



# **MODEL-BASED PROJECT MANAGEMENT: A CLASS DIAGRAM APPROACH**

## **THESIS PRESENTATION**

Candidate: Leonardo Mischitelli

Relator: Alberto De Marco

Co-relator: Filippo Maria Ottaviani

External relator: Richard Maltzman

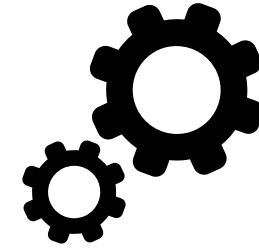
Politecnico di Torino-Boston University

2024 November-December Session

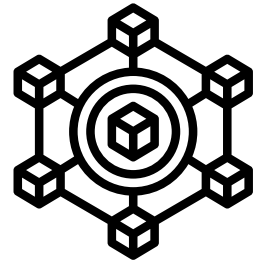
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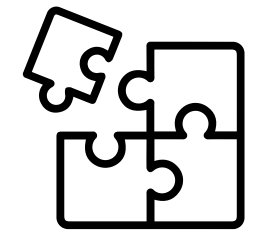
Model



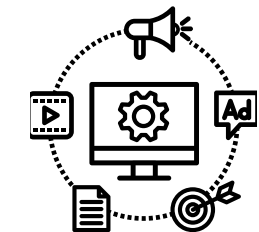
Digital Twin Framework



Results



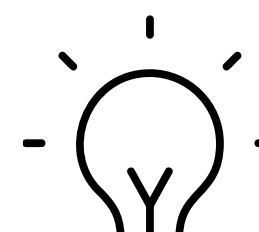
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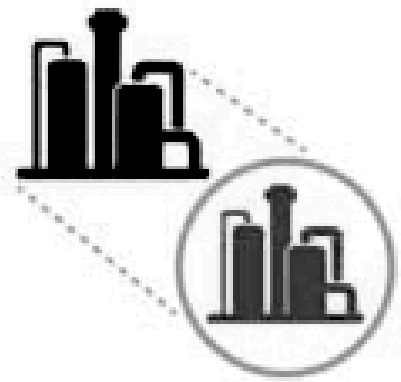
Objective



Conclusions

# INTRODUCTION

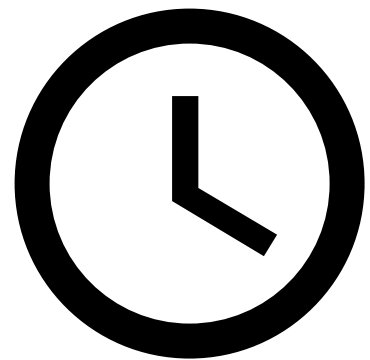
## Project Management Digital Twin (PMDT)



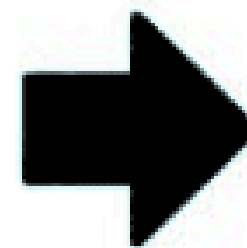
Represents physical assets with a digital model that feels like the real environment



