



SA ARMY

TECHNOLOGY WORKSHOP

SOLDIER SYSTEM 2030

D D S I

Col (ret) Perie Franken

**TO PROVIDE
A BROAD FRAMEWORK
FOR THE
TECHNOLOGY REQUIREMENT
FOR THE SA ARMY
TOWARDS 2030**

**THE WORLD CAN CHANGE OVERNIGHT
FOR AN INDIVIDUAL BUT FOR A
SYSTEM IT MAY TAKE YEARS.**

- **OUTLINE OF TECHNOLOGY**
- **SWOT ANALYSIS**
- **STRATEGIC OVERVIEW AND SCENARIOS**
- **MILITARY MISSIONS**
- **OPERATIONAL REQUIREMENTS**
- **FUTURE SOLDIER AS A SYSTEM**
- **BATTLEFIELD OPERATING SYSTEMS**

- TECHNOLOGY'S INTERFACE WITH EQUIPMENT
- LIFE CYCLE OF SOLDIER SYSTEMS
- SOLDIER PROFILES TOWARDS 2030
- BENCHMARKING WITH OTHER ARMIES
- TECHNOLOGY CLUSTERS
- KEY TECHNOLOGY REQUIREMENTS
- TECHNOLOGY ROADMAP?

OUTLINE OF TECHNOLOGY

Technology can generally be seen as the making, usage, and knowledge of tools, machines, techniques, crafts, systems or methods of organization in order to solve a problem or perform a specific function.

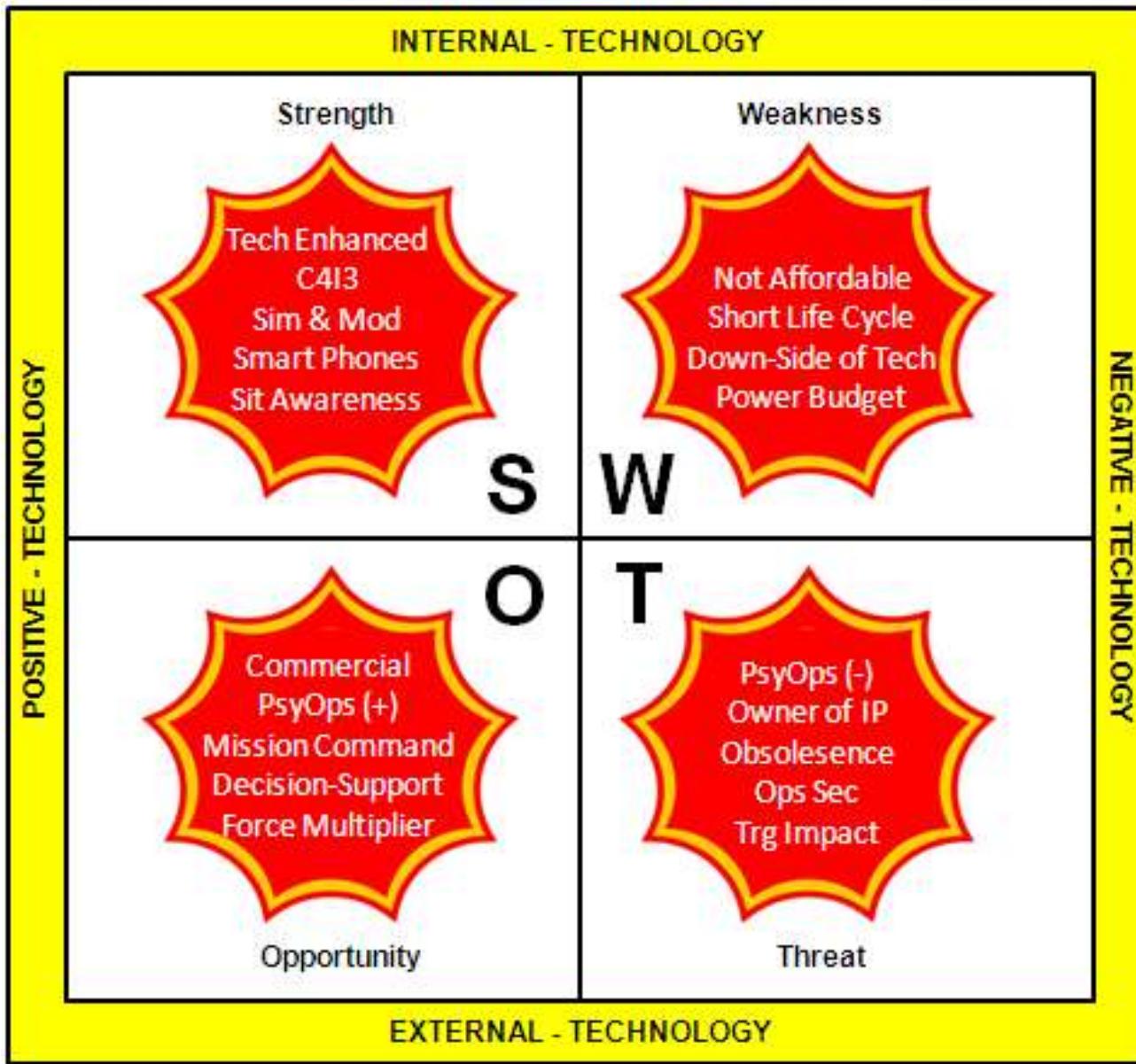
[As retrieved from http://en.wikipedia.org/wiki/Technology](http://en.wikipedia.org/wiki/Technology)

SWOT ANALYSIS



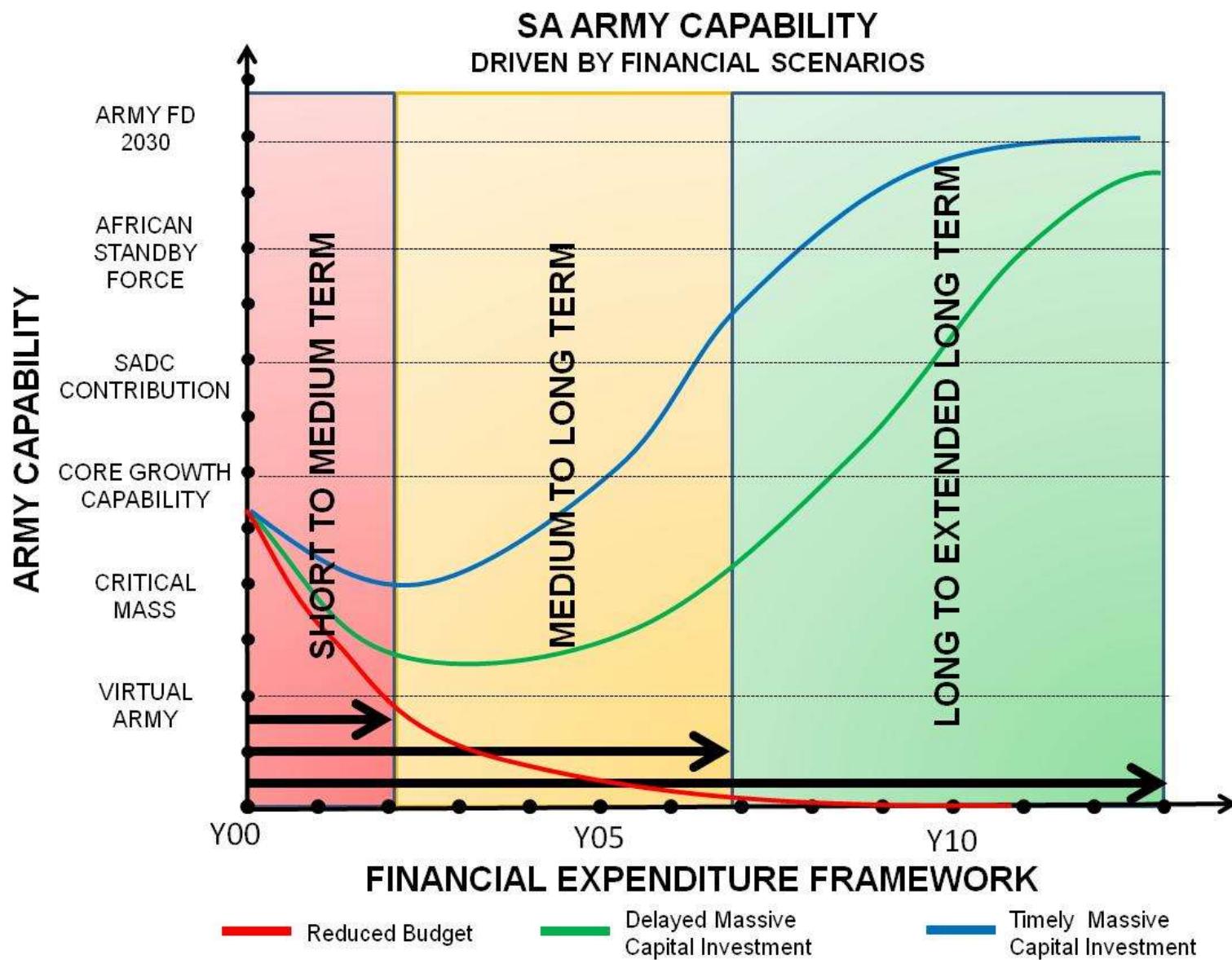
TECHNOLOGY FOCUS

SWOT ANALYSIS



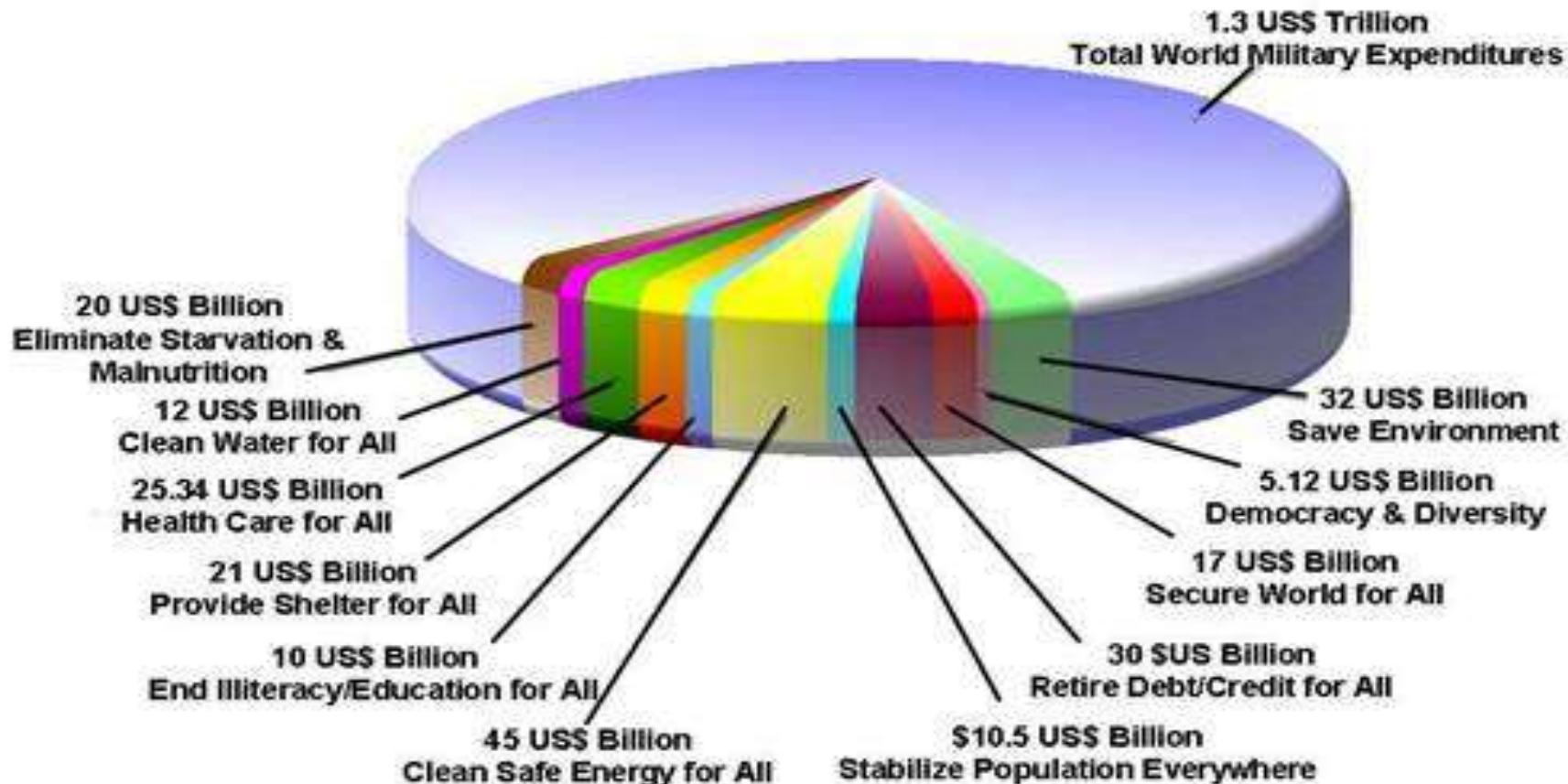
STRATEGIC OVERVIEW FOR SCENARIO FORMULATION

STRATEGIC OVERVIEW



STRATEGIC OVERVIEW

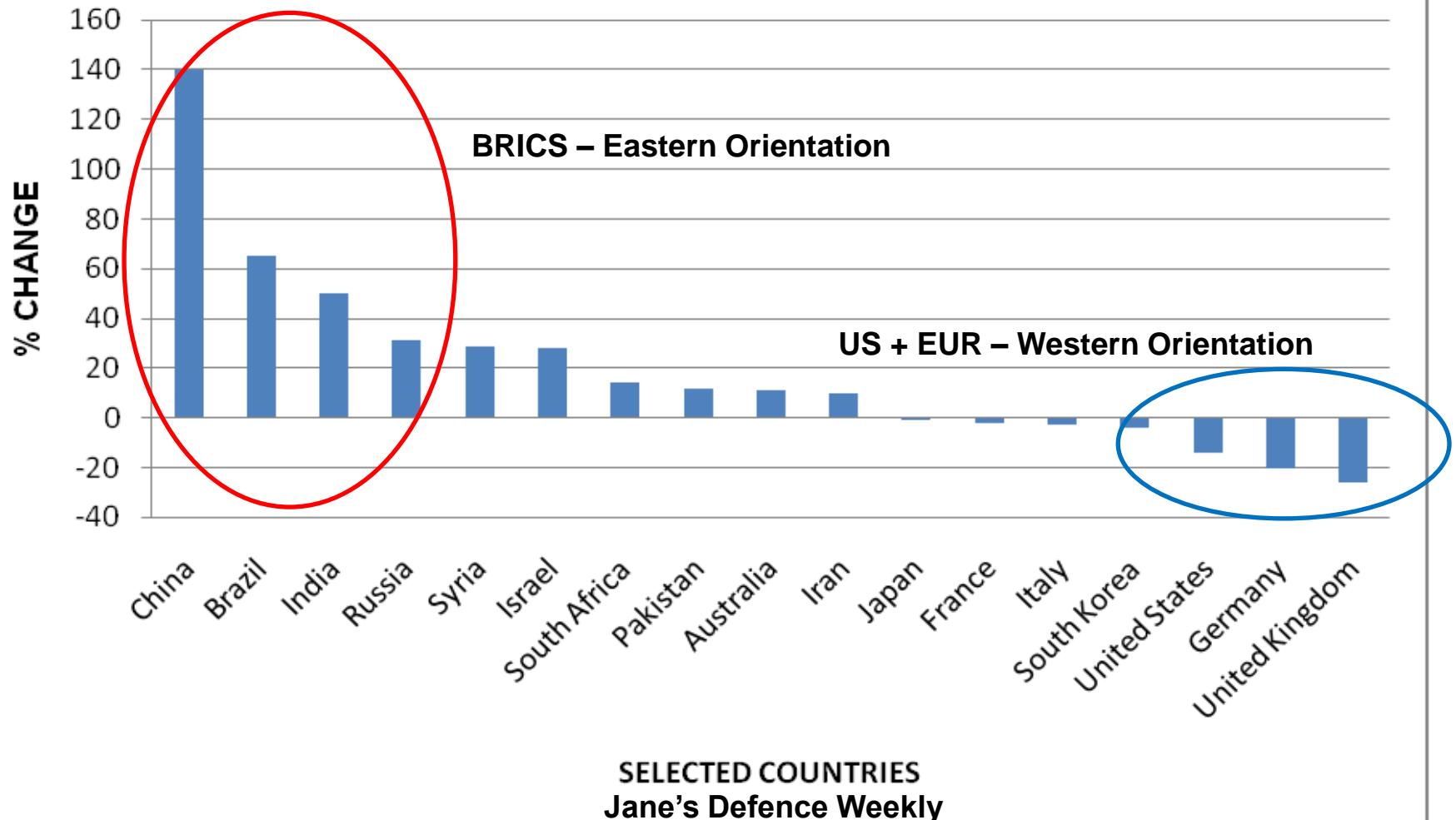
“THERE WILL ALWAYS BE CONFLICT”



