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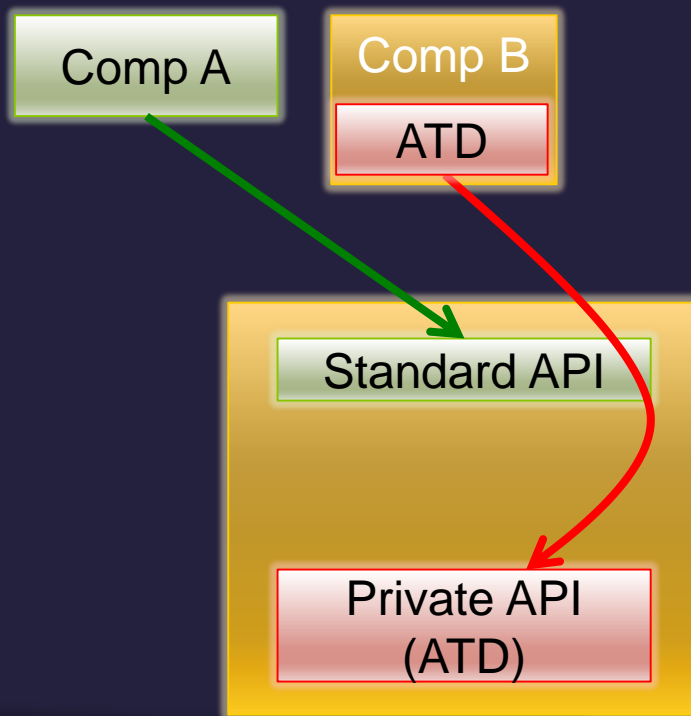
Project #2 of Software Center

