JSSAP

Future Small Arms Technology Plan Development

The Fusion of Science and Science Fiction

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JSSAP's Future Small Arms Technology Plan
The Fusion of Science and Science Fiction

Briefing Outline

Purpose
Futures I: The Science Fiction Writers
Futures II: The Scientists, Engineers and Military
Follow-on Activities: Plan Development

JSSAP's Future Small Arms Technology Plan
The Fusion of Science and Science Fiction

Purpose

Develop the Foundations
of a
Mid-Far Term Technology Investment Strategy
for
The Joint Service Small Arms Program

Futures I
The Science Fiction Concepts

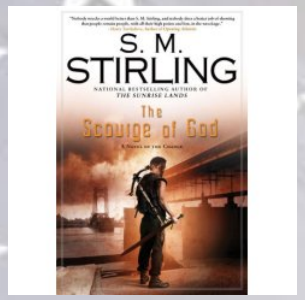
Who: Principally Science Fiction Writers

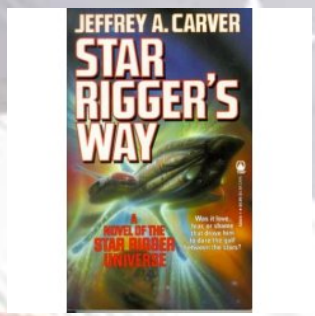
When: 11-12 March 2008

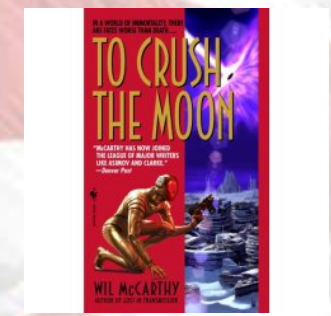
What: Broad-based Concepts Identified and Assessed
- Positives
- Negatives
- Enhancements
- Potential

The Generation of Concepts That Will Lead to Creation of a Warfighter Capable of Overwhelmingly Defeating the Enemy Combatant of the Future

Futures I
The Science Fiction Concepts







The Science Fiction Writers

Charles Gannon

S. M. Stirling

Will McCarthy

Kathleen Goonan

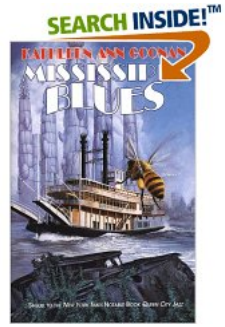
Jeffery Carver

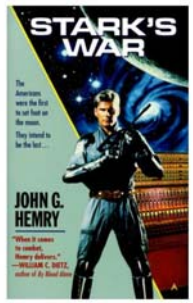
Arlan Andrews

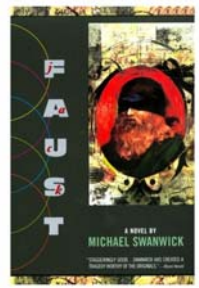
Matt Armstrong

John Hemry

Michael Swanwick

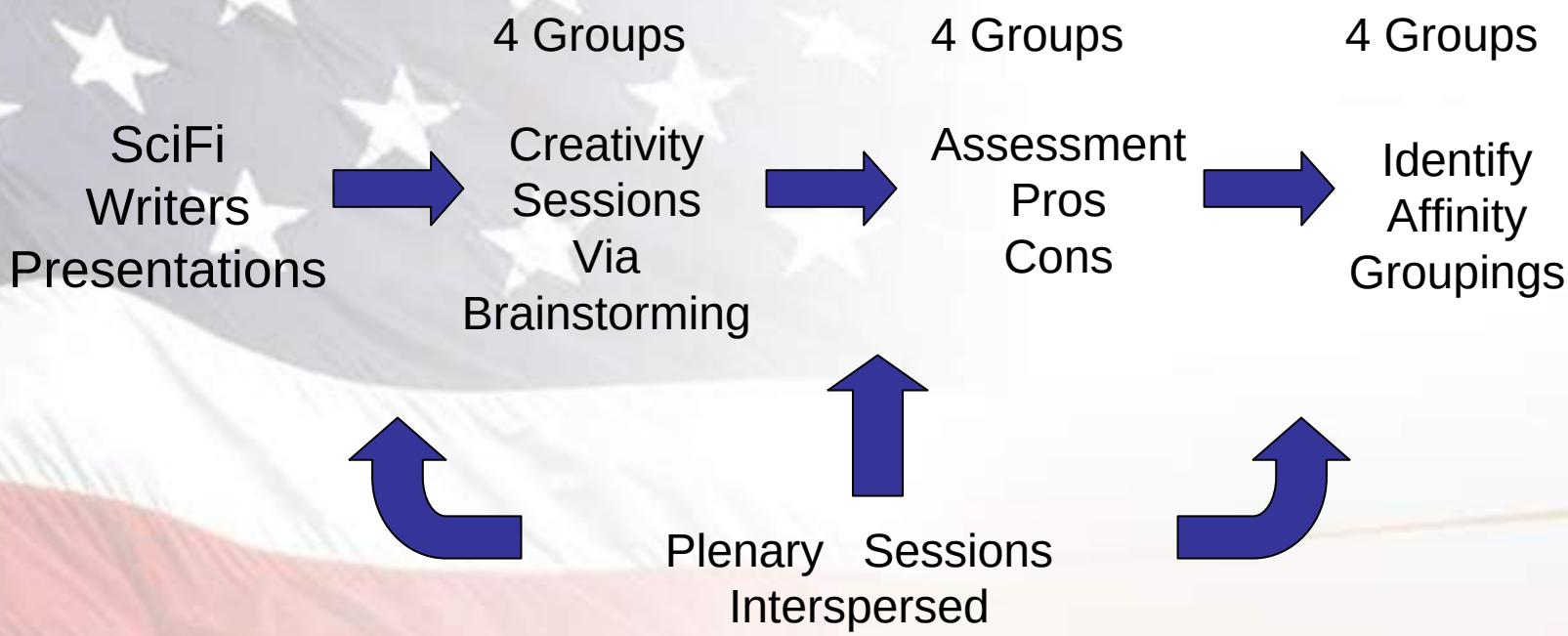






Futures I
The Science Fiction Concepts

The Process



The Generation of Concepts That Will Lead to Creation of a Warfighter Capable of Overwhelmingly Defeating the Enemy Combatant of the Future