Is not just a data model  
It must include relational interaction

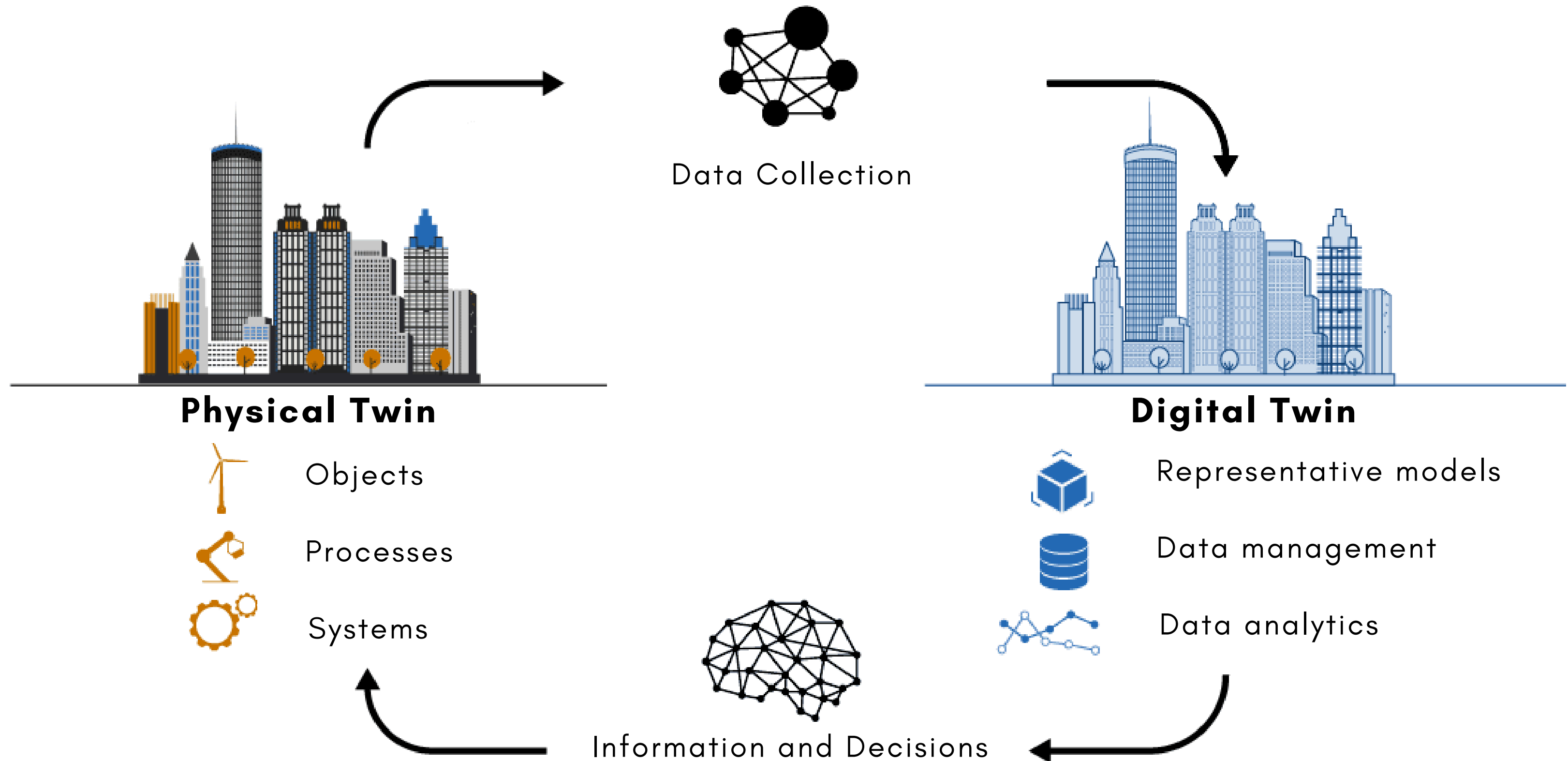


Connects with relevant time data to ensure the model mirrors reality



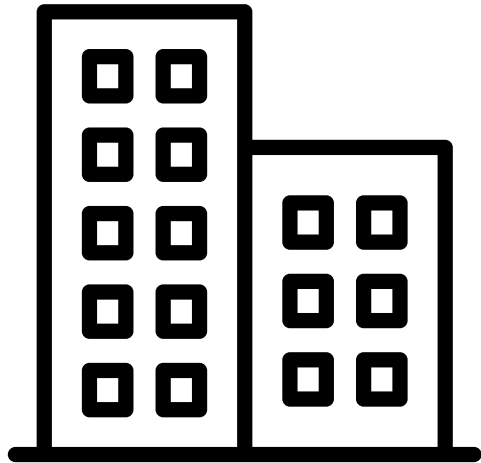
Simulates models forward with varying degrees of fidelity

# DIGITAL TWIN FRAMEWORK

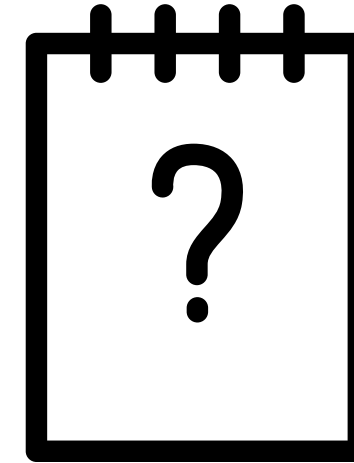




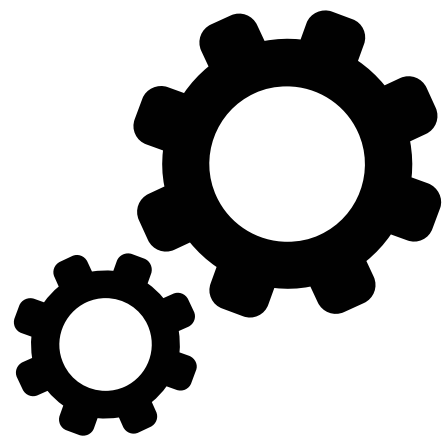
# GAPS IN LITERATURE



Current Digital Twin  
require tangible system  
to measure



There is no relevant  
conceptual study for  
PMDT

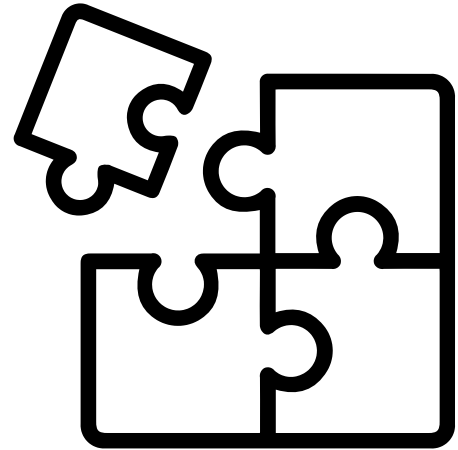


Current PM InfoSys do  
not model documents  
and their relationship  
with pre-existing  
classes

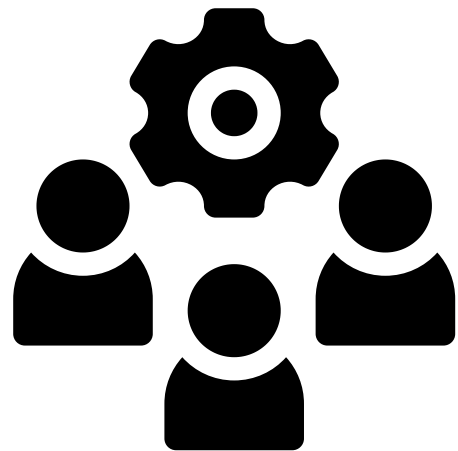


The external business  
environment has rarely  
been considered

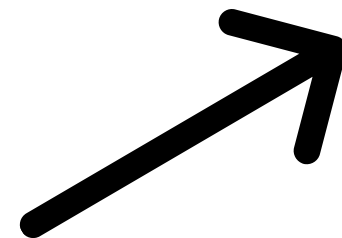
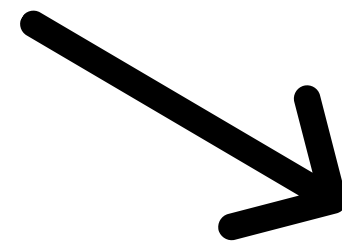
# OBJECTIVE



