# Pre-Tuesday Info Dump

### Overview

The goal BEFORE Tuesday is to get on track with some of the information and potentially the bigger picture that we’re looking at for the project. The info dump here is probably useful, so I’ll outline what I think is the bigger picture:

- The research group that we’re working alongside is focused on modeling collaborative acts. Meaning they care about the conversations between groups of people and perhaps the emotional motivations/underlying emotional influences that exist in collaborative work.

- The larger school of thought that the work this group is working on is called “Process Mining” which is the goal of discovering, monitoring, and improving processes (these can range from anything really, a simple task to get a refund, to collaborative acts between two people). Process Mining can be found explained in more detail in the PDF in our tub.

- We’re focused on the model part of Process Mining, because I presume the group in psychology is focused on the emotional aspects, and perhaps our side of the department (as in Professor Chanel) is more focused on the “multimodal and affective” computer interactions (think our VR/AR class).

So this is where we are at in the big picture.

### Next Step

Next step is probably to take the coding scheme and LTL and find some syntax/setup to model the collaborative process.

i.e: “Give Recall” R “Check Reception” maybe? In the sense that Check Reception is always true (checking for understanding) until the other person gives recall (of some valid information) ... I think this is maybe how it would go

### Linear Temporal Logic (LTL)

Dimitri indicated that the likely modeling technique we will be looking at is linear temporal logic, or LTL. I think the reason being is that most of the interactions between collaborative people are linear in the sense that they happen in a sequential order (or at least relatively sequential). There might be additional things that we cannot model easily, but we will burn those bridges when we get there.

Some important new things to note about LTL that differ from CTL (the modeling we are used to from last semester):

Presence of some new logics:

- R (Release)

- W (Weak Until)

- M (Strong Release)

I will attempt to explain them here.

R is the symbol for the logic, “Release” and functions how it sounds. means “x releases y.” And true to its form, is similar to how a pope might release you from guilt or something like that. It means that y is true until x, and if x is never true, then y must remain true.

W is the symbol for the logic “Weak Until” which functions similarly to Until (as in, , x is true until y is true) except that it makes no guarantees about the stop condition. Meaning that means x is true until y, but there’s no guarantee that y will ever be present. Wikipedia suggests it is useful because both Until and Release can be explained in terms of the weak until logic.

M is the symbol for “Strong Release” which functions similarly to “Release” (R) but guarantees that the release conditions will occur eventually (F).

### Process Mining

There are some considerations for our process mining of collaborative speech acts. We’ve been given a list of as well as the syntax (coding scheme) that the research group uses in order to reason about the collaborative acts. Our job is thus to make sense (model) these acts, presumably the group monitors them, and together we can improve them.

In process mining, the PDF talks about discovery and conformance.

Discovery is the process about generating a model to reflect events seen.

Conformance is the process of checking whether a model and seen events reflect each other.

This suggests that we will be mainly dealing with these two tasks: Discovery and Conformance of the speech acts in order to increase collaborative energy (through process mining!).

We can talk more as I dive more into the literature, for now this seems like a pleasant start.