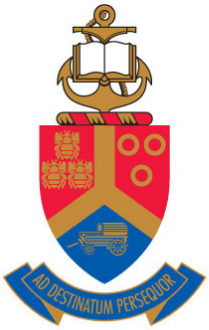

UNIVERSITEIT VAN PRETORIA
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YUNIBESITHI YA PRETORIA

COS 301

Department Of Computer Science

Architectural Requirements and Initial Architecture Design Functional Requirements

Group Members:	*Student numbers:*
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October 24, 2016

IMPAKD link

For further references see gitHub. October 24, 2016

Contents

1 Vision

The Property Investor Optimizer project is objective is to evaluate whether a certain rental property is worth buying. It does this by calculating the Return of Investment (ROI) of a property, which can be compared with another property's ROI, to assist a user to optimize their investment strategy according to their portfolio.

The project will assist the user by helping to answer the following questions:

- Given a certain bond (interest rate, deposit as a percentage of property value), rental (occupancy rate, agent commission, rental amount) and environmental conditions (Interest rate, inflation) what is the ROI?
- When is it better to pay a higher or lower deposit for a bond?
- Between two rental scenarios which provides the greater ROI?
- Is it better to try and pay off the bond as fast as possible by paying in extra capital?
- How does purchasing another property influence a user's ROI and at which point would this be a good idea?
- At which point does it make sense to buy another property?
- How much tax will the user have to pay?

2 Background

The project was given to us by our client, CSIR, so that we can research how the ROI of different configurations of rental properties can answer the questions listed in the Vision section of this document. Answers to these questions can be used to help users of the system choose to buy the best property that fits their portfolio and requirements with the ease of not having to manually evaluate the property themselves. The project can also be used for property-related research.

3 Functional Requirements and Application Design

3.1 Use case prioritization

Critical:

- Property
    1. updateProperty
    2. addProperty
    3. deleteProperty
    4. viewProperty
    5. compareTwoProperties
- Accounting
    1. calculateNPV
    2. calculateROI

Important:

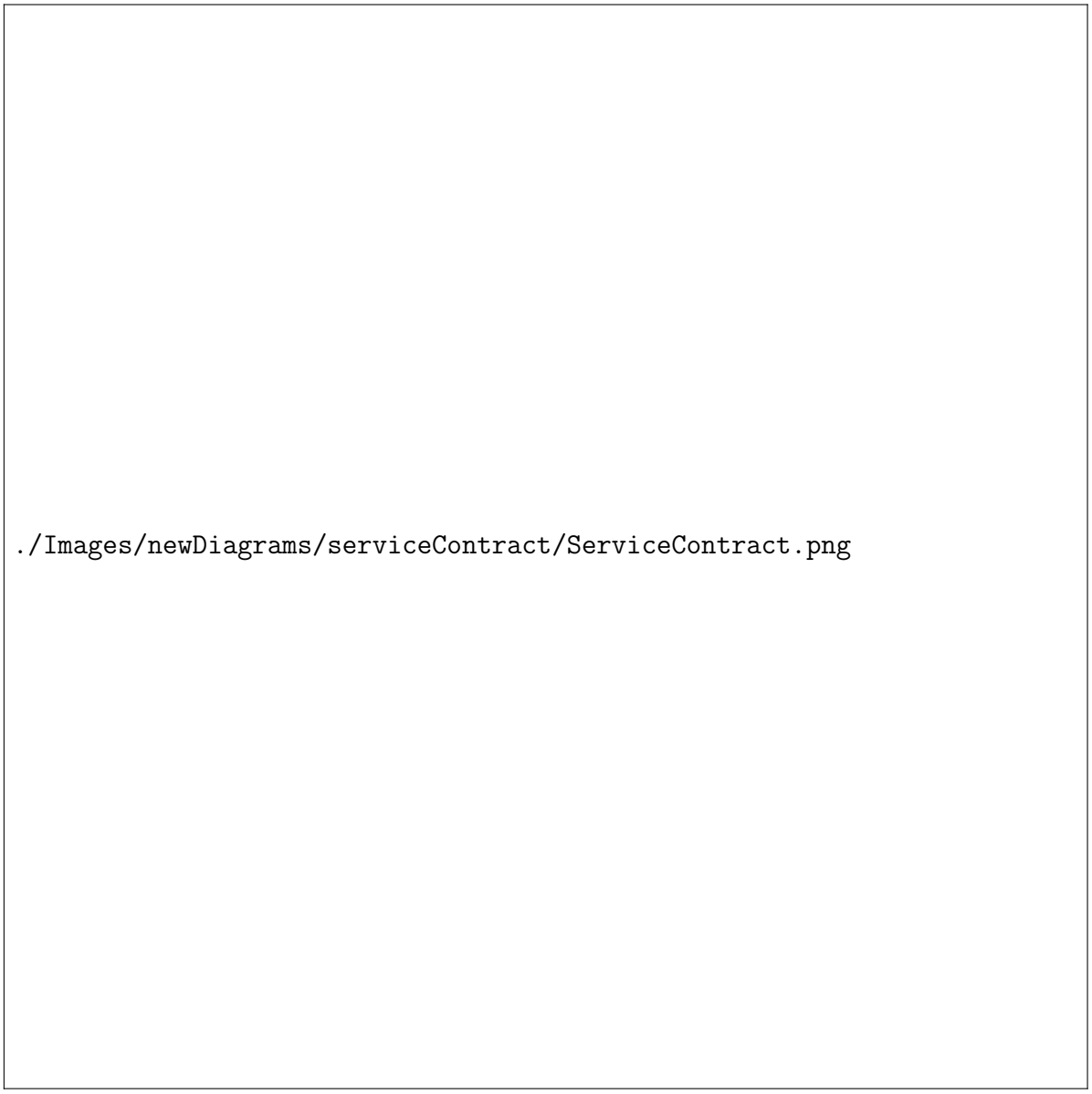
- Profile
    1. login
    2. logout
    3. register
    4. viewProfile
    5. updateProfile

Nice-to-have:

- Report
    1. generateReport
    2. producePDF
    3. viewReport

3.2 Use case/Services contracts

3.2.1 Profile

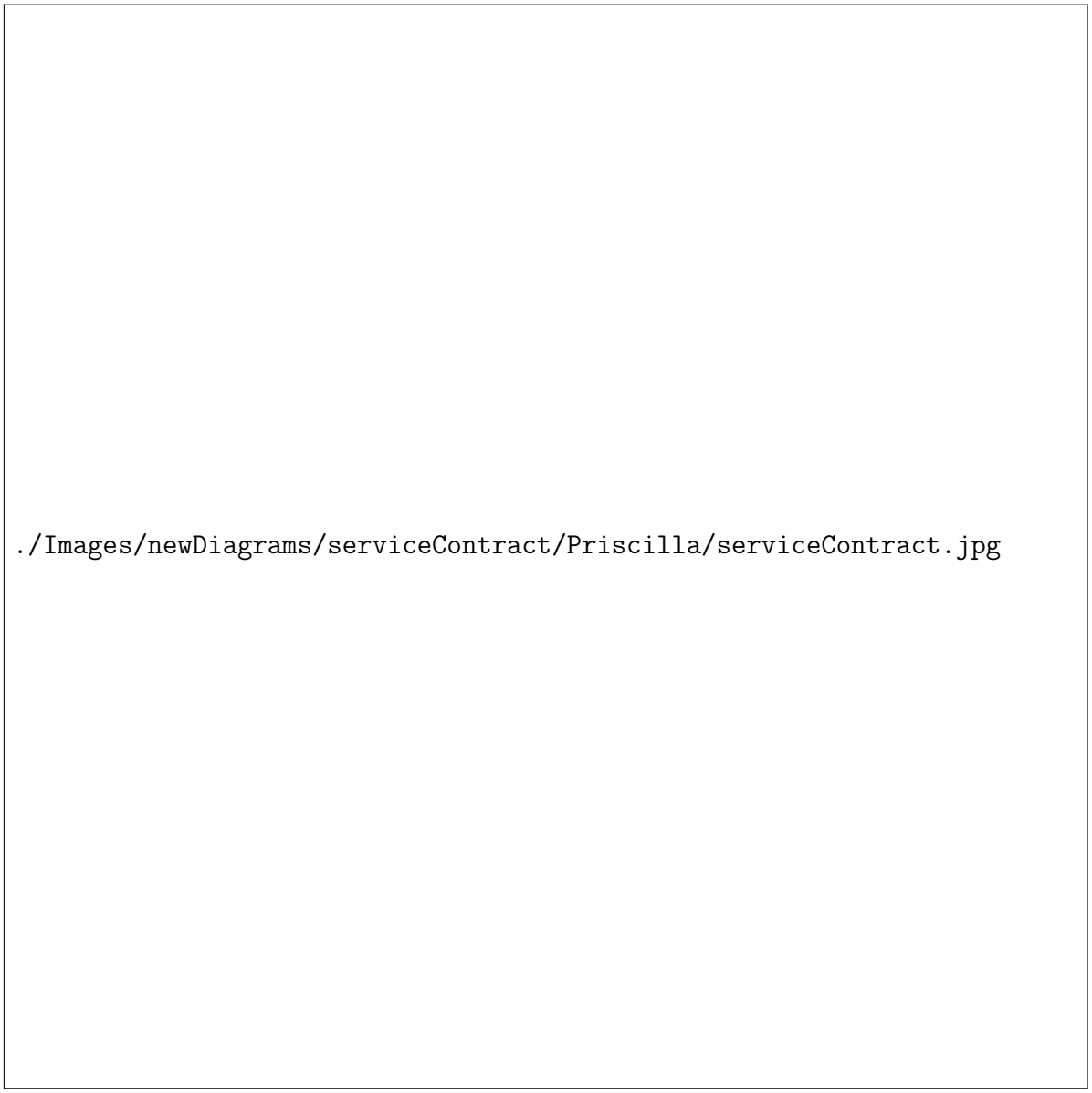


3.2.2 Property

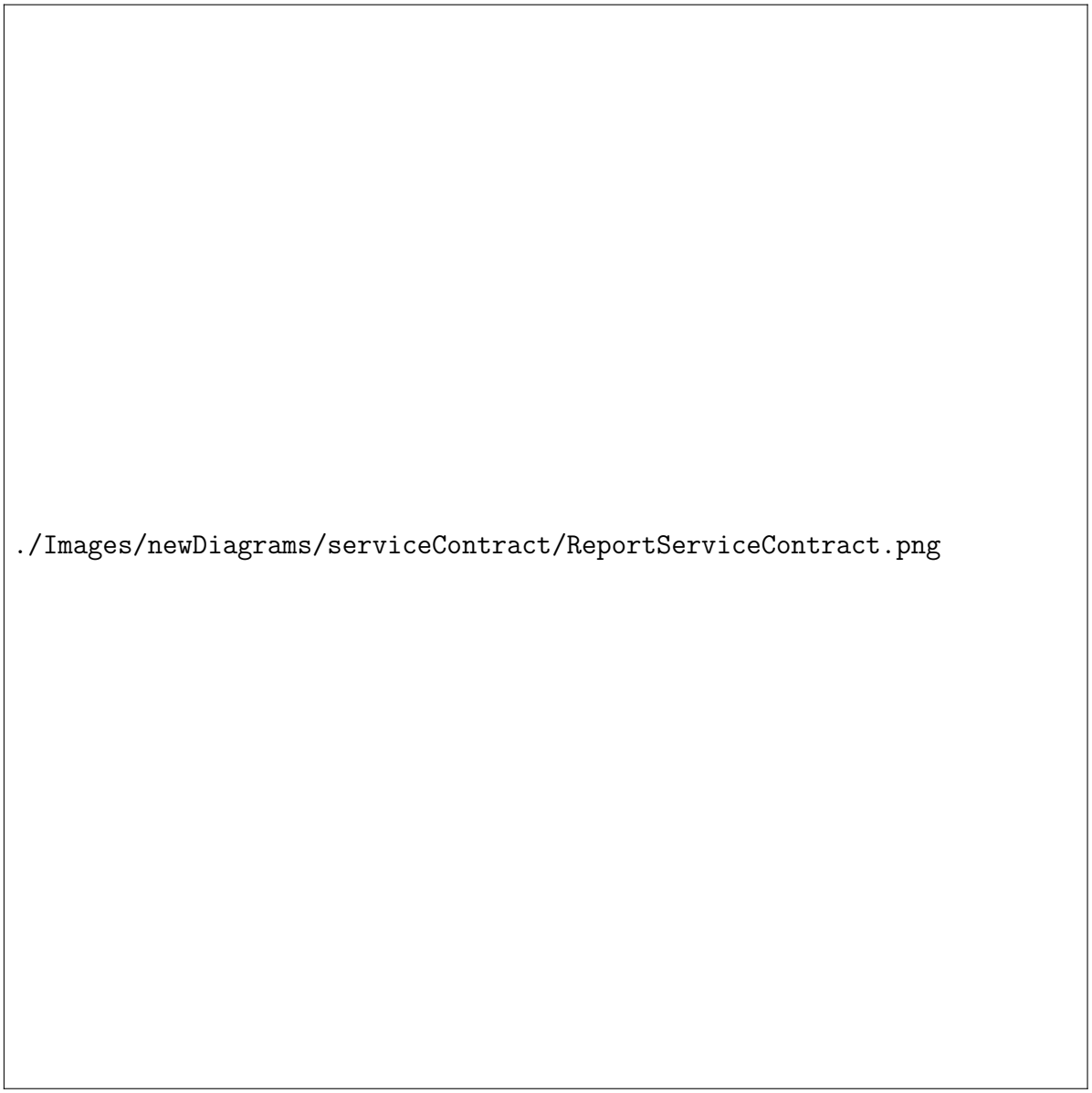
updateProperty


./Images/newDiagrams/serviceContract/Property.png

3.2.3 Accounting



