# Report: How a U.S. University Helped China Tighten Its Surveillance Machine

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**Overview**

This report examines how a joint research center linking the University of Wisconsin–Madison (UW–Madison) and China's Southeast University (SEU [东南大学]) helped China's Ministry of Public Security (MPS) deploy technologies that further entrench China's surveillance state — and that also have significant dual-use implications.

According to publicly available SEU and UW–Madison documents, the two universities established the Joint Research Institute (JRI) in 2017 as a joint research platform focused on intelligent transportation, connected vehicles, and vehicle-road-cloud technologies. Vehicle-road-cloud systems link onboard vehicle sensors, roadside sensors and cameras, and centralized cloud servers, allowing them to function as both traffic-management tools and mechanisms for surveillance and control.

Strategy Risks, drawing exclusively on publicly available, open-source materials, also shows how UW–Madison researchers conducted joint research with a sanctioned Chinese defense conglomerate, and participated in Tianlai, a radio-astronomy project centered on a telescope array in Xinjiang, a region fraught with sanctions compliance risks due to the Chinese government's campaign of ethnic cleansing there. Strategy Risks' investigation examines these collaborations, their institutional relationships, and the broader research ecosystems surrounding them.

Publicly available SEU and UW–Madison materials document the JRI and its UW–Madison/SEU affiliation, with SEU still identifying JRI leadership in February 2024; separately, a peer-reviewed article published online in August 2026 listed multiple authors under the affiliation "Institute on Internet of Mobility, Southeast University and University of Wisconsin-Madison." Counsel for a UW–Madison professor disputes that the contemplated UW–Madison arrangement was ever implemented, states that the JRI was never operational, funded, or staffed by UW–Madison, advises that the 2026 affiliation was erroneous, and has requested that Strategy Risks issue a correction regarding these points. Strategy Risks has not independently resolved that dispute and accordingly distinguishes in this report between what the cited public records state and what has been independently verified concerning the JRI's operations. (SEU and UW-Madison didn't respond to a request for comment.)

Publicly available records use several different English renderings of the JRI's full name, including "Institute on Internet of Mobility, Southeast University and University of Wisconsin-Madison," "Joint Research Institute of the Intelligent Network Association," and "Joint Research Institute of Intelligent Network Association of University of Wisconsin-Southeast University." The institute's Chinese name is consistently given as "Southeast University–University of Wisconsin Intelligent Connected Transportation Joint Research Institute" [东南大学-威斯康星大学智能网联交通联合研究院].

This report identifies no evidence of espionage or intellectual property theft. It does, however, illustrate how longstanding academic partnerships established during an earlier era of scientific engagement could now present elevated national security risks in an era of intense strategic competition and rising authoritarianism.

**Summary of Findings**

1. Publicly available records from both UW–Madison and SEU describe the JRI as having been established in 2017 in Nanjing, Jiangsu province. UW–Madison's own records independently corroborate the institute's establishment: a 2019 College of Engineering publication described the UW–Madison–SEU Joint Research Institute on Internet of Mobility as having "launched in late 2017,"[1] while the College of Engineering's current leadership page references the establishment of a "joint research institute" with SEU in Nanjing.[2] A 2018 UW–Madison News article also described a "recently established collaboration" with SEU.[3] Publicly available SEU materials continued to identify personnel with JRI leadership positions in 2024,[4] and a peer-reviewed article published online in August 2026 lists multiple researchers as affiliated with the "Institute on Internet of Mobility, Southeast University and University of Wisconsin-Madison."[5] These records indicate that the JRI remained in use as an institutional research affiliation through at least 2026, although Strategy Risks could not independently confirm its current administrative or operational status. SEU has extensive links to China's military, the People's Liberation Army (PLA), and to the MPS, China's internal security and policing body. U.S. congressional and executive-branch reporting have identified SEU as an institution with significant military-civil fusion.[6]

[1] Department of Civil & Environmental Engineering, "CIVIL AND ENVIRONMENTAL ENGINEERING," University of Wisconsin-Madison, 2019, observed September 16, 2026 at https://engineering.wisc.edu/wp-content/uploads/2022/01/cee-newsletter_spring_2019.pdf, and archived at https://web.archive.org/web/20260916222854/https://engineering.wisc.edu/wp-content/uploads/2022/01/cee-newsletter_spring_2019.pdf

[2] College of Engineering, "Leadership," University of Wisconsin-Madison, undated, observed September 17, 2026 at https://engineering.wisc.edu/about/leadership/, and archived at https://web.archive.org/web/20260917003028/https://engineering.wisc.edu/about/leadership/

[3] Silke Schmidt, "Wisconsin corridor turns testbed for connected vehicle technology," University of Wisconsin-Madison News, January 2018, observed https://news.wisc.edu/wisconsin-corridor-turns-testbed-for-connected-vehicle-technology/, and archived at https://web.archive.org/web/20260917003057/https://news.wisc.edu/wisconsin-corridor-turns-testbed-for-connected-vehicle-technology/

[4] Cheng Yue [陈悦] "Rui Yikang," Southeast University School of Transportation, February 29, 2024, observed September 25, 2026 at https://tc.seu.edu.cn/jt_en/2024/0229/c53581a482611, and archived at

[5] Zhiyu Wang et al, "Vehicle group risk modeling based on risk propagation mechanism," Elsevier Ltd., August 14, 2026, observed September 16, 2026 at https://pubmed.ncbi.nlm.nih.gov/42600330/, unarchivable https://web.archive.org/web/20260916223126/https://pubmed.ncbi.nlm.nih.gov/42600330/

[6] U.S.-China Economic and Security Review Commission, "Chapter 3, Section 2: China's Cyber Capabilities: Warfare, Espionage, and Implications for the United States," *2022 Annual Report to Congress,* November 2022, observed July 5, 2026 at https://www.uscc.gov/sites/default/files/2022-11/Chapter_3_Section_2--Chinas_Cyber_Capabilities.pdf, and archived at https://archive.ph/8sPQ9

2. The JRI's research reportedly focused on vehicle-road-cloud development, a dual-use field with civilian traffic control, public security and military applications.[7,8,9,10] Public records show that JRI-affiliated researchers and an MPS research institute participated in the same vehicle-road cooperative research and standards-setting efforts.[11] The MPS has formally integrated JRI-advocated vehicle-road-cloud standards into China's national standards and has begun to deploy them throughout the country.
3. In January 2025, the U.S. Department of Commerce's Bureau of Industry and Security (BIS) restricted transactions involving vehicle connectivity hardware and software linked to China or Russia, citing the potential risks posed to the U.S. economy and national security.[12] Strategy Risks does not allege that UW–Madison or any of the JRI-linked research documented in this

[7] Chen Yue [陈悦], Southeast University School of Transportation, "Joint Institute on Internet of Mobility between SEU and UW–Madison Established," *Southeast University School of Transportation*, December 20, 2017, observed September 4, 2026 at https://tc.seu.edu.cn/jt_en/2017/1230/c16823a206389/page.htm, and archived at https://web.archive.org/web/20260910184540/https://tc.seu.edu.cn/jt_en/2017/1230/c16823a206389/page.htm

[8] RAN Bin, et al, "Development status and trend of connected automated vehicle highway system [智能网联交通技术发展现状及趋势]," Journal of Automotive Safety and Energy [汽车安全与节能学报], July 4, 2018, observed September 28, 2026 at https://www.journalase.com/CN/10.3969/j.issn.1674-8484.2018.02.001, and archived at https://web.archive.org/web/20260928195134/https://www.journalase.com/CN/10.3969/j.issn.1674-8484.2018.02.001

[9] China Highway & Transportation Society [中国公路学会], "The Development Report on Vehicle-Road Cooperative Autonomous Driving (2019) was released in bilingual format [车路协同自动驾驶发展报告（2019）双语发布]," May 7, 2020, observed September 28, 2026 at https://www.wtc-conference.com/report/a423.html, and archived at https://web.archive.org/web/20260928195237/https://www.wtc-conference.com/report/a423.html

