Decision Trees vs. Simulation for Cargo Screening Cost Benefit Analysis

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26 January 2010
Sponsored by EPSRC EP/G004234/1 and UKBA

Background
- Cargo screening at seaports and airports
- Looking for stowaways, weapons and other threats
- Efficiency is not known

Research question
- Decision trees vs. simulation for conducting cost benefit analysis
  - How to use decision trees?
  - How to use simulation?
  - What is the difference between them?
- Can decision trees and simulation help us to define data requirements

First Case Study
- Stowaways (clandestines)
- 900,000 lorries/year
- 0.4% are positive detected lorries
**The Conceptual Model**

```
PAF  PMMW  UKBA  Check  Berth  HB
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**Decision tree**

- Tickets → Passport
- Search
- Hard
- Large
- Soft
- Open
- Medium
- Very Large
- Berth
- End2

**Simulation**

- Decision trees and Simulation are useful for basic analysis of static systems
- In dynamic environments simulation is more flexible (e.g. queue jumping or queue size)
- Both techniques are useful for data requirement analysis
- Simulation requires more data than decision trees

**Conclusions**
Comments or Questions?