

DEFENSE TECHNICAL INFORMATION CENTER

2012 DTIC Conference

Connecting Lab Research with the Warfighter

March 27-28, 2012

Customer Support and Collaboration

March 28, 2012

Moderator: Mr. Thomas Glad



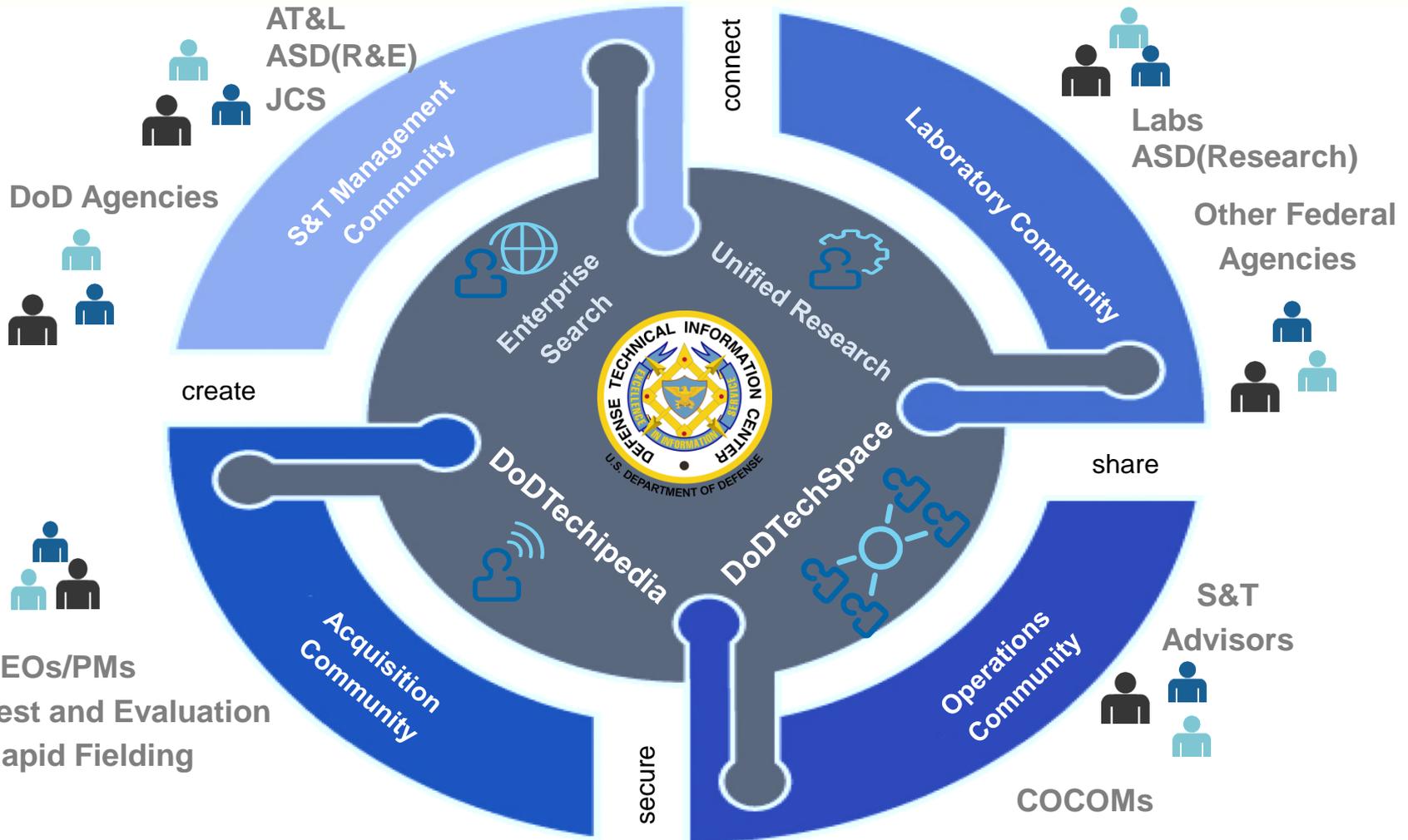
Supporting the Warfighter: DoDTechSpace

Ms. Michele Finley, DTIC
Communications Program Analyst

DoDTechSpace – Connecting the DoD S&T Enterprise



DoD R&E Information Channels



Connecting R&E Information between consumers and solution providers



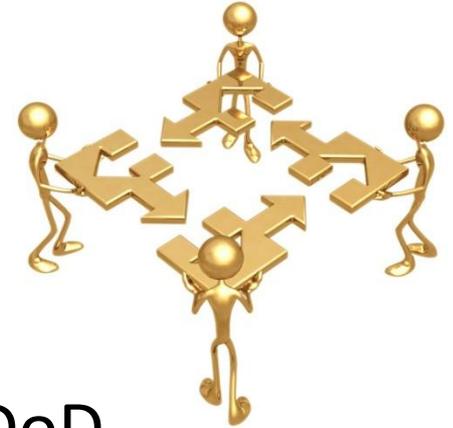
Maximizing DoD's Technology Investment





What is DoDTechSpace?

- Advanced Web 2.0 tool
- Secure application
- Connects the DoD R&E enterprise
 - Links communities of interest across DoD
 - Fosters collaboration, networking and secure information sharing
 - Supports self-forming, controlled/secured communities of interest and discussions



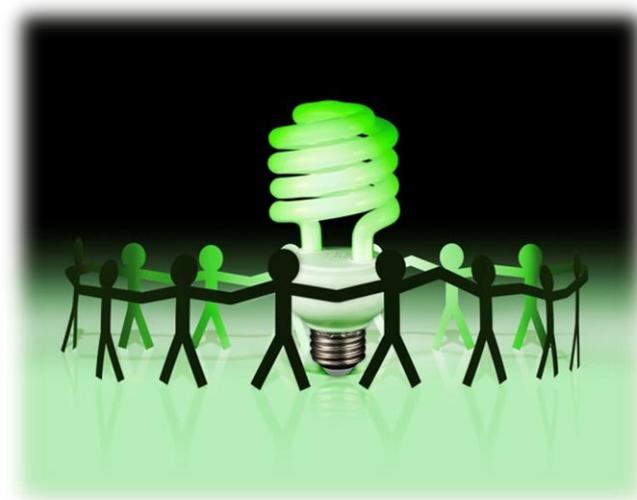


Where are we now?

- On SIPRNET
 - Only SIPRNET tool exclusively for S&T collaboration
- Pilot on NIPR site

Community Participation

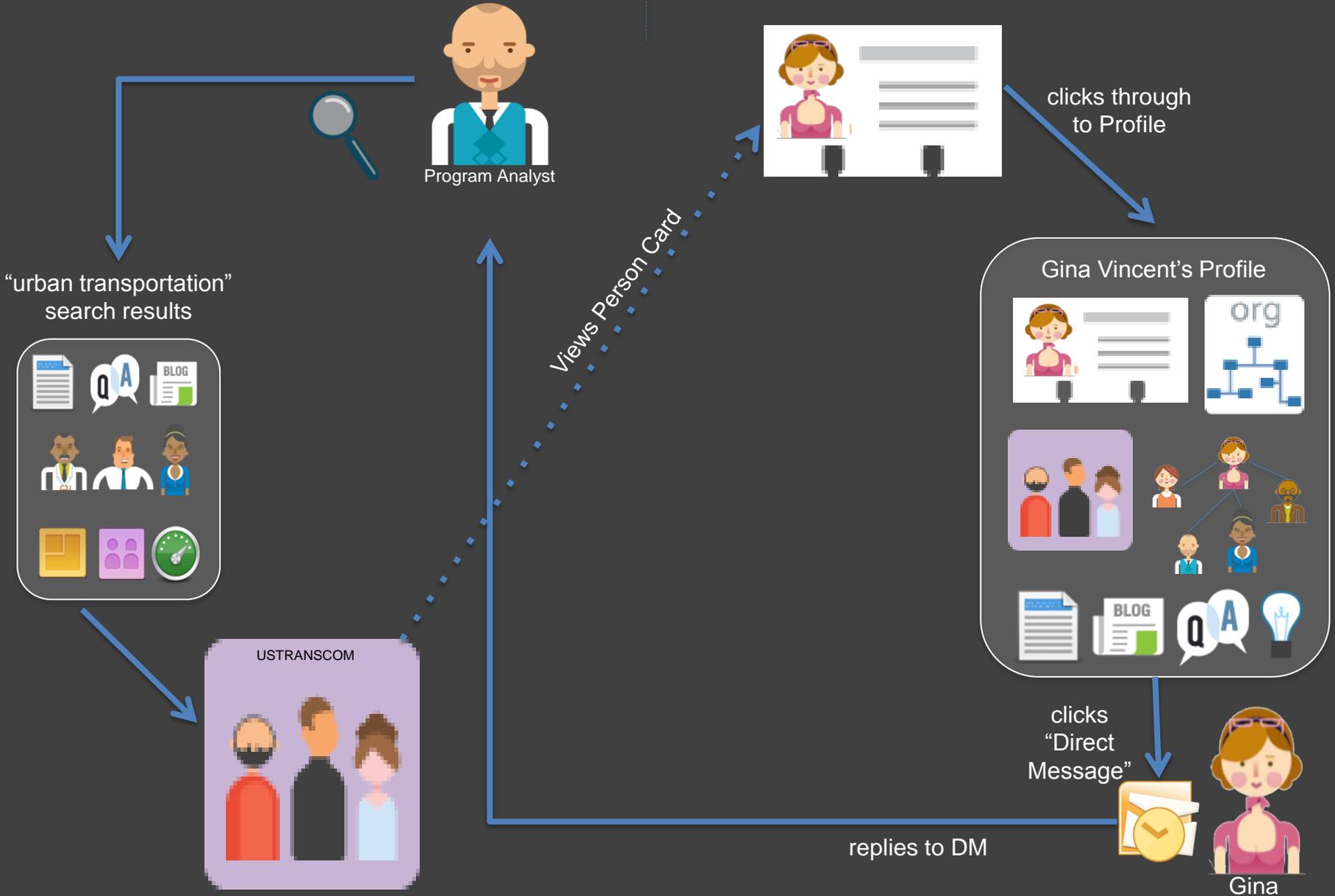
- Access experts within the DoD
- Inspire next generation
- Engage the community on solving challenges
- Discover similar projects
- Build on lessons learned
- Preserve the conversation



