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An Analytic Model of Success for Information Technology Decision Making

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Central Idea

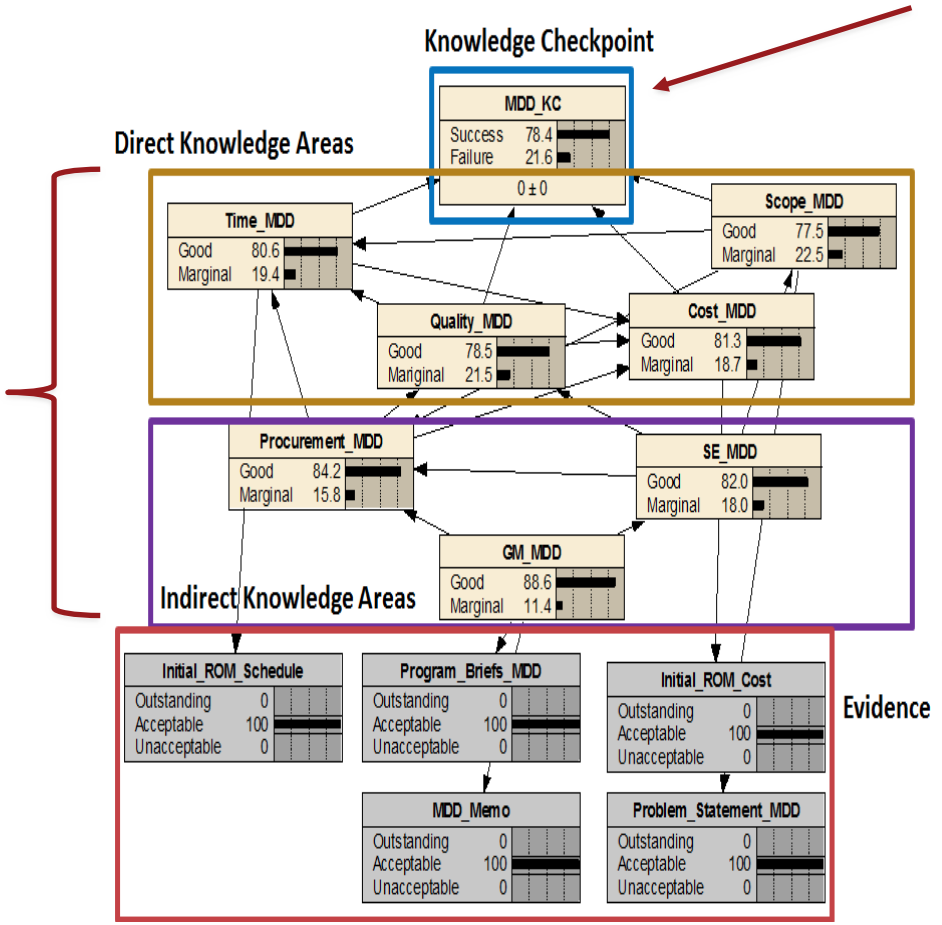
- The DAPS model, modified for use with ITIL can assist in IT acquisition decision making and management

Defense Acquisition Probability of Success Model (DAPS)

- A Dynamic Bayesian Network (DBN)
- Models subject matter knowledge to assess level of success at various program milestones
- Three-level structure using program assessments to provide evidence of 7 knowledge areas
- Dynamically carries over temporal relationships between nodes

