



# U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND

CBRNE Defense Conference and Exhibition

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# A CENTURY OF CHEMICAL AND BIOLOGICAL EXPERTISE

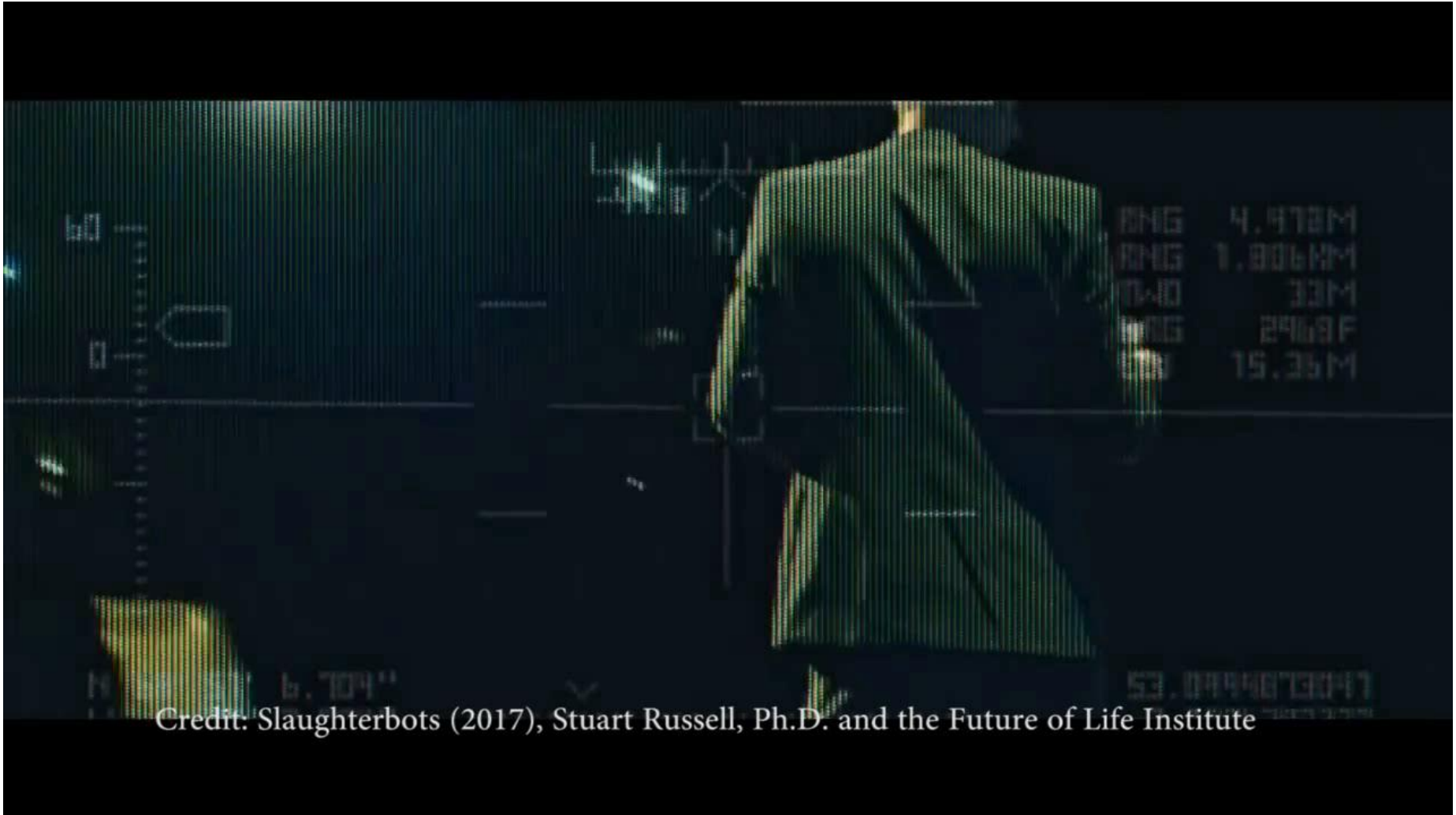


- ECBC, now known as the **U.S. Army Research, Development and Engineering Command Chemical & Biological Center**, will join the Army Futures Command with the rest of RDECOM to **lead innovation and modernization of the Army.**
- The new name demonstrates RDECOM's **unified efforts to create innovative defense technologies for our Warfighters.**
- New name, with the **same passionate commitment to CB defense.**