Expertise location

Search Content, People, Places

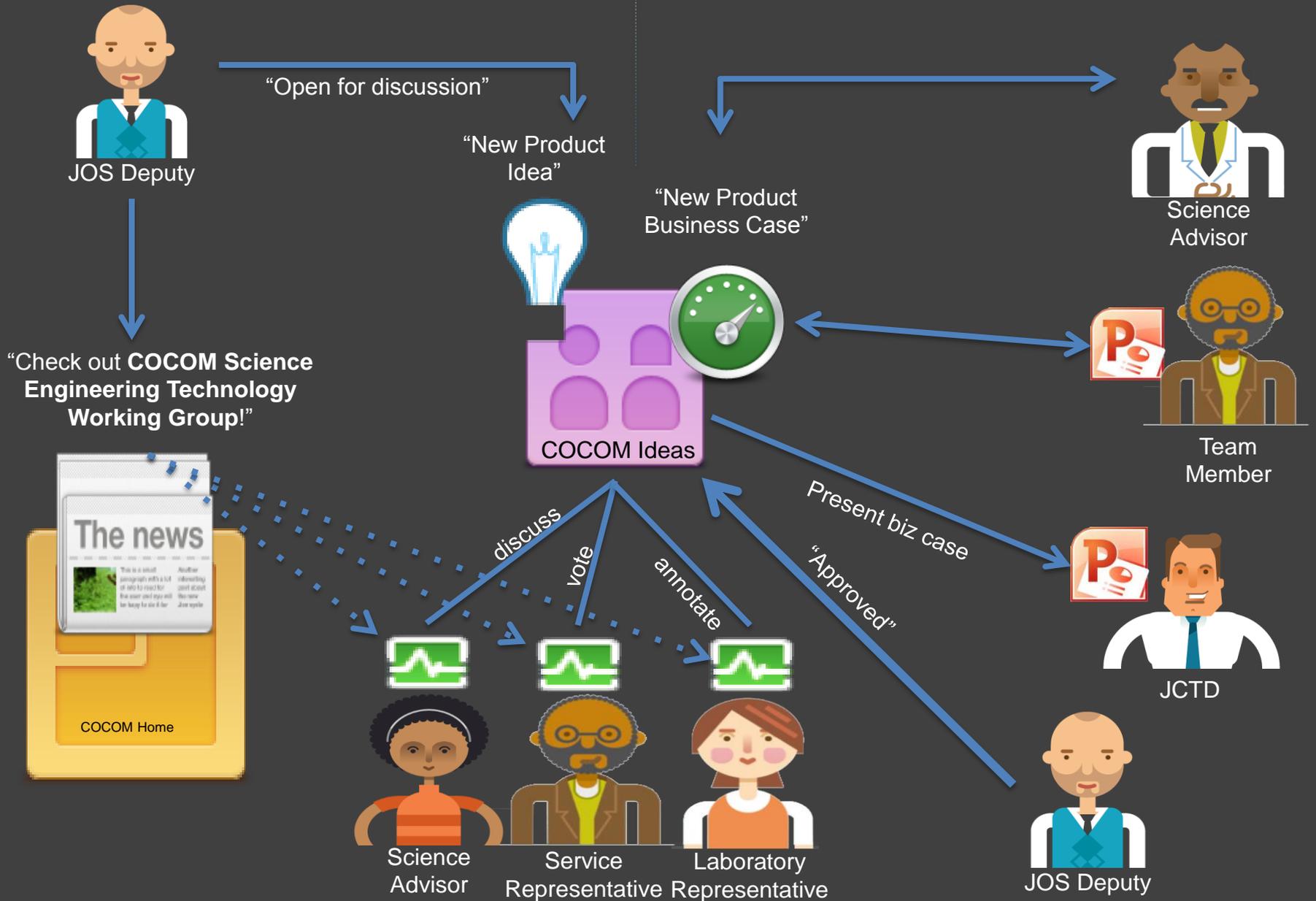
View Profiles and Connect



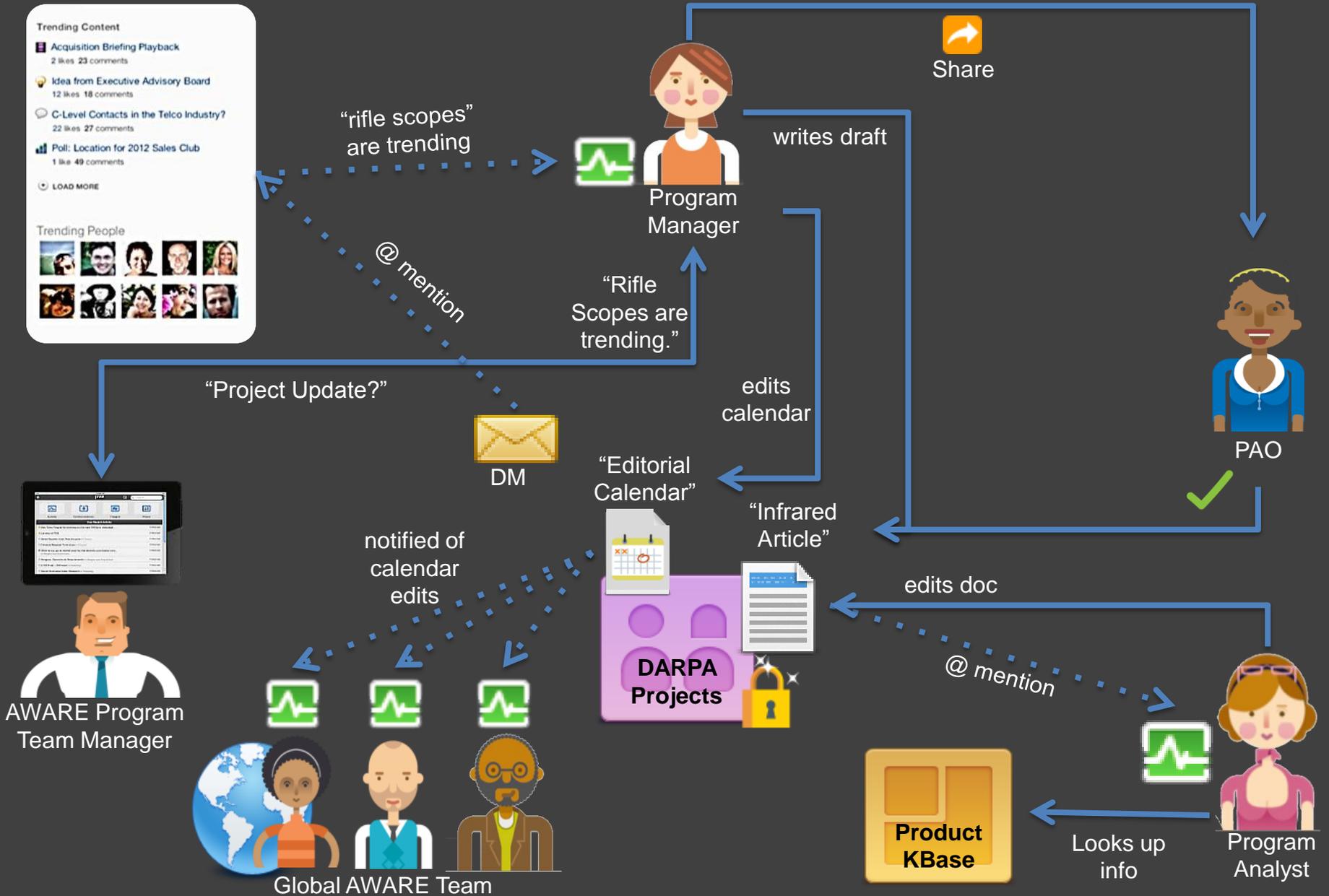
Technology innovation within the DoD

New Product Ideation

Business Case Creation

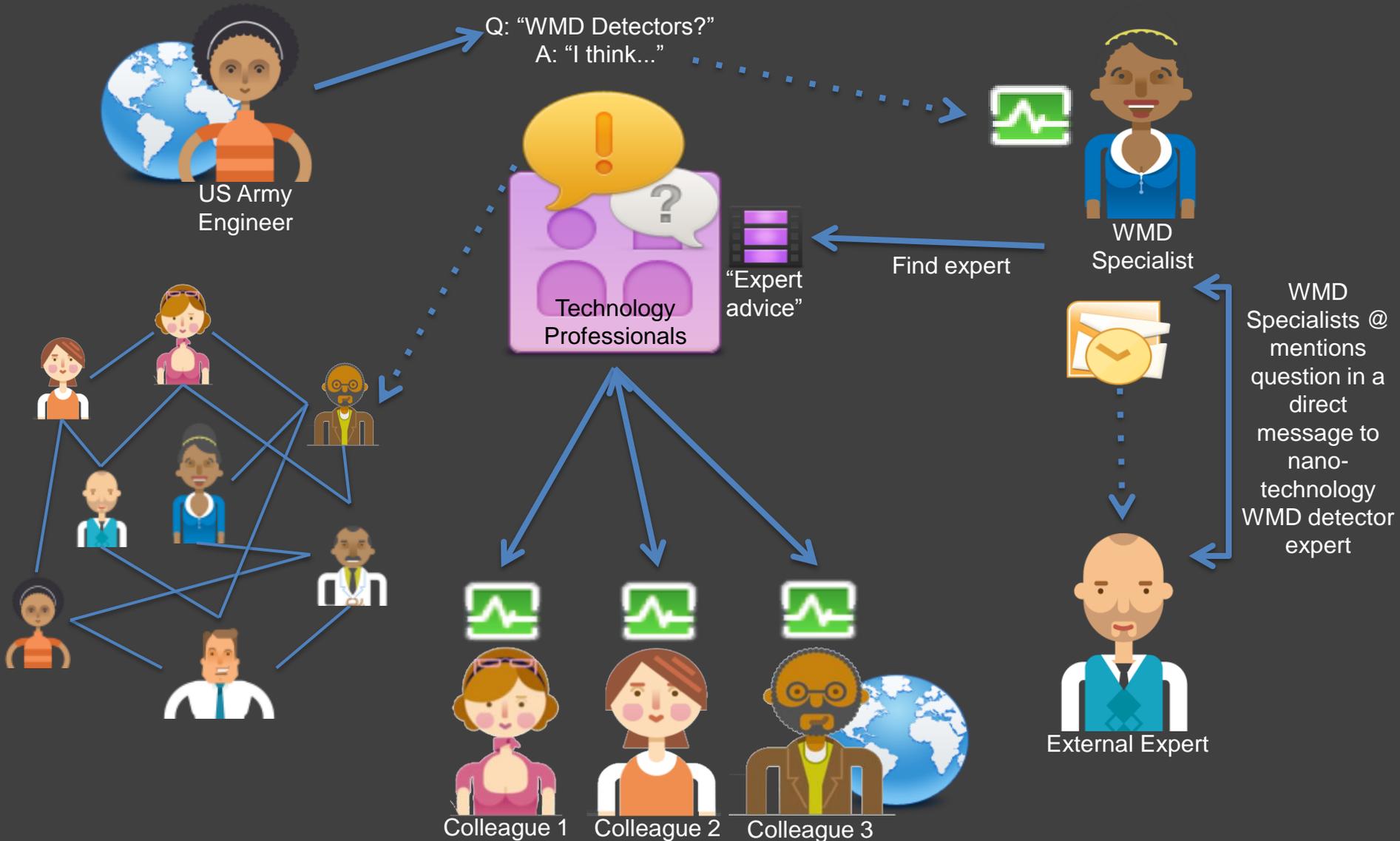


Writing a Timely Report



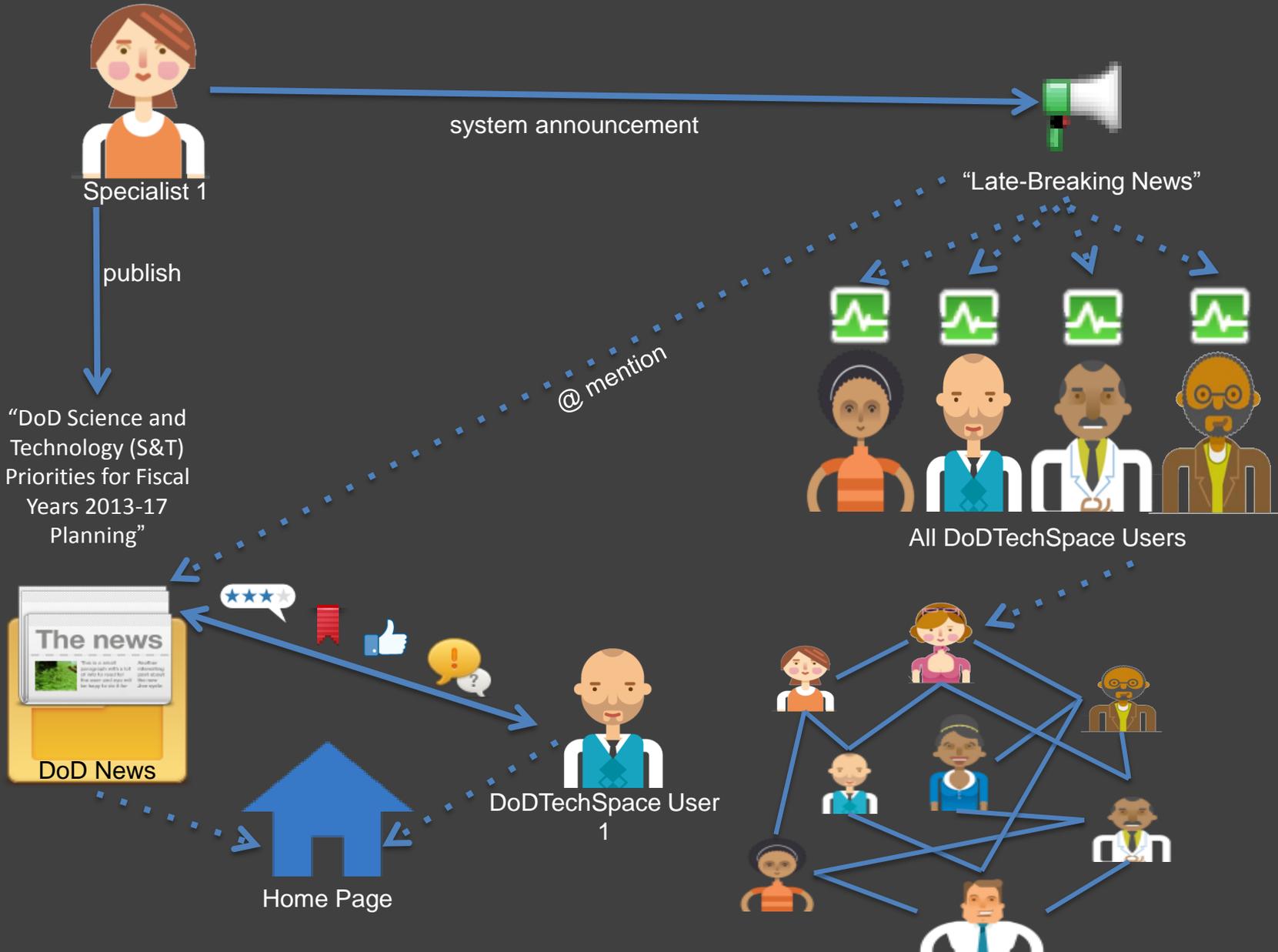
Crowd-sourcing across geographies & business divisions

Crowd-Sourced Global Ideation



Internal DoD communications distribution

DoD Communications Distribution





Questions?





STIPL Research and COCOM Reachback

Ms. Christine Barrett

Technical Information Specialist, DTIC



STIPL Research

STIPL

- **Science & Technology Integrated Priority List**
 - distilled from IPLs, based on combatant commander's highest priority requirements
- **DTIC Team**
 - three person team: 1 retired Army, 1 retired Marine Reservist and 1 civilian



STIPL Research

What We Research

- **DTIC databases**
 - **+4 million records**
 - **URED**
 - **TEMS**
 - **Technical Reports**
- **DoD SBIR (DoD Small Business Innovation Research)**



STIPL Research

End Product

Spreadsheet with potential solutions for COCOM needs.