[10] "Notice from the Ministry of Industry and Information Technology, the Ministry of Public Security, the Ministry of Natural Resources, the Ministry of Housing and Urban-Rural Development, and the Ministry of Transport on Launching Pilot Applications for the "Vehicle-Road-Cloud Integration" of Intelligent Connected Vehicles [工业和信息化部 公安部 自然资源部 住房和城乡建设部 交通运输部关于开展智能网联汽车"车路云一体化"应用试点工作的通知]," Ministry of Industry and Information Technology, Ministry of Public Security, Ministry of Natural Resources, Ministry of Housing and Urban-Rural Development, Ministry of Transport, January 17, 2024, observed September 28, 2026 at https://wap.miit.gov.cn/jgsj/zbys/wjfb/art/2024/art_140d86b63e494628ae039dd23a3cc539.html, and archived at https://web.archive.org/web/20260928195733/https://wap.miit.gov.cn/jgsj/zbys/wjfb/art/2024/art_140d86b63e494628ae039dd23a3cc539.html

[11] China Highway and Transportation Society [中国公路学会], China Society of Automotive Engineers [中国汽车工程学会], and China Institute of Communications [中国通信学会], "Cooperative Development Framework for Vehicle-Road Cooperative Automated Driving System (Vehicle-Road-Cloud Integrated System)" [车路协同自动驾驶系统（车路云一体化系统）协同发展框架], *China Society of Automotive Engineers* [中国汽车工程学会], January 16, 2023, observed September 10, 2026 at https://img.sae-china.org/web/2023/01/%E8%BD%A6%E8%B7%AF%E5%8D%8F%E5%90%8C%E8%87%AA%E5%8A%A8%E9%A9%BE%E9%A9%B6%E7%B3%BB%E7%BB%9F%E5%8F%91%E5%B1%95%E6%A1%86%E6%9E%B6%EF%BC%8820230116%E7%BB%88%E7%89%88)(1).pdf, and archived at https://web.archive.org/web/20260911014819/https://img.sae-china.org/web/2023/01/%E8%BD%A6%E8%B7%AF%E5%8D%8F%E5%90%8C%E8%87%AA%E5%8A%A8%E9%A9%BE%E9%A9%B6%E7%B3%BB%E7%BB%9F%E5%8F%91%E5%B1%95%E6%A1%86%E6%9E%B6%EF%BC%8820230116%E7%BB%88%E7%89%88)(1).pdf

[12] U.S. Bureau of Industry and Security, "Commerce Finalizes Rule to Secure Connected Vehicle Supply Chains from Foreign Adversary Threats," *U.S. Department of Commerce*, January 14, 2025, observed July 4, 2026 at https://www.bis.gov/press-release/commerce-finalizes-rule-secure-connected-vehicle-supply-chains-foreign-adversary-threats, and archived at https://archive.ph/dB6P9

report violated these rules. Rather, the documented research areas associated with the JRI merit deeper scrutiny considering this BIS policy.[13]

4. For about a decade, federally funded UW–Madison physicists have participated in Tianlai, a radio astronomy experiment which studies the structure and evolution of the universe. The broader research network surrounding this work has included collaboration with the 54th Research Institute of the China Electronics Technology Group (CETC 54 [中国电子科技集团公司第五十四研究所]), a subsidiary of a major defense conglomerate. CETC 54 has been identified by U.S. defense research bodies as a principal contractor building communications equipment for the PLA, and it and its parent company CETC have long been under U.S. sanctions.[14] More recently, CETC 54 has also been sanctioned by Japan.[15]

5. UW–Madison reported $1.93 billion in research expenditures in fiscal year 2024,[16] ranking fifth nationally. U.S. federal agencies provided a substantial share of this support. In FY 2023 this included about $457 million from the National Institutes of Health and more than $127 million from the National Science Foundation (NSF).[17] Additional funding came from the departments of War, Energy, Agriculture, and Transportation, as well as other agencies. Federal agencies that supported UW–Madison's broader research portfolio also funded the specific projects discussed in this report, including NSF support for UW–Madison's participation in Tianlai and Department of Transportation support for related connected-vehicle research.

[13] Ibid.

[14] The identification of CETC 54 as principal contractor for China's space ground segment rests on the first of these sources, and the identification of CETC 54 as a builder of PLA communications equipment, including the South China Sea troposcatter terminals, on the second. Kristin Burke, "PLA Counterspace Command and Control," *China Aerospace Studies Institute, Air University*, December 2023, observed September 13, 2026 at https://www.airuniversity.af.edu/Portals/10/CASI/documents/Research/PLASSF/2023-12-11%20Counterspace-%20web%20version.pdf, and archived at https://archive.md/grh9I; J. Michael Dahm, "A Survey of Capabilities on China's Fortified Islands," *South China Sea Military Capability Series, Johns Hopkins University Applied Physics Laboratory*, July 6, 2020, observed September 13, 2026 at https://apps.dtic.mil/sti/pdfs/AD1128624.pdf, and archived at https://archive.md/chwjz

[15] Ministry of Economy, Trade and Industry of Japan, "Review of the End User List Providing Information on Foreign Entities for which Verification of Transaction Status is Required Regarding the Development of Weapons of Mass Destruction and Missiles or Conventional Weapons," *Ministry of Economy, Trade and Industry of Japan,* September 29, 2025, observed September 10, 2026 at https://www.meti.go.jp/english/press/2025/0929_003.html, and archived at https://web.archive.org/web/20260910155755/https://www.meti.go.jp/english/press/2025/0929_003.html

[16] Fiscal year 2024 is the most recent year for which National Science Foundation Higher Education Research and Development Survey data is available. Natasha Kassulke, "UW–Madison top 5 in national research ranking for first time since 2014, surpasses $1.93B in research expenditures," *UW–Madison News*, December 23, 2025, observed September 13, 2026 at https://news.wisc.edu/UW–Madison-5th-in-national-research-ranking-for-first-time-since-2014-surpasses-1-93b-in-research-expenditures/, and archived at https://archive.md/Lf99r

[17] Fiscal year 2023 is the most recent year for which an agency-by-agency breakdown is available.

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## The Institutions

### University of Wisconsin–Madison (UW–Madison)

UW–Madison is one of the nation's leading public research universities. As of the 2024-25 academic year, students from mainland China made up nearly half of UW–Madison's roughly 7,600 international students.[18] UW–Madison's relationship with China dates to 1907, when Chinese scholars first arrived on its campus, and grew to include more than 60 agreements with Chinese universities by the fall of 2019.[19] Its China-facing footprint includes numerous faculty and student exchanges, joint conferences, and research collaborations across law, medicine, geoscience, and other fields.

This report focuses on the JRI and the Tianlai collaboration because of their direct connections to Chinese state-security and defense-industrial entities. UW–Madison and SEU established the JRI as an institutional platform for long-term scientific collaboration. According to the public partnership agreements and university materials, the JRI was designed to support joint research, faculty exchanges, graduate education, laboratory collaboration, academic conferences, and the development of shared research initiatives. Its principal research areas included intelligent transportation systems, connected and autonomous vehicles, and vehicle-road-cloud technologies.[20] UW–Madison researchers associated with the JRI have also conducted U.S.-supported research in closely related technical areas, including technologies with civilian and dual-use applications prioritized by the Chinese Communist Party (CCP). These technologies have implications for surveillance, military use, and human rights and deserve more attention than they presently receive.

Separately, UW–Madison staff and students also work alongside Chinese colleagues running the Tianlai telescope. The Tianlai work may be developing dual-use technologies benefiting China's military and security services, and places UW–Madison, at least indirectly, in a region of the country where China has long been accused of widespread human rights abuses.

