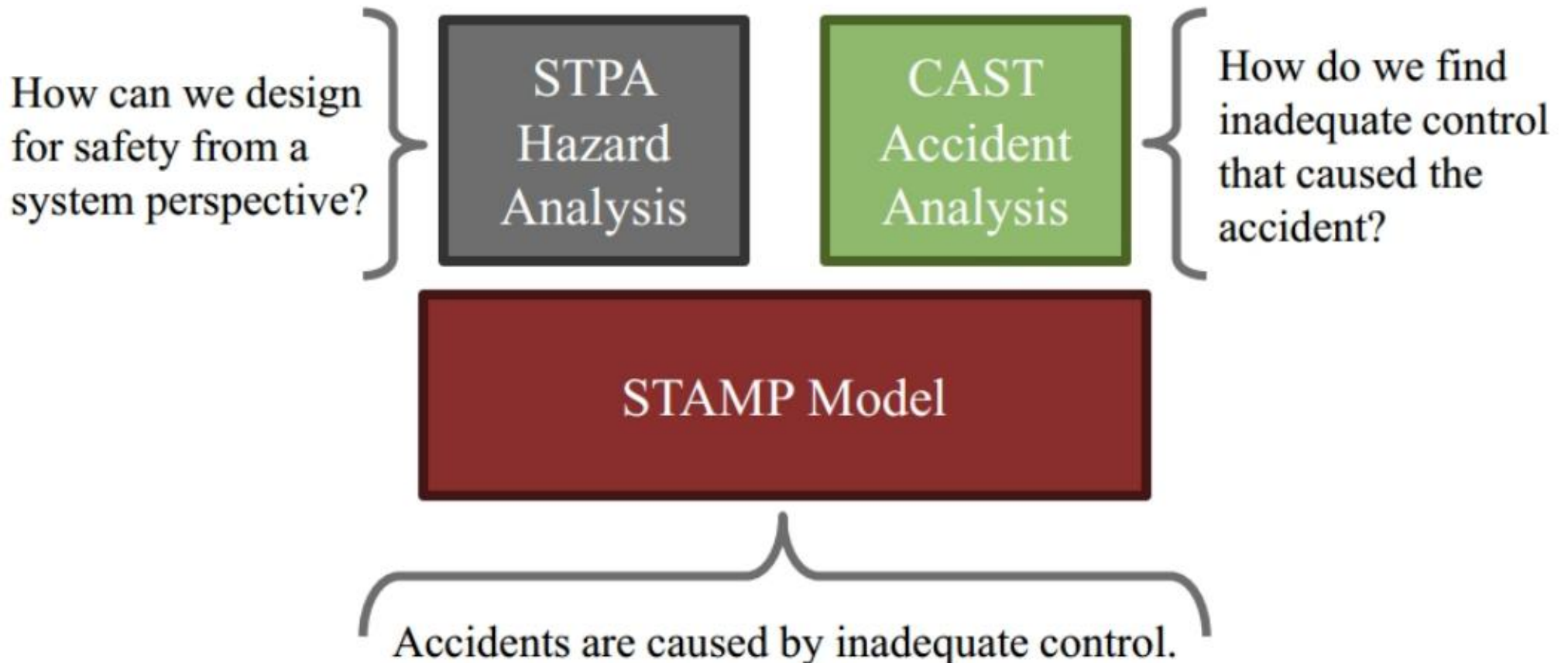


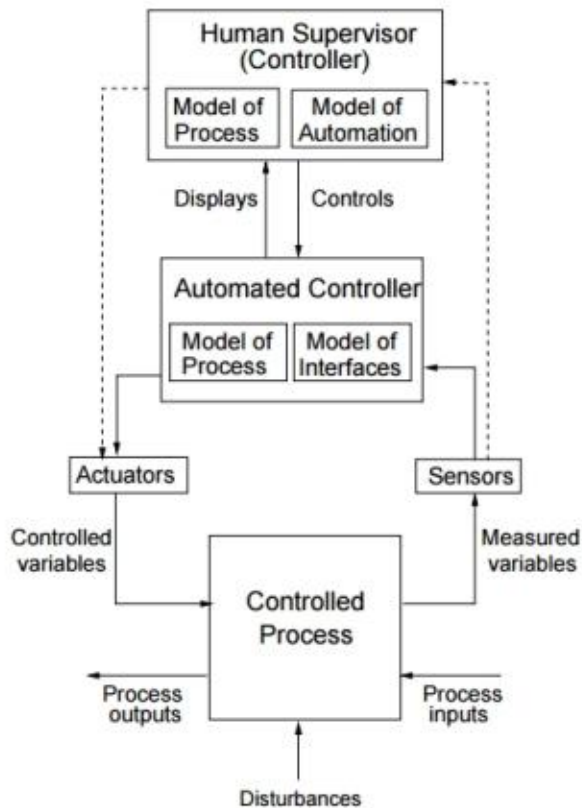
STAMP- Base Tools

Looking Forward:
System Theoretic
Process Analysis (**STPA**)

Looking Backwards:
Causal Analysis using
System Theory (**CAST**)



STAMP- Systems–Theoretic Accident Model and Processes



STAMP Model

- Accidents involve complex dynamic **processes** involving humans, machines and their environment.
- Treat accidents as a **control problem**.
- Prevent accidents by enforcing constraints on system behavior and component **interactions**.
- Captures more causes of accidents:
 - Component failure accidents
 - Unsafe interaction among components
 - Complex human and software behavior
 - Design errors
 - Flawed requirements

A typical control loop and the process models involved.

