

ISS GLOBAL / INSIGHT REPORT



Russia's networked jet drones

Geran-4 Seeker, Geran-5 and the significance of the mesh modem

REPORTING / REVIEW WINDOW

ISSUE DATE

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Speed is only part of the change. Cameras, communications and evolving navigation are widening the analytical picture of Russia's jet-powered attack drones.

An evidence-led insight into the reported hardware, what mesh connectivity enables, and what it does not prove. Includes five published examination images, a real geographic map, a reporting chronology and Dfuze-focused investigative implications.

Main subject: Geran-4 Seeker. Geran-5 and the separate Gerbera modem investigation are identified comparisons, not merged configurations. ^{[1][4][5][10]}

What happened and its threat significance

COUNTRY	WHERE	WHEN
 Ukraine	Reported use in Ukraine, including Kyiv. Russian production context: Alabuga. [1][11]	Disclosures: January–October 2026. Assessment: 25 October 2026. [7][8]

What happened

This report examines Russia’s jet-powered Geran-4 Seeker and related Geran-5, explains the significance of their reported mesh communications, and assesses the evidence for changing operational capability. Ukrainian technical records identify mesh equipment in both platform families, while published examinations show associated sensing and communications hardware. [1][2][5]

The October DIU disclosure adds further navigation changes to the Geran-4 development picture. The report covers variant differences, imagery, supply-chain findings, threat significance and investigative use in Dfuze. [8]

Threat significance

ISS Global assessment. Faster flight combined with an available sensing and communications link can make the weapon more responsive after launch. The change is relevant to infrastructure protection and to investigations that must reconstruct both the aircraft and its information connections. [3]

EXECUTIVE JUDGEMENT

Assess the platform and its communications as related but distinct capabilities. Preserve configuration-specific evidence so that hardware discoveries, reported operator control and wider threat judgements remain traceable.

02 / IDENTIFICATION

The system behind the headline



Plate 1. Airframe presented as Geran-4 Seeker during the published examination. Schemes / Radio Svoboda, 19 September 2026; capture date unstated. ^[2]

The closest match to the nominated description is the Geran-4 “Seeker” examined in September reporting. Its relevance is the combination of a jet-powered airframe and communications-enabled sensing. Geran-5 is a separate system in the same discussion, not an interchangeable name. ^{[1][2][5]}

The official Geran-4 catalogue separately identifies a camera, network switch, mesh modem and navigation equipment. These component roles should remain distinct in an intelligence record: the presence of one does not prove the operating state of the others. ^{[1][4][15]}

Image observation. The published view shows an opened airframe with components laid out during an examination. It is a presentation of recovered material, not a frame captured during an attack. The identities assigned to the system rely on the publisher and examiners; the image alone does not establish the recovery location or flight history.

Scope. This insight assesses public evidence available through 25 October 2026. It uses the Geran-4 as its main subject, compares Geran-5 where material, and treats the newer Gerbera modem investigation as a separate comparative record.

03 / THE MODEM

A communications device with wider significance

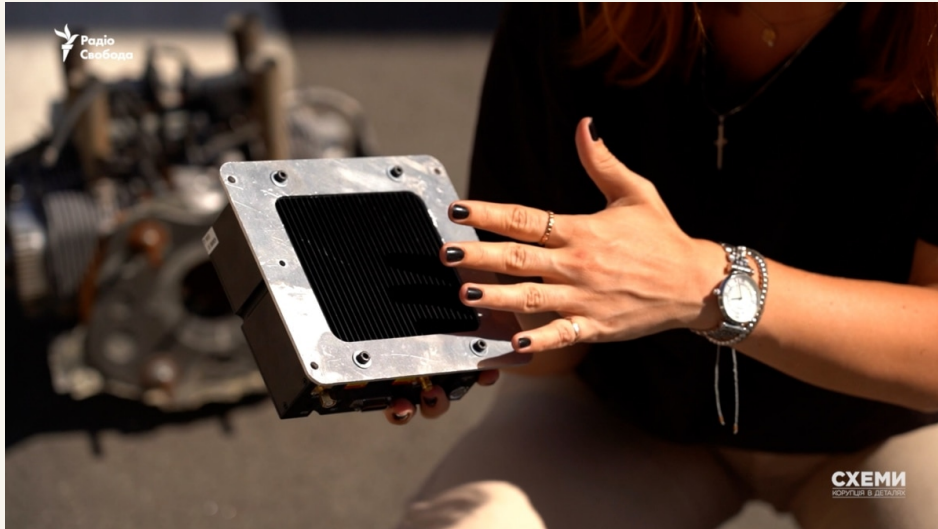


Plate 2. Unit presented as the mesh modem; the visible casing is not a conclusive model identification. Schemes / Radio Svoboda, 19 September 2026; capture date unstated. ^[2]



