Task Analysis for Knowledge Description

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Presentation Outline

• Background
  • What is Task analysis?
• Task analysis for Knowledge Description
  • What, why and when?
  • The Process
• An Example
• Conclusions
What is Task Analysis?

• Purpose
  • Ensure system operable and maintainable in a safe and efficient manner.

• Description and Analysis of:
  • Task Requirements - goal defined by system context
  • Task, environment - constraints on sequencing
  • Task Behaviour - the actions required to fulfil goals

Possible Applications

• System design/evaluation - Allocation of function
• Training design/evaluation - Creation or improvement
  • Interface design/evaluation - information requirements for task
• Job/team design - effective allocation of tasks
• Personnel selection - information on mental and physical requirements
• System reliability analysis - application of error data to each task component
Task Analysis for Knowledge Description (TAKD)

• What?
  • Originally used for training application
  • Cognitive Approach

• Purpose
  • Requirements Specification
    - Communication
    - Not interface specific

• Evaluation
  - Effort required to perform task sequences

Task Analysis for Knowledge Description (TAKD)

• Subjective Procedure based on Heuristics

• Process
  • State the Goal of the product
  • List all specific actions and objects
  • Construct Task Description Hierarchy (TDH)
  • Redescribe in Knowledge Representation Grammar (KRG)
  • Analyze KRG Sentences
A Worked Example: Step One

• Step 1: Statement of Goal:
  • To specify requirements of a collaborative authoring system to perform annotations as easily as paper format.

• Heuristics/Procedure
  • Be specific! (e.g. Communication example)

A Worked Example: Step Two

• Step Two: List All Specific Actions and Objects
  • Example:
    - Circle annotation in document
    - Word in the document
    - Link to the margin

• Procedure/Heuristics
  • Obtain from observation and cognitive walkthrough
  • Objects (All objects relevant to task)
  • Actions (Specific actions performed towards specific objects)
A Worked Example: Step Three

• Step Three: Construct a Task Hierarchy Description (THD)

• Example:
  - See diagram

• Procedure/Heuristics

  • Representation of Relationship between low-level objects and actions
  • Must have a unique route through the TDH.
  • Analyst must use deductive and Inductive logic
A Worked Example: Step Four

• Step Four: Construct KRG Sentences
  • Example:
    - MARK TEXT/Source(highlight(text(circle(word))))/link
      (short(text(single)))/Destination (public
      (general(Annotation (comment (text(word))))
      (symbols(text(question mark)))))))/
  • Procedure/Heuristics:
    • Calculate no. of KRG Sequences
    • Calculate no. of different KRG sequences
    • Good for validation
    • Calculate object frequencies

A Worked Example: Step Five

• Step Five: Generification
  • Example: See diagram

• Procedures/Heuristics:
  • Identify possible KRG sequences associated
  • Identify their frequency
Worked Example: Step Five

What have you got to Gain?

• A thorough grasp of the operating procedure.

• System Requirements.

• Experience for next time!
What have you got to Lose?

• Time & Effort
  • Version Control
  • Subjectivity of process
  • Unnecessary work?

• Information during translation to System Specification.
• Personally…..