STAMP- Analysis Process

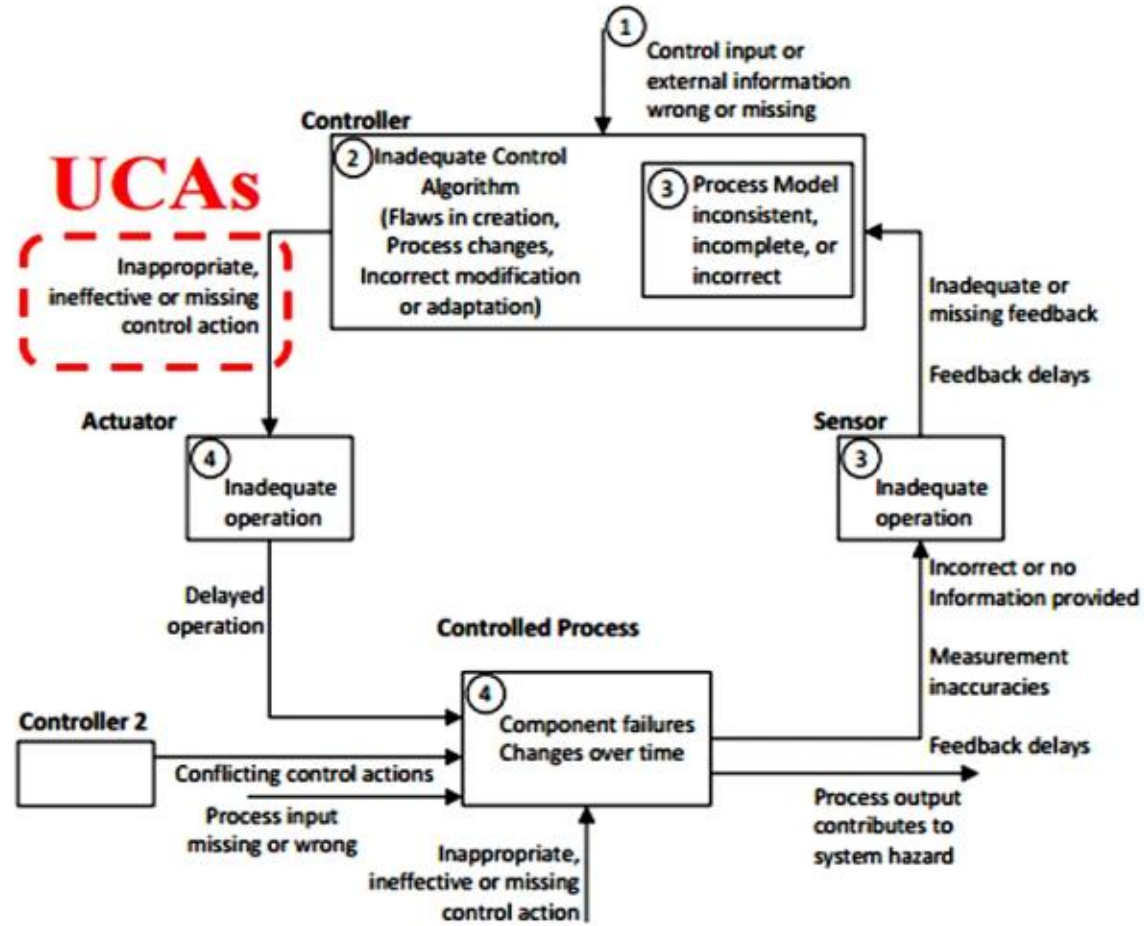
