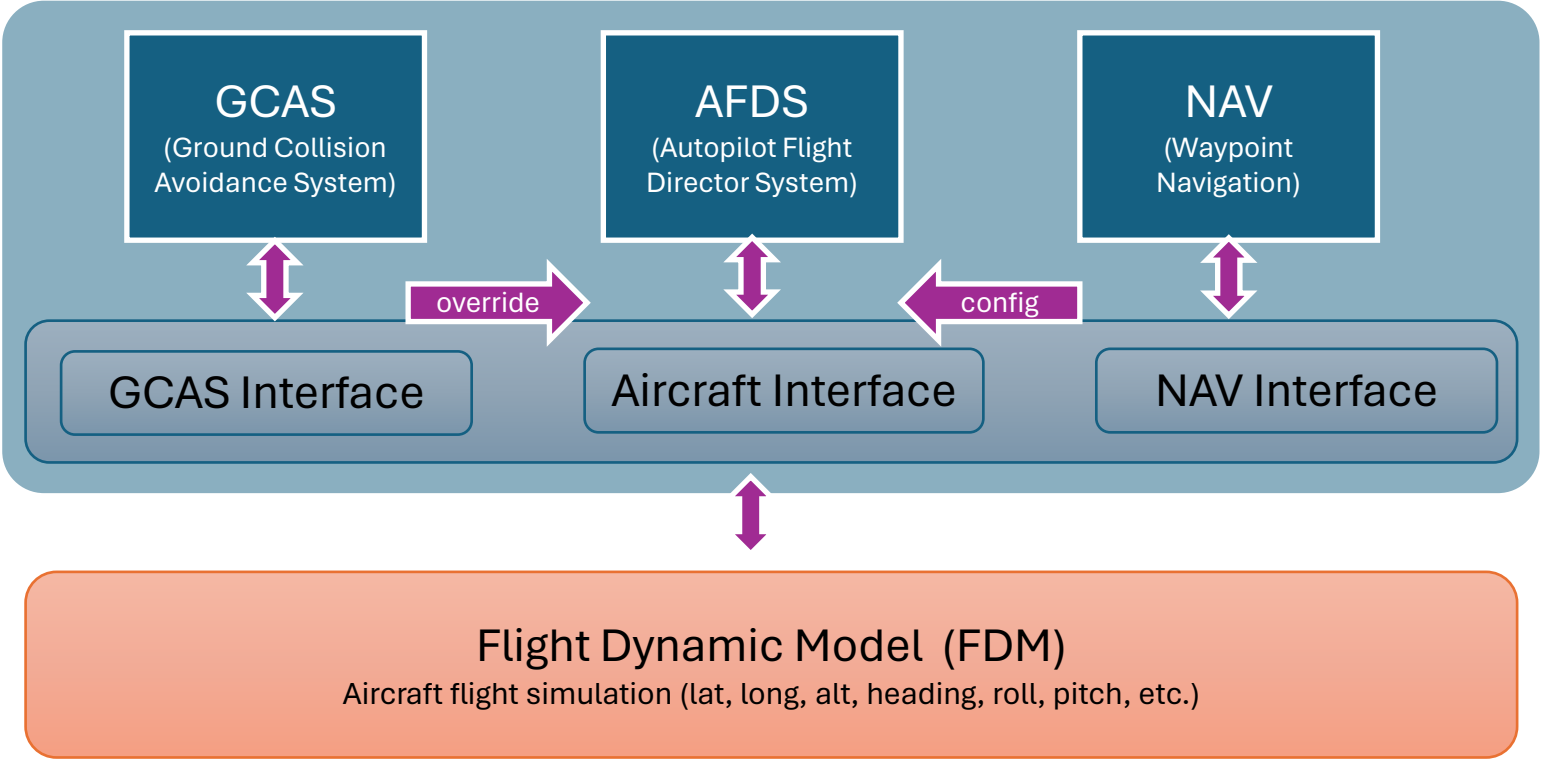


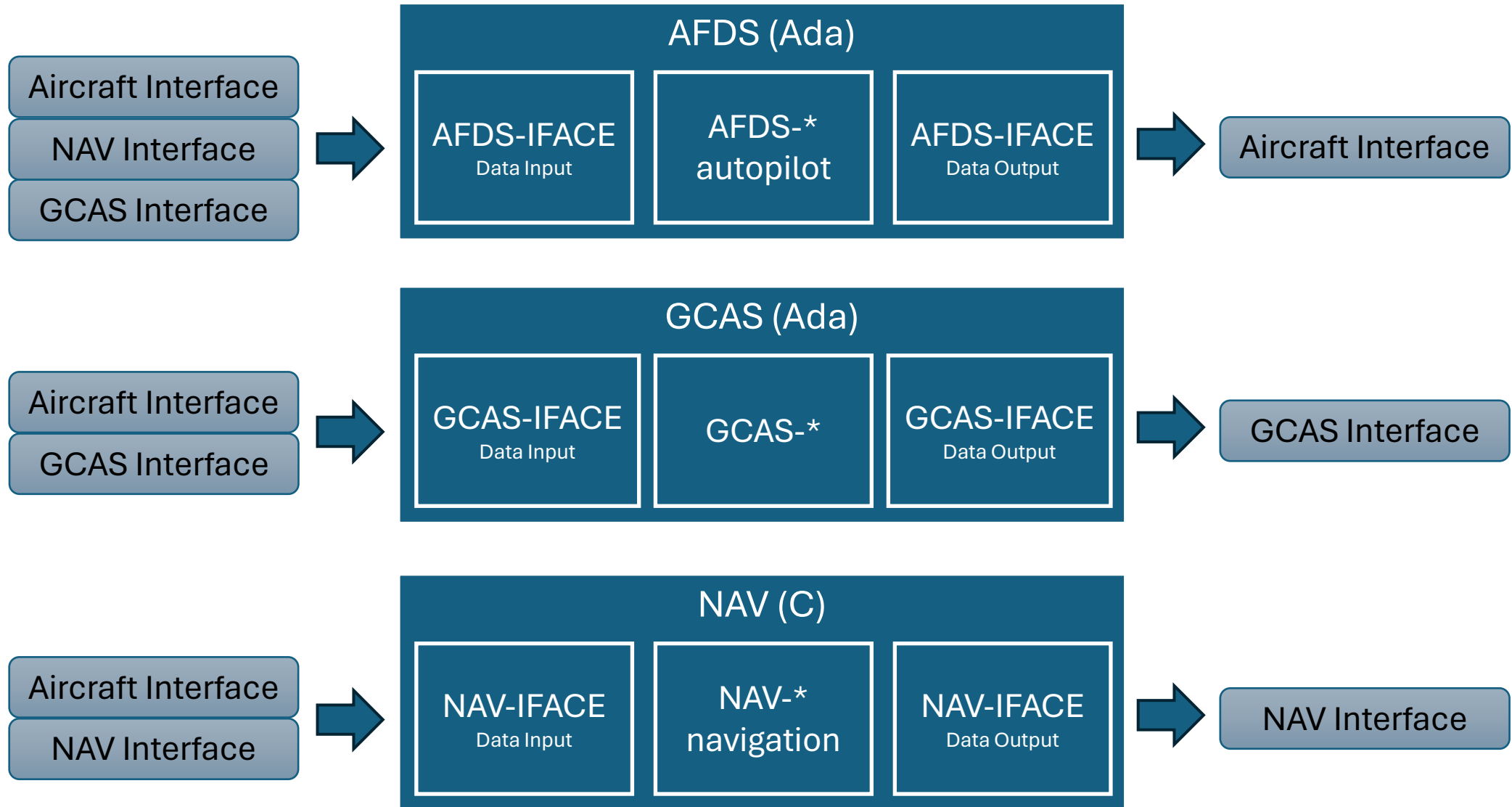
Application



Components

- Each component follows the same pattern
 - A component XYZ is made of two parts:
 - Data interface: XYZ.iface and XYZ.iface.*
 - The implementation: XYZ and XYZ.*
 - The XYZ package contains the single entry point for the component: 'step'
 - A step is made of 3 actions
 - Read data from the global interface (IFACE.* packages) to the local interface (XYZ.iface.*)
 - Perform the function(s) of the component
 - Write data back from the local interface (XYZ.iface.*) to the global interface (IFACE.*)
 - For example AFDS step subprogram is:

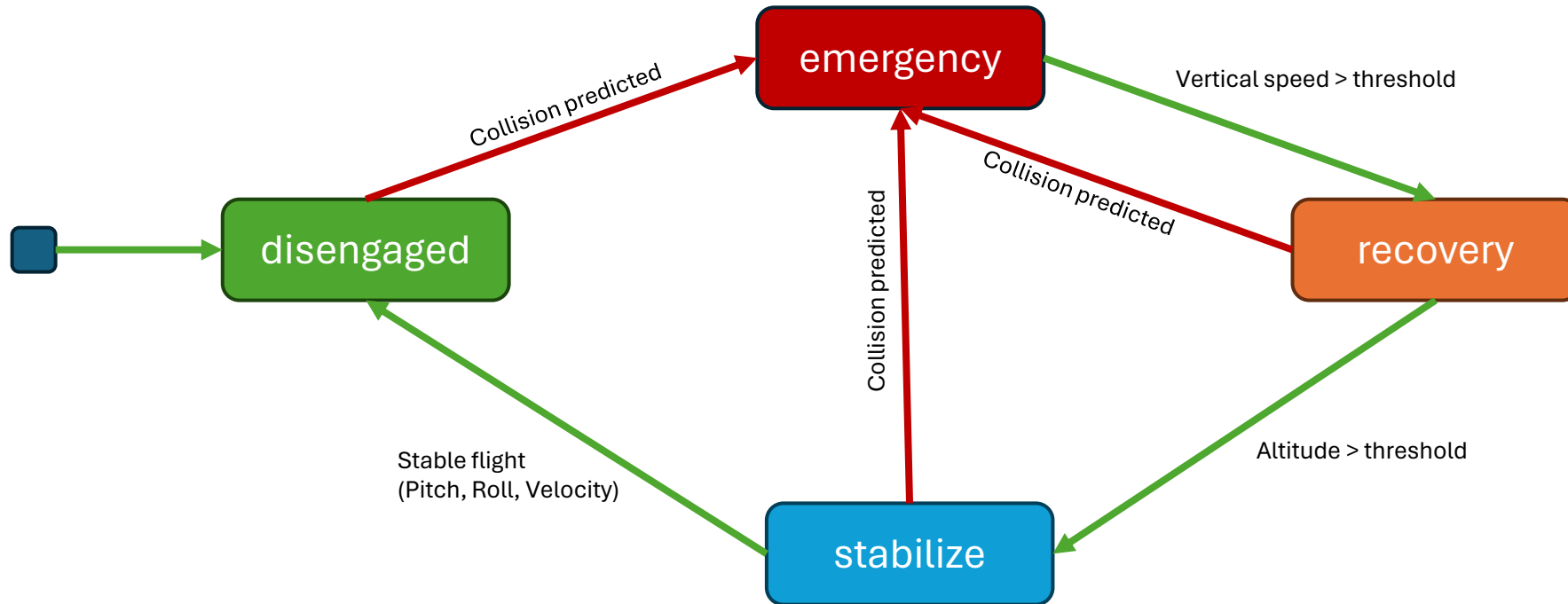
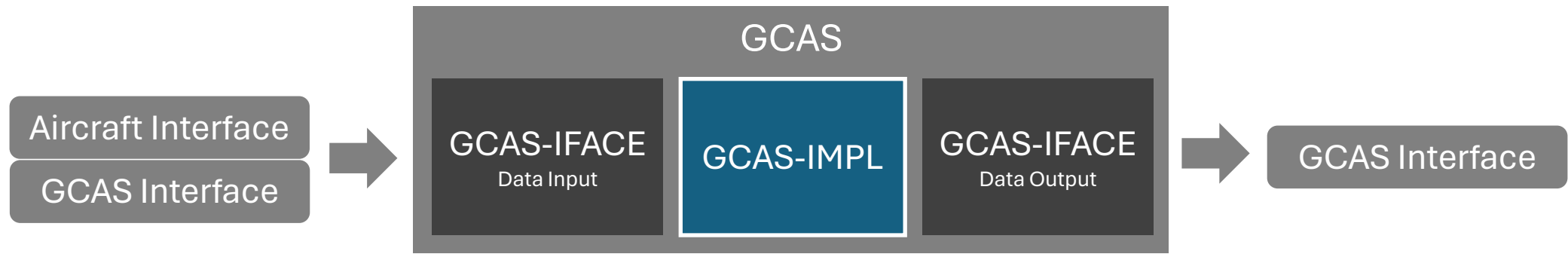
```
procedure step is
begin
    AFDS.iface.read;    -- read data from all relevant interfaces
    AFDS.GCAS.step;
    AFDS.heading.step;
    AFDS.altitude.step;
    AFDS.velocity.step;
    AFDS.vspeed.step;
    AFDS.roll.step;
    AFDS.pitch.step;
    AFDS.iface.write;   -- write data to all relevant interfaces
end step;
```



GCAS

GCAS

- The GCAS component detect potential ground collision and set the GCAS state accordingly (see next slide)
- The GCAS state is checked by the AFDS component and the AFDS.GCAS function of this component implements the required manoeuvre.

