Exploring Product Line Concepts in Game Building
Authors: Diego Castro, Claudia Werner
(diegocbcastro@cos.ufrj.br, werner@cos.ufrj.br)
Federal University of Rio de Janeiro

Presenter: Diego Cardoso
November 13 - 17, 2023 - Valencia, Spain
Diego Cardoso Borda Castro

Federal University of Rio de Janeiro
- PhD in progress in Software Engineering
- Master in Systems and Computer Engineering

Rio de Janeiro State University
- Degree in Computer Science

Claudia Maria Lima Werner

Federal University of Rio de Janeiro
- PhD in Systems and Computer Engineering
- Bachelor's degree in Mathematics (Informatics modality)
- Currently, is a full professor at the Federal University of Rio de Janeiro (UFRJ) in the Systems and Computer Engineering Program (PESC) at the Alberto Luiz Coimbra Institute for Postgraduate Studies and Engineering Research (COPPE).
Introduction

- Games have emerged as a highly prevalent mode of entertainment [1]
  - Many fans
  - Diverse preferences
- Development process [1]
  - Exhaustive
  - Non-systematized
  - Prolonged release timelines
Introduction

● Dedicated community [2]
  ● Remake the original game

● Software Reuse [3]
  ● Mitigate development time and costs
  ● Components
  ● Model-based development
  ● Software Product Line (SPL)
Remaking games

- Own versions of the games
- Modding

It can be conceptualized as a manifestation of players' artistic freedom in remaking and reinterpreting the original game, comparable to the opportunistic reuse process [4]
Remaking games

- The process of building mods has some issues [4, 5]:
  - Lack of specific tools for mods
  - Time-consuming
    - Faster than building a game
  - Making the source code available to be modified
- Development Kits (SDKs)
Software Product Line

- Systems that have a certain set of functionalities in common [4, 5]
  - The original game serves as a structure upon which a new game is constructed
- Software X with Y characteristics
  - Characteristics can be altered, eliminated, or expanded by introducing new feature
EngageSPL

- **EN**gine for **GA**me **GE**neration through **S**oftware **P**roduct **L**ine
  - Facilitate the expansion of gaming
  - Distinct characteristics
  - Variation points
  - 3 feature trees
    - Mechanics
    - Second level mechanics
    - Aesthetics
EngageSPL
Conclusion

● Game companies are growing in size
  ● Billions of dollars per year

● Development process

● Software Reuse
  ● Ad hoc reuse
  ● Process and tools

● EngageSPL
References


Exploring Product Line Concepts in Game Building

THANK YOU!

Diego Castro, Claudia Werner
(diegocbcastro@cos.ufrj.br, werner@cos.ufrj.br)
November 13 - 17, 2023 - Valencia, Spain