Motivation
- The success of contract-based multiagent systems relies on agents complying with their commitments.
- A contract describes a commitment between two agents: the debtor commits to satisfy a property for the creditor.
- Debtor may delegate the task to another agent (delegatee).
- When something goes wrong, we need to identify the links among agents' commitments.

Delegation of Commitments
- A delegation of a commitment $CC(X,Y,P)$, called primary, is a new commitment where either $X$ or $Y$ plays the role of the creditor or debtor, and a new agent $Z$ is responsible for bringing about $Q$ or $P$.
- Six types of delegation are particularly meaningful:
  - Explicit delegation: $Primary → CC(Z,Y,Q,P)$ [Yolum and Singh, AAMAS '02]
  - Weak explicit delegation: $Primary → CC(Y,Z,P,Q)$ [Chopra et al., AAMAS '10]
  - Implicit delegation: $Primary & CC(Z,X,P)$ [Kafalı et al., CLIMA XI]
  - Weak implicit delegation: $Primary & CC(Y,Z,P,R)$
  - Antecedent delegation: $Primary & CC(Y,Z,Q,P)$
  - Weak antecedent delegation: $Primary & CC(Y,Z,R,P)$

Case Study
- Consider the following protocol:
  $P_{cond} = \{ CC_1(\text{bank, client, paid, delivered(7)}), CC_2(\text{courier, bank, printed, delivered(3)}), CC_3(\text{office, bank, confirmed, printed(3)}) \}$

- Consider the following trace for the protocol:
  $T = \{ 4 \text{ pay(cli, ban)}, 7 \text{ confirm(ban, off)}, 10 \text{ print(off, cou)} \}$

Diagnosis
- A diagnosis framework $F$ is a five tuple $(P, R, A, T, D)$, where
  - $P$ is a set of conditional commitments,
  - $R$ is a set of roles and $A$ is a set of agents enacting roles in $R$,
  - $T$ is an event trace,
  - $D$ is a diagnosis process.

Future Work
- Distributed diagnosis algorithm
- Universal temporal constraints & maintenance properties

Acknowledgement
- The first author is supported by Boğaziçi University Research Fund under grant BAP5694, and the Turkish State Planning Organization (DPT) under the TAM Project, number 2007K120610.