- Sent to COCOM Science Advisor
- Post to DoDTechSpace (NIPR / SIPR)
- Post to DoDTechipedia (NIPR / SIPR)

| A | B | C | D | E | F | G | H |
|--------------------------------------|--|---|-----------------------------|----------------------|--|--------------------|----------------------------------|
| STIPL | Project Title | Program Objective | Responsible Organization | Responsible POC Name | Responsible POC Contact Info (Phone & Email) | Source | Source ID |
| Approaches Supporting long endurance | Wide Area Video | Phase-II project will design, develop and integrate an effective and efficient algorithm to Autonomous Real-time | | Baldwin, Alex | (703) 644-9234 | SBIR | Contract Number W77P4Q-10-C-2398 |
| | Test results of the Solar-Powered AUV System | The OBJECTIVE is a 30-minute endurance test using SAUV II primarily to demonstrate that the vehicle is capable of conducting | AIR FORCE RESEARCH LAB ROME | Johnson, Don | Phone:315 819 2315 Email: Don.johnson@rl.af.mil | Research Summaries | DF538222 |
| | | This project will bring to the point of transition new compression | | Hill, Susie | (703) 680-2965 | SBIR | Contract Number W88P4Q-09-C-6578 |
| | LONG ENDURANCE MULTIMEDIA TELEVISION VEHICLE (LEMV) | Meta-Physical Optics | | Barrett, Jessie | (703) 676-7228 jbarrett@metaphysicaloptics.com | Technical Reports | ADB222519 |
| | Tube Launched UAS with Modular Payload Bays and Interfaces | address modular sensor payload bays, extended battery capacity, and quiet propulsion system. | Lionel Technologies, Inc. | Mollar, Canine | (520) 121-3224 cmollar@lionelTechnologies.com | SBIR | Contract Number N77724-11-C-40 |
| | Endurance Unmanned Aerial Vehicles | This PE will focus USAF efforts on long endurance Remotely-Piloted Aircraft (RPAs), which allows days, months, or years of endurance as well as their | AF | Spears, Whitney | 404-760-4545 wspearsstar@airl.mil.com | RDDS | PE 0305205F |



COCOM Reachback

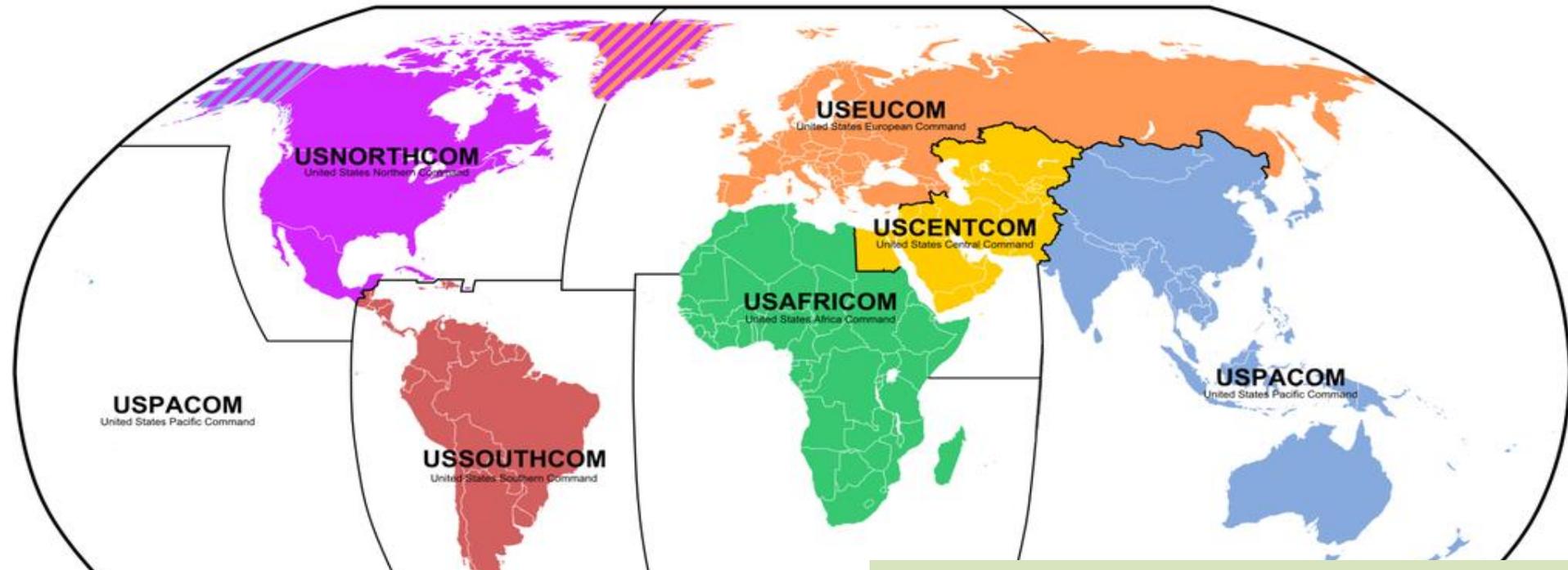
Reachback

The process of obtaining products, services, and applications, or forces, or equipment, or material from organizations that are not forward deployed.

Joint Pub 3-30



COCOM Reachback



Geographic Commands

USAFRICOM USNORTHCOM
USCENTCOM USPACOM
USEUCOM USSOUTHCOM

Functional Commands

USSOCOM USSTRATCOM
USTRANSCOM



COCOM Reachback

Collaboration

- Research special topics for military exercises
- RFIs (requests for information)
- Special requests

COCOM Reachback

Collaboration

- Starts with COCOMs or DTIC
- Solutions and ideas spark collaboration
- Continuing dialog among COCOMs

The screenshot displays the DoD TechSpace website interface. At the top, there is a navigation bar with links for Home, Browse, Links, Create, DoDTechpedia, DTIC Online (AC), Aristotle, and TEMS. Below this is a search bar and an announcement banner. The main content area is divided into several sections: Quick Tips, Application Suite (listing DoDTechpedia, Defense Communities, Aristotle, and DTIC Online AC), Popular Content, Latest Poll, and Expert Search. The bottom section shows the COCOM S&T Community page, specifically the CSTC Home page, which includes a search bar, content areas, and a list of logos for various military commands. The page also features a notice about Warfighter and COCOM Request for Information (RFI) and a section for items of interest, such as the FY14-18 STIPL Call with STIPL Template and NORAD-NORTHCOM S&T Conference briefs.



Questions?





DoDTechipedia - In the News

Ms. Diane R. Schnurpusch

Technical Information Specialist, DTIC



DoDTechipedia - In the News

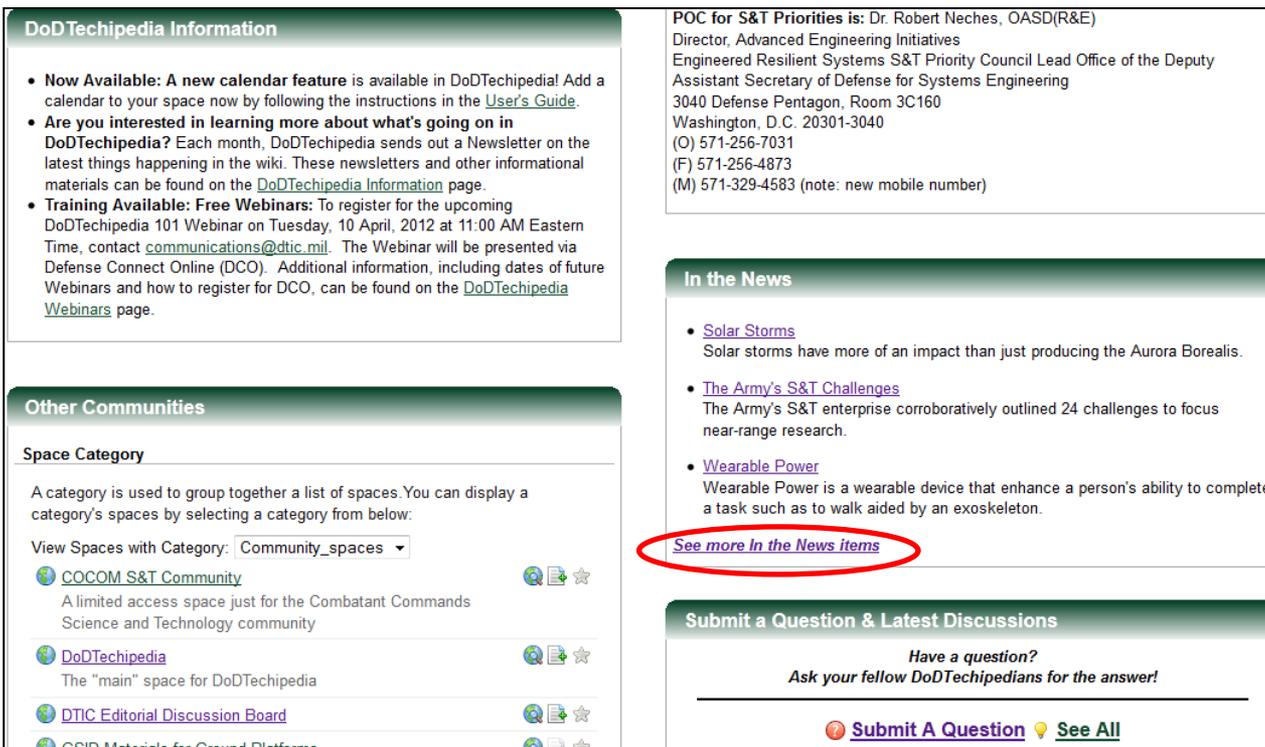
- Highlights recent S&T news items of interest to DoD
- Basis for collaboration and discussion
- Links to related DTIC content:
 - Technical reports in DTIC collection
 - DoDTechipedia pages
 - NDIA (National Defense Industrial Association) conference briefings



DoDTechipedia - In the News

- Where do I find “In the News”?

