIIDI organises a yearly conference and its think tank formulates policy analysis, including on European ICT policy.^{18,19}
- Open Source China (OSChina)²⁰ is China's first and largest open-source software community; it is also the creator of the second-largest open source repository in the world, Gitee.²¹
- OpenAtom Foundation²² is China's first open-source foundation. It was founded in 2020 by companies including Alibaba, Baidu, Huawei, Inspur, 360, Tencent, and China Merchants Bank. It engages in fundraising, international cooperation and promoting the development of open source.

Policy and legal framework

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

- Development Plan for Software and Information Technology Service Industry in the 14th Five-Year Plan of the Ministry of Industry and Information Technology (MIIT), 2021.²³ This plan details ambitious objectives to support open source as an ecosystem. It calls for:
 - Support for key open source projects for the overall open source ecosystem.
 - Support of backbone companies to deploy a number of basic and forward-looking open source projects based on the needs of the Internet, cloud computing, big data, artificial intelligence, automated driving, blockchain, operating systems and other technologies.

¹⁴ <http://www.copu.org.cn/about>

¹⁵ Chair's Statement of the 2nd Northeast Asia OSS Promotion Forum July 28th, 2004 In Sapporo, Japan.

¹⁶ <http://www.copu.org.cn/news/notice>

¹⁷ [中国电子信息产业发展研究院_百度百科](#)

¹⁸ [赛迪智库- 安全内参| 决策者的网络安全知识库](#)

¹⁹ <https://baijiahao.baidu.com/s?id=1762033702445732980&wfr=baike>

²⁰ [关于我们- OSCHINA 社区](#)

²¹ [开源软件- Gitee.com](#)

²² [关于我们- 开放原子开源基金会](#)

²³ [工业和信息化部关于印发“十四五”软件和信息技术服务业发展规划的通知_国务院部门文件](#)

- Support of the open source community through integration of stakeholders with a focus on key open source projects and creating a developer-friendly participation mechanism to optimise and grow the open source community.
 - Organised training on open source software technologies, standards and certification.
 - Enhancing open source governance expertise.
 - Improving the intellectual property management through maturity assessment as well as technology and ecological governance mechanisms of open source software.
 - Encouraging private capital to explore the establishment of open source software intellectual property funds and research the development of open-source licences that comply with Chinese laws and regulations.
 - Active participation in global open source governance.
- Artificial Intelligence Standardisation White Paper, 2021.²⁴ Published by a state-run think tank, the China Electronic Standardisation Institute under the MIIT, this paper analyses the benefits of open source for AI and the country's dependence on foreign open source. One of its main recommendations is the creation of de facto standards for the AI industry, partially using open source as a means to achieve that.
 - 14th Five-Year Plan for National Informatisation²⁵, 2021. This document, issued by the Central Network Security and Informatisation Committee, calls for important progress to be made in the construction of the open source community ecosystem.²⁶
 - 14th Five-Year Plan for the Development of the Big Data Industry (MIIT), 2022.^{27,28} This plan describes in more detail the policy objectives related to the subject of big data. It explicitly mentions open source as a tool to achieve a better market position. Among other topics, it calls for the promotion of R&D on open source frameworks, components and tools. Furthermore, it also calls for the development of open source communities and the related ecosystem.
 - Notice "About Promoting the Action of Using Data to Empower Cloud Intelligence"²⁹, 2020. Issued by the National Development and Reform Commission, as a response to the Covid-19 pandemic, this notice calls for more open source development and increased open source use for public services.
 - Software and Information Technology Service Industry Development Plan (2016-2020).³⁰ Published in 2016 by the MIIT, this plan outlines the use of open source in a software development plan where open source is identified as the main direction for technological innovation. It also clearly

²⁴ [Artificial Intelligence Standardization White Paper \(2021 Edition\) - Center for Security and Emerging Technology](#)

²⁵ [14th Five-Year Plan for National Informatization | DigiChina](#) (Translated version)