1.3 \$ Trillion for War, When \$227.96 Could Buy BOTH Peace AND Prosperity

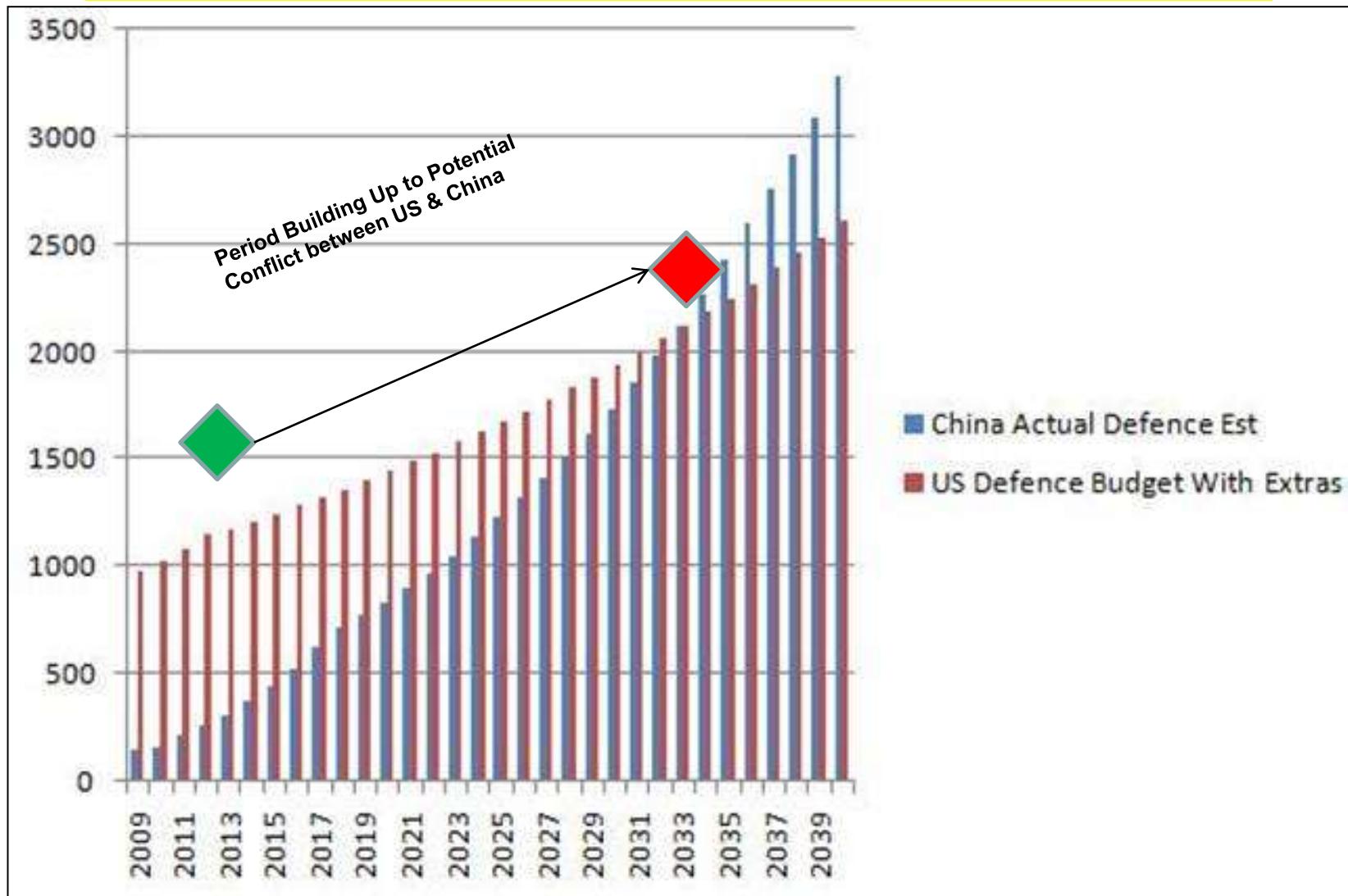
STRATEGIC OVERVIEW

FORECAST % DEFENCE SPENDING CHANGE (PERIOD 2010 TO 2015)

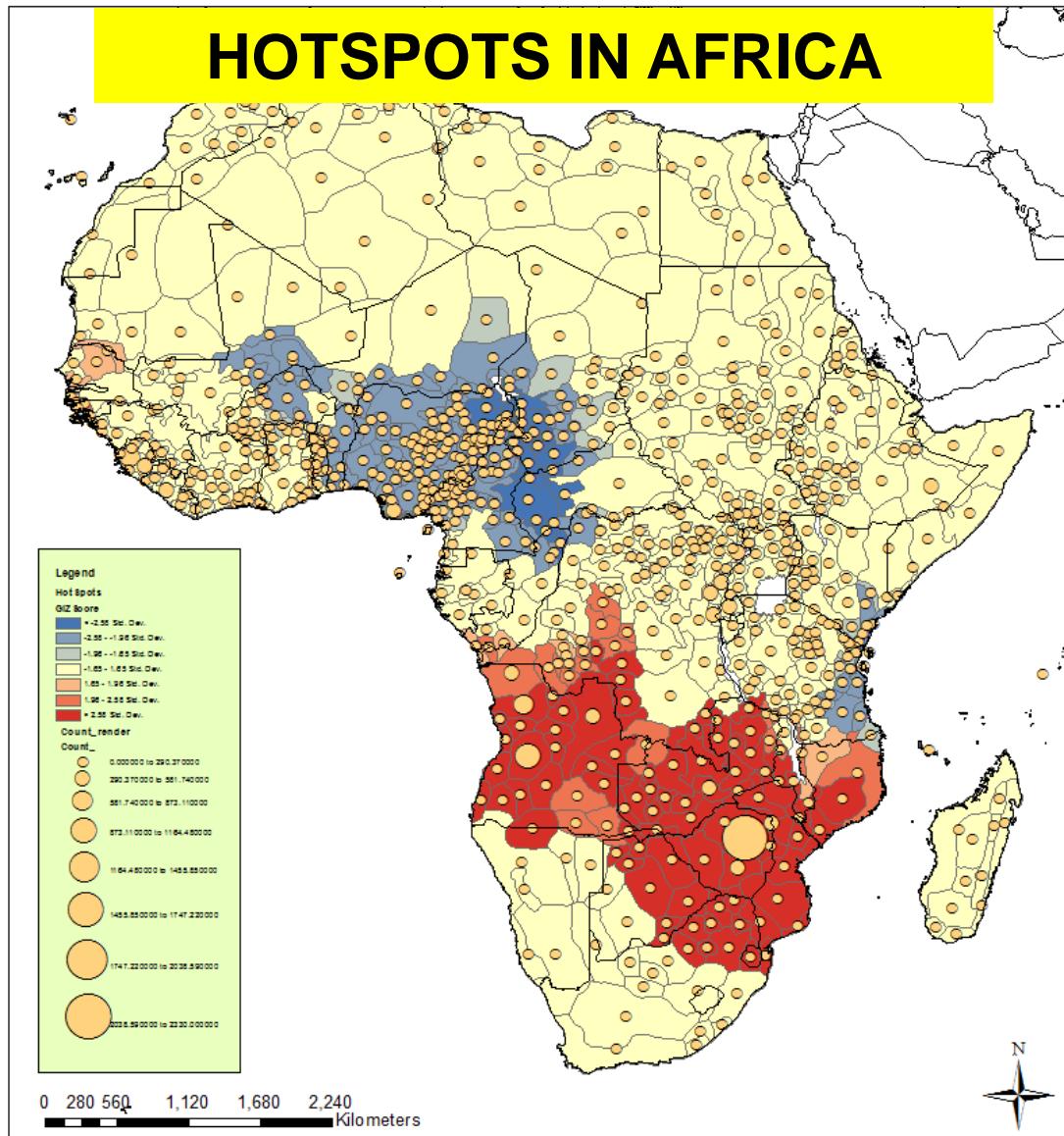


STRATEGIC OVERVIEW

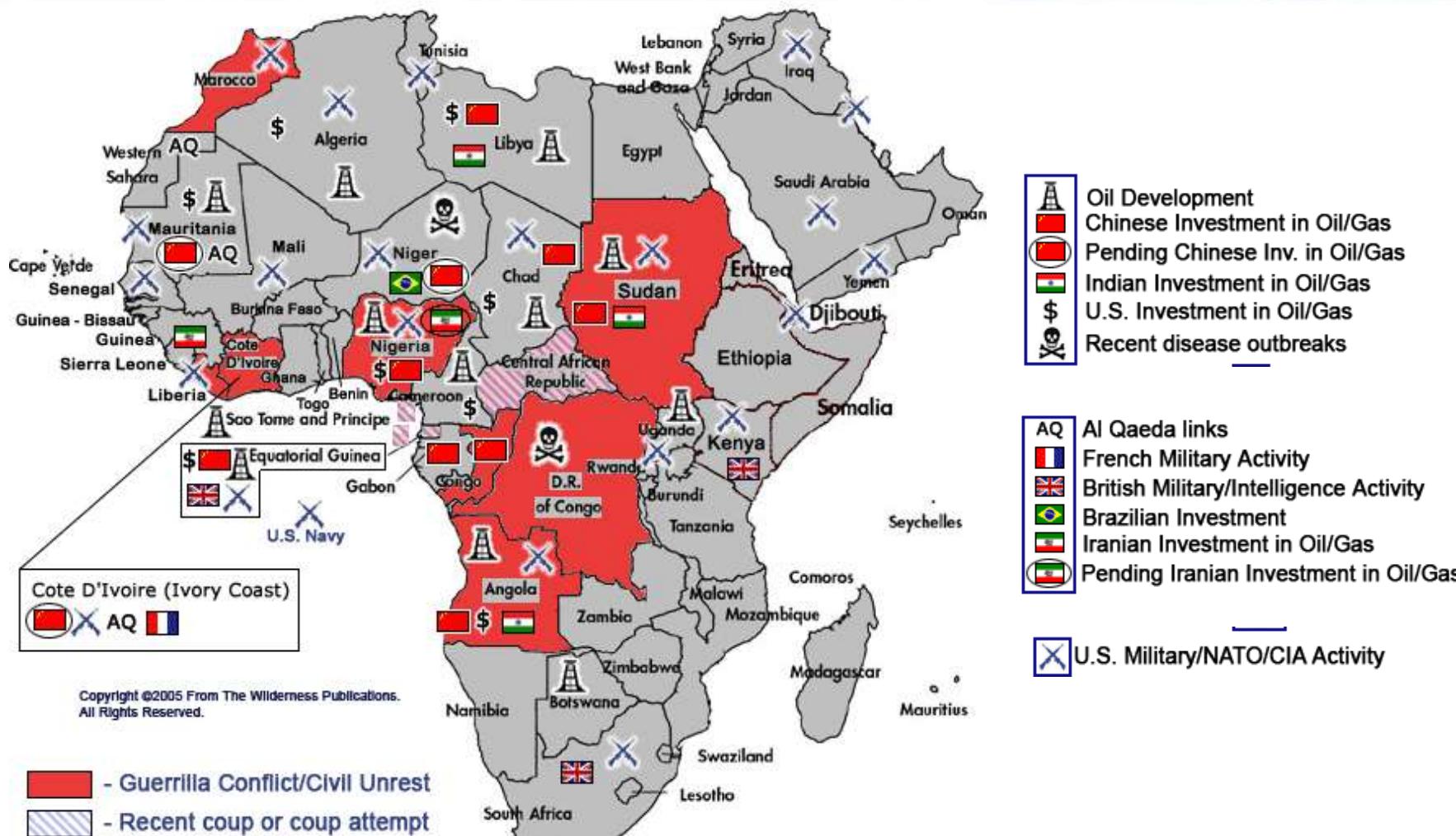
EAST-WEST CONFRONTATION?



STRATEGIC OVERVIEW



STRATEGIC OVERVIEW

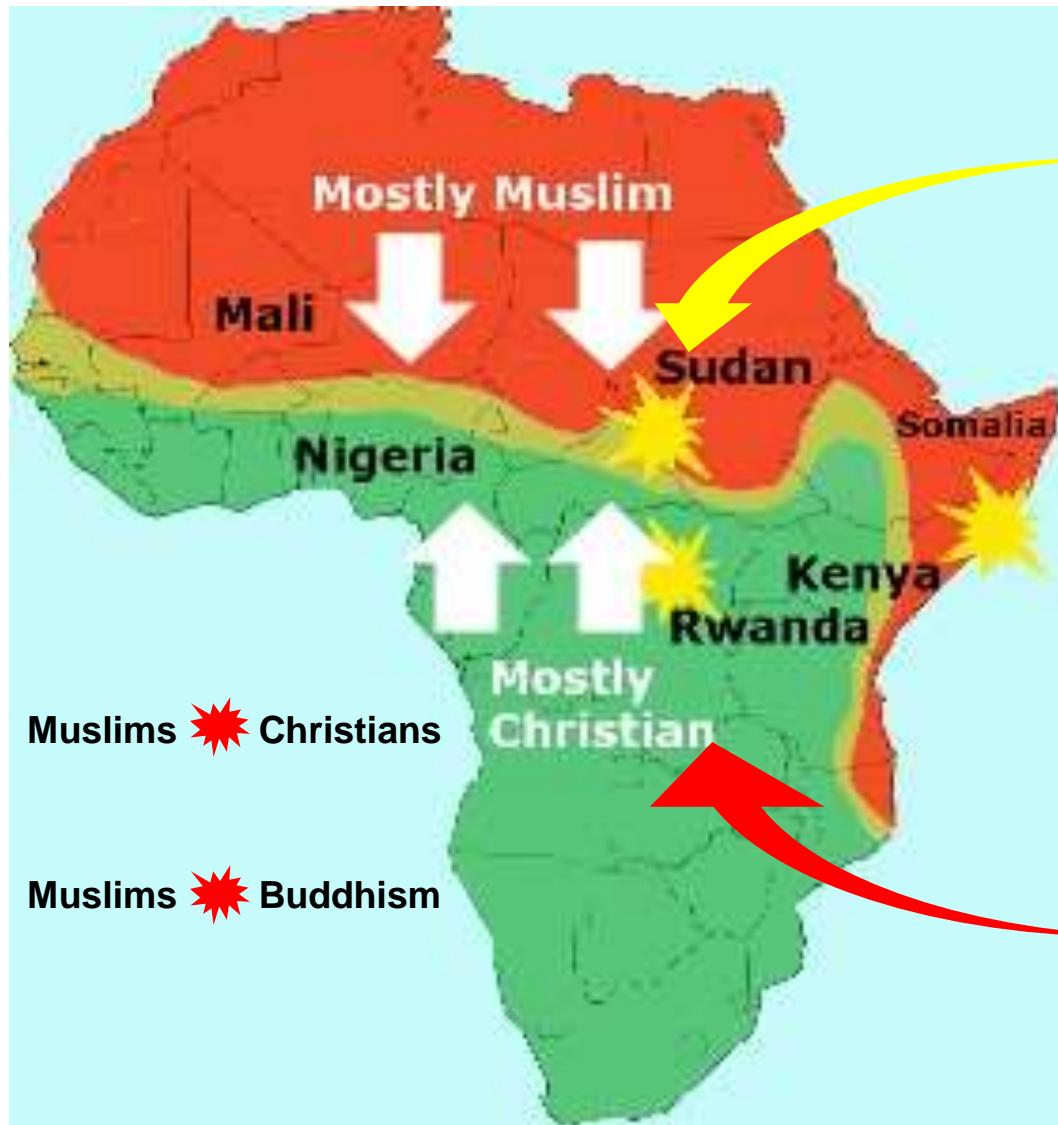


- Trade between China and Africa up 50% in 2004 (IAGS - Energy Security Nov. 15, 2004)
- Sir Mark Thatcher pled guilty to involvement in coup attempt in Equatorial Guinea on Jan 11th
- "OIL IS THE ONLY U.S. INTEREST IN AFRICA" - The Economist

"WEST" & "EAST"
Competing for Africa's Resources

STRATEGIC OVERVIEW

WILL THE CONCEPT OF RELIGIOUS WARFIGHTING EVER BE OPENLY ACKNOWLEDGED?



High Conflict Potential
between Muslims and
Buddhism

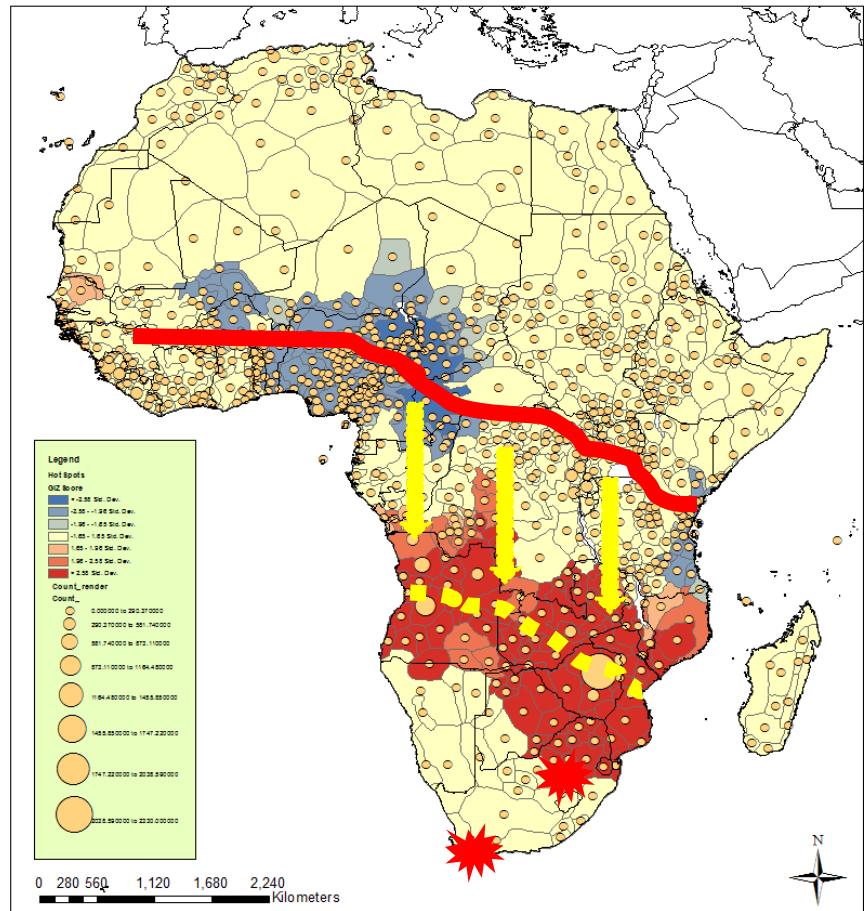
- Christianity
- Muslims
- Buddhism
- Taoism