Plate 3. Separate cellular modem units in the same examination; these are not the mesh radio. Schemes / Radio Svoboda, 19 September 2026; capture date unstated. ^[2]

The official Geran-4 component entry names a mesh modem without a displayed F358/F359 suffix. The Geran-5 entry specifically lists XK-F358. Those records support platform-specific component claims, not a universal model assignment. ^{[4][6]}

ISS Global assessment. The important distinction is function: mesh networking can carry information between nodes; cellular connectivity uses a different communications service. Recording both as simply “a modem” loses investigative value. Neither physical presence nor a photograph proves that a particular link carried control commands during an attack.

04 / SENSORS AND PROPULSION

Three functions that should not be conflated



Plate 4. Exposed turbojet assembly shown in the examination; no independent performance test is presented. Schemes / Radio Svoboda, 19 September 2026; capture date unstated. ^[2]



Plate 5. Optical assembly shown separately from the airframe; it is not proof of autonomous target recognition. Schemes / Radio Svoboda, 19 September 2026; capture date unstated. ^[2]

Propulsion moves the aircraft; sensing supplies observations; communications transports data. DIU separately catalogues a Honpho camera. Its October announcement adds optical correlation navigation and magnetic heading assistance to the development picture. ^{[8][15]}

ISS Global assessment. A camera plus a communications path can support an operator's involvement. A camera plus onboard navigation software can perform a different function. Mesh routing, remote piloting and autonomous navigation must therefore be assessed separately; none alone establishes an AI-directed weapon.

Compare like with like

PUBLISHED CHARACTERISTIC	GERAN-4 CATALOGUE	GERAN-5 CATALOGUE
Length / wingspan	3.6 m / 3.05 m	6.5 m / 3.2 m
Maximum take-off weight	Up to 450 kg	850 kg
Reported warhead mass	90 kg	90 kg
Speed wording	320 km/h cruise; 450 km/h maximum	450–600 km/h cruise
Reported range	770 km	950 km
Altitude wording	Up to 4 km	Up to 6 km
Source status	DIU platform entry ^[1]	DIU platform entry ^[5]

These are attributed catalogue figures, not ISS Global measurements. The September specialist interview gives higher Geran-4 speed and altitude estimates than the catalogue. Differences may reflect the sample, configuration, operating condition or an estimate; the accessible evidence does not settle which explanation applies. ^{[1][2]}

