CONTRIBUTION TO DEVELOPMENT OF TELEMATIC SERVICES FOR DATA ANALYSIS IN TECHNOLOGY AREA. APPLICATION TO E-HEALTH FIELD.

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AtlantTIC

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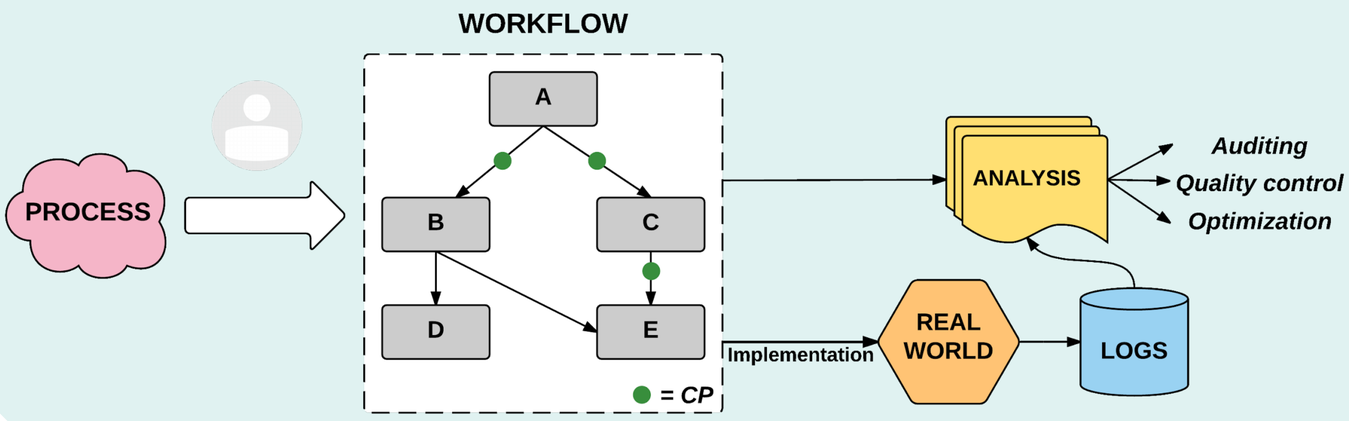
INTRODUCTION

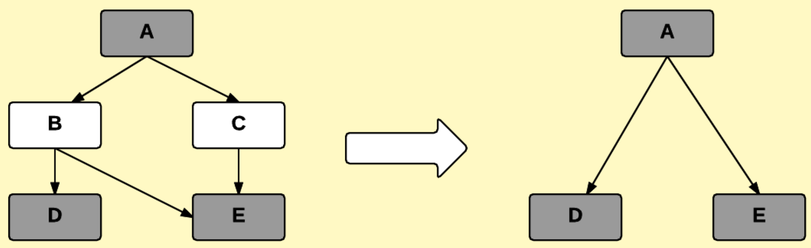


- In some contexts, such as health, process monitoring is very important. It is necessary to control, check and verify the implementation of workflows in actual scenarios.
- A typical approach is based on an HACCP plans. These ones define Control Points (CP) in the workflow for taking traces.
- Later, these traces are used to perform the analyses.
- In the recent past, it was common to monitor these processes using manual procedures. But, currently, ICT-based implementations are providing with a large set of advantages.
- However, current techniques have some shortcomings. This PhD research tackles them.

MOTIVATION

Current process mining techniques:

- All activities in a workflow need to be monitorized by taking traces in each execution.
- If it is impossible for the context to take traces for all activities all the time ➞ simplification of workflow needed (see figure).
- Consequently, different types of analysis like conformance checking or auditing are not using all the information.

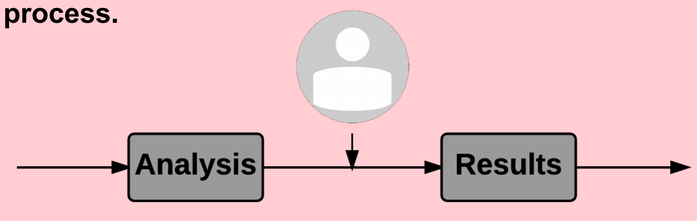


Current notation and modeling languages:

- Only supports one type of activities ➞ monitorized (activities A,D,E in figure above).
- Not clear disassociation between activities and control points (CP).
- Not clear support of process mining techniques integration in an HACCP system.

Current techniques:

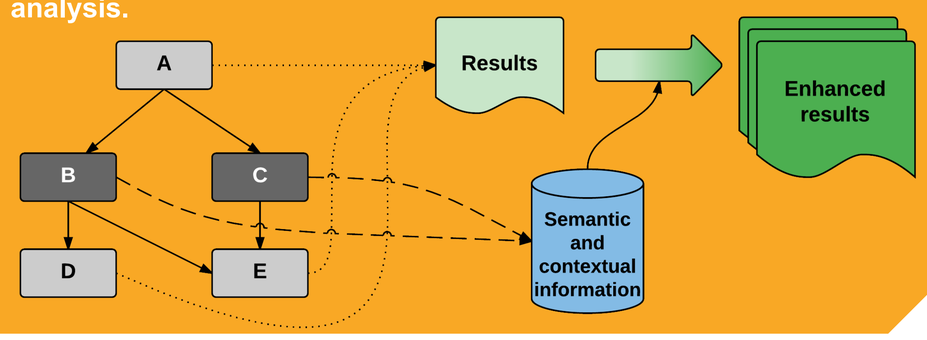
- Very dependent on human intervention.
- Semantics of the context is provided by the person in charge for analyzing the whole process.



