# An LLM-Based Decision Support System for Strategic Decision-Making

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## 1. Motivation

- We introduce StrategicAI, a **decision-support system (DSS)** for **organization leaders** and **managers**
- StrategicAI is designed as a **general-purpose tool** supporting **strategic decisions**
- The main idea is to **structure and solve complex decision-making problems** using **logic trees**, inspired by leading management consulting firms
- StrategicAI is built around **human-AI collaboration** and **integrates with company data** and **online sources**
- Unlike traditional DSS and business intelligence (BI) tools, StrategicAI **does not require expert-crafted pipelines/queries**
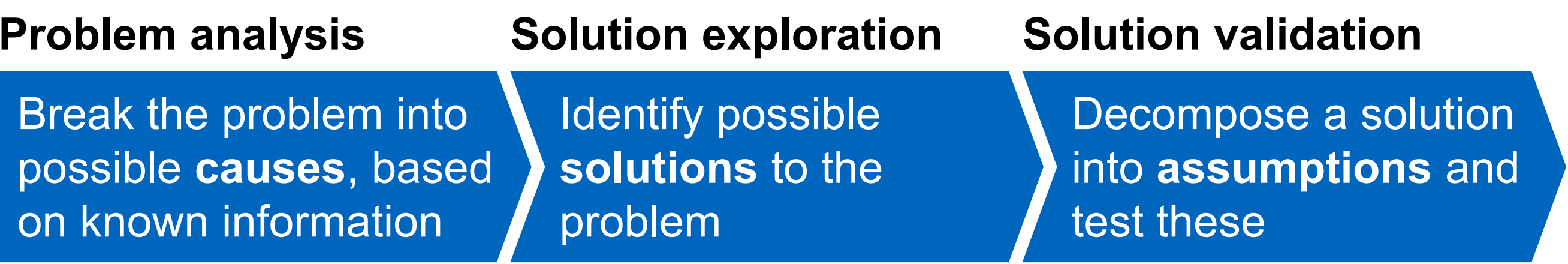
## 2. System Features