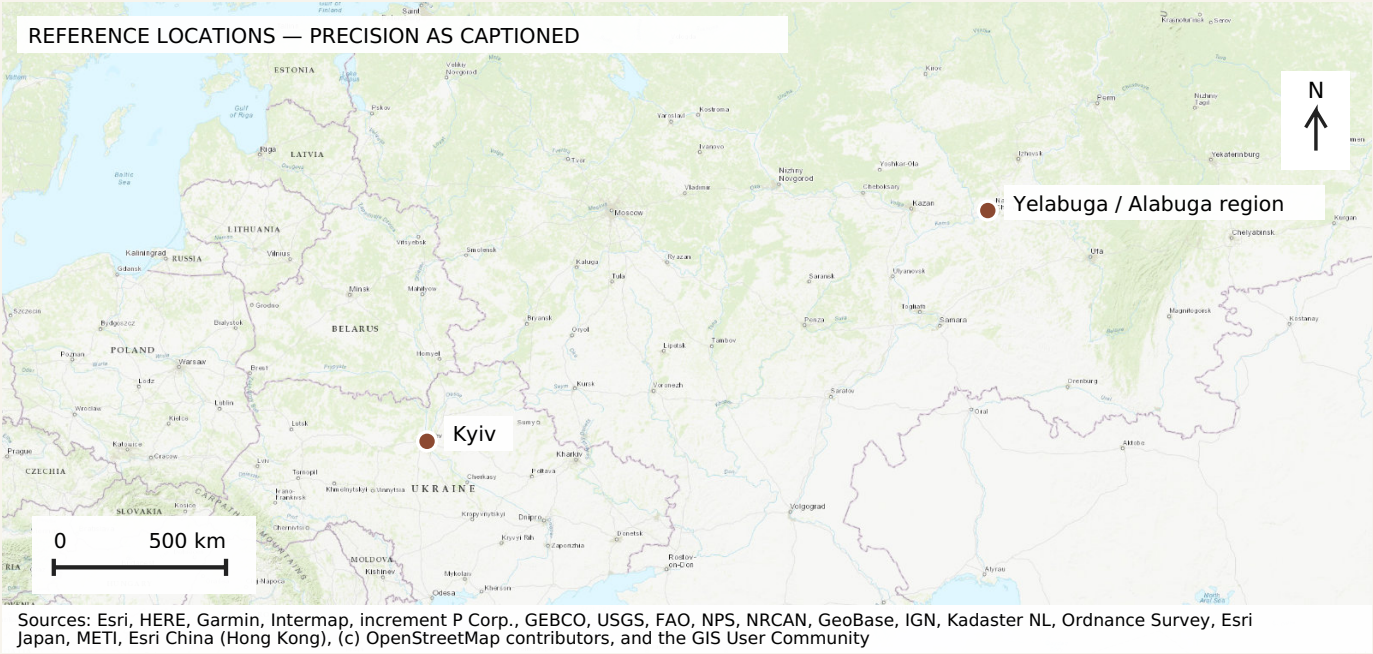
The October modification

On 5 October, DIU described a Geran-4 version with “Susanin” electro-optical correlation navigation, an additional magnetic-sensor module working with inertial navigation, a new payload and a locally produced engine equivalent. The announcement states that use began in the autumn. ^[8]

The October catalogue retains the earlier headline performance values and payload list. It is therefore unsafe to merge the announcement and every catalogue row into one fully verified specification. A version date is part of the evidence, not a cosmetic label. ^[9]

ISS Global assessment. The development trajectory is broader than adding a faster engine. Separate improvements to flight, navigation, sensing and communications can appear in different combinations. Treat a recovered sample as a configuration at a particular date, not as proof of the entire fleet.

Production context and reported use



Regional reference map. Kyiv: 50.45466° N, 30.52380° E. Yelabuga: 55.762317° N, 52.044254° E. City references only; no facility, recovery point, relay location or route is asserted. [13][14]

DIU identifies Alabuga as the manufacturer in its platform records. Kyiv is a reporting focus for the October operational account. The map locates these distinct contexts without implying a direct launch-to-target relationship. [1][5][11]

PLACE IN THE ANALYSIS	WHAT THE MARKER MEANS
Kyiv, Ukraine	City context for reported drone activity. Not the Inkom building coordinate or a verified modem location.
Yelabuga, Russia	City reference for the Alabuga industrial region. Not a factory boundary or a launch position.

Display projection: Web Mercator, EPSG:3857. Coordinates use WGS84. The scale bar was checked with ellipsoidal and independent great-circle calculations at its displayed latitude. The basemap is geographic context, not a map of confirmed radio coverage. [13][14]

ISS Global assessment. Communications reach and aircraft endurance answer different questions. A platform’s quoted flight range cannot be drawn as a guaranteed remote-control radius. An observed strike location does not identify every relay or the operator’s location.

An evolving capability, not a single new discovery

DATE	PUBLIC REPORTING MILESTONE	MEANING
19 January 2026	ArmyInform relayed Geran-5 component findings, including the named mesh modem. ^[7]	Mesh-equipped jet variants were in the public record months before October.
31 August 2026	RFE/RL carried interviews on jet drones and operator control. ^[3]	Evidence of concern and assessed capability; not a fleet-wide test.
19 September 2026	Schemes published its Geran-4 sample examination. ^[2]	Visual access to physical components, mediated by the publisher.
29 September / 21 October	The Kyiv Independent reported a 29 September release of Inkom strike footage, and published its analysis on 21 October. ^[11]	Footage publication and later explanation are distinct dates.
5 October 2026	DIU announced further Geran-4 navigation and engine changes. ^[8]	A later modification; not the date of the original mesh discovery.
14 October 2026	The Insider published its Gerbera-associated modem and supplier investigation. ^[10]	A separate sample and claimed model correction.
25 October 2026	This review reconciled the available records.	Evidence cutoff; no claim to a complete operational census.

