Client interview

Explanation of project

A data farming process/model that explores information surrounding new pandemics.
The idea is that with limited information about a virus, can we gather worthwhile information from it?

Some important people

Anthony Cramp - research scientist
Tim was the guy on the phone, he's Anthony's boss and the group leader. The group brings together virtual simulation and model areas.

The area that Andy works in which is simulation technologies.

Simulation is a service in a combat management system. The system that sits on the ship that might receive incoming tracks and handle that and HELP operators on which actions to take.

Mat is a diagnostic expert. Matt wants to give a workshop and we get taken into DST.

The Process

Rapid scenario prototype - adapt processionals so it becomes a vehicle for model development and researching into how we might use different components.

- Requirements elicitation process
- define what the models are

Model Development

- This is the model that we are trying to build
- Research questions
- Sprints for different issues

Design of experiments

- Second semester when we start development
- We start working with inputs and make sure we cover the important cases
- Run every possible combination of the inputs
- We figure which inputs matter and which don't, drop those who don't

High performance computing

- Isn't really a big deal
- An experiment might run for ten minutes before it spits out an answer
- Complex interactions going on
- We should try to reduce time as much as possible
- Where we can take the data that comes out of the experiment, how can we feed that into a machine learning model
- Its effectively a function, given these inputs what's the answer?
- How might we validate machine learning?

Validation

- You've trained this machine learning algorithm, but what confidence do we have that the information is useful with the data you've trained it with
- Needs a more scientific approach

The very nature of doing data farming to train a model, the underlying question is how do you gain trust in that information? And what is the sensitivity that it takes to be trusted?

Data farming is trying to solve this trust issue with experiments, trying to get a quantifiable result from a scholastic point of view.

Ingenuity - Your going to want some nice snazzy graphics, display it nice and well if you want HD. UI COMPONENTS!!!

Research

- Data farming
- Design of experiments how we incorporate data farming
- Modelling and Simulation
- Validation of Machine Learning
- Reduction of Simulation through machine learning

The model

Start with a really simple model that wouldn't really fit in a system?

We have a pandemic and how we might treat it?
Approaches to treating it, how many people died, different age groups?
What factors decide what it effects
The defence force really doesn't know about it but its something we can all learn
John Hopkins carona virus statistics
We are more focused on solving the problem
The model is goon got have 6-7 factors
Not specific treatments or how the virus works, how it spreads, effectiveness of masks?
Rate of infection - might have been in contact with 10 people
Compare to one that doesn't spread easily
How long before the vaccine is available.
How spread out is the population and how isolated are people.
Getting to the stage what the best treatment option
Balancing economic and health issues
The model to check if the politicians are giving useful advice

Right now were thinking of lit review
Work around the research questions