

The CATALINK Brief

Preventing the onset or escalation of conflict by building a resilient global communications system.

CATALINK | 'kadə - liNGk |

noun

From the English words cataclysm and link (CATAclysm + LINK)

A novel approach to a modern, hotline-style crisis communication system that allows leaders of nuclear-armed states to communicate with each other – built to be secure, resilient, and trusted from the silicon up.

The Problem

Today's nuclear command, control, and communications (NC3) systems are increasingly vulnerable to emerging and disruptive technologies. Despite this fact, if and when NC3 systems fail under stress, leaders must still be able to communicate to manage crises and disasters.

» LACK OF TRUST

Mutual distrust has eroded the political will to invest in and rely on secure hotlines as a diplomatic and security tool, especially when such cooperation is most needed.

» TECHNOLOGICAL INEFFECTIVENESS

Legacy systems are inconsistent in performance, and technical and resource gaps leave several nuclear-armed states without fully effective crisis communication channels.

» INSUFFICIENT FOCUS

There is a lack of authoritative criteria for what constitutes a hotline—including the risk of treating informal channels as equivalent—and when it should be used as a de-escalation tool.

» BILATERAL LIMITATIONS

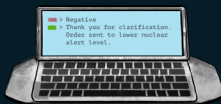
An escalating conflict in today's environment would likely involve more than two nuclear-armed states, but existing crisis communications remain locked in bilateral architectures.

The Solution | CATALINK communications system

An internationally-driven, secure, resilient communications solution that has the potential to avert catastrophes amidst rising tensions between adversaries.

THE PUCK

A simple, secure and robust device



meant for dedicated communication between global leaders and officials during a nuclear crisis or other high-stakes events like disaster response. Designed with an open-source platform, the Puck will send text messages in minutes.

THE BROKER

An interface between the Puck and the ROCCS, the Broker determines the path of the Puck message throughout the desired network.



The ROCCS (Resilient Omni Frequency Crisis Communications System)



A permanently active global mesh network, the ROCCS uses multiple channels/wavelengths to ensure reliable message relays; one of a variety of redundant networks for Puck messages to use depending on availability, the threat environment, and the type of message sent.

A modern, trustworthy, multilateral nuclear communications system would represent a significant improvement over existing bilateral arrangements. To be effective, such a system must be:

- » **Secure** from espionage and exploitation via encryption;
- » **Trusted** by states to be built without technical vulnerabilities; and
- » **Resilient** against environmental degradation due to accidents or wartime crises.

Achieving a hotline that can operate at a level of security and trust to be used by each of the nuclear-armed states has not yet been attempted. CATALINK, founded on the principle that shared confidence is central to nuclear risk reduction, represents an achievable, operable, and sustainable solution.

CATALINK Components

- » **Security.** Complexity is the enemy of security. CATALINK uses radically simple lines of code to focus on the security and resilience of the firmware, software, and hardware. Users will know what every line of code does, how every piece of hardware interacts, and where any bugs or vulnerabilities may lie.
- » **Trust.** CATALINK will consist of open source components and remain expressly transparent. If states choose to adopt CATALINK, they will use their own trusted supply chains to construct and maintain it. All prototypical code for the system is viewable on [GitHub](#).
- » **Reliability.** CATALINK is ensured by the use of theoretical mathematical proofs for the hardware and software, to show with confidence that the system can do what it is designed to do.
- » **Coalition Building.** The CATALINK team has been working to build international support for the system alongside governments and civil society from both nuclear-armed and non-nuclear-armed states.

Next Steps

The CATALINK project going forward will focus on three lines of effort:

1. Furthering technical development and design
2. Building diplomatic coalitions
3. Increasing public understanding of the need for strategic and nuclear risk reduction

To achieve its goal of being a global crisis communications hotline, CATALINK will need to be supported by most—and ideally all—nuclear-armed states. Once states express interest, the next step is a series of trust and confidence-building measures to prepare states to use CATALINK and to familiarize themselves with their new communication ability, making it both a risk reduction technology and a catalyst for dialogue and collaboration.

States without nuclear weapons and civil society groups are also critical in this process. They have roles to play in sponsoring and supporting CATALINK, technically and diplomatically, as well as advocating for the risk reduction it would foster. We hope that CATALINK will also encourage the development and adoption of other risk reduction technologies, building confidence between adversaries.

Learn more about CATALINK



Watch our video
When Every Second Counts: Why the world needs a new last-resort nuclear hotline like CATALINK



CATALINK is an effort led by the Institute for Security and Technology. It receives political and financial support from the Swiss Federal Department of Foreign Affairs and the German Federal Foreign Office.

The CATALINK team continues to seek additional collaborators and state supporters.