
# Provenance in Games

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# PROVENANCE

"Refers to the documented history of an object's life cycle and is generally used in the context of art or digital data."

PREMIS Working Group, 2005. Data Dictionary for Preservation Metadata, Preservation Metadata: Implementation Strategies (PREMIS).

# GOALS

- INTRODUCE PROVENANCE IN GAMES
- CREATE A FRAMEWORK FOR PROVENANCE
- ANALYZE GAME FLOW
- IMPROVE UNDERSTANDING OF EVENTS

# PROVENANCE MODEL

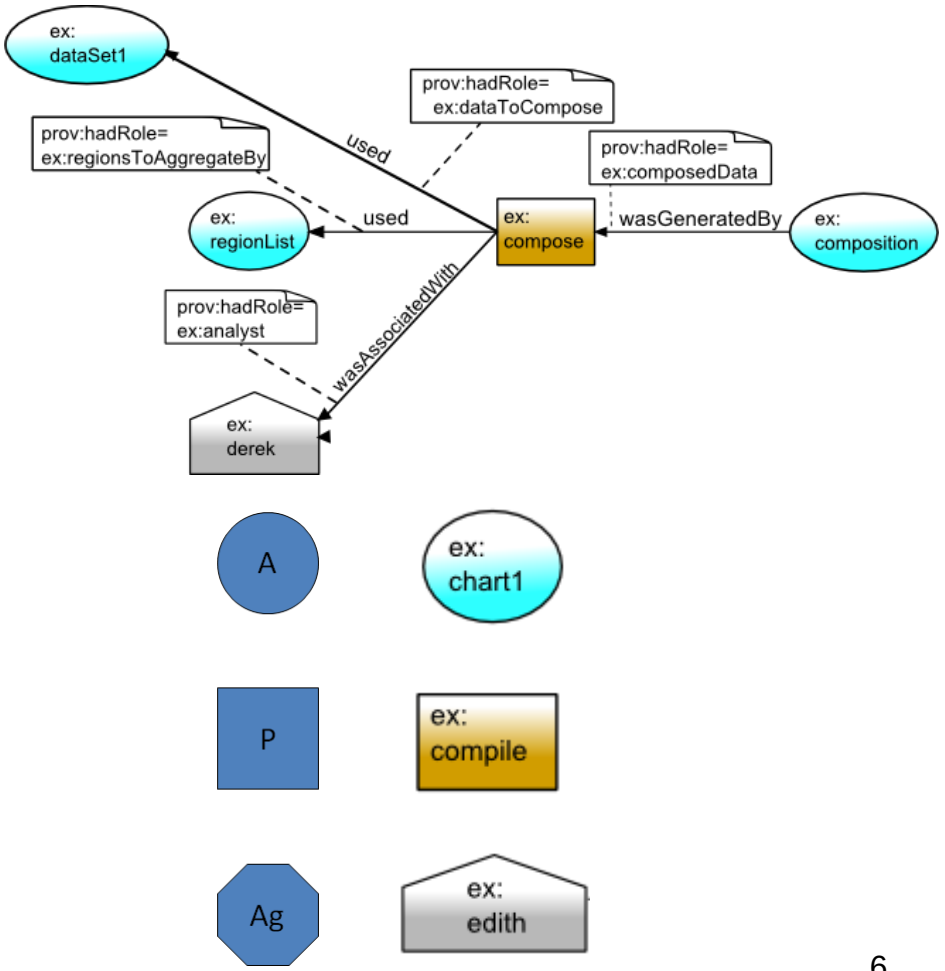
- DOCUMENTED HISTORY
  - OBJECT'S LIFE CYCLE
  - PROCESSES

- *OPEN PROVENANCE MODEL*
  - *International Provenance and Annotation Workshop, 2006*