²⁶ [中央网络安全和信息化委员会印发《“十四五”国家信息化规划》](#)

²⁷ https://www.miit.gov.cn/zwgk/zcwj/wjfb/tz/art/2021/art_c4a16fae377f47519036b26b474123cb.html

²⁸ ["14th Five-Year" Plan for the Development of the Big Data Industry - Center for Security and Emerging Technology](#)

²⁹ [《关于推进“上云用数赋智”行动培育新经济发展实施方案》的通知\(发改高技\[2020\]552号\)](#)

³⁰ [软件和信息技术服务业发展规划\(2016—2020年\)](#)

describes the policy of China towards openness, which is described as a win-win situation where China needs to deeply integrate into the global industrial ecosystem, improve the right to participate in international rule-making and enhance international competitiveness. It also calls for supporting the construction of a “public welfare ecological environment”, through joint establishment of open source funds and other methods, based on the open source model.

- “Made in China 2025”.³¹ Published in 2015, this strategy’s objective is to enhance the competitiveness of the Chinese manufacturing sector on the global stage. While the plan doesn’t address open source, it calls for the augmentation of the country’s capacities for information technology, and for the participation in standardisation activities.

Open source software initiatives

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

- openKylin, 2023³²: openKylin is the latest version of China’s work to create its own operating system based on OSS.³³ China’s Kylin operating system project was initiated in 2001. One functional priority was to provide technologies specific to the Chinese language and compatibility with software commonly used in China.³⁴ The other priority, focused on cybersecurity, was to reduce dependencies on American software and to ensure China’s ability to audit and improve the security of the software used in China. Kylin was originally based on FreeBSD but was switched to GNU/Linux in 2010. Development has been supported, since 2013, by the Open Source Software Innovation Joint Laboratory. Since 2013, a lot of the development of Kylin took place within the Ubuntu Kylin project. openKylin is the latest version of this effort to create a Chinese-based OS. It is independent of Ubuntu Kylin but uses a lot of the same packages.³⁵
- “Shenzhen Action Plan for Promoting Open Source HarmonyOS and EulerOS Industry Innovation and Development (2023-2025)”, 2023³⁶: An epicentre of open source development in China, the Shenzhen province strongly supports its open source industry. Eight of the biggest OpenAtom Foundation companies are located there. The Shenzhen Action Plan promotes the HarmonyOS developed by Huawei and calls for the local government, state-owned enterprises and institutions to use it in government investment projects in sectors such as water affairs, transportation, education, health, urban construction, technology & industrial support and urban lifeline projects.

³¹ [中国制造2025 中国政府网](#)

³² <https://github.com/ukui?spm=a2c6h.12873639.article-detail.7.66a710c5Nst3kH>

³³ <https://www.openkylin.top/community/aboutus-en.html>

³⁴ <https://web.archive.org/web/20040927070250/http://www.kylin.org.cn/>

³⁵ [China rallies support for Kylin Linux in war on Windows • The Register](#)

³⁶ [市工业和信息化局关于印发《深圳市推动开源鸿蒙欧拉产业创新发展行动计划\(2023—2025年\)》的通知](#)