**Live demo available**
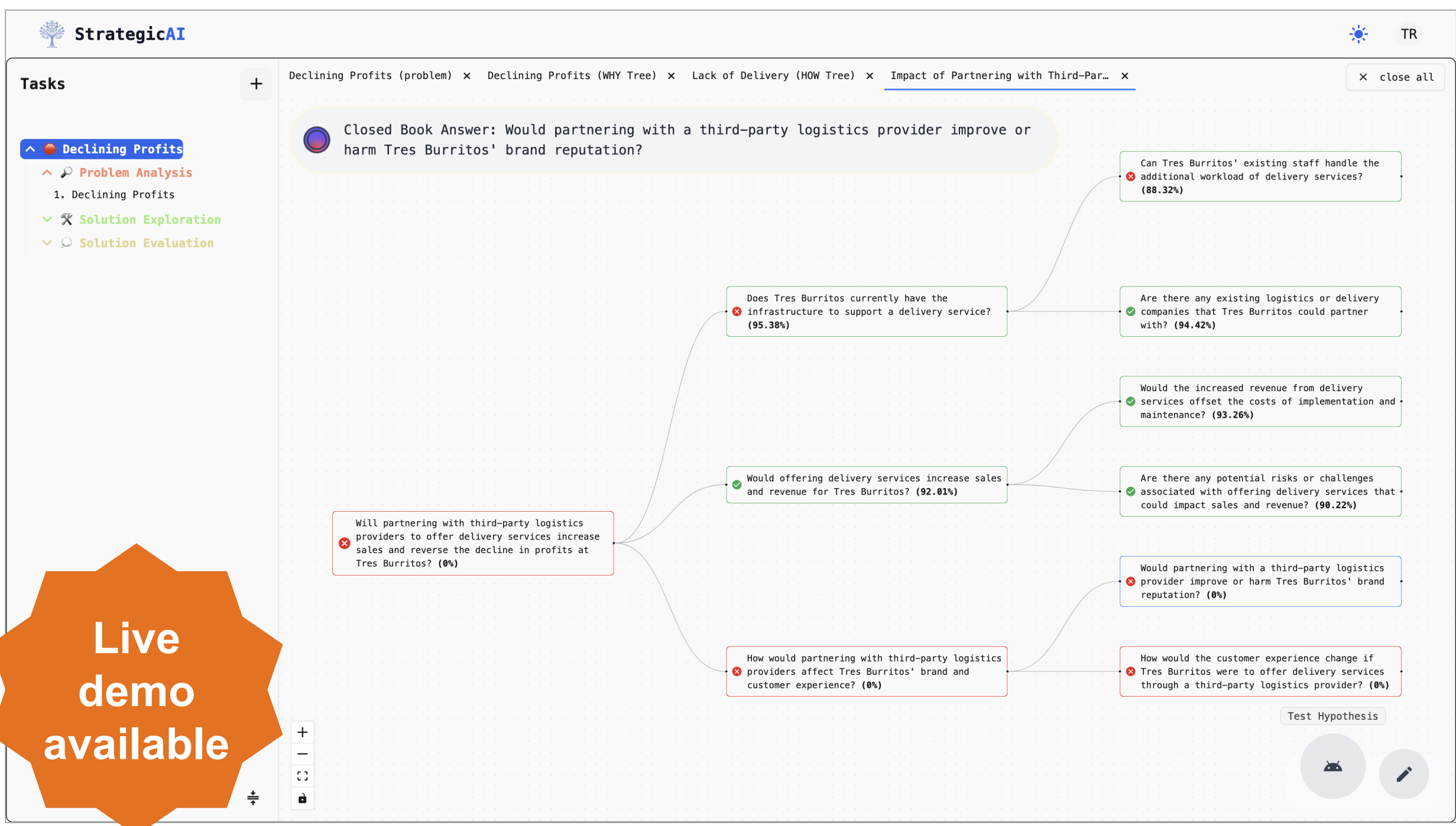
**Notable features of StrategicAI include:**

- **File uploads** and storing extracted facts in a fact database
- **Company profile** with facts & figures about the organization
- **Fact retrieval** from fact database and online search engines to build and validate trees
- **AutoRun** that fully-automatically builds trees (fully manual or hybrid modes also possible)
- **Chatbot** for interactive tree construction and question-answering
- **PDF/Word export** of problem-solving outcomes to share with other stakeholders

## 3. System Workflow

In StrategicAI, every decision-making problem follows a **three-step workflow**:

**Problem analysis**
Break the problem into possible **causes**, based on known information

**Solution exploration**
Identify possible **solutions** to the problem

**Solution validation**
Decompose a solution into **assumptions** and test these

## 4. Confidence Measurement

All tree nodes come with a **natural-language explanation** from an LLM, and a **confidence score** calculated from the LLM's output logits:

$$Confidence = \exp\left(\frac{1}{n}\sum_{i=1}^{n}\log p_i\right)$$

## 5. System Evaluation

We evaluated StrategicAI on **six business case studies** from well-known business schools and with **six human test takers** (details in our paper):

| Phase | Method | Mode | Precision | Recall | F1 |
|---|---|---|---|---|---|
| Problem analysis | ChatGPT | AI-only | 43% | **100%** | 60% |
| | StrategicAI | AI-only (AutoRun) | 59% | 94% | 71% |
| | StrategicAI | Human-AI collaboration | **79%** | 92% | **84%** |
| Solution exploration & validation | ChatGPT | AI-only | 40% | 76% | 50% |
| | StrategicAI | AI-only (AutoRun) | 40% | **83%** | 52% |
| | StrategicAI | Human-AI collaboration | 65% | 69% | **65%** |

## 6. Resources

Paper

Video

GitHub