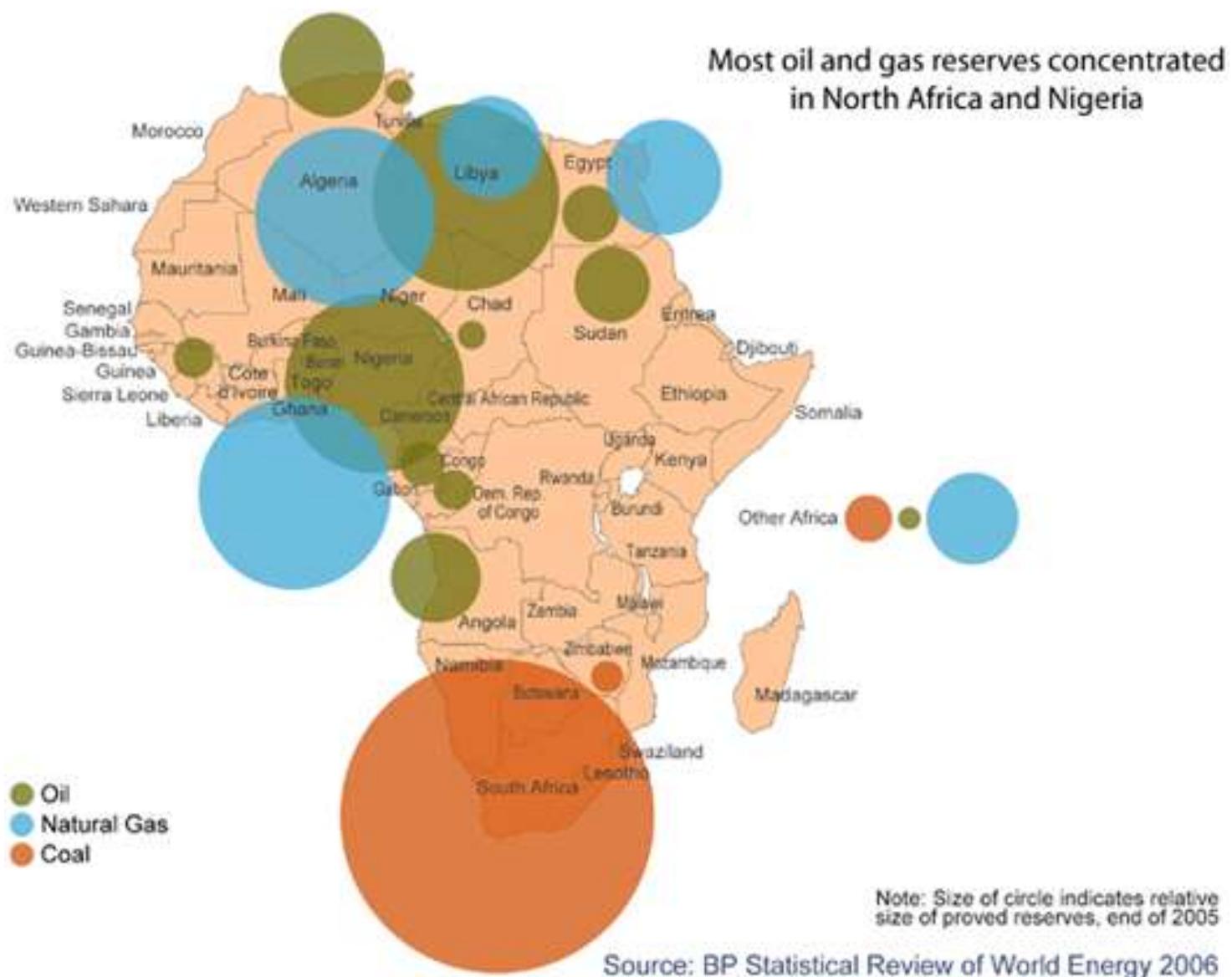
Low Conflict Potential
between Christians and
Buddhism

STRATEGIC OVERVIEW

CORRELATION BETWEEN RELIGIOUS DIFFERENCES AND CONFLICT OCCURENCES?



STRATEGIC OVERVIEW



STRATEGIC OVERVIEW

RACE FOR RAW MATERIALS IN AFRICA VIA AGGRESSIVE DEAL-MAKING



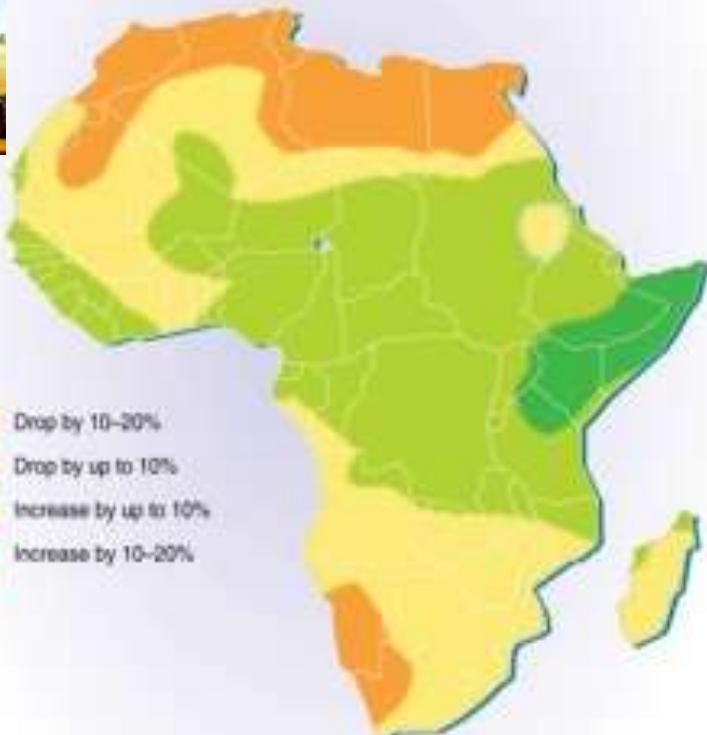
STRATEGIC OVERVIEW

Changes in available water

END OF 20TH CENTURY



PREDICTED CHANGE – END OF 21ST CENTURY



Less than 400 mm
400-1000 mm
More than 1000 mm

Drop by 10-20%
Drop by up to 10%
Increase by up to 10%
Increase by 10-20%



SOURCE: Maarten de Wit and Jacek Stankiewicz, Science 31 March 2006.

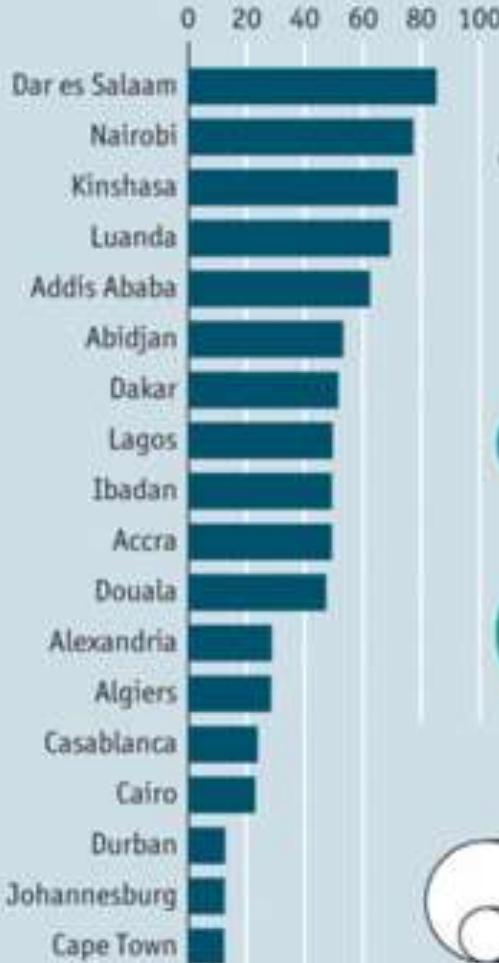
MAESTRALE logo: GIZ/GRID Africa

Strategic Partnership/Alliance with Neighbours to the North for Water
Water can also be the source for generating electricity

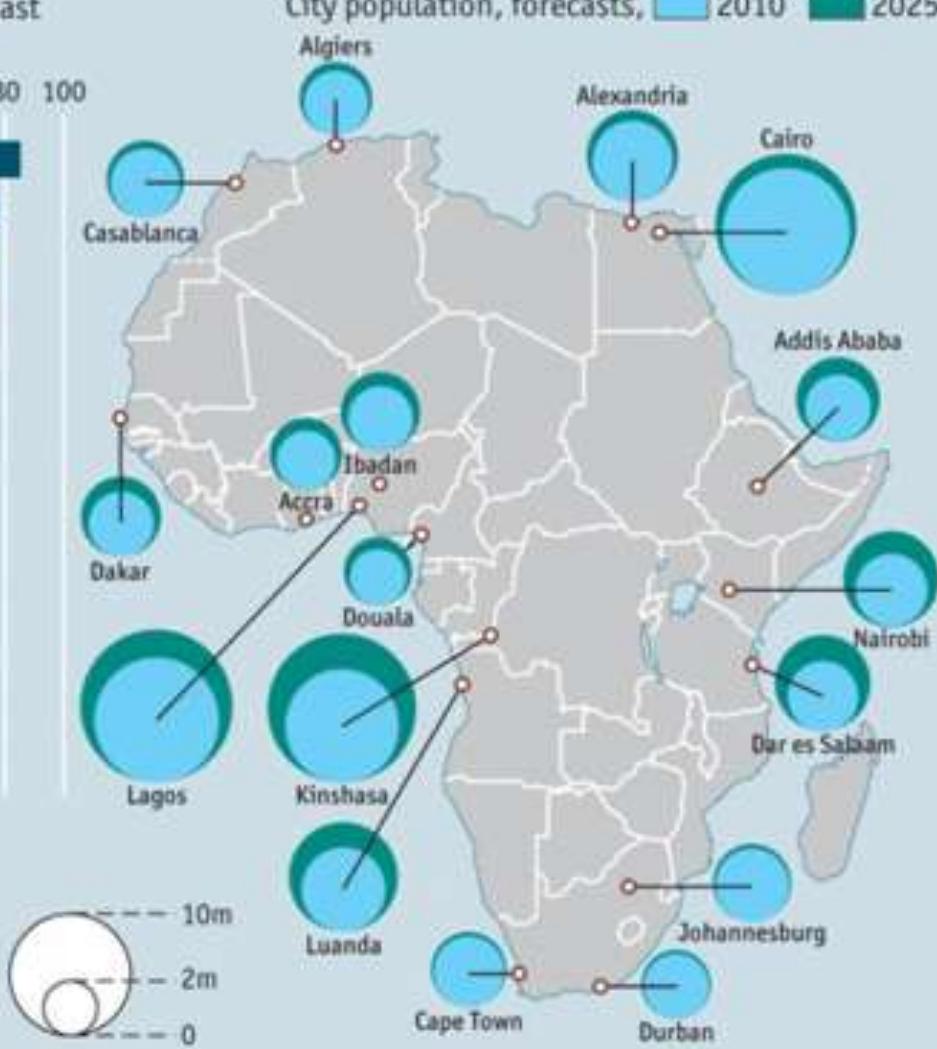
STRATEGIC OVERVIEW

Growth of African cities

% increase, 2010-2025 forecast



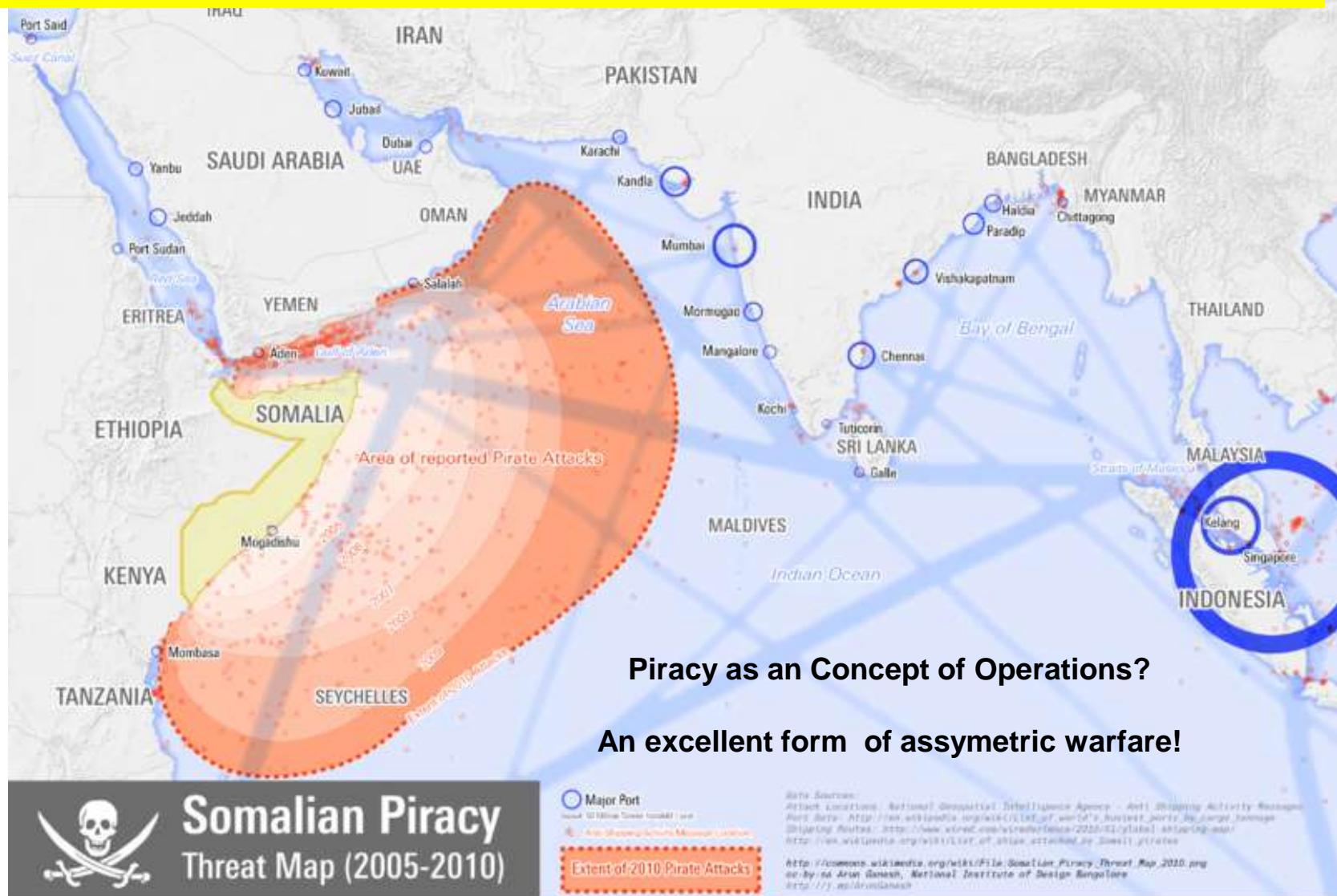
City population, forecasts,  2010  2025



Source: UN-HABITAT

STRATEGIC OVERVIEW

SA ARMY INVOLVEMENT IN CURBING PIRACY – HOMEBASE NEUTRALISATION?

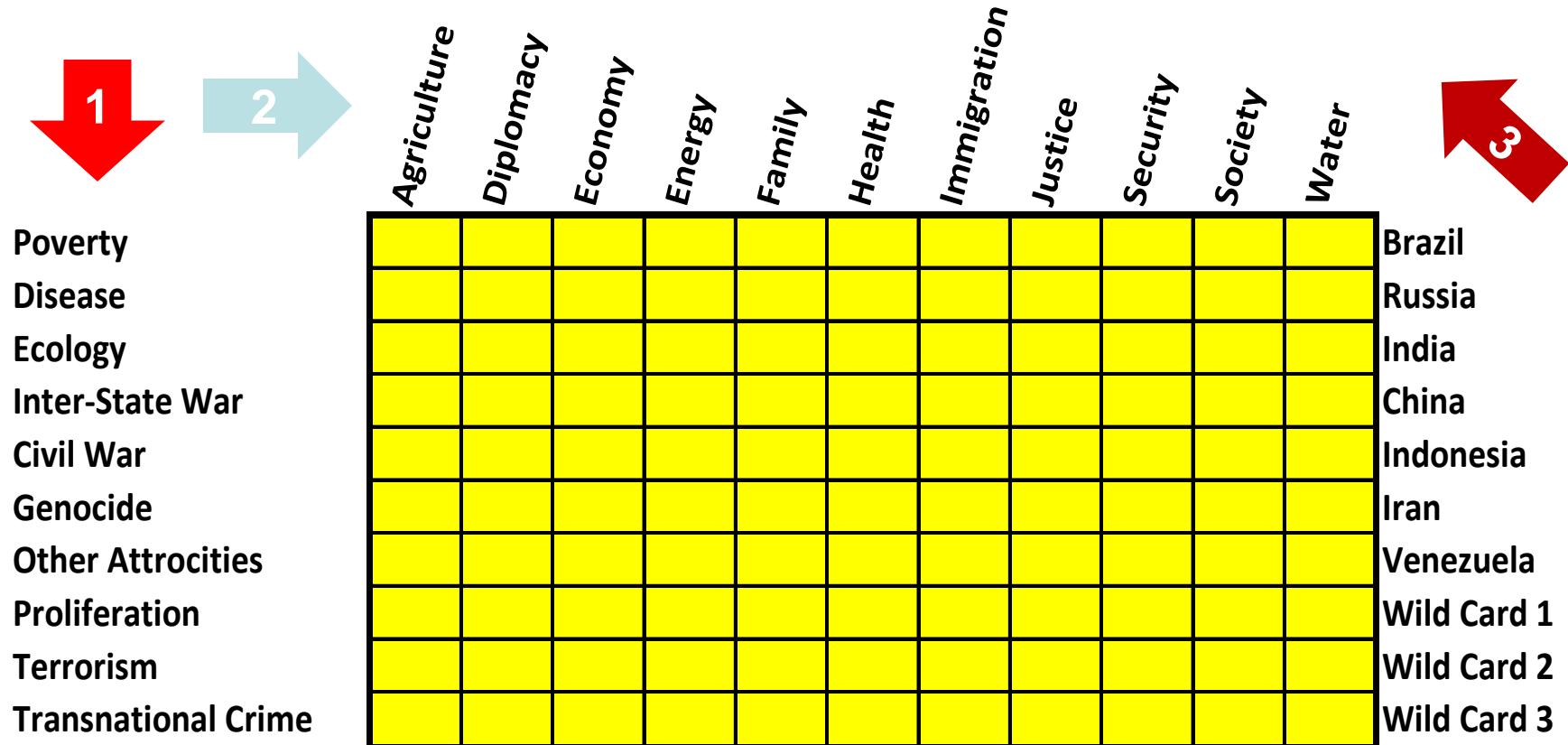


Correlation with Arab Spring!

