



UNMANNED AUTONOMOUS SYSTEMS IN THE CONTEXT OF MEDICAL EVACUATION DURING LSCO

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- *Current Situation*
- *What can Unmanned Autonomous Systems offer?*
- *The iMedCap approach*
- *Capabilities*
 - *Recce: Localization, Assessment and Decision support*
 - *UGV and UAV*
 - *Patient Box*
 - *RASIC*
 - *CBRN Containment*
- *Gaps / Way ahead*

THE TRANSPARENT BATTLEFIELD

Transparency – Awareness – Decision Advantage

FRIENDLY FORCE AREA
TRANSPARENT & NETWORKED

FORWARD EDGE OF
BATTLEFIELD AREA (FEBA)

ENEMY FORCE AREA
TRANSPARENT & NETWORKED

EXCLUSION ZONE
"NO MAN'S LAND"

Depleted by friendly and enemy forces
near 100 % personnel and
equipment casualties

Any man movement – even minimal –
is detected immediately and engaged

No freedom of movement.
No concealment. No survival.

DEPTH

FEBA

EXCLUSION ZONE "NO MAN'S LAND"

FEBA

DEPTH

STRATEGIC DEPTH

OPERATIONAL DEPTH

TACTICAL DEPTH

CLOSE AREA

SPACE AIR

AIRBORNE AIR

GROUND SENSORS

SIGNAL INTELLIGENCE

ELECTRO-OPTICAL IIR

CLOSE AREA

TACTICAL DEPTH

OPERATIONAL DEPTH

STRATEGIC DEPTH

HQ

HQ

CHALLENGES OF THE MILITARY RESCUE CHAIN

POI TO ROLE 2 – CONTINUOUS EVACUATION UNDER DRONE SURVEILLANCE AND FIRE (REALITY 2024/25)

1. POINT OF INJURY (POI)

Location of wounding

 15 – 90 MIN.
(can be >2 hrs)

2. CASUALTY COLLECTION POINT (CCP)

Collection point of the wounded

 1 – 6 HRS.
(depending on situation and opportunity)

3. ROLE 1

First medical care
(forward facility)

 4 – 24 HRS.
(depending on situation and threat)

4. ROLE 2

Stabilization facility
(underground / in rear area)

 6 – 24+ HRS.
(can be >48 hrs in extreme cases)



UAV SURVEILLANCE
(ISR)



FPV DRONES



INDIRECT FIRE
(ARTILLERY, MORTARS)



MINES /
EXPLOSIVE HAZARDS



DESTROYED
INFRASTRUCTURE



THERMAL
IMAGING



ELECTRONIC
WARFARE (EW)



WEATHER /
TERRAIN



DRONE NETTING
(NOT 100% EFFECTIVE)



The greatest challenge today is not medical treatment,
but the **secure tactical evacuation** from the Point of Injury to Role 1/2.

Persistent UAV surveillance, accurate indirect fire, and lack of freedom of movement
significantly extend evacuation times and ultimately determine the **chances of survival**.

- *Medical personnel under immediate threat*
- *Group of soldiers always an HVT*
- *Evacuation delayed until nightfall*
- *Far longer distances to cover*
- *Dedicated armored vehicles easily recognized and targeted*

WHAT CAN UAS OFFER?