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# MODERNIZING CB DEFENSE FOR THE FUTURE FIGHT



Credit: Slaughterbots (2017), Stuart Russell, Ph.D. and the Future of Life Institute



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# MODERNIZING CB DEFENSE FOR THE FUTURE FIGHT



**Integrated Early Warning Systems:** Leaning forward with **detection, networking and artificial intelligence** to provide actionable information to Warfighters, and help commanders make real-time decisions.

- Perceptive Dragon 2 Demonstration



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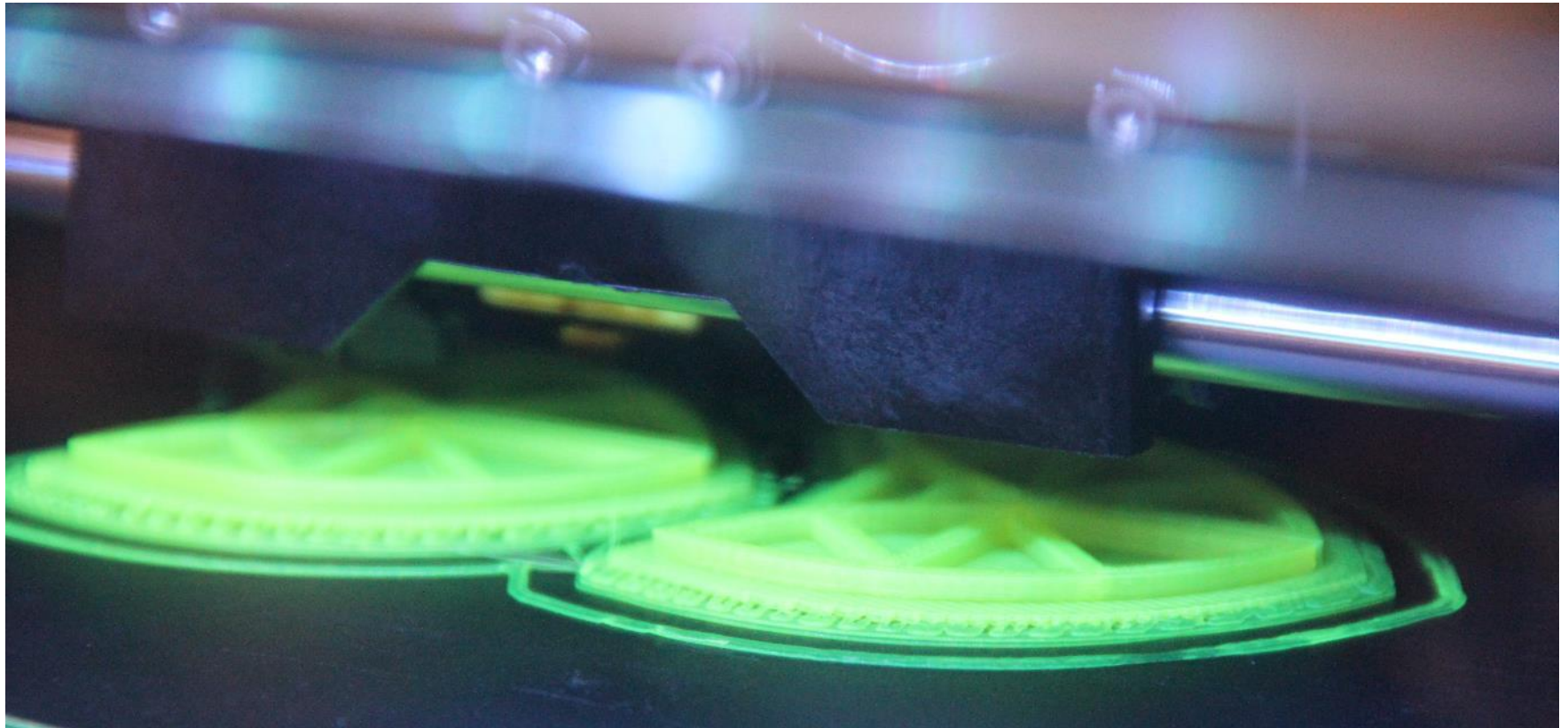
**Advanced Obscurants** for protection of **next generation combat vehicle** and **spectral dominance** in future fights, allowing Warfighters to be better protected in maneuver.