Main page <https://www.dodtechipedia.mil>



DoDTechipedia Information

- **Now Available:** A new calendar feature is available in DoDTechipedia! Add a calendar to your space now by following the instructions in the [User's Guide](#).
- **Are you interested in learning more about what's going on in DoDTechipedia?** Each month, DoDTechipedia sends out a Newsletter on the latest things happening in the wiki. These newsletters and other informational materials can be found on the [DoDTechipedia Information](#) page.
- **Training Available: Free Webinars:** To register for the upcoming DoDTechipedia 101 Webinar on Tuesday, 10 April, 2012 at 11:00 AM Eastern Time, contact communications@dtic.mil. The Webinar will be presented via Defense Connect Online (DCO). Additional information, including dates of future Webinars and how to register for DCO, can be found on the [DoDTechipedia Webinars](#) page.

Other Communities

Space Category

A category is used to group together a list of spaces. You can display a category's spaces by selecting a category from below:

View Spaces with Category:

- [COCOM S&T Community](#)
A limited access space just for the Combatant Commands Science and Technology community
- [DoDTechipedia](#)
The "main" space for DoDTechipedia
- [DTIC Editorial Discussion Board](#)
- [GSID Materials for Ground Platforms](#)

POC for S&T Priorities is: Dr. Robert Neches, OASD(R&E)
Director, Advanced Engineering Initiatives
Engineered Resilient Systems S&T Priority Council Lead Office of the Deputy Assistant Secretary of Defense for Systems Engineering
3040 Defense Pentagon, Room 3C160
Washington, D.C. 20301-3040
(O) 571-256-7031
(F) 571-256-4873
(M) 571-329-4583 (note: new mobile number)

In the News

- [Solar Storms](#)
Solar storms have more of an impact than just producing the Aurora Borealis.
- [The Army's S&T Challenges](#)
The Army's S&T enterprise corroboratively outlined 24 challenges to focus near-range research.
- [Wearable Power](#)
Wearable Power is a wearable device that enhance a person's ability to complete a task such as to walk aided by an exoskeleton.

[See more In the News items](#)

Submit a Question & Latest Discussions

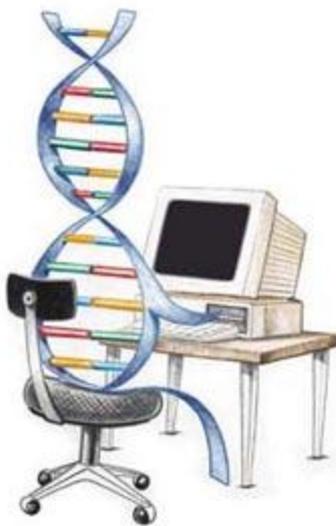
Have a question?
Ask your fellow DoDTechipeditors for the answer!

[Submit A Question](#) [See All](#)



DoDTechipedia - In the News

<https://www.dodtechipedia.mil/dodwiki/display/techipedia/In+the+News>



In the News

[Article](#) |
 [Edit Content](#) |
 [Attachments \(2\)](#) |
 [Import Word Document](#) |
 [History](#)

Added by [brattenc1227](#), last edited by [Thomas Glad](#) on Dec 01, 2011 ([view change](#))

TinyLink (useful for email): <https://www.dodtechipedia.mil/dodwiki/x/agllAw>

Labels:

[Add Labels](#)

| Title | Date |
|---|--------------------|
| Advanced Coatings | January 30, 2012 |
| Aerial Surveillance | August 24, 2011 |
| AirSea Battle | September 06, 2011 |
| Alternative Fuels | May 26, 2011 |
| Balloons in Warfare | June 23, 2011 |
| Body Armor | January 31, 2012 |
| Brain Cap Technology | August 3, 2011 |
| Chip Fabrication | October 18, 2011 |
| Crowd Surveillance | April 27, 2011 |
| Cyber Security | June 23, 2011 |
| Cyber Security -- UPDATE | July 14, 2011 |
| Developing Naval Weaponry | August 31, 2011 |
| Disruptive Technologies | September 14, 2011 |
| DoD Breast Cancer Research | June 9, 2011 |
| Earth Day and "Green" Initiatives | April 21, 2011 |
| Electronic Navigation Charts | November 2, 2011 |
| Energy Efficiency--UPDATED | December 1, 2011 |
| Environmental Cleanup of Agent Orange | June 29, 2011 |
| Explosive Ordnance Disposal | November 9, 2011 |
| Feeding the Troops | August 31, 2011 |
| Fighting Wildfires | June 23, 2011 |
| First Women at the Military Academies | July 7, 2011 |
| Food Safety | June 9, 2011 |
| Food Safety (UPDATE) | July 27, 2011 |
| Fuel Efficiency | June 29, 2011 |
| Fuzes and Fuzing Systems | November 16, 2011 |



DoDTechipedia - In the News

UNCLASSIFIED ONLY

Body Armor

Article Rating: ★★★★★ (0 ratings)

[Article](#) | [Edit Content](#) | [Attachments \(6\)](#) | [Import Word Document](#) | [History](#)

[+](#) Add [x](#) Delete [✉](#) Invite [⚙](#) Tools [v](#)

Added by [Thomas Glad](#), last edited by [Diane Schnurrpusch](#) on Mar 09, 2012 ([view change](#))

TinyLink (useful for email): <https://www.dodtechipedia.mil/dodwiki/x/tQLxAw>

Labels:

[Add Labels](#)

In the News Body Armor

DTIC Resources Relevant to Major Trends

Description



From rhinoceros hide to chainmail to iron plates, body armor has been around since the beginning of organized armies and large-scale conflict. The invention of gunpowder and firearms made such armor more of a burden than benefit and was largely abandoned by the 18th Century. But advanced fibers such as Kevlar and advanced ceramics have resulted in a renaissance in personal protection since the early 1980s. New approaches have been appearing on a regular basis, like the ideas generated by research on mollusk shells in the news item to the left.

Documents from DTIC



[Survivability Analysis for the Evaluation of Personnel in Body Armor](#)

ADA535119 ([Distribution A](#))

"A new approach to personnel survivability and casualty assessment has been developed by integrating the Operational Requirement-based Casualty Assessment (ORCA) modeling system into MUVES-S2."

[Ballistic Testing of Hard Body Armor Using Clay Backing](#)

ADB371340, ([Distribution D](#))

Guidance on testing body armor.

[Soft Body Armor: An Overview of Materials, Manufacturing, Testing, and](#)





DoDTechlopedia - In the News

Stories from the Media

[Sea mollusks hold secret to stronger body armor](#)

Armed With Science, March 22, 2011

"The development of tools – from optical microscopy to electron microscopes – has advanced our understanding of the microstructures and microstructural architectures in nature's materials. The development of tools – from optical microscopy to electron microscopes – has advanced our understanding of the microstructures and microstructural architectures in nature's materials."

[Body Armor Made From Spider Silk](#)

Discovery News, 15 Jan 2012

"After decades of trying, scientists may have finally found a way to make body armor out of spider silk." Spider silk is stronger by weight than Kevlar.

Content from DoDTechlopedia



[Armor Technology](#)

"Armor materials and systems may be and have been tailored for a multitude of applications, protecting critical systems, assets of strategic value, or human body parts..."

[Nanotechnology](#)

"Nanotechnology being tested for next-gen body armor."

[More in DoDTechlopedia](#)

Find other professionals working in this area



[Add Discussion](#)

[FOIA](#) | [S&T Resources](#) | [DTIC A-Z](#) | [Submit Documents](#) | [IACs](#) | [Contact Us](#) | [DoD S&T Priorities](#) | [Customer Support](#) | [Help](#)

[Accessibility \(508\)](#) | [Site Map](#) | [Security & Privacy Notice](#) | [Guidelines](#) | [Feedback](#) | [Release Notes](#)

DoDTechlopedia content is dynamic. Only Unclassified content should be posted.

