NLW effectiveness and standards

A team effort
Contents

› Emerging capabilities offered by NLW
› Finding the right one (or two)
› Making effectiveness explicit
› Standards development
› How to get NLW fielded
NLW as emerging capabilities

- Many potential applications
  - Crowd and riot control
  - Checkpoint operations
  - Force protection
  - Special operations
  - …

**No single agency can provide comprehensive solutions**

- Many specific issues, merits and limitations
  - Effectiveness and risk characterisation
  - Concept of use
  - Legal framework
  - …
NLW knowledge network

- NATO
  - Research & Technology Organisation / SAS Panel
  - Army Armament Group / Land Capability Group 9
  - Defence Against Terrorism (DAT-11)

- Bilateral arrangements

- Civil-military co-operation

- Academia

- Industry
Some NATO deliverables

- 2000 SAS-ET15 NLW Roadmap
- 2005 AC225/LG3/NLW ToE Proposed NATO NLC set
- 2004 SAS-040 Outlook 2020 (Ops/Tech/Policy)
- 2006 HFM-073 Need for Human Effects Research
- 2004 SAS-035 Effectiveness Assessment Methodology
- 2009 SAS-060 Enhanced Methodology
- 2011 SAS-078 Capabilities Based Assessment
- 2011 DAT-11 Rapid Fielding of NLW
- 2014 SAS-094 (ongoing) Concepts of Use
- 2012 NAAG LCG/9 Materiel Standards and Co-ordination
NATO Capabilities Based Assessment

“Conduct a CBA to determine NLW requirements, gaps, and candidate solutions, including associated work on experimentation”

<table>
<thead>
<tr>
<th>Requirement (Assessment of Gap Priority – Top Ten, Middle, or Lowest Ten)</th>
<th>Highest Scoring Current/Programmed NLW</th>
<th>Highest Scoring Candidate Material Solution</th>
<th>Highest Scoring Candidate Non-Material Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Capability (Gap)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Domain</td>
<td>Required Domain(s)</td>
<td>Capability (Gap)</td>
<td>Yes</td>
</tr>
<tr>
<td>Space</td>
<td>Required Space(s)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Characterization</td>
<td>Target Number requirement</td>
<td>Capability (Gap)</td>
<td>Capability (Gap)</td>
</tr>
<tr>
<td>Targeting requirement</td>
<td>Mobility</td>
<td>Capability (Gap)</td>
<td>Capability (Gap)</td>
</tr>
<tr>
<td>Physical Properties</td>
<td>Physical Properties requirement</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Range</td>
<td>Range requirement (showing the desired range and the range that covers most of the threats)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Coverage</td>
<td>Coverage requirement</td>
<td>Capability (Gap)</td>
<td>Yes</td>
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<tr>
<td>Onset</td>
<td>Onset requirement</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Duration</td>
<td>Duration requirement</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Score from assessment model</td>
<td>20%</td>
<td>35%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Candidate non-materiel and materiel solutions

Verified in Solutions Workshop hosted by ACT (03/2011)
Employment characterisation

DOTMLPFI

Mental

Physical

Equipment

Environment

Target

Effect

Undesired behaviour

 Desired behaviour
Integrated NLW Experimentation Framework

Capability Gaps and Emerging Solutions

- Environment
- Target
- Interpretation
- Requirement
  - Technology
  - Performance
  - Response
  - Behaviour

Specific
General

Fielded Capability

DOTMLPF
Lines of Development

Risk & Outcome
REAL DEAL

› “Does INEF provide the right guidance for setting up proper NLW experiments?”
› Joint NLW effectiveness test protocol
› Three cases
› Involving human subjects
STANREC VAD

- No dedicated NATO standard for Non-Lethal Capabilities

- “Propose a standard for the performance of Vehicle Arresting Devices (VAD), in order to capture current practices and explore desired properties of a Capability Based Standard”

- “…to promote the comparison and exchange of test results”
A capability is well-described when the commander knows
- What the primary intended effect is (i.e. ‘what does it do?’)
- Against which range of targets
- Requiring which resources to operate and maintain
- Performing under which conditions
- Ability to integrate in operations
- Safety issues to consider

STANREC VAD provides measures and metrics in support of answers to these capability questions
STANREC VAD content

- Current edition limited to
  - Non-lethal VAD
  - Mechanical technology
  - Deliberative and hasty emplaced
  - Wheeled, civil-based land vehicles

- Measures and metrics on
  - VAD system
  - Target system
  - Environment
  - Interaction

MoP: inherent properties of VAD or target, in environment
MoE: outcome of engagement, in environment
MoS: utility of VAD, in environment
WG for NLW KE Projectiles Standardization

“...to develop a common frame of reference to promote the exchange of performance test results of NLW kinetic energy projectiles”
WG Programme of Work

- Effectiveness (accuracy plus pain)
- Injury and damage potential of
  - Skin
  - Chest
  - Abdomen
  - Head (not a target)
- Promotion to STANREC(s) pending
Other capabilities next?

- Promoting the exchange of test results on
  - Kinetic impact (ongoing)
  - Counter-mobility maritime
  - Acoustic hailing
  - Blinding light
  - Strobe light
  - Malodour
  - …

What can be done (purpose and content)?
Can it be done (resources and time)?
Fielding of NLW

- Defence against Terrorism Non-Lethal Capabilities (DAT-11)

- “To confirm and demonstrate existing, or soon to be fielded (TRL 7+), non-lethal technologies with a view to facilitating the rapid fielding of non-lethal capabilities in support of the NATO mission in Afghanistan (ISAF) and in Counter-Terrorism operations”

- Identify tasks most relevant to NLC
- Identify mature NLC
- Demonstrate capabilities
- Produce catalogue
- Handover
North American Technology Demonstration

- Hosted by Canadian MoD
- 80+ vendors/exhibitors
- 750+ participants (30+ countries)
NATO NLC Concept development

- NATO RTO SAS-094 (2012-2014)
- 10 nations plus ACT, ACO, NURC

“Analytical support to the development and experimentation of NLW Concepts of Operations/Employment and Experimentation”

In support of NATO Allied Command Transformation

Operational impact often results not from the advent of new technologies but rather from new concepts that capitalize on those technologies
Thank you for your attention

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