3.2.4 Report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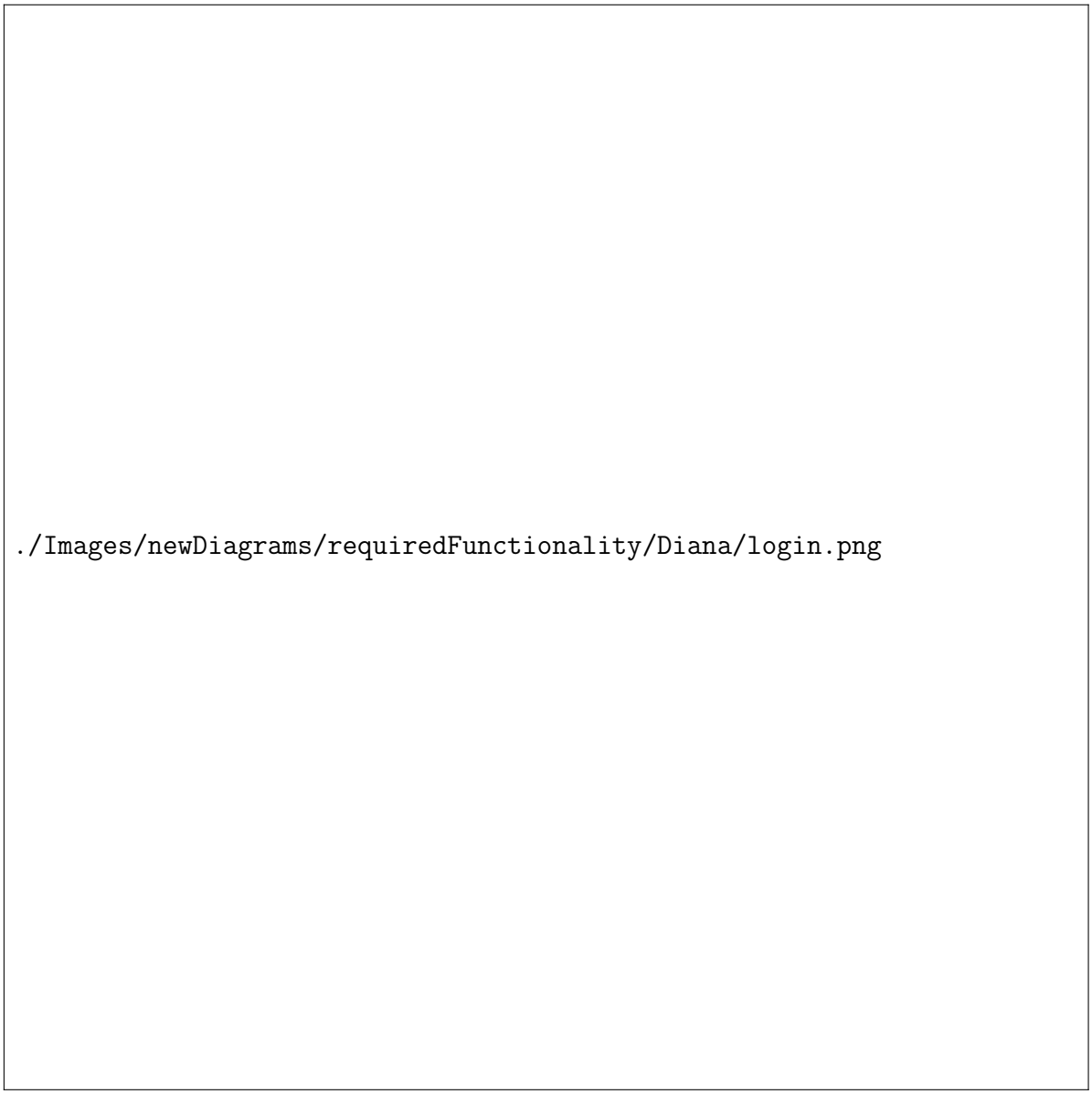
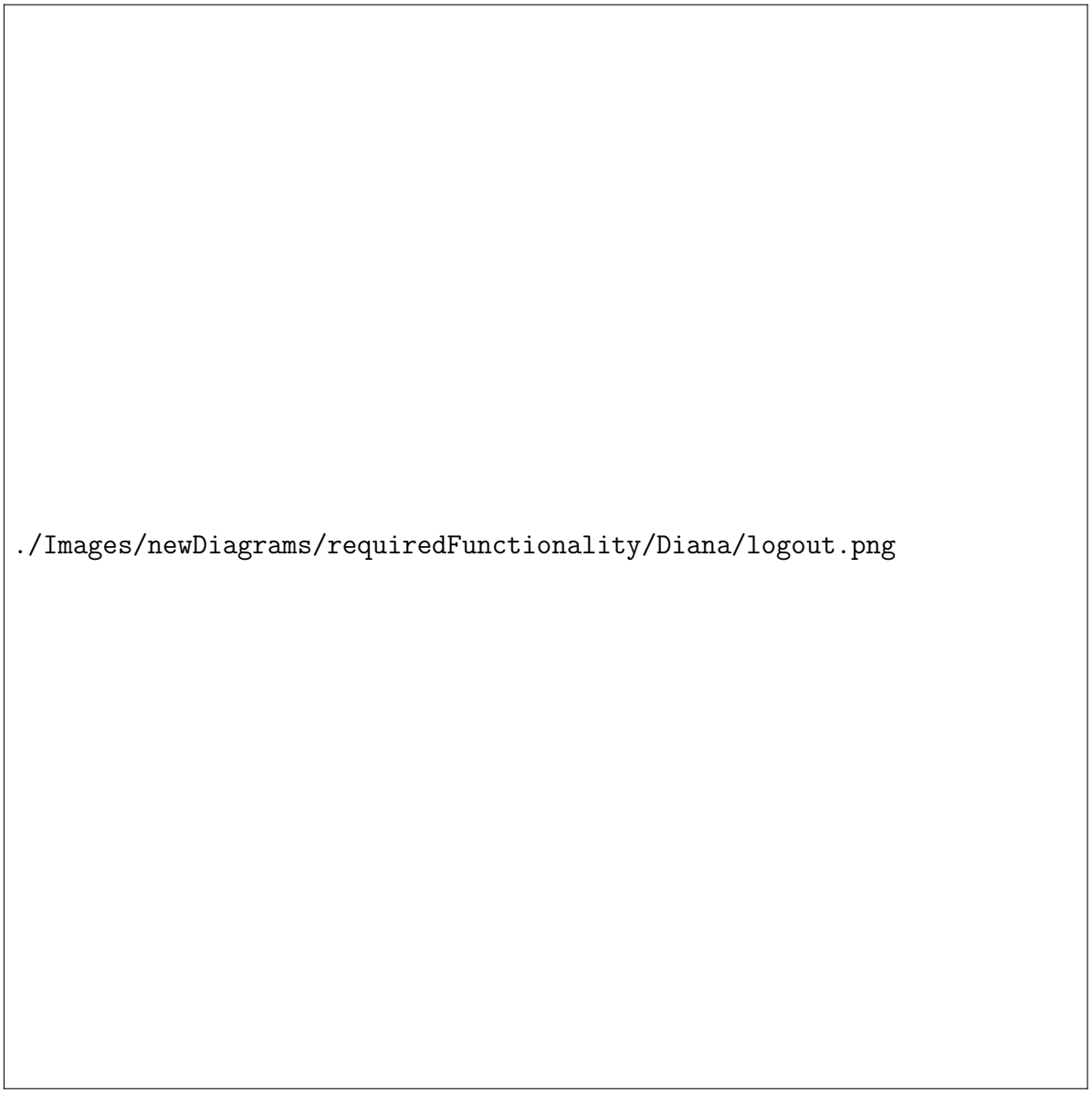
3.3 Required functionality

3.3.1 Login



3.3.2 Logout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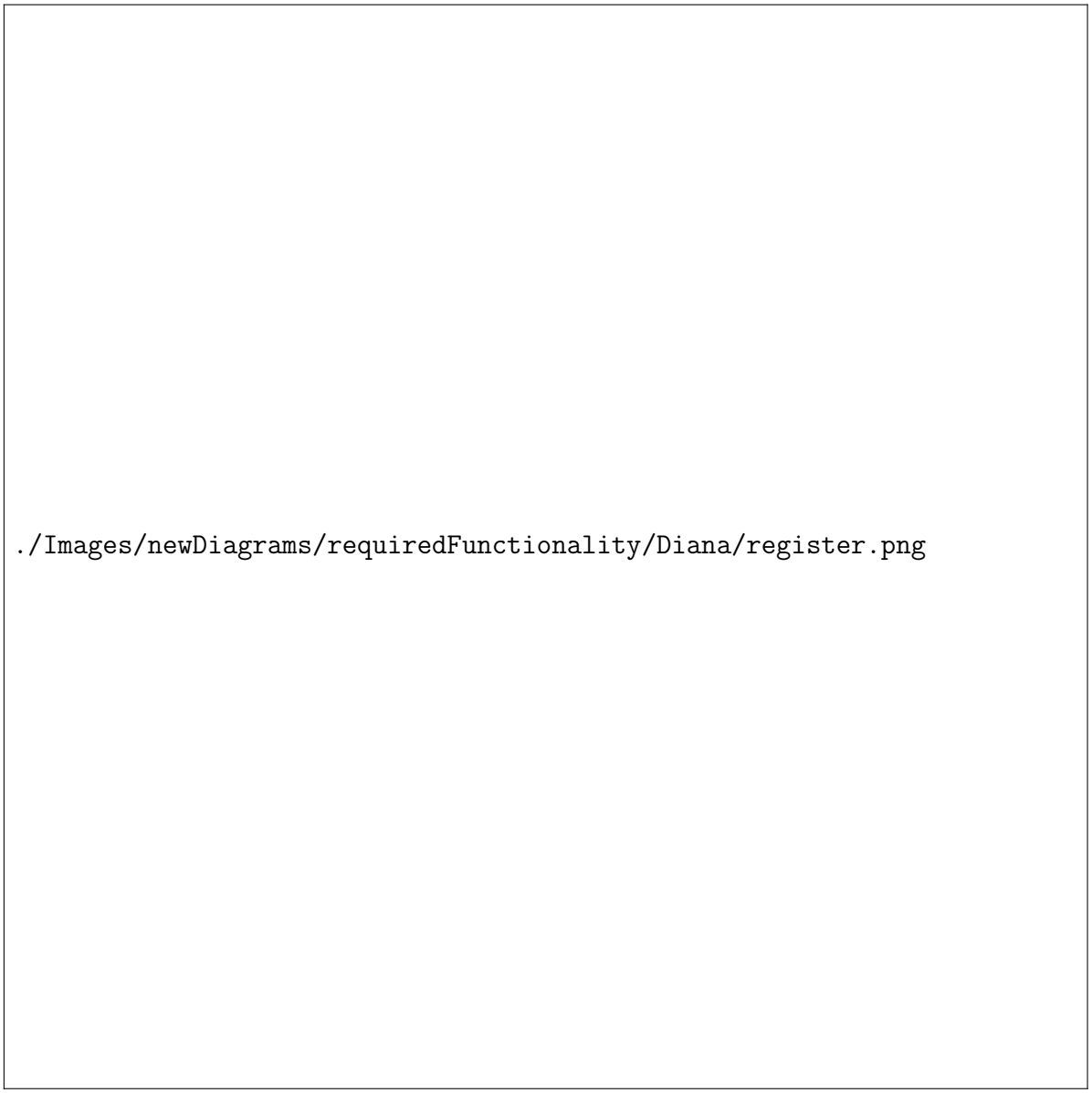
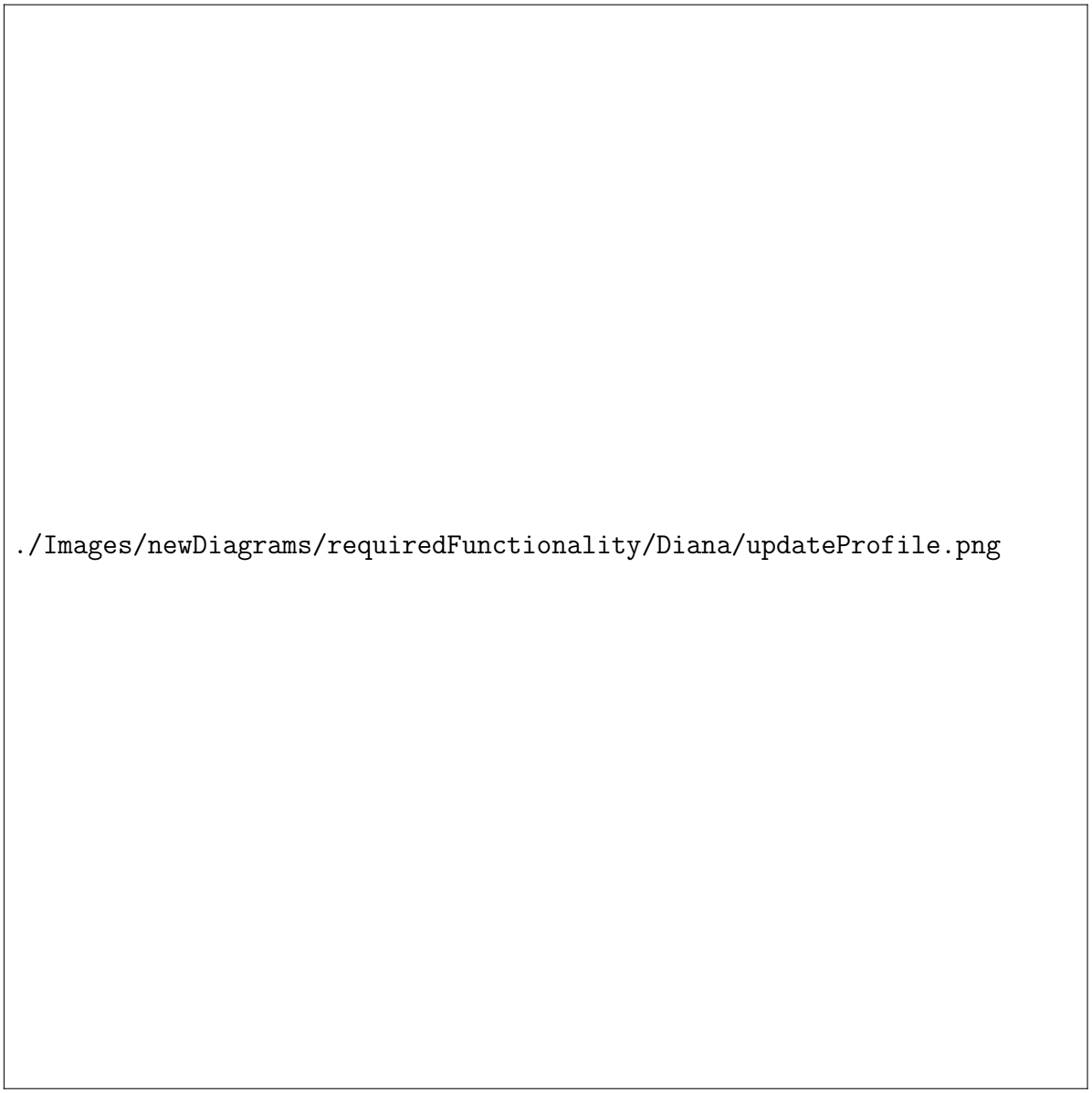
3.3.3 Register