### China's Southeast University (SEU)

SEU is a leading defense research university, jointly supervised by the Ministry of Education and the State Administration for Science, Technology and Industry for National Defense (SASTIND). SASTIND oversees universities conducting defense-relevant research, with the goal of speeding up the research-to-

[18] Frances Vavrus, "Message from the Dean–February 2025," *University of Wisconsin-Madison International Division*, February 14, 2025, observed September 10, 2026 at https://international.wisc.edu/message-from-the-dean-february-2025/, and archived at https://web.archive.org/web/20260910183931/https://international.wisc.edu/message-from-the-dean-february-2025/; University of Wisconsin-Madison, "UHS psychologist hopes to help international students succeed," *UW–Madison News,* November 3, 2015, observed September 10, 2026 at https://news.wisc.edu/uhs-psychologist-hopes-to-help-international-students-succeed/, and archived at https://web.archive.org/web/20260910184039/https://news.wisc.edu/uhs-psychologist-hopes-to-help-international-students-succeed/

[19] Niki Denison, "Asia + UW 4ever," *On Wisconsin*, August 28, 2019, observed September 10, 2026 at https://onwisconsin.uwalumni.com/asia-uw-4ever/, and archived at https://web.archive.org/web/20260910184137/https://onwisconsin.uwalumni.com/asia-uw-4ever/

[20] Chen Yue [陈悦], Southeast University School of Transportation, "Joint Institute on Internet of Mobility between SEU and UW–Madison Established," *Southeast University School of Transportation*, December 20, 2017, observed September 4, 2026 at https://tc.seu.edu.cn/jt_en/2017/1230/c16823a206389/page.htm, and archived at https://web.archive.org/web/20260910184540/https://tc.seu.edu.cn/jt_en/2017/1230/c16823a206389/page.htm

industry pipeline. SEU has two formally designated defense laboratories, and maintains secret-level security credentials, which means it can work on classified defense projects. The United States House Select Committee on Strategic Competition between the United States and the Chinese Communist Party flagged SEU in a September 2025 report listing Chinese universities with direct ties to the PLA and China's defense industrial base.[21]

SEU has strong links to state-backed cyber campaigns. Researchers at SEU's School of Cyber Science and Engineering [网络空间安全学院] have received funding from the Ministry of State Security (MSS),[22] and the school also has ties to Beijing Topsec Network Security Technology [北京天融信网络安全技术有限公司], a company that has reportedly trained PLA cybersecurity officers.[23]

In 2020, SEU and the PLA signed a joint construction and education [共建共育] agreement, a formal arrangement in which a civilian university and a PLA unit jointly sponsor military-related activity on campus, including student recruitment, reserve-officer or militia training, and a permanent liaison presence for national defense mobilization. That same year, they established the SEU National Defense Education Base [东南大学国防教育基地],[24] an armed forces department, recruitment office, and national defense mobilization liaison unit operating formally within SEU.[25] Over the decades, multiple PLA units — including China's Nuclear Test Base, the Xi'an Satellite Control Center, and the Luoyang Electronic Equipment Test Center [洛阳电子装备试验中心] — have recruited and trained directly from SEU,

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[21] Select Committee on the Strategic Competition Between the United States and the Chinese Communist Party, "From Ph.D. to PLA: How Visa Policies Enable PRC Defense Entities to Tap U.S. Higher Education," *U.S. House of Representatives Select Committee on the Strategic Competition Between the United States and the Chinese Communist Party*, September 19, 2025, observed July 4, 2026 at https://chinaselectcommittee.house.gov/sites/evo-subsites/selectcommitteeontheccp.house.gov/files/evo-media-document/from-ph.d-to-pla-report_final.pdf, and archived at https://archive.md/qbmfl

[22] Dakota Cary, "Academics, AI, and APTs: How Six Advanced Persistent Threat-Connected Chinese Universities are Advancing AI Research," *Center for Security and Emerging Technology*, March 15, 2021, observed September 10, 2026 at https://cset.georgetown.edu/wp-content/uploads/CSET-Academics-AI-and-APTs.pdf, and archived at https://web.archive.org/web/20260910220451/https://cset.georgetown.edu/wp-content/uploads/CSET-Academics-AI-and-APTs.pdf

[23] U.S.-China Economic and Security Review Commission, "2022 Report to Congress," *U.S.-China Economic and Security Review Commission*, November 15, 2022, observed September 10, 2026 at https://www.uscc.gov/sites/default/files/2022-11/2022_Annual_Report_to_Congress.pdf, and archived at https://web.archive.org/web/20260814070227/https://www.uscc.gov/sites/default/files/2022-11/2022_Annual_Report_to_Congress.pdf; Dakota Cary, "Testimony before the U.S.-China Economic and Security Review Commission on China's Cyber Capabilities: Warfare, Espionage and Implications for the United States," *Center for Security and Emerging Technology*, February 17, 2022, observed September 10, 2026 at https://cset.georgetown.edu/wp-content/uploads/Testimony-before-U.S.-China-Economic-and-Security-Review-Commission-Dakota-Cary.pdf, and archived at https://web.archive.org/web/20260825141419/https://cset.georgetown.edu/wp-content/uploads/Testimony-before-U.S.-China-Economic-and-Security-Review-Commission-Dakota-Cary.pdf

[24] Sun Wei [孙威], "The signing and unveiling ceremony for the Southeast University-PLA 73096 Unit National Defense Education Base was successfully held!" [东南大学——中国人民解放军 73096 部队国防教育基地签约揭牌仪式顺利举行！], *Sohu* [搜狐], December 30, 2020, observed July 4, 2026 at https://www.sohu.com/a/441802060_697085, and archived at https://archive.ph/bguKQ

[25] Southeast University [东南大学], "National Defense Education Center" [国防教育中心], *Southeast University Student Affairs Office* [东南大学学生处], undated, observed July 4, 2026 at https://xsc.seu.edu.cn/64999/list.htm, and archived at https://web.archive.org/web/20260706012514/https://xsc.seu.edu.cn/64999/list.htm

seeking students in strategic national-security, space-military, and electromagnetic-security disciplines, respectively.

**Joint Research Institute (JRI)**

In July 2016, University of Wisconsin's then Vice Provost Jeffrey S. Russell visited SEU.[26] The universities signed a strategic cooperation memorandum and a joint-training agreement covering research, faculty exchange, student training, and the creation of a joint institute.[27] In October 2017, SEU's president (and later SEU deputy party secretary) Zhang Guangjun [张广军][28] traveled to Madison to sign the formal agreement that established the JRI.[29] Senior UW–Madison engineering leaders attended the unveiling in Nanjing that December, alongside Jiangsu provincial authorities and party officials from Nanjing.[30] (Russell didn't respond to a request for comment.)

## The Technology and its Strategic Significance

In 2019, the Party's powerful Central Committee and the State Council issued the Outline for Building China into a Transportation Powerhouse [交通强国建设纲要], a national strategic planning document setting out China's long-term transportation priorities.[31] In August 2021, the Ministry of Transport included SEU among ten universities nationwide selected as "Transportation Powerhouse" pilot

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[26] Zhang Wenliang [张雯靓], "Starting a New Journey, Writing a New Chapter—Southeast University and the University of Wisconsin Sign Strategic Cooperation MOU and '4+X' Joint Training Cooperation Agreement" [开启新征程，谱写新篇章——东南大学与威斯康星大学签订战略合作谅解备忘录以及"4+X"联合培养合作协议], *Dongda Jiaotong Wulian* [东大交通物联], July 23, 2016, observed June 26, 2026 at https://mp.weixin.qq.com/s?src=11&timestamp=1774464802&ver=6620&signature=eOLrS31gx8xaGfClq8O-ZqcJWmo1zyOvPV3f*jQSVitX8YHX7UhELhSeRCpSQ5ITYp-91yxUxJuCV4u-JhGOksd6qVsg9j-4Z6m4w4ooNT-GUaRdAcrXQ8900lqBX0pS&new=1, and archived at https://archive.today/w769F

[27] Ibid.

[28] Southeast University, "Zhang Guangjun [张广军]," undated, observed September 14, 2026 at https://tc.seu.edu.cn/_t2411/2017/1020/c25664a201253/page.htm, and archived at https://web.archive.org/web/20260914202633/https://www.seu.edu.cn/2015/1123/c28449a333176/page.htm

[29] Hong Yang [洪阳], "Southeast University and the University of Wisconsin Officially Sign Cooperation Agreement for the Intelligent Connected Transportation Joint Research Institute" [东南大学与美国威斯康星大学正式签署智能网联交通联合研究院合作协议], *Southeast University School of Transportation* [东南大学交通学院], October 20, 2017, observed June 28, 2026 at https://tc.seu.edu.cn/_t2411/2017/1020/c25664a201253/page.htm, and archived at http://archive.today/CYvrS

[30] Jiang Tingyu [蒋廷玉] and Yang Yang [杨洋], "Southeast University–University of Wisconsin Connected Transportation Institute Unveiled" [东大-威斯康星大学网联交通研究院揭牌], *Xinhua Daily* [新华日报], December 22, 2017, republished by Southeast University News [东南大学新闻网], observed June 29, 2026 at https://news.seu.edu.cn/2017/1222/c5541a205743/page.htm, and archived at http://archive.today/wd43u

