

Dronathons: Bridging security, education and entertainment

Think Piece 49: June 2026



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This think piece builds on our August 2025, *Think Piece 44 – Building an integrated and interconnected AI drone system*,¹ which suggested New Zealand should invest heavily in developing a coordinated drone ecosystem. From our perspective, New Zealand's challenge lies not in inventing new types of drones, but in our ability to organise, integrate and deploy these technologies effectively to deliver national benefit – put simply, in adding value through innovation. While there are many ways to accelerate progress in this space, this think piece focuses on one option: hosting a dronathon, with the aim of bridging existing applications and integrating their use for New Zealand's long-term benefit.

Drone technology offers New Zealand a growing set of opportunities. Drones are a multipurpose technology that is affordable, adaptable and capable of being manufactured in New Zealand at scale (unlike ships, planes and other large assets). Building on this, we began to consider how this country might build skills, capability and public understanding at pace. This think piece explores what a practical initiative to accelerate progress could look like. We propose a 'dronathon': a one-off, national-scale event designed to integrate and build on existing technologies, catalyse investment, foster innovation, and engage the public, serving as a launchpad for New Zealand's future in drone technology.

What is a dronathon?

A dronathon is an event focused on drones and/or other uncrewed systems. It typically brings together a range of activities, such as showcasing, testing, competing and prototyping, to accelerate capability and innovation. While the term is not yet widely established, it has been used to describe this type of coordinated, multipurpose event. For example, in April 2024, a dronathon was organised in Tunisia, to 'delve into the exciting world of drones while exploring fundamental principles of entrepreneurship and design thinking'² (see case study in Box 1).

Drones vary significantly in type, scale and function. Even within a defence context, there is considerable diversity, ranging from small, handheld reconnaissance devices to large, long-endurance platforms capable of surveillance, logistics or strike functions (see Figure 1). This diversity suggests that a dronathon could incorporate a wide range of competitive and creative formats, with participants recognised through prizes for excellence in specific categories or capabilities.

Figure 1: A selection of drones³



1. Underwater: SU10 uncrewed underwater vehicle by SYOS Aerospace (New Zealand)



2. Surface: SM300 Uncrewed Surface Vessel by SYOS Aerospace (New Zealand)



3. Air: The Drone Zone, supported by the Agricultural Drone Association (ADA), Fieldays (New Zealand)



4. Air: Mavic 2 Enterprise (China), developed in partnership with FLIR Systems (United States) and DJI, (China).

Categories for showcasing, assessing and competing could include:

1. Speed (i.e. drone racing)
2. Accuracy, including precision navigation through obstacles
3. Load capacity and volume delivery logistics
4. Depth capabilities of underwater drones
5. Design and build quality
6. Ease of use
7. Cost efficiency
8. Weather durability and resilience
9. Conservation and sustainability (see Figure 2)
10. Film quality (e.g. aerial cinematography)
11. Search-and-rescue simulations
12. Autonomous swarm coordination (i.e. multiple drones operating in a coordinated system), which could also extend to creative aerial choreography and storytelling performances.

Together, these categories would reflect the breadth of drone applications, encouraging both technical performance and creative innovation.

Figure 2: Seed pod drone system in development for cost efficient and fast native reforestation, Evinco (New Zealand).⁴



Box 1: 2024 dronathon held in Tunis, Tunisia⁵

The dronathon was a collaborative two-day event organised by the Institute of Electrical and Electronics Engineers (IEEE) Engineering School of Tunis (ENSIT) Student Branch and the IEEE Aerospace and Electronic Systems Society (AESS) ENSIT Student Branch Chapter. The event covered a wide range of topics, bringing together experts to explore advanced aspects of drone design, programming and manufacturing, alongside business development and financial planning for start-ups in the drone sector. Participants were organised into teams to address pre-defined challenges, providing a practical platform to apply their skills and develop solutions to real-world problems. The event culminated in team presentations, where participants pitched their ideas, followed by prizes being awarded for the most successful proposals.

A strategic opportunity

A coordinated national focus, supported by a flagship event, could accelerate skills development, stimulate industry growth and foster collaboration across sectors by attracting both public and private investment. It would also create opportunities to bring international drone manufacturers and buyers to New Zealand, and could even invite participation from other countries, such as Australia and Singapore, to establish a 'drone games competition'.