**CONTINUOUS ARCHITECTURE - SPRINT 8**

# **MANAGING ARCHITECTURAL TECHNICAL DEBT**

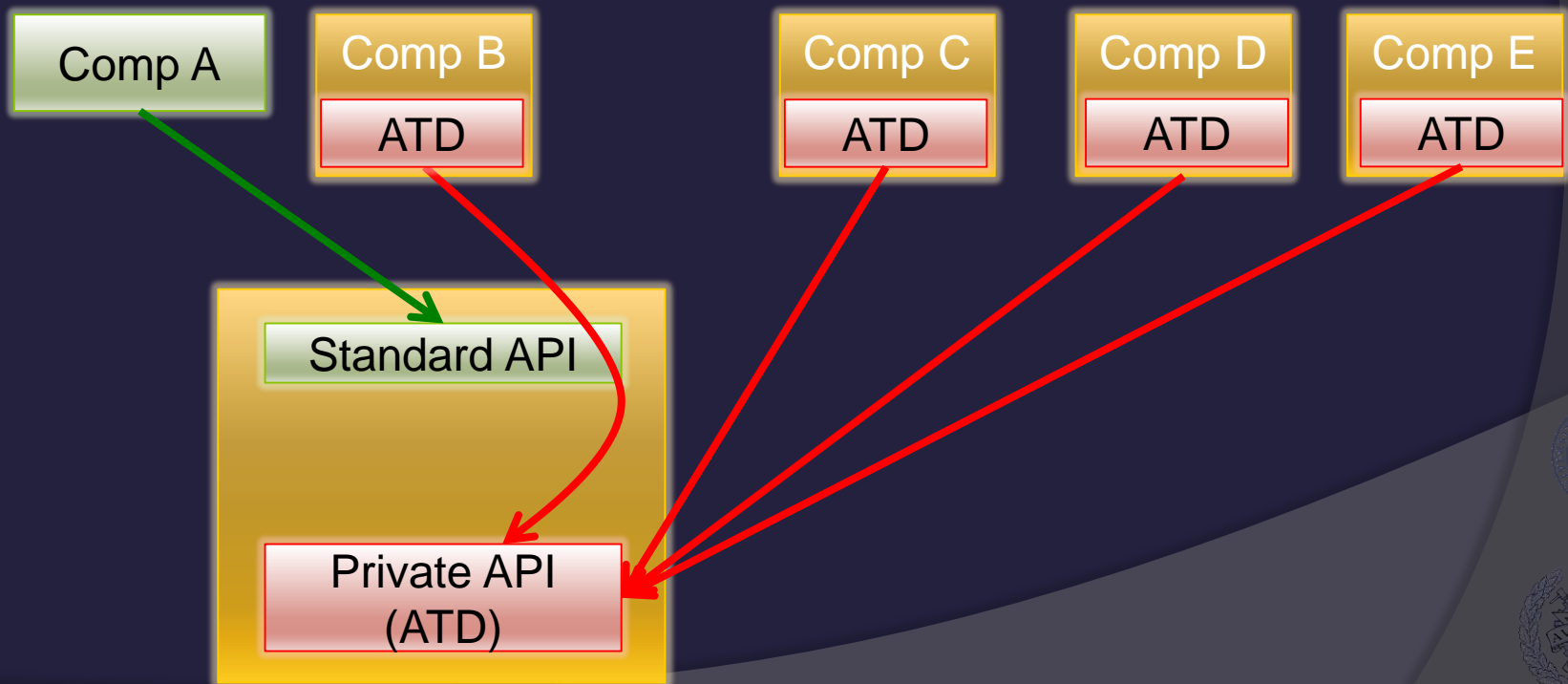
# Recap: example of architecture debt

- Standard public API violation:



# Recap: example of architecture debt

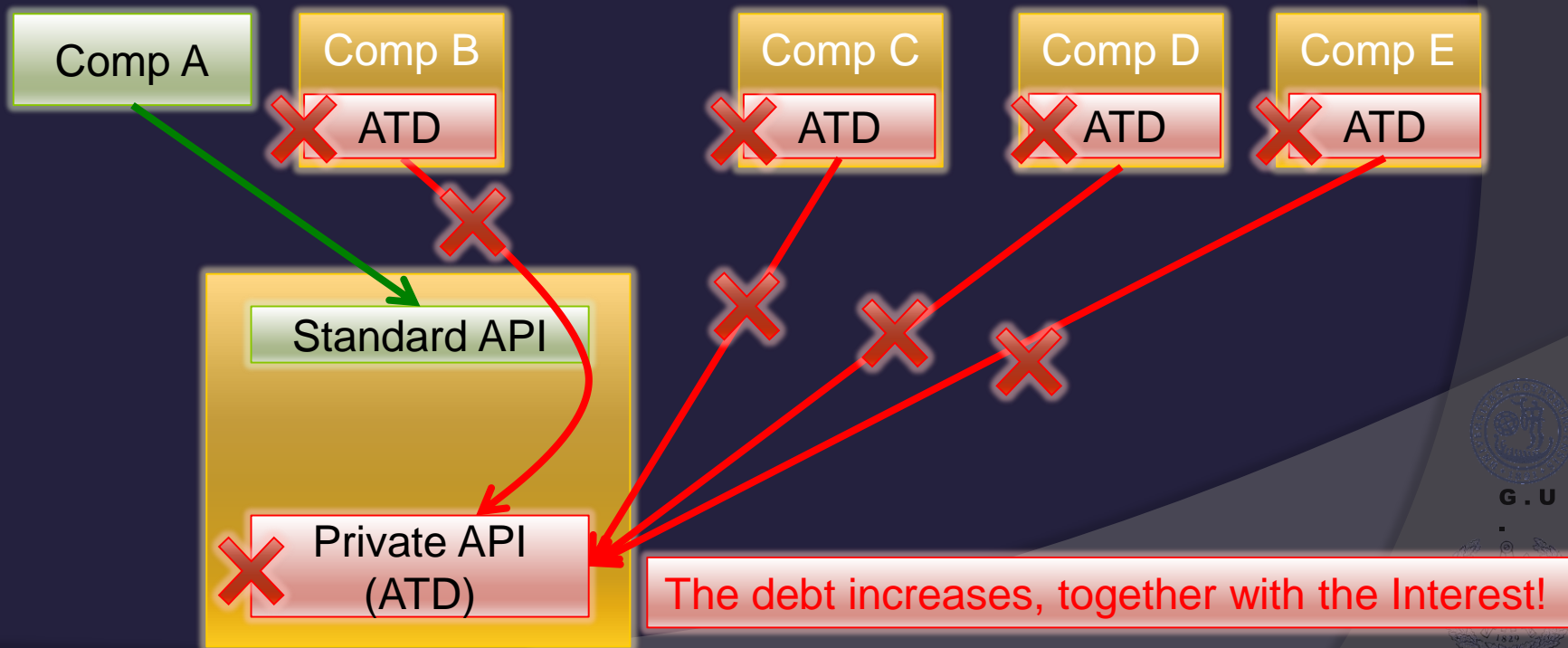
- Standard public API violation:
  - The violation is spreading to many components if not fixed/contained on time