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# MODERNIZING CB DEFENSE FOR THE FUTURE FIGHT



**Additive Manufacturing** Additive Manufacturing provides cost-effective solutions to quickly build and repair items for Warfighter use.

Programs include:

- MakerSpace
- RAMP-MD partnership
- ADM Apprenticeship Program



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# MODERNIZING CB DEFENSE FOR THE FUTURE FIGHT



**Non-aqueous decontamination technologies, such as Metal Organic Frameworks, allow Warfighters and equipment to return to the fight faster after exposure.**



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# MODERNIZING CB DEFENSE FOR THE FUTURE FIGHT



**Increased collaboration with 20<sup>th</sup> CBRNE Command and CBRNE School** provides opportunities to educate Warfighters on handling CB threats, and ensures that CB defense solutions address their needs.





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# MODERNIZING CB DEFENSE FOR THE FUTURE FIGHT



Synthetic Biology offers the potential to **unlock new types of materials by harnessing the natural abilities of living systems**, such as **self-assembly, sense-and-respond, and molecular-scale control and patterning.**



# MODERNIZING CB DEFENSE FOR THE FUTURE FIGHT

**2018**

Today we are developing paper tickets embedded with cellular machinery that change color in response to a range of threats

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**2023**

Syn Bio applications mature enough to transition to acquisition

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**2028**

Novel syn bio systems to be incorporated into deployed systems

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**2038**

Life-mimicking properties, such as sense-and-respond and self-healing, will start to be incorporated into deployed systems.



