

Cyber-over-RF – Industry perspective and trends

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Uri Barkan
Sigmabit, General Manager

Cyber-over-RF – Industry perspective and trends

Elbit Systems & Sigmabit at a glance

What is Cyber-over-RF (CRF)

Operational users and use cases of CRF

Classical EW and CRF

General Cyber and CRF

Trends and next steps in the domain

Summary

AGENDA

The Company at a Glance

OUR MISSION

To empower our customers
with tools and
technologies necessary
to face the future with
confidence.



Founded in 1966



Headquarters in Haifa, Israel



Over \$4.5B in sales*



Publicly traded (NASDAQ, TASE)



Subsidiaries in numerous countries

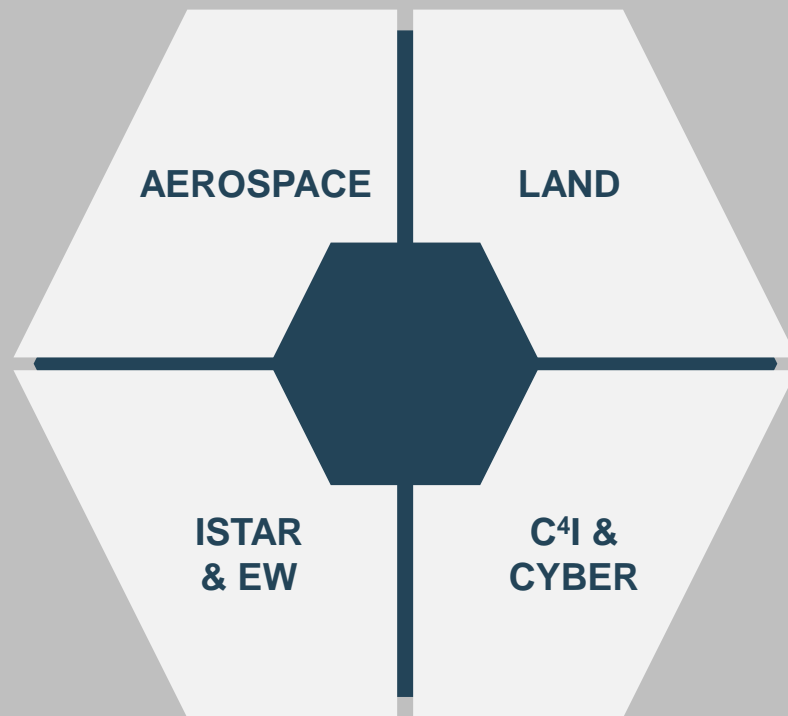


**~16,500 employees of which 55%
engineers**

Business Structure

Our businesses
are organized in

4
Divisions
in Israel



Subsidiaries - Global Presence

Australia

Austria

Belgium

Brazil

Canada

France

Georgia

Germany

Hungary

India

North Macedonia

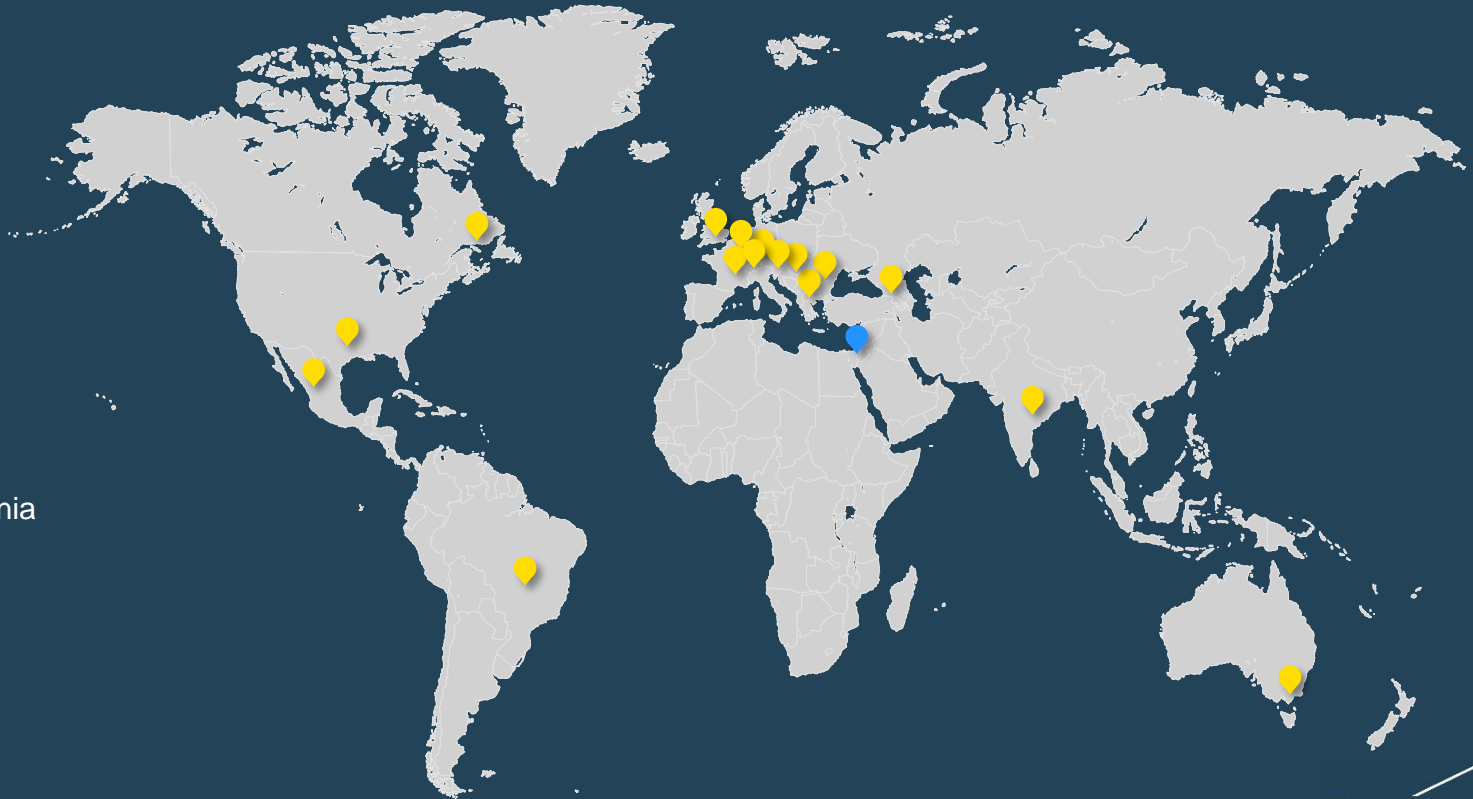
Mexico

Romania

Switzerland

UK

USA



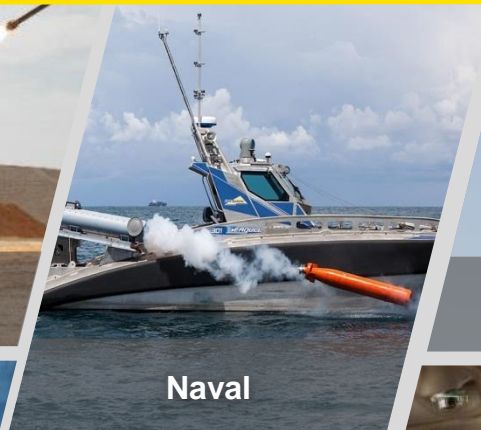
A Comprehensive Portfolio



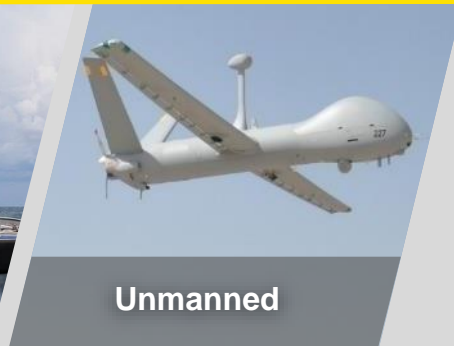
Air & Space



Land



Naval



Unmanned



Cyber



Homeland Security



Commercial

