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Dual-Use Technologies and Defense Innovation

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The concept of "dual-use" constitutes a form of *topos* in the discourse on technology. It gained significant traction after the Second World War within the context of debates surrounding nuclear technologies. However, this notion belongs to a much longer temporality—one that arguably predates the very categories of war and peace, or civil and military, to name but a few. Today, the concept is experiencing a major resurgence, driven by questions surrounding defense innovation. Historically, military requirements were thought to fuel cutting-edge research, the outputs of which subsequently found civilian applications. Today, however, the paradigm seems to have reversed: the technologies that military institutions seek to acquire are predominantly civilian in nature, requiring adaptation to the military environment. Concurrently, civilian innovation management practices and their associated economic models are generating growing interest within the defense sector. Consequently, two competing industrial models currently clash and dominate the strategic debate. First, the War Economy Model: centered on traditional industrial mobilization, this model remains preoccupied with the prospect of a high-intensity conflict in the short term. It prioritizes immediate readiness, the massive replenishment of ammunition and equipment stocks, and the revival of assembly lines and heavy industry. This perspective rehabilitates classical industrial warfare and the sustained mobilization of the nation's productive, human, and moral forces to support a prolonged war effort. Second, the Disruptive Innovation Model: Conversely, the second model relies on so-called disruptive technologies—such as drones, artificial intelligence, software, data, and autonomous systems. It promises operational superiority achieved less through industrial mass than through the speed of innovation and the maintenance of a permanent technological edge over the adversary. Its primary drivers are no longer solely nation-states or traditional defense contractors, but Big Tech, startups, innovation ecosystems, and venture capital, which gradually import an entrepreneurial mindset into the military domain.

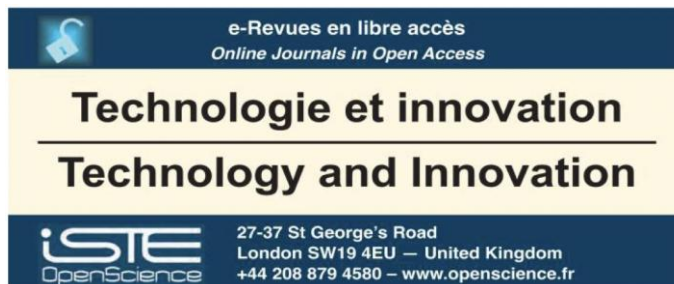


This recurring discourse within military staffs and government procurement agencies raises the question of how to define a concept whose boundaries remain blurred. Several characteristics emerge from contemporary debates. Is this dual-use nature located in the research phase that led to the development of new artifacts? This is far from certain. While research conducted in military laboratories targets potential defense applications, the very structure of these projects—which routinely blend civilian and military institutions—challenges rigid distinctions. The same applies to research conducted by private firms, which rarely view defense as the sole application for their work.

If the nature of the research conducted does not provide a fully satisfactory criterion, what of the produced artifacts? While the purpose of lethal weapons is beyond doubt, many objects fall into a highly ambiguous gray zone. In this space, the notion of dual-use can be leveraged depending on the political will to make a technology accessible—or not—to potential competitors. For instance, contemporary US regulations, such as the Export Administration Regulations (EAR) and the International Traffic in Arms Regulations (ITAR) component list, allow for a highly flexible interpretation of dual-use. The concept has thus become eminently political, especially since many elementary components of complex systems are inherently dual-use—just as inert chemical components can form the basis of an explosive mixture once combined. Beyond hardware, software and digital technologies face the same scrutiny, disrupting traditional representations through what is sometimes perceived as the 'equalizing power of the byte': the ability to create disproportionate asymmetric effects using widely available and easily deployable systems.

Can use-cases offer clearer definitions? Doubt is equally warranted here, within an environment where boundaries are increasingly blurred between security and defense missions, peace and war, the civilian and the military, as well as the spaces in which these activities take place. Ultimately, dual-use appears less as a stable analytical category than as a relational, fluid, and deeply political concept, whose applications vary according to strategic, industrial, legal, or technological contexts. The articles submitted should therefore question all dimensions of a concept whose conceptual imprecision is matched only by its widespread popularity. Contributions may address, but are not limited to, the following dualities:

- Civil / Military: The circulation of technologies, skills, funding, and organizational models between the civilian and military spheres.
- Protection / Targeting: How the dual-use classification of an object, infrastructure, or technology can serve either to enhance its protection or to legitimize its control or destruction.
- Public / Private: The growing role of corporations, startups, investors, and digital platforms in the production of strategic capabilities.
- Hardware / Software: The shift of strategic value toward software, data, updates, and digital architectures.