Fill the gap by  
modeling artifacts and  
linking them to the  
external environment

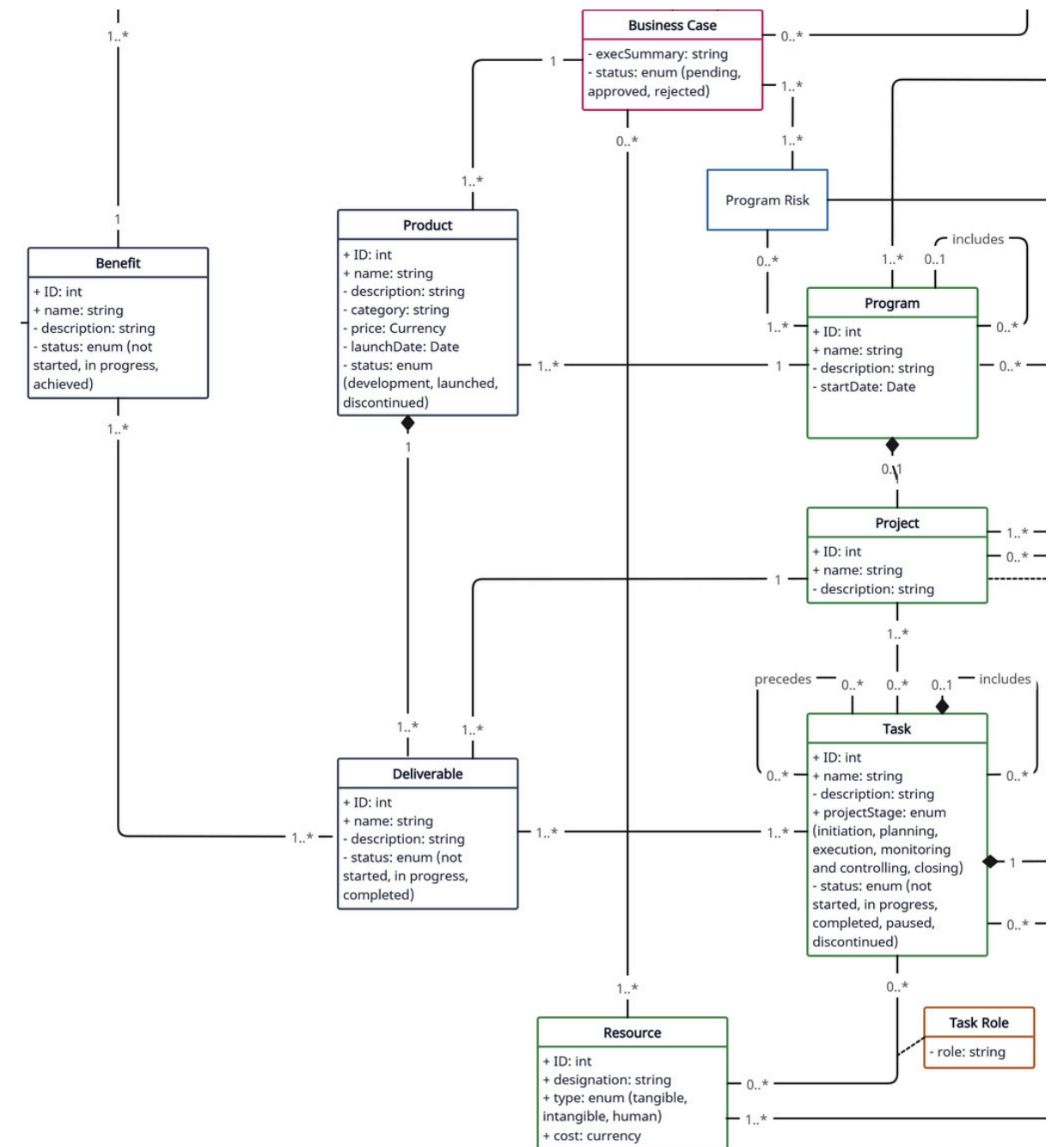
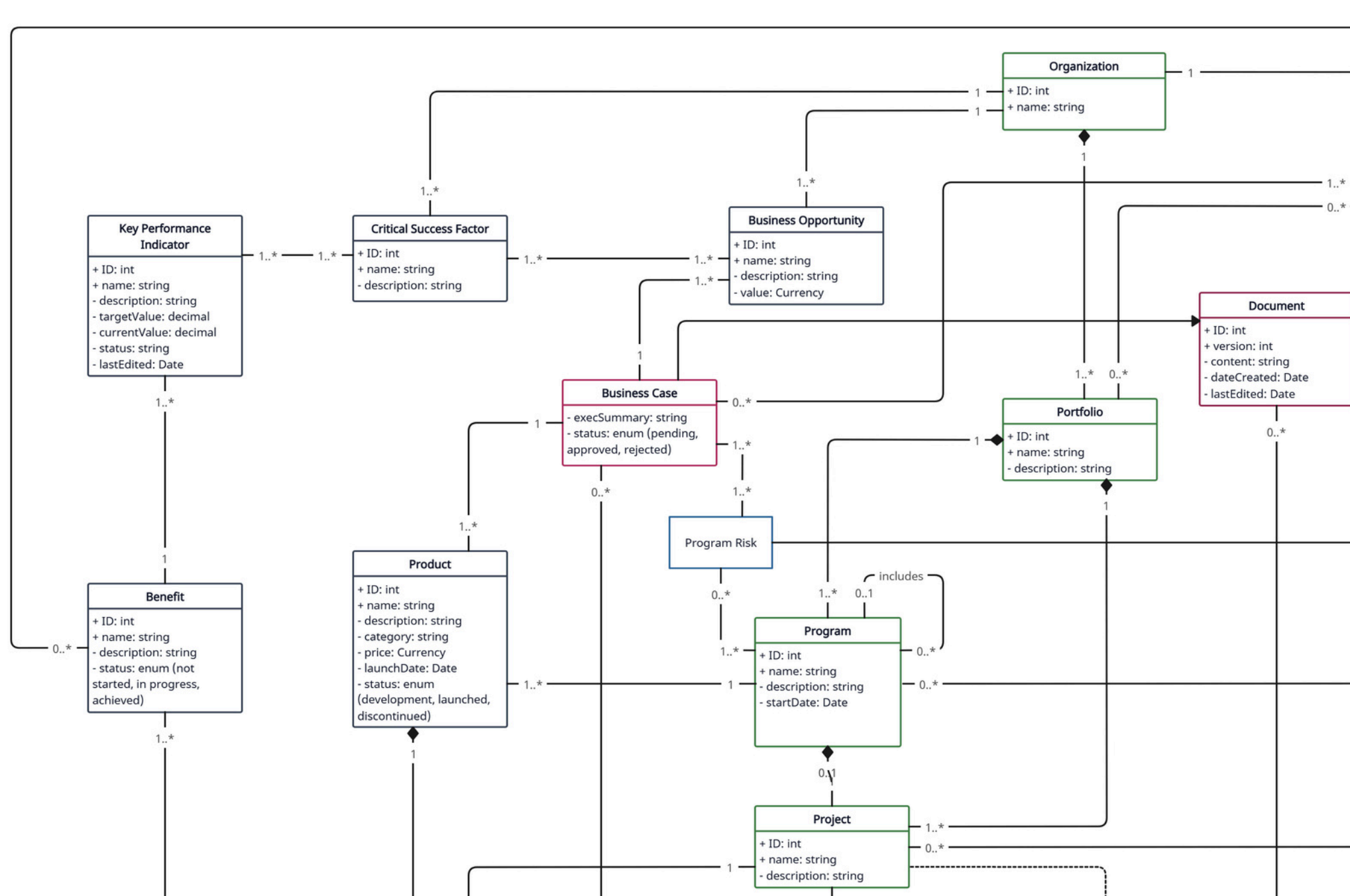