What should the RSA have for Defence in Depth?

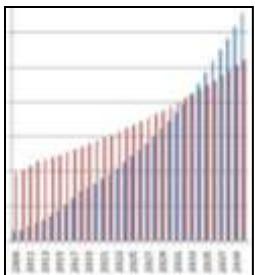
10 High Level Threats to Humanity

21st Century Demands Defence in Depth



STRATEGIC OVERVIEW

WHEN?



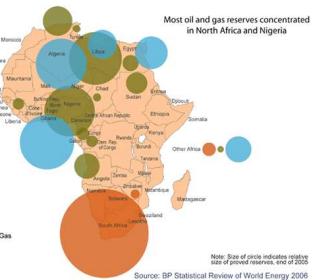
WHOM?



WHY? + WHERE?



WHY? + WHERE?



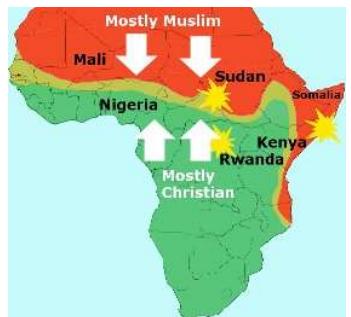
CONFLICT (FUTURE) =

CONFLICT (RESOURCES)

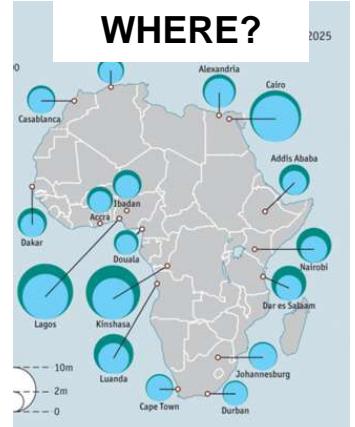
PLUS

CONFLICT (RELIGION)

WHY? + WHOM?



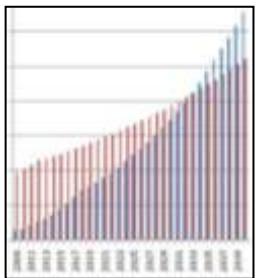
WHERE?



STRATEGIC OVERVIEW

POSSIBLE HIGH LEVEL IMPLICATIONS FOR THE SA ARMY?

WHEN?



WHOM?

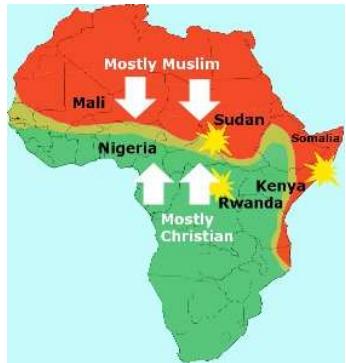


WHY? + WHERE?



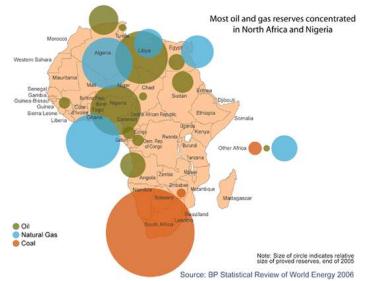
RESPONSE TIME?

WHY? + WHOM?



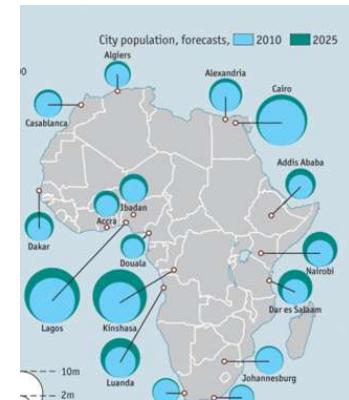
DOCTRINAL MIX?

WHY? + WHERE?



TECHNOLOGY?

WHERE? + HOW?



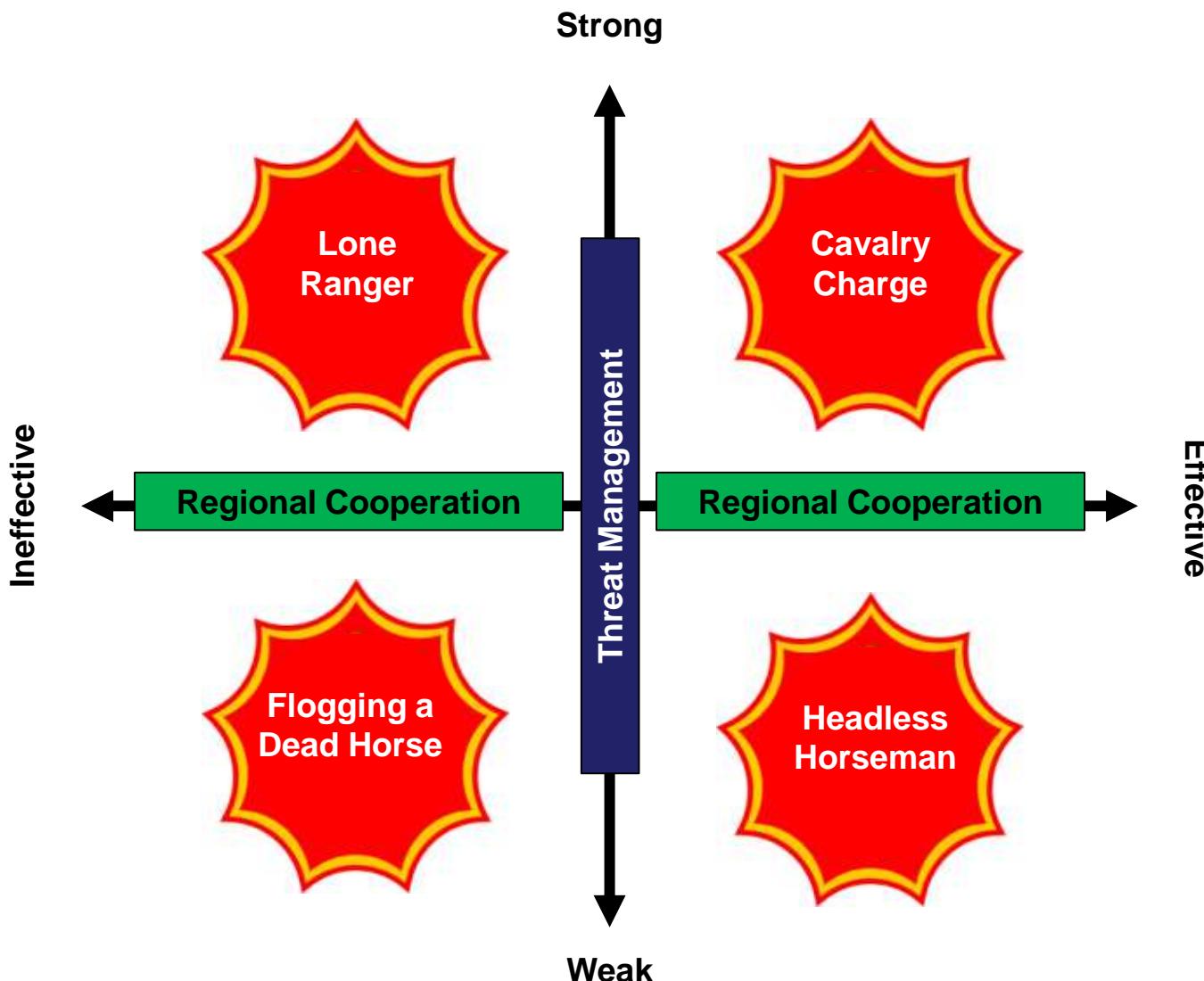
OPERATIONAL CULTURE
– TRG & LDR?

TTP FOR KP & HVT
PROTECTION – TRG & DOC?

URBAN WARFIGHTING
TTP & PRECISION?

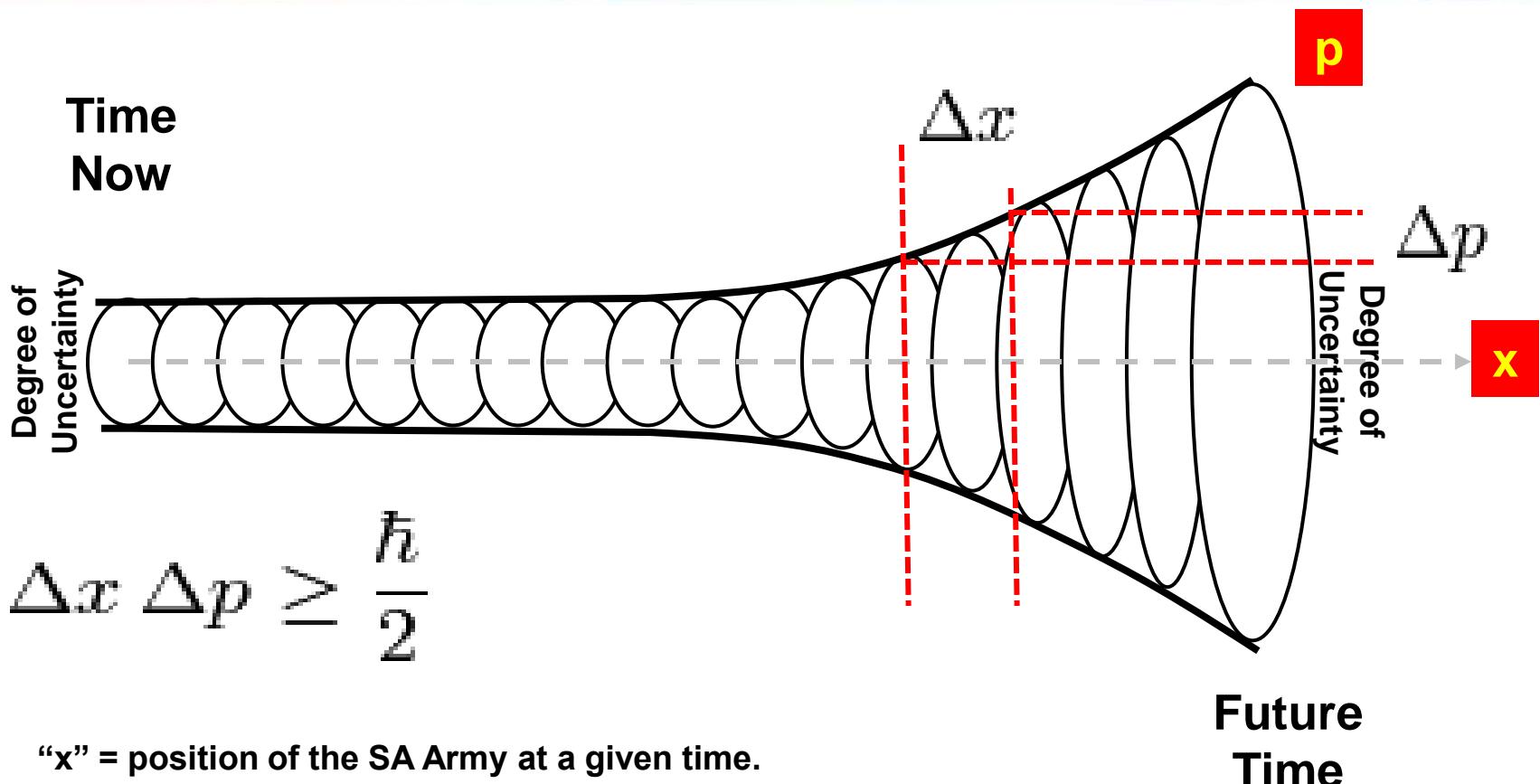
MILITARY FOCUSED SCENARIOS

SCENARIO FORMULATION



HOW TO PREPARE AN ARMY IN TIMES OF UNCERTAINTY?

HEISENBURG'S UNCERTAINTY PRINCIPLE

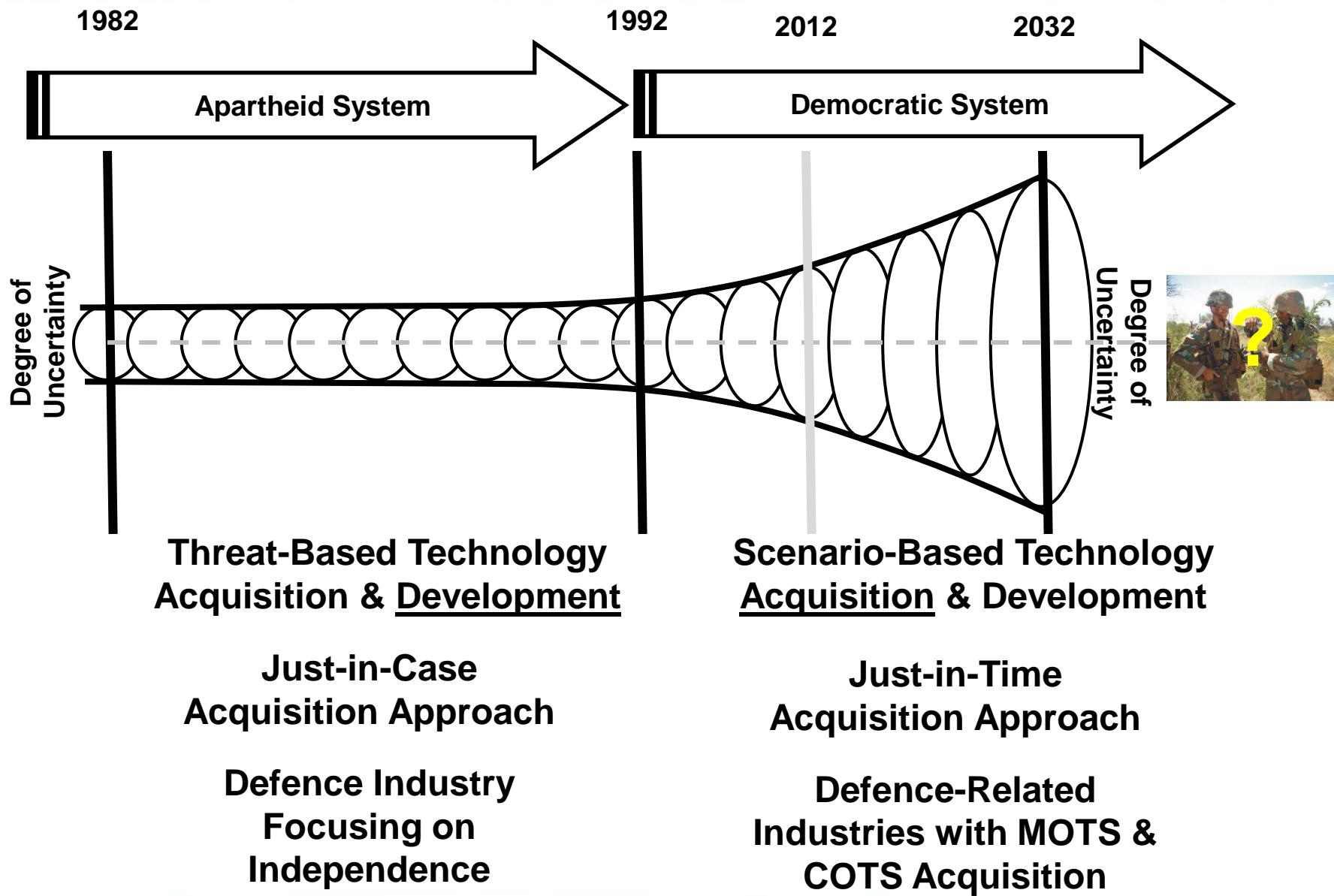


“x” = position of the SA Army at a given time.

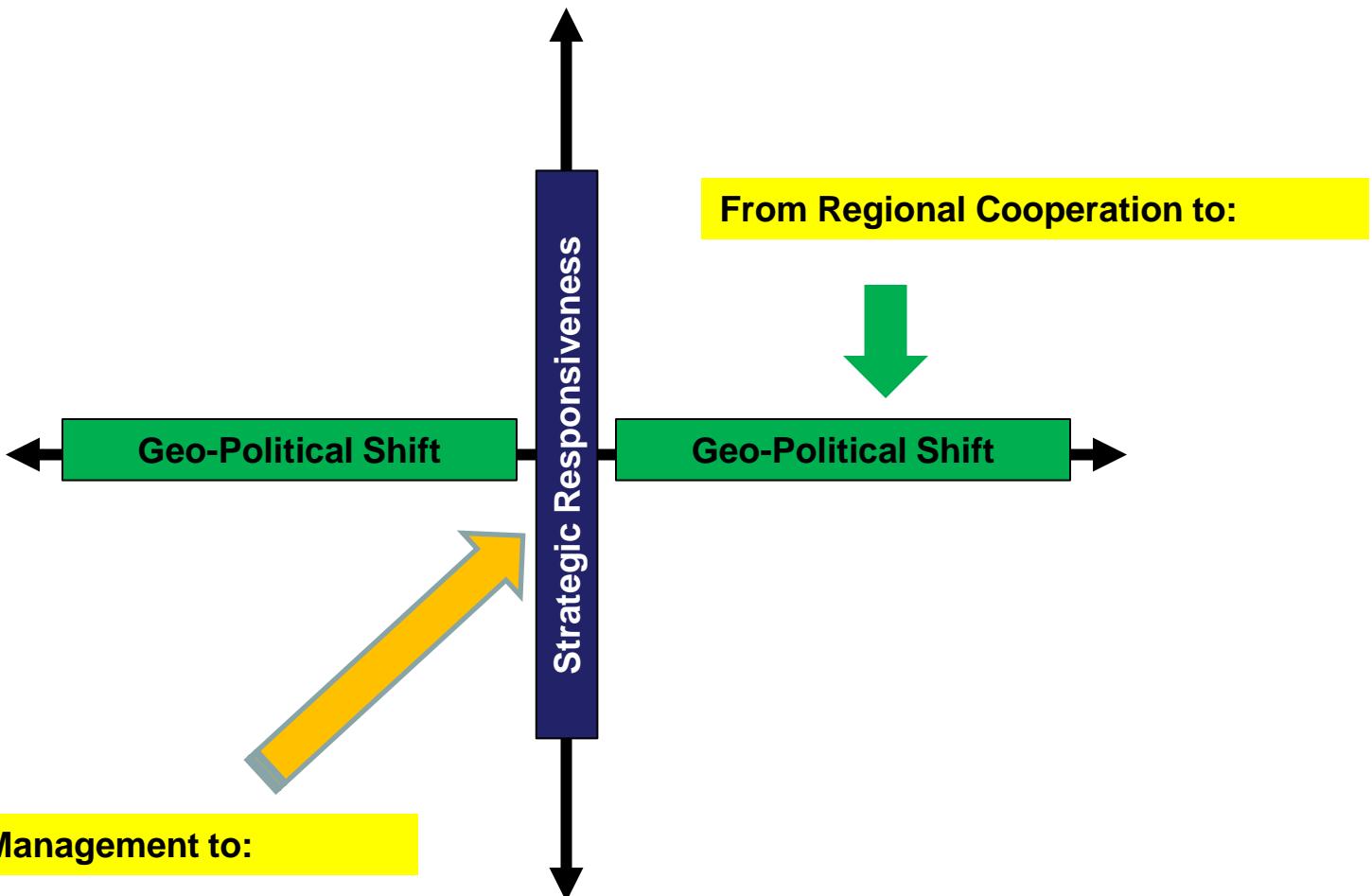
“p” = momentum of the SA Army at a given time.