# Recap: example of architecture debt

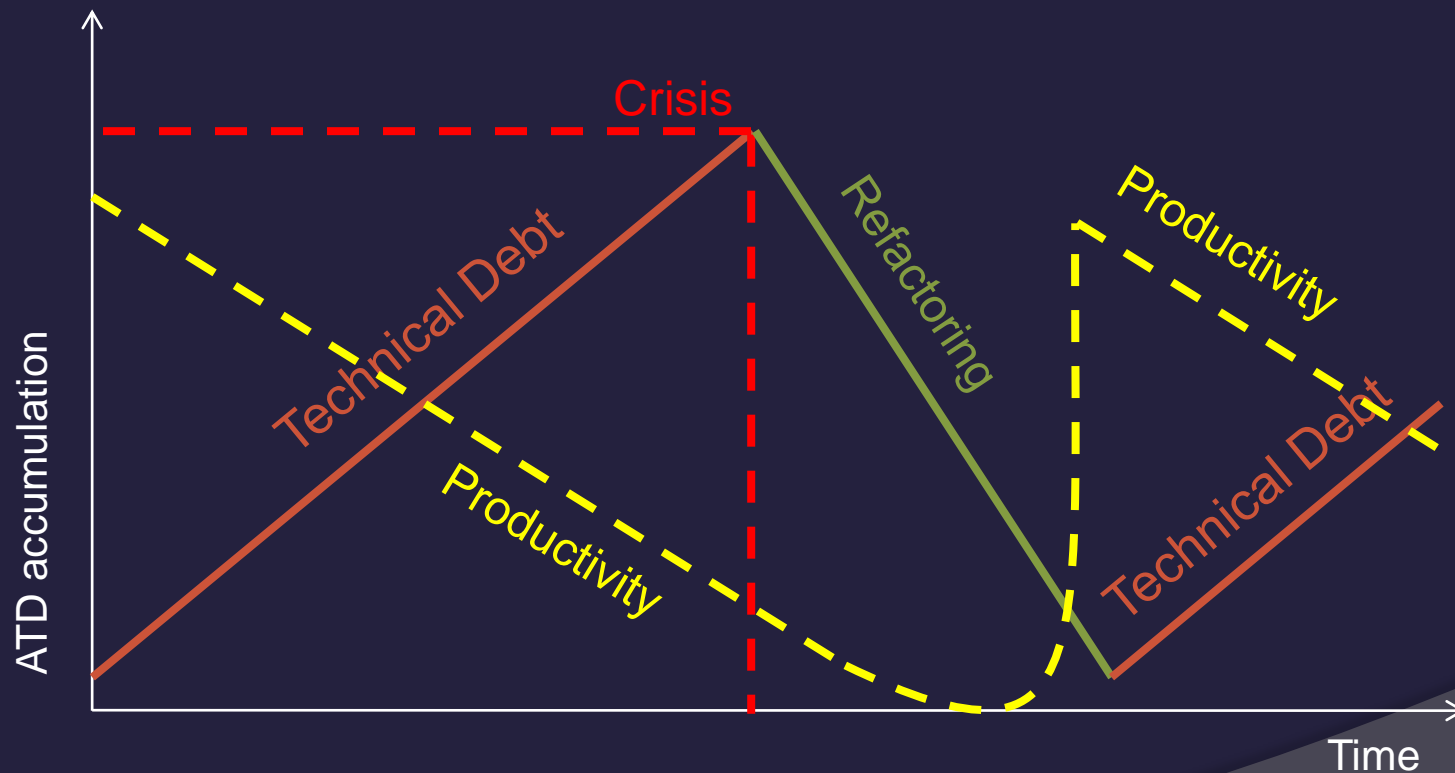
## Standard public API violation:

- *Costly* to remove the violation afterwards from all the components and *difficult to estimate the impact*



# Research Goal (1): Identification of ATD

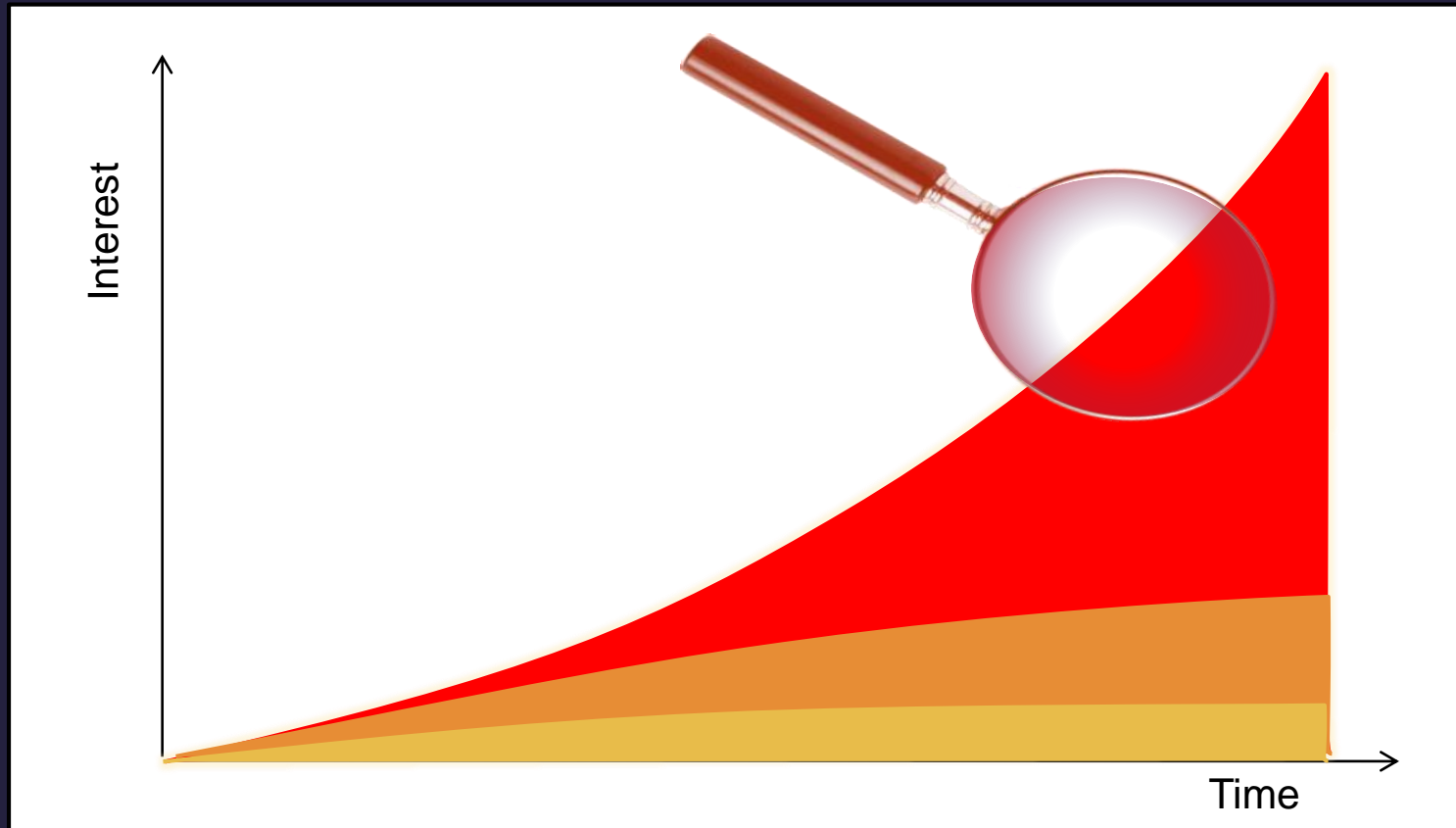
- Increase the awareness about the accumulation of Architectural Technical Debt and its interest in order to avoid crises\*



