Optimization Model for Scrum-based Software Development

Generated Model

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1 Sets (Entities)

- Projects
- Teams
- Workers
- Features
- Tasks
- Sprint Goals
- Blockers
- Stakeholders

2 Indices

- $p \in P$ (Projects)
- $t \in T$ (Teams)
- $w \in W$ (Workers)
- $f \in F$ (Features)
- $k \in K$ (Tasks)
- $g \in G$ (Sprint Goals)
- $b \in B$ (Blockers)
- $s \in S$ (Stakeholders)

3 Goals

- G0: Maximize team velocity ($\max \sum_{t \in T} avg.\_story\_points_t$)
- G1: Minimize blocker severity ($\min \sum_{b \in B} severity_b$)
- G2: Maximize sprint goal achievement ($\max \sum_{g \in G} achievement\_status_g$)
- G3: Minimize task effort ($\min \sum_{k \in K} effort_k$)
- G4: Maximize feature priority ($\max \sum_{f \in F} priority_f$)

4 Conditions

- C0: Ensure product owner availability ($availability_{po} \geq threshold$)
- C1: Limit project duration ($project\_end_p \leq limit$)
- C2: Prioritize features ($priority_f \geq threshold$)
- C3: Ensure team velocity ($avg.\_story\_points_t \geq threshold$)

5 Decision Variables

- D0: Team assignment to projects ($x_{pt} \in \{0, 1\}$)
- D1: Task priority ($y_k \in \{1, 2, 3\}$)
- D2: Sprint goal achievement ($z_g \in \{0, 1\}$)
- D3: Blocker resolution ($w_b \in \{0, 1\}$)