[31] A CCP Central Committee and State Council document is a policy instrument jointly issued by the Chinese Communist Party's highest decision-making body and China's chief administrative authority, the State Council, headed by the premier. Joint issuance of this kind signals the policy carries top-level party-state authority and binds ministries and provincial governments to implement it, placing it well above an ordinary single-ministry notice or regulation in China's policy hierarchy. Xinhua News Agency [新华社], "The CCP Central Committee and the State Council Issue the Outline for Building China into a Transportation Powerhouse" [中共中央 国务院印发《交通强国建设纲要》], *People's Daily Online* [人民网], September 19, 2019, observed September 13, 2026 at http://politics.people.com.cn/n1/2019/0919/c1001-31362994.html, and archived at https://archive.md/UEOlo

institutions.[32] The pilot program assigned SEU six research tasks, including rapid-roadway control and vehicle-road cooperative technology development, areas also reflected in publicly documented JRI research, with annual progress reports due to the ministry.[33]

In January 2023, three of China's most influential transportation and communications standards bodies published the Cooperative Development Framework for Vehicle-Road Cooperative Automated Driving System, the document that now defines vehicle-road-cloud integration nationally.[34] SEU is listed among the framework's drafters, alongside the MPS's own Road Traffic Safety Research Center.[35] In July 2024, five ministries jointly designated 20 Chinese cities as pilot sites to begin deploying the technology this framework describes.[36] Through this process SEU's work became integral to national standards co-written with China's police ministry and now being built into actual cities.

Vehicle-road-cloud systems are a dual-use technology operating on multiple levels. At the base level, roadside sensors extend what a car's own sensors can see. At the next level, a cloud-connected network analyzes traffic system-wide and recommends actions to drivers. At the top level, the road-and-cloud infrastructure can send direct commands to connected vehicles, taking over specific driving functions. It is this progression that makes the technology dual-use: The same system that improves traffic flow and safety gives whoever controls it real-time visibility into and command over participating vehicles. In

[32] Ministry of Transport [交通运输部], "Opinion of the Ministry of Transport on Southeast University Carrying Out Transportation Powerhouse Construction Pilot Work Including Transportation Infrastructure Digitalization and Long-Service-Life Technology R and D" [交通运输部关于东南大学开展交通基础设施数字化与长效服役技术研发等交通强国建设试点工作的意见], *Ministry of Transport Government Information Disclosure* [交通运输部政府信息公开], August 26, 2021, observed June 29, 2026 at https://xxgk.mot.gov.cn/jigou/zhghs/202108/t20210826_3616637.html, and archived at https://archive.md/Ad0Gk

[33] Ibid.

[34] China Highway and Transportation Society [中国公路学会], China Society of Automotive Engineers [中国汽车工程学会], and China Institute of Communications [中国通信学会], "Cooperative Development Framework for Vehicle-Road Cooperative Automated Driving System (Vehicle-Road-Cloud Integrated System)" [车路协同自动驾驶系统（车路云一体化系统）协同发展框架], *China Society of Automotive Engineers* [中国汽车工程学会], January 16, 2023, observed September 10, 2026 at https://img.sae-china.org/web/2023/01/%E8%BD%A6%E8%B7%AF%E5%8D%8F%E5%90%8C%E8%87%AA%E5%8A%A8%E9%A9%BE%E9%A9%B6%E7%B3%BB%E7%BB%9F%E5%8F%91%E5%B1%95%E6%A1%86%E6%9E%B6%EF%BC%8820230116%E7%BB%88%E7%89%88)(1).pdf, and archived at https://web.archive.org/web/20260911014819/https://img.sae-china.org/web/2023/01/%E8%BD%A6%E8%B7%AF%E5%8D%8F%E5%90%8C%E8%87%AA%E5%8A%A8%E9%A9%BE%E9%A9%B6%E7%B3%BB%E7%BB%9F%E5%8F%91%E5%B1%95%E6%A1%86%E6%9E%B6%EF%BC%8820230116%E7%BB%88%E7%89%88)(1).pdf

[35] Ibid.

[36] Ministry of Industry and Information Technology [工业和信息化部], Ministry of Public Security [公安部], Ministry of Natural Resources [自然资源部], Ministry of Housing and Urban-Rural Development [住房和城乡建设部], and Ministry of Transport [交通运输部], "Notice on the Publication by Five Ministries of the List of Pilot Cities for Intelligent Connected Vehicle 'Vehicle-Road-Cloud Integration' Applications" [五部门关于公布智能网联汽车"车路云一体化"应用试点城市名单的通知], *Ministry of Industry and Information Technology* [工业和信息化部], July 3, 2024, observed September 10, 2026 at https://www.miit.gov.cn/zwgk/zcwj/wjfb/tz/art/2024/art_7b42963f0fde4af496dfcc9c224be54c.html, and archived at https://web.archive.org/web/20260911020602/https://www.miit.gov.cn/zwgk/zcwj/wjfb/tz/art/2024/art_7b42963f0fde4af496dfcc9c224be54c.html

China, the MPS's role as a co-author of the national standard means that control sits, by design, partly with the country's police ministry rather than solely with transportation regulators.

China is not alone in developing this technology, but it has moved quickly to fold it into national standards, public-security administration, and military-civil-fusion planning. The U.S. government recognized this when, in January 2025, the Commerce Department's BIS issued a ruling under Executive Order 13873 prohibiting the import of connected-vehicle hardware, and the import or sale of connected vehicles incorporating certain software designed, developed, manufactured, or supplied by an entity "owned by, controlled by, or subject to the jurisdiction or direction of" China or Russia.[37] Such transactions, it found, posed "undue and unacceptable" risks to the U.S. economy and national security. The BIS was especially concerned that technology originating in China or Russia could allow those countries' governments to access sensitive driver data, or even to control vehicles on U.S. roads remotely. (Notably, however, the 2025 rule is not a blanket ban, and under its terms hardware and software prohibitions are phased in rather than taking effect immediately.)

The Commerce Department document does not mention SEU or UW–Madison by name,[38] and Strategy Risks does not allege that UW–Madison, either on its own or through the JRI, deliberately channeled U.S. technology into Chinese surveillance or military systems. However, the available evidence indicates that research conducted by scholars affiliated with the JRI contributed to the development of a civilian-framed dual-use technology in technical areas that also received U.S. institutional and federal research support. When Beijing incorporated this technology into national standards, the state absorbed a system that has significant surveillance, military, and human rights dimensions.

**JRI-Affiliated Research and Ministry of Public Security (MPS) Participation**

In 2019, five UW–Madison researchers appeared among the 46 named contributors to a Chinese national industry report on vehicle-road cooperative automated driving, alongside the Traffic Management Research Institute of the MPS. The report, published by the China Highway and Transportation Society Working Committee on Autonomous Driving [中国公路学会自动驾驶工作委员会], lists the JRI first among its drafting units, the institutions credited with authoring the report's technical content.[39] The Traffic Management Research Institute of MPS appears seventh.

[37] U.S. Bureau of Industry and Security, "Commerce Finalizes Rule to Secure Connected Vehicle Supply Chains from Foreign Adversary Threats," *U.S. Department of Commerce*, January 14, 2025, observed July 4, 2026 at https://www.bis.gov/press-release/commerce-finalizes-rule-secure-connected-vehicle-supply-chains-foreign-adversary-threats, and archived at https://archive.ph/dB6P9

[38] U.S. Bureau of Industry and Security, "Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles," *Federal Register*, January 16, 2025, observed June 28, 2026 at https://www.federalregister.gov/documents/2025/01/16/2025-00592/securing-the-information-and-communications-technology-and-services-supply-chain-connected-vehicles, and archived at https://archive.ph/zZRGg

[39] China Highway and Transportation Society Working Committee on Autonomous Driving [中国公路学会自动驾驶工作委员会], "Development Report on Vehicle-Road Cooperative Automated Driving, Version 1.0" [《车路协同自动驾驶发展报告》1.0 版], *China Highway and Transportation Society* [中国公路学会], June 14, 2019, observed June 28, 2026 at https://www.chts.cn/cms_files/filemanager/1389253025/attach/20235/618102a417e24d85932fc6695ccb85f7.pdf, and archived at http://archive.today/KLeIQ

In March 2022, the JRI signed a strategic cooperation agreement with Tencent Cloud to pursue joint project applications, key-technology research and development (R&D), and formulating industry standards in smart transportation.[40] In 2025, the Department of War included Tencent Holdings Limited, Tencent Cloud's parent company and one of China's largest internet and data companies, on its list of Chinese military companies operating in the U.S.[41] The 2026 list stated that Tencent Holdings Limited is indirectly affiliated with the PLA.[42]