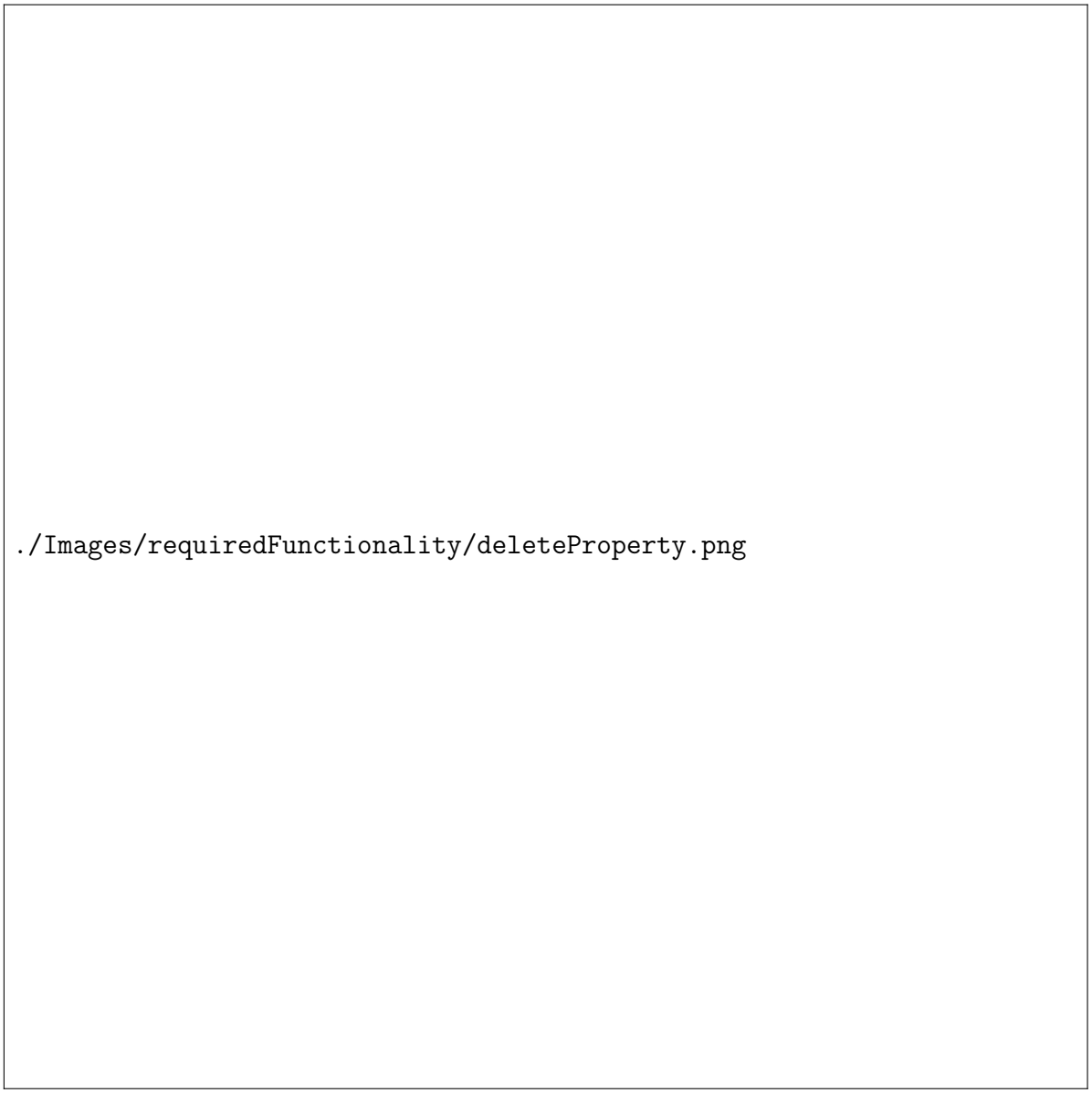


3.3.4 updateProfile

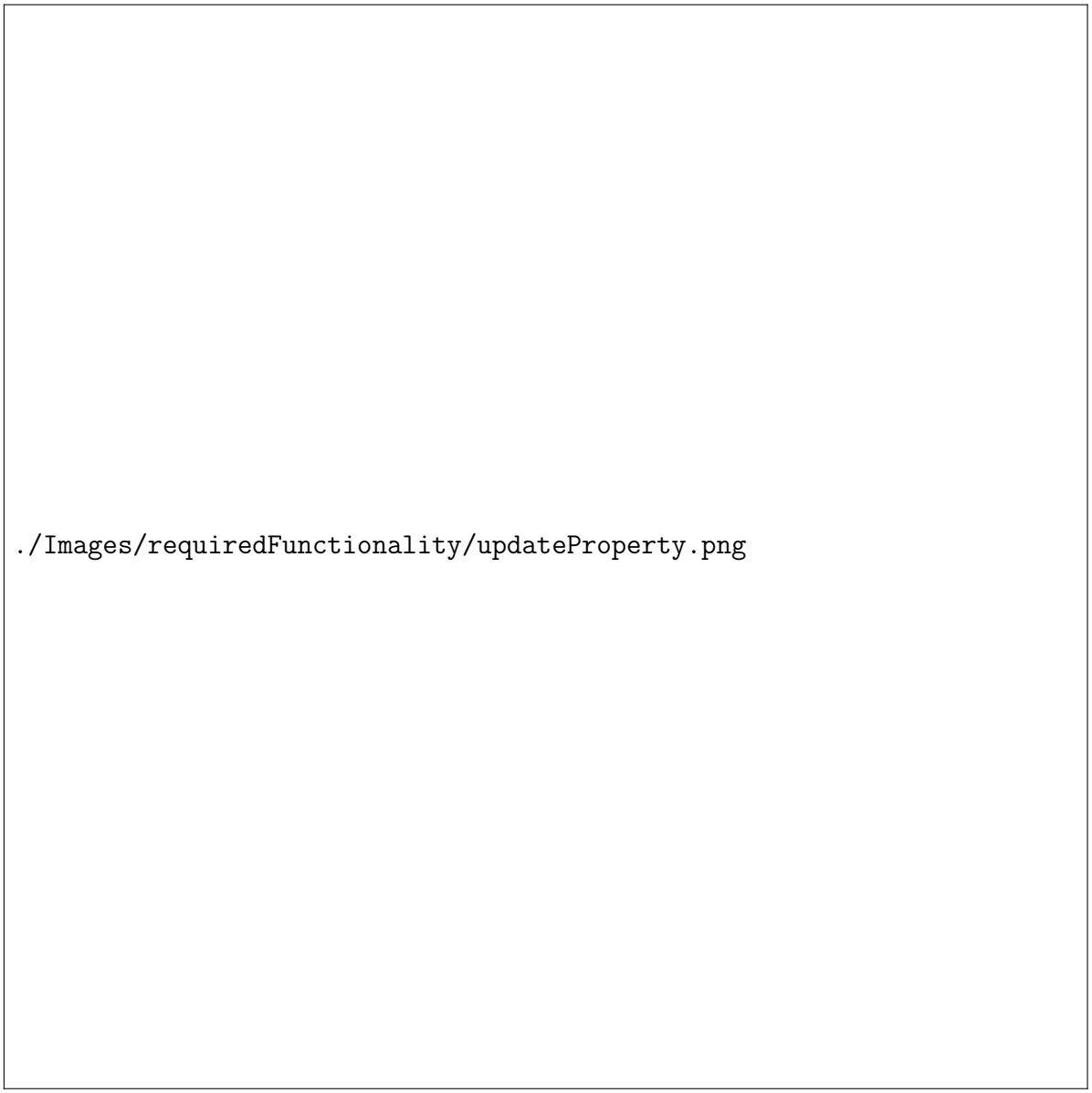


3.3.5 addProperty

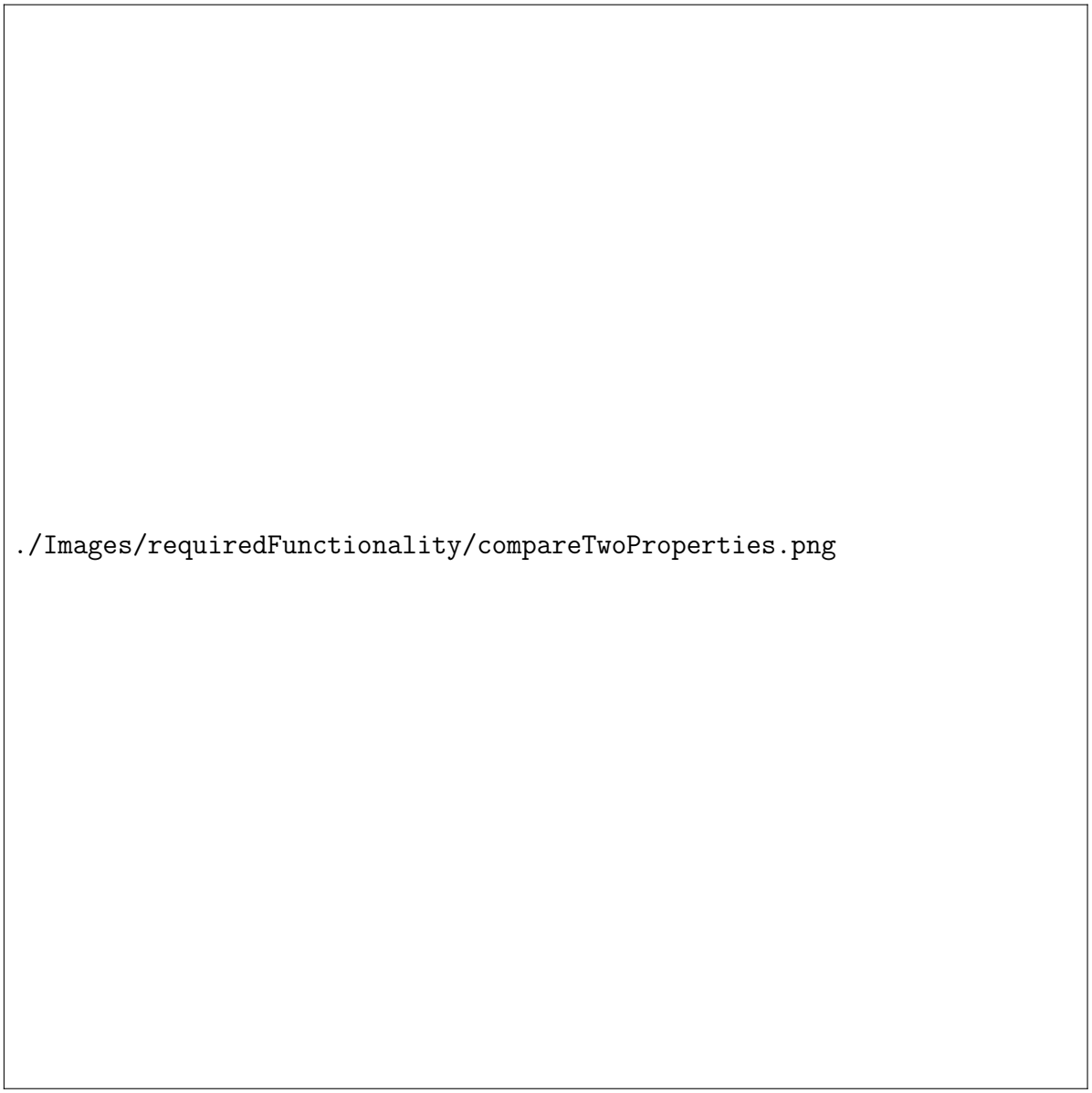
3.3.6 deleteProperty



3.3.7 updateProperty

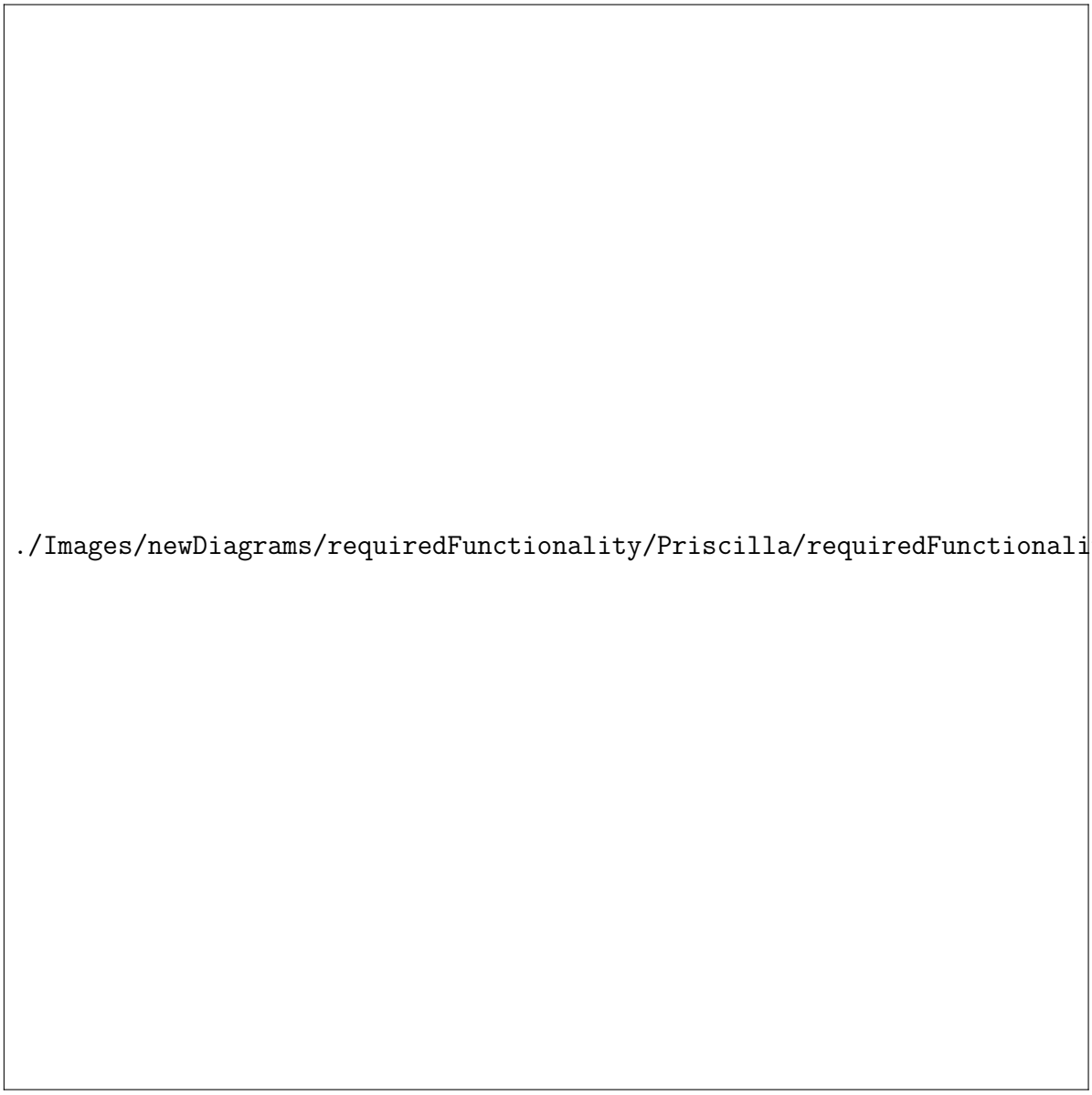


3.3.8 compareTwoProperties

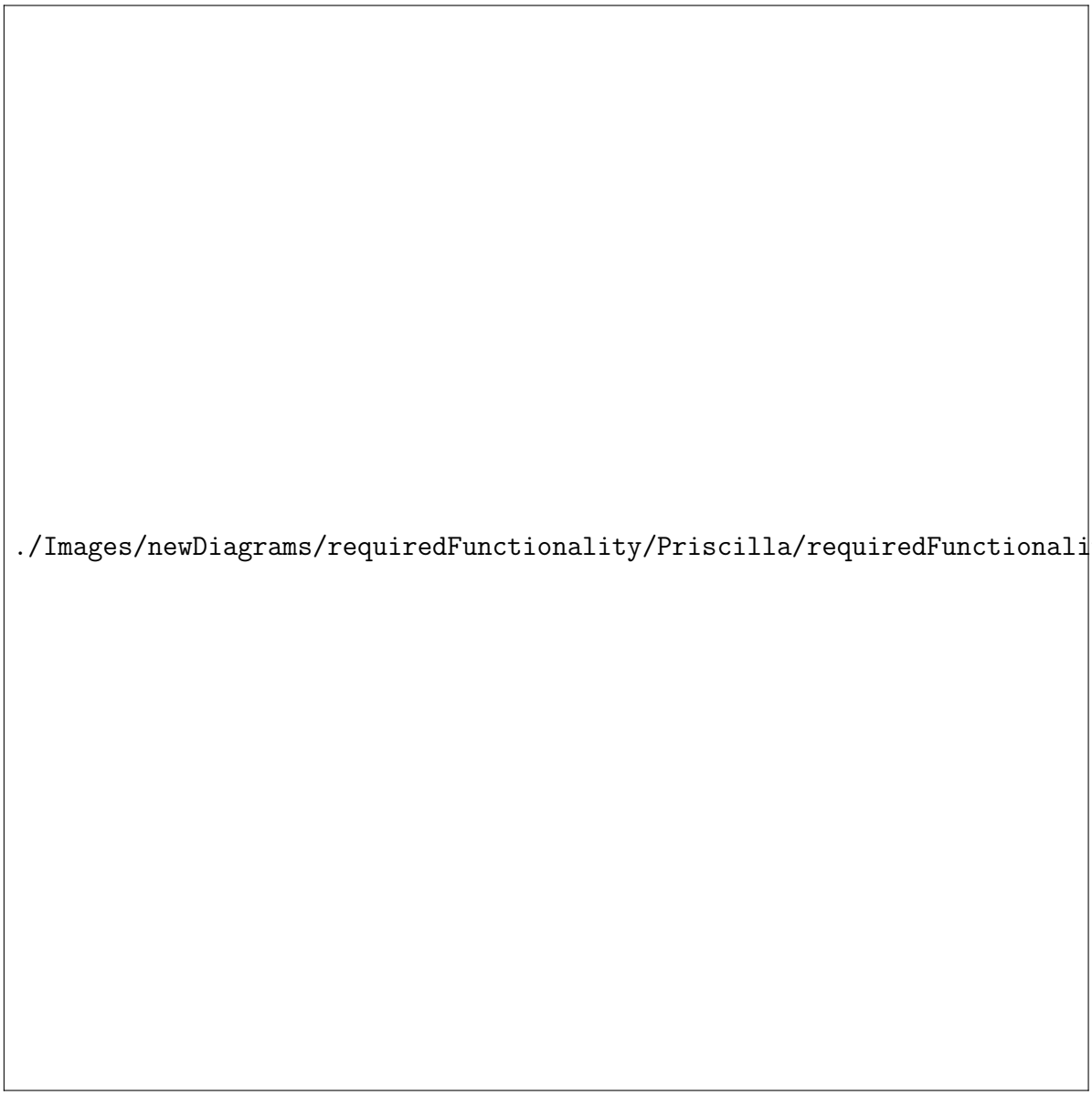


