



# Using THE HTA TOOL for Agile Mission Planning

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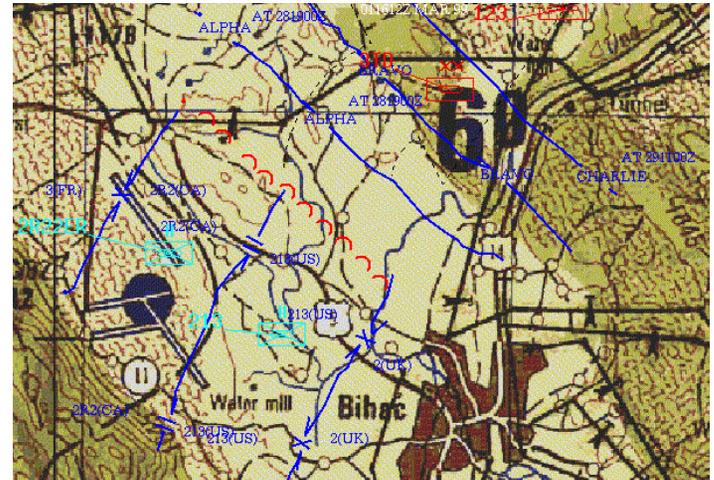
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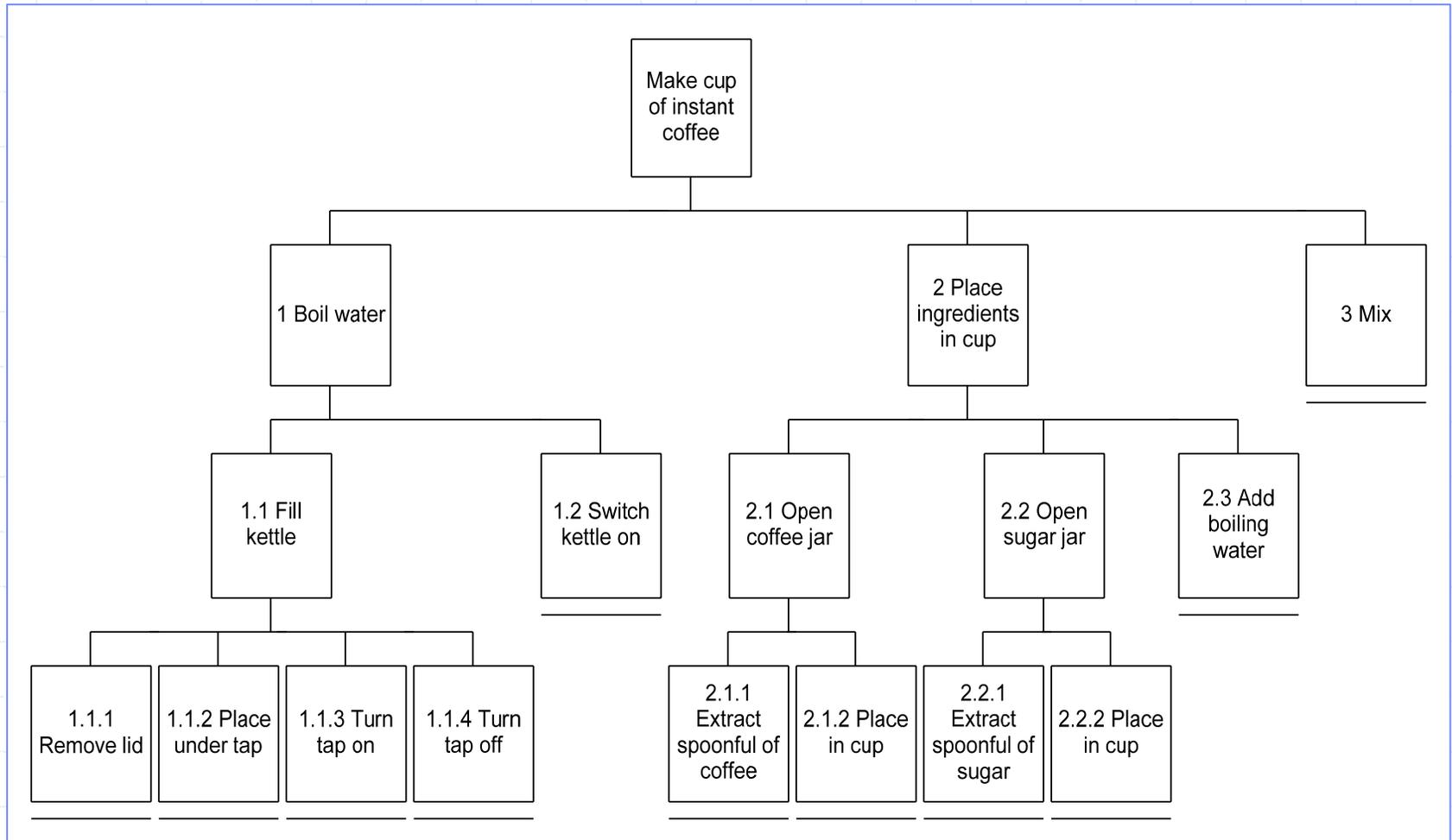
# Presentation Plan:

Introduction  
Hierarchical Task Analysis  
THE HTA TOOL  
Mission Planning  
Application of the Tool  
Proof of Concept  
Further Development Routes  
Conclusion





# Hierarchical Task Analysis

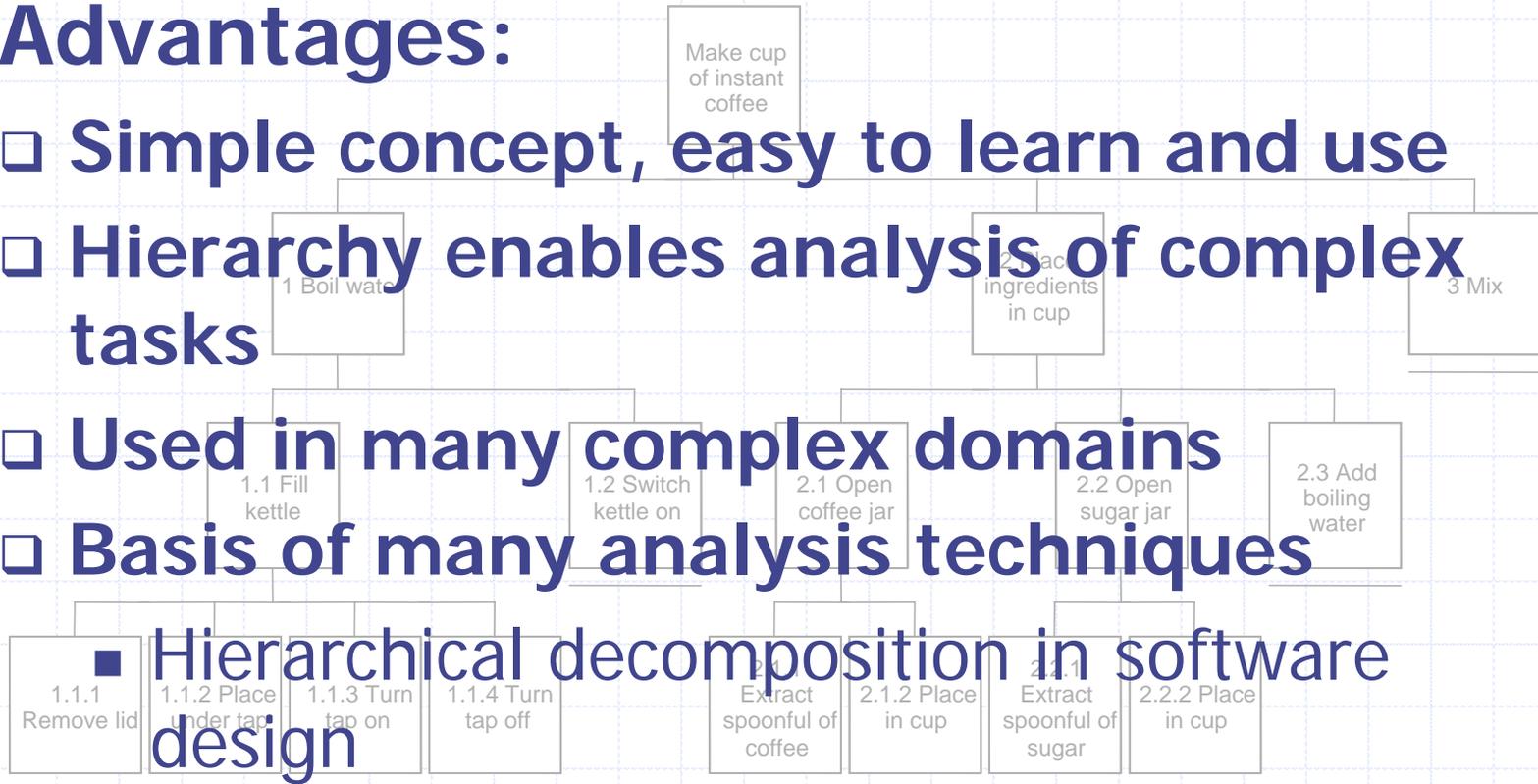




# Hierarchical Task Analysis (2)

## Advantages:

- ❑ Simple concept, easy to learn and use
- ❑ Hierarchy enables analysis of complex tasks
- ❑ Used in many complex domains
- ❑ Basis of many analysis techniques

