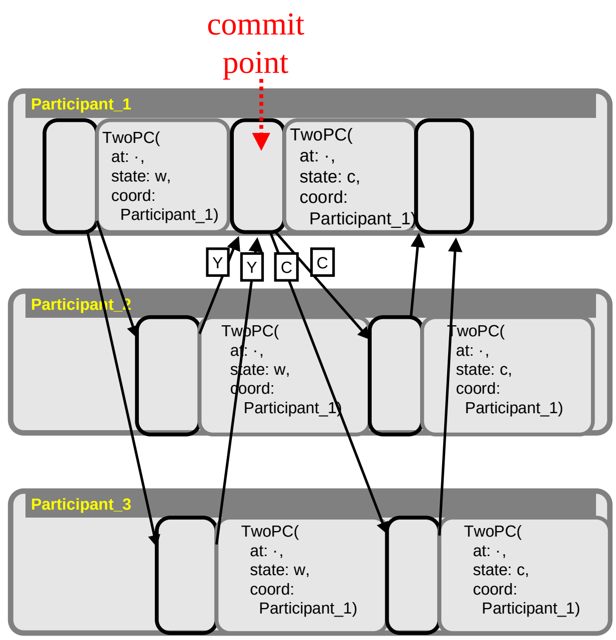
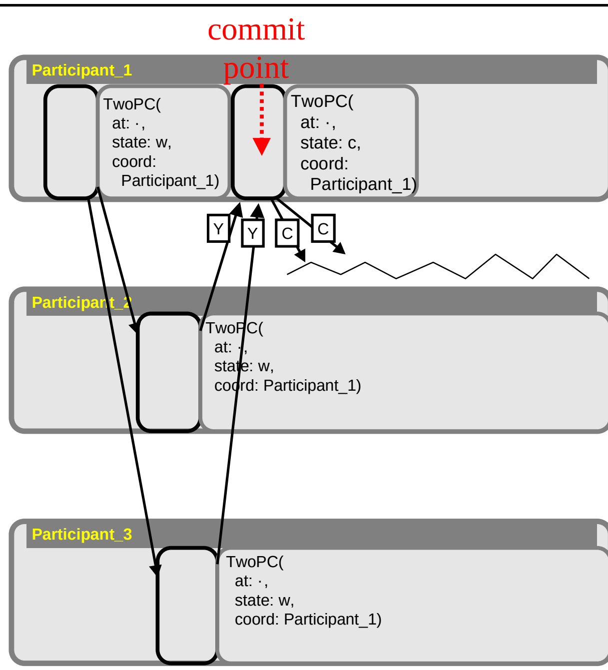
2-Phase Commit

1st phase is a vote; 2nd phase distributes outcome. **Commit point** is where decision becomes final; thereafter the decision must be carried out despite failures.