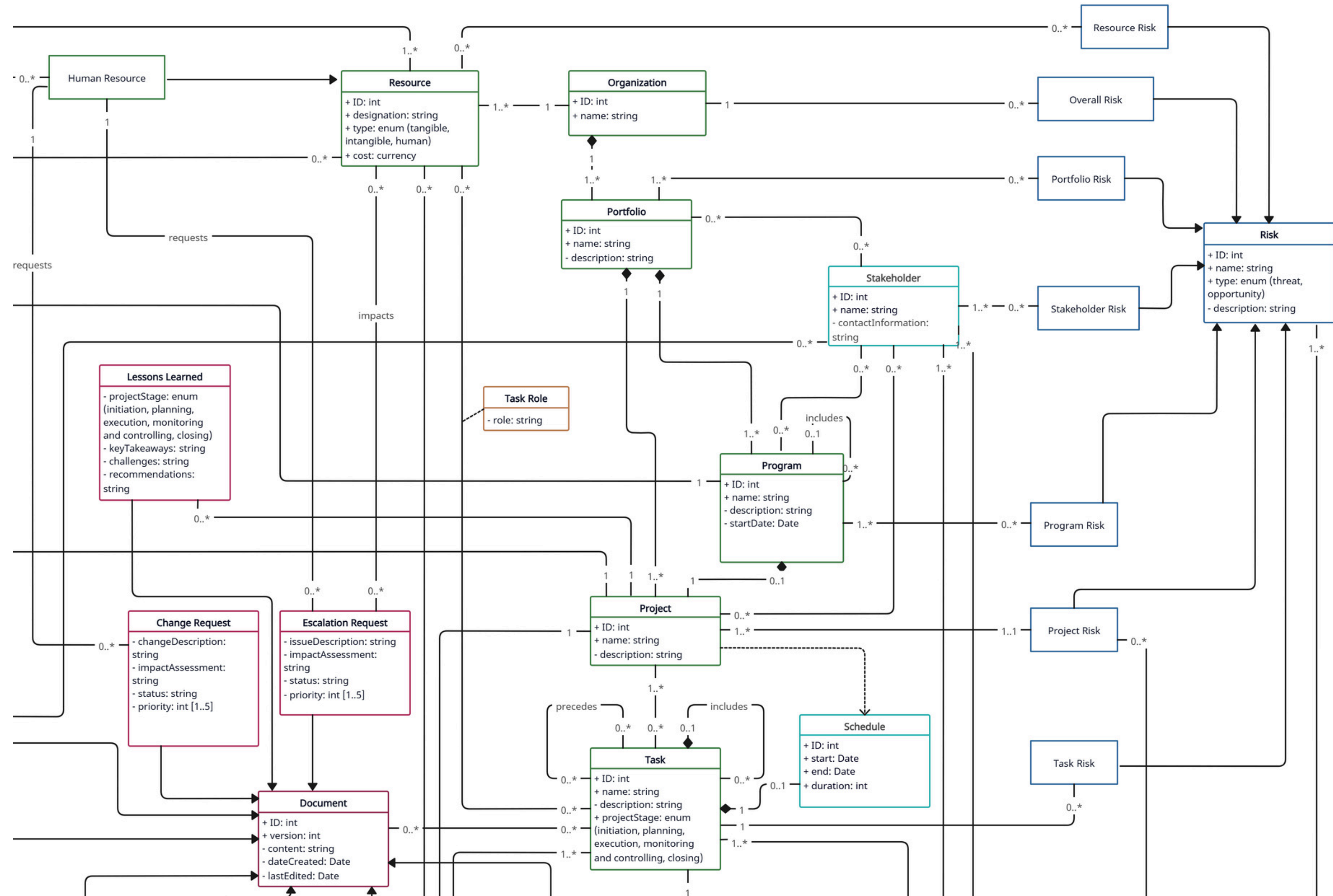
Create integrated PM  
system to monitor,  
control, and predict  
organizational  
dynamics



