
Helicopter Operations Simulation (HelOS) and applications

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Introduction

The ADF's current Amphibious capability will have reached the end of its service life by 2015

What should succeed this capability?



Desired Effect

**Minimum
Requirements**



Simultaneous Helicopter Lift

- All helicopters arrive at a destination at the same time
- Useful for delivering whole units ashore
- Tricky if less deck spots than helicopters



Launching



Loitering



Refuelling



Helicopter Operations Simulation (HelOS)

INPUTS : Number of helicopters and type, Type of Operation

Number of Deck Spots and types (refuel, launching, park)

Distance to destination

**An Object-Oriented Queuing
model**

Sends

Requests



Helicopter Object



Controller Object

Sends

Directives

OUTPUTS:

Operation Times

Fuel Consumed

Deck Crew Hours

Controller Intensity

Safety Measurement

Past uses

- HelOS has been used in future capability studies to:



- estimate the minimum number of deck spots required to launch a simultaneous lift of n airframe types

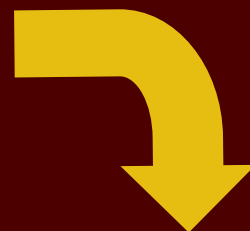
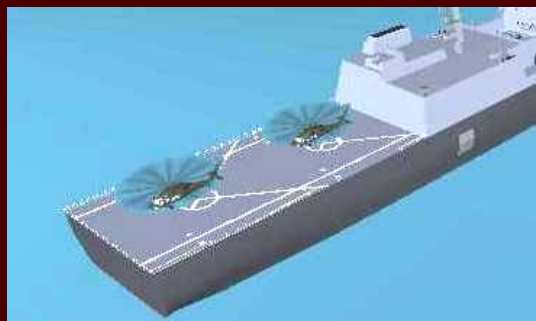


- estimate the benefits of having more than this minimum, i.e. impacts on time, safety etc

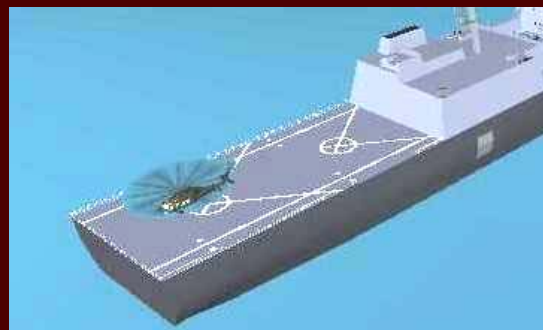


Possibilities for the future: Scheduling

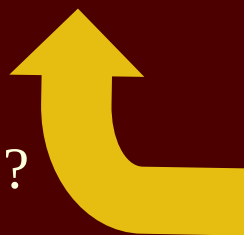
Example: Launching 3 helicopters from 2 spots



Should you
launch 2 then 1...



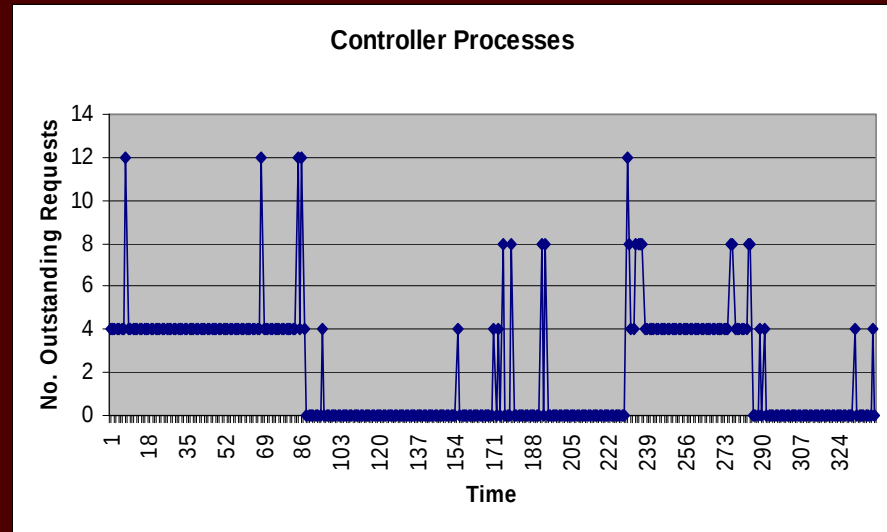
...or 1 then 2?



**Different schedules affect the work load,
fuel consumption and safety of operation**

Possibilities for the future: C2 issues

- Monitoring the controller activity could offer insight into C2 levels during an operation

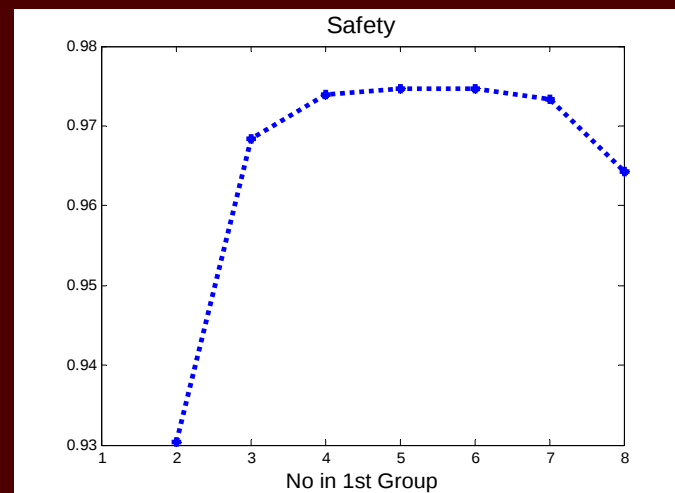
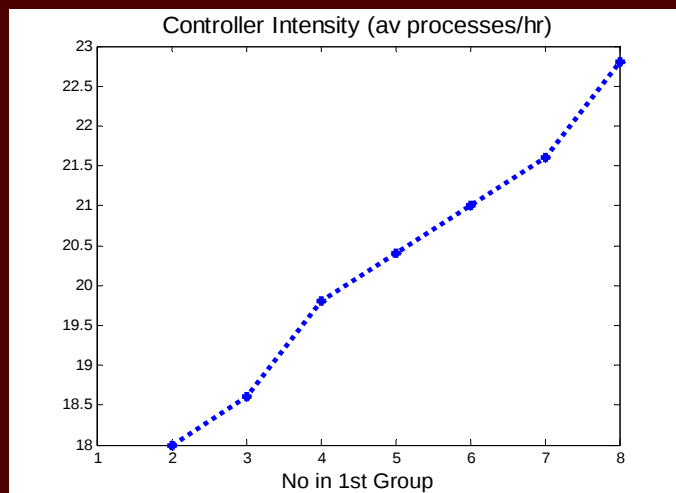


Example of HelOS output

- Trials required (possibly human-in-the-loop) to see how such results map to reality

Possibilities for the future: Developing SOPs

- Using outputs from HelOS, trade offs that occur by altering the operation can be analysed
- Such work could feed the development of ‘optimal’ Standard Operating Procedures



HelOS outputs

At the moment...

- HelOS being shifted from analysis tool to an operators tool
- Integration into Littoral Battlespace Tool Set (LBaTS)
- Research into inclusion of optimisation (ILP)
- Discussions being held to use HelOS for planning ops during EX CROC 03



Summary

- HelOS is an object oriented modelling tool which simulates amphibious helicopter operations
- Useful for analysis of
 - Platform requirements
 - Scheduling and C2 issues
 - SOP development
- Useful for operators as a planning tool



QUESTIONS?