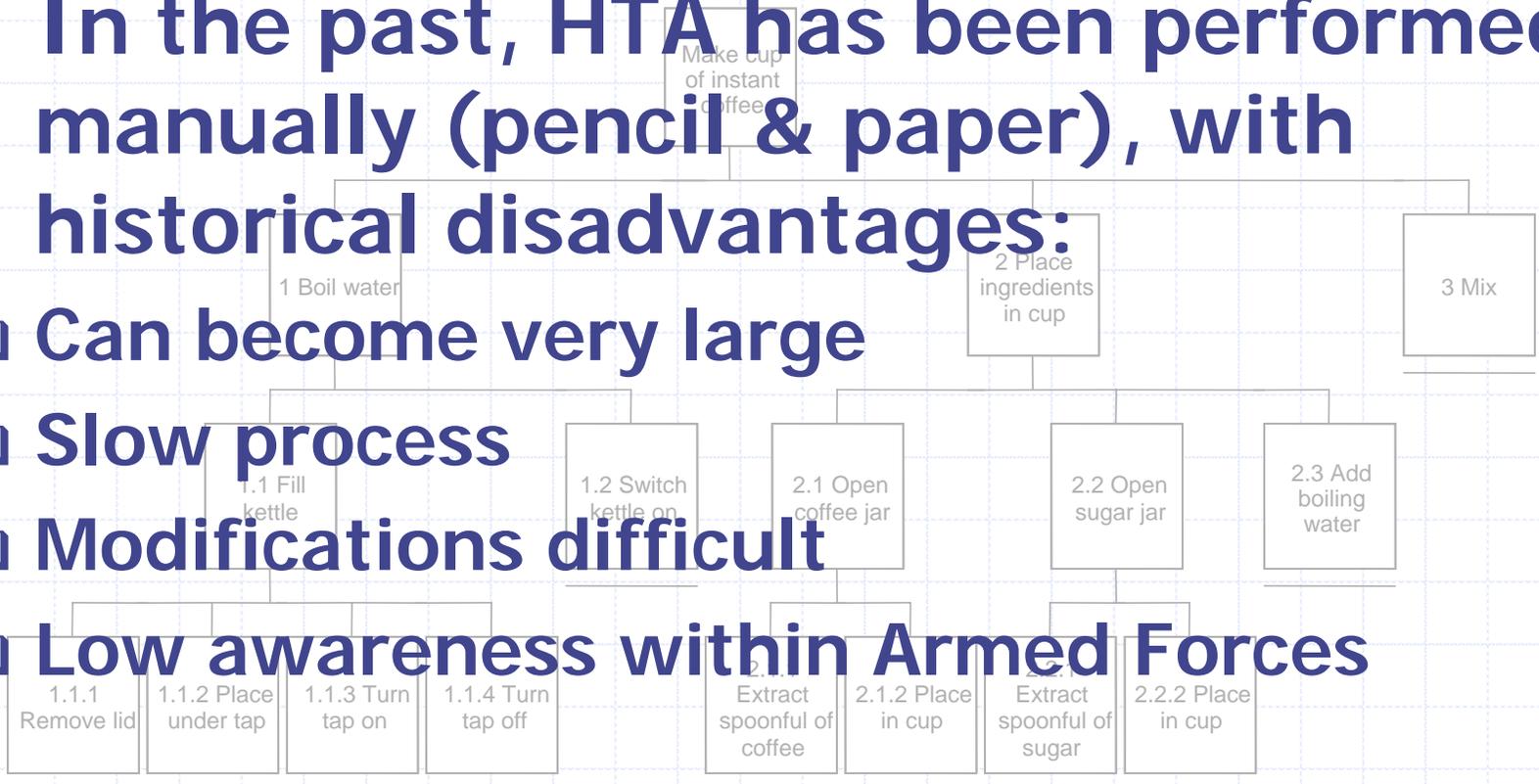




# Hierarchical Task Analysis (3)

In the past, HTA has been performed manually (pencil & paper), with historical disadvantages:

- ❑ Can become very large
- ❑ Slow process
- ❑ Modifications difficult
- ❑ Low awareness within Armed Forces





# THE HTA TOOL

The  
Distribution  
CD





## THE HTA TOOL (2)

- ❑ Meets need for computerised HTA
- ❑ Developed by HFI-DTC (an MoD initiative)
  - Released THE HTA TOOL version 1.0/1.1
- ❑ Freely available – used Internationally
- ❑ All Army Training Advisors issued with copy
- ❑ Other users include DSTL, RAF, REME TDT, DSTO, DRDC, BAE, Ael, Coca Cola...





# Mission Planning

Decision-making & plans are key  
military activities





# Mission Planning (2)

## Issues:

- ❑ Must be timely and accurate
- ❑ Requirement for more agile approach to mission planning (C2 traditionally constrained)
- ❑ Whiteboards, spreadsheets and presentations currently used



## Mission Planning (3)

Involves breaking down operations into sub-components, which are in turn decomposed, and resources allocated  
*(Hierarchical Task Analysis)*

### Examples:

**HTA used for UAV mission planning**  
*(Bryant, 2006)*

**HTA used for Euro-Fighter mission planning**  
*(BAE Systems)*



# Application of the Tool

## Why use THE HTA TOOL?

- ❑ Software improves speed & efficiency
- ❑ Intuitive - make changes “on the fly”
- ❑ Wizards/checkers to help construct
- ❑ Extensive plans system
- ❑ Automatic updates (numbering & plans) and validity checking
- ❑ Merge, print, export analyses and layouts
- ❑ And more...



## Application of the Tool (2)

BAE Systems are currently using THE HTA TOOL for air mission planning for the Euro-Fighter (Typhoon)



Could it be used for mission planning for ground military operations?



