

# A formal language for safety-critical embedded user interfaces

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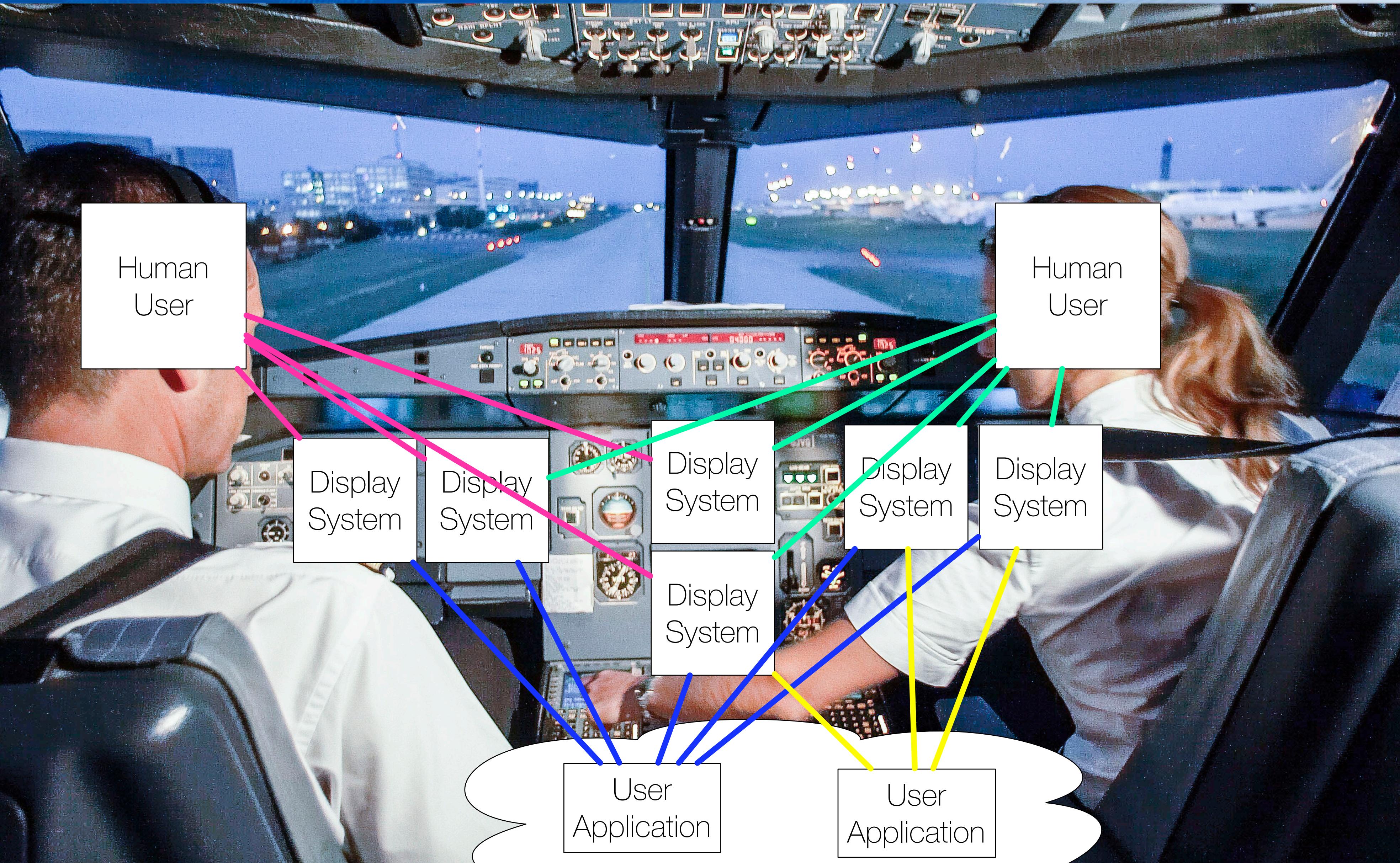


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