Operational example

The Kyiv Independent attributes to Serhii Beskrestnov an account of a Geran-5 strike on Kyiv’s Inkom business centre, with another jet-powered drone acting as relay and recording the event. This is a specific operational explanation attributed to an identified adviser; it is not network telemetry independently examined by ISS Global. ^[11]

Assessment. “New” is best understood here as an evolving combination and expanding public evidence. A claim that the technology first appeared this week would misrepresent the documented chronology.

Connectivity is not autonomy

In a mobile ad hoc network, moving nodes can forward data through intermediate nodes. The IETF’s foundational description emphasises changing topology, constrained wireless capacity and the difference between nominal transmission rates and realised throughput. This is a general networking reference, not documentation of the Russian implementation. ^[12]

TERM	MEANING FOR THIS REPORT
Mesh network	A communications arrangement with potential paths through other nodes. It can relay data without making target decisions.
Operator control	A human receives information and sends commands. Evidence of a modem alone does not establish when that occurred.
Autonomous navigation	Onboard systems estimate position or follow a route without continuous human commands. This is distinct from autonomous target selection.
GNSS / CRPA	Satellite-navigation reception and an antenna approach intended to resist interference. This is not the same link as mesh communications.
GSM / LTE	Cellular communications. A separate service and dependency from the mesh radio.

The operational reporting links mesh connectivity with video transmission and operator intervention. The October DIU disclosure describes a separate optical-navigation function. The two may coexist, but one should not be cited as proof of the other. ^{[8][11]}

Claims that need restraint

Routing around a failed link requires another usable path. A radio network cannot create connectivity where no viable link exists. Mobility, interference and competing data demands affect performance. These constraints are why advertised distances or hop counts are not evidence of actual end-to-end video performance. ^[12]

ISS Global assessment. Avoid “jam-proof”, “unlimited range” and “AI swarm” as shorthand. The defensible finding is that communications equipment can support a more interactive mission. Establishing coordinated autonomy requires evidence about the decision-making system, not just the network hardware.

The model label matters

The Insider reports examining a modem recovered from a Gerbera and identifying it as XK F-359 through supplier contact and comparison material. It says some similar units had been labelled F358. Its investigation also describes an invoice obtained after a declared military-end-user enquiry. These are investigative findings, not a judicial determination or proof that the quoted batch was delivered. ^[10]

That Gerbera-associated finding should not automatically rename the official Geran-5 component entry or every Geran-4 unit. The correct record preserves the original identifier, the proposed correction, the sample association and the source behind each claim. ^{[4][6][10]}

PROPOSITION	EVIDENCE STRENGTH AND BOUNDARY
Mesh hardware is associated with examined jet drones	Official component records plus reporter access support this. Full recovery chains are not public. ^{[2][4][6]}
All units are the same modem model	Not established. Platform entries and the separate Gerbera investigation use different levels of identification. ^{[4][6][10]}
Mesh was active in a particular strike	Requires event-linked evidence. The Inkom explanation remains attributed, without network logs in this review. ^[11]
A manufacturer knowingly supplied a particular recovered item	A component marking alone cannot establish that chain or knowledge. Preserve supplier-investigation allegations separately.
More reporting proves a higher incidence rate	Not without a consistent denominator and identification rules. This report does not calculate an attack growth rate.

The principal source families are DIU exploitation, RFE/RL field reporting, The Insider/Nordsint investigation and Kyiv Independent interviews. DIU pages and their media relays are one institutional evidential chain; multiple pages do not represent multiple independent recoveries.

Images are publisher-associated examination material. They were inspected as downloaded, retain watermarks and are embedded unchanged apart from provider resizing. Five views of one examination are five illustrations, not five independently corroborating samples.