Sampling of Concepts

Robotic Dog ("Snoopy")

Persian Donkey

G-D-H (Girlfriend – Dog – Hawk)

Understand Motivation of Enemy

Smart Dog Tag

Psychic Potential

Personal Strap-on Jets

Odors

Sheddable Exoskeleton

Artificial Muscles

Brain Plasticity

Zero Point Energy

Antimatter

Prosthetics as Fighting Aids

Panic Generator

Explosive Suppressor

Kamikaze UAV Bombers

Climate Change

Nutraceuticals

Stealth via No Emissions

Holographic Deception

"Mouse"/Camera

Futures I
The Science Fiction Concepts

Affinity Groupings

Intelligence Gathering – 10 Concepts

Human Factors – 18 Concepts

Increased Firepower – 18 Concepts

Increased Survivability – 5 Concepts

Increased Battlefield Impact – 23 Concepts

Futures I
Example Concepts

Intelligence Gathering

Understand motivation of enemy
MOUT/counter-insurgent operations
where an enemy is not in uniform.
Pros: Interpret actions as being friendly/hostile.
Predictability,
Diffuse confrontations,
Empowering the warfighter
Cons: Requires training,
Leaves the decision in warfighters hands

Human Factors

Artificial muscles
For large muscle control and fine muscle control.
May enable microsurgery on the battlefield
Pros: Provides superhuman strength, reduces fatigue
Cons: Unintended consequences

Increased Survivability

Odors
Demographic/friendly force specific products
Pros: Differentiates, allows IFF
Cons: One aspect of info (not 100% reliable)
May be easy to spoof if the predominate
odors are due to cosmetics or laundry.

Increased Battlefield Impact

Nanoparticle dust information gathering
Projectile-based dispersal of small “dust sized”
information gathering particles.
Pros: Remote, versatile
Lower interception/jamming potential
Con: Environmental issues (wind, fans, etc)

Enhanced Firepower

Zero Point Energy
Tapping energy from the quantum vacuum.
Nanotech batteries may use this
technology.
Pros: Inexpensive, freely available energy
Cons: No technology to harvest or utilize

Futures II
The Scientists, Engineers and Military

Who: SME's from Military, Industry, Academia, Government and National Labs
When: 30 April-1 May 2008
What: Technologies Mapped to Concepts and Assessed
Concepts Assessed wrt Empowerment of Small Arms Platforms
- Lethality/Incapacitation
- Network Integration
- Overall Integration

Identify the Concepts That Can Empower the Warfighter's Small Arms Platform

Futures II
The Scientists, Engineers and Military

Process

Affinity Groupings

Intelligence Gathering
Human Factors
Enhanced Firepower
Increased Battlefield Impact

4 Groups

Generate
Additional Concepts;
&
Link Technologies

4 Groups

Assessment
Mid to Long Term
Rationale

4 Groups

Assess
Linkage to
Small Arms
Platforms

4 Groups

Assessment
Network
Incapacitation
Overall Integration

Prepare Report
&
Develop Plan

Human Factors Example Output Part I

Augment the Warfighter Mobility Via Sheddable Exoskeleton

Concept	Technology	Short Term Feasibility	Long Term Feasibility	Assessment with Support Rationale

Augment the war fighter mobility by a sheddable exoskeleton	Biomechanics	H	H	• Greater Load – Short Term/ Medium
				• Greater warfighter agility – Long Term/Low
				  • Lack of acceptance from user
				  • Biomechanical limitations of body
				• Scalable complexity

Feasibility Ranking Legend: U = Undetermined, L = Low feasibility, M = Medium feasibility, H = High feasibility
Assessment to include challenges to implementation and concept/technology maturity

Human Factors Example Output Part II

Augment the Warfighter Mobility Via Sheddable Exoskeleton

Concept or Technology	Platform	Application or Linkage to Small Arms	Network Centric Integration	Improved Lethality or Incapacitation	Integration of Network centric & Lethality or Incapacitation	Assessment with Support Rationale
Biomechanics Actuators/power DARPA SARCOS ONR Lightweight materials Sensor	All platforms	Y	N/A	Y	N/A	• Leverage shock mitigation work in shipping sensitive materials • Weight and power concerns • Maturity Level •Short Term – Medium (load carriage) •Long Term – High (agility) • Recommendation - Continue funding •Customized applications •Watch link to prosthetics •Partial exoskeleton

Application/Linkage Ranking Legend: Y = Yes, N = No
Network Centric Integration Ranking Legend: U = Undetermined Risk, L = Low Risk, M = Medium Risk, H = High Risk
Improved Lethality/Incapacitation Legend: U = Undetermined, Y =Yes, N = No
Integration of Network Centric & Lethality/Incapacitation Legend: U = Undetermined Risk, L = Low Risk, M = Medium Risk, H = High Risk

What's Next?

Complete the Future Tech Assessment Report
Brief at National Small Arms Center Meeting
Solicit White Papers Submissions
Develop the Technology Plan

Forge a Technology Investment Strategy That Will Lead to Small Arms Systems Capable of Overwhelmingly Defeating the Any Enemy Combatant of the Future