- Disruption / Continuity: Tensions between disruptive innovation discourses and legacy doctrinal, organizational, or industrial frameworks.
- Sovereignty / Dependence: The paradox of innovations designed to reinforce strategic autonomy while relying on foreign infrastructure, supply chains, or technologies.
- Secrecy / Openness: Tensions between military cultures of secrecy and open, collaborative, or entrepreneurial innovation models.
- Security / Market: The increasing transformation of security and defense challenges into economic and industrial opportunities.
- Experimentation / Institutionalization: The transition from prototypes or laboratories to operational, doctrinal, and bureaucratic integration.
- Human / Machine: New distributions of authority, decision-making, perception, and accountability between humans and technical systems.
- Automation / Human Judgment: The expanding role of AI in surveillance, decision-making, and action, and the resulting tensions regarding meaningful human control.
- Local / Global: Tensions between national sovereignty and dependence on globalized supply chains, infrastructures, and networks.
- Innovation / Regulation: The difficulties of legal and political oversight for technologies that circulate rapidly across sectors, use-cases, and jurisdictions.
- Platform / Network: The shift from a platform-centric logic (aircraft, armored vehicles, satellites, naval vessels) toward interconnected systems of data, sensors, and effectors.
- Service Culture / Multi-Domain Culture: Tensions between the operational identities specific to each military branch (land, sea, air) and the increasing logic of multi-domain integration and interoperability.

This special issue of the journal *Technology and innovation* aims to explore, through diverse and complementary lenses, the concept of dual-use in technology and defense innovation. In order to address this issue from a multiplicity of theoretical, methodological, and disciplinary perspectives, we invite contributions from a wide range of fields, such as law, engineering, information and communication sciences, management studies, economics, history, philosophy, sociology, anthropology, or strategic studies. Each contributor is invited to provide an original perspective on the aforementioned issues through the specific lens of their respective discipline. This list is by no means exhaustive, and proposals may also open onto other related dimensions of dual-use and contemporary innovation.

Interested authors are invited to submit a full manuscript of approximately 6,000 to 8,000 words, formatted in Times New Roman, 13 pt, with 12 pt line spacing. Author **guidelines** and document templates can be downloaded at the following address:

https://www.openscience.fr/IMG/zip/consignes_os_2022.zip



Timeline

- Full manuscript submission: November 2026
- Final acceptance and editorial recommendations (if applicable): January 2027
- Submission of final revised manuscripts (compliant with journal standards): February 2027
- Publication: 2027
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Submissions

Article proposals should be sent to:

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Bibliography

Ford, M. C. (2025). *War in the smartphone age: conflict, connectivity and the crises at our fingertips* (vol. 1-1 online resource (xii, 291 pages) : illustrations). Oxford University Press.

<https://doi.org/10.1093/oso/9780197829844.001.0001>

Hoiijtink, M. (2022). 'Prototype warfare': Innovation, optimisation, and the experimental way of warfare. *European Journal of International Security*, 7(3), 322-336.

<https://doi.org/10.1017/eis.2022.12>

Horowitz, M., Schwartz, J. A. et Fuhrmann, M. (2022). Who's prone to drone? A global time-series analysis of armed uninhabited aerial vehicle proliferation. *Conflict Management and Peace Science*, 39(2), 119-142. <https://doi.org/10.1177/0738894220966572>

Jones, C., Mousamputri, I. et Griffiths, M. (2026). Dual use as a political technology of contemporary military violence. *Political Geography*, 127, 103525.

<https://doi.org/10.1016/j.polgeo.2026.103525>

Mawdsley, J. et Martins, B. O. (2026). War economy vs European Silicon Valley? The EU's competing sociotechnical imaginaries of defence innovation and industry. *Contemporary Security Policy*, 47(2), 299-323. <https://doi.org/10.1080/13523260.2025.2599280>

Ølgaard, D. M. (2025). The New Technopolitics of War: (Re)imagining Agency and Authority in Military Affairs. *Global Policy*, 16(3), 474-479. <https://doi.org/10.1111/1758-5899.70045>

Richardson, M. et Jacob, A. (2026). Mil-tech oligarchy and the security state. *Science as Culture*, 0(0), 1-16. <https://doi.org/10.1080/09505431.2026.2648051>

Schwarz, E. (2025). From blitzkrieg to blitzscaling: Assessing the impact of venture capital dynamics on military norms. *Finance and Society*, 1-24. <https://doi.org/10.1017/fas.2024.18>

Singer, P. W. et Brooking, E. T. (2018). *LikeWar: the weaponization of social media* (First Mariner books edition). Mariner Books, Houghton Mifflin Harcourt.