3.3.9 viewProperty

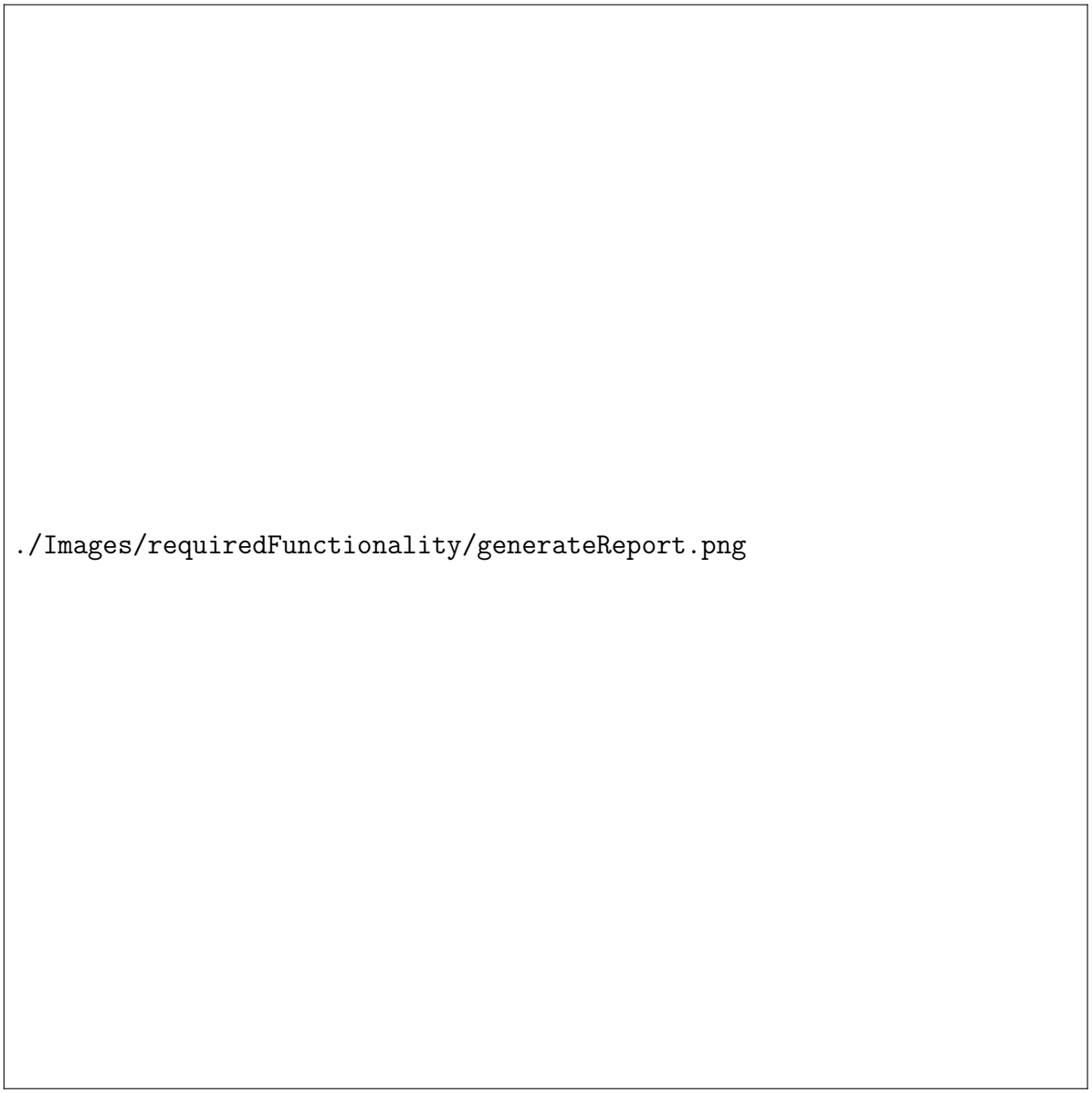
3.3.10 calucalateNPV



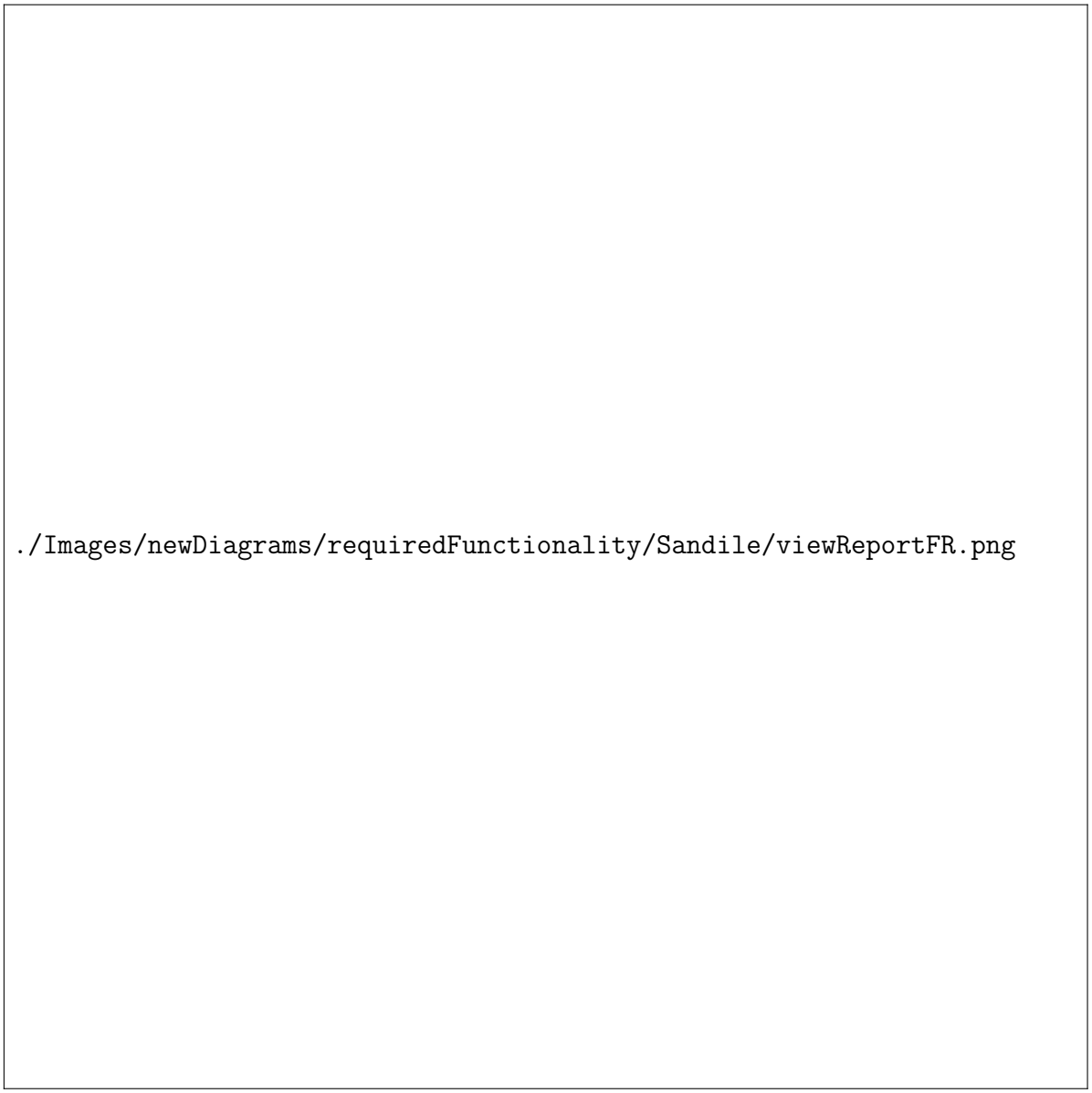
3.3.11 calucalateROI



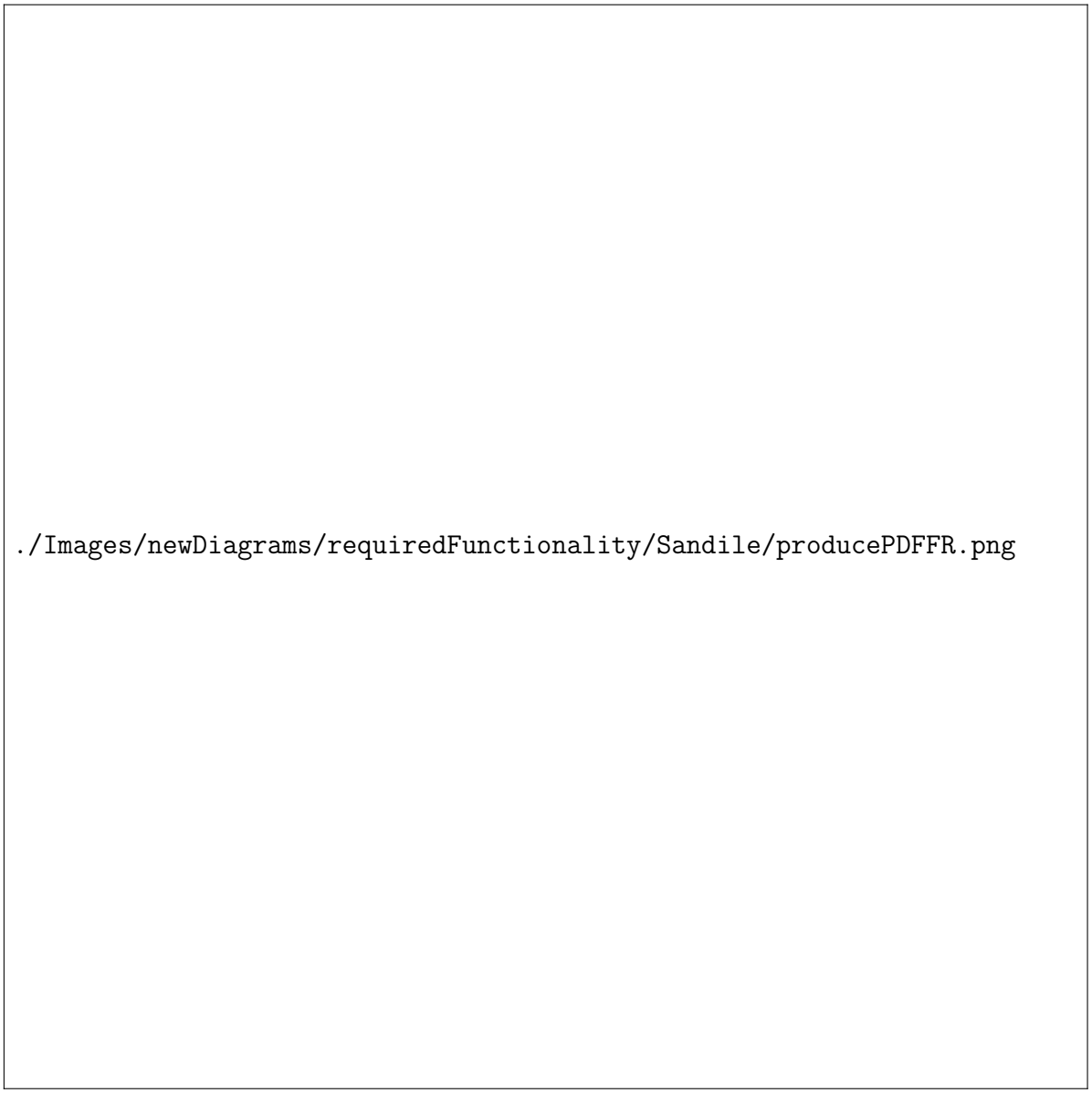
3.3.12 generateReport



3.3.13 viewReport

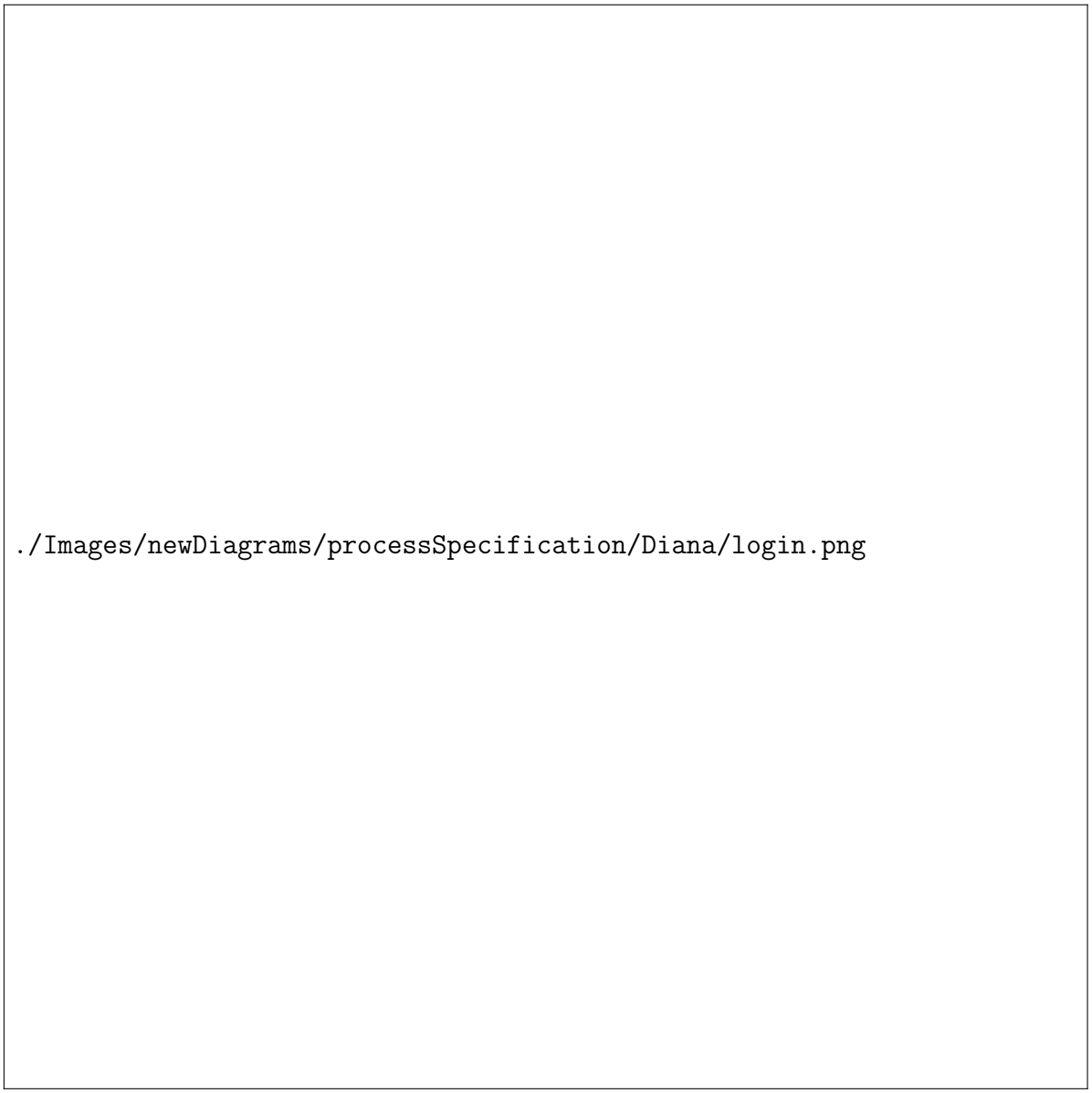