10 / THREAT ASSESSMENT AND DFUZE

What should change in the analyst's picture

ISS Global assessment. The consequential development is the combination of speed and interaction. Faster flight can compress the time available to respond; an available video/control link can let an operator influence the mission after launch. Together, these characteristics warrant a broader assessment than a pre-programmed one-way aircraft alone. The evidence supports that direction of change, not universal availability on every sortie. ^{[1][3][5]}

Critical-infrastructure relevance

RFE/RL's interviews describe concern about energy and logistics targets. For infrastructure stakeholders, the practical insight is to avoid assuming that a weapon's original route fully describes its later behaviour. Protective planning should integrate incident reporting, operational disruption and recovery evidence through competent authorities. ^[3]

Investigative priorities

For Dfuze case-building, maintain separate records for the incident, recovered platform, component and source. Preserve the original model wording, visible markings, examination date, location precision and association basis. A proposed F358-to-F359 correction should be traceable to the relevant item and source, leaving the earlier description visible in history.

Record whether a statement concerns hardware presence, tested function or observed use. Keep physical recovery, image observation, public attribution and analyst assessment as separate evidence types. A common commercial component is useful for comparison but cannot establish a common operator, supplier or attack cell by itself.

What would materially strengthen the assessment?

An item-specific examination report, authenticated component identification, event-linked communications evidence or a consistent series of recoveries would sharpen the conclusions. The most valuable trend would measure the proportion of identified configurations over a defined period, rather than count headlines or social-media reposts.

Executive judgement carried forward. Treat the jet-powered, mesh-equipped Geran as a connected weapon system requiring configuration-aware analysis. Keep propulsion, navigation, sensing and control separate, then link them only where the evidence supports the relationship.

SOURCE REGISTER

Sources 01–06

Source families and access limits are recorded below. Repetition of a statement is not independent proof.

-
- 01 Geran-4 UAV: platform and component catalogue
Defence Intelligence of Ukraine (DIU/HUR) · Live catalogue; version accessed 25 October 2026
Family: DIU technical exploitation · Accessed 25 October 2026. Official English record. Recovered-system attribution and specifications are DIU findings, not independent ISS Global tests.
<https://war-sanctions.gur.gov.ua/en/page-geran-4>
-
- 02 Journalists examined a jet-powered Geran: how Russia is improving drones used against Kyiv
Radio Svoboda / Schemes · 19 September 2026
Family: RFE/RL field reporting · Accessed 25 October 2026. Ukrainian original read; English descriptions translated by ISS Global. Reporter access to an examined sample and unnamed specialists; recovery location/date and full chain of custody not published. Five credited stills used.
<https://www.radiosvoboda.org/a/news-skhemy-reaktyvnyy-bpla-heran-spetsreportazh/33858889.html>
-
- 03 Russia's Jet-Powered Drones: A Major New Threat To Ukraine Amid Speeding Arms Race
RFE/RL / Donbas.Realities, Roman Pahulych · 31 August 2026, 17:37 CET displayed
Family: RFE/RL interviews · Accessed 25 October 2026. English adaptation of Ukrainian reporting. Official and expert estimates are attributed. Same publisher family as [2], not automatically independent corroboration.
<https://www.rferl.org/a/russia-ukraine-jet-powered-drones-shahed-geran/33841747.html>
-
- 04 Geran-4: Mesh modem
DIU / War & Sanctions · Live component record
Family: DIU technical exploitation · Accessed 25 October 2026. Official entry names a mesh modem and Chinese origin; does not specify the F358/F359 model in the displayed title.
<https://war-sanctions.gur.gov.ua/en/page-geran-4/7184>
-
- 05 Geran-5 UAV
DIU / War & Sanctions · Live platform record
Family: DIU technical exploitation · Accessed 25 October 2026. Lists the XK-F358, aircraft dimensions and assessed performance. Do not transfer this model label to every Geran-4 recovery.
<https://war-sanctions.gur.gov.ua/en/page-geran-5>
-
- 06 Geran-5: Modem Mesh Network XK-F358
DIU / War & Sanctions · Live component record
Family: DIU technical exploitation · Accessed 25 October 2026. Names the model and platform association; no operational network logs or independent validation supplied.
<https://war-sanctions.gur.gov.ua/en/components/6870>
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SOURCE REGISTER

Sources 07–11

Source families and access limits are recorded below. Repetition of a statement is not independent proof.