- OSCAR Open Source Industry Conference, 2023³⁷: Co-organised by the CAICT, the Cloud Computing Standards and Open Source Promotion Committee, this event held since 2019³⁸ in this form has served as one of the public fronts of the CAICT's work on open source. It also features the OSCAR Open Source Peak Case Awards which this year are set in four categories: "Open Source Individuals", "Open Source Communities and Open Source Projects", "Open Source Enterprises and Open Source Users" and "Open Source Technology Innovation".
- 8th Annual China Open Source Conference 2023 (COSCon'23)³⁹: Organised by Open Source Society (OSS), a consortium of individual members who volunteer to contribute to the cause of open source, this conference gathers international open source representatives.
- 18th Open Source China Open Source World Summit, 2023⁴⁰: Started in 2005 and organised by the COPU, this is the oldest Chinese open source conference. Each year it features some of the most important open source figures globally.
- CAICT's Global Open Source Ecosystem White Paper (2022): Released yearly since 2020⁴¹, this paper analyses the governance structures and trends of open source from the Chinese government's perspective. It presents the industry's role and, since the 2022 version, policies created by both the EU and US. The report also presents a series of recommendations to achieve a stronger open source ecosystem.
- ZJU Mirror, 2022⁴²: A non-profit program aimed at popularising open source software and facilitating efficient access to various resources of open source projects by users, this project was active thanks to students of the Zhejiang University Supercomputing Team.
- Improvement of Gitee, 2020⁴³: the "2020 Open Source Hosting Platform Project" was started by the MIIT to help develop a sustainable alternative to GitHub following some restrictions on that platform. The consortium of Open Source China won the bidding with Gitee⁴⁴ as the basis for this project.
- Zhijiang Tianshu (Dubhe Platform), 2019^{45,46}: An open source artificial intelligence platform, Dubhe, has been developed by a public-private partnership, the Zhejiang Lab, in east China's Zhejiang Province.

³⁷ [2023 OSCAR开源产业大会正式启动, 推动技术与产业协同共进](#)

³⁸ [OSCAR云计算开源产业大会召开——计算无处不在, 开源引领未来](#)

³⁹ [2023 第八届中国开源年会- KaiYuanShe](#)

⁴⁰ <http://copu.softic.com.cn/yc.html>

⁴¹ [White Paper on Open Source Ecology \(2020\)](#)

⁴² [ZJU Mirror](#)

⁴³ [防止再被卡脖子, 中国正构建代码托管平台Gitee来取代GitHub - IT之家](#)

⁴⁴ [Gitee](#)

⁴⁵ [之江天枢 - 致力于构建业界领先的人工智能开源平台。](#)

⁴⁶ [ZJ Lab's Dubhe AI Open Source Platform Releases New Version](#)

- Open Source Software Innovation Joint Laboratory, 2013⁴⁷: Created by the Software and Integrated Circuit Promotion Center (CSIP) of the MIIT, the National University of Defence Technology (NUDT) and Canonical Ltd. (the support company of Ubuntu), this laboratory's focus was on supporting open source in China. Its tasks were to promote the standardised development of open source and basic software, become an authoritative and open organisation of domestic open source software and gather many open source software contributors. It mainly helped create the Ubuntu version of Kylin (see above, openKylin).
- Open Source University Promotion Alliance (LUPA), 2005⁴⁸: Founded by the Zhengjiand Linux Centre (ZJLC) as an alliance of nearly 70 universities⁴⁹, LUPA's primary objective was to promote the use of open source through education. It was active until 2020.⁵⁰ With approval received in 2012, LUPA became the first official training system on open source software of the Ministry of Education. LUPA was joined by more than 400 universities and colleges, including Tsinghua University, Peking University and Zhejiang University.⁵¹
- Red Flag Linux, 1999⁵²: This project, part of the broader Asianux project, aimed at creating a Chinese operating system. Although the company behind it, Red Flag Software (Zhongke Hongqi), closed in 2014, a community continues to make releases and updates.^{53,54} The efforts of the Chinese government, however, now seem to have been redirected to the openKylin project.

⁴⁷ [CCN开源软件创新联合实验室"正式成立](#)

⁴⁸ <http://www.lupa.net.cn/view.php?tid=10477&cid=14>

⁴⁹ [Report-on-the-International-Status-of-Open-Source-Software-2010](#) Page 92.

⁵⁰ [LUPA开源周刊:Linux硬核回应美实体清单](#)

⁵¹ <http://www.lupa.net.cn/view.php?tid=10702&cid=13>

⁵² [红旗Linux桌面 10 | 中科红旗](#)

⁵³ [红旗Linux桌面操作系统V11 | 中科红旗](#)

⁵⁴ <https://web.archive.org/web/20140303023030/http://it.chinabyte.com/467/12856967.shtml>