DAPS Model

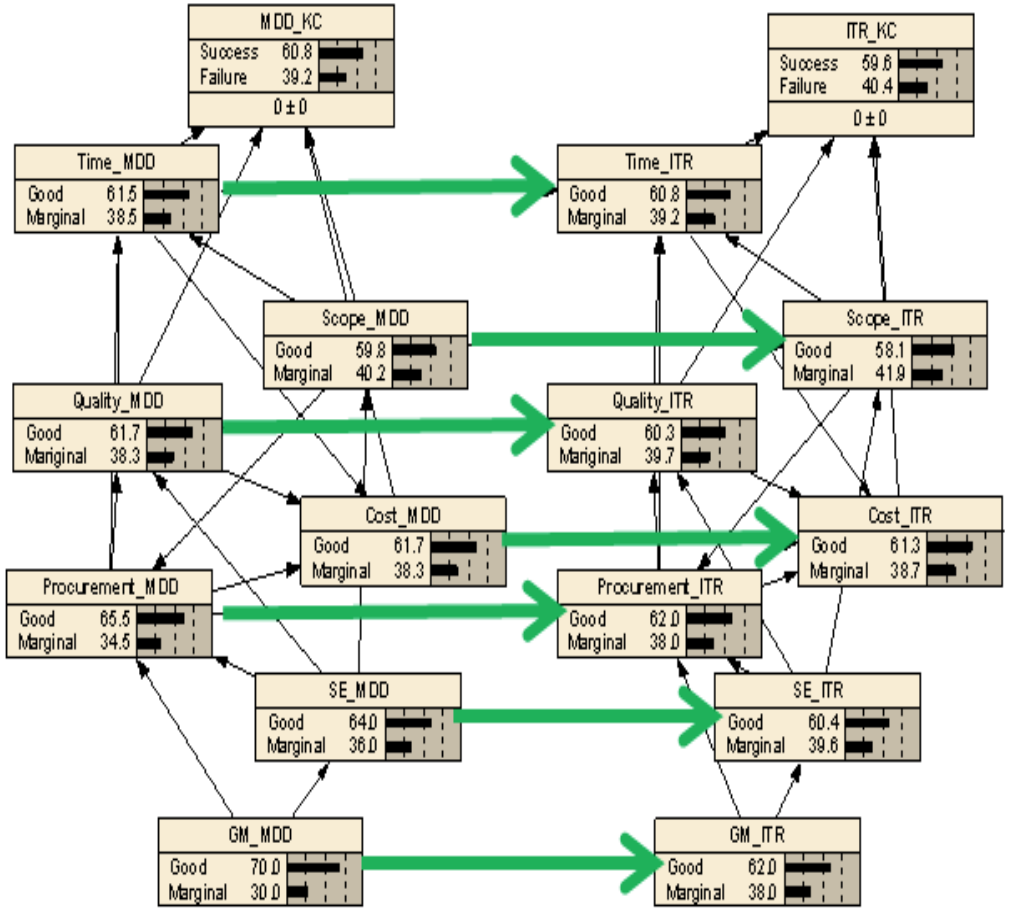
Knowledge areas:
- Time
- Scope
- Quality
- Cost
- Procurement
- Systems Engineering
- General Management
- Two states:
  - Good
  - Marginal



Knowledge Checkpoint
- Success Probability
- Two states:
  - Success
  - Failure

Evidence:
- Varies by checkpoint
- Three states:
  - Outstanding
  - Acceptable
  - Unacceptable

Dynamic Arcs



Temporal relationships:

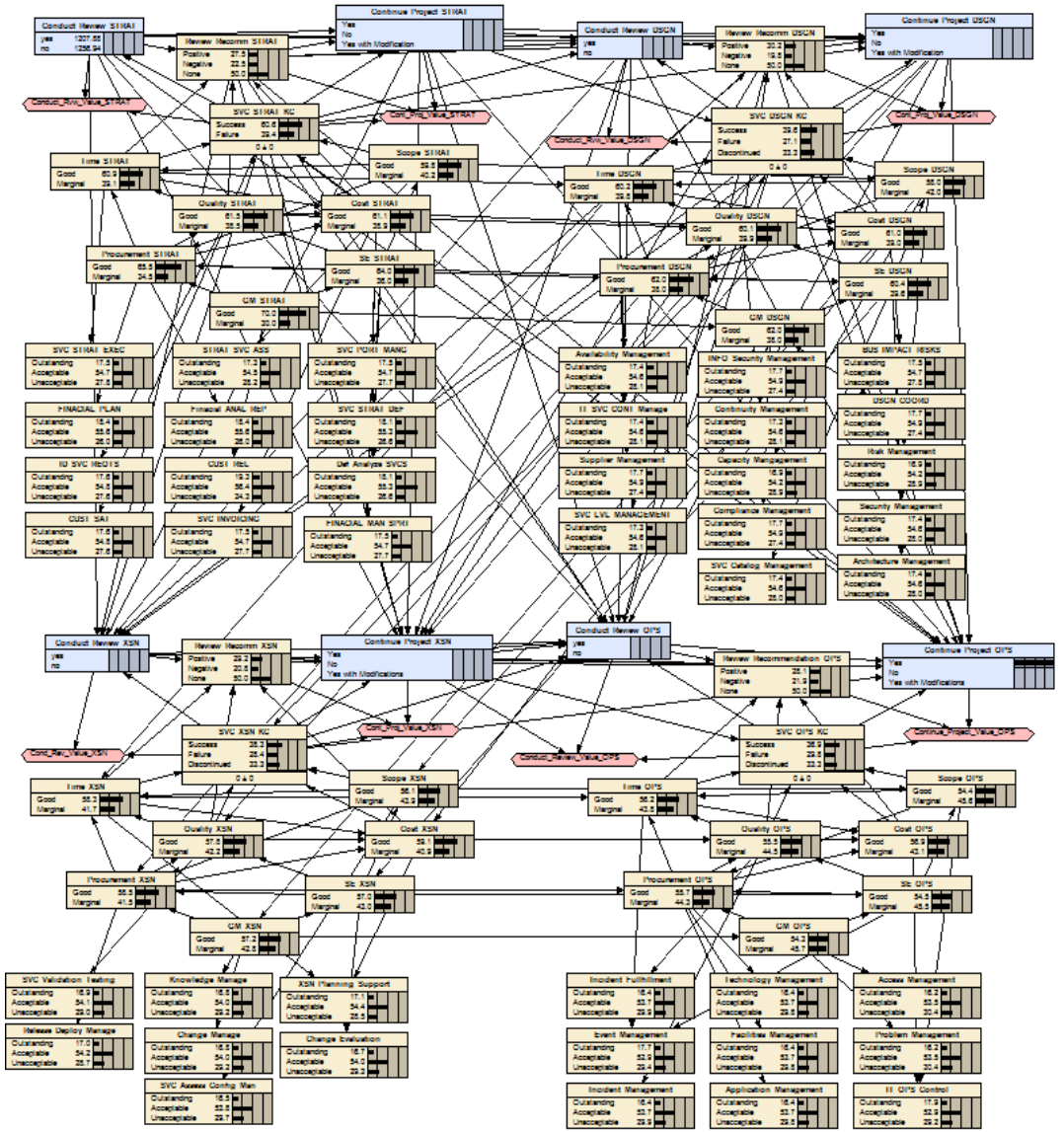
- Measure of success at one check-point carries over to the adjacent checkpoint

Information Technology Infrastructure Library (ITIL) ®

- Guide for system lifecycle management
- Five lifecycle phases
  - Service strategy
  - Service Design
  - Service Transition
  - Service Operation
  - Continual Service Improvement
- Applicable to all types of organizations and businesses

