**LEVEL 0 SUMMARY TEMPLATE**

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* **Paper title:** An\_AI\_Tool\_for\_Modelling\_and\_Optimizing\_Business\_Processes
* **Source (e.g. scholars.google.com):** https://scholar.google.com/
* **Keywords specific to the paper:** Business process models modeling and AI
* **Summary of the main contributions (use text paragraphs, tables and if necessary, figures):**

This An\_AI\_Tool\_for\_Modelling\_and\_Optimizing\_Business\_Processes article introduces SHAMASH, a business process optimization and modeling tool. SHAMASH differs from other similar tools in two key ways: its ability to define and use organizational standards that constrain process design, and its use of automatic optimization techniques.

SHAMASH's architecture includes four subsystems: an authoring subsystem to define standards and processes; a simulation and optimization subsystem; a text generation subsystem; and a workflow interface subsystem. Standards represent rules that define how processes should operate within an organization. Processes depict workflows within an organization and how they relate. SHAMASH also models organizational structure and resources.

SHAMASH uses a RETE algorithm to efficiently manage rules that define much of its knowledge. Rules represent activity behavior, validation checks, standards, and optimization operations. The authoring subsystem allows defining standards, modeling processes graphically or hierarchically, connecting related processes, and creating reusable process libraries. Behavior of activities and decisions within processes can also be defined through rules.

The simulation subsystem selects processes for simulation and defines metrics for evaluating model performance. Models are evaluated based on user-defined goals like time, cost or quality. Simulation traces are output. Optimization works by searching a "process space" of possible models. Each model node represents a potential process design. Optimization operators propose model modifications, which are simulated and evaluated. The best modifications are accepted, improving the model iteratively until goals are met.Knowledge acquisition informed SHAMASH's design.

Interviews with BPR and domain experts elicited required knowledge. Conceptual models represented key concepts and relationships. Standards and optimization knowledge particularly required expert input. SHAMASH is demonstrated through a university maintenance example.

The maintenance process receives requests, determines responsibility, routes for approval if important, and outsources if too costly. Knowledge acquisition combined UML modeling and KBS techniques. Use cases, class diagrams and other UML views supported requirements analysis and design. KBS approaches supported knowledge acquisition, representation in rules, and simulation optimization behavior definition.

In summary, SHAMASH supports automated process optimization using acquired domain experts' knowledge. Process standards definition and validation is also unique. Its rule-based design enables extensibility. Simulation, text generation and workflow integration complete the tool. SHAMASH’s framework could benefit companies pursuing efficient, adaptive workflow systems.

* **AI model used (e.g. Neural network, etc.) :**

The AI Model used is : SHAMASH model

* **Introduce the AI models :**

To put it simply, SHAMASH is a system based on a type of AI system that uses inference and representation methods to solve problems.

* **How do they contribute to the idea proposed by the paper?**

The Shamash model contributes by designing processes using the SHAMASH authoring subsystem, simulating processes using the simulator and using optimization rules to automatically improve processes. The example provides a practical context for explaining how SHAMASH is intended to be used in real-world scenarios.

* **Supported by a software application? (If yes, provide more details) :**

The article are supported by the existence of the SHAMASH software application