## Pre-study report, associated with an analysis phasis.

What would be in this report : pre-study, general specification, first schedule of tasks (around 20 pages). No UML (report 2).

**First draft : October, 15th**
**Last draft : October, 23th**

## Summary (what we have decided)

Introduction : Interest of the project without going too deep (Dan)

1. Presentation of our project (breve interest of AI, goals of the project) (Gabriel)
2. Algorithm MCTS (Benoit)
3. Presentation of our game (Moves, Arimaa designed to be complex for computer) (Gabriel)
4. "Etat de l'art" of Arimaa (latest computing calculus improvements) and MCTS results (Study of the Game Go) (Benoit)
5. Strategy of root parallélisation (Mikail)
6. Solutions/Software used for our project (Open MP, C++, Grid 5000) (Baptiste)
7. Final realisations of our project : What we will do with it (Dan)
8. Tasks' schedule (MS Project) - organisation (Baptiste)

Conclusion : recap of the report (Dan)
Bibliography (Mikail & Dan)

Re-reading of the document (Dan)
Correcting grammar mistakes (Everyone)
Main font : Times New Roman, 12, Justified

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# Table of contents : (to discuss)

**Introduction** : (Dan)

Interest of the project :

- Beat a human on 6 matches with an artificial intelligence (we will not do that)
- Discover MCTS programming
- Understand parallelization computing (one page about the project, less complicated than the presentation but any INSA student should be able to understand it).

1. **Presentation of our project** (Prateek) :

- Why design an Artificial Intelligence, at what level ? (nor Tic Tac Toe, nor Chess)
- Why use MCTS and parallelization programming (superficial), Calculations, our algorithm, building trees
- Goal of the project (an AI with MCTS computing, see 4INFO project manual)
- **Algorithm MCTS** (Benoit) :
- What is MCTS (start with easy explanation)
- Why use MCTS (game in general)
- How to use it (we need computing power)
- **Presentation of Arimaa** (Moves, Arimaa designed to be complex for computer) (Gabriel) :
- Why have we chosen it ? (impossible to solve, not much studied)
- Moves (almost every one of them with screenshots of your game)
- How to win ?

2. **"Etat de l'art" of Arimaa and MCTS results** (Benoit) :

- Arima computing AI thesis recap (what has been done on Arimaa so far)
- MCTS thesis recap (report results game GO)
- **Strategy of root parallelization** (Mikail) :
- Three types of parallelization (presentation of the three)
- Tests parallelization : What is the best of the three
- Hybrid parallelization ? Is it worthy ? State of the art

3. **Solutions/Software used for our project** (Baptiste) :

- OpenMP VS C++11
- Special C++ library (boost – delete is not useful)
- Microsoft Visual Studio 2013 (Gabriel Arimaa's application)
- MPI technology
- Grid5000 (just explain what it is)
- Zotero/Jabref for bibliography
- MS Project (just say that we will use it for the schedule)

4. **Tasks' schedule** (Baptiste) :

- MS Project explain the goal of this schedule (not be late)
- Schedule
- comments if doubts to explain uncertainty

**Conclusion** (Dan) :

- What we are doing
- Technologies (MCTS, parallelization)
- Important software

- What has been done --> What we will do

1. **Bibliography** (Mikail) :
- Just what we use to do that (ask everyone and collect all data by yourself – GoogleDoc ?)