An Integrative Approach to Airborne EW Test, Evaluation and Training

Erlank Pienaar

Competency Area Manager: Radar and electronic warfare systems
CSIR Defence, Peace, Safety and Security
South Africa
A Capability Management Approach to EW Test, Evaluation and Training

- Enhancing the Indigenous EW defence research, test, evaluation and training capability
  - Capabilities consist of skilled people, optimised processes and specialised tools/facilities
- Defence research, development, test and evaluation as well as training capabilities that will enable our partners to:
  - Be knowledgeable buyers of defence systems
  - Be knowledgeable users of defence systems
  - Be knowledgeable managers of defence capabilities
  - Have independence in identified strategic technology areas
  - Contribute towards related national objectives such as industrial growth and high level skills development
• Enhancing the **indigenous EW capability** by following an **integrative approach** in relation to:
  • National System of Innovation
  • Defence Systems hierarchies
  • Knowledge management
  • Arms of Service (Land, Sea, Air)
  • Application of the knowledge base (R&D, Modelling and Simulation, Test, evaluation and training)
  • Electromagnetic Spectrum
  • Industry collaboration
An Integrative Approach: National System of Innovation

Fundamental research
- understanding fundamental principles

Strategic basic & applied research
- generation of new knowledge and application of existing knowledge

Technology & Decision Support
- development of new concept solutions, decision & operations support

Technology uptake & implementation
- Impact on DoD success

CSIR DPSS provides strategic capabilities, technological concept solutions, decision support, development of concepts of operation and the congruent with the DoD’s operational needs as expected at some future date.

Industry supplies the kit, often dictated by the specifications derived from CSIR DPSS work.

Tertiary Education, Institutes & labs

CSIR DPSS

DoD uptake & Industry response
Integrating over all levels of the Defence Systems hierarchy
Nonaka’s SECI model of knowledge dimensions
Requirements for training simulation capabilities

Training specific Requirements:
- Training outcomes
- Performance monitoring
- Trainer focussed
- Pedagogy
- Language & Culture tailored
- Knowledge transfer and internalisation

Modelling and Simulation Requirements:
- Large-scale, distributed, real-time environment
- Interoperability among Range systems, Lab Facilities and Software Simulations systems in a quick, cost-efficient manner,
- Foster Reuse and enable future developments
- Provide Composability to rapidly assemble, initialize, test, and execute a system from a pool of reusable, interoperable elements
An Integrative Approach to Applying the Knowledge Base

- Training
- Modelling and Simulation
- Research and Development
- Test and Evaluation
An integrative approach to collaboration with the UAE Industry
Enhance the **indigenous EW capability** by following an **integrative approach** in relation to:

- National System of Innovation
- Defence Systems hierarchies
- Knowledge management
- Multi-service (Land, Sea, Air) and multi-spectral application of the knowledge base
- Industry collaboration
Thank you