These opportunities are particularly relevant in a country characterised by dispersed communities, an ageing rural workforce, challenging terrain and increasing exposure to climate risks. Drones can provide rapid situational awareness during fires, floods and earthquakes, support search-and-rescue operations, and reduce reliance on risk-intensive or high-emission alternatives. With appropriate regulation, they offer the potential to lift productivity, improve safety, reduce environmental impact and enable new forms of innovation aligned with New Zealand's values of stewardship, resilience and community wellbeing.⁶

Recent developments further illustrate the expanding scope and practical application of drones. Remotely operated underwater vehicles will soon be used in New Zealand to combat smugglers coming in by sea. The drones will inspect vessel hulls below the waterline, enabling more efficient detection of concealed contraband and allowing inspections to be completed more safely and within significantly shorter timeframes.⁷ In parallel, the US, UK and Australia say they will develop underwater drone technology to protect undersea cables and boost defence, under their military alliance known as AUKUS.⁸

A dronathon would position these capabilities as both a public asset and a strategic priority. It would create a focal point for testing, demonstrating and advancing drone systems across a range of applications, including logistics, surveillance, autonomous coordination and real-time decision-making. At the same time, it would help embed drone expertise more deeply within society, strengthening education pathways, building workforce capability and increasing public understanding. Most importantly, it would help New Zealand forge a more strategically autonomous path in defence and security.

Accelerating an integrated multidisciplinary systems approach

New Zealand is heading in the right direction, but a dronathon could help accelerate the shift toward building a fully developed domestic drone industry at pace. In February 2026, the Government announced that the New Zealand Defence Force (NZDF) will trial locally developed air, land and sea drones in partnership with Kiwi firms Syos Aerospace, Sysdoc and Hirtenberger Defence Technology (HDT) Ltd, strengthening defence capability while reducing supply-chain risk and building a more resilient domestic defence industry.⁹

Globally, there is a growing trend of events designed to bring together stakeholders interested in developing integrated, systems-level solutions to complex challenges. One recent example is the United States' 'Operation Jailbreak', which convened engineers from more than 50 defence companies to overcome long-standing barriers between military systems – including drones, sensors, missiles and command-and-control platforms (see Box 2). The initiative reflects lessons from contemporary conflicts, particularly Ukraine, where speed, adaptability and system integration have proven decisive. Operation Jailbreak demonstrates that the strategic value of drones lies not only in individual platforms, but in the ability to integrate them into cohesive, rapid-response systems that can operate at scale.

Box 2: Operation Jailbreak¹⁰

In May 2026, the US initiated 'Operation Jailbreak' to bring together hundreds of engineers from more than 50 defence companies in a rapid 'hackathon' to break down long-standing barriers between military systems, including drones, sensors, missiles and command-and-control platforms. Rather than procuring new hardware, the effort focused on jailbreaking existing systems, opening proprietary interfaces and enabling them to share data in real time, so that previously disconnected technologies could operate within a unified network. Early outputs have already been deployed in operational environments, with software updates linking counter-drone systems, radars and decision-making platforms, reducing the need for personnel to manually integrate information across multiple screens.

Building the next generation of pilots, engineers and designers

A dronathon could play a pivotal role in building the next generation of pilots, engineers and designers by providing hands-on, real-world learning experiences that extend beyond traditional education. By bringing participants together in multidisciplinary teams, it would expose students, entrepreneurs and early-career professionals to the full innovation lifecycle, from problem definition and system design through to prototyping, testing and pitching solutions.

A dronathon could incorporate a hackathon, encouraging rapid iteration, creative problem-solving, and practical application of technical skills. Participants would gain experience working with complex, integrated systems, combining hardware, software, data and operations, capabilities that are increasingly essential in modern engineering and design. A dronathon could also connect emerging talent with industry experts, mentors and potential employers, strengthening pathways from education into employment. It could bring together defence, civil agencies, universities, start-ups and private-sector innovators in a shared ecosystem.¹¹ By embedding collaboration, experimentation and systems thinking, it could help develop a workforce that is adaptable, innovative and equipped to address New Zealand's future challenges.

An early example of this approach is the 2015 C-Prize, designed to stimulate the development of drone technologies to support New Zealand's screen and unmanned aerial vehicle (UAV) industries (see Box 3). By combining a clearly defined challenge with seed funding and a competitive structure, the initiative gave participants hands-on experience across the full innovation lifecycle. The 2015 event will offer valuable insights for those seeking to design and deliver a dronathon in New Zealand.