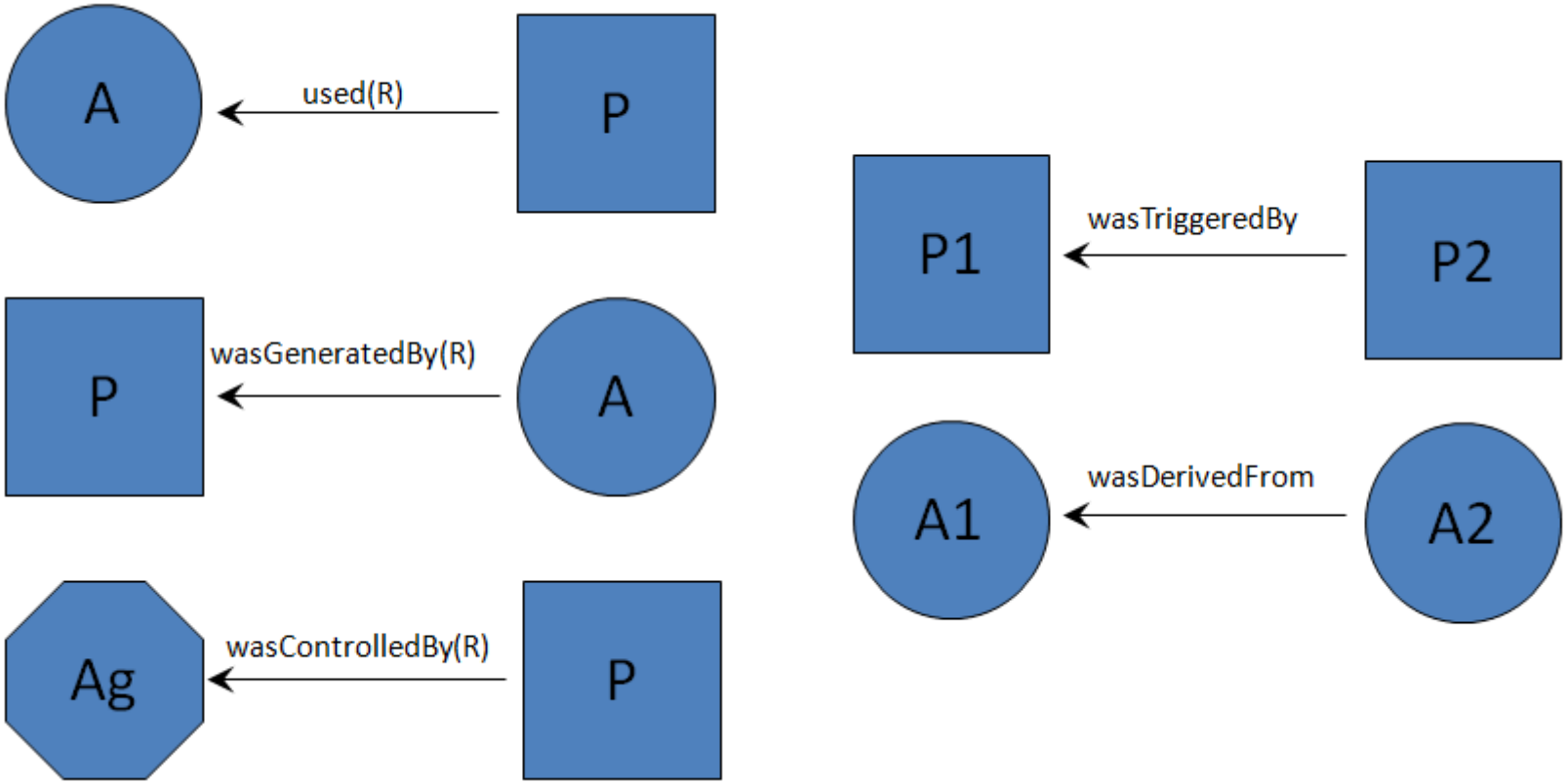
- *PROV MODEL PRIMER*
  - *WC3 Working Draft 10 January 2012*

# PROVENANCE MODEL

- PROVENANCE GRAPH
  - CASUALITY GRAPH
  - RECORD OF PAST OR CURRENT EXECUTION
  - NOT A DESCRIPTION OF WHAT MIGHT HAPPEN
- NODES
  - ARTIFACTS / ENTITIES
  - PROCESSES / ACTIVITIES
  - AGENTS