[Armor - Vest Components Need Improvement, ADA546352, \(Distribution A\)](#)

[Body Armor Explosion and Fragmentation Protection \(Spiral 4\), ADB371000 \(Distribution A\)](#)

[Ballistic Analysis of a Silk Body Armor, ADB291648 \(Distribution B\)](#)

[More in DTIC](#)

[Proceedings from the National Defense Industrial Association \(NDIA\)](#)



[Special Operations Forces Industry Conference](#)

[Advanced Materials for Armor and Weight Reduction](#)



DoDTechipedia - In the News

- How can I collaborate on an “In the News” article?
 - Add discussion or an entire page
 - Invite a friend to join the discussion
 - Edit an article
 - May require wiki mark-up language
 - Add labels (tagging)
 - Rate an article
 - Suggest topics (send to ref@dtic.mil)
 - Watch an article
 - Contact the author



DoDTechipedia - In the News

- Page
- Discussion

Adding discussion

Find other professionals working in this area 

[Add Discussion](#)

[FOIA](#) | [S&T Resources](#) | [DTIC A-Z](#) | [Submit Documents](#) | [IACs](#) | [Contact](#)
[Accessibility \(508\)](#) | [Site Map](#) | [Security & Privacy Notice](#) | [G](#)

Discussions ([Hide Discussions](#))

Rich Text | Wiki Markup | Preview

Paragraph | **B** | *I* | U | ABC | | | | | | | | | Insert | | |

Hint: press **Ctrl+Shift+X** to cut a row and **Ctrl+Shift+V** to paste a row in a table.



DoDTechipedia - In the News

Article Rating: ★★★★★ (0 ratings)

Delete **✉ Invite** ⚙ Tools ▾

- Invite to Register
- Invite to Discussion
- Invite to Article

Invite a Friend

To:* separate email addresses with a comma (,).

Subject:*

Invitation to Join a Discussion in DoDTechipedia Limited

Message:*

This is an invitation from Diane Schnurpusch to initiate or join a discussion on the 'Body Armor' page. Your input pertaining to the information being discussed on this page is vital to our goal, finding reliable science and technology solutions, and sharing ideas and / or topics across the wiki. If you are already a registered DoDTechipedia user and would like to participate or review the discussion for this invite, please click on this link <https://www.dodtechipedia.mil/dodwiki/x/tQLxAw> to get started.

For help adding to a discussion, see "How to Use the Add a Discussion Functionality" page at <https://www.dodtechipedia.mil/dodwiki/x/qltwAQ>.

If you are not already a registered DoDTechipedia user and you would like to explore the information-sharing and collaboration capabilities now available to you and other members of the DoD science and technology community as well as DoD and federal government employees and their contractors, please click on the following link to register for DoDTechipedia: <https://www.dodtechipedia.mil>.

We appreciate your contributions and hope we are also providing a useful means for you to share and access science & technology information that supports your mission.

*required

Send

Cancel



DoDTechipedia - In the News

UNCLASSIFIED ONLY

Body Armor

Article Rating: ★★★★★ (0 ratings)

Article | **Edit Content** | Attachments (6) | Import Word Document | History

+ Add | Delete | Invite | Tools

Added by [redacted] t edited by [redacted] on Mar 09, 2012 [\(view change\)](#)
TinyLink (useful for email): <https://www.dodtechipedia.mil/dodwiki/x/tQLxAw>
Labels:
[Add Labels](#)

Article Rating: ★★★★★ (0 ratings)
Your Rating: ☆☆☆☆☆

In the News Body Armor

DTIC Resources Relevant to Major Trends



From rhinoceros hide to chainmail to iron plates, body armor has been around since the beginning of organized armies and large-scale conflict. The invention of gunpowder and firearms made such armor more of a burden than benefit and was largely abandoned by the 18th Century. But advanced fibers such as Kevlar and advanced ceramics have resulted in a renaissance in personal protection since the early 1980s. New approaches have been appearing on a regular basis, like the ideas generated by research on mollusk shells in the news item to the left.

Documents from DTIC  **DTIC Online** Access Controlled
Information for the Defense Community

[Survivability Analysis for the Evaluation of Personnel in Body Armor](#)

ADA535119 [\(Distribution A\)](#)
"A new approach to personnel survivability and casualty assessment has been developed by integrating the Operational Requirement-based Casualty Assessment (ORCA) modeling system into MUVES-S2."

[Ballistic Testing of Hard Body Armor Using Clay Backing](#)

ADB371340, [\(Distribution D\)](#)
Guidance on testing body armor.

[Soft Body Armor: An Overview of Materials, Manufacturing, Testing, and](#)



DoDTechipedia - In the News

UNCLASSIFIED ONLY

Body Armor

Article Rating: ★★★★★ (0 ratings)

[+ Add](#) [Delete](#) [Invite](#) [Tools](#)

[Article](#) [Edit Content](#) [Attachments \(6\)](#) [Import Word Document](#) [History](#)

Added by _____ : edited by _____ on Mar 09, 2012 ([view change](#))
Tiny link (useful for email): <https://www.dodtechipedia.mil/dodwiki/x/TLxAw>

Labels:
[Add Labels](#)

Labels:
[armor](#) [personal_protection](#) [army](#) [body_armor](#) [Done](#)

Enter labels to add to this page:

[Add](#)

[Done](#)

Looking for a label? Just start typing.

Suggested labels: [navicp-or](#) [electronic_warfare](#) [integration](#) [electronic-warfare](#) [mathematics](#) [software](#) [e-warfare](#) [inside_dodtechipedia_2008-2010](#) [nano-science](#) [human](#) [nanotechnology](#) [technology](#) [engineering](#) [cyber](#) [science](#) [systems](#) [nano-technology](#) [ew](#) [human_systems_integration](#)

Click "add" to continue adding labels

Click "done" when you are finished.



DoDTechipedia - In the News

Labels:

[armor](#) [personal_protection](#) [army](#) [body_armor](#) [Edit](#)

Click a label to see other articles with the same label.

Label: [body_armor](#)

View: [Popular Labels](#) | [All Labels](#)

All content with label [body_armor](#).

Related Labels: [armor](#), [army_science_and_technology](#), [insect_repellant](#), [mopp_gear](#), [army](#), [force_protection](#), [fire_retardancy](#), [personal_protection](#)

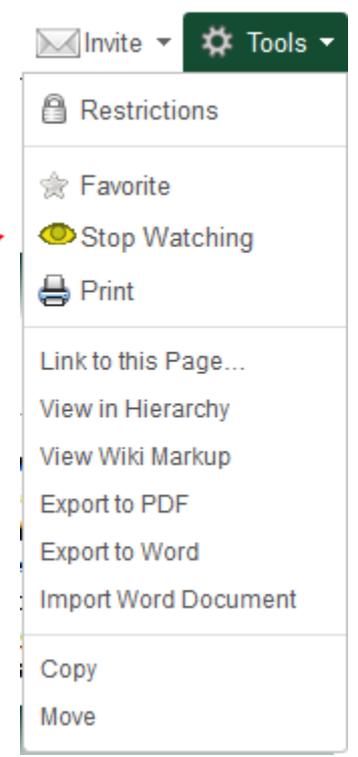
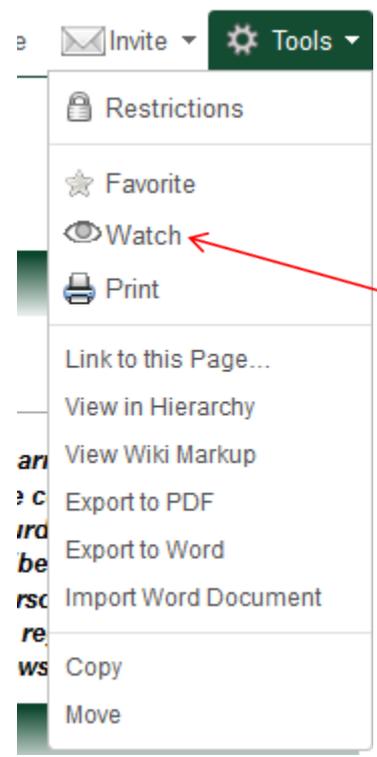
[Body Armor](#) (DoDTechipedia)
 DTIC Resources Relevant to Major Trends !bodyarmor.jpg width=350, border=0, align=center! "Lightweight, ergonomic, nonceramic ballistic armor offers more comfort and mobility for deployed warfighters." (Photo illustration by Armacel Armor Company). Sea mollusks
 ...
 Other labels: [armor](#), [personal_protection](#), [army](#)

[Force Protection - Soldier and Small Unit](#) (DoDTechipedia)
 Introduction Force Protection is outlined in {}Big Army Problems that S&T Must Help Solve Current Focus: "Soldier as the Decisive Edge" <http://www.google.com/url?sa=t&rct=j&q=ArmyS%26T24challenges&source=web&cd=1&ved=0CCEQFjAA&url...>
 Other labels: [army](#), [army_science_and_technology](#), [force_protection](#), [mopp_gear](#), [insect_repellant](#), [fire_retardancy](#)



DoDTechipedia - In the News

Keep an “eye” on your favorite “In the News” articles.





Questions?