Publicly available research and standards records also connect JRI-affiliated work with two entities that have documented ties to China's security apparatus: China Information Communication Technologies Group Corporation (CICT [中国信息通信科技集团有限公司]) and its subsidiary, CICT Connected and Intelligent Technologies Ltd (CICTCI [中信科智联科技有限公司]).[43] CICT is a central state-owned enterprise (SOE) operating directly under the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), a government agency that oversees the country's SOEs.[44]

CICT's 2024 regulatory filing for the Shanghai Stock Exchange identifies six core business segments, placing vehicle networking [车联网] and smart transportation [智慧交通] inside the same product cluster as smart policing [智慧警务] and public-security solutions.[45] The same report states that CICT's products have passed testing by the MPS's First Research Institute, the MPS's primary technology standards and certification body for police and security technology. This means CICT's products meet MPS specifications, in addition to civilian-transport ones. In May 2024, SASAC selected CICT's vehicle networking communication technology as one of the ten landmark digital technology achievements of China's SOEs.[46]

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[40] Southeast University School of Transportation [东南大学交通学院], "Joint Research Institute Signs Strategic Cooperation Agreement with Tencent Cloud" [智能网联交通联合研究院与腾讯云签署战略合作协议], *Southeast University School of Transportation* [东南大学交通学院], March 11, 2022, observed June 28, 2026 at https://tc.seu.edu.cn/2022/0315/c58259a532782/page.htm, and archived at https://archive.ph/R3MAe

[41] U.S. Department of Defense, "Entities Identified as Chinese Military Companies Operating in the United States in Accordance with Section 1260H of the William M. ("Mac") Thornberry National Defense Authorization Act for Fiscal Year 2021," *U.S. Department of Defense*, January 7, 2025, observed July 1, 2026 at https://media.defense.gov/2025/Jan/07/2003625471/-1/-1/1/ENTITIES-IDENTIFIED-AS-CHINESE-MILITARY-COMPANIES-OPERATING-IN-THE-UNITED-STATES.PDF, and archived at http://archive.today/tbD0h

[42] U.S. Department of Defense, "Entities Identified as Chinese Military Companies Operating in the United States in Accordance with Section 1260H of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021," *U.S. Department of Defense*, June 8, 2026, observed July 1, 2026 at https://media.defense.gov/2026/Jun/08/2003945537/-1/-1/1/ENTITIES-IDENTIFIED-AS-CHINESE-MILITARY-COMPANIES-OPERATING-IN-THE-UNITED-STATES-IN-ACCORDANCE-WITH-SECTION-1260H.PDF, and archived at http://archive.today/ToyvR

[43] CICTCI Connected and Intelligent Technologies Co., Ltd. [中信科智联科技有限公司], "Company Introduction" [公司介绍], *CICTCI Connected and Intelligent Technologies Co., Ltd.*, undated, observed July 1, 2026 at https://www.cictci.com/index/aboutUs.html, and archived at http://archive.today/Dihfw

[44] China International Import Expo [中国国际进口博览会], "China Information Communication Technologies Group Corporation" [中国信息通信科技集团有限公司], *Buyer's Home* [采购商之家], undated, observed July 5, 2026 at https://www.ciie.org/buy/front/companyDetail?id=2c979627982ba4a90199ce6eb7fa01ca&cid=ff8080818a506fa3018a8dc8d927198f, and archived at http://archive.today/zf60n

[45] China Information Communication Technologies Group Corporation [中国信息通信科技集团有限公司], "Company Bond Annual Report (2024)" [公司债券年度报告（2024 年）], *Shanghai Stock Exchange* [上海证券交易所], April 30, 2025, observed June 28, 2026 at https://static.sse.com.cn/disclosure/bond/announcement/company/c/new/2025-04-30/240864_20250430_ELPZ.pdf, and archived at http://archive.today/ys6xg

[46] Ibid.

When three of China's most influential industry and standards bodies for roads, automotive, and communications jointly published new standards for vehicle-road-cloud integration in January 2023, SEU appeared among the document's drafters, alongside Tsinghua University, CICTCI, and the MPS Road Traffic Safety Research Center.

Later that year, researchers affiliated with the JRI published one of the clearest English-language descriptions of the vehicle-road-cloud architecture associated with the institute's research. The paper, published in Urban Lifeline, a journal under SEU, turns the vehicle-road-cloud concept into a concrete blueprint — specifying how vehicles, roads, and cloud systems should be connected, what each layer of the system should do, and how control should escalate from basic information-sharing up to the road-and-cloud system directly commanding a vehicle's driving functions. The paper names as co-authors Jinling Hu of CICTCI and Yanming Hu of CICT[47] — employees of a central SOE with documented ties to China's public-security apparatus.

In July 2024, the Chinese authorities began deploying the technology. Five ministries jointly issued a notice designating 20 cities as pilot sites for vehicle-road-cloud integration.[48] The MPS's role as a named co-governing authority gave it a direct stake in the rollout of a nationwide sensor network that tracks and can issue commands to vehicles in real time. This is, by design, a surveillance and control system.

**Federal Funding**

One of the clearest ways to see the overlap between UW–Madison's SEU partnership and its federal transportation-research funding is through the closely related technical areas supported by both initiatives. In April 2018, UW–Madison News covered a public driverless-shuttle demonstration on campus, describing the university's College of Engineering as leading the federally designated Wisconsin Automated Vehicle Proving Grounds (WiscAV), one of just ten sites nationwide named by the U.S. Department of Transportation in January 2017 to test automated and connected vehicles.[49] It also cited the Wisconsin Traffic Operations and Safety Laboratory (TOPS) as a key participant.

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[47] Bin Ran, Yuan Zheng, Kaijie Luo, Haozhan Ma, Yikang Rui, Linheng Li, Xiaolong Li, Jinling Hu, and Yanming Hu, "Architecture Design of a Vehicle–Road–Cloud Collaborative Automated Driving System," Urban Lifeline 1, no. 1 (2023): art. 9, December 19, 2023, December 19, 2023, observed June 28, 2026 at https://link.springer.com/article/10.1007/s44285-023-00007-8, and archived at http://archive.today/eoySK

[48] Ministry of Industry and Information Technology [工业和信息化部], Ministry of Public Security [公安部], Ministry of Natural Resources [自然资源部], Ministry of Housing and Urban-Rural Development [住房和城乡建设部], and Ministry of Transport [交通运输部], "Notice on Publishing the List of Pilot Cities for Intelligent Connected Vehicle 'Vehicle-Road-Cloud Integration' Applications" [关于公布智能网联汽车"车路云一体化"应用试点城市名单的通知], *Beijing International Center for Science Technology Innovation* [国际科技创新中心], July 9, 2024, observed June 28, 2026 at https://www.ncsti.gov.cn/zcfg/zcwj/202407/t20240709_170887.html, and archived at http://archive.today/dGtCY

[49] Tom Ziemer, "Driverless Shuttle to Deliver Rides at UW–Madison April 24–25," *UW–Madison News*, April 17, 2018, observed July 2, 2026 at https://news.wisc.edu/driverless-shuttle-to-deliver-rides-at-UW–Madison-april-24-25/, and archived at http://archive.today/ttBqx; U.S. Department of Transportation, "U.S. Department of Transportation Designates 10 Automated Vehicle Proving Grounds to Encourage Testing of New Technologies," *U.S. Department of Transportation*, January 19, 2017, observed September 10, 2026 at https://www.transportation.gov/briefing-room/dot1717, and archived at https://web.archive.org/web/20260910232247/https://www.transportation.gov/briefing-room/dot1717

In January 2023, the same month the three Chinese standards bodies published their Cooperative Development Framework,[50] Steven Parker, a Managing Director and IT Program Manager at TOPS, and researchers from SEU and Tsinghua University published a companion paper titled "Classification of Roadway Infrastructure and Collaborative Automated Driving System" in the International Journal of Connected and Automated Vehicles.[51] This paper proposes a five-level scale to define how much control roadway infrastructure can exercise over a vehicle. The similarity to the Chinese national standard suggests that both may have came out of the same research relationship.