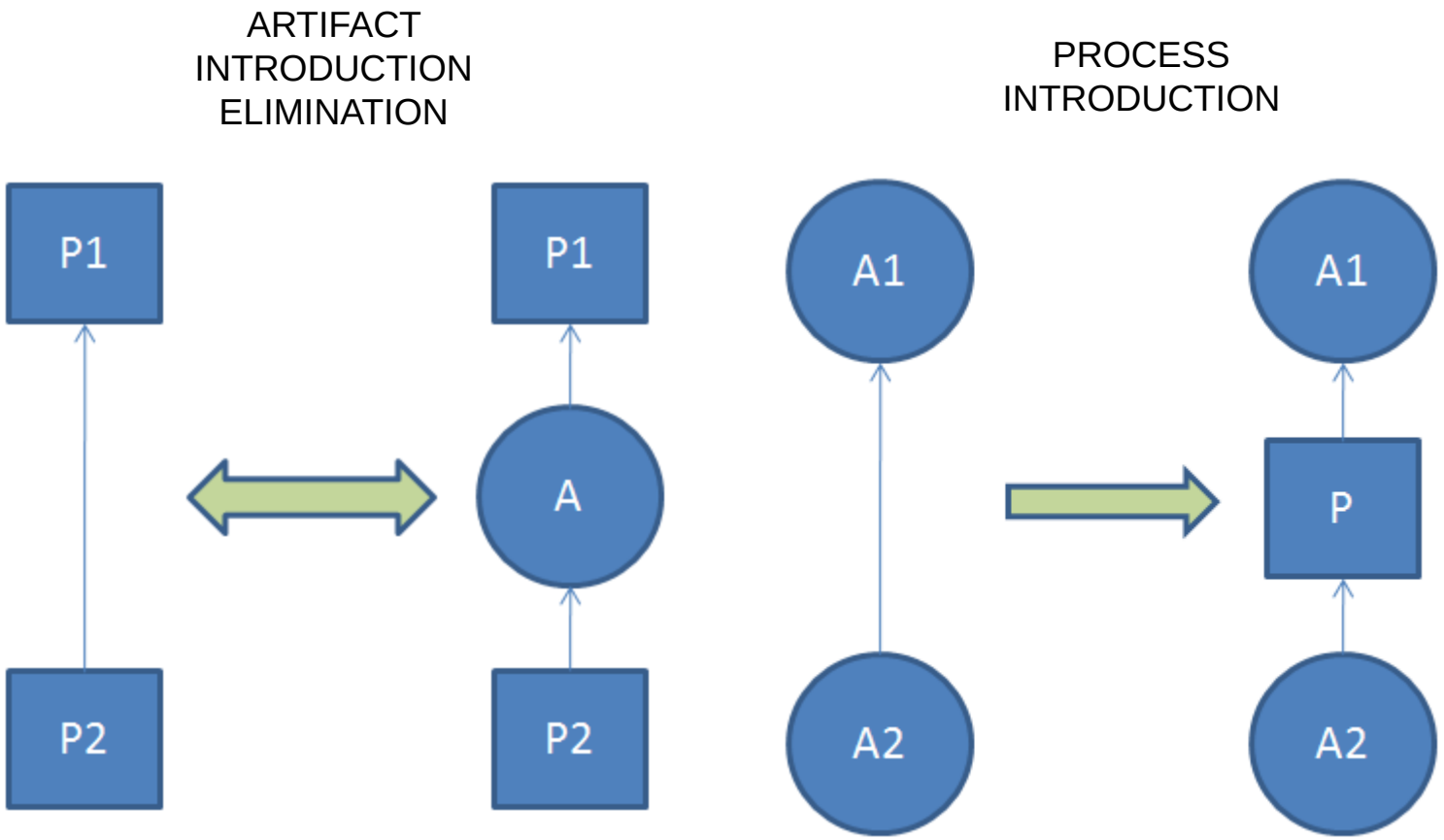


# PROVENANCE MODEL



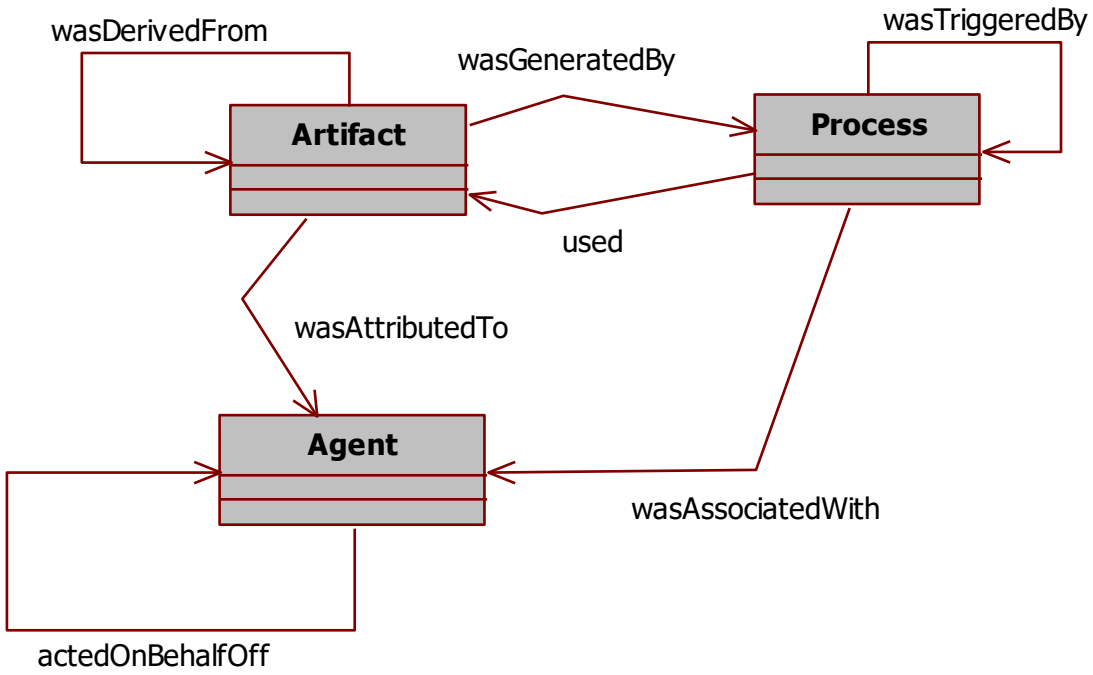

Moreau, L. et al., 2011. The Open Provenance Model core specification (v1.1)

# TRANSITIVE RULES




Moreau, L. et al., 2011. The Open Provenance Model core specification (v1.1)