\* Martini, A., Bosch, J., Chaudron, M., 2014. "Architecture Technical Debt: Understanding Causes and a Qualitative Model",  
Best Paper Award at 40th Euromicro Conference on Software Engineering and Advanced Applications.

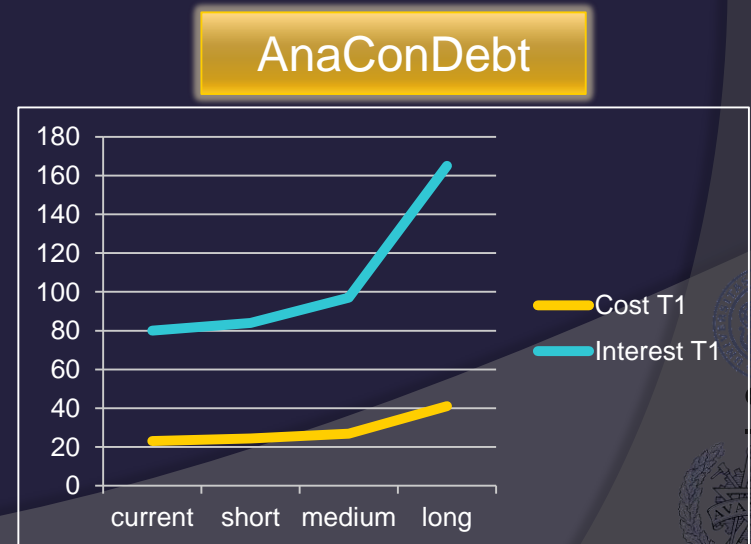
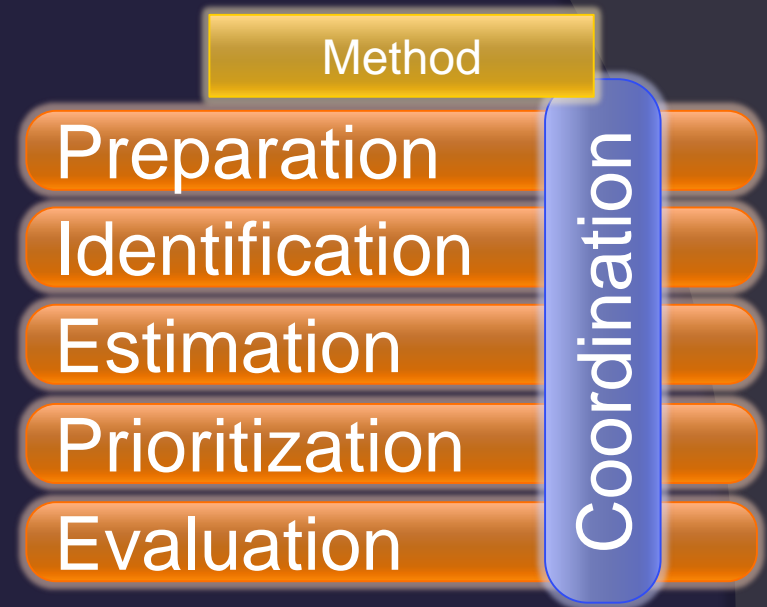
# Research goal (2). Prioritization of ATD