A separate funding stream connects UW–Madison's vehicle-road-cloud work to federal money. UW–Madison is a partner institution in the Center for Connected and Automated Transportation (CCAT), a project of the U.S. Department of Transportation.[52] In 2024, CCAT records listed a UW–Madison project with Parker as a principal investigator.[53, 54] Parker appeared again the following year as principal investigators in a follow-up CCAT project phase.[55] Both projects focused on the use of automated-driving software platforms for tracking vehicle trajectories. (Parker didn't respond to a request for comment.)

Taken together, these projects show that Parker, who was involved in the SEU-linked vehicle-road-cloud research also led federally funded U.S. transportation projects in closely related technical areas. These records document overlapping research areas, but do not establish that U.S. federal funds supported the China-based collaboration.

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[50] CICT Connected and Intelligent Technologies Co., Ltd. [中信科智联科技有限公司], "Ran Bin | Vehicle-Road-Cloud Integration Coordinated-Action System Framework and Smart Expressway Development" [冉斌丨车路云一体化一致行动系统框架与智慧高速发展], *CICT Connected and Intelligent Technologies Co., Ltd.*, April 9, 2023, observed June 28, 2026 at https://www.cictci.com/index/industryHotspots/358.html, and archived at http://archive.today/Zu0p0

[51] Bin Ran, Yang Cheng, Shen Li, Hanchu Li, and Steven Parker, "Classification of Roadway Infrastructure and Collaborative Automated Driving System," *SAE International Journal of Connected and Automated Vehicles* 6, no. 4 (2023): 387–395, May 9, 2023, observed July 7, 2026 at https://par.nsf.gov/biblio/10465948, and archived at https://web.archive.org/web/20260708192705/https://par.nsf.gov/biblio/10465948

[52] Center for Connected and Automated Transportation, "CCAT Renewed as USDOT Region 5 University Transportation Center," *Center for Connected and Automated Transportation, University of Michigan*, February 21, 2023, observed September 4, 2026 at https://ccat.umtri.umich.edu/ccat-renewed-as-usdot-region-5-university-transportation-center, and archived at https://web.archive.org/web/20260912135951/https://ccat.umtri.umich.edu/ccat-renewed-as-usdot-region-5-university-transportation-center/

[53] The Center for Connected and Automated Transportation is the U.S. Department of Transportation-designated Region 5 University Transportation Center, led by the University of Michigan with regional university partners, advancing research, education, and technology transfer in connected and automated vehicle systems.

[54] Steven Parker and Bin Ran, "Prototyping a Low-cost Roadside Device System for Cooperative Automated Driving," *Center for Connected and Automated Transportation*, October 10, 2025, observed July 2, 2026 at https://ccat.umtri.umich.edu/research/wisconsin/prototyping-a-low-cost-roadside-device-system-for-cooperative-automated-driving/, and archived at https://web.archive.org/web/20260708142628/https://ccat.umtri.umich.edu/research/wisconsin/prototyping-a-low-cost-roadside-device-system-for-cooperative-automated-driving/

[55] Center for Connected and Automated Transportation, "A Low-cost Roadside Device System for Cooperative Automated Driving Phase 2: Work Zone Safety Applications," *Center for Connected and Automated Transportation*, October 27, 2025, observed July 2, 2026 at https://ccat.umtri.umich.edu/research/wisconsin/a-low-cost-roadside-device-system-for-cooperative-automated-driving-phase-2-work-zone-safety-applications/, and archived at https://web.archive.org/web/20260708193353/https://ccat.umtri.umich.edu/research/wisconsin/a-low-cost-roadside-device-system-for-cooperative-automated-driving-phase-2-work-zone-safety-applications/

## The Tianlai Collaboration

### The Science and the U.S. Role

So far, this report has examined a partnership built around vehicle-road-cloud infrastructure and the national standards China is building on top of it. This section addresses a different kind of collaboration: the risk posed when a scientific research partner is part of China's defense-industrial base. For about a decade, federally funded UW–Madison physicists have worked alongside Chinese researchers on a radio-astronomy project called Tianlai, which studies the structure and evolution of the universe.[56]

While radio-astronomy arrays like Tianlai are not military systems, the underlying capabilities of large-scale radio-frequency signal processing, phased-array antenna design, and precision timing overlap substantially with those used in early-warning radar, signals intelligence, and satellite communications. Thus, a facility's civilian scientific purpose does not separate it from the dual-use risk profile of the researchers and institutions building it.

The Chinese side of that collaboration includes a company under active U.S. sanctions for supporting China's military modernization and activities that threaten U.S. national security.[57] It also includes universities operating under the direct oversight of China's defense-industrial regulator.[58] This section identifies the entities working alongside U.S. physicists, and some of the other implications of those collaborations.

The Tianlai telescope is a 21-centimeter intensity-mapping radio interferometer array located in the remote desert region of Hongliuxia in Barkol County, part of Hami Prefecture, Xinjiang. Tianlai uses radio waves to study the structure and evolution of the universe by mapping hydrogen. The telescope began to transmit data in September 2016.[59] During this period, Xinjiang became known for the Chinese government's mass internment and surveillance campaign against Uyghurs and other Turkic Muslim minorities, which, beginning in 2021, the U.S. government and multiple human rights organizations began identifying as genocide.[60]

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[56] Fengquan Wu et al., "The Tianlai Dish Pathfinder Array: Design, Operation, and Performance of a Prototype Transit Radio Interferometer," *Monthly Notices of the Royal Astronomical Society*, September 21, 2021, observed July 13, 2026 at https://doi.org/10.1093/mnras/stab1802, and archived at https://archive.md/E5sUh; U.S. National Science Foundation, "Award Abstract #1616554: Large Scale Intensity Mapping of Neutral Hydrogen in the Universe with the Tianlai Pathfinders," *NSF Award Search*, undated, observed July 13, 2026 at https://www.nsf.gov/awardsearch/showAward?AWD_ID=1616554, and archived at https://archive.md/1rk2P; National Astronomical Observatories, Chinese Academy of Sciences, "Tianlai Project," *NAOC Research Programs*, January 20, 2017, observed July 13, 2026 at https://english.nao.cas.cn/research/telescopesprojects/researchprograms/202103/t20210321_265708.html, and archived at https://web.archive.org/web/20260120152342/https://english.nao.cas.cn/research/telescopesprojects/researchprograms/202103/t20210321_265708.html

[57] U.S. Bureau of Industry and Security, "Revisions to the Entity List," *Federal Register*, September 20, 2016, observed July 13, 2026 at https://www.federalregister.gov/documents/2016/09/20/2016-21543/revisions-to-the-entity-list, and archived at https://archive.md/8HmuR

[58] Alex Joske, "The China Defence Universities Tracker," *Australian Strategic Policy Institute International Cyber Policy Centre*, November 25, 2019, observed July 13, 2026 at https://www.aspi.org.au/report/china-defence-universities-tracker/, and archived at https://archive.md/LI2tq

[59] Jixia Li et al., "The Tianlai Cylinder Pathfinder Array: System Functions and Basic Performance Analysis," *Science China Physics, Mechanics and Astronomy*, June 10, 2020, observed July 13, 2026 at https://arxiv.org/abs/2006.05605, and archived at https://archive.md/cz2GI

[60] Michael R. Pompeo, "Determination of the Secretary of State on Atrocities in Xinjiang," *U.S. Department of State*, January 19, 2021, observed July 13, 2026 at https://2017-2021.state.gov/determination-of-the-secretary-of-state-on-atrocities-in-xinjiang/,

There is a scientific explanation for Tianlai's location: Radio astronomy arrays require remote environments with minimal radio-frequency interference, making sparsely populated areas well suited for this type of research.[61] However, Xinjiang is also a region characterized by an extensive state security presence and significant military infrastructure, meaning that any major scientific installation built there operates within the region's broader political and security context.

Moreover, the surrounding Hami Prefecture contains detention facilities documented through independent satellite-imagery investigations, and the Xinjiang Production and Construction Corps (XPCC) — a heavily sanctioned paramilitary organization linked to forced labor and detention systems — maintains a presence in the area.[62]

While these facts do not establish any connection between Tianlai and forced labor, detention, or military activity, they do situate the project within one of the world's most heavily securitized regions.

Because Tianlai involves no human subjects, an academic ethics review is unlikely to flag its Xinjiang location as problematic, and the project does have obvious scientific merit. In October 2024, the Square Kilometre Array Observatory, an intergovernmental organization, designated Tianlai as a pathfinder for the world's largest international radio telescope project, the Square Kilometre Array (SKA).[63] The SKA may use technologies and techniques developed by pathfinders in the future, and their findings inform and refine its practices. As such, the designation serves as strong acknowledgment of the Tianlai project's status as a contributor to cutting-edge radio astronomy.