“h” = constant representing the required operational capability of the SA Army at a predefined time.

THE QUEST FOR APPROPRIATE TECHNOLOGIES FOR 2030

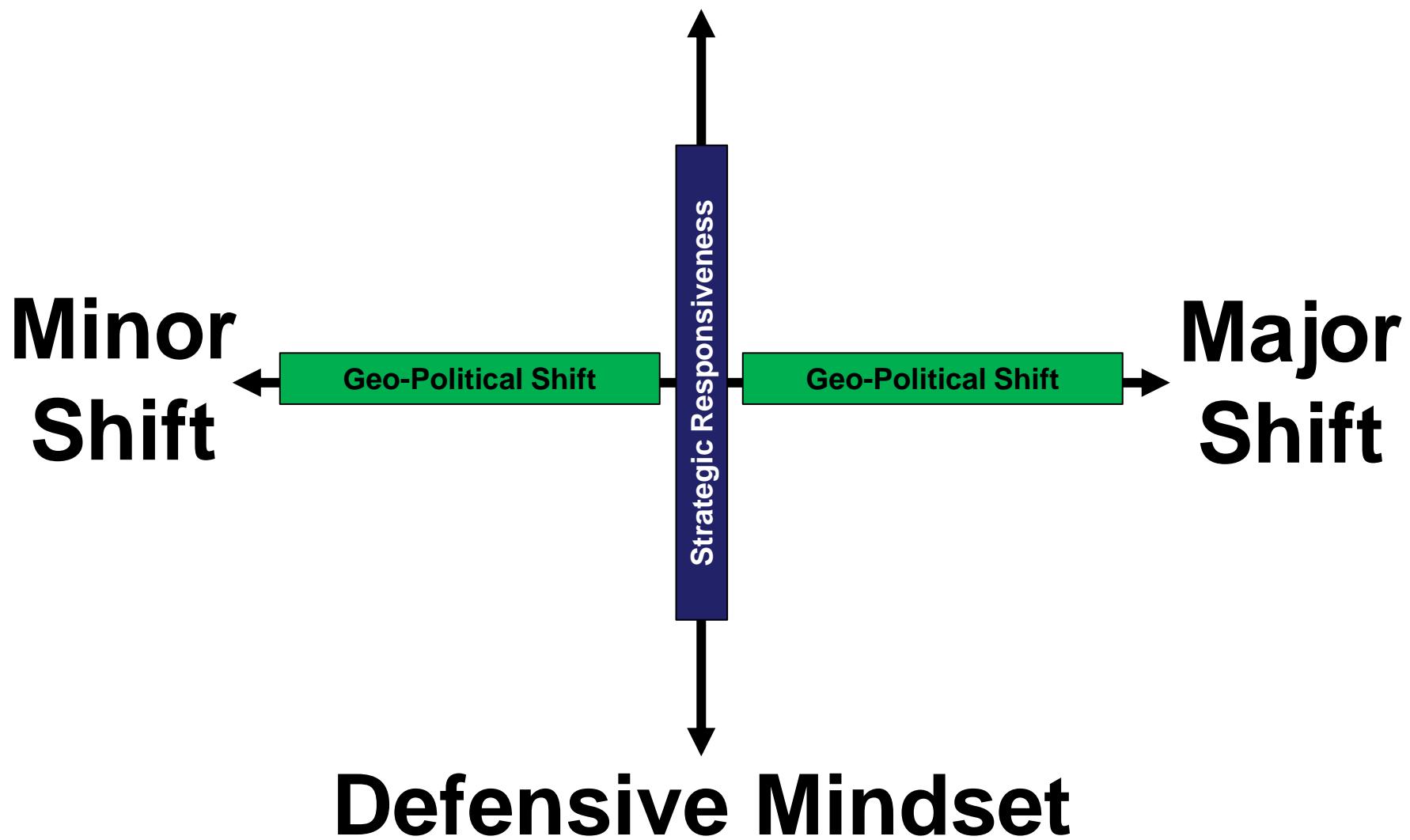


SCENARIO FORMULATION

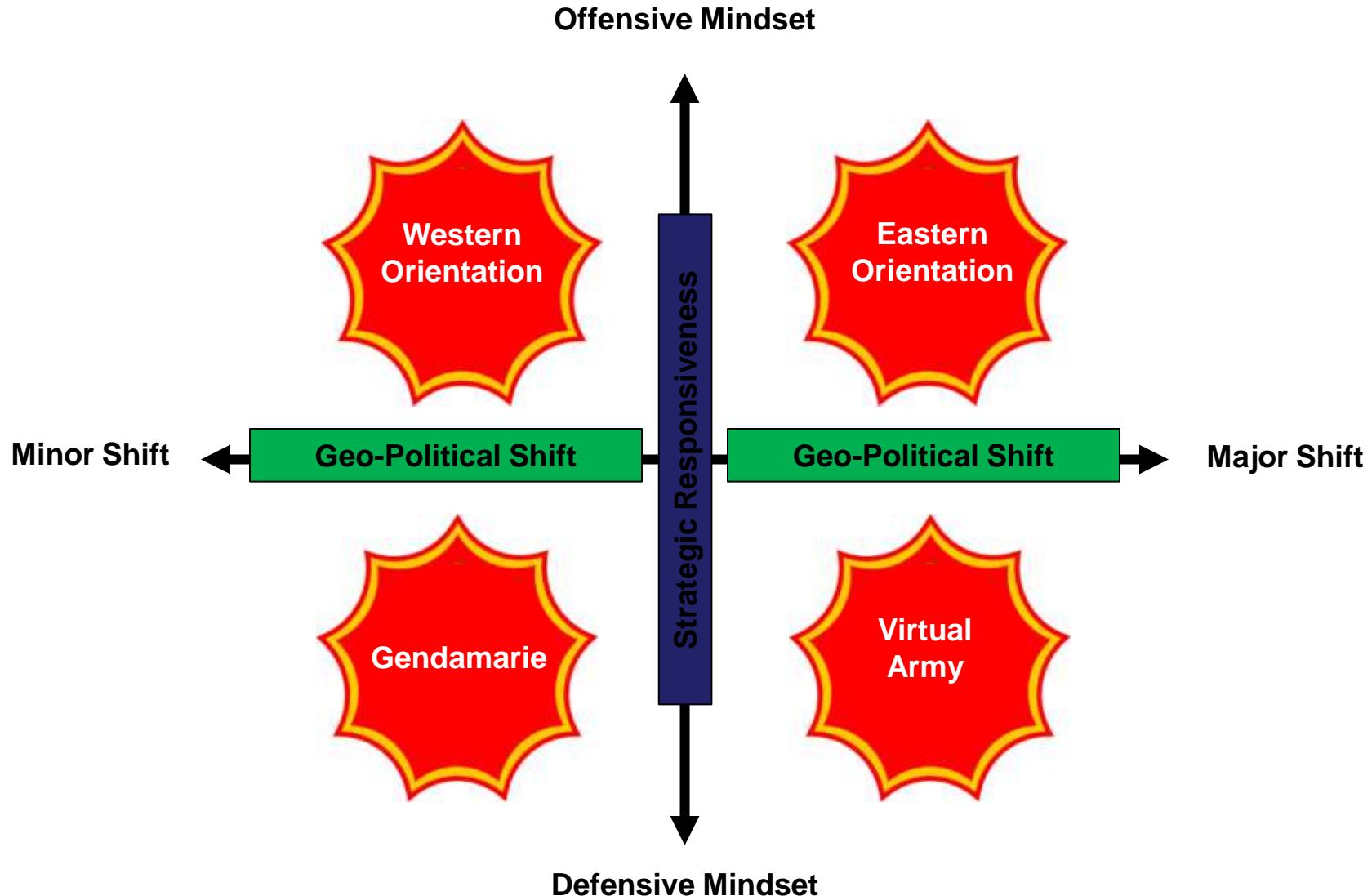


SCENARIO FORMULATION

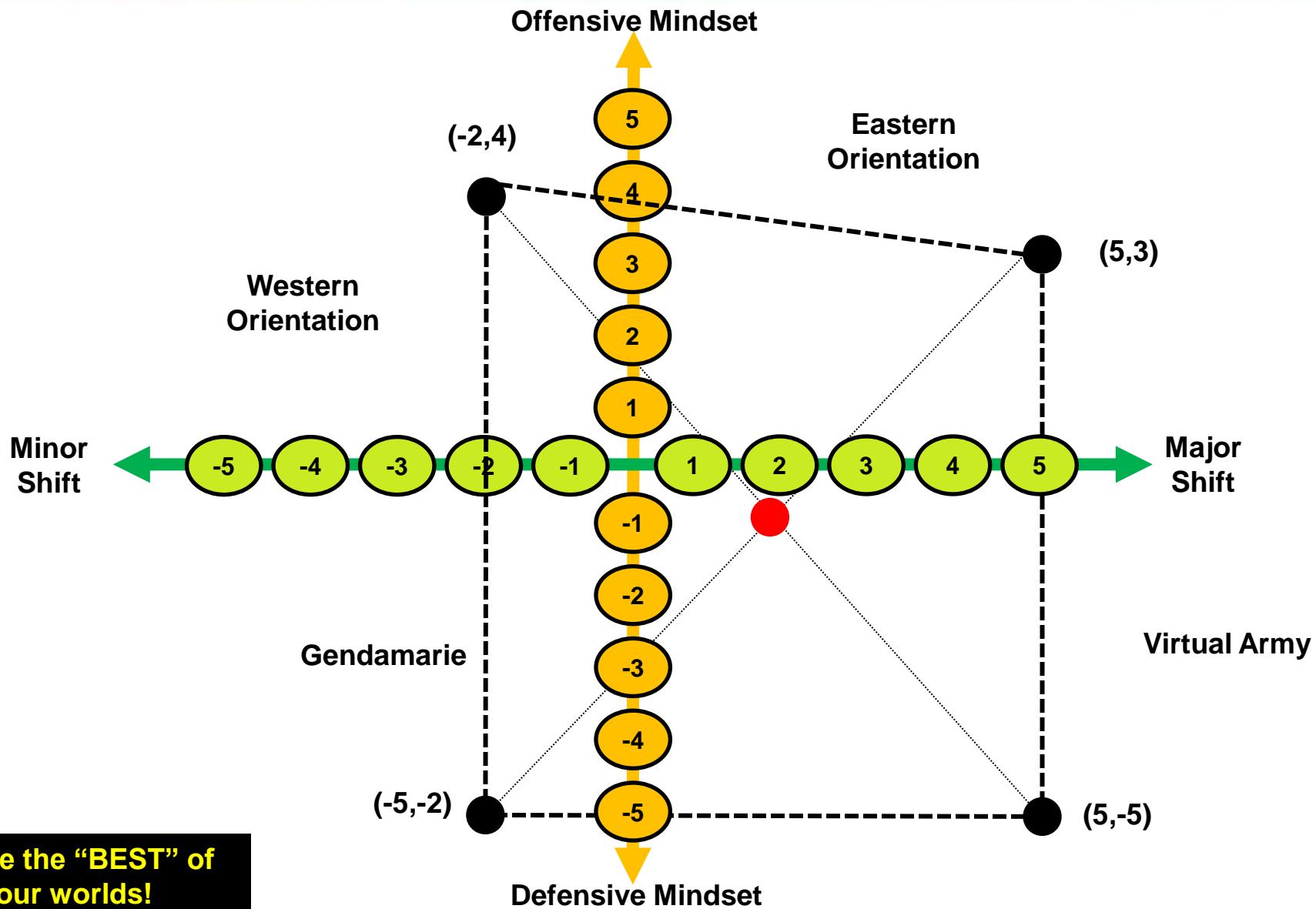
Destroy (Phys)- Offensive Mindset – Cripple (Psych)



SCENARIO CONUNDRUM



SCENARIO UNFOLDING



SOLDIER SYSTEM 2030



MILITARY MISSIONS

MILITARY MISSIONS



- 1. CONVENTIONAL & UNCONVENTIONAL OPERATIONS IN THE AREA OF TACTICAL INFLUENCE**
- 2. PEACE SUPPORT OPERATIONS IN THE AREA OF TACTICAL AND STRATEGIC INFLUENCE**
- 3. INTERNAL STABILITY OPERATIONS WITHIN THE RSA THEATRE**
- 4. TRAINING MISSIONS (VARIOUS LEVELS) WITHIN THE RSA THEATRE**

CHALLENGES = WILL THE TACTICS, TECHNIQUES AND PROCEDURES STILL BE THE SAME AND HOW CAN TECHNOLOGY ASSIST/ENHANCE THE SOLDIER ON THE GROUND AND TO WHAT EXTENT WILL THE SA ARMY DOCTRINAL BASELINE HAVE TO CHANGE?

OPERATIONAL REQUIREMENTS

SPECTRUM OF CONFLICT



PEACE

CONFLICT

WAR

OPERATIONS OTHER THAN WAR

WARFIGHTING

Search and Rescue

Disaster Relief

Humanitarian Assistance

Survey and Control of RSA Territory

Evacuation of RSA Citizens Overseas

Peace Support Operations (Chapter 6)

Aid to Civil Authority

National Sovereignty and Interest Enforcement

Peace Support Operations (Chapter 7)