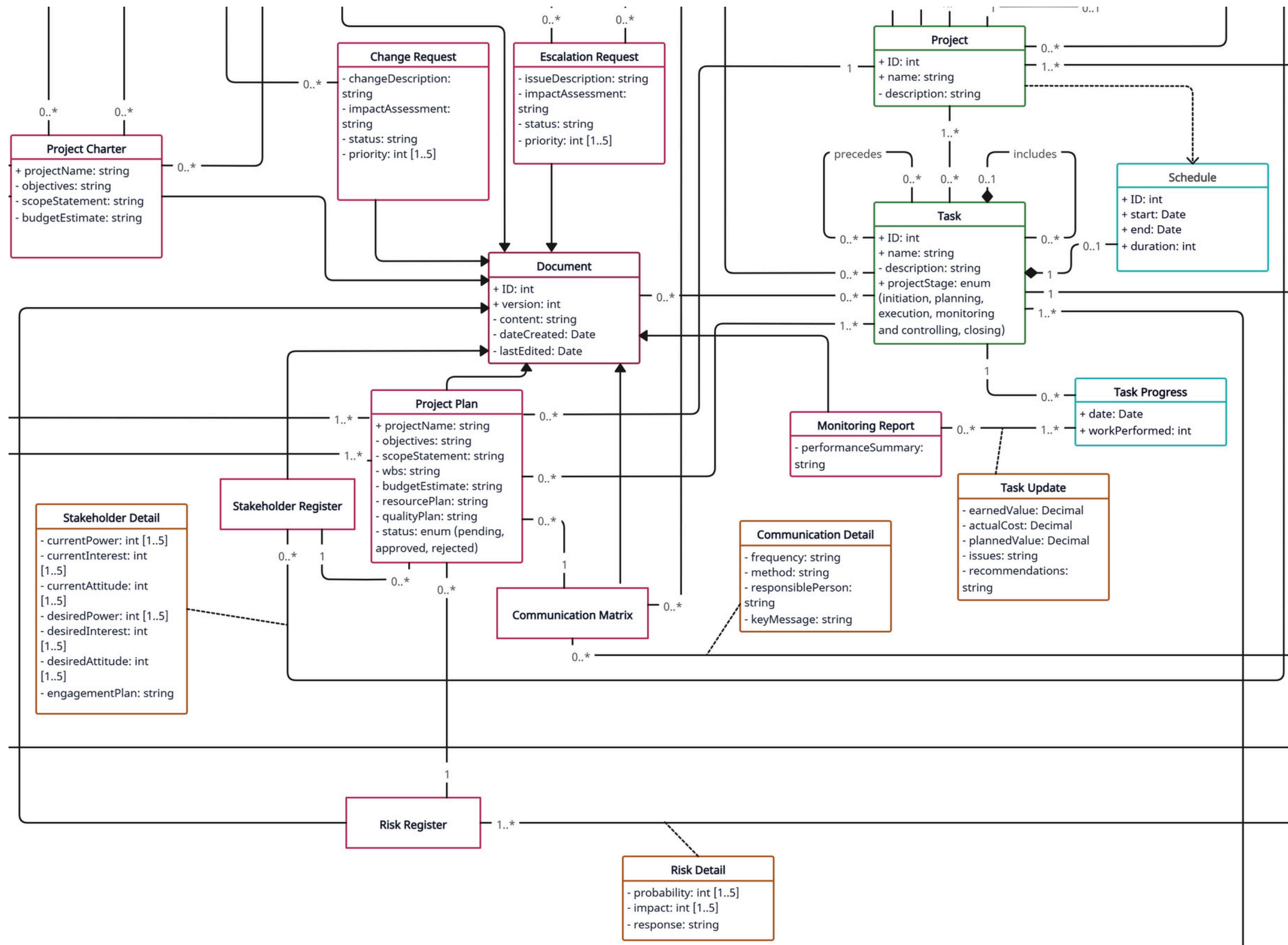
UML Diagram  
compatible with all PM  
standards