Globally, public engagement with drones remains limited, often confined to passive experiences. A dronathon would shift this dynamic from spectacle to active participation, providing a structured platform where schools, universities, companies and public agencies can come together to compete, collaborate and innovate. In doing so, a dronathon aligns closely with Sir Paul Callaghan's 2011 vision for New Zealand, of 'creating a place where talent wants to live'.¹²

Box 3: 2015 Callaghan Innovation C-Prize¹³

In 2015, Callaghan Innovation launched a competition targeting key technical barriers for drone technology such as reducing rotor noise, improving stability in wind, and enhancing object tracking to support increasingly sophisticated film-production needs. The initiative attracted over 80 entries, with finalists receiving funding and mentorship to develop prototypes. The winning team, VorTech, produced a drone with an innovative propeller system capable of maintaining position in turbulent conditions, demonstrating strong commercial potential.

A well-designed dronathon has the potential to bridge the gap between specialist capability and mainstream engagement. In doing so, it would help embed innovation and advanced technology more deeply across society, fostering a mindset that New Zealand can be inventive, innovative and independent. The benefits would extend beyond the event itself, strengthening capabilities in areas such as the space sector and search and rescue, while encouraging the integration of systems that deliver long-term value to the wider public. Crucially, it would also create opportunities to test systems under conditions that closely reflect real-world scenarios. For example, search-and-rescue competitions could simulate disaster environments, while logistics challenges could replicate the remote delivery conditions common across New Zealand.

Utilising satellite communications infrastructure

A dronathon creates an opportunity for New Zealand to position itself internationally as a testbed for integrated drone systems, building on and complementing its emerging satellite communications capability. Satellites play a critical enabling role in modern drone operations, providing connectivity, navigation, data transmission and real-time coordination, particularly in remote or infrastructure-limited environments. By linking drone development with satellite capability, New Zealand could demonstrate how integrated, multilayered systems can operate effectively across land, sea and air. This is especially relevant given the country's geography, with vast maritime zones, dispersed communities, and areas where terrestrial communications are limited or vulnerable during emergencies.

A dronathon could therefore serve not only as a showcase for drone innovation, but also as a practical environment to test how drones interact with satellite networks in real-world conditions, such as disaster response, environmental monitoring and remote logistics. In doing so, it would highlight New Zealand's potential to act as a living laboratory for space-enabled technologies, strengthening its position within the global space and advanced technology ecosystem. See *Think Piece 48 – Signals from Space: Why we need a space-first strategy for New Zealand*.¹⁴

Enabling storytelling and nation-building

Beyond competition, a dronathon could provide a platform for national storytelling. Drone-based creative events, involving synchronised formations, cultural narratives and visual storytelling, could reflect Aotearoa New Zealand's identity, values and heritage.

Figure 3: Drone light show at the opening night of the International Astronautical Congress, Sydney, 2025¹⁵

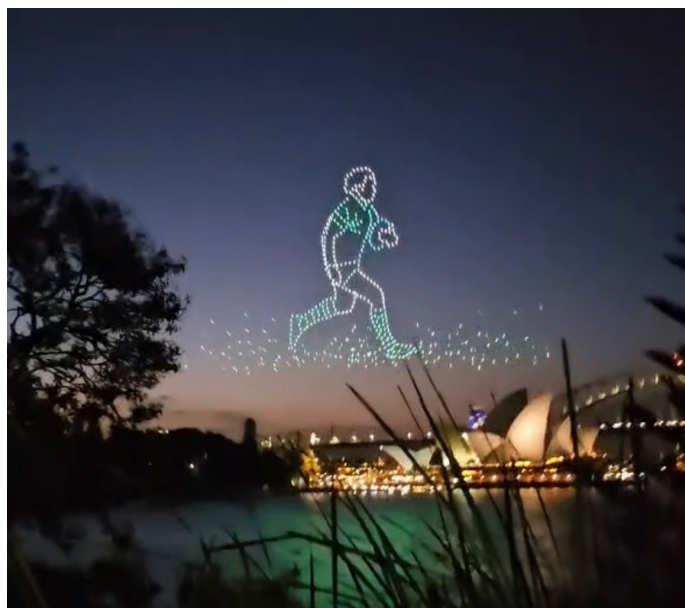


Figure 4: Drones falling into Sydney Harbour during the Vivid Sydney light show, 25 May 2026¹⁶



Drone technologies offer a programmable medium for storytelling that can incorporate symbols, language and narratives unique to place. In this sense, a dronathon is not only about technology, it is also about how technology is used to express our identity (see the rugby image in Figure 3).