Beer Sheva – The Israeli National Cyber Capital

REASONS FOR SUCCESS - PARTNERS IN VISION



אוניברסיטת בן-גוריון בנגב
Ben-Gurion University of the Negev

Leveraging the potential
of BGU centers of excellence

Open to industry and focused
on an applicable approach



באר שבע
בירת ההדדנות של ישראל

City of Be'er-Sheva

City of the future

Growth potential and
motivation to succeed

Leading in number of engineers
graduating annually

GLOBAL TECH INDUSTRY



GAVYAM

PROPERTY & BUILDING CORP. IDB GROUP

Vast experience in the
creation of leading science
and hi-tech parks

Spearheading the creation
of world-class work
environments

Home to some of the world's
top companies

**GOVERNMENT
OF ISRAEL**

IDF Technology Campus

National incentives for tech
companies

National Cyber Complex

Vast investments in
Infrastructure



KUD International

Global developer
specializing in PPP projects

Sigmabit at a glance



- Established at 2015
- Acting as the leading Cyber-RF house in Israel
- Subsidiary of Elbit Systems EW and SIGINT Elisra company
- Specializes in Security and Intelligence solutions
- Vast experience with governmental organizations around the world
- Over 75 employees – more than 90% technologist – BSc, MSc, PhD, Elite Israeli intelligence units alumni