3.3.14 generatePDF

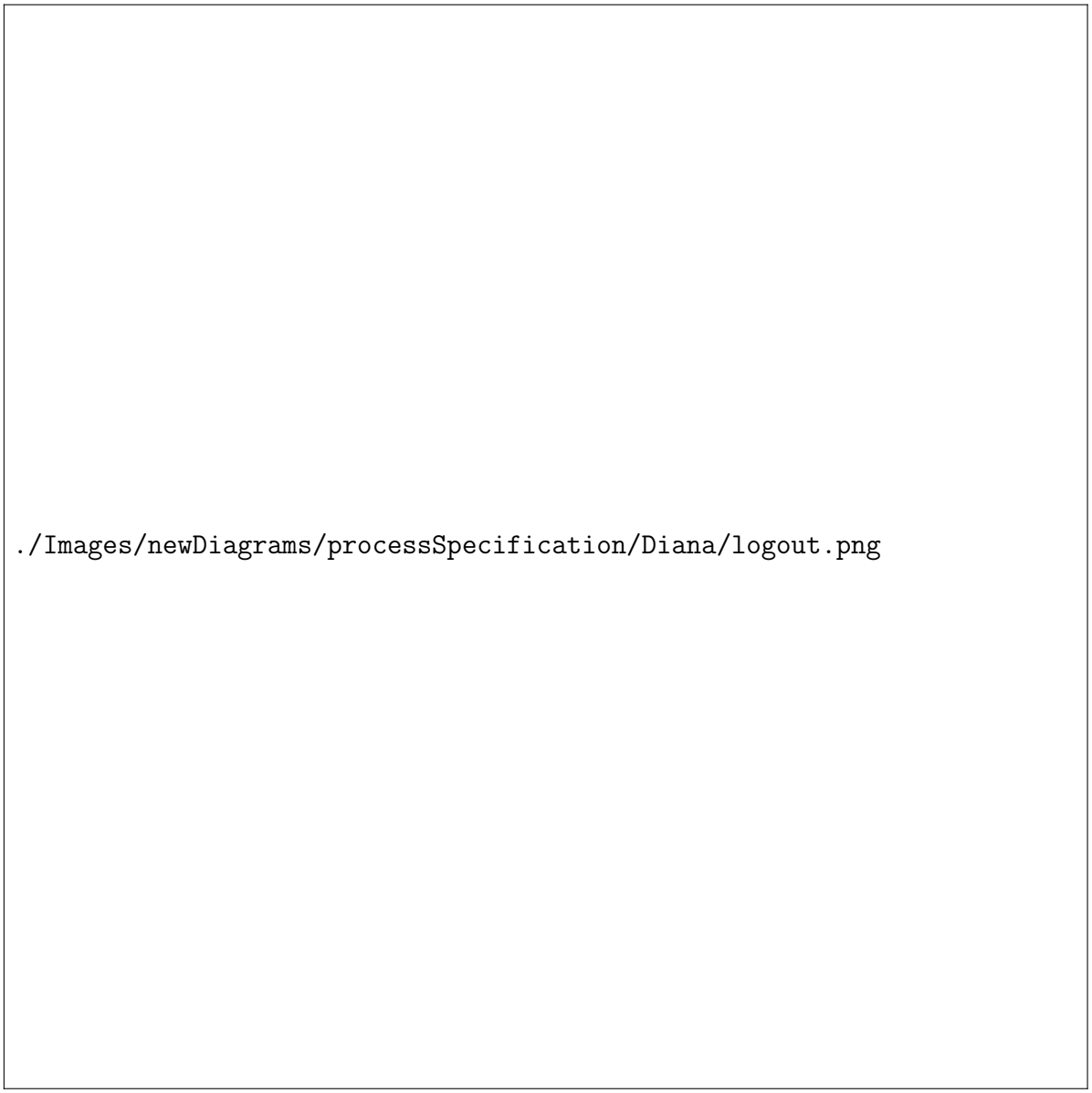


3.4 Process specifications

3.4.1 Login



3.4.2 Logout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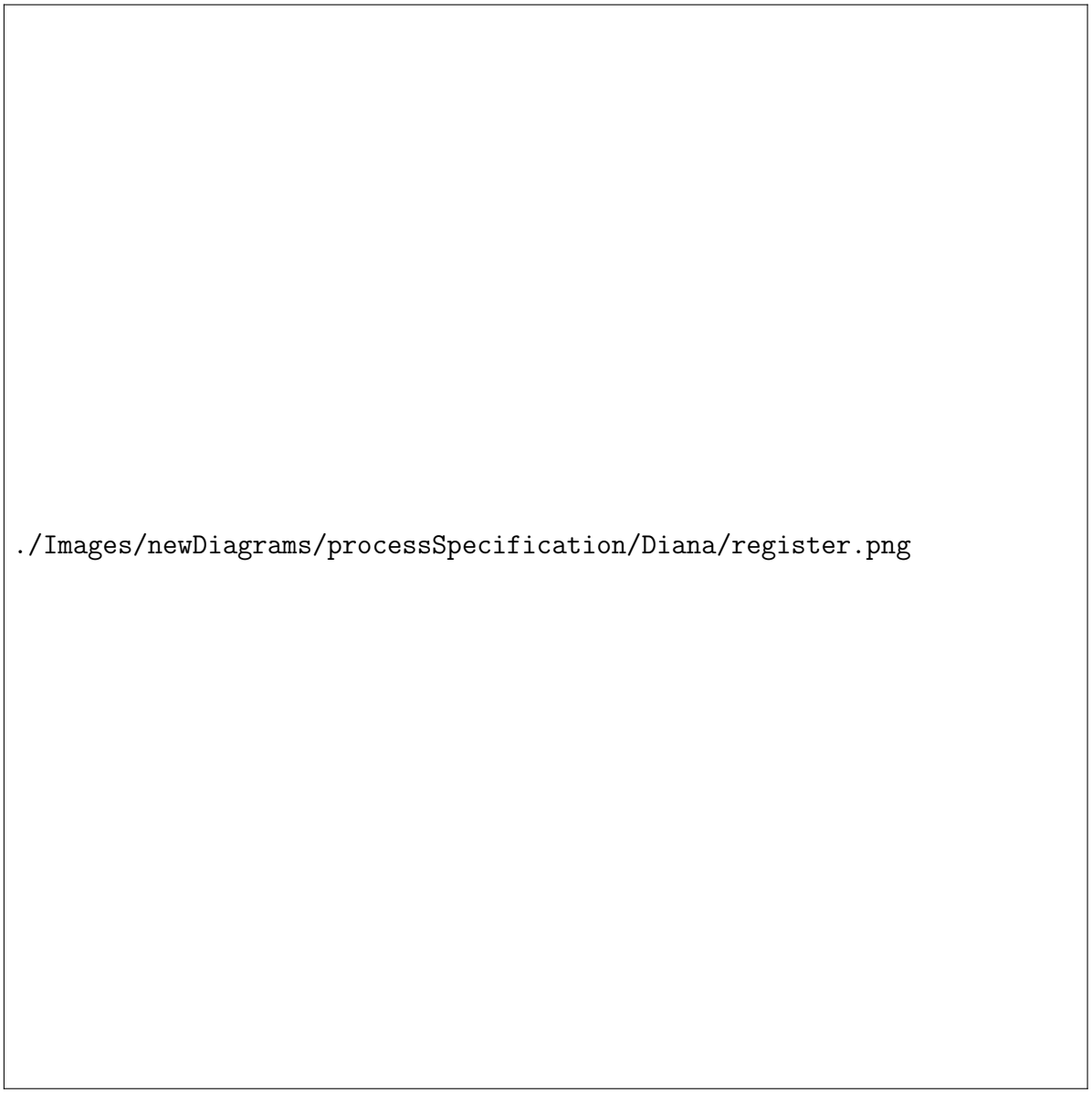
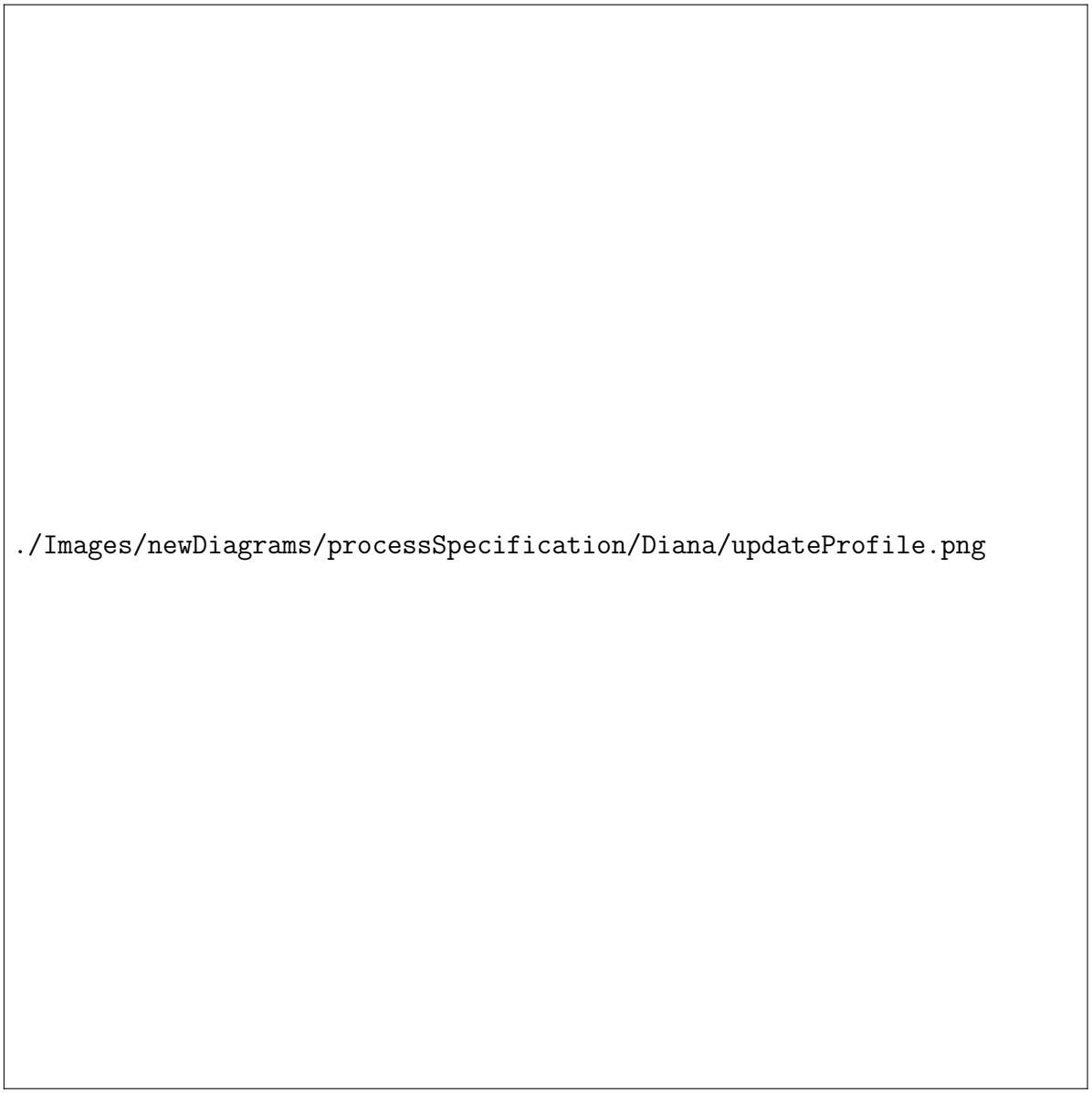
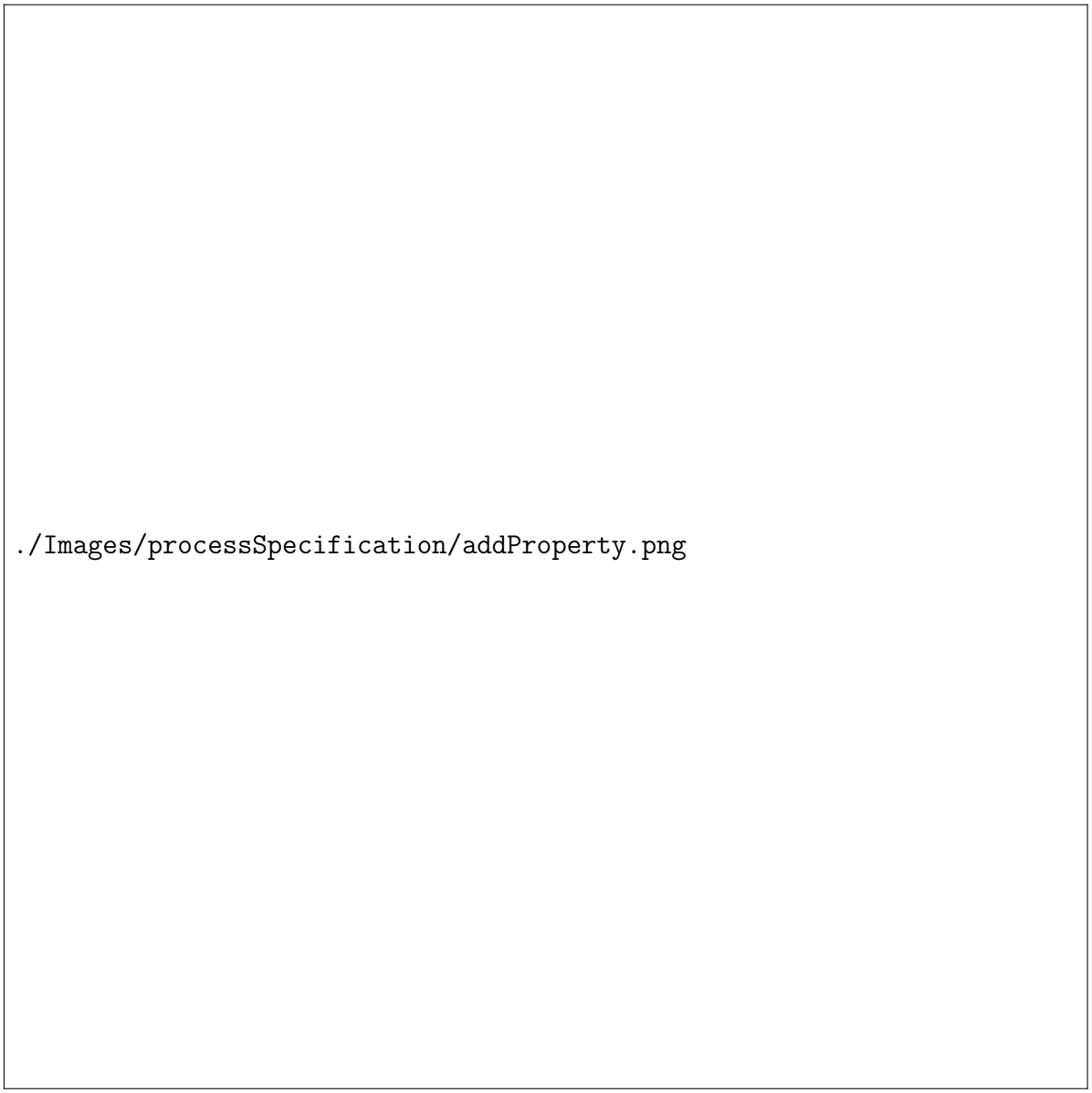
3.4.3 Register



