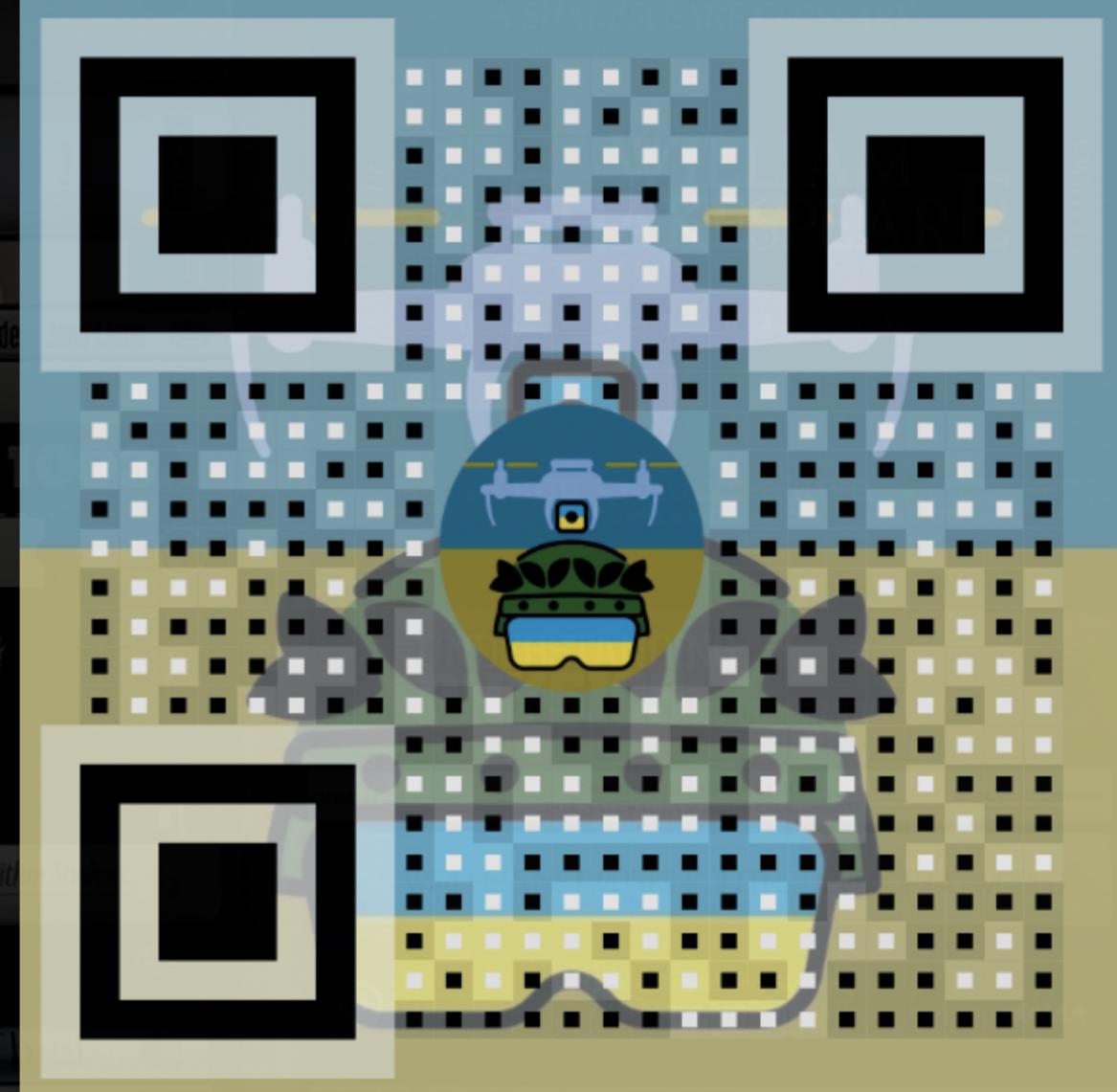


Aerial vision
foreground