# Proof of Concept

We trialled THE HTA TOOL as a retrospective mission planning tool based on a scenario used for British Army training:

“Armoured Battle-group in the Quick Attack”





# Proof of Concept (2)

**THE HTA TOOL - [Quick Attack]**

File Edit View Task Properties Options Tools Windows Help

**0 Quick Attack**  
Plan 0: Do 1  
Do 2, continue throughout attack  
When target found do in order 3-5

**1 Advance to Target**

**2 Find**  
Plan 2: Do 1 continuously  
Do at the same time 2-5

**2.1 All units gather data**

**2.2 Recce platoon gather information on target**  
Plan 2.2: Do at the same time 1-5

**2.2.1 Get info on strengths**

**2.2.2 Get info on weapons**

**2.2.3 Get info on fields of fire**

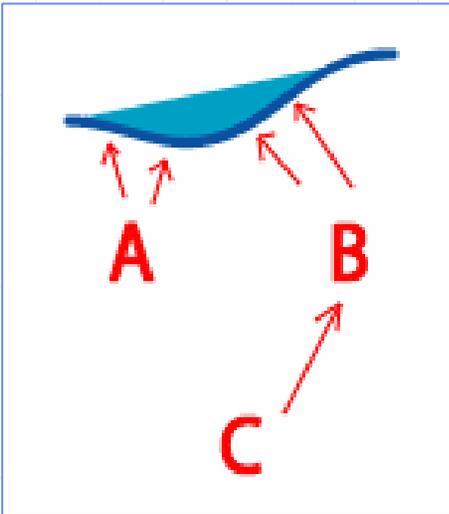
**2.2.4 Get info on routes into enemy position**

**2.2.5 Get likely withdraw routes**

**2.3 Recce advise OC on possible FUPs**

Insert  
Edit  
Delete  
Cut  
Copy  
Paste  
Paint  
Focus  
Hide  
Mark/Unmark as Stopped  
Mark as Completed

# Proof of Concept (3)



## Example

Companies A and B attack enemy position

Company B expected to make breakthrough, supported by reserve, C

2.2 Company A and B locate FUP

2.3 Company C positioned to support Company B

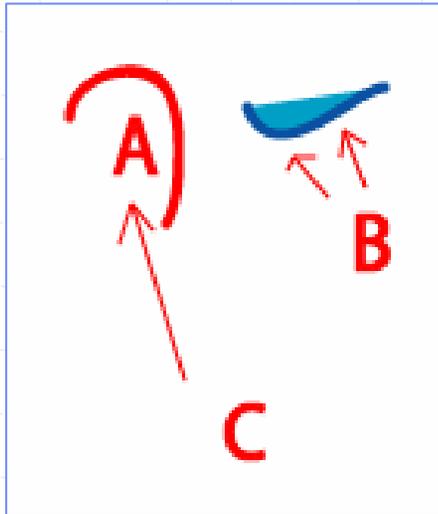
Plan 2.3: Do at the same time 1-2

2.3.1 Set orientation

2.3.2 Locate reserve ammo supply for Company C

2.4 Confirmatory orders

# Proof of Concept (4)



Company A makes unexpected breakthrough

Hasty re-planning: re-orient C to support A, re-locate ammunitions, notify logistics support

## 2.4 Re-orient Company C in support of Company A

Plan 2.4: Do at the same time 1-2  
Do 3

2.4.1 Change orientation

2.4.2 Move ammo supply

2.4.3 Notify logistics support



# Future Development Routes

**Trials on real/simulated missions**

**Create Mission Planning template for THE  
HTA TOOL**

**New version of tool?**

**Develop flow-chart/time-line based view**

**Link with other tools & methods**

Such as Thunholm's PUT (Planning Under Time-pressure) model



# Conclusion

**We have shown:**

- ❑ **HTA is suitable for use in Mission Planning**
- ❑ **THE HTA TOOL can be used to create, manage & update Mission Plans**

**Next step:**

- ❑ **Test the tool on real missions**
- ❑ **Develop THE HTA TOOL to directly support Agile Mission Planning**



# Questions?

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