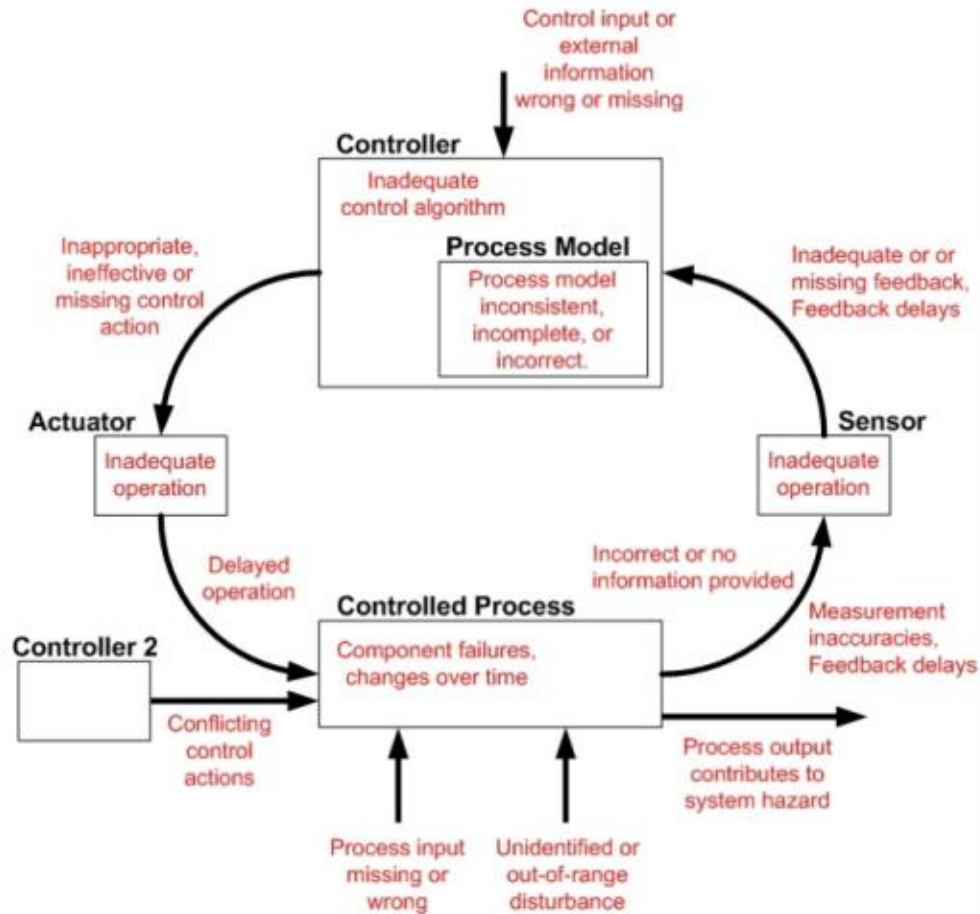
STPA Process