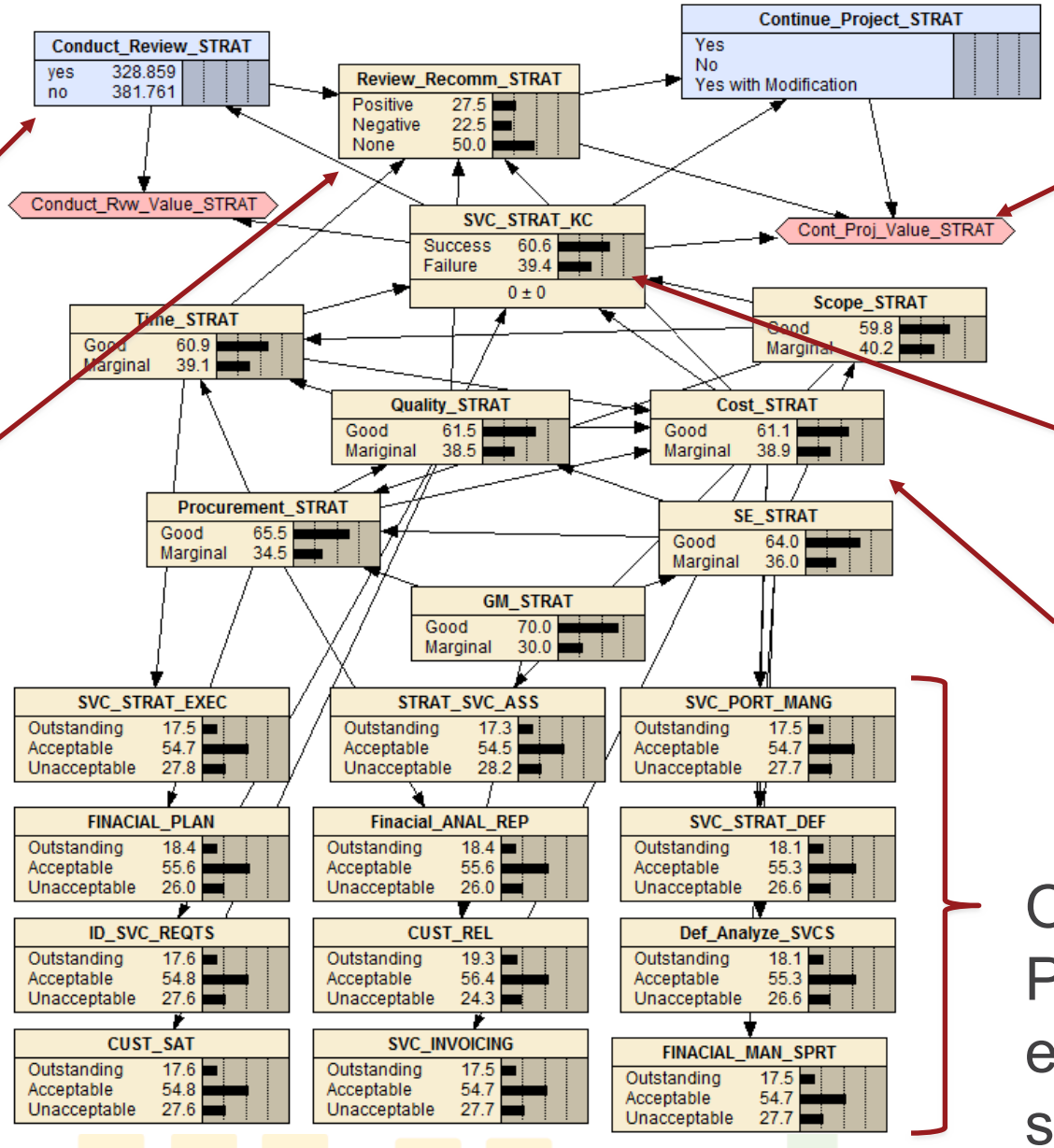
ITDMS

- Four phases of the ITIL process
- Each has its own set of evidence and links to Knowledge Areas
- Each phase has a likelihood of success and decision nodes to conduct review and continue project
- Knowledge areas from one phase dynamically arc to next phase (i.e., knowledge is carried forward)



Decision nodes
- Conduct Review
- Continue Project

Additional chance node reflects the Probability of review outcome given status of time, cost, and quality Knowledge Areas



