



Semi-Autonomous Direct Fire Weapons

Fred Hood, TL Battlefield Engineering Studies,
DSTL Land Systems Department

amhood@dstl.gov.uk

Outline

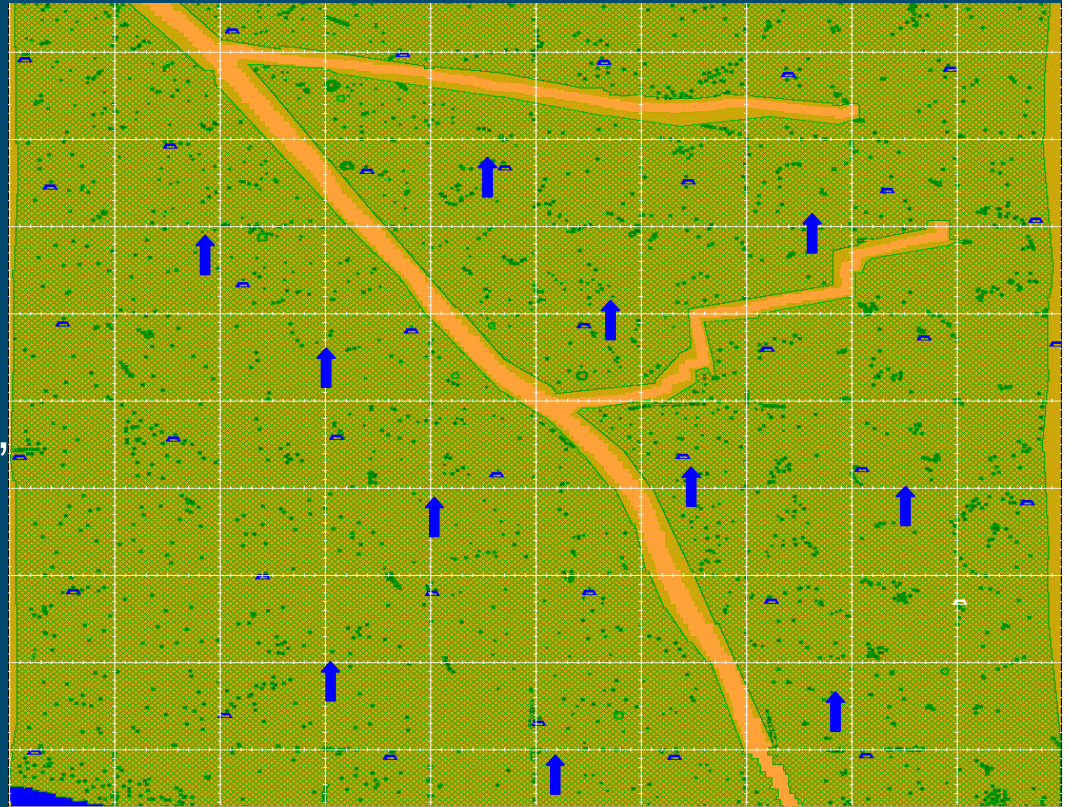
- Historical perspective
- Gaming/simulation
- Initial engineering study

C24 study

- Alternative to AP Land Mines (1997)
- Semi-autonomous support weapons concept (SASW)
- Identified as possible long term solution
- Applicable in wide a range of scenarios

CAEn Wargaming/Simulation

- Detailed small unit, low-level combat model
- Clearance of 200 m wide path through ADW obstacle by dismounted platoon
- 1x1 km area with 15 cm grass, bushes and small trees
- Weapons engaged only own targets with suppressive not aimed fire
- One operator for all weapons



Gaming Observations-1

- 4 SASW

- Red spotted and forced to ground at 300 m
- Red moved prone to avoid 'suppressive' fire
- Weapons localised by sound then located visually and neutralised by aimed fire
- Delay caused by Red crawling, but no disruption

- 8 SASW

- Crossfires of up to 3 weapons
- More weapons gave Blue more information
- Red reserve section required