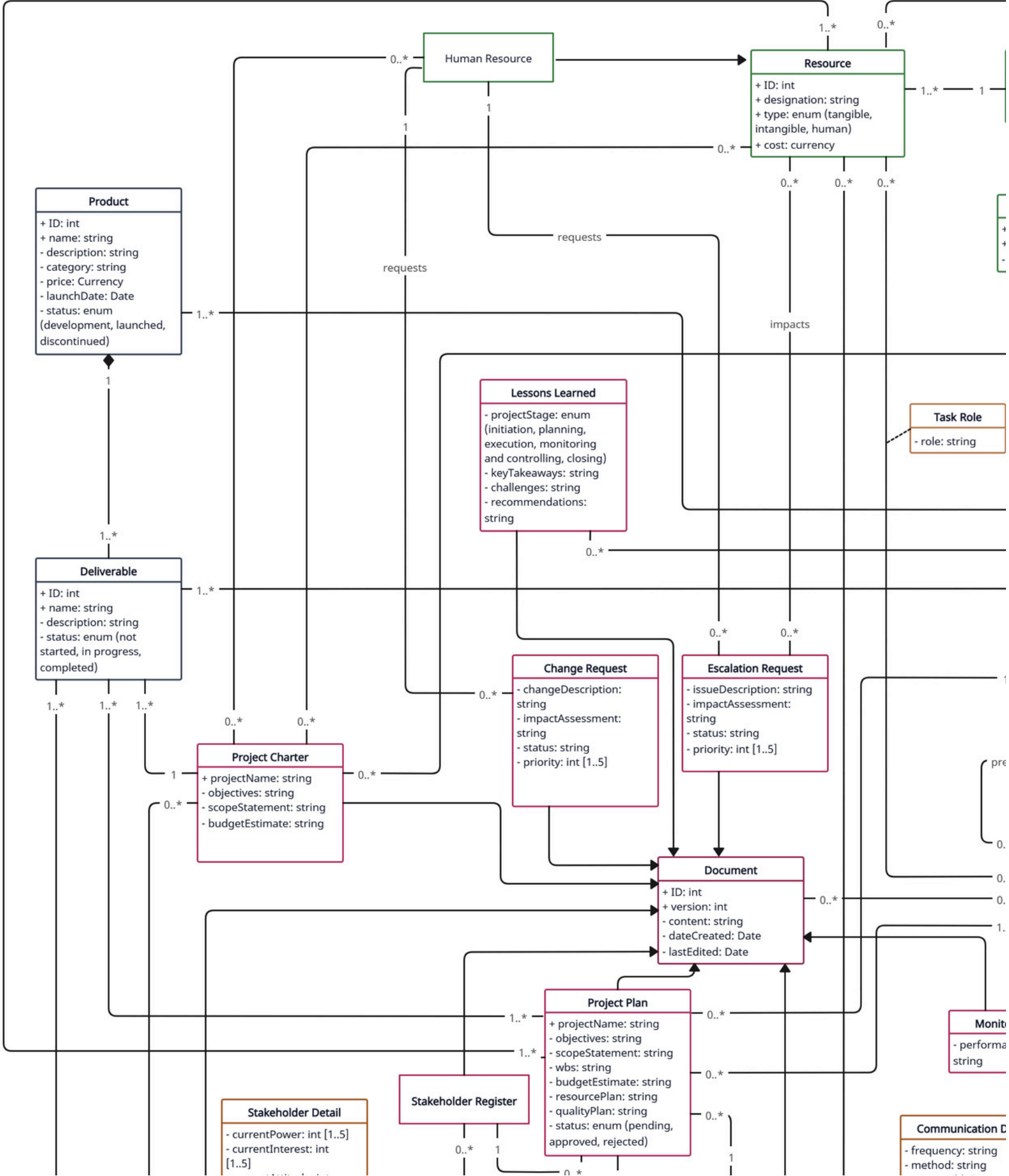
# MODEL



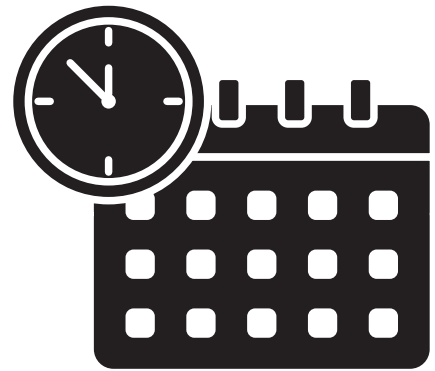








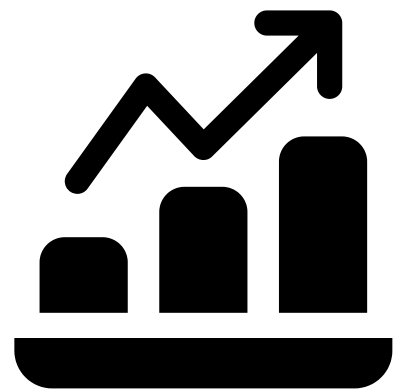
# RESULTS



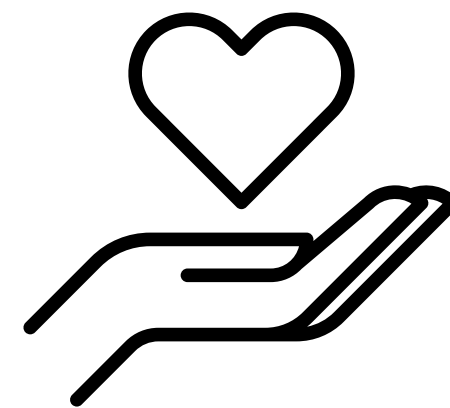
Assist scheduling and  
decision-making



Enable real-time  
monitoring and  
predictive analysis



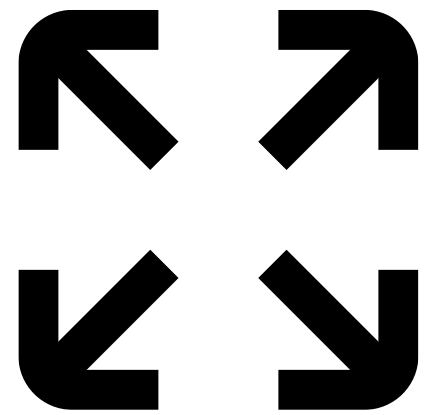
Achieve project  
management success  
AND project success