3.4.4 updateProfile

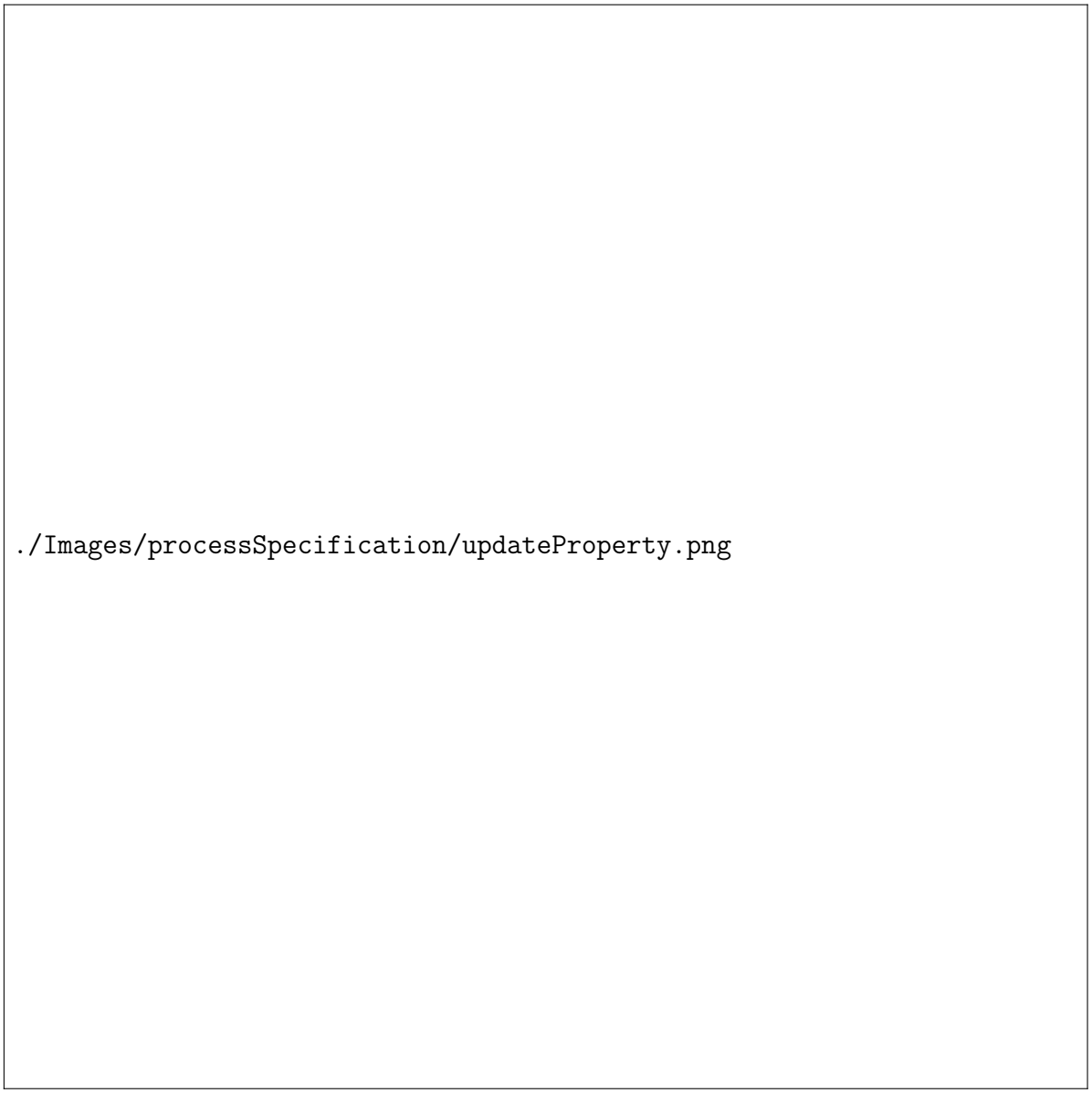


3.4.5 addProperty

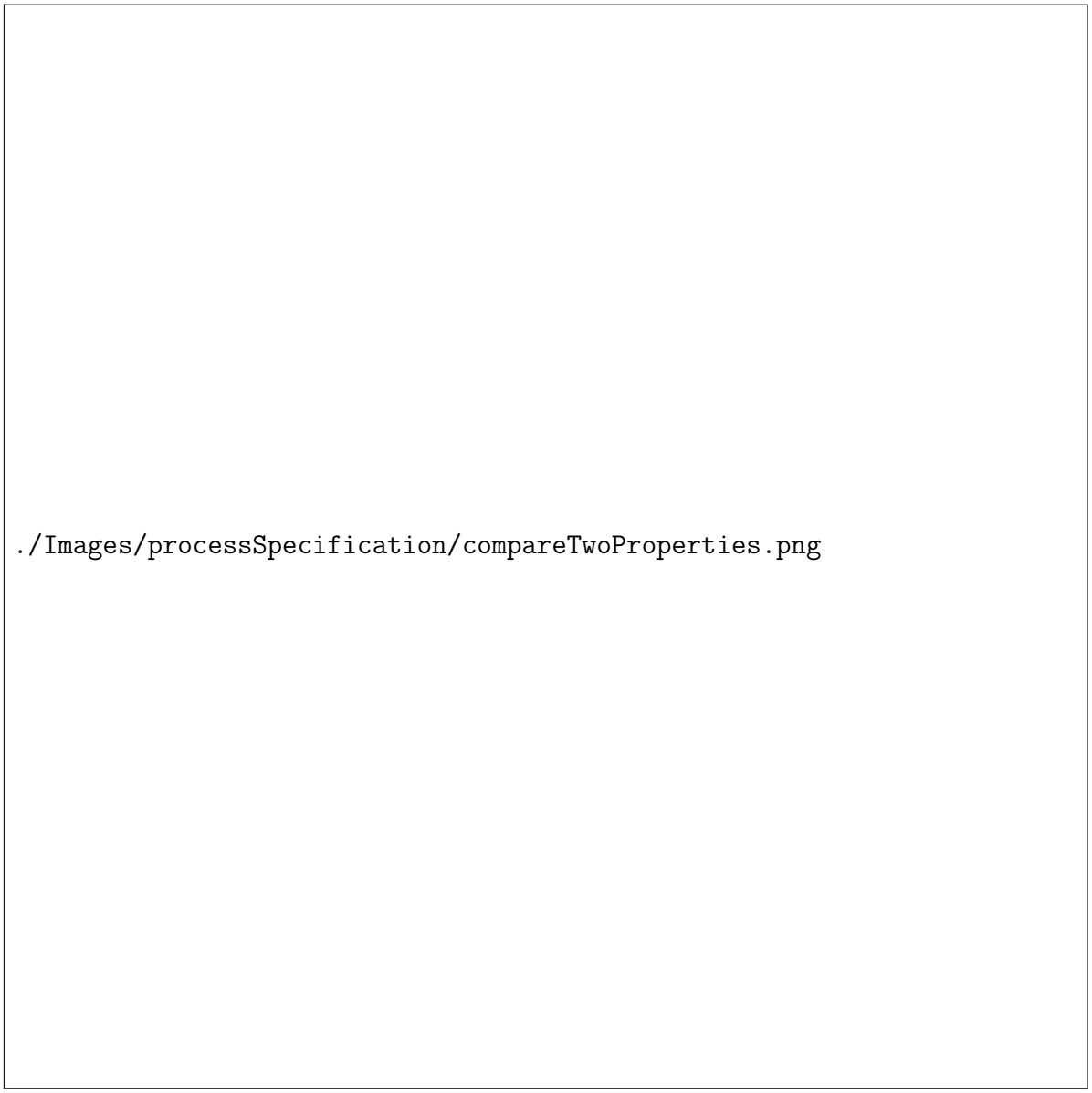


3.4.6 deleteProperty

3.4.7 updateProperty

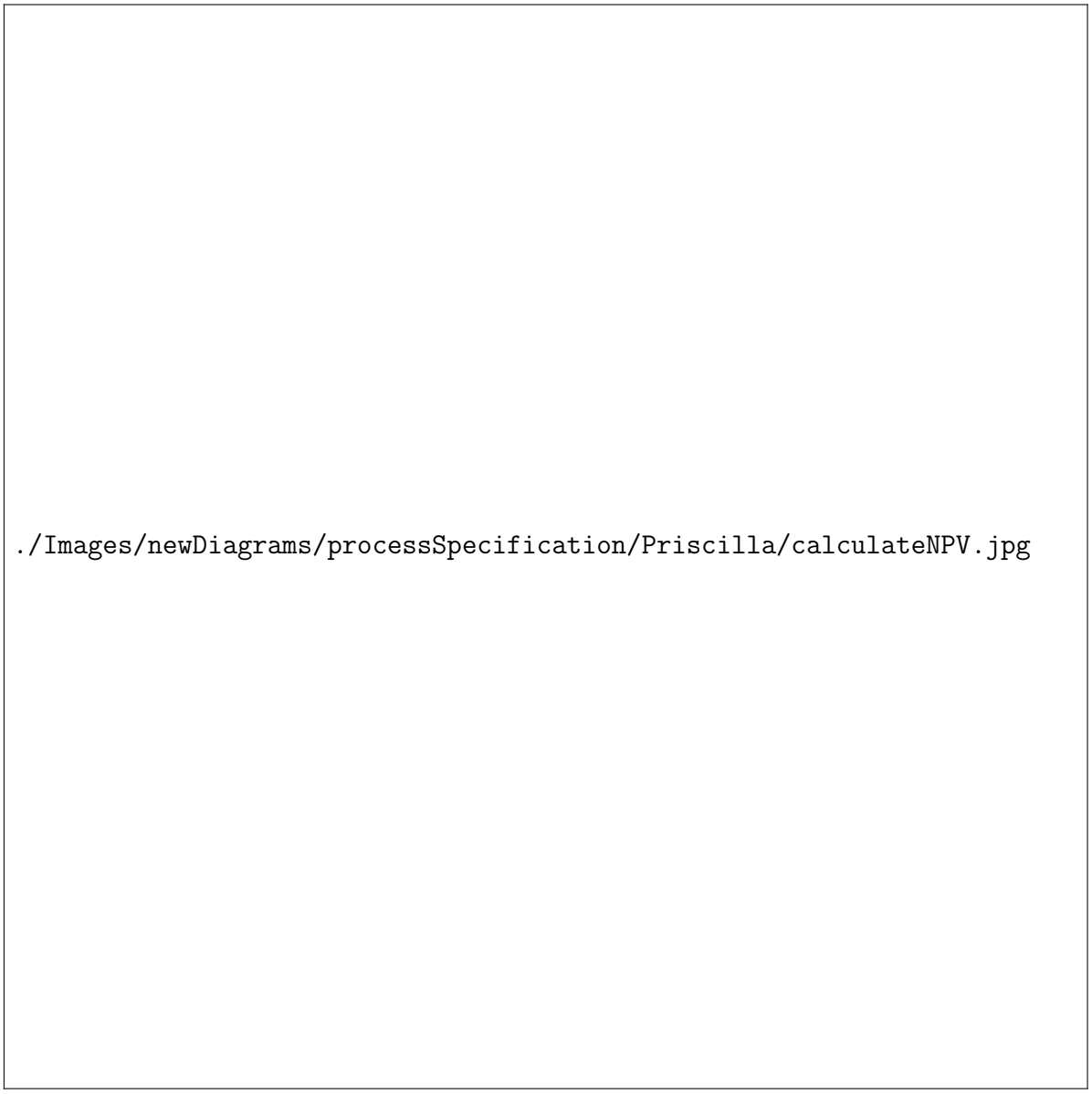


3.4.8 compareTwoProperties

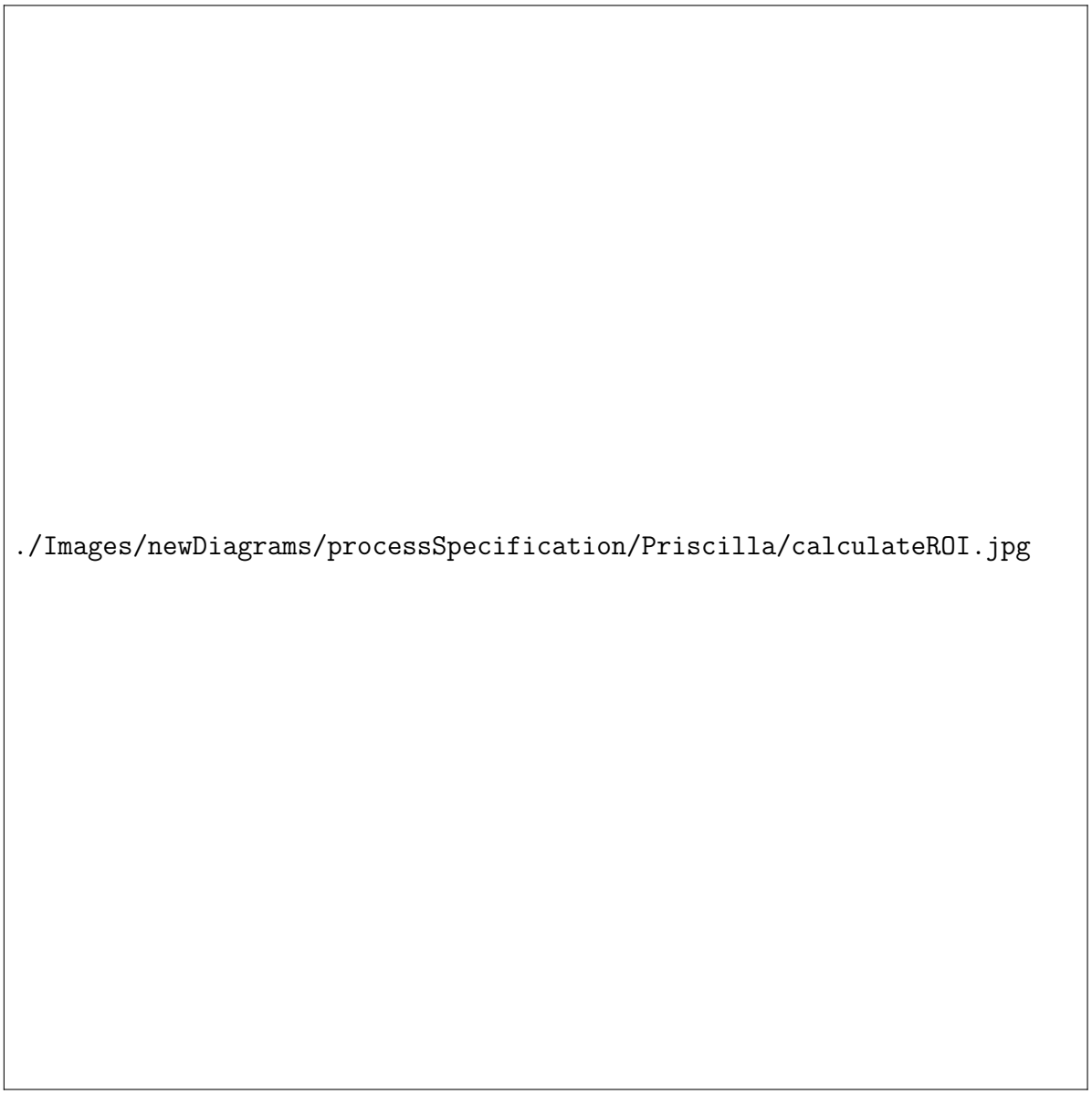


3.4.9 viewProperty

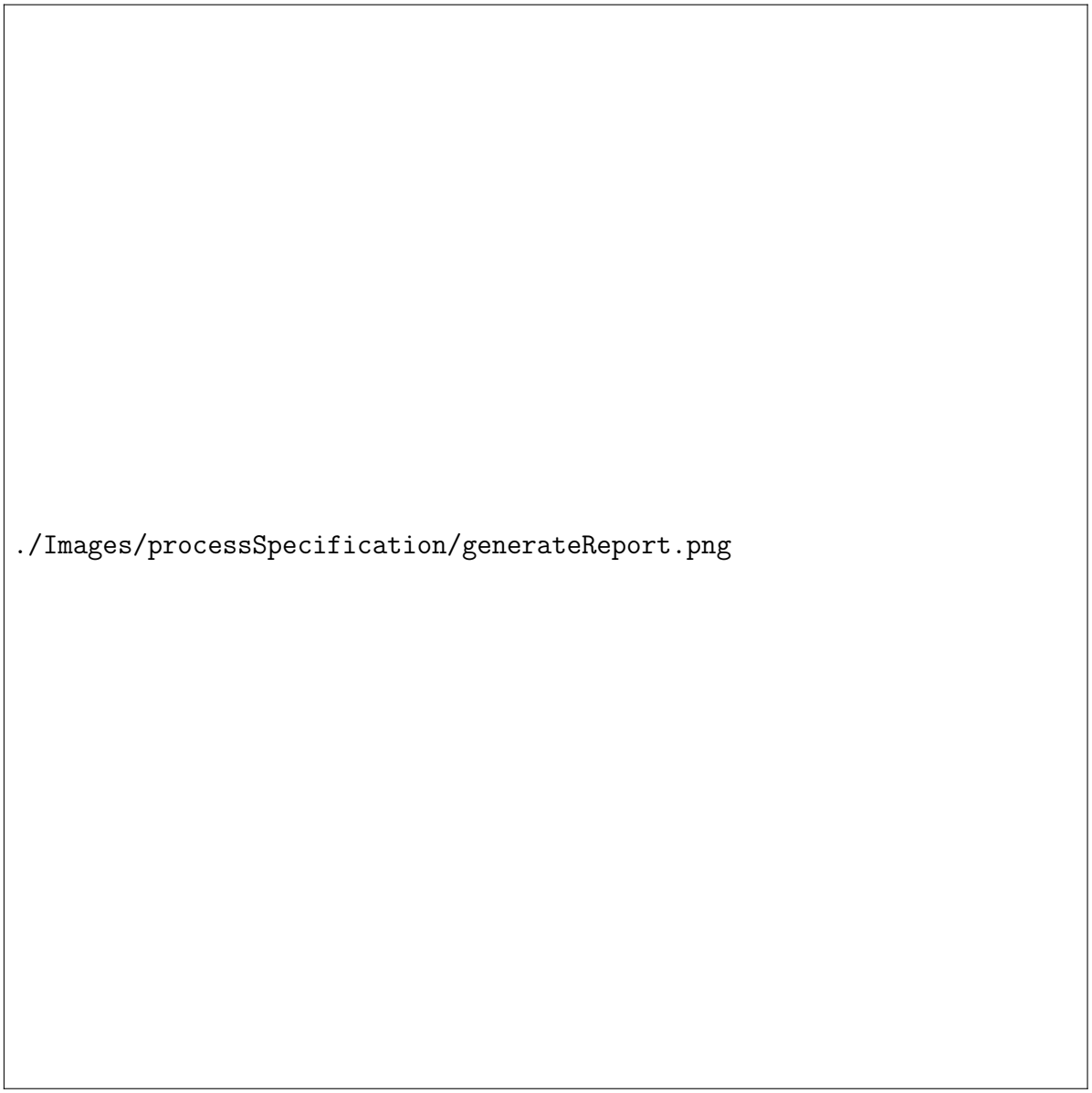
3.4.10 calucalateNPV



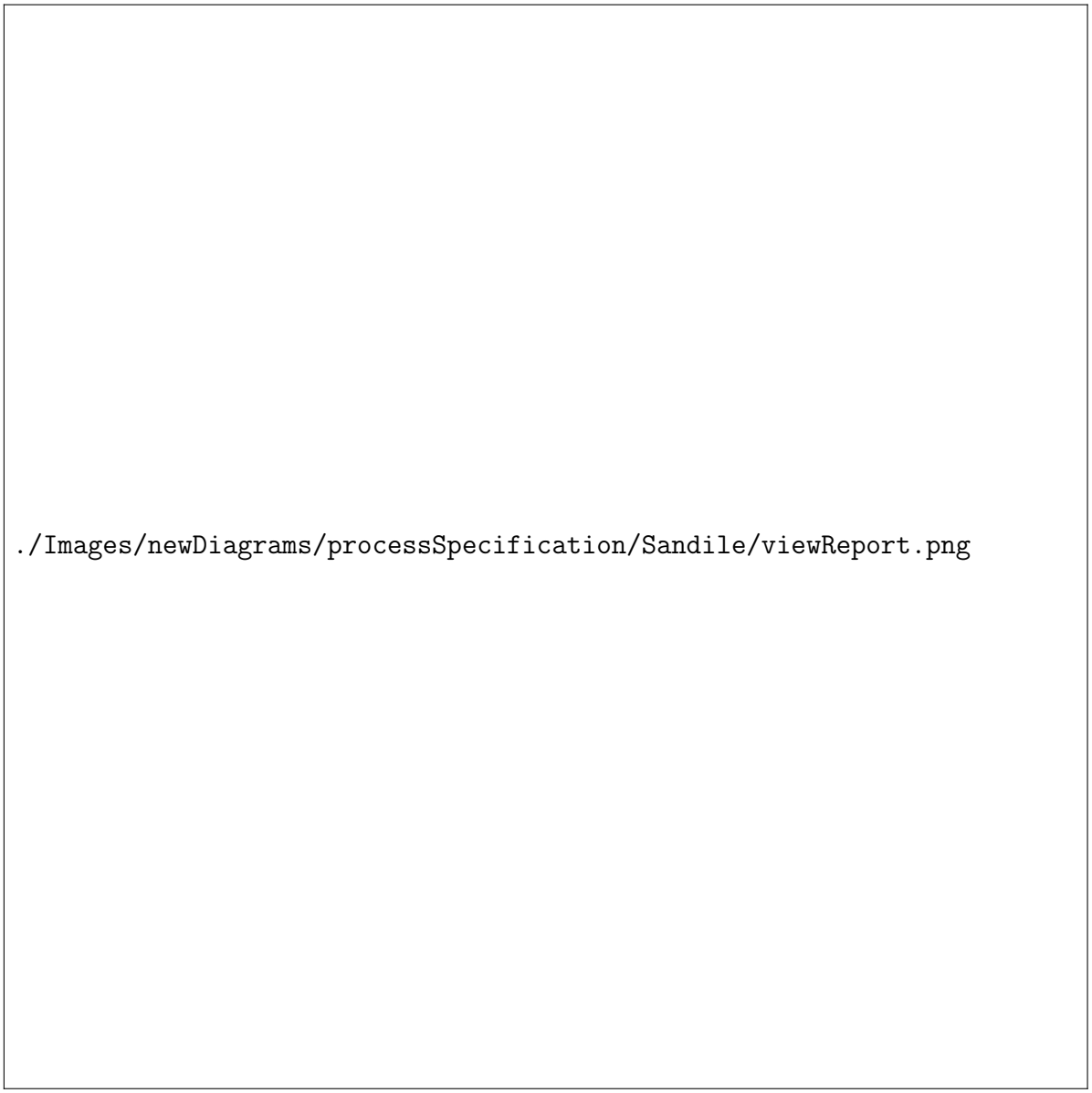