Value Nodes
- Provide measure of goodness for particular options

Program success based on Knowledge area results

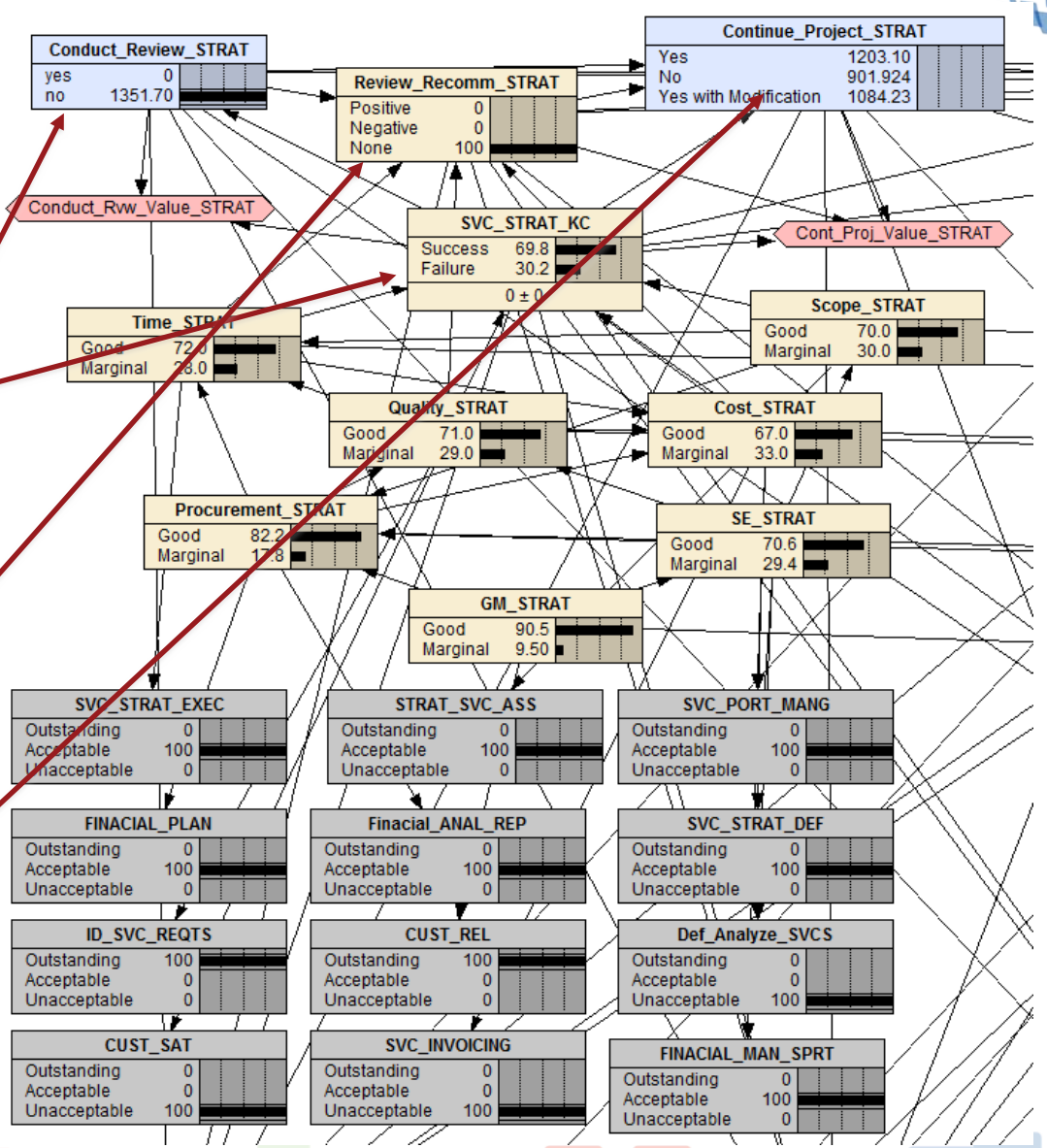
Knowledge areas based on SME expertise of evidence

