File 20100526.0658: Notes for meeting with Dr Martin tomorrow:

The problem in any given ST&E is that you always have a set of accreditors each representing a different data owner, and these accreditors all necessarily have different views on what the total risk of the system is, and what *their* residual risk is (which is different for each accreditor because each accreditor 'owns' information of a different sensitivity). Each accreditor has a set of risks it is desirable to mititgate, a set of risks it is possible to mitigate, and a set of risks it is acceptable not to mitigate—the residual risk. Some accreditors may know of threats that other accreditors are not cleared to know about, and they may know of a partially non-overlapping set of risk mitigations that other accreditors are not cleared to know about.

This is a an artificial situation, probably more complicated than would normally happen in real life, but it's general enough to cover all situations. It's a theoretical model.

So you've got all these multi-way interactions. You have asymmetry of knowledge, and you want to optimise—you want to find a solution that satisfies all parties that the residual risk is low enough to meet their acceptable thresholds—which may be different—without requiring everyone to lay all their cards out on the table. The players have to be allowed to keep their secrets.

So when I thought about this, I thought of one mechanism from economics that is efficient at optimising in situations of asymmetric knowledge where some participants know things that others don't. It's a market.

A friend of mine a few months ago was trying to tell me about a system he was investing in called a prediction market. The idea being that players could buy and sell futures based on predictions about certain events, and when the price of a prediction went up, that indicates that the prediction has a higher probability of being true.

I thought this might be applied to accreditors. It's a weird kind of market, because you're buying and selling commodities that you don't know the value of. Someone else knows the value—you know the price, and you know two different prices that you are willing to offer to bid and sell at, even though you don't know the actual contents of the package. The package, in this case, is either a risk or a risk mitigation—a positive or a negative value—that affects your 'position' that is your residual risk.

I don't know if this is going to work. I asked my friend for some primary references where I can go learn about how this sort of artificial market works. I think there might be something in Nash equilibrium about it.

## References