Fireworks remain a familiar and dramatic way to mark celebrations across New Zealand, marking New Year's Eve, festivals and civic events. However, what was once a widely accepted celebration has increasingly become contested, with growing concern about health and safety issues and their impacts on animals, communities and an already fire-prone landscape.¹⁷

Are fireworks still the right tool for public celebration, or should alternatives such as drones be considered instead? Costs can vary depending on scale and complexity, but it can be argued that professional drone shows are increasingly cost-comparable with fireworks displays, as their reusability makes them more economical over time.¹⁸

Fireworks also offer limited creative scope beyond colour, sound and scale. Drone shows, by contrast, are inherently programmable. They can spell words, depict symbolic imagery, and tell sequential stories unique to place and purpose.¹⁹ For New Zealand, this opens the door to culturally grounded storytelling: visual narratives aligned with local history, regional identity and te ao Māori perspectives.

Drone light shows present a different approach to celebration. Hundreds of small electric drones fly in synchronised formations, each acting as a pixel in the sky. Together, they create shapes, words, symbols and animated sequences choreographed to music or narrative.²⁰

Crucially, they do this without combustion, unlike fireworks. There is no smoke or falling debris (unless malfunctions occur, see Box 4), and once built, emissions are minimal, limited primarily to electricity generation. Drones are reusable across multiple events, reducing long-term material waste.²¹ At operating altitudes, noise is limited to a low ambient hum, often inaudible from the ground.²²

For councils and event organisers, drones significantly reduce risk. There are no explosives to store or transport, fewer emergency services required on standby, and less chance of last-minute cancellation due to fire bans.²³ Formalised safety standards for drone shows are emerging internationally as the sector matures, particularly given the recent issues at a drone show in Sydney, where drones fell from the skies.²⁴

Drone light shows are not suitable for every context. They require specialist operators, aviation approvals, clear weather parameters and upfront planning. However, they offer a highly flexible, reusable and low-emission alternative to traditional displays, with the potential to deliver visually compelling experiences that can be tailored to different cultural settings and public events.

Risks and constraints

A dronathon is not without challenges. It would require clear regulatory frameworks, aviation approvals, cybersecurity safeguards and robust safety protocols. Infrastructure requirements and operational costs would also need careful management, and natural constraints such as weather events might be an issue. However, many of these risks and constraints are also those that must be addressed to build a functioning national drone ecosystem. In this way, the event itself could act as a catalyst for improving governance, standards and coordination for the operation of drones in New Zealand.

The Sydney experience (see Box 4) illustrates both the potential of drones to transform public engagement and the importance of carefully managing technical and operational risks. The malfunction underscores the need for strong coordination, robust safety frameworks and clear governance, alongside a high level of collaboration between the public and private sectors. Drone events, whether a dronathon or a drone show, cannot be developed in isolation. As an emerging technology operating in public spaces, they require the involvement of multiple regulatory stakeholders to ensure safety, compliance and effective delivery. Public and private sectors must work together to create a safe environment for learning, experimentation and innovation.

Box 4: 2026 Vivid Sydney festival²⁵

As part of the 2026 Vivid Sydney festival (22 May–13 June 2026), organisers introduced one of the largest drone light programmes staged in Australia, featuring up to 1,000 synchronised drones performing across multiple nights over Cockle Bay in Darling Harbour. The display was positioned as a flagship attraction within a broader cultural programme expected to draw millions of visitors. However, a technical malfunction on 25 May led to almost 90 drones falling into the harbour during a performance, prompting cancellations and a full safety review (see Figure 4 opposite). The incident underscores a critical point: while drone-based spectacle is rapidly scaling and attracting mass audiences, it also requires robust coordination across technology, safety systems and regulatory oversight.

A deliberate step forward

A dronathon reflects a shift in thinking, from viewing drones as inventions to recognising them as innovations, positioning them as a platform for creating real-world value in areas such as national security, education and entertainment.