troops

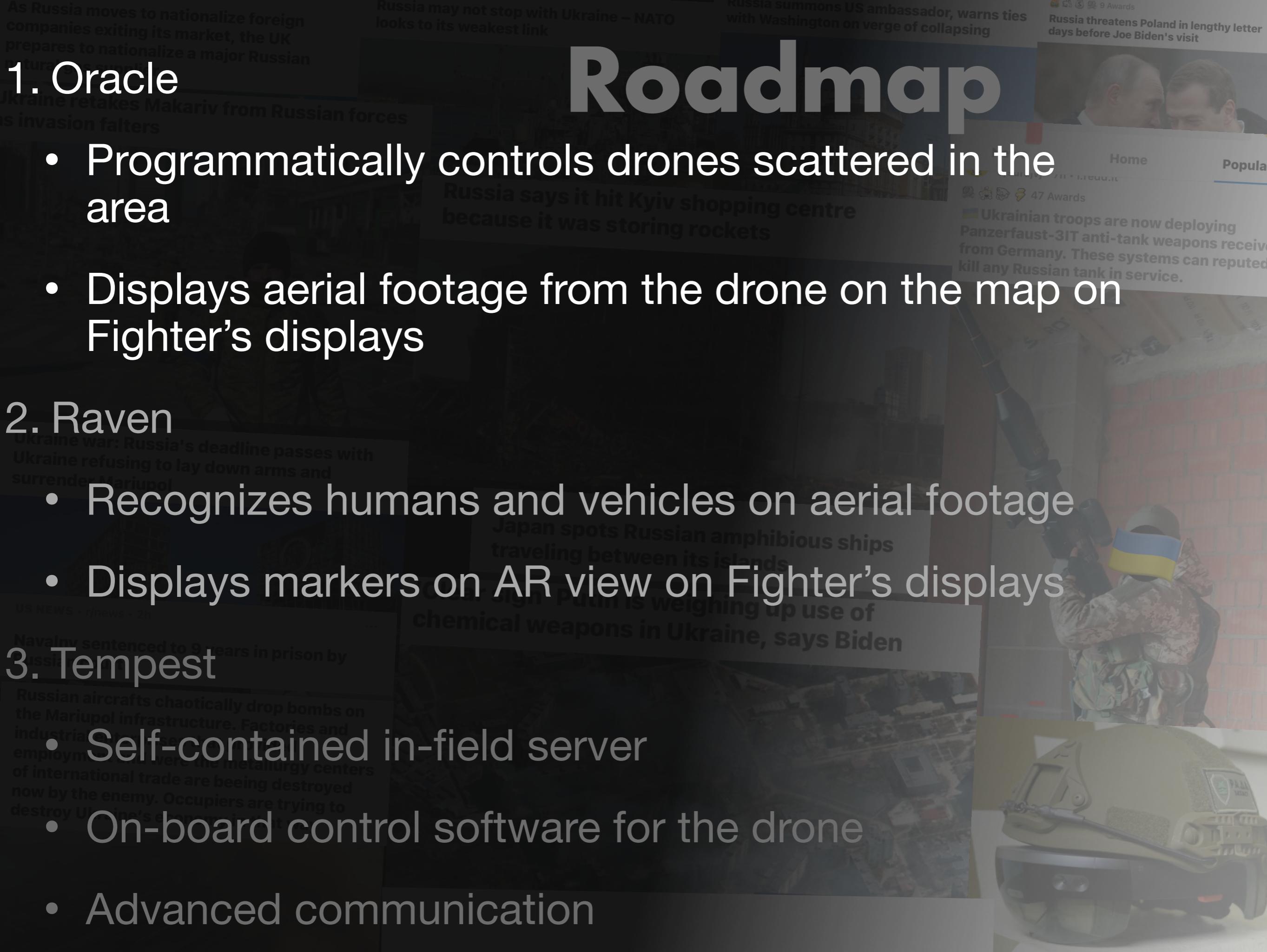
System "Zir"