THESIS OBJECTIVES

Proposed approach:

- Define a different kind of activities that do not need to be monitorized.
- Describe with semantics the behavior of these activities to overcome the lack of information and to improve the results.
- Take into account all kind of information available for performing analysis.



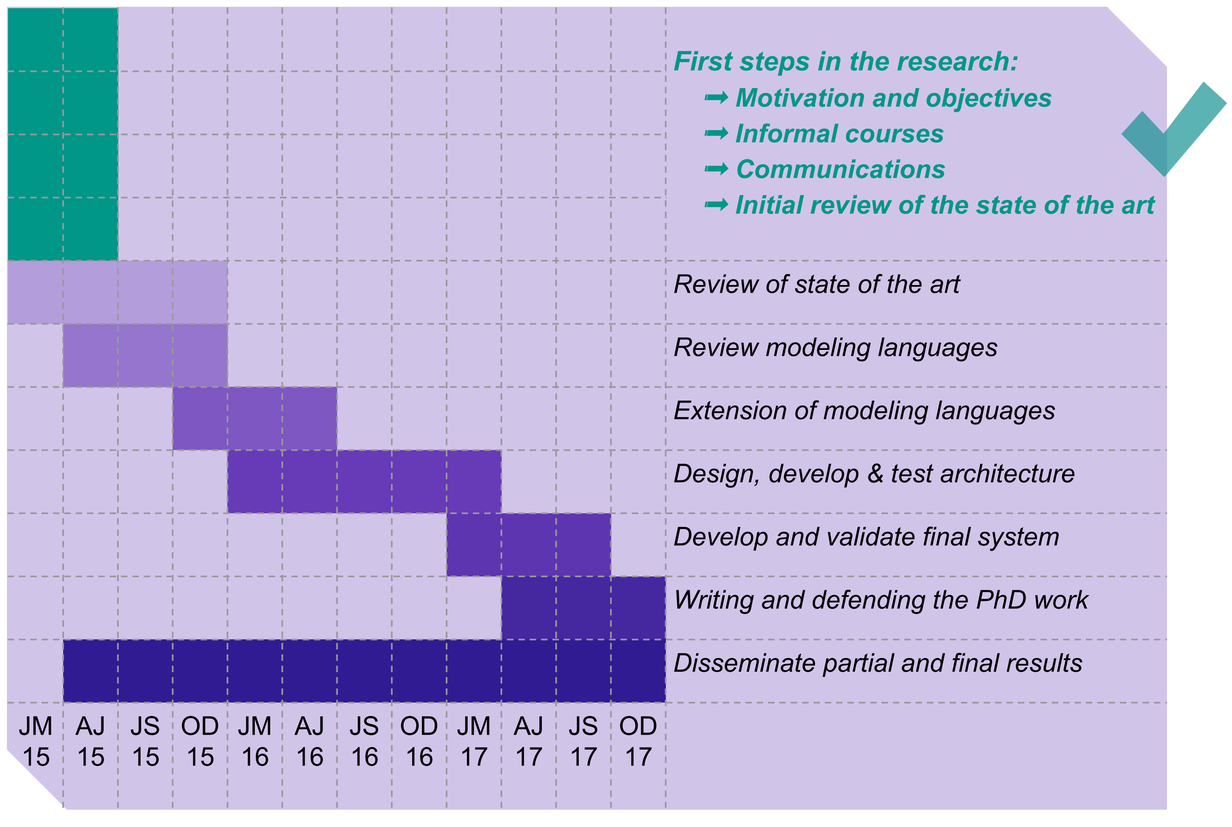
Proposed enhancements of notation:

- Support the definition of activities that do not need to be monitorized.
- Integrate semantic and contextual information of this kind of activities with the basic workflow in order to facilitate later analysis.
- Delivery a feasible application of enhanced process mining techniques in an HACCP system.
- Enriched and human friendly graphical representation of workflows with contextual information.

Proposed approach:

- Automatic tools for predicting behaviors and recommend actions.
  - E.g.: predict the end state of a product with a certain probability, recommend changes in the process model to improve performance, ...
- Adapt techniques to new ideas described in first objective ➞ semantics of the context are now in the model.
- Achieve results is not a manual task as before.

RESEARCH PLAN



NEXT YEAR PLANNING

- To complete the state of the art (Process Mining, Data Mining, Data Analytics, Machine Learning…).
- To study suitable modeling languages and existing extensions for implementing the objective ideas.
- To start the design and the evaluation of models and architectures required.
- To develop and test first approximations of architectures and models ➞ firsts results.
- To disseminate the result in conferences and journals.

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