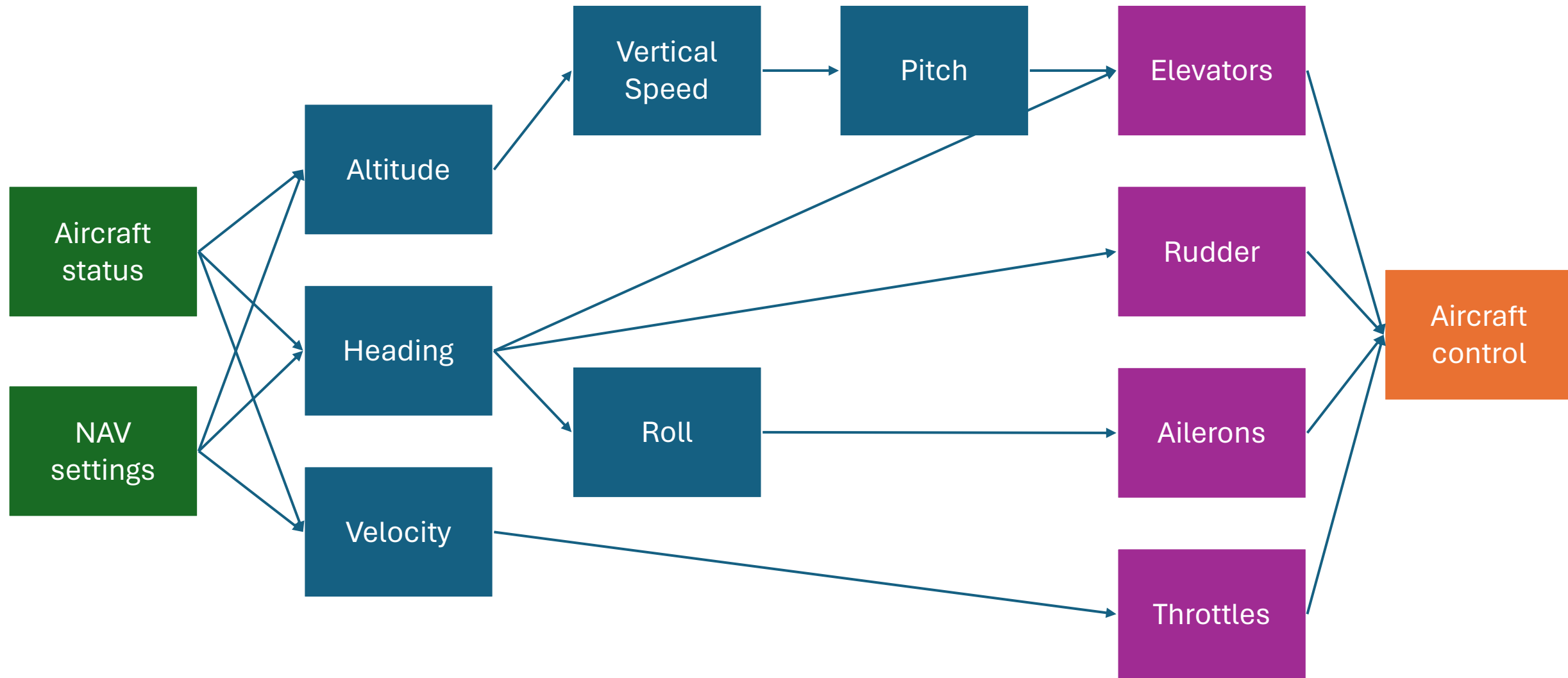


AFDS

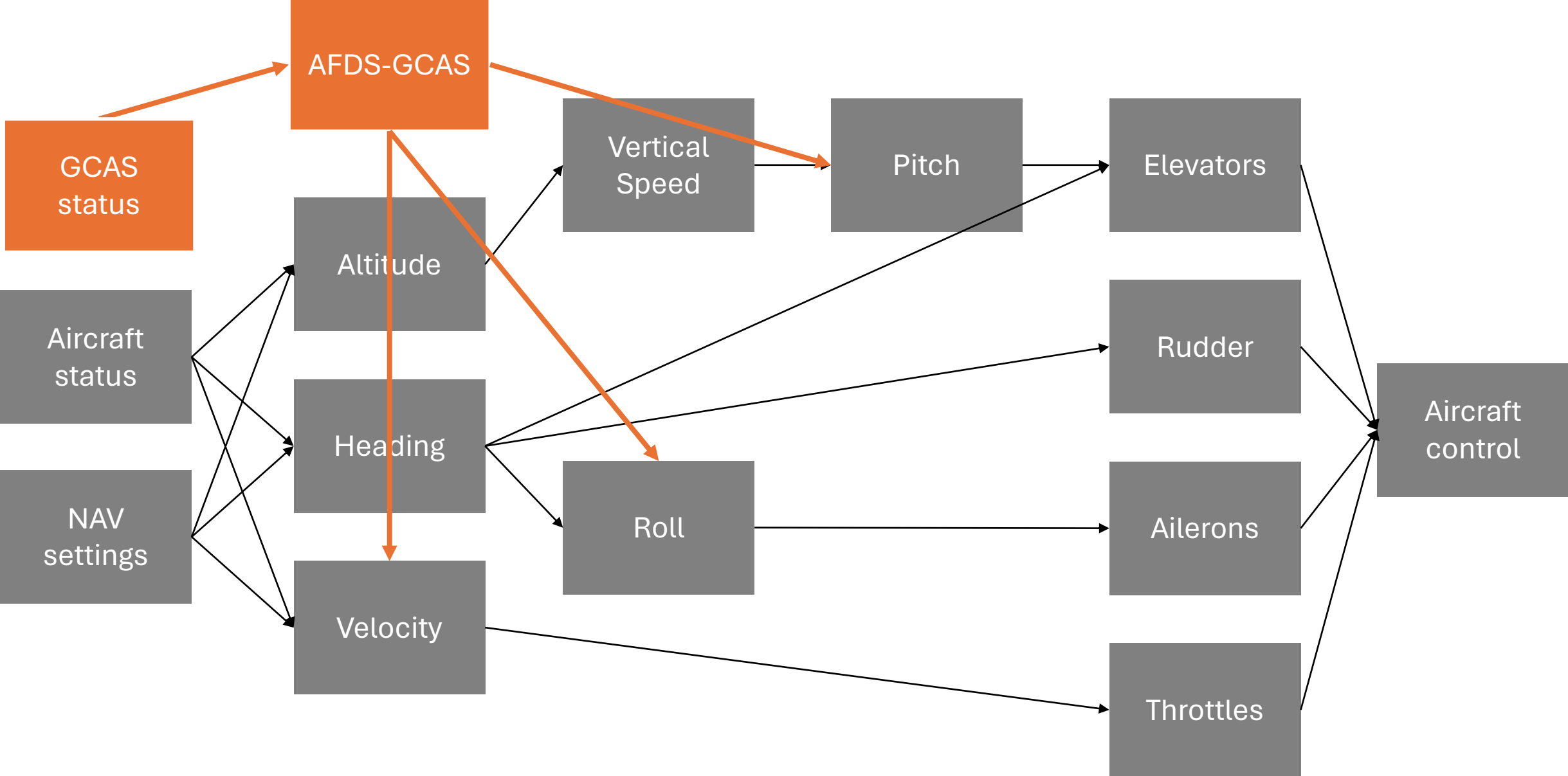
AFDS

- The AFDS read the current and desired heading, altitude and velocity set by the NAV component and calculate the require commands for the aileron, elevator, rudder and throttle.
- The AFDS.GCAS can override the NAV input to force a emergency collision avoidance manoeuvre.

AFDS-* (Autopilot)



AFDS-GCAS override



NAV

NAV

- This component is implemented in C
- The NAV component navigate to the next waypoint.
- When a waypoint is reached, the next waypoint in the list is selected as the active waypoint.
- Navigation data (desired heading, altitude, velocity) are written to the IFACE.NAV interface for the AFDS component to read.