But Tianlai also has military implications. The same characteristics that make a site scientifically valuable for radio astronomy (remoteness and minimal radio-frequency interference) are also militarily valuable for signals intelligence collection, early-warning radar, and satellite communications. In this respect, the antennas and broader infrastructure are often dual-use by nature.

The project is led by the National Astronomical Observatories of the Chinese Academy of Sciences (NAOC [中国科学院国家天文台]), China's top state-run scientific research institution.[64] According to a 2021 academic publication presenting data connected to the array, a grant from China's National High-Technology Research and Development Program funded Tianlai's construction. Launched in 1986

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and archived at https://archive.md/nf8f6; Human Rights Watch, "'Break Their Lineage, Break Their Roots': China's Crimes against Humanity Targeting Uyghurs and Other Turkic Muslims," *Human Rights Watch*, April 19, 2021, observed July 13, 2026 at https://www.hrw.org/report/2021/04/19/break-their-lineage-break-their-roots/chinas-crimes-against-humanity-targeting, and archived at https://archive.md/b35RK

[61] Jixia Li et al., "The Tianlai Cylinder Pathfinder Array: System Functions and Basic Performance Analysis," *Science China Physics, Mechanics and Astronomy*, June 10, 2020, observed July 13, 2026 at https://arxiv.org/abs/2006.05605, and archived at https://archive.md/cz2GI

[62] Laura T. Murphy, Nyrola Elimă, and David Tobin, "'Until Nothing Is Left': China's Settler Corporation and Its Human Rights Violations in the Uyghur Region," *Sheffield Hallam University Helena Kennedy Centre for International Justice*, July 26, 2022, observed July 13, 2026 at https://humantraffickingsearch.org/wp-content/uploads/2022/07/Murphy-Elima-Tobin-Until-Nothing-is-Left-XPCC-July-2022.pdf, and archived at https://archive.md/PiZT0

[63] Square Kilometre Array Observatory, "Tianlai becomes newest member of SKA pathfinder family," *Square Kilometre Array Observatory*, October 21, 2024, observed July 1, 2026 at https://www.skao.int/en/news/584/tianlai-becomes-newest-member-ska-pathfinder-family, and archived at https://archive.ph/HAdno

[64] National Astronomical Observatories, Chinese Academy of Sciences, "Tianlai Project," *National Astronomical Observatories, Chinese Academy of Sciences*, undated, observed July 1, 2026, at https://english.nao.cas.cn/Research2015/rp2015/201701/t20170120_173612.html, and archived at https://archive.ph/ixD02

specifically to develop technologies with both civilian and strategic or defense significance, the Program has historically been one of China's flagship dual-use-technology funding vehicles.[6566]

UW–Madison provides considerable funding, technical assistance, and research capacity to Tianlai under a range of grants and programs, several of which are U.S.-taxpayer-funded. From 2016 to 2022, the NSF granted nearly $900,000 for UW–Madison's participation in the Tianlai project.[67] A research paper published in 2024 by the Journal of Astronomical Instrumentation focuses specifically on Tianlai in examining how the local environment impacts radio astronomy facilities. The paper acknowledges a student award from the Wisconsin Space Grant,[68] funded by the National Space Grant College and Fellowship Program — part of NASA.[69] That paper also used resources and personnel from the Fermi National Accelerator Laboratory (Fermilab), a facility within the U.S. Department of Energy's Office of Science.[70]

**The Partners**

Peter Timbie, a professor in the UW–Madison Department of Physics, is a prominent researcher who has played a coordinating role at the annual 21 cm Cosmology Workshop and Tianlai Collaboration Meetings in China in recent years.[71] (Timbie didn't respond to a request for comment).

Timbie has published academic papers with researchers across a network of Chinese institutions over the past decade.[72,73] Three of these institutions warrant close attention:

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[65] Jixia Li et al., "Reflections and Standing Waves on the Tianlai Cylinder Array," *Research in Astronomy and Astrophysics*, August 19, 2021, observed June 30, 2026 at https://arxiv.org/pdf/2007.11129, and archived at https://archive.ph/wth9L

[66] Fengquan Wu, et al., "Tianlai: a 21cm radio telescope array for BAO and dark energy, status and Progress," Hangzhou Dianzhi University, undated, observed September 14, 2026 at https://inspirehep.net/files/0ad4db96dba77b3954203f5ad2b24102, and archived at https://web.archive.org/web/20260914211350/https://inspirehep.net/files/0ad4db96dba77b3954203f5ad2b24102

[67] U.S. National Science Foundation, "Award Abstract #1616554 Large Scale Intensity Mapping of Neutral Hydrogen in the Universe with the Tianlai Pathfinders," *NSF Award Search*, undated, observed June 30, 2026 at https://www.nsf.gov/awardsearch/show-award/?AWD_ID=1616554, and archived at https://archive.ph/1rk2P

[68] Juhun (David) Kwak et al., "The Effects of the Local Environment on a Compact Radio Interferometer I: Cross-coupling in the Tianlai Dish Pathfinder Array," Journal of Astronomical Instrumentation 13, no. 1 (2024), observed July 6, 2026 at https://indico.fnal.gov/event/57357/contributions/255468/attachments/161995/213948/TDA_X_Coupling_Paper_David_UW_Madison.pdf, and archived at https://archive.ph/Nf22v

[69] Wisconsin Space Grant Consortium, "About WSGC," *Wisconsin Space Grant Consortium*, undated, observed July 6, 2026 at https://spacegrant.carthage.edu/about/, and archived at https://archive.ph/diOQK

[70] Juhun (David) Kwak et al., "The Effects of the Local Environment on a Compact Radio Interferometer I: Cross-coupling in the Tianlai Dish Pathfinder Array," Journal of Astronomical Instrumentation 13, no. 1 (2024), observed July 6, 2026 at https://indico.fnal.gov/event/57357/contributions/255468/attachments/161995/213948/TDA_X_Coupling_Paper_David_UW_Madison.pdf, and archived at https://archive.ph/Nf22v

[71] Tianlai Project, "21 cm Cosmology Workshop 2025 and Tianlai Collaboration Meeting," *Tianlai Project*, undated, observed July 5, 2026 at https://tianlai.casconf.cn/, and archived at https://archive.ph/GgdbD

[72] Juhun (David) Kwak et al., "The Effects of the Local Environment on a Compact Radio Interferometer I: Cross-coupling in the Tianlai Dish Pathfinder Array," Journal of Astronomical Instrumentation 13, no. 1 (2024), observed July 6, 2026 at https://indico.fnal.gov/event/57357/contributions/255468/attachments/161995/213948/TDA_X_Coupling_Paper_David_UW_Madison.pdf, and archived at https://archive.ph/Nf22v

[73] Fengquan Wu et al., "The Tianlai Dish Pathfinder Array: Design, Operation, and Performance of a Prototype Transit Radio Interferometer," *Monthly Notices of the Royal Astronomical Society*, July 7, 2021, observed July 13, 2026 at https://academic.oup.com/mnras/article/506/3/3455/6316800, and archived at https://web.archive.org/web/20260912144843/https://academic.oup.com/mnras/article/506/3/3455/6316800

- CETC 54, or the 54th Research Institute of the China Electronics Technology Group
- Hangzhou Dianzi University (HDU [杭州电子科技大学])
- Xidian University [西安电子科技大学]

In 2021, CETC 54's parent company, China Electronics Technology Group Corporation (CETC [中国电子科技集团有限公司]), a state-owned telecommunications and electronic information research center, was added to the U.S. Treasury's Non-SDN Chinese Military-Industrial Complex Companies List.[74] It was also separately named under Section 1260H of the National Defense Authorization Act as a Chinese military company operating in the U.S.[75] Japan later added CETC to its own export-control list.[76] These designations restrict Americans from investing in the company and require licenses for certain export transactions, reflecting CETC's role in supplying communications and radar equipment to the PLA.