- Which architectural technical debt has more interest to be paid and when?



# Sprint 7 and 8: results

- Method for managing TD
  - Method
    - Evaluated at Ericsson and Saab Aeronautics
  - Checklist for sprint review (to be shared)
- Contagious debt tool
  - 12 cases of contagious debt studied
    - AnaConDebt method



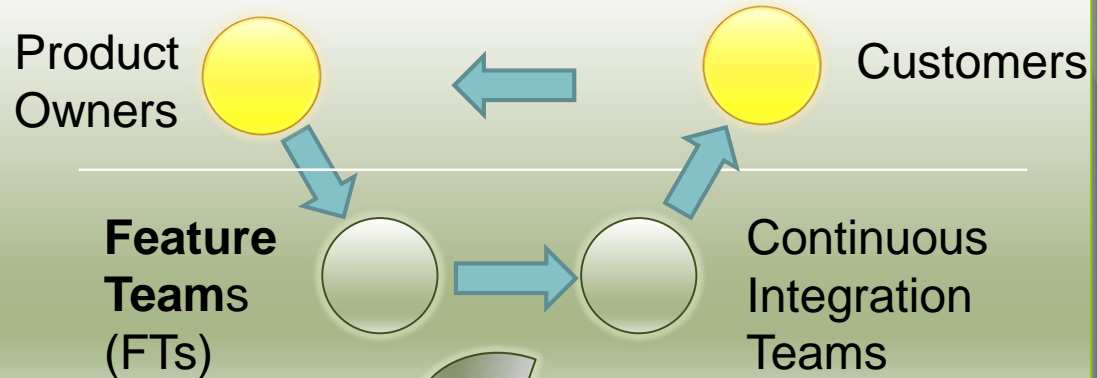
# Sprint 9: further investigation and evaluation of the method and tool AnaConDebt

- ◉ Further analysis of new cases
- ◉ Evaluation and improvement of the method and prototype for AnaConDebt (on going)
- ◉ Workshop on Technical Debt Management
  - Contagious Debt
    - Demo of Prototype (tentative, depending on resources)
  - Technical Debt Management
    - Demo of checklist
  - End of October (?)



# Research goal (3). Organizing for Continuous Architecture

## Agile



## CAFFEA Framework

## Architecture Runway



**AGILE  
PRINCIPLES  
CRITICAL\***

**COMMUNICATION  
IS CRITICAL\***

**ORGANIZATION  
CRITICAL\***

**Continuous Architecting**

# Sprint 9: Evaluation of CAFFEA

- ◎ further analysis and evaluation of CAFFEA:
  - Data analysis to evaluate
    - New cases collected
      - Saab Aeronautics
      - Jeppesen
    - Evaluation of implementation at Grundfos
      - Many benefits discovered
- ◎ Cross-company workshop to share evaluation and new insights
  - End of October (?)

# Summary of sprint 9

- Cross-company workshop: CAFFEA (end of October)
- Cross-company workshop: Architecture Technical Debt and contagious debt (end of October)
- Case study: Quantification of interest
  - Ericsson DURA (master students involved)
- Exploratory case study: ATD and AUTOSAR
  - VGTT
  - VCC
  - (Based on new resources)
- Antonio's PhD Dissertation 😊 (end of November)