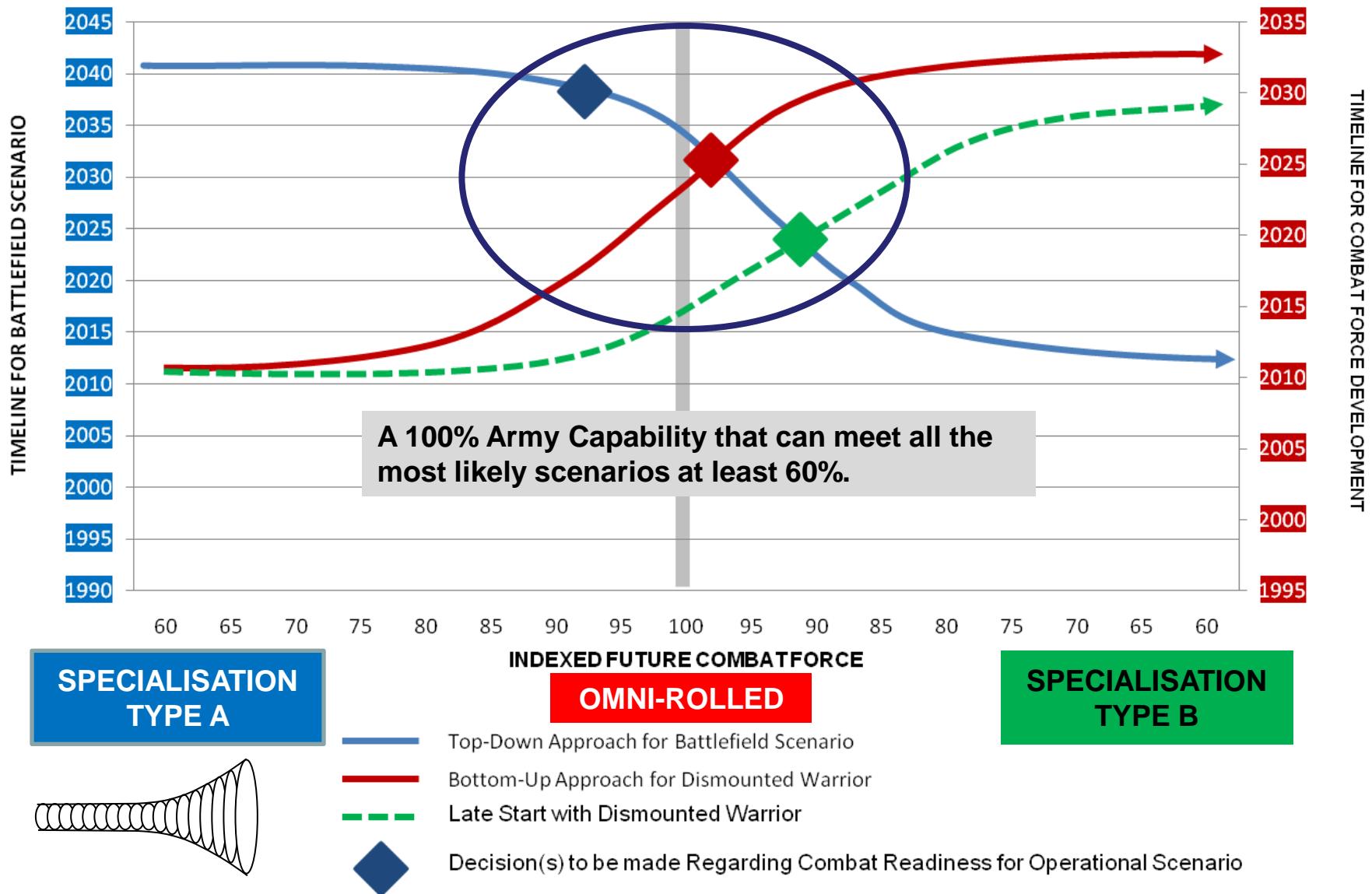
Defence of RSA and SADC Territory

Collective Defence

NON-COMBAT OPERATIONS

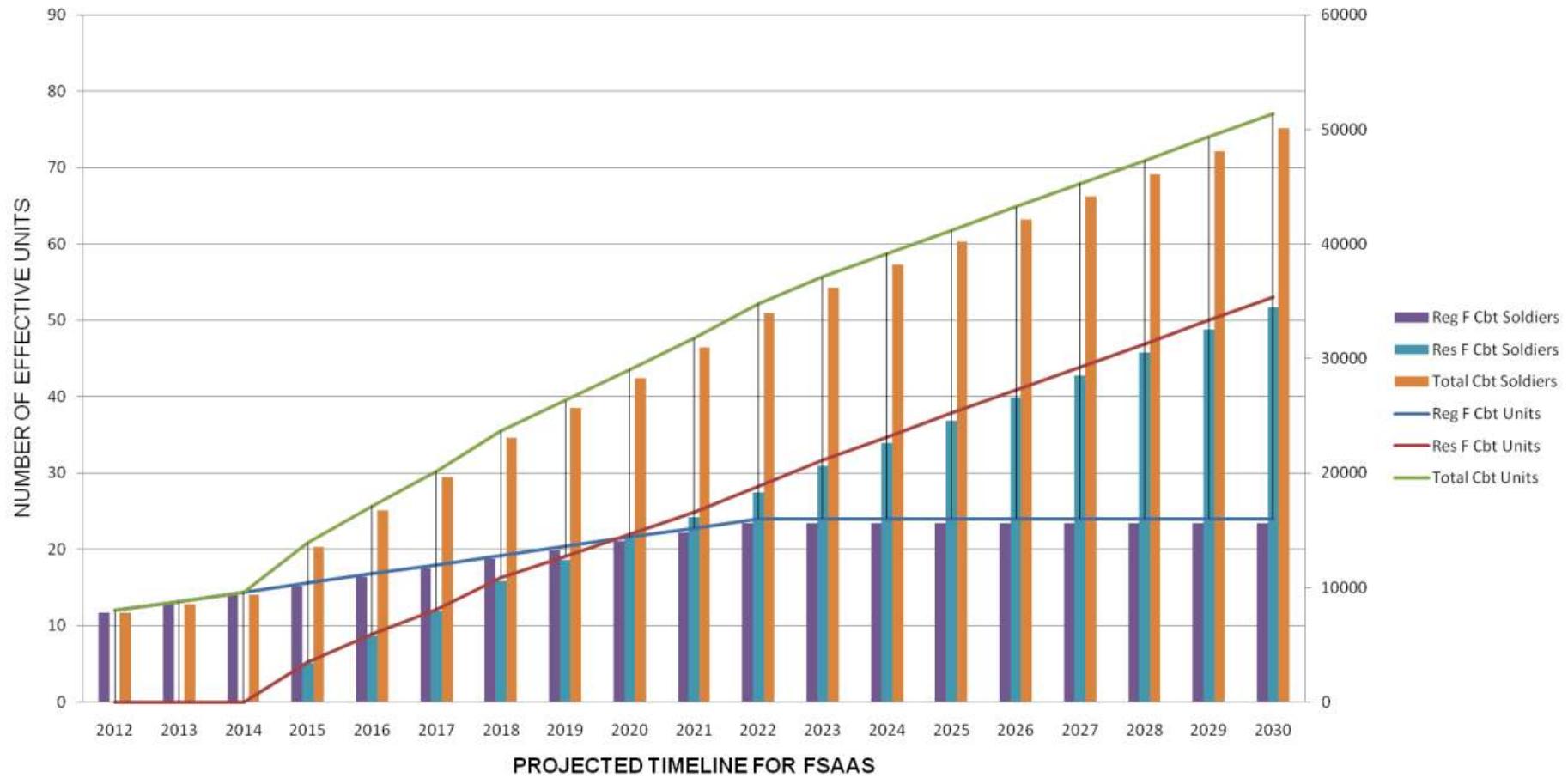
COMBAT OPERATIONS

WHAT CAPABILITY?



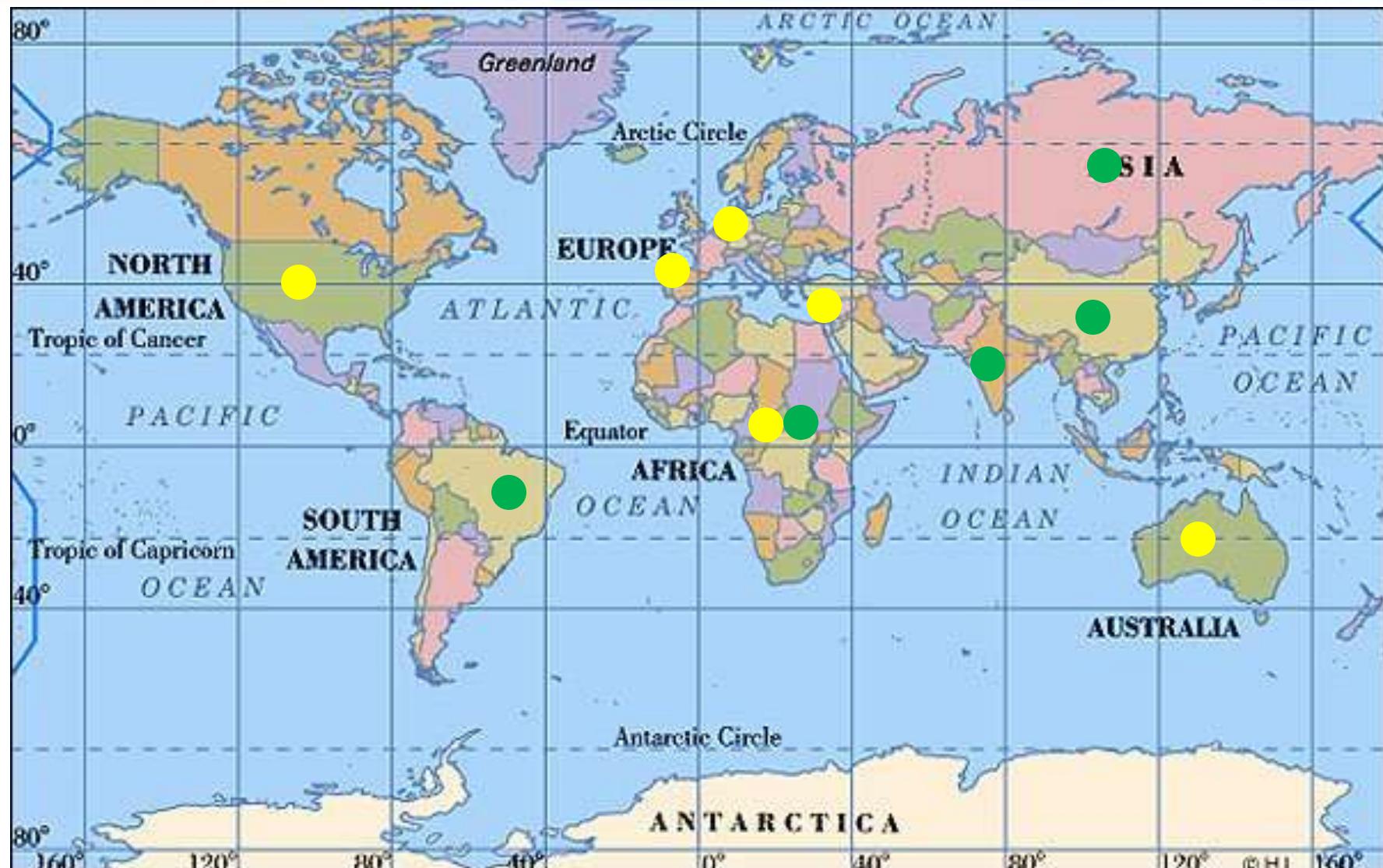
TIME IMPLICATION

FSAAS FORCE STRUCTURE - OPERATIONAL DEPLOYABLE CAPABILITY PROJECTED GROWTH AT 8000 MSDS PER YEAR



THE SOLDIER AS A SYSTEM AND BENCHMARKING

BENCHMARKING



RELEVANCE FOR THE AFRICAN BATTLESPACE

BENCHMARKING



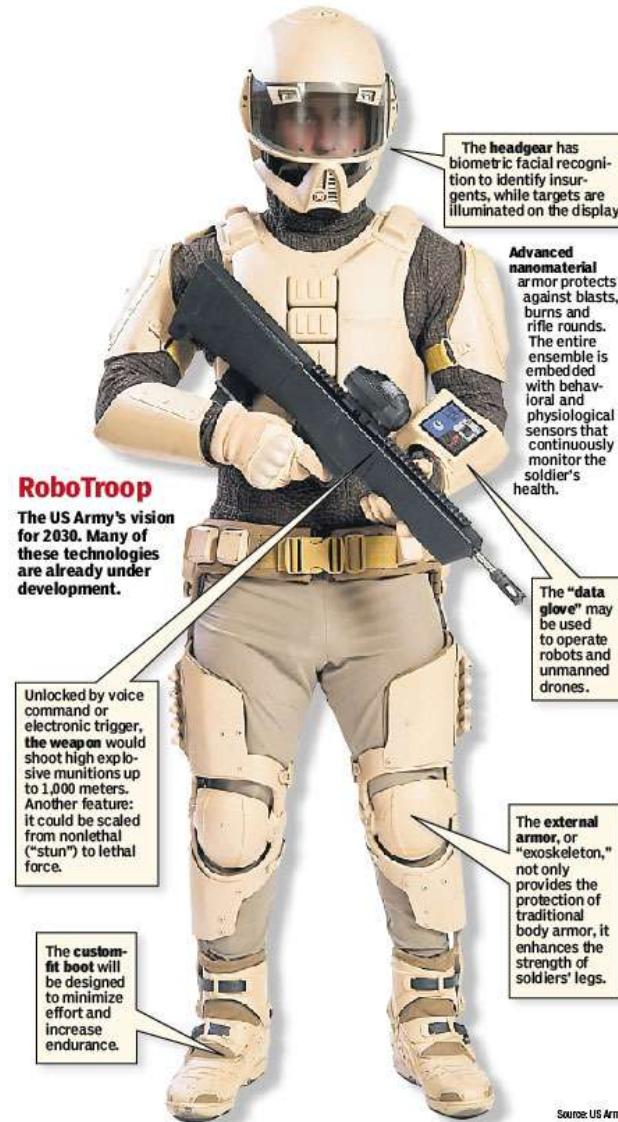
BENCHMARKING

FRENCH + US ARMY SOLDIER SYSTEM - DISMOUNTED



FELIN

Fantassin à Équipements et Liasons intégrés
"The modular integrated system for dismounted soldiers"



BENCHMARKING

UK + RSA SF SOLDIER SYSTEM - DISMOUNTED



TEST BED FOR SA ARMY?

BENCHMARKING

COTS SOLDIER SYSTEM ACCESSORIES



BENCHMARKING

RUSSIAN SOLDIER SYSTEM - DISMOUNTED

Боевая экипировка «Бармица-М1»	
Шлем защитный	
Вооружение и прицелы	
Средства связи и навигации	
	
Бронежилет	
Жилет транспортный	
Транспортная система	
Заплечный резервуар	
Средства обогрева	
Продукты	
Специмущество	
Мешок спальный	
Рюкзак рейдовый	
Плащ-палатка	
Обнаружитель СВЧ-облучения	
Фильтр	
Фонарь	