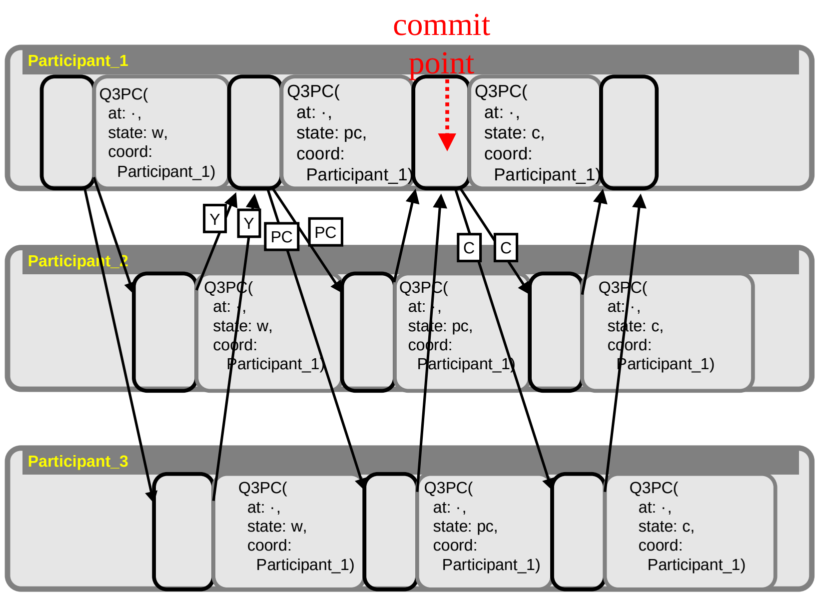
2PC can Block

Coordinator Participant_1 is has reached commit point, so others can't make their own decision. But others don't know decision, so they are blocked (cannot abort or commit) until communication is restored.

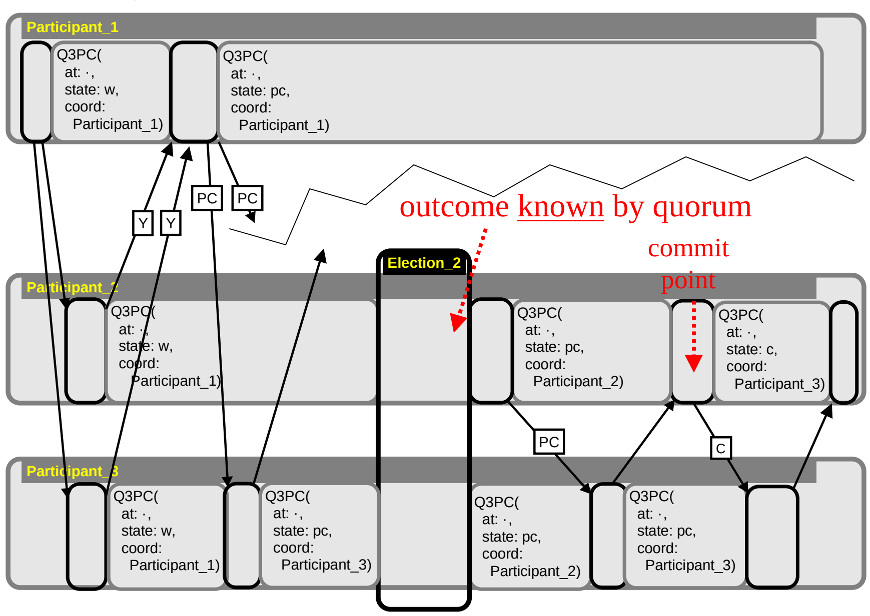


Quorum-based 3-Phase Commit

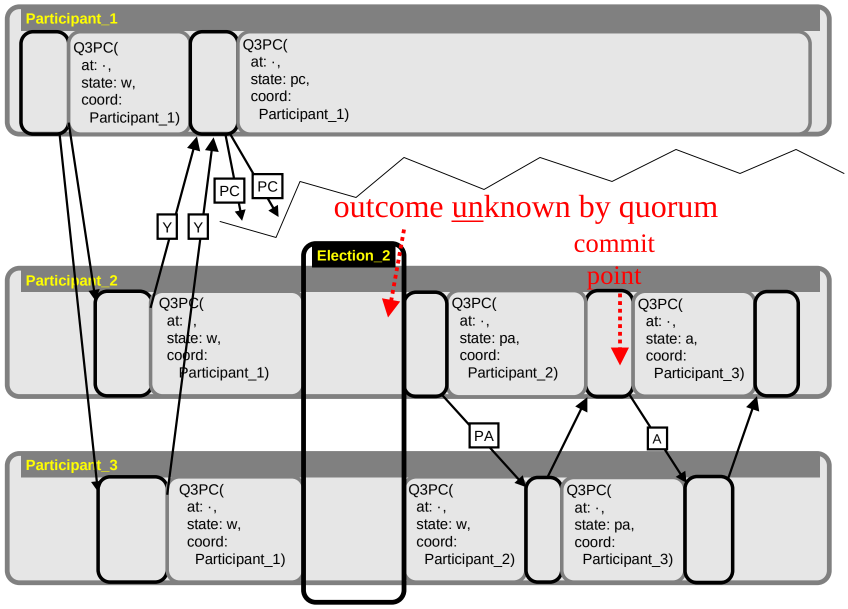
Distribute outcome before commit point, so quorum can continue if coordinator fails