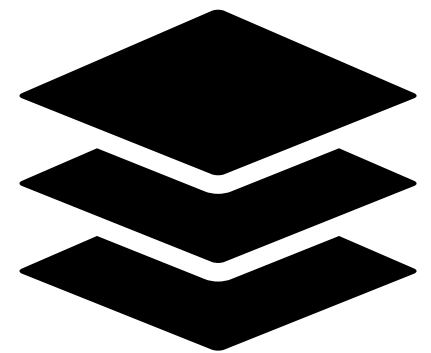
Accomplish value-  
based management

# DISCUSSIONS

## Theory

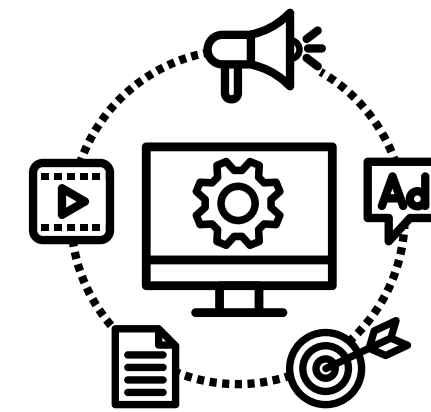


Expand DT frameworks  
beyond the constraint  
of physical assets

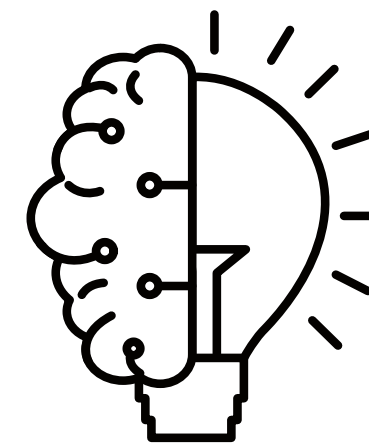


Promote multi-layered  
DT structures

## Practice



Align strategy to daily  
operations and  
external environment

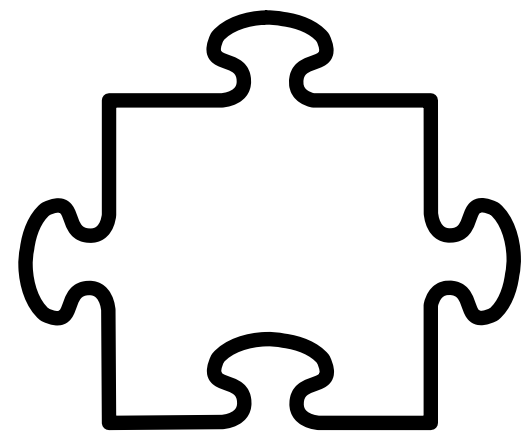


Train AI assistants with  
lessons learned

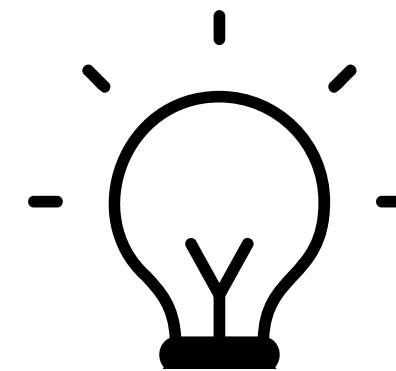
# CONCLUSIONS

## Limitations of the Model

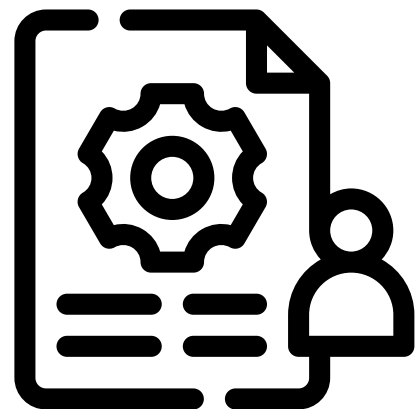
## Future Research



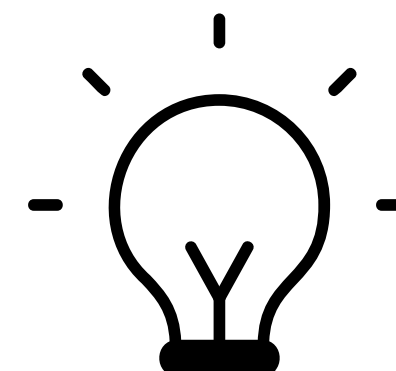