BENCHMARKING

CANADIAN SOLDIER SYSTEM –
BIOMECHANICAL SUPPORT



CHINESE SOLDIER SYSTEM –
FOCUSED TRAINING



BENCHMARKING

POPULAR SOLDIER SYSTEM

Комплект FELIN

Вес – 26 килограммов



POPULAR SOLDIER SYSTEM

SOLDIER SYSTEM 2030



SOLDIER SYSTEM IN THE MOUNTED CONFIGURATION



SOLDIER SYSTEM 2030

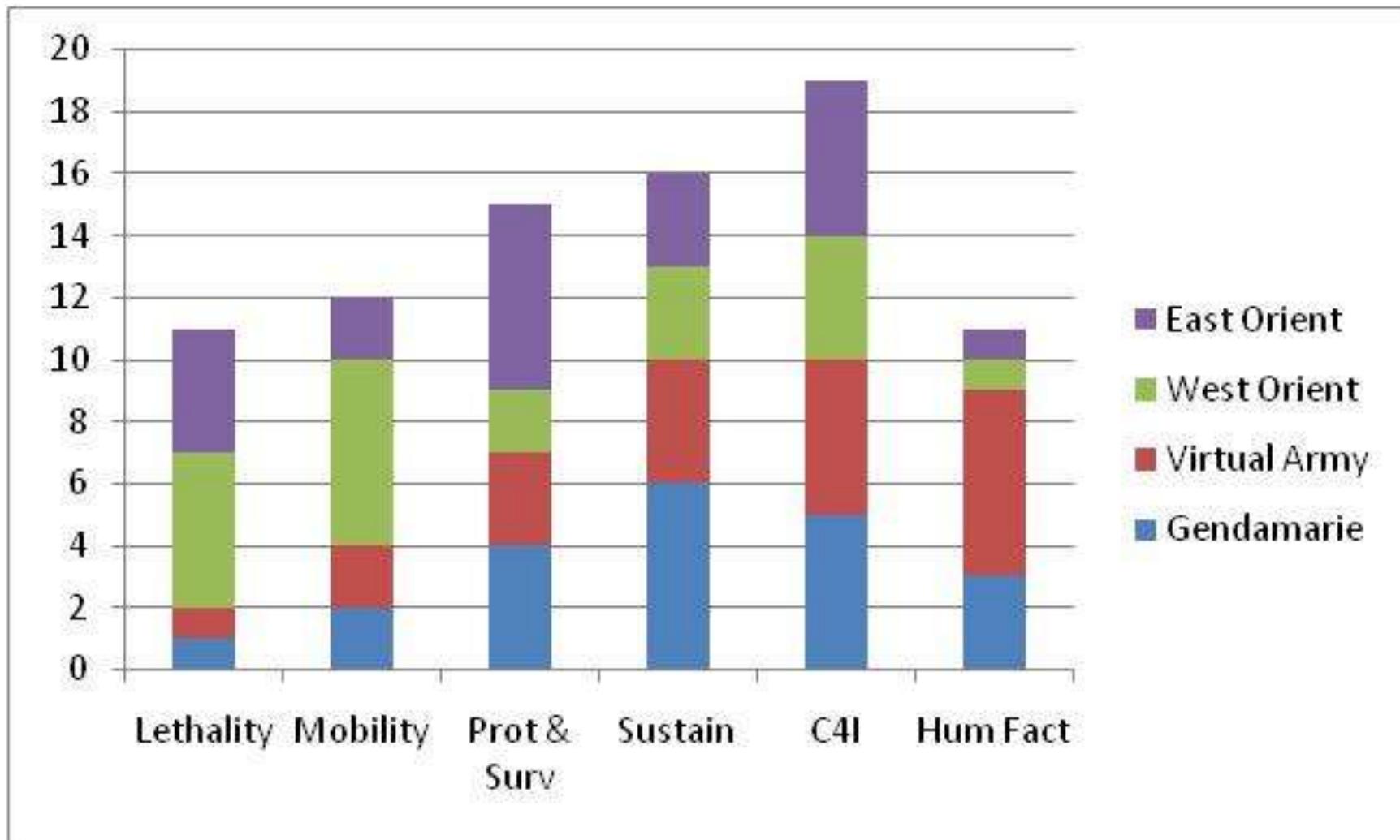
SOLDIER SYSTEM INTEGRATED WITHIN A FORWARD OPERATING BASE



BATTLEFIELD OPERATING SYSTEMS

SOLDIER SYSTEM 2030

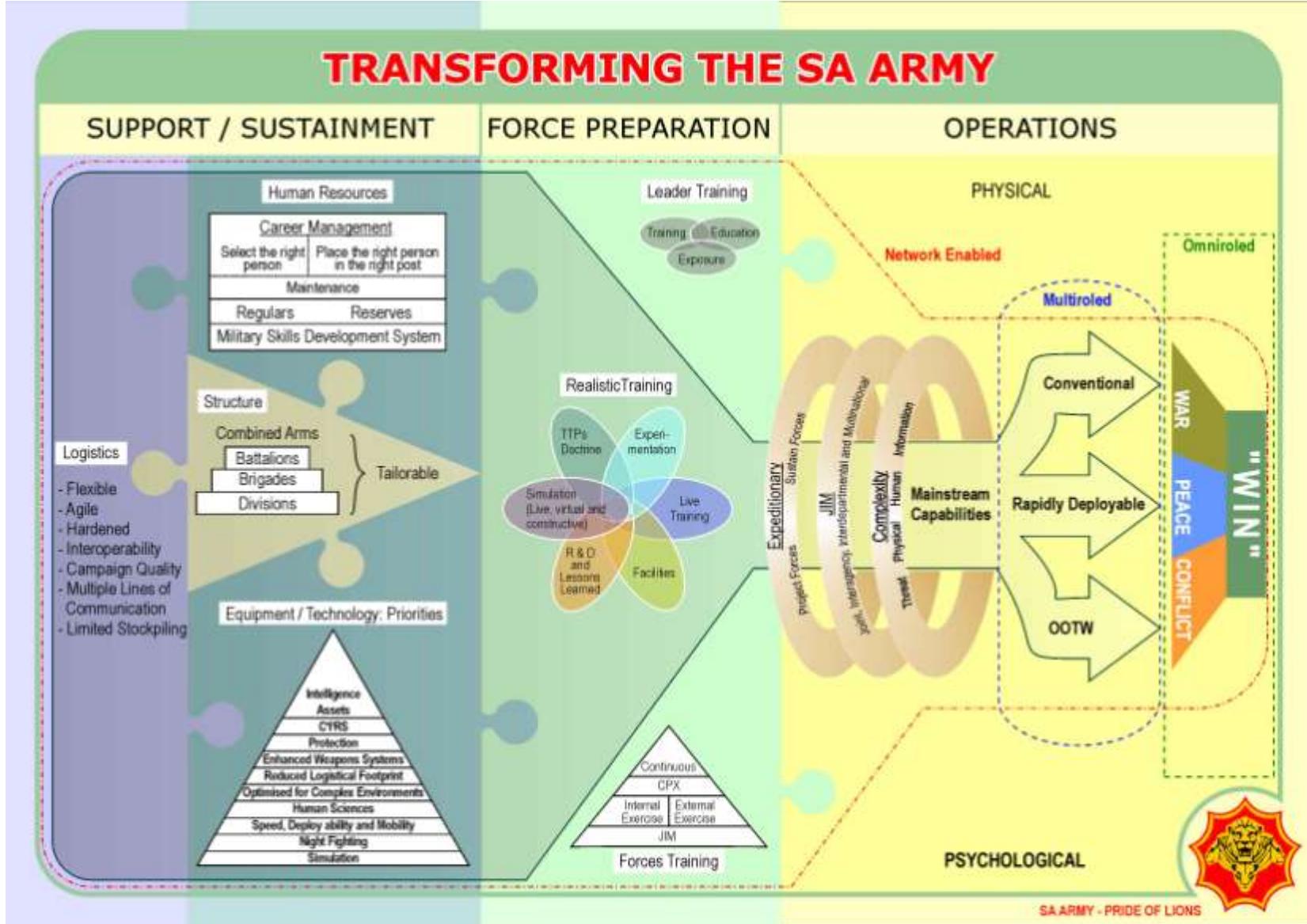
RELEVANCE OF BOS WITHIN SCENARIOS



LIFE CYCLE OF SOLDIER SYSTEMS

SOLDIER SYSTEM 2030

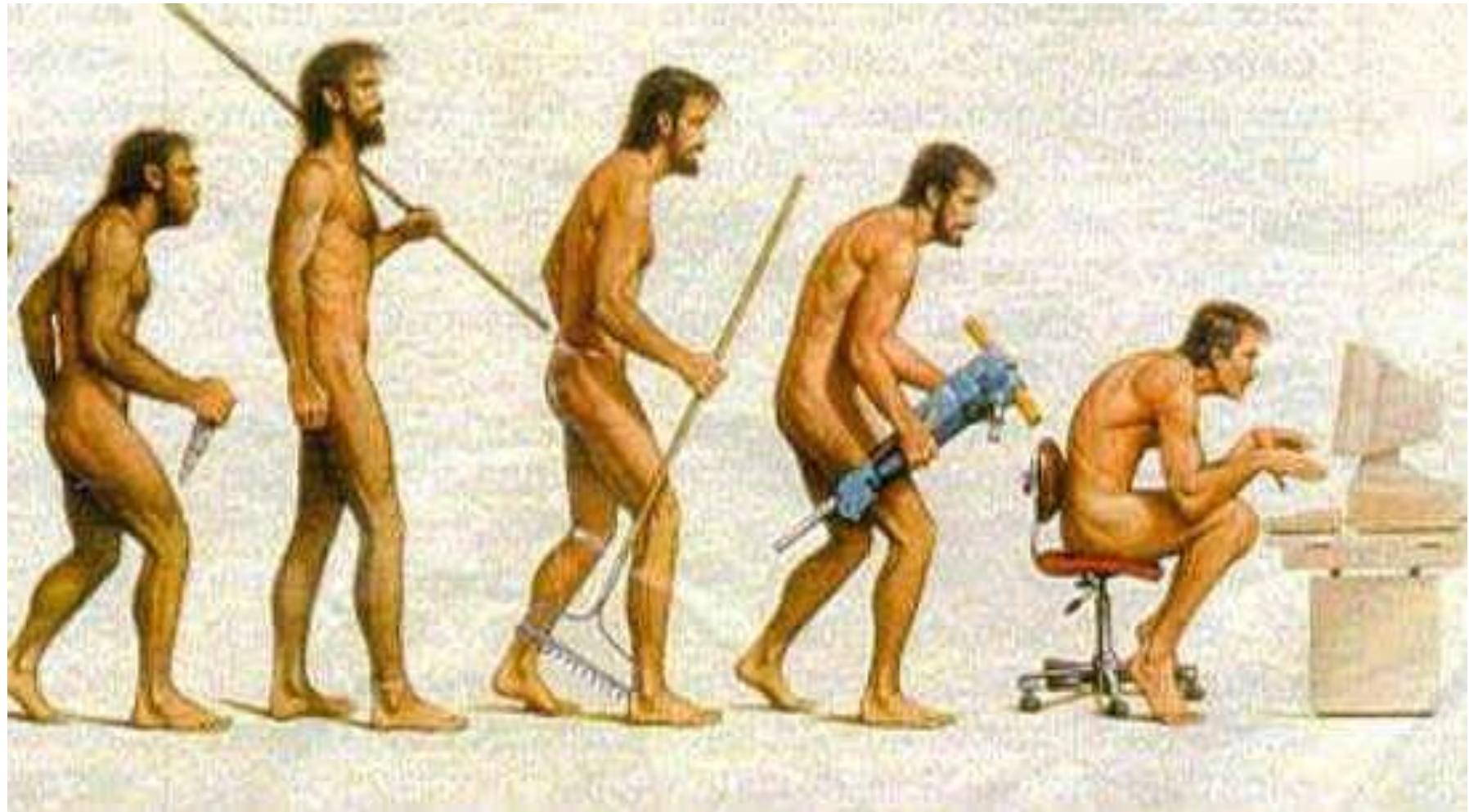
TRANSFORMING THE SA ARMY



SOLDIER PROFILE TOWARDS 2030

SOLDIER SYSTEM 2030

DEVELOPMENT OF MANKIND THROUGH THE AGES

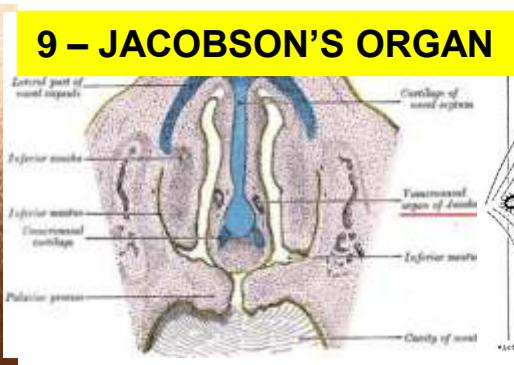


IF EVER THERE WAS A PHENOMENON SUCH AS EVOLUTION THEN IT HAS CERTAINLY STOPPED NOW!

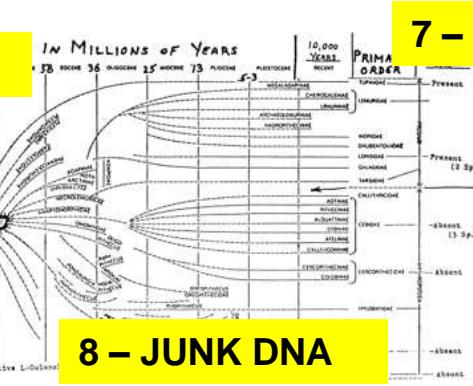
SOLDIER PROFILE 2030



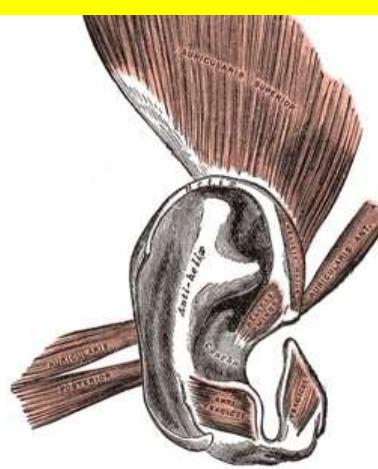
10 - GOOSE BUMPS



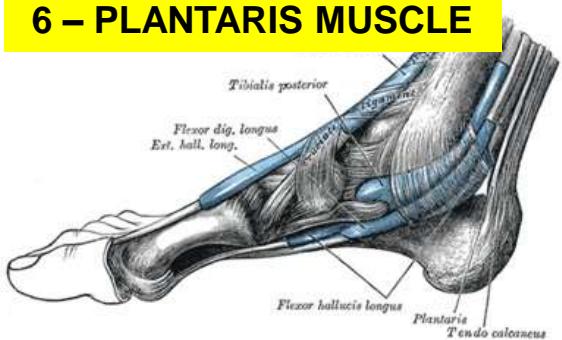
9 – JACOBSON'S ORGAN



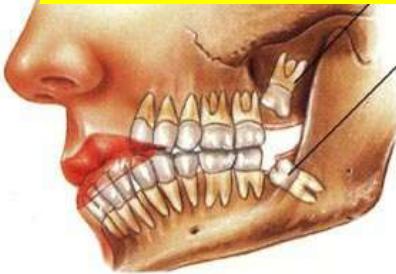
7 – EXTRA EAR MUSCLE



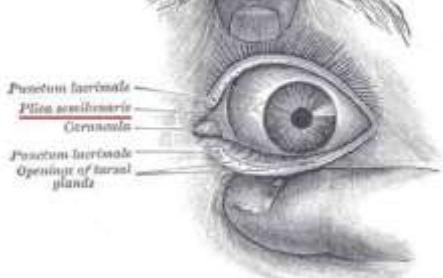
6 – PLANTARIS MUSCLE



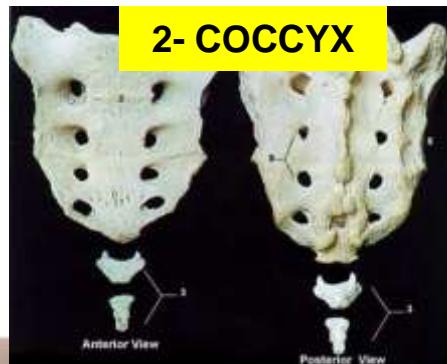
5 – WISDOM TEETH



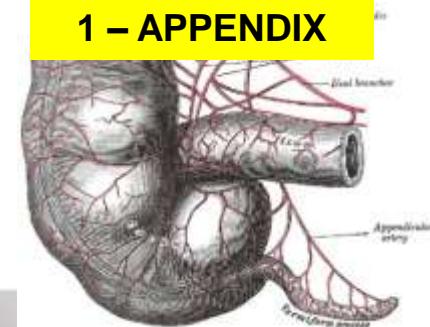
4 – THIRD EYELID



3 – DARWIN'S POINT

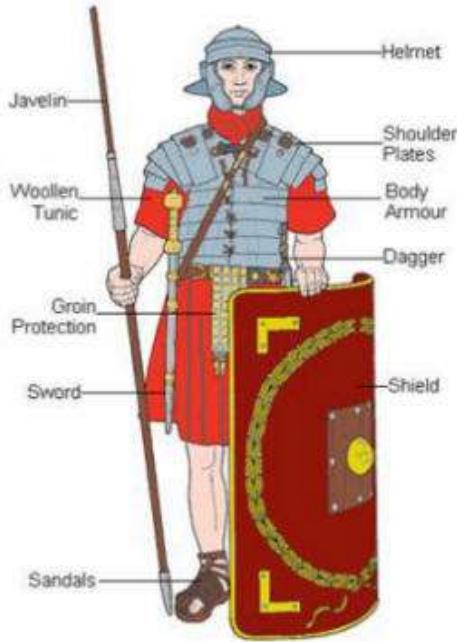


2- COCCYX



1 – APPENDIX

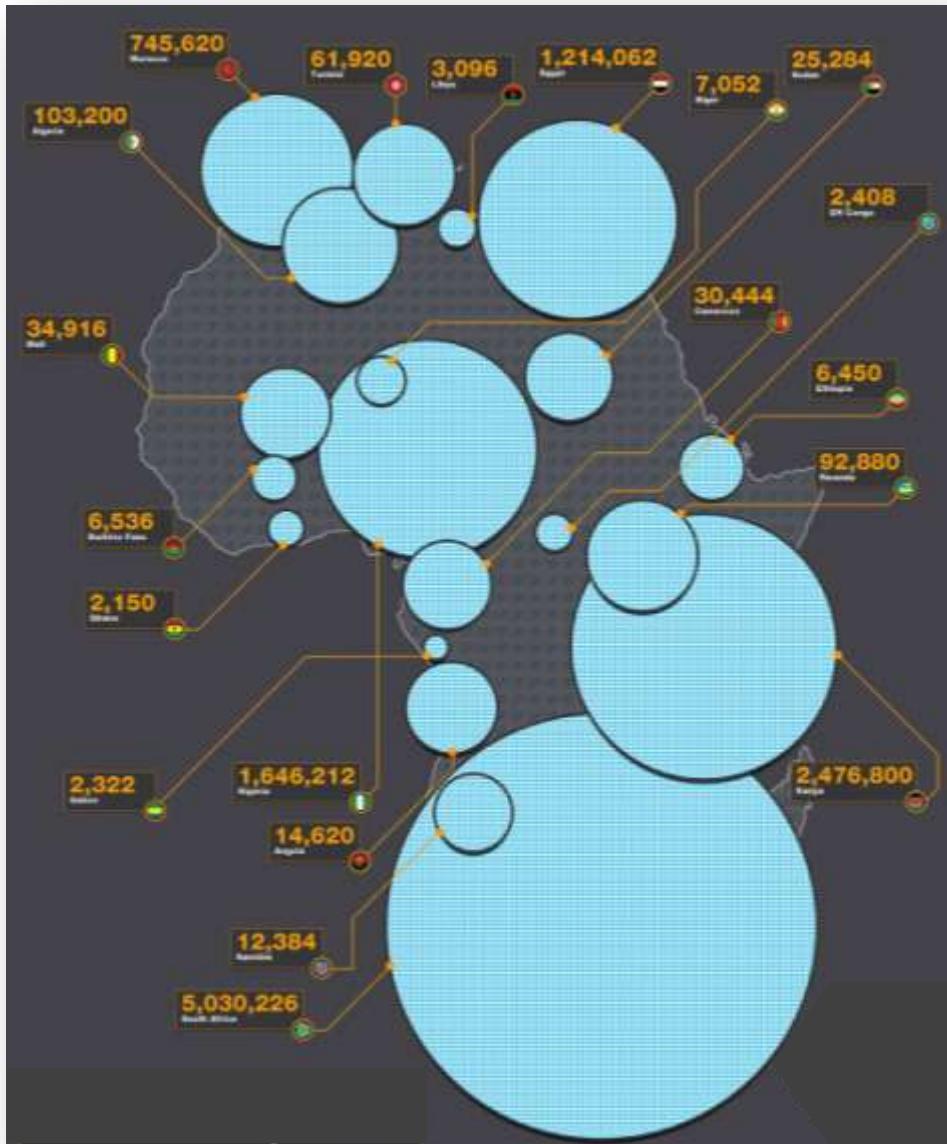
SOLDIER PROFILE 2030



BENCHMARKING FOR THE FUTURE SOLDIER?

**TECHNOLOGY &
RELATIONSHIP WITH
POSTEDFIT
SOLDIER SYSTEM
ENHANCEMENT**

SOLDIER SYSTEM 2030



IMPACT OF TECHNOLOGY ON
WARFIGHTING?

CONSIDER THE IMPACT OF
SOCIAL MEDIA ON THE ARAB
SPRING

SOLDIER SYSTEM 2030



KEY ATTRIBUTES OF THE SOLDIER

1. **STRONG, HEALTHY AND FIT – HUM FACT & ETD**
2. **COMMAND AND CONTROL – HUM FACT & EQPT**
3. **MOBILITY – HUM FACT & SKILL & DRESS & EQPT**
4. **LETHALITY – TECHNOLOGY & EQUIPMENT**
5. **ATTACK & DEFEND – SKILL & EQUIPMENT**
6. **PROTECTION – SKILL & EQUIPMENT**
7. **LOAD CARRYING CAPABILITY – HUM FACT & TECH & EQPT**
8. **OBSERVATION – HUM FACT & TECH & EQPT**
9. **SUSTAINABILITY – HUM FACT & SKILL & EQPT**
10. **SURVIVABILITY – HUM FACT & SKILL & EQPT**
11. **TECHNOLOGICAL ENHANCEMENTS - EQUIPMENT**