Collaboration in DoDTechipedia: Topical Reports

Ms. Shayna Liebler, DTIC
Management Analyst, DoDTechipedia
Contributor

Collaboration in DoDTechipedia: Topical Reports

Home | DoDTechipedia | Welcome to DoDTechipedia

DoDTechipedia Defense Communities DTIC Online (AC) Aristotle Welcome Browse Log Out

UNCLASSIFIED ONLY

Welcome to DoDTechipedia

Article Rating: ★★★★★ (1 rating)

Article Edit Content Attachments (156) Import Word Document History

Added by _____ last edited by _____ on Mar 07, 2012 (view change)

TinyLink (useful for email): <https://www.dodtechipedia.mil/dodwiki/x/AwAN>

Labels: [how-to](#) [coating](#) [Edit](#)

READ **ADD** **EDIT** **BLOG** **SHARE**

DoDTechipedia is a wiki for you, the DoD research and engineering community. The power is in your hands to add content, edit, and blog on projects in which you have an interest. Start creating today! Need help getting started? View the [tutorials](#), browse the [help](#) section, and sign up for [training](#).

Featured Article: Drug Resistant Bacteria



Antibiotic resistance is a type of drug resistance where a microorganism is able to survive exposure to an antibiotic. While a spontaneous or induced genetic mutation in bacteria may confer resistance to antimicrobial drugs, genes that confer resistance can be transferred between bacteria in a horizontal fashion by conjugation, transduction, or transformation. Thus a gene for antibiotic resistance which had evolved via natural selection may be shared. Evolutionary stress such as exposure to antibiotics then selects for the antibiotic resistant trait. Many antibiotic resistance genes reside on plasmids, facilitating their transfer.

[\[more...\]](#)

DoDTechipedia Information

DoD S&T Priorities

- [Memo for DoD S&T Priorities for Fiscal Years 2013-17 Planning](#)
- [Autonomy](#)
- [Combating Weapons of Mass Destruction \(WMD\)](#)
- [Cyber Science and Technology](#)
- [Data to Decisions](#)
- [Electronic Warfare \(EW\)](#)
- [Engineered Resilient Systems \(ERS\)](#)
- [Human Systems](#)

Related material from the [8th Annual Disruptive Technologies Conference](#)

POC for S&T Priorities is: Dr. Robert Neches, OASD(R&E)
Director, Advanced Engineering Initiatives
Engineered Resilient Systems S&T Priority Council Lead Office of the Deputy Assistant Secretary of Defense for Systems Engineering

Search: Go

Content Areas:

- [Home](#)
- [Tech Discovery](#)
- [Tech Challenges](#)
- [Organizations](#)
- [Countries](#)
- [News & Events](#)
- [Blogs](#)
- [Acronyms](#)
- [Terminology](#)
- [My Favorites](#)

R&E Community:

- [ASD\(R&E\)](#)
- [DTIC](#)
- [Defense Communities \(DoD/Contractor Only\)](#)
- [Other Communities](#)

General Information:

- [About Us](#)
- [Help](#)
- [FAQ](#)
- [Tutorials](#)



Collaboration in DoDTechlopedia: Topical Reports



Collaboration in DoDTechipedia: Topical Reports

Home > DoDTechipedia > Welcome to DoDTechipedia

Welcome [dropdown] Browse [dropdown] Log Out

DoDTechipedia Defense Communities DTIC Online (AC) Aristotle

UNCLASSIFIED ONLY

Welcome to DoDTechipedia

Article Rating: ★★★★★ (1 rating)

Article Edit Content Attachments (157) Import Word Document History

Added by [dropdown] last edited by [dropdown] on Mar 13, 2012 (view change)

TinyLink (useful for email): <https://www.dodtechipedia.mil/dodwiki/x/AwAN>

Labels: [how-to](#) [cqatkwg](#) [Edit](#)



Don't get left behind with the floppies! Use DoDTechipedia to add content, edit, and blog on the projects in which you're interested for the DoD Research and Engineering Community. Start Creating today! Need help getting started? View the [tutorials](#), browse the [help](#) section, and sign up for [training](#).

Featured Article: Drug Resistant Bacteria

 Antibiotic resistance is a type of drug resistance where a microorganism is able to survive exposure to an antibiotic. While a spontaneous or induced genetic mutation in bacteria may confer resistance to antimicrobial drugs, genes that confer resistance can be transferred between bacteria in a horizontal fashion by conjugation, transduction, or transformation. Thus a gene for antibiotic resistance which had evolved via natural selection may be shared. Evolutionary stress such as exposure to antibiotics then selects for the antibiotic resistant trait. Many antibiotic resistance genes reside on plasmids, facilitating their transfer. [\(more...\)](#)

DoDTechipedia Information

DoD S&T Priorities

- [Memo for DoD S&T Priorities for Fiscal Years 2013-17 Planning](#)
- [Autonomy](#)
- [Combating Weapons of Mass Destruction \(WMD\)](#)
- [Cyber Science and Technology](#)
- [Data to Decisions](#)
- [Electronic Warfare \(EW\)](#)
- [Engineered Resilient Systems \(ERS\)](#)
- [Human Systems](#)

Related material from the 9th Annual Disruptive Technologies Conference

Local intranet | Protected Mode: Off 125%



Collaboration in DoDTechipedia: Topical Reports

Technology Discovery



- Is for top-level articles focusing on a particular Science & Technology (S&T) Investment Area or Enabling Technology.



Collaboration in DoDTechipedia: Topical Reports

Technology Challenges

- Represent technical challenges that DoD faces in maintaining military readiness and effective mission capabilities.





Collaboration in DoDTechipedia: Topical Reports

Topical Reports

- Introduction – Background about topic
- Image
- Topical Research in the DTIC collection
- Footnotes
- References
- Saved search - Technical Reports and Research Summaries



Collaboration in DoDTechipedia: Topical Reports

Drug Resistant Bacteria

Article Rating: ★★★★★ (0 ratings)

[Article](#) [Edit Content](#) [Attachments \(1\)](#) [Import Word Document](#) [History](#)

[+](#) Add [✖](#) Delete [✉](#) Invite [⚙](#) Tools [▾](#)

Added by [levinea0000](#), last edited by [levinea0000](#) on Dec 23, 2011 ([view change](#))

TinyLink (useful for email): <https://www.dodtechipedia.mil/dodwiki/x/qXfAw>

Labels:

[drug_resistant_bacteria](#) [drug_resistant](#) [antibiotic_resistance](#) [antibiotic](#) [antibiotic_resistant](#) [superbug](#) [super_bacterium](#) [Edit](#)

Introduction

"Antibiotic resistance is a type of drug resistance where a microorganism is able to survive exposure to an antibiotic. While a spontaneous or induced genetic mutation in bacteria may confer resistance to antimicrobial drugs, genes that confer resistance can be transferred between bacteria in a horizontal fashion by conjugation, transduction, or transformation. Thus a gene for antibiotic resistance which had evolved via natural selection may be shared. Evolutionary stress such as exposure to antibiotics then selects for the antibiotic resistant trait. Many antibiotic resistance genes reside on plasmids, facilitating their transfer. If a bacterium carries several resistance genes, it is called multidrug resistant (MDR) or, informally, a superbug or super bacterium."^[1]

"The military has been a leader in recognizing and protecting against the spread of multidrug-resistant organisms, commonly known as superbugs, defense officials told Congress members yesterday. DoD has been actively engaged in measures to screen, surveil, prevent and control infection in military treatment facilities at home and on the battlefield, Dr. Jack Smith told a House subcommittee yesterday. Smith is the acting deputy assistant secretary for clinical and program policy in the Office of the Assistant Secretary of Defense for Health Affairs. Superbugs can cause infections anywhere but are especially dangerous when they arise and spread among hospital patients, Smith said. In hospital settings, the infections are most likely to contaminate surfaces and equipment like ventilators and dialysis machines; the hands of health care workers, visitors and family members; and the respiratory, urinary, skin and gastrointestinal tracts and wounds of hospitalized patients, he said."^[2]

Drug Resistant Bacteria Research

"Human pathogens that have become resistant to drug therapy are an increasing cause of burn, wound and bone infections. Drug resistance could develop in both free-floating bacteria and biofilms. One of the major difficulties in controlling biofilms is their enhanced resistance to antimicrobial agents. The problem of enhanced drug resistant infections in wounds had led researchers to examine other methods of treating infections. Among these alternative techniques is the use of biological control agents such as viruses and medical maggots. Recent studies have highlighted the potential use of predatory prokaryotes from the genera Bdellovibrio and Micavibrio to control and reduce pathogenic bacteria. This study hypothesizes that predatory prokaryotes could be used as a novel therapeutic agent in controlling war-related burns and wound infections. This study proposes to: (1) evaluate the ability of B. bacteriovorus and M. aeruginosavorus to reduce drug resistant bacteria associated with war burn and wound infections. (2) Assess the ability of B. bacteriovorus and M. aeruginosavorus to penetrate and reduce single and multispecies biofilm. (3) Enhance the potency of existing antimicrobial and antibiofilm drugs, by incorporating their use in concert with microbial predators."^[3]