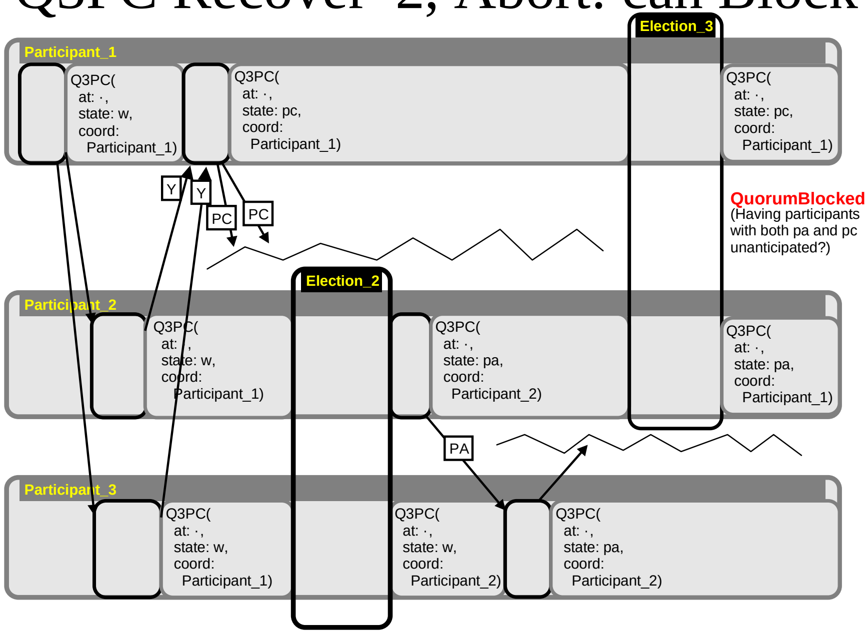
Q3PC Recover and Commit



Q3PC Recover & Abort

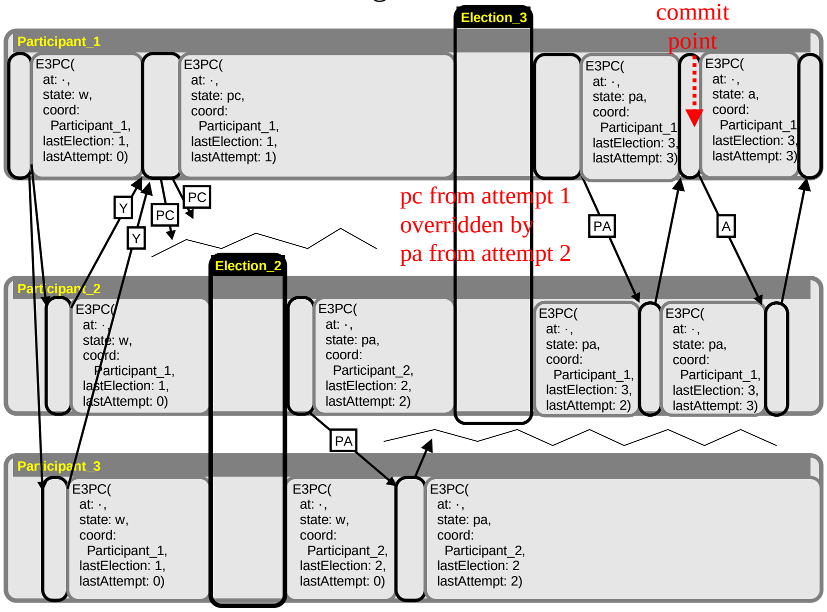


Q3PC Recover^2, Abort: can Block



Enhanced 3-Phase Commit

Count elections; choosing last outcome resolves conflicts



X3PC can commit where E3PC aborts

Elections distribute history; may commit if abort coordinators couldn't have reached commit point