SOLDIER SYSTEM 2030

KEY DEVELOPMENT AREAS



LETHALITY & PROTECTION & PRECISION

SUSTAINMENT & MOBILITY

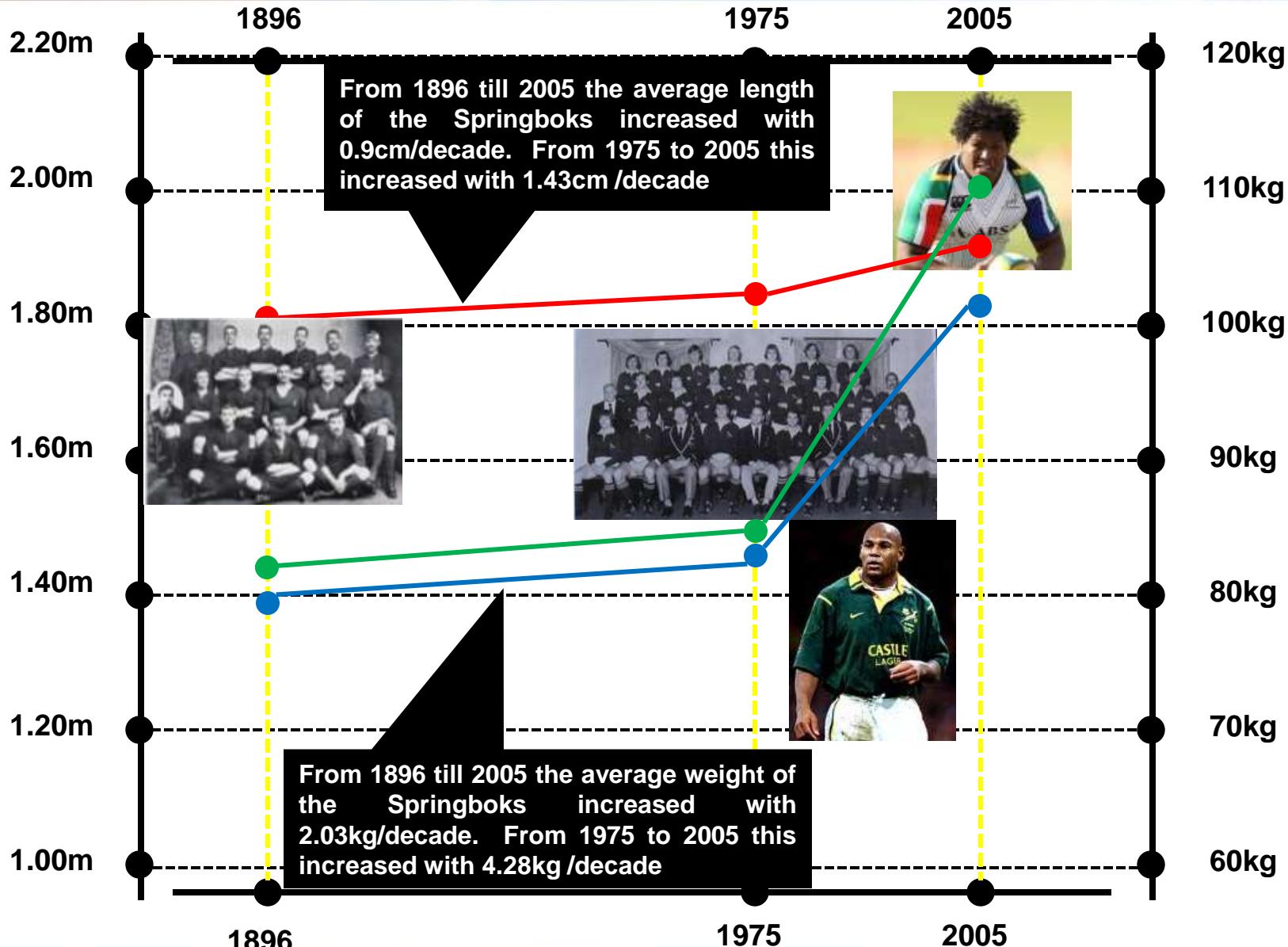
SITUATIONAL AWARENESS

PROTECTION & MOBILITY & SUSTAINMENT

SITUATIONAL AWARENESS

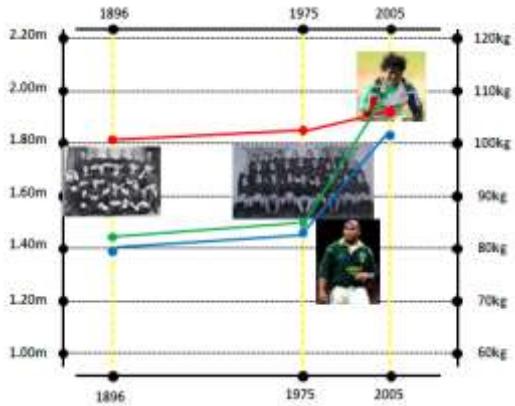
PROTECTION & MOBILITY & SUSTAINMENT

HUMAN POTENTIAL



SOLDIER SYSTEM 2030

SOLDIER SYSTEM OPTIMISATION



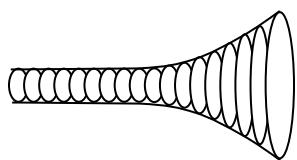
SELECT BEST
AVAILABLE
HUMAN
MATERIAL

APPLY APPROPRIATE
BUT RIGOROUS
TRAINING

ENHANCE WITH AFFORDABLE
AND APPROPRIATE
TECHNOLOGY

TECHNOLOGY CLUSTERS

TECHNOLOGY CONUNDRUM



Offensive Mindset



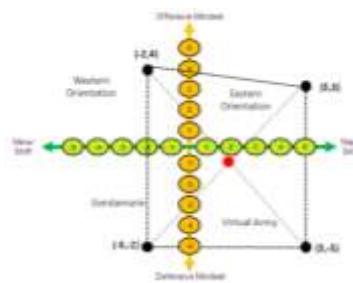
Minor Shift



Major Shift



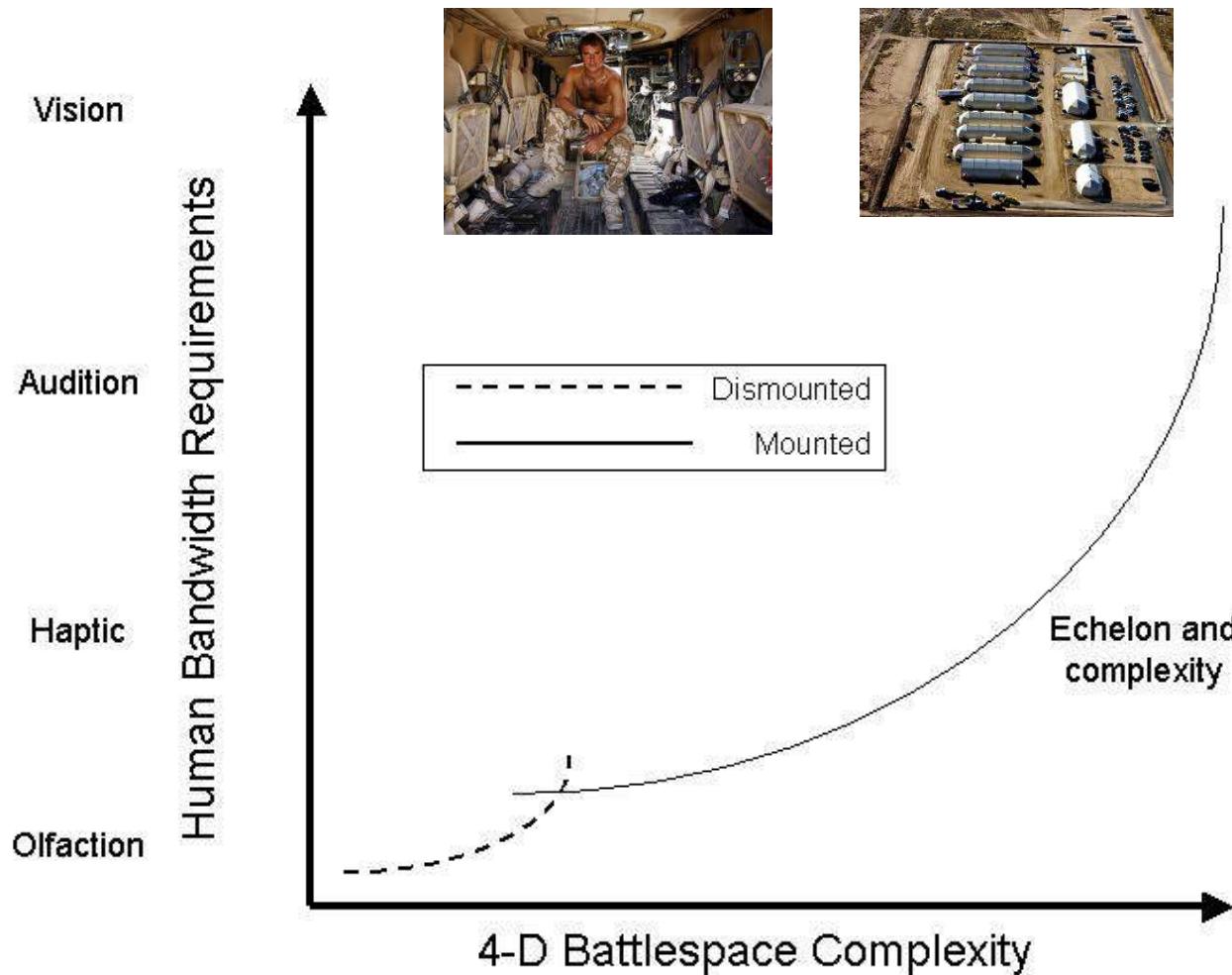
Defensive Mindset



KEY TECHNOLOGY

REQUIREMENTS

HUMAN & TECHNOLOGY



Haptic = refers to the sense of touch

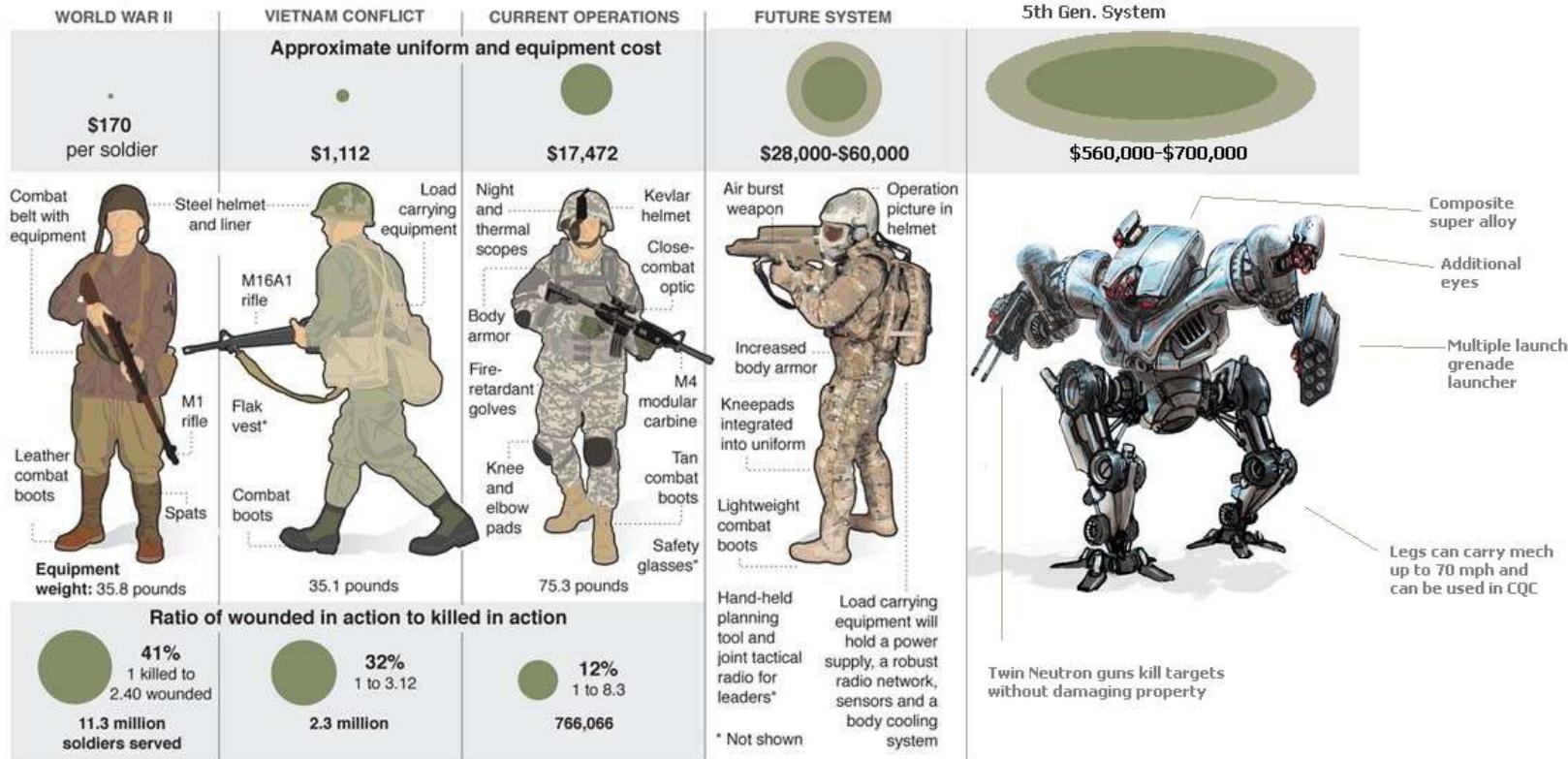
Olfaction = refers to the sense of smell

SOLDIER SYSTEM 2030

PROTECTION SHOULD ORIGINATE FROM HUMAN ABILITY AND TTPS

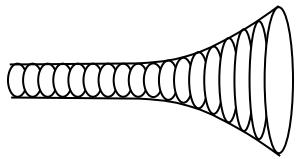
High cost of force protection

The current cost to outfit a U.S. soldier is about \$17,500, primarily for body armor and other protection. But the ratio of wounded to killed soldiers is far less than in previous wars. Future costs may double.



BALANCE BETWEEN TECHNOLOGY AND TRAINING

KNOWLEDGE BASE



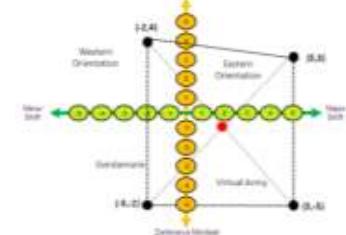
Offensive Mindset

Western Orientation

FOB – Camp Design Capability
Combined Operations
Precision Strikes
Urban Warfare
Protecting HVT & KP
Post-Conflict Reconstr & Devel

Eastern Orientation

Area Operations
Mobile Defence
Protecting HVT & KP



Minor Shift

Geo-Political Shift

Major Shift

↑ Strategic Responsiveness ↓

Gendarmerie

Protecting HVT & KP
Support SAPS
Border Safeguarding
Protect against Militia

Virtual Army

Personnel Maintenance
Modelling and Simulation
Corporate Memory
Capacity Building

Defensive Mindset

M&S Tech for Development of New Doctrinal Concepts.

M&S Tech for Decision Support

Tech to Assist Formal Training Institutions to Expose Jnrs & Snrs Cdrs to **Leadership and Decision-making**.

C4I3RS Tech to enhance Interoperability, Situational Awareness and Operational Level Sustainment.

TECH REQ - TAC LEVEL



C4I3RS Technology to optimise limited fire power resources on the battlefield.

Precision strike capability within the indirect fire power domain.

Technologies that will enhance the SA Army's capability to protect key and high value targets both internally and externally to the RSA.

Technologies to detect and counter IEDs.

Technologies to provide early warning for CB threats.

Technologies to allow commanders on the ground to obtain an accurate operational picture of the identified target(s).

TECH REQ - TECH LEVEL



Water manufacturing and/or purification technology.

Interacting in a JIIM environment – technology for the soft issues

Urban navigation technology.

Enhanced medical technologies.

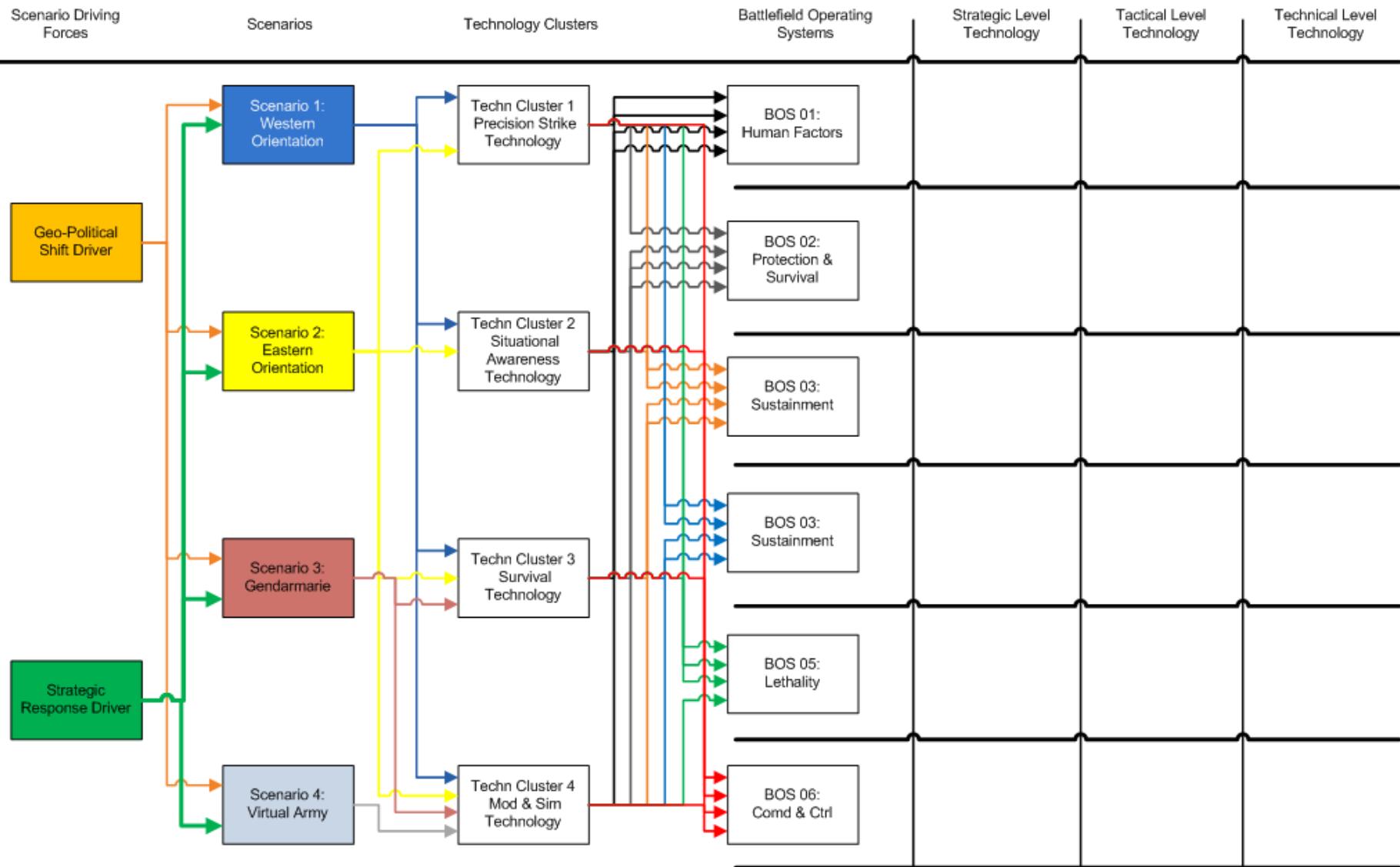
Imaging technologies.

Camouflage technologies.

Lightweight fire power with tunable effects.

Versatile computing and communication technologies.

TECHNOLOGY ROADMAP?



**AFFECTING CHANGE NOW
FOR THE LONG TERM
SHOULD BE SMALL
INCREMENTAL STEPS BUT
WITHIN A BROAD
FRAMEWORK!**



QUESTIONS?

DDSI

Col (ret) Perie Franken