# PROVENANCE MODEL




http://www.w3.org/TR/prov-n/

# PROVENANCE IN GAMES

- **ARTIFACTS**
  - **OBJECTS**
- AGENTS
  - NPC
  - PLAYER
- PROCESSES
  - ACTIONS
  - EVENTS

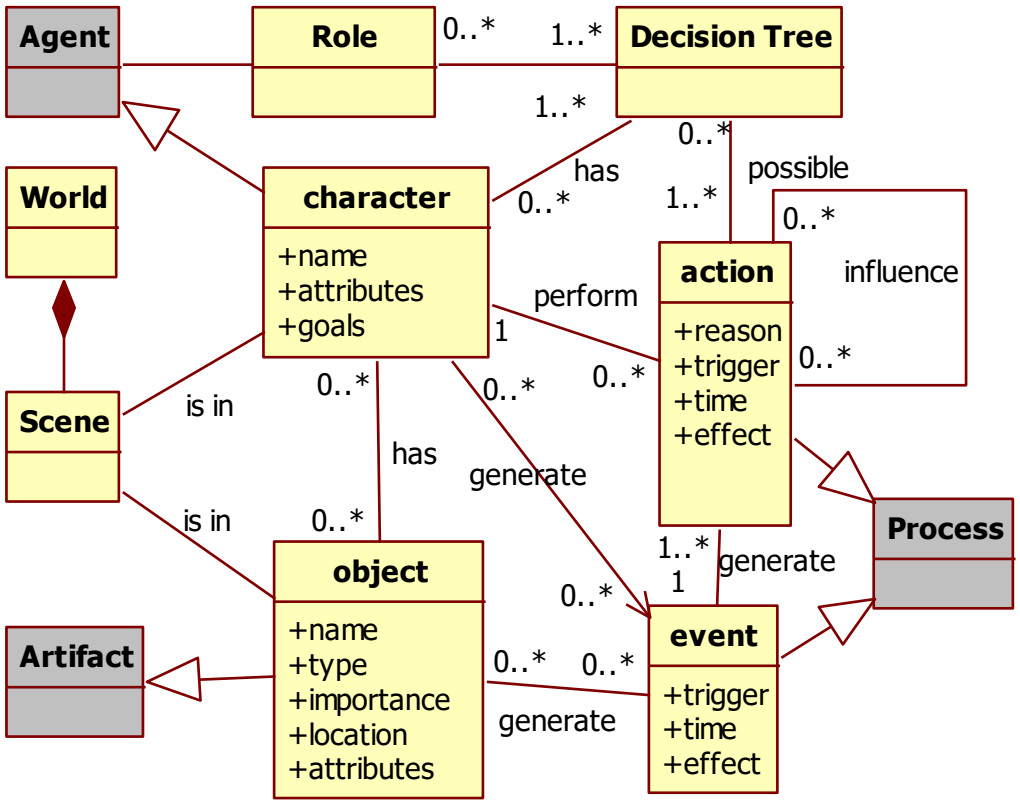
# PROVENANCE IN GAMES

- ARTIFACTS
  - OBJECTS
- **AGENTS**
  - **NPC**
  - **PLAYER**
- PROCESSES
  - ACTIONS
  - EVENTS


# PROVENANCE IN GAMES

- ARTIFACTS
  - OBJECTS
- AGENTS
  - NPC
  - PLAYER
- **PROCESSES**
  - **ACTIONS**
  - **EVENTS**

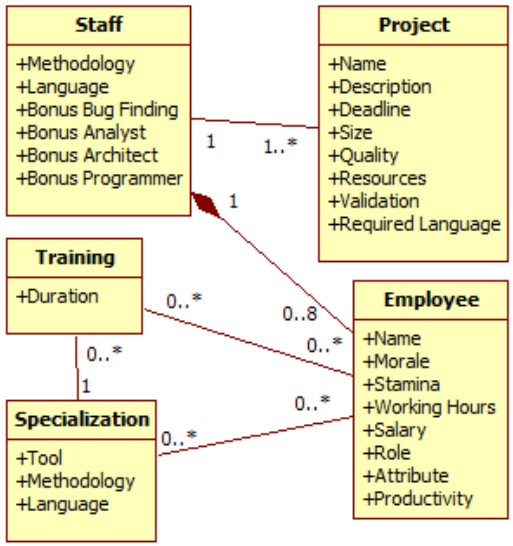
