

Towards the SA DERI

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Overview

- Why high-tech EW?
- What is the SA DERI?
- Compared to...
- Roles
- Examples
- Issues
 - Funding
- Note:
 - aim to foster discussion
 - principles rather than principalities



Why High-Tech EW?

- *Asymmetric advantage*
 - force multiplier
 - at least equal to firepower
 - missile launches prevented by countermeasures
- Proliferation of high-tech equipment
 - military
 - bandit
 - mercenary
- Prepare properly
 - current trends
 - future possibilities
- Increasing complexity of platforms
- Strategic independence



What is the SA DERI?

- **SA**
 - Defence
 - Evaluation
 - Research
 - Institute
- South African
 - in the interest of the RSA
 - unique local requirements



CSIR
our future through science

What is the SA DERI?

- SA
- **Defence**
- Evaluation
- Research
- Institute
- Military
- Civil
- Economic



What is the SA DERI?

- SA
- Defence
- Evaluation
- **Research**
- Institute
- Relatively high-risk
- Often long-term
- Limited resources
 - cannot do everything
- Development of strategically valuable
 - systems and
 - capabilities
- Build a knowledge base



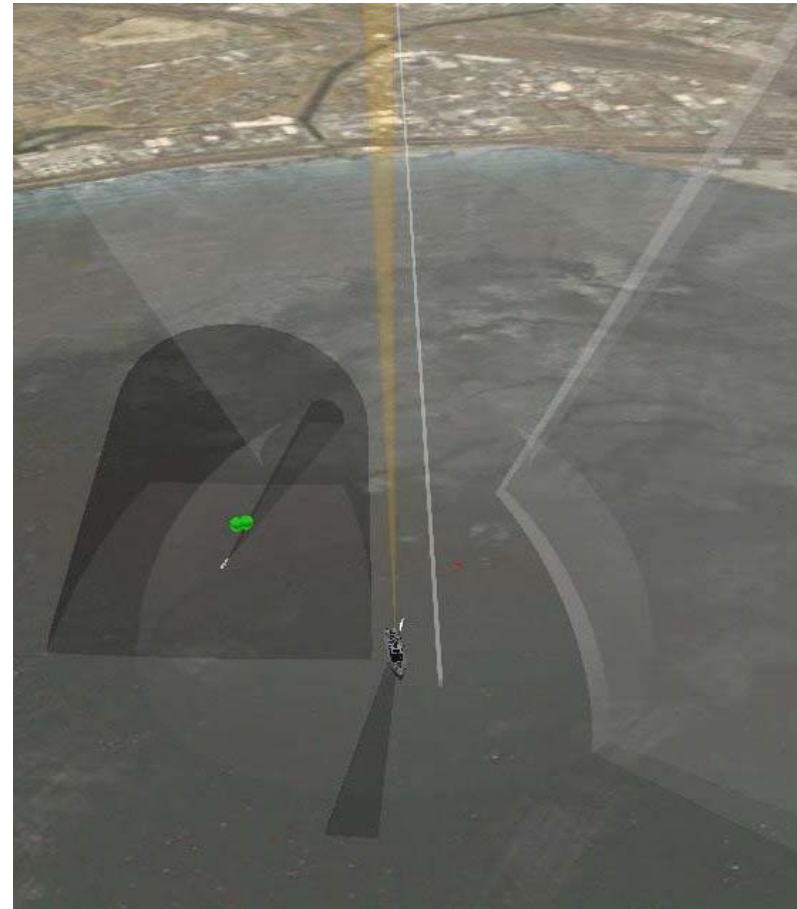
What is the SA DERI?

- SA
- Defence
- **Evaluation**
- Research
- Institute
- Apply knowledge base
- Maintain national facilities
- RSA small player globally
 - cannot develop everything locally
 - need to purchase systems
- Support DoD to be an knowledgeable, informed
 - buyer
 - user
 - decision maker



What is the SA DERI?

- SA
- Defence
- Evaluation
- Research
- **Institute**
- Separate from
 - academia
 - industry
 - SANDF
- But in partnership with everyone



Compared to...

- **Academia**
- Industry
- SANDF/
SAPS
- Primary functions
 - training
 - fundamental research
- Not a DERI because
 - project lifetime limited
 - retention of capability limited
 - quality of students
- DERI not because
 - different people, processes, environment
 - application-oriented (engineering) research
 - support academia to get research into systems

Compared to...

- Academia
- **Industry**
- SANDF/
SAPS
- Primary functions
 - development of new products
 - manufacturing
 - support of products
 - profit
 - create jobs
- Not a DERI because
 - for profit rather than for cause
 - not impartial
- DERI not because
 - different people, processes, environment
 - prove concepts, not manufacture
 - support industry through technology transfer

Compared to...

- Academia
- Industry
- **SANDEF/
SAPS**
- Primary function
 - defence of the RSA
- Not a DERI because
 - user of systems
- DERI not because
 - different people, processes, environment
 - support users with technology issues

Roles

- NASA technology readiness levels
 - 9 : Proven system in operation
 - 8 : Qualified system through demonstration
 - 7 : Prototype demonstrated in operational environment
 - 6 : Model or prototype demonstrated in relevant environment
 - 5 : Breadboard validation in relevant environment
 - 4 : Breadboard validation in laboratory
 - 3 : Proof of concept of critical function or characteristic
 - 2 : Technology concept formulated
 - 1 : Basic principles observed and reported
- Research types (Frascati Manual)
 - C : Technology transfer
 - B : Experimental development
 - A : Explore underlying nature of systems

Roles

- NASA technology readiness levels
 - 9 : SANDF
 - 8 : SANDF/Industry
 - 7 : Industry/DERI
 - 6 : Industry/DERI
 - 5 : DERI
 - 4 : DERI
 - 3 : DERI/Academia
 - 2 : DERI/Academia
 - 1 : Academia
- Research types (Frascati Manual)
 - C : Industry
 - B : DERI
 - A : Academia

Examples

- Platform signature reduction
 - capability was available when required
- UV MAWS (Ultra-Violet Missile Approach Warning Sensor)
 - observed phenomenon
 - initial development at CSIR
 - successfully industrialised and marketed by industry
- DRFM (Digital Radio-Frequency Memory)
 - research started before need was clear
 - capability now available to support new platforms
- Modelling and Simulation
 - valuable capability developed
- People



Issues

- University co-operation must improve
 - competition from other industries
 - “defence” has bad connotations
- Industry co-operation must improve
 - perceived competition
 - not wholly RSA owned
- SANDF co-operation must improve
 - unaware of capabilities
 - wary of consulting
- Funding...



Funding

- Considerations
 - capability must be
 - established
 - maintained (critical mass)
 - long-term projects
- State funding
 - ideal: 100%
 - reality: 60% and decreasing
- Need additional funding
 - local
 - international



Conclusion

- SA DERI
 - build and maintain capability
 - co-operate with all parties
 - strategic independence
- Challenges
 - improve co-operation
 - funding



Questions?