- *Reduced exposure*



- *Re-Supply*



- *Fast (and early) Evacuation*



- *CBRN containment*



- *Remote Triage / initial assessment*



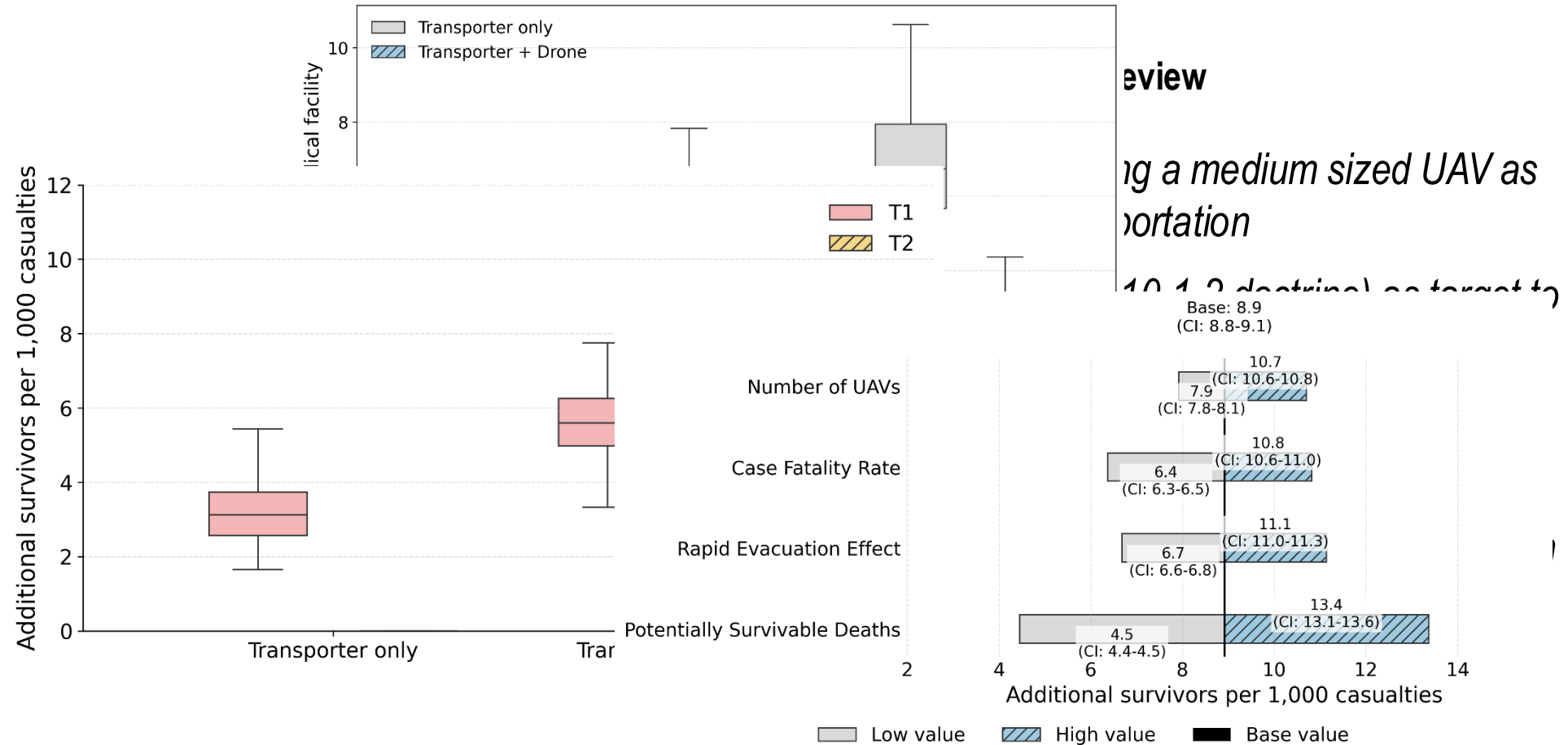
- *Remote life saving interventions*



- *Decision Support*

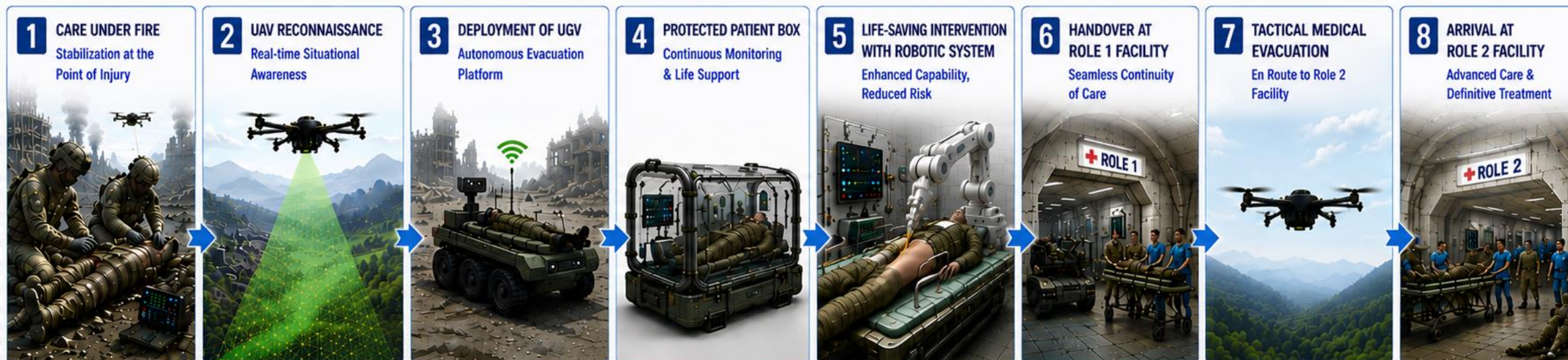


HELP SAVING MORE LIVES



MODULAR AUTONOMOUS CONNECTED – END-TO-END MEDICAL EVACUATION CAPABILITY

ONE NETWORK – CONTINUOUS MONITORING – BETTER DECISIONS – MORE SURVIVORS