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- 07 Intelligence reveals characteristics and component base of Russia's new Geran-5 UAV
ArmyInform · 19 January 2026
 Family: DIU announcement relay · Accessed 25 October 2026. Ukrainian military outlet; retrieved English account. Used for dated disclosure, not as a second examination.
<https://armyinform.com.ua/en/2026/01/19/intelligence-reveals-characteristics-and-component-base-of-russias-new-geran-5-uav/>
-
- 08 Optical navigation, a new warhead and a compass: new modification of Geran-4
Defence Intelligence of Ukraine · 5 October 2026
 Family: DIU technical exploitation · Accessed 25 October 2026. Official English announcement. Describes autumn modifications; claims of function and localisation remain attributed.
<https://gur.gov.ua/en/content/warsanctions-optychna-navihatsiia-nova-bch-ta-kompas-hur-publikuie-dani-pro-novu-modyfikatsiiu-vorozhykh-heran4.html>
-
- 09 Geran-4 UAV (October 2026)
DIU / War & Sanctions · October 2026 version
 Family: DIU technical exploitation · Accessed 25 October 2026. Live catalogue snapshot. Header specification list does not fully reflect the new payload description in [8]; preserve the distinction.
<https://war-sanctions.gur.gov.ua/en/page-geran-4-2>
-
- 10 China's drone modem pipeline: How mesh technology helps Russian UAVs penetrate deep into Ukraine
The Insider / Andrey Zayakin and Ryan X · 14 October 2026
 Family: The Insider / Nordsint investigation · Accessed 25 October 2026. Full English article accessed through web retrieval; direct local fetch denied. Reporter examined a Gerbera-associated modem and conducted supplier enquiries. F359 identification and supplier-knowledge allegations belong to this investigation.
<https://theins.press/en/inv/298263>
-
- 11 How Russia uses mesh networks inside drones to precision-strike Kyiv
The Kyiv Independent / Polina Moroziuk · 21 October 2026, 09:43 displayed
 Family: Kyiv Independent interviews / attributed operational accounts · Accessed 25 October 2026. Full English article. Inkom example attributed to Serhii Beskrestnov; this review did not obtain radio telemetry proving the asserted relay arrangement.
<https://kyivindependent.com/very-difficult-to-defeat-how-russia-uses-mesh-networks-inside-drones-to-precision-strike-kyiv-2/>
-

SOURCE REGISTER

Sources 12–15

Source families and access limits are recorded below. Repetition of a statement is not independent proof.

-
- 12 **RFC 2501: Mobile Ad hoc Networking (MANET): Routing Protocol Performance Issues and Evaluation Considerations**
IETF / RFC Editor, S. Corson and J. Macker · January 1999
Family: Primary networking reference · Accessed 25 October 2026. Informational RFC, not an Internet standard or documentation of Russian equipment. Used only for basic network principles and performance limits.
<https://www.rfc-editor.org/info/rfc2501/>
-
- 13 **Kyiv and Yelabuga city reference coordinates**
GeoNames · Live gazetteer
Family: Geographic reference · Accessed 25 October 2026. Kyiv 50.45466 N, 30.52380 E. Yelabuga 55.762317 N, 52.044254 E from <https://www.geonames.org/advanced-search.html?country=RU&q=Respublika+Tatarstan> . City references, not sites.
<https://www.geonames.org/advanced-search.html?q=Kyiv%2C+UA>
-
- 14 **Static basemap and provider attribution**
Esri / World Topographic Map · 25 October 2026 acquisition
Family: Basemap provider · Accessed 25 October 2026. Returned extent and EPSG:3857 retained. Full contributor credits reproduced. Attribution terms reviewed at <https://www.esri.com/en-us/legal/terms/data-attributions> .
https://services.arcgisonline.com/ArcGIS/rest/services/World_Topo_Map/MapServer
-
- 15 **Geran-4: Honpho TS130C-01 camera**
DIU / War & Sanctions · Live component record
Family: DIU technical exploitation · Accessed 25 October 2026. Official component identification. A matching product name does not establish the performance or configuration of every recovered camera.
<https://war-sanctions.gur.gov.ua/en/page-geran-4/7189>
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