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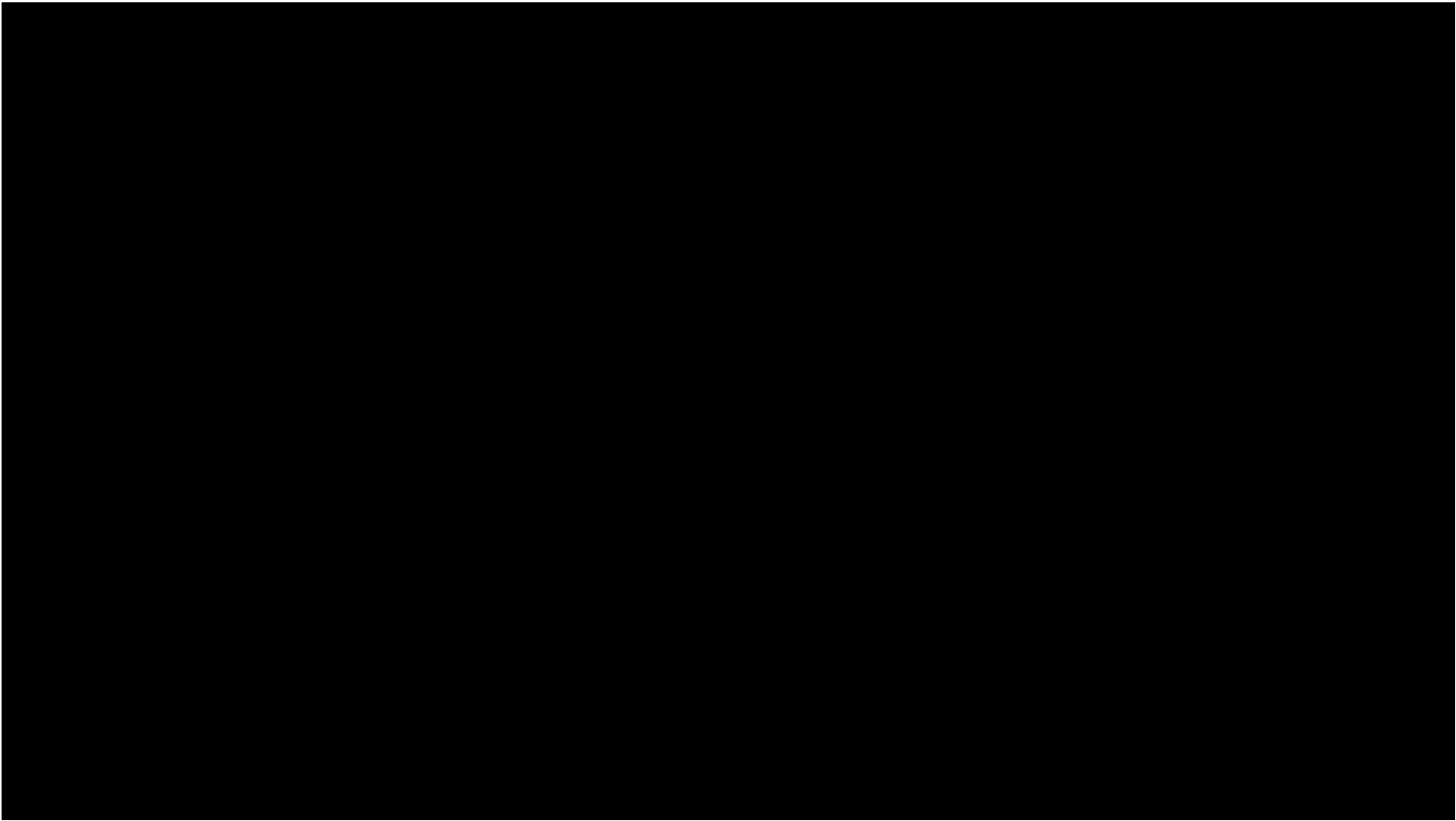


Utilize semi-autonomous systems and robotics as a force multiplier for CB reconnaissance capabilities

- Array Configurable of Remote Network Sensors (ACORNS)
- Deep Purple



# MODERNIZING CB DEFENSE FOR THE FUTURE FIGHT





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# INDUSTRY IS A KEY PARTNER



“Engineers and scientists at Aberdeen Proving Ground are developing **cutting-edge technology** that can be put to broader use, **benefiting our economy and our quality of life.**”

- *Michael Gill, Maryland Commerce Secretary*



# INDUSTRY IS A KEY PARTNER

- Advanced Manufacturing Division Apprenticeship Program
- TechLinks Innovation Discovery Events
- Maryland Defense Technology Commercialization Center (DefTech)
- **Cooperative Research & Development Agreement (CRADA)**
- Educational Partnership Agreements
- Technology Support Agreement
- Patent License Agreement
- **Army Small Business Innovation Research (SBIR)**
- Chemical Biological Defense SBIR
- **Army Small Business Technology Transfer (STTR)**
- ECBC Broad Agency Announcement (BAA)
- Rapid Innovation Fund BAA
- Memorandum of Understanding
- Memorandum of Agreement (MOA)
- Material Transfer Agreement (MTA)
- **Interagency Agreement – non-DoD (IAA)**
- **JE-RDEP**
- **CWD OTA**



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# THE NEXT CENTURY OF CHEMICAL AND BIOLOGICAL EXPERTISE



- “We are not trying to fight the last war better, **we are trying to win the next one**”  
–*General James C. McConville, Vice Chief of Staff of the Army*
- U.S. Army Research, Development, Engineering Command Chemical & Biological Center is focused on CB technologies that **deliver information faster, create equipment that is lighter, ruggedized, and can be applied quickly.**



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