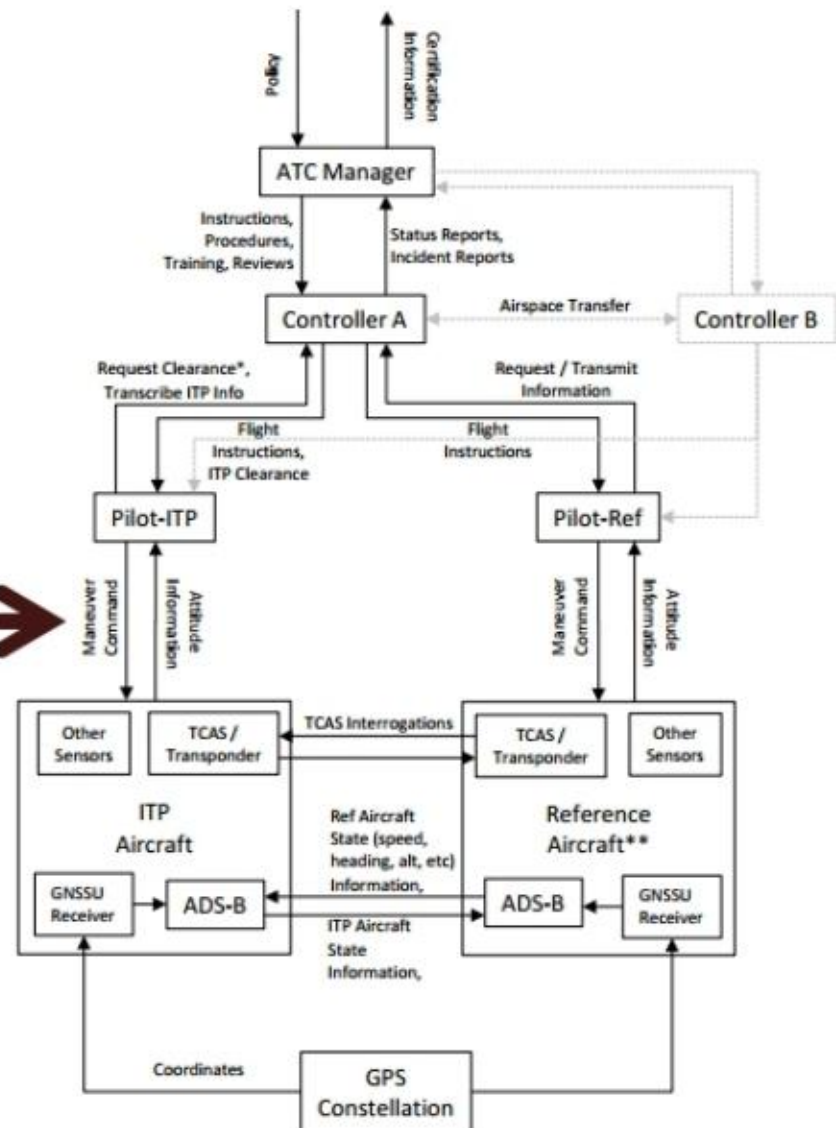
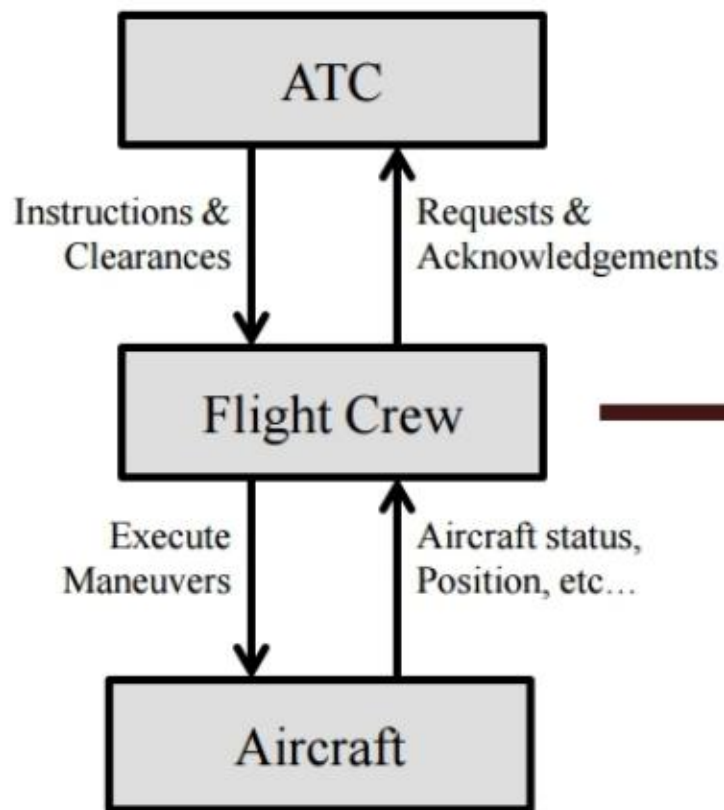
CAST Process

1	System and hazard definition
2	System level safety/security requirements
3	Draw control structure
4	Proximate events
5	Analyze the physical system
6	Moving up the levels of the control structure
7	Coordination and communication
8	Dynamics and change over time
9	Generate recommendations.