# GAME-PROVENANCE MODEL

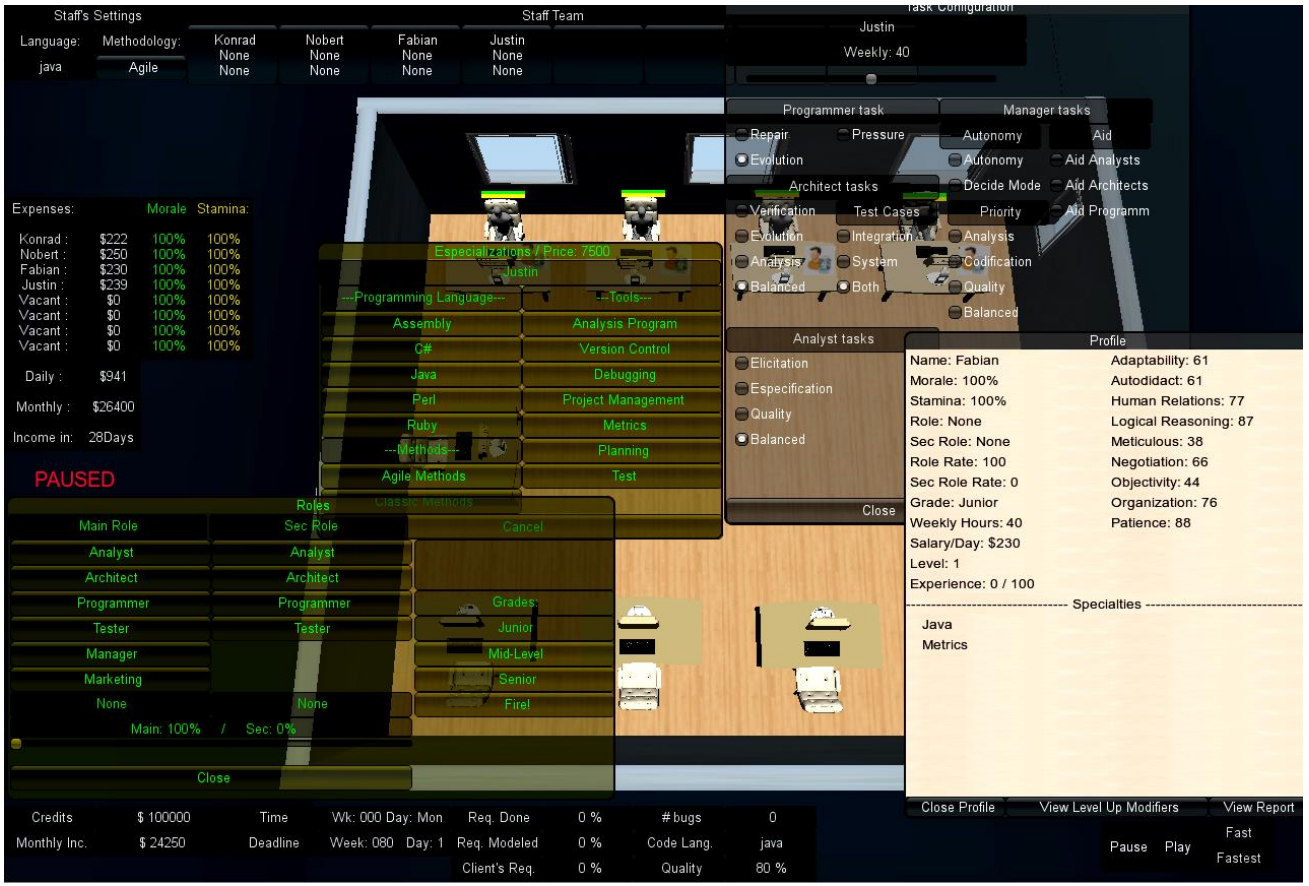


# APPLICATION

- **INSTANCIATED IN A SERIOUS GAME**
- **SDM: SOFTWARE DEVELOPMENT MANAGER**
  - UNDERSTAND EXISTING CAUSE-EFFECT RELATIONSHIPS IN SOFTWARE DEVELOPMENT
- NEW FEATURES
  - EVENT RECORDING
  - DECISION TREES

# APPLICATION




http://gems.ic.uff.br/sdm/

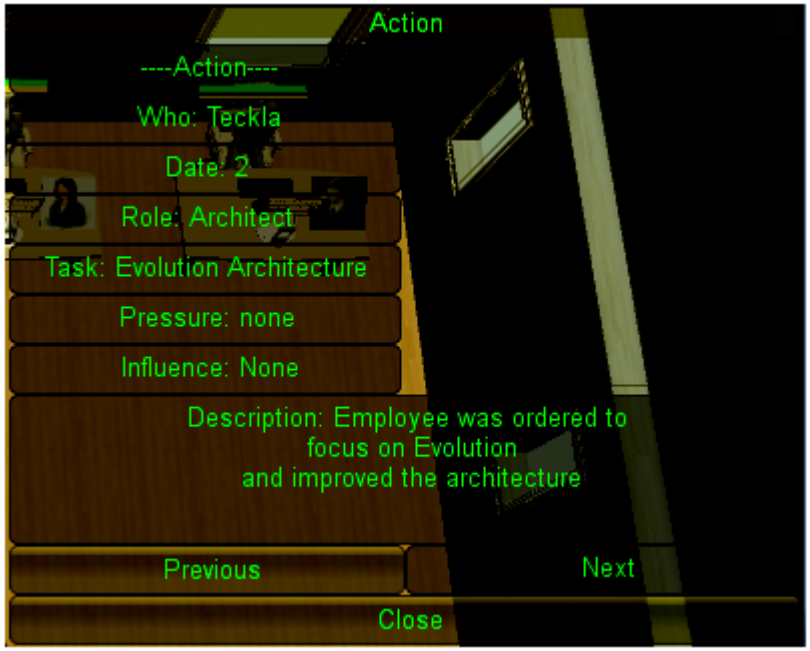
# APPLICATION

- INSTANCIATED IN A SERIOUS GAME
- SDM: SOFTWARE DEVELOPMENT MANAGER
  - UNDERSTAND EXISTING CAUSE-EFFECT RELATIONSHIPS IN SOFTWARE DEVELOPMENT