Outputs of ITIL Processes provide evidence of program success

Scenario Analysis

PM conducts a review of progress on a new service strategy

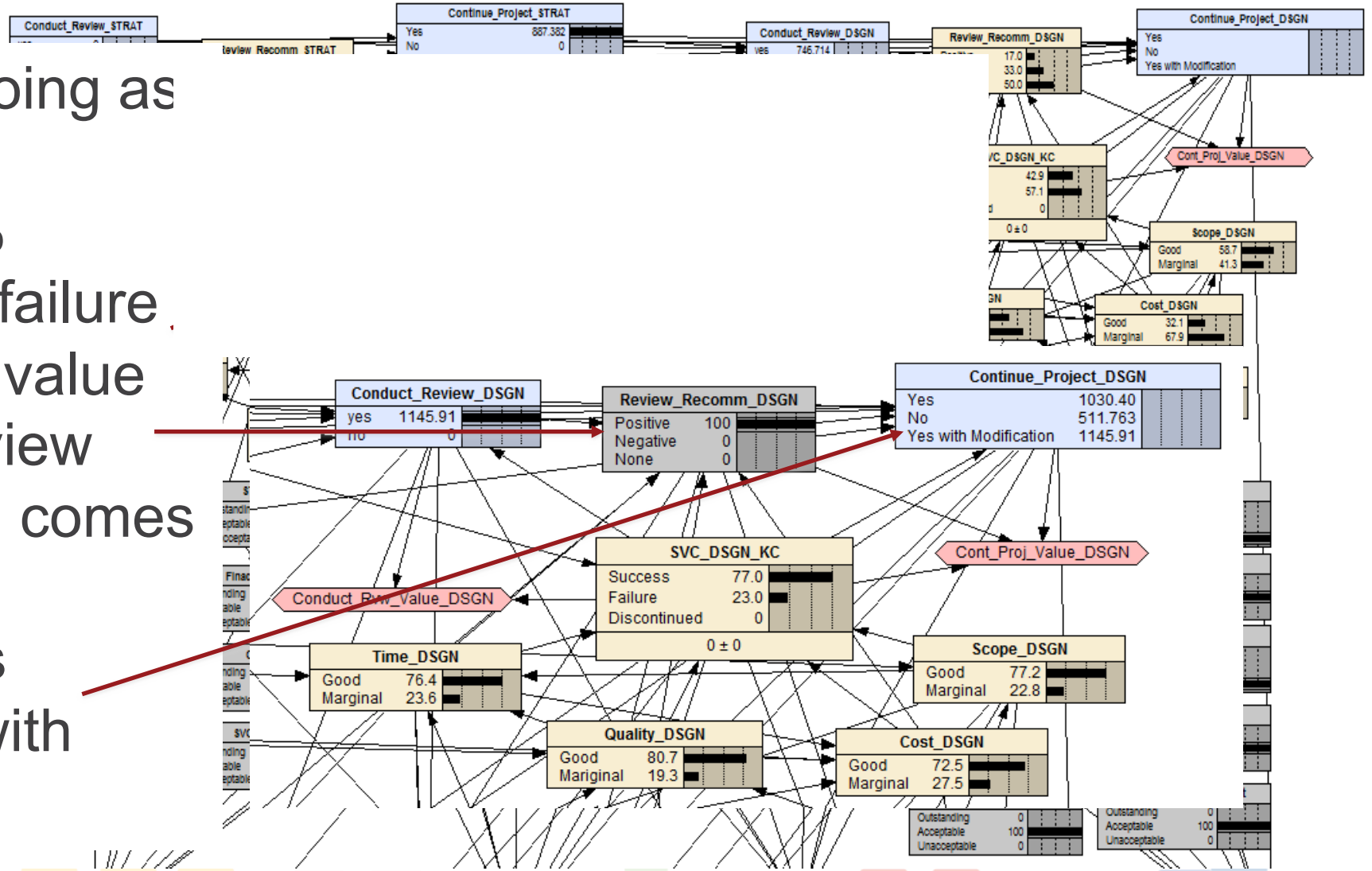
- Model predicts 70% program success based on evidence provided
- Model recommends no review
- PM selects not to do review
- Model recommends continuing project



Scenario Continued

Later things are not going as well

- Model predicts 43% chance of program failure
- Model places more value on conducting a review
- Review is done and comes out positive
- Model recommends continuing project with modifications



Summary

- ITMDS provides process for project assessment based on ITIL sub-process success or failure
- Continued research needed to verify model with real IT acquisition using ITIL
- Test with diverse real world scenarios to validate the approach
- Enhance computational efficiency for scalability
- Develop software product for practical use

Questions?

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Incorporating ITIL Processes

- Four of five lifecycle phases form knowledge checkpoints in the ITDMS
- Each ITIL phase includes a number of formal processes, sub-processes, procedures, tasks and check-lists
  - These are structured sets of activities designed to accomplish a specific objective
- These outputs become evidence in the model