Global Trends in the Cyber Domain

Connectivity

- Emerging use of wireless connectivity
- Personal & Military communications

Awareness

- Users and customers rising awareness

Defense efforts

- Endpoint: OS, application levels
- Network level
- Low level is overlooked

Sigmabit's vision and core business



OUR Vision

To dominate the RF medium

with cutting edge cyber techniques

**allowing operational and
tactical superiority**

What is Cyber-over-RF (CRF)



Gaining control of the device over the RF medium



Accurate Geo-Location



Identities extraction



All Protocols – Content access and manipulation



UMTS



Operational users and use cases of CRF – Market overview



Gov Intelligence

Federal agencies,
justice departments

Access to contents



HLS

Police, Federal
agencies, Correctional
facilities

Identities extraction &
location



Army

Military Intelligence

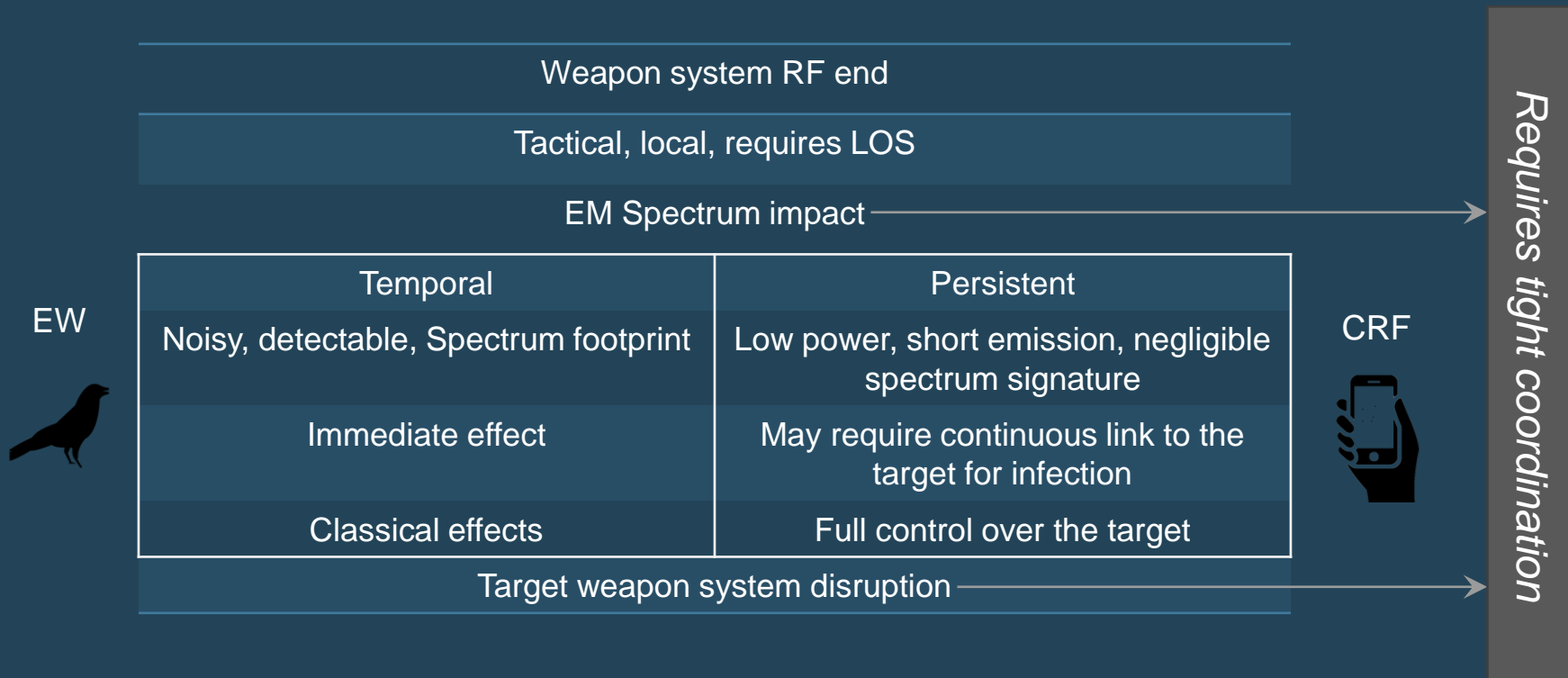
Disruption

Customer needs and characteristics

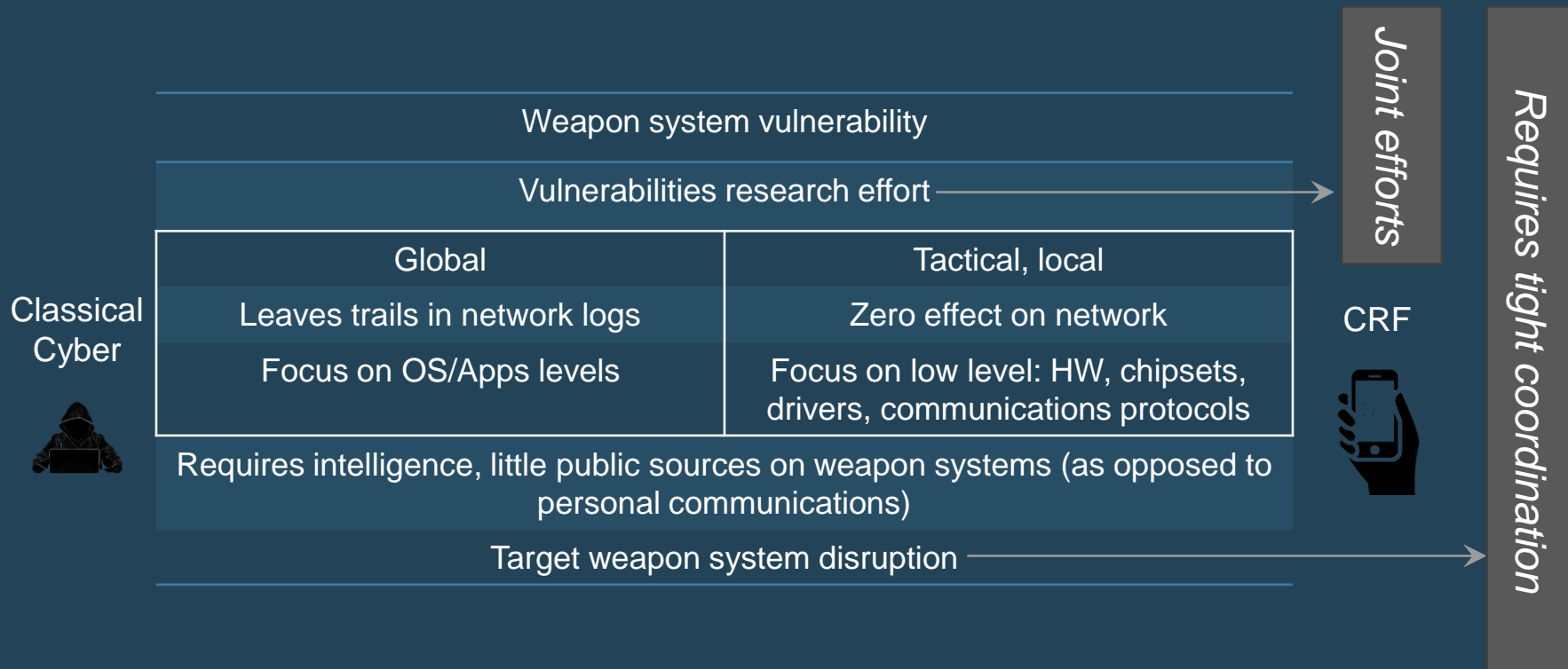
Market segment	Typical deal type	Main solution features	Solution availability in market	Main challenges
Intelligence	Project/Product	Access to contents, Trojan infection	High	Full value chain: vulnerabilities, exploits, Trojans, data conveyance, intelligence extraction systems
HLS	Product	Identities extraction and location	Medium	Hermeticity, quality of solution
Military	Project	Prevention, disruption, deception	Low	Intelligence sharing, national permits

Elbit's core market

Classical EW and CRF



Classical Cyber and CRF



Trends and next steps in the domain

- The cyber arena changes in a fast pace
 - solutions must be generic, modular, and adaptive
- Single-use solution is ineffective and not scalable
 - Solutions must cover the full RF spectrum and be able to support different protocols
- Lab-to-operation-capability time is too long, devices are updated constantly
 - Powerful SDR as a technological cornerstone
- Mixing expertise and cultures
 - Multi-disciplines – (Antenna, RF, algorithms, signal processing, hardware, software) + VR, hacking
- Breaking walls between EW, CRF, Classical cyber and Sigint



Summary

- CRF is an emerging domain, holding significant operational potential, expanding the boundaries of both EW and classical cyber and completing them
- Different types of users need different solutions – one size doesn't fit all
- Military users' requirements are the most challenging and unique
- Technological developments enable coping with different protocols, devices and frequency bands simultaneously, by a single system
- Sigmabit – a one-stop shop for CRF solutions, from vulnerability to antenna

THANK YOU

elbitsystems.com