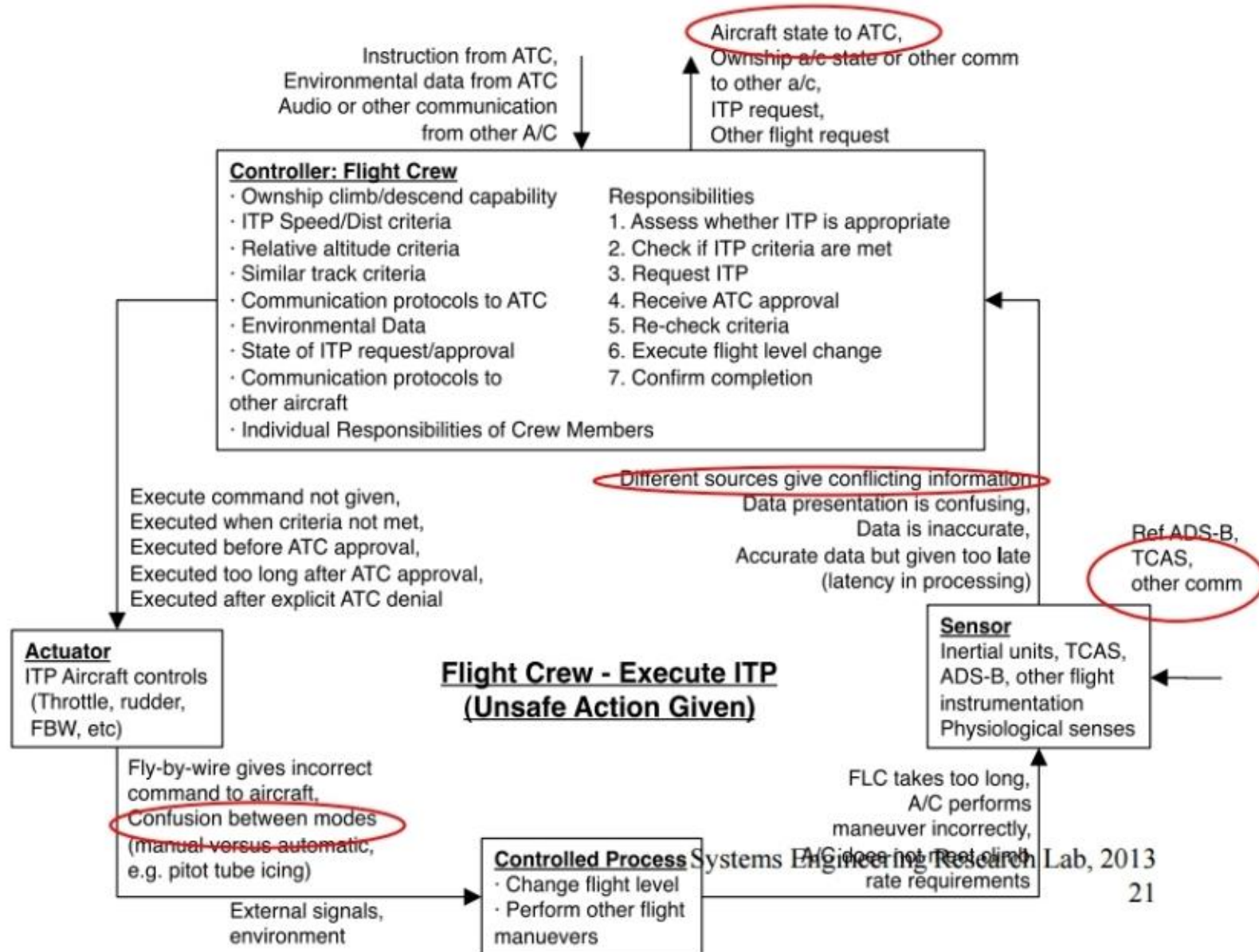
STAMP- Basic Modeling Diagram



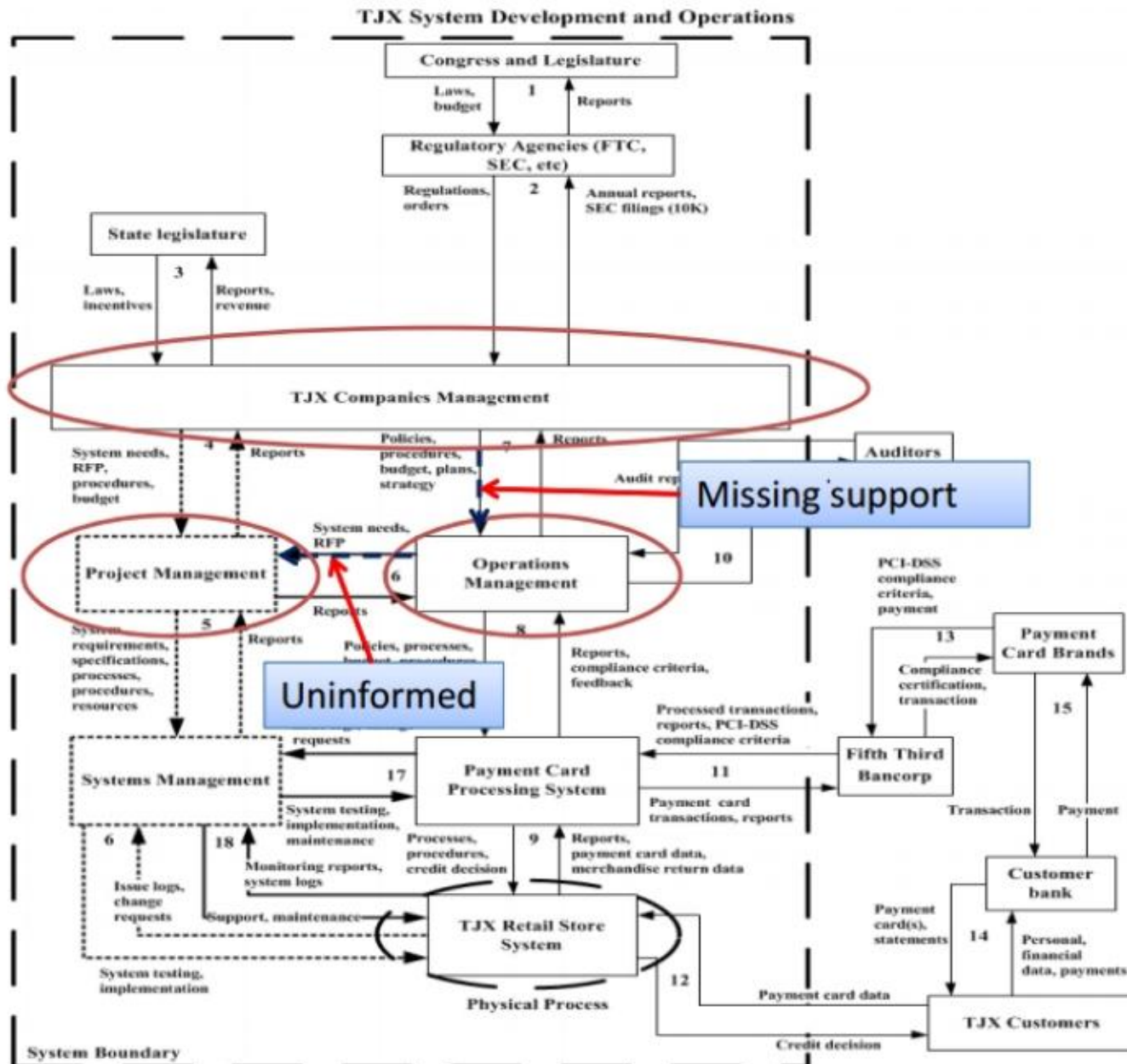
STAMP Modeling–Aircraft Flight Control Example



STAMP- Identify Causal Factors



STAMP Analysis Modeling Example



STAMP Analysis Modeling Example