CETC 54 itself has an even longer sanctions history than its parent: BIS first listed CETC 54 on its Entity List in May 2001.[77] The U.S. government has export-controlled, sanctioned, or debarred more than ten CETC entities, including CETC 54.[78]

Like SEU, both HDU and Xidian University operate under the formal oversight of China's defense-industrial regulator, SASTIND. SASTIND's "co-construction" designations formally place a university inside China's defense-industrial higher-education system, deepening cooperation with defense companies and giving it access to relevant funding and eligibility for classified security clearances. It began formal co-construction oversight of Xidian University in 2008,[79] and of HDU in 2007.[80] The

[74] U.S. Department of the Treasury Office of Foreign Assets Control, "Issuance of Executive Order Addressing the Threat from Securities Investments that Finance Certain Companies of the People's Republic of China and related FAQs; Introduction of Non-SDN Chinese Military-Industrial Complex Companies List," *U.S. Department of the Treasury*, June 3, 2021, observed September 10, 2026 at https://ofac.treasury.gov/recent-actions/20210603, and archived at https://web.archive.org/web/20260910231654/https://ofac.treasury.gov/recent-actions/20210603

[75] OpenSanctions, "China Electronics Technology Group Corporation," *OpenSanctions*, July 3, 2026, observed July 13, 2026 at https://www.opensanctions.org/entities/NK-YADPL6jAxn9RNFsYtRrHCi/, and archived at https://archive.md/Qm56b

[76] Ministry of Economy, Trade and Industry of Japan, "Review of the End User List Providing Information on Foreign Entities for which Verification of Transaction Status is Required Regarding the Development of Weapons of Mass Destruction and Missiles or Conventional Weapons," *Ministry of Economy, Trade and Industry of Japan,* September 29, 2025, observed September 10, 2026 at https://www.meti.go.jp/english/press/2025/0929_003.html, and archived at https://web.archive.org/web/20260910155755/https://www.meti.go.jp/english/press/2025/0929_003.html

[77] CETC 54 was listed under the aliases "Communication, Telemetry and Telecontrol Research Institute (CTI)" and "Shijiazhuang Communication Observation and Control Technology Institute." University of Georgia Office of Research, "Export Control Restrictions Involving Foreign Universities and Research Institutes," *University of Georgia*, undated, observed September 4, 2026 at https://research.uga.edu/export-control/resources/foreign-universities/, and archived at https://archive.md/1gtIm

[78] OpenSanctions, "China Electronics Technology Group Corporation (CETC) 54th Research Institute," *OpenSanctions*, January 6, 2026, observed July 13, 2026 at https://www.opensanctions.org/entities/NK-UfyP2f3P7pHCTL6R6ZD9Wo/, and archived at https://archive.md/oqCWZ

[79] Edmund Xu and Robert Kim, "Understanding Ties Between China's Research Institutions and the PLA," *Kharon*, April 25, 2023, observed July 13, 2026 at https://www.kharon.com/brief/understanding-ties-between-chinas-research-institutions-and-the-pla, and archived at https://archive.md/QUfXD

[80] Ye Jing [叶璟] and Fang Xiufen [方秀芬], "The Provincial Government and the State Administration for Science, Technology and Industry for National Defense Jointly Build Hangzhou Dianzi University" [省政府与国家国防科技工业局共建杭州电子科技大学], Hangzhou Daily [杭州日报], March 25, 2011, republished by Hangzhou News [杭州网], observed July 13, 2026 at https://hznews.hangzhou.com.cn/kejiao/content/2011-03/25/content_3668697.htm, and archived at https://archive.md/vW3kw;

Australian Strategic Policy Institute's China Defence Universities Tracker names CETC as Xidian's affiliated defense conglomerate, while listing HDU among SASTIND-affiliated universities more broadly.[81]

HDU is a university in Hangzhou, Zhejiang province, with a strong academic and research focus on electronic science and engineering.[82] Faculty from HDU's School of Mechanical Engineering appear as co-authors throughout academic articles related to the Tianlai array.[83] HDU fits into a wider ecosystem of institutions and companies supporting the development of China's defense technology, as denoted by its SASTIND-affiliated status.

Xidian University in Xi'an, Shaanxi province focuses on electronics and computer science. In 2025 it hosted the annual Tianlai collaboration meeting. Its faculty made up the majority of the local organizing committee, and officials listed the university as a "cooperation unit" alongside HDU and National Astronomical Observatories of the CAS.[84] Xidian has a long history of contributing R&D to the PLA, including the first millimeter-wave communication set and the first three-dimensional phased array radar.[85] Since 2020, the university has won at least seven bids to conduct technological research for the Chinese government and the PLA.[86]

The Pentagon identifies two of Xidian's labs as institutions engaging in problematic activity: the Defense S&T Key Laboratory of Radar Signal Processing and the Defense S&T Key Laboratory of Antennas and Microwave Technology.[87] The latter, a national-level institute for specialized defense research, is managed by SASTIND and the PLA's Equipment Development Department.[88]

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The Commission for Science, Technology and Industry for National Defense (COSTIND; 国防科学技术工业委员会), SASTIND's predecessor initially oversaw HDU.

[81] Alex Joske, "The China Defence Universities Tracker," *Australian Strategic Policy Institute International Cyber Policy Centre*, November 25, 2019, observed July 13, 2026 at https://www.aspi.org.au/report/china-defence-universities-tracker/, and archived at https://archive.md/LI2tq

[82] Hangzhou Dianzi University [杭州电子科技大学], "About Hangzhou Dianzi University," *Hangzhou Dianzi University*, undated, observed July 5, 2026 at https://hdu.admissions.cn/info/Hangzhou%20Dianzi%20University, and archived at https://archive.ph/7PEZd

[83] Juyong Zhang et al., "Beam Measurements of the Tianlai Dish Radio Telescope using an Unmanned Aerial Vehicle," *IEEE Antennas and Propagation Magazine*, July 18, 2020, observed July 5, 2026 at https://arxiv.org/abs/2007.09351, and archived at https://archive.ph/Ihhri

[84] Tianlai Project, "21 cm Cosmology Workshop 2025 and Tianlai Collaboration Meeting," *Tianlai Project*, undated, observed July 5, 2026 at https://tianlai.casconf.cn/, and archived at https://archive.ph/GgdbD

[85] China-Finland Strategic ICT Alliance, "Xidian University," *China-Finland Strategic ICT Alliance*, undated, observed July 5, 2026 at https://ictalliance.org/about-us/project-partners/xidian-univ/, and archived at https://archive.ph/ZqRHi

[86] Edmund Xu and Robert Kim, "Understanding Ties Between China's Research Institutions and the PLA," *Kharon*, April 25, 2023, observed July 13, 2026 at https://www.kharon.com/brief/understanding-ties-between-chinas-research-institutions-and-the-pla, and archived at https://archive.md/QUfXD

[87] U.S. Department of Defense, "Introduction to Fiscal Year 24 Lists Published in Response to Section 1286 of the National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232), as amended," *U.S. Department of Defense*, June 24, 2025, observed July 12, 2026 at https://basicresearch.defense.gov/Portals/61/Documents/Academic%20Research%20Security%20Page/FY24%20Section%20128 6%20List%20for%20public%20release_V2.pdf?ver=KqtK4tL1wLDoUwe2yxWHSw%3D%3D, and archived at https://archive.ph/VaOLw

[88] Edmund Xu and Robert Kim, "Understanding Ties Between China's Research Institutions and the PLA," *Kharon*, April 25, 2023, observed July 5, 2026 at https://www.kharon.com/brief/understanding-ties-between-chinas-research-institutions-and-the-pla, and archived at https://archive.ph/QUfXD

Through the Tianlai project, U.S. taxpayers are funding activity that has value for Chinese defense researchers and that lies in close proximity to human rights violations. By doing so, U.S. research expertise and taxpayer funds have strengthened the research capacity and reputations of sanctioned institutions that, both directly and indirectly, contribute to the technological advancement of the PLA.

## Conclusion

The documented histories of the JRI and the Tianlai collaboration reflect an earlier era of U.S.-China academic engagement, when partnerships with SEU or CETC 54, and Xinjiang-based research were framed as purely scientific or civilian, or worth the risks. Over time, however, the surrounding context has changed dramatically. China has folded vehicle-road-cloud technology into its public-security and military-civil-fusion architecture, tightened its surveillance and detention apparatus in Xinjiang, and formalized the defense-industrial status of institutions like SEU, Xidian, and HDU. Public records reviewed for this report document continued UW–Madison-affiliated research ties to these projects and institutions into recent years, with little public scrutiny or apparent reassessment. What began as scientific engagement now takes place in a very different environment, warranting renewed scrutiny of these types of relationships.