UML diagrams are  
simple and static



Develop PMDT with  
different paradigms



No emphasis on  
procedures and real-  
time integration

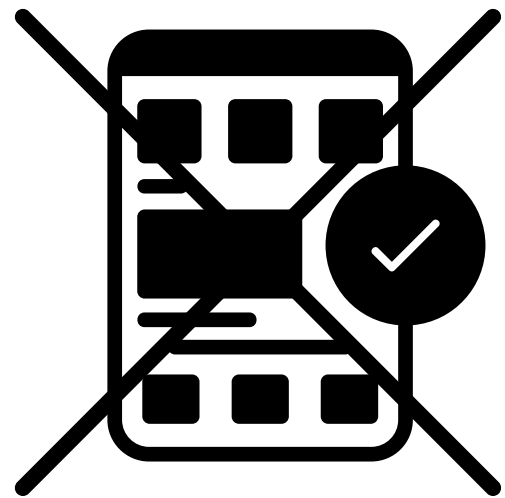


Expand current model



# CONCLUSIONS

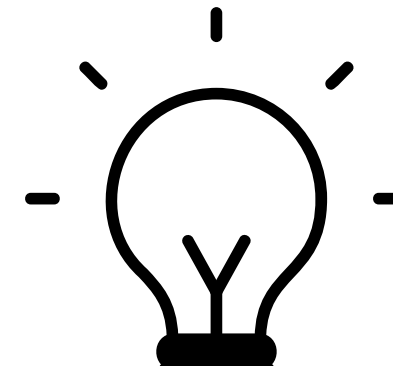
## Limitations of the Study



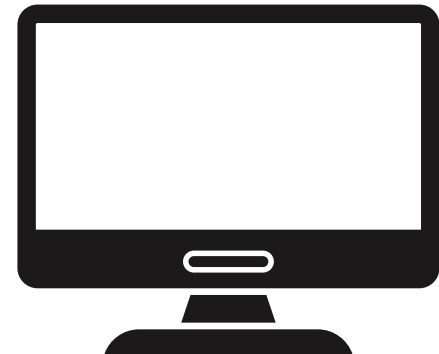
Lack of real-world testing



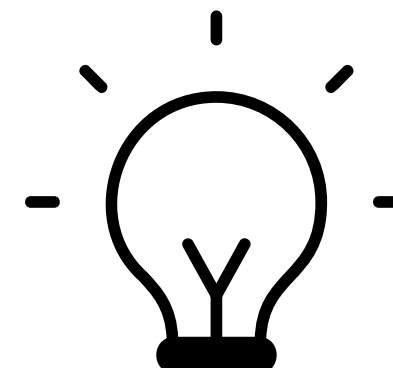
## Future Research



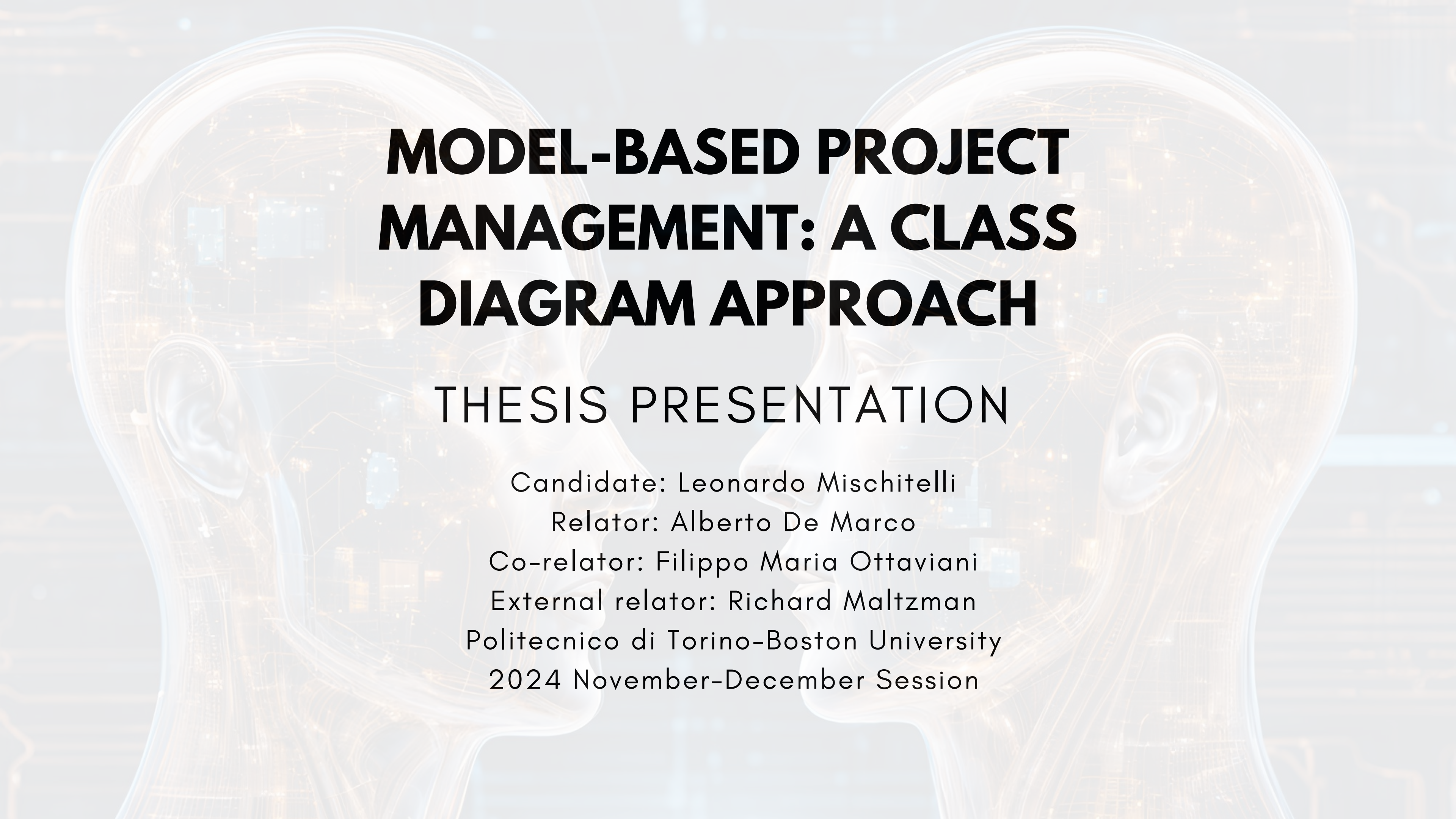
Validate in PM environments and implement changes



Generic PMDT model



Develop sector-specific PMDT



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