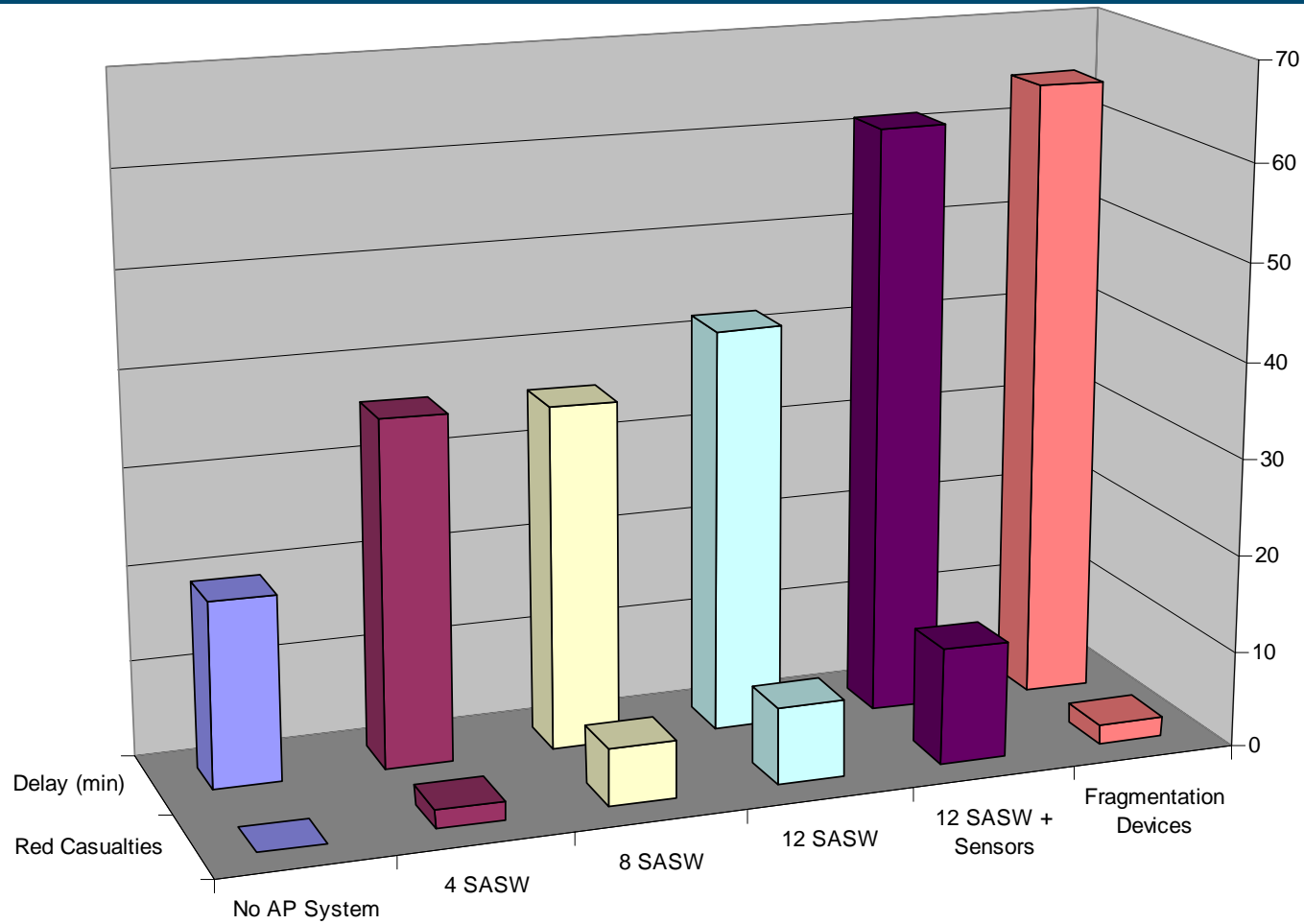
- 12 SASW

- 7 weapon crossfire
- Reserve section required immediately
- Individual weapons harder to locate

Gaming Observations-2

- 12 SASW each with 4 simple sensors
 - Red cohesion stressed by massed, sustained fire
 - Blue able to fight entire obstacle as a single system
 - Red 'pulled' around obstacle
- Fragmenting device
 - 6 shot HE device with seismic sensor package
 - Red forced to move slowly to reduce signature
 - packages deployed outside cleared strip did not contribute

CAEn Results



Observations Influencing Design

- Forward weapons only fired about 100 rounds
- Rear weapons needed up to 1000 rounds
- Sight magnification x2-4 required for target identification
- Ability to fire on fixed lines towards targets detected by other systems

The SASW Design

- Engineering trade-off study
- Key constraints
 - cost
 - residual hazard or utility
- Offensive element
 - non-standard rifle calibre metal storm
 - front weapons fire rapidly
 - rear weapons fire more slowly
 - burst fire before capture
- Sensor element
 - x4 optical sensor
 - 3rd generation II
- Other elements
 - powered tripod
 - communications - video feed bandwidth issues
 - UXO hazard concentrated in weapon

Further Work

- Model 'designed' system
- Study combinations of Fragmenting Weapons and Semi-Autonomous Direct Fire Weapons
- Consider alternative obstacle types to support
- More detailed design work
- Supply of operators