"Multidrug-resistant organism (MDRO) infections, including those secondary to Acinetobacter (ACB) and extended spectrum Beta-lactamase (ESBL)-producing Enterobacteriaceae (Escherichia coli and Klebsiella species) have complicated the care of combat-injured personnel during Operations Iraqi Freedom and Enduring Freedom. Data suggest that the source of these bacterial infections includes nosocomial transmission in both deployed hospitals and receiving military medical centers (MEDCENs). Admission screening for MDRO colonization has been established to monitor this problem and effectiveness of responses to it. Admission colonization screening of injured personnel began in 2003 at the three US-based MEDCENs receiving the majority of combat-injured personnel. This was extended to Landstuhl Regional Medical Center (LRMC; Germany) in 2005. Focused on ACB initially, screening was expanded to include all MDROs in 2009 with a standardized screening strategy at LRMC and US-based MEDCENs for patients evacuated from the combat zone. Eighteen thousand five hundred sixty of 21,272 patients admitted to the 4 MEDCENs in calendar years 2005 to 2009 were screened for MDRO colonization. Average admission ACB colonization rates at the US-based MEDCENs declined during this 5-year period from 21% (2005) to 4% (2009); as did rates at LRMC (7-1%). In the first year of screening for all MDROs, 6% (171 of 2,989) of patients were found colonized at admission, only 29% (50) with ACB. Fifty-seven percent of patients (98) were colonized with ESBL-producing E. coli and 11% (18) with ESBL-producing Klebsiella species. Although colonization with ACB declined during the past 5 years, there seems to be replacement of this pathogen with ESBL-producing Enterobacteriaceae."^[4]

"Small molecules with apoptosis-inducing ability have great potential to be developed into chemotherapeutic drugs. one particularly important class of small molecule druos. the beta-lactam antibiotics. have for the past 60 years played an essential role in treating bacterial infections without causing toxic

Contents

- [Introduction](#)
- [Drug Resistant Bacteria Research](#)
- [Footnotes](#)
- [References](#)
- [Related Works in the DTIC Collection](#)

Antibiotic-resistant Staphylococcus



Collaboration in DoDTechipedia: Topical Reports

bearing human breast mcf-7 tumors.^[6]

"Despite advances in resuscitation and surgical management of combat wounds, infection remains a concerning and potentially preventable complication of combat-related injuries. Interventions currently used to prevent these infections have not been either clearly defined or subjected to rigorous clinical trials. Current infection prevention measures and wound management practices are derived from retrospective review of wartime experiences, from civilian trauma data, and from in vitro and animal data. This update to the guidelines published in 2008 incorporates evidence that has become available since 2007. These guidelines focus on care provided within hours to days of injury, chiefly within the combat zone, to those combat-injured patients with open wounds or burns. New in this update are a consolidation of antimicrobial agent recommendations to a backbone of high-dose cefazolin with or without metronidazole for most postinjury indications, and recommendations for redosing of antimicrobial agents, for use of negative pressure wound therapy, and for oxygen supplementation in flight."^[6]



A photograph of antibiotic-resistant *Staphylococcus aureus* bacteria magnified 50,000 times taken in Washington, D.C., Sept. 29, 2010. U.S. military leadership testified to the U.S. Congress about Department of Defense efforts to respond to antibiotic-resistant infection. (DoD photo by Janice Haney Carr/Released), courtesy of [Defense Imagery](#)

Footnotes

1. ^{*} http://en.wikipedia.org/wiki/Antibiotic_resistance
2. ^{*} Pellerin, Cheryl, Defense Department Responds To 'superbug' Threat.
3. ^{*} KADOURI, D. The Use Of Predatory Prokaryotes To Control Drug-resistant Bacteria And Microbial Biofilms Associated With Burn And Wound Infections
4. ^{*} Hopenhthal, Duane R et al. Multidrug-Resistant Bacterial Colonization of Combat-Injured Personnel at Admission to Medical Centers After Evacuation from Afghanistan and Iraq
5. ^{*} DOU, Q. Synthetic Beta-lactam Antibiotics As A Selective Breast Cancer Cell Apoptosis Inducer: Significance In Breast Cancer Prevention And Treatment
6. ^{*} Hopenhthal, Duane R et al., Guidelines for the Prevention of Infections Associated With Combat-Related Injuries: 2011 Update

References

- DOU, Q, Army Medical Research and Development Command, [Synthetic Beta-lactam Antibiotics As A Selective Breast Cancer Cell Apoptosis Inducer: Significance In Breast Cancer Prevention And Treatment](#), 08 November 2011, DA372337
- Hopenhthal, Duane R Crouch, Helen K English, Judith F Leach, Fluryanne Pool, Jane Conger, Nicholas G Whitman, Timothy J Wortmann, Glenn W Robertson, Janelle L Murray, Clinton K, San Antonio Military Medical Center Infectious Disease Service, [Multidrug-Resistant Bacterial Colonization of Combat-Injured Personnel at Admission to Medical Centers After Evacuation from Afghanistan and Iraq](#), July 2011, ADA546433
- Hopenhthal, Duane R ; Murray, Clinton K ; Andersen, Romney C ; Bell, R B ; Calhoun, Jason H ; Cancio, Leopoldo C ; Cho, John M ; Chung, Kevin K ; Clasper, Jon C ; Colyer, Marcus H , Army Medical Command, [Guidelines for the Prevention of Infections Associated With Combat-Related Injuries: 2011 Update](#), August 2011, ADA552009
- KADOURI, D, New Jersey Medical School, [The Use Of Predatory Prokaryotes To Control Drug-resistant Bacteria And Microbial Biofilms Associated With Burn And Wound Infections](#), 31 January 2011, DA362757
- Pellerin, Cheryl, American Forces Information Service, [Defense Department Responds To 'superbug' Threat](#), 30 September 2010, CBRNIAC-CB-159548

Related Works in the DTIC Collection

[More Technical Reports](#)

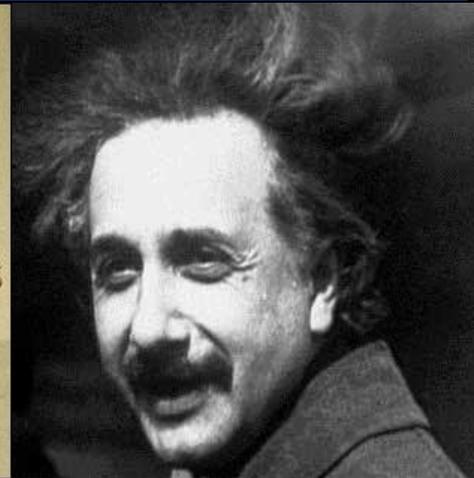
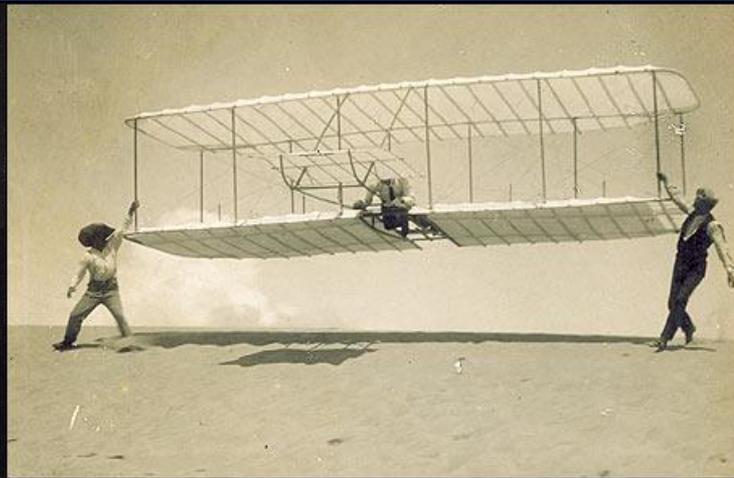
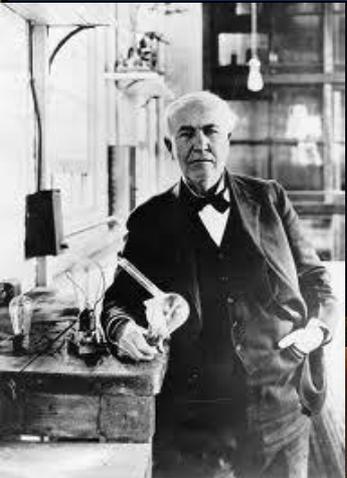
[More Research Summaries](#)

[Latest News](#)

[Add Discussion](#)



Collaboration in DoDTechipedia: Topical Reports



Are you a subject matter expert?

- Interested in sharing?



Collaboration in DoDTechipedia: Topical Reports



- Adding content on DoDTechipedia?
 - Create new pages or add content
 - Comment and start a discussion
 - Add tags
 - Link content to DoDTechSpace



Collaboration in DoDTechipedia: Topical Reports



Do you have content? -
DTIC can post it for you

Just email: ref@dtic.mil



Questions?





Contact Information

Christine Barrett, DTIC

703-767-7057

cbarrett@dtic.mil

Diane Schnurpusch, DTIC

703-767-9069

dschnurr@dtic.mil

Michele Finley, DTIC

703-767-8215

mfinley@dtic.mil

Shayna Liebler, DTIC

703-767-9105

sliebler@dtic.mil

Thomas Glad, DTIC Moderator

703-767-9053

tglad@dtic.mil



Disclaimer of Endorsement

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government, and shall not be used for advertising or product endorsement purposes.