



Using THE HTA TOOL for Agile Mission Planning

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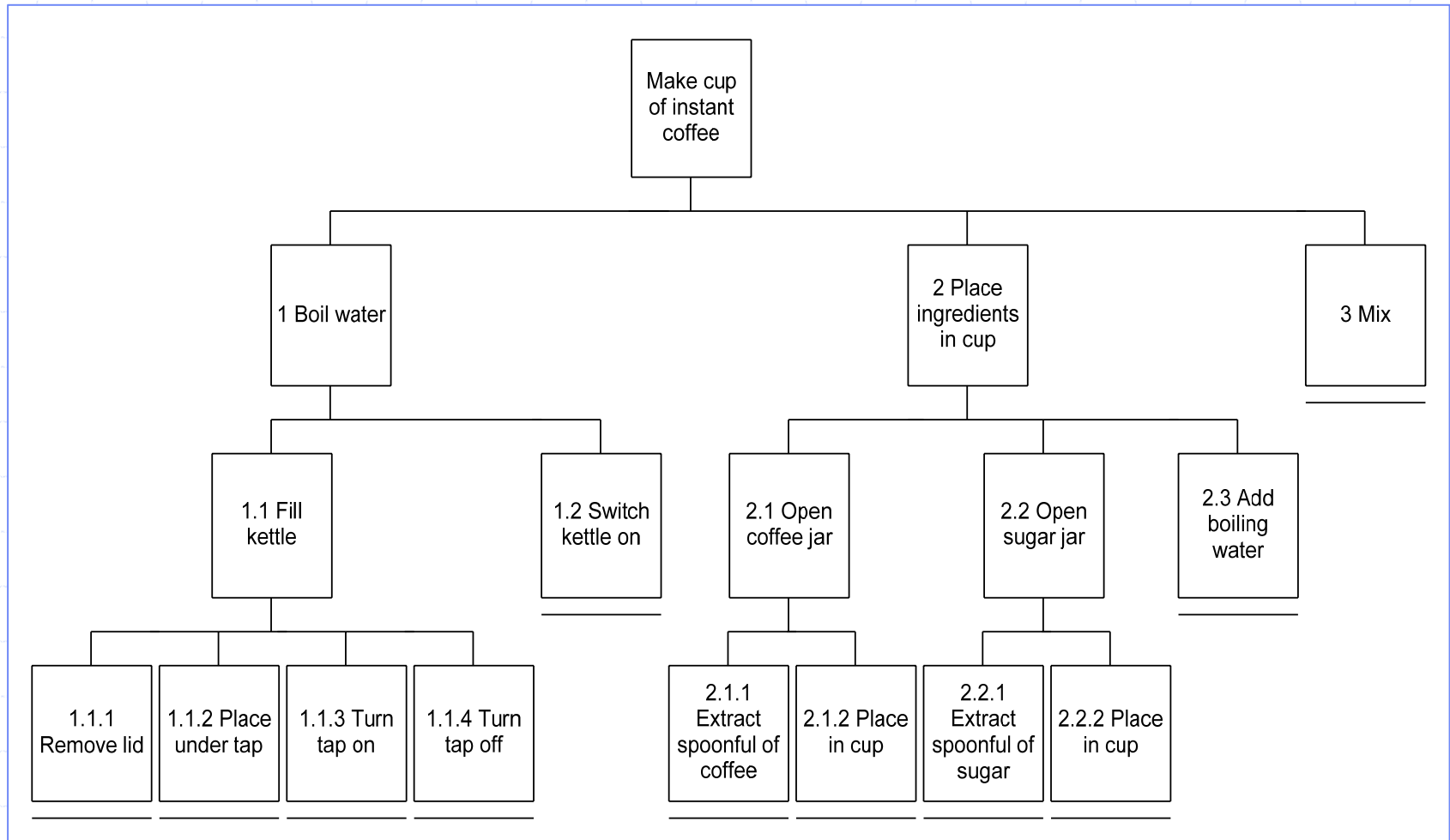


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Hierarchical Task Analysis





Hierarchical Task Analysis

Advantages:

- ◆ Simple concept, easy to learn and use
- ◆ Hierarchy allows focus on complex & important tasks
- ◆ Used in large variety of domains
- ◆ Basis of many other analysis techniques



Hierarchical Task Analysis

Disadvantages:

- ◆ Can become large & unwieldy
- ◆ Difficult to maintain
- ◆ No formal process or appearance
- ◆ Analysts and experts need to all be present during its creation
- ◆ Low awareness within Armed Forces



THE HTA TOOL

- ◆ Growing need for the computerisation of HTA
- ◆ HTA tool developed by HFI-DTC (an MoD initiative)
- ◆ Several prototypes and user feedback later...
- ◆ THE HTA TOOL version 1.0
- ◆ Freely available and in use widely & Internationally
- ◆ Users include DSTL, RAF, REME TDT, DSTO, DRDC, BAE, Ael (and other acronyms!)



Mission Planning

Decision-making & plans are key
military activities





Mission Planning

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

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

Example: HTA has been used in UAV mission planning (Bryant 2006)



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)
- ◆ Merge, print, export analyses
- ◆ And more...



Application of the Tool

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

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



Proof of Concept

Trialled THE HTA TOOL as a retrospective mission planning tool

“Armoured Battlegroup in the Quick Attack” scenario



Proof of Concept

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

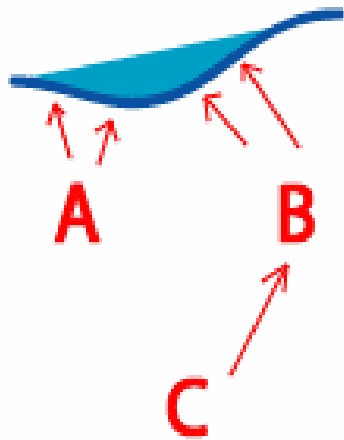
2 Find
Plan 2: Do 1 continuously
Do at the same time 2-5

- 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**

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



Proof of Concept



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

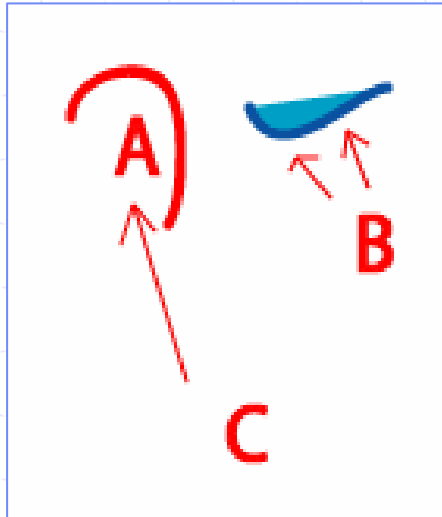
2.3.1 Set orientation

2.3.2 Locate reserve ammo supply for Company C

2.4 Confirmatory orders



Proof of Concept



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



Further Development Routes

- ◆ Trials on real/simulated missions
- ◆ Generate Mission Planning template
- ◆ New version of tool?
- ◆ Flow chart/time-line based view
- ◆ Closer integration between tasks and plans
- ◆ Collaborate with other tools & methods



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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