- Aerial vision for ground troops using consumer hardware
 - DJI Mavic Air 2s - \$700
 - DJI Mavic Advanced Industrial - *portable aerial thermal imaging solution*
\$6000
 - MS Hololens 2 mounted on the helmet - *could be replaced by smartphone client in majority of situations*
\$3000



Aerial vision for ground troops

zirukraine.com



1. Oracle

- Programmatically controls drones scattered in the area
- Displays aerial footage from the drone on the map on Fighter's displays

2. Raven

- Recognizes humans and vehicles on aerial footage
- Displays markers on AR view on Fighter's displays

3. Tempest

- Self-contained in-field server

- On-board control software for the drone

- Advanced communication

Roadmap

Deliverables

- 6 months
 - 100 drones/500 fighter's displays are in use
- 4 engineers
 - Pilotless aerial vision for individual
- 12 months
 - 500 drones/5000 fighter's displays are in use
 - 7 engineers
 - ML/CV recognition of the ground targets
- 24 months
 - 2500 drones/20 000 fighter's displays are in use
 - 12 engineers
 - Command/tactical features of software

A. iPhone Ground Station app

- I. *Broadcasts drone video*
- II. *Pilots drone according to the instruction from the server*

B. iPhone/Hololens 2 Fighter app and a webpage

- I. *Displays aerial video fixed onto the map and raw video*
- II. *Displays GPS coordinates of Drone and of the Fighter*

C. System's server

- I. *Handles multiple Ground Stations*

D. Hololens/Helmet mount

E. Printed fighter manuals

F. Ground Station / StarLink connection

Deliveries - 6 months



asted AR vision for soldier

DJI Mavic 2 Enterprise Advanced
MS HoloLens 2
DJI Mavic 2/3/Air
iPhone XR

zirukraine+donations@gmail.com

Press “Play”

Drone assisted AR vision for soldier



CV/ML Scientist
Mobile Software Engineer
Industrial Designer

zirukraine+jobs@gmail.com

What do we have

- People
 - Software engineer generalist
 - Unreal Engine software engineer
 - Part time iOS developer
 - Graphics designer
- Prototypes
- Users in Ukraine



What do we need

<u>\$ 470 k</u>	<u>First Stage</u>
<u>\$ 30 k</u>	<u>Starting cost</u>
<u>\$ 73 k</u>	<u>Monthly Upkeep</u>
-	Software Generalist Hire
\$ 4 k	SW hardware kit
\$ 4 k	Unreal Engine Developer
\$ 4 k	SW hardware kit
\$ 4 k	Robotics engineer Hire
\$ 4 k	SW hardware kit
\$ 7 k	Mavic 2 Enterprise Advar
\$ 2 k	Heisha D80 Drone Dock
\$ 5 k	MS Hololens 2 Industrial
<u>\$ 2 335 k</u>	<u>Second Stage</u>
<u>\$ 25 k</u>	<u>Helmet mount for Hololens</u>
<u>\$ 128 k</u>	<u>Monthly Upkeep</u>
\$ 1 k	ML/CV specialist Hire
\$ 4 k	SW hardware kit
\$ 26 k	Mac Pro maxed out
\$ 1 k	Industrial designer
\$ 6 k	Designer hardware kit
\$ 1 k	Helmet x 3
\$ 15 k	3D printer x 3
\$ 2 k	Night vision goggles



Current Usage of DJI Drones in Ukraine

- There are hundreds of DJI Mavic drones currently being used by fighters of Ukrainian forces
- Users love DJI Mavic's portability, ease of use
- Building a solution on top of familiar hardware simplifies integration

Using a smartphone attached to a remote controller for a drone, a fighter in the Ukrainian forces conducted surveillance over Irpin, outside Kyiv. The fighters used the drone to spot ambushes as they worked to clear out Russian forces from the embattled suburb.



Daniel Berehulak for The New York Times