3.4.11 calucalateROI



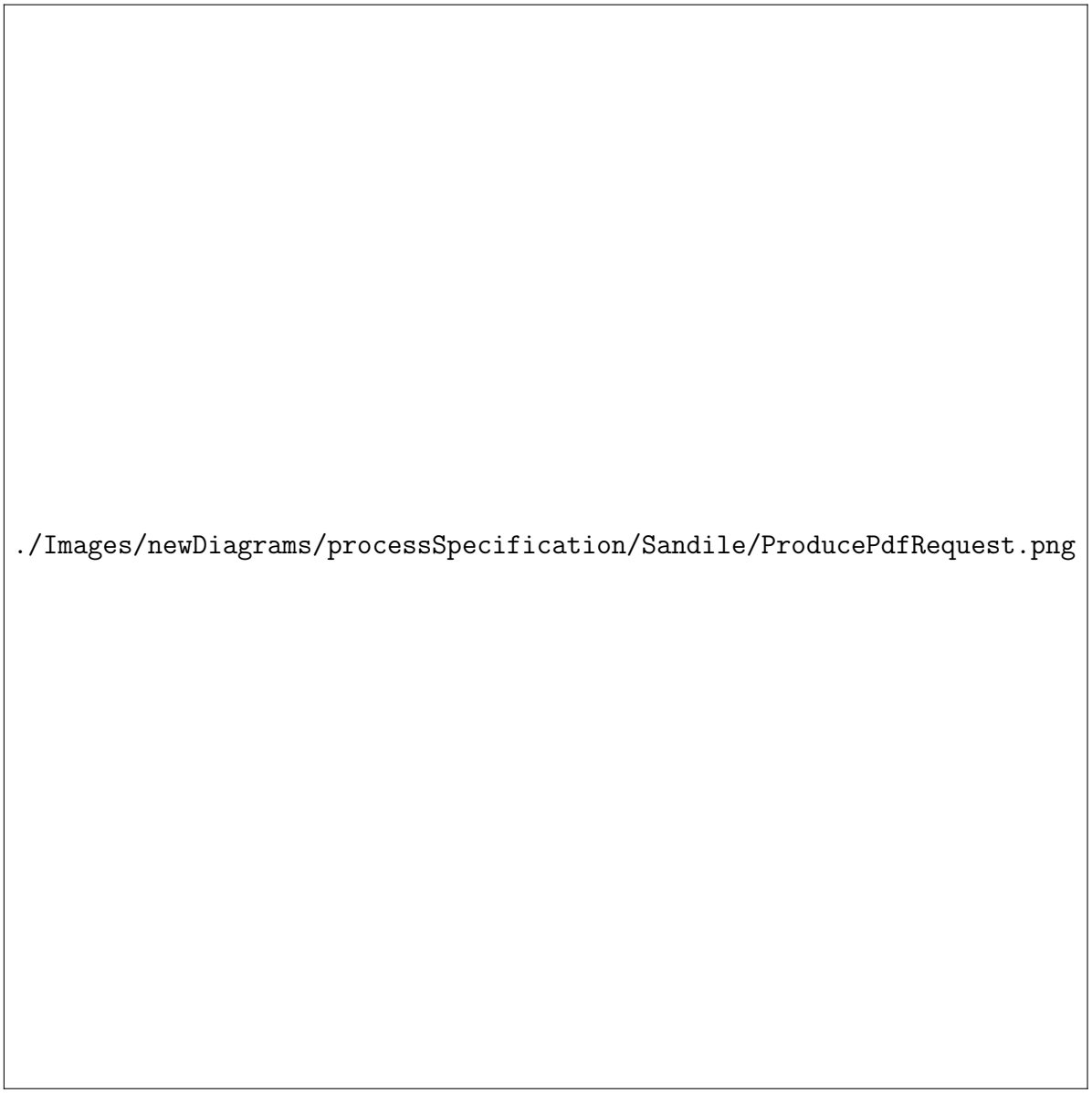
3.4.12 generateReport



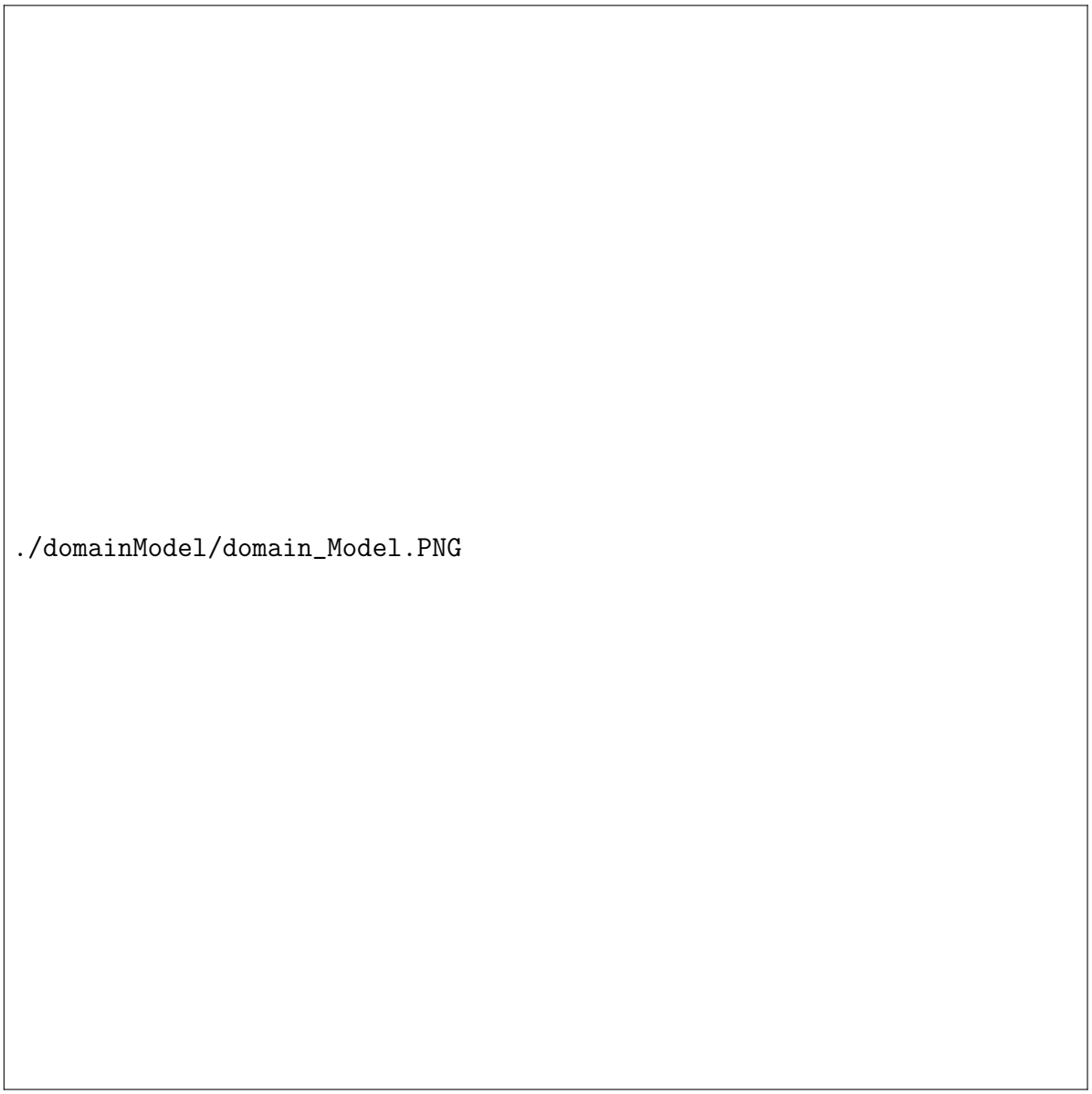
3.4.13 viewReport



3.4.14 generatePDF



3.5 Domain Model



4 Open Issues

- An appropriate Particle Swarm Optimization algorithm API and a Hill Climbing API is needed to optimize the Net Present Value calculation.
- We still need to get the EJB Container and JNDI lookup to work with our system.