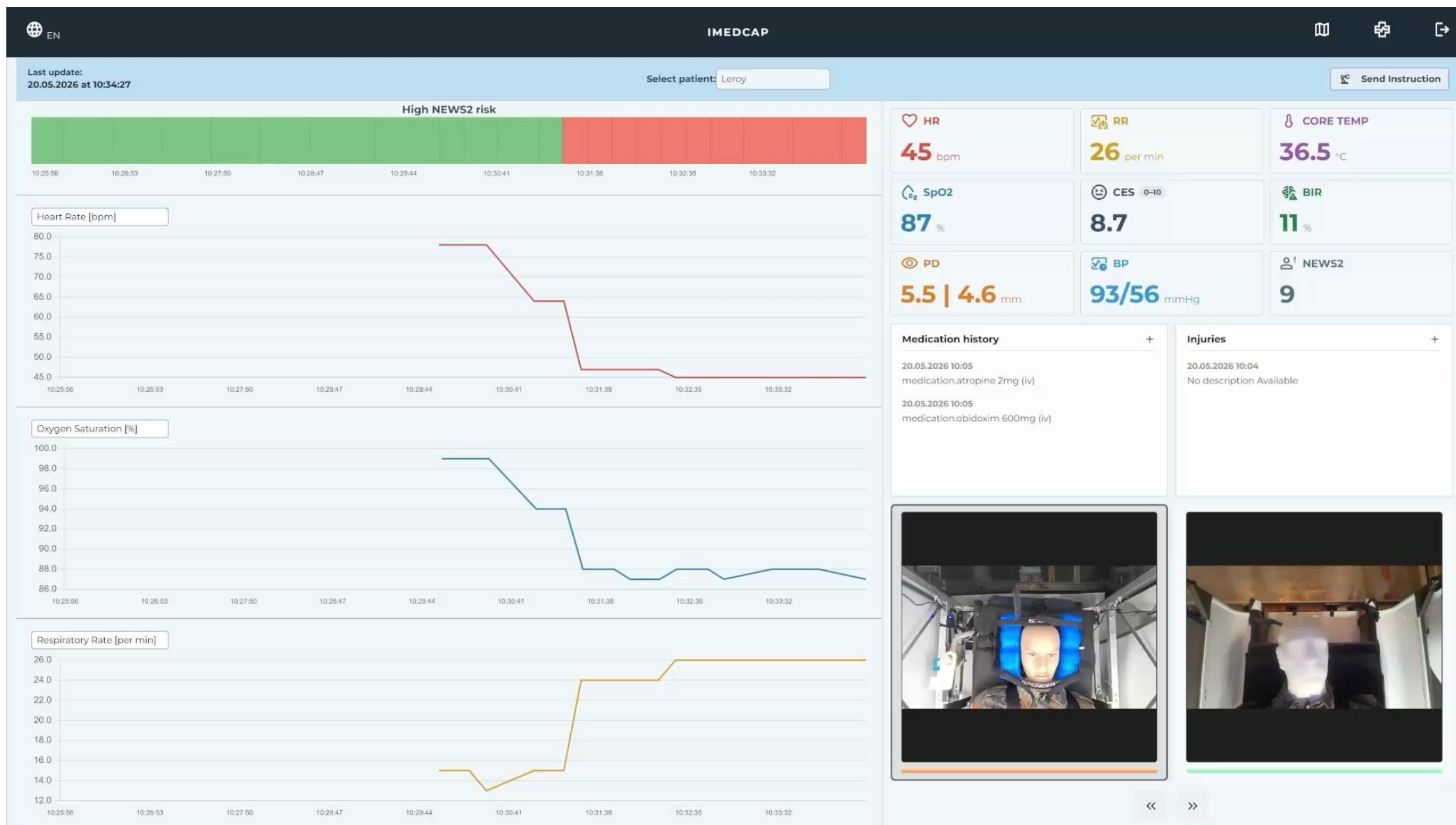






PATIENT BOX





PoC - BLOOD DETECTION SENSOR

INTEGRATED SENSOR TEXTILE



REAL-TIME DETECTION

Immediate identification of blood.



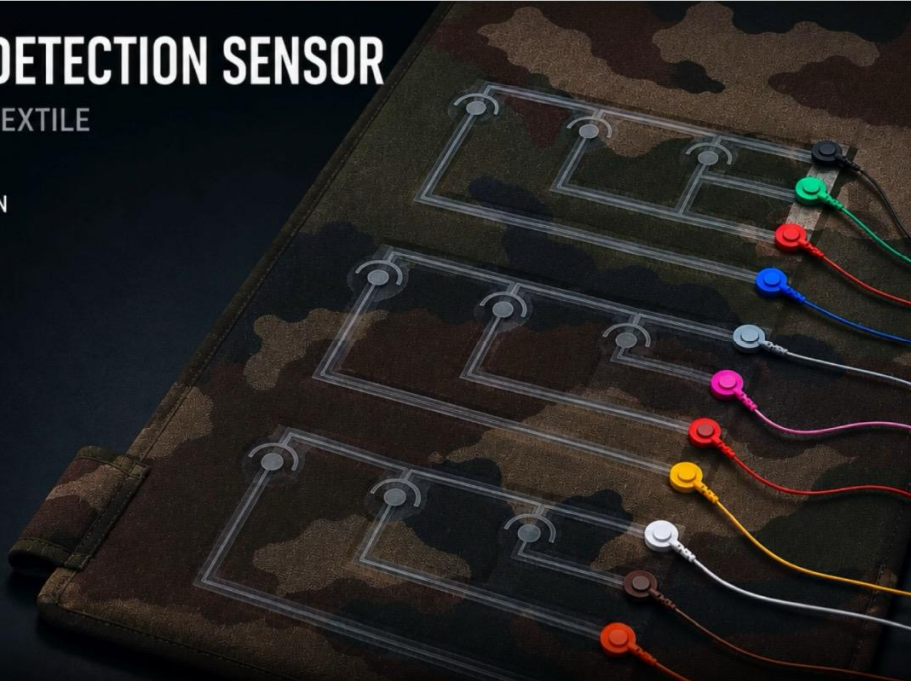
RELIABLE & PRECISE

High sensitivity and accurate results.



TEXTILE INTEGRATION

Fully integrated into textile for maximum flexibility.



- *Project delivered Proof of Concept*
- *Technical Readiness Level differ between different technologies*
- *Payload of UAV currently limits equipment*
- *Loading / unloading the casualty into/ out of the patient box needs human interaction*
- *How to deal with ethics – autonomous therapie in case of LOC?*

MODULAR COMMUNICATION AND MONITORING SYSTEM

CONTINUOUS PATIENT MONITORING FROM CASUALTY COLLECTION POINT TO ROLE 1 OR ROLE 2

MODULAR SCALABLE MOBILE SECURE INTEROPERABLE



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