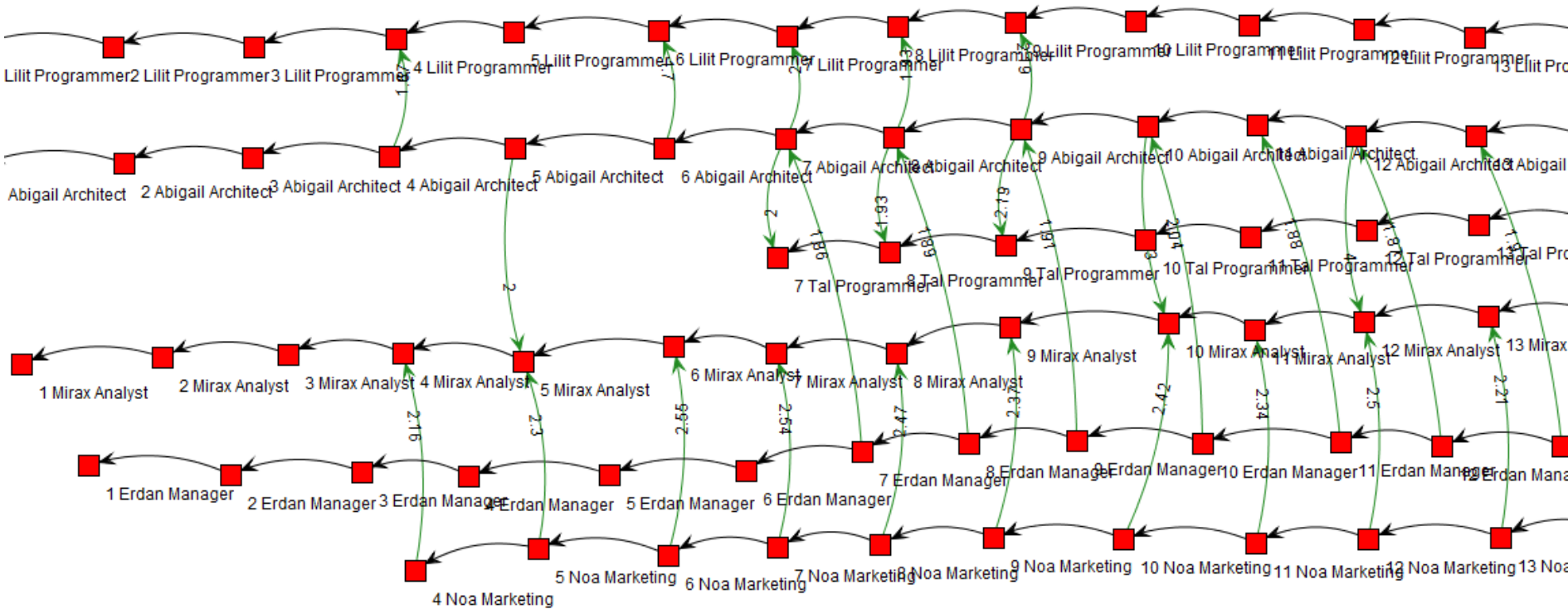
- NEW FEATURES
  - EVENT RECORDING
  - DECISION TREES

# APPLICATION

- INGAME ACTIONS AND EVENTS LOG
  - EXPORTED TO A GRAPH APPLICATION

# WORK IN PROGRESS



# CONTRIBUTIONS

- NEW FRAMEWORK
  - PROVENANCE IN GAMES
- ALLOWS POST-GAME ANALYSIS
  - IDENTIFY DIVERGENCE POINTS
- UNDERSTANDING ANALYSING GAME FLOW
  - IDENTIFY ACTIONS THAT INFLUENCED OUTCOME
  - AID PLAYER UNDERSTANDING

# FUTURE WORK

- SDM
  - GENERATE VISUAL GRAPH
  - APPLY PROVENANCE ANALYSIS TECHNIQUES
- GRAPH ANALYSIS
- RUN EXPERIMENTS
  - EVALUATE ASPECTS OF LEARNABILITY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