As a country that values long-term stewardship and practical innovation, New Zealand is well positioned to accelerate the adoption of drones and related technologies through an integrated, systems-based approach to addressing complex national challenges.

Nine policy recommendations

A dronathon serves to bridge national security, education and entertainment, while acting as a catalyst for accelerated drone capability and industry development. The following list outlines a set of suggested actions for the Government to consider:

Dronathon specific recommendations

- 1. Establish a national dronathon**
Create a one-off dronathon, led by central government in partnership with business, local authorities, iwi and educational institutions (such as schools and universities) to showcase capability, drive innovation and build public engagement. To help manage risks and maximise benefits, we suggest that the dronathon is managed by the Royal New Zealand Air Force at Ōhākea,²⁶ in collaboration with the Civil Aviation Authority (CAA), the Ministry of Transport, the Ministry of Education, Te Papa, iwi and private businesses.
- 2. Design for real-world challenges that contribute directly to national capability-building**
Design the dronathon in such a way as to support fire and emergency services, search and rescue, law enforcement and border security (e.g. Police and Customs), and environmental surveillance and management, ensuring a dronathon delivers practical, cross-sector benefits. Environmental organisations, such as the Department of Conservation, Antarctica New Zealand and NIWA may also have a strong interest in using drones to better understand environmental outcomes, carbon emissions and climate adaptation challenges, providing new ways to monitor what is happening, and what is not, across ecosystems.

- 3. Create safe drone trialling zones before the event**
Designate specific spaces as drone experimentation zones, enabling controlled testing of advanced capabilities in order to experiment without real-world consequences (e.g. swarm systems and beyond visual line of sight [BVLOS] operations), supported by streamlined regulatory approvals (similar to dog training areas, but on a larger scale).
- 4. Develop and enforce robust cybersecurity and system resilience requirements**
Involve the Civil Aviation Authority (CAA) and Government Communications Security Bureau (GCSB) to further test and strengthen cybersecurity and aviation standards.
- 5. Integrate cultural storytelling and public engagement**
Creatives and artists may have an interest in developing their knowledge of drone technology. Given Māori navigation and knowledge systems, iwi may wish to embed te ao Māori perspectives and local narratives into the creative and public-facing elements of a dronathon, strengthening cultural relevance and reinforcing national identity. Te Papa could play an important role as the national museum, acting as a kaitiaki (guardian) of the country's cultural heritage through its work collecting, preserving, and interpreting taonga (treasures).

Other recommendations

- 6. Establish a 'National Future Skills Pipeline'**
Create a joined up education-to-workforce pipeline focused on emerging capabilities (AI, drones, satellites, robotics, data systems), linking schools, tertiary institutions, industry and government into a single coordinated talent system. Fund national competitions, training pipelines, and education programmes linked to the dronathon, including school-level engagement, tertiary pathways and specialist technical training.
- 7. Build a 'National Defence Capability System' centred on talent, not just assets**
Shift defence policy from a platform-centric model (ships, planes, equipment) to a capability system, where people, skills and networks are treated as the primary strategic asset, adopting a whole-of-society approach (see *Think Piece 47 – Hidden Patterns in Global Defence Strategies: 12 countries compared*).²⁷
- 8. Develop a national drone ecosystem strategy**
Create a national drone ecosystem strategy, in consultation with the private sector and a broad range of stakeholders, to enable a secure, innovative and globally competitive sector that integrates security, research and development and commercial objectives within a unified framework, supported by clear priorities and funding pathways. There is no existing drone strategy in the public domain. See the *2025 GDS Index* (in press) and *Think piece 44 – Building an integrated and interconnected AI drone system*.²⁸
- 9. Create a cross-agency governance structure**
Establish a dedicated multidisciplinary drone coordination unit (or taskforce) for, say, the next five years, to align regulators (e.g. aviation), fire and emergency services, defence and economic development agencies, ensuring coherent policy, standards and oversight.

Endnotes

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Image 4: Photo taken by Wendy McGuinness at Butterworth Air Force Base in Penang, Malaysia, on 27 April 2026. Mavic 2 Enterprise, developed in partnership with FLIR Systems and DJI. Specifications: 31 min flight time, max speed 72 km/h and up to 8 km transmission with a service ceiling of 6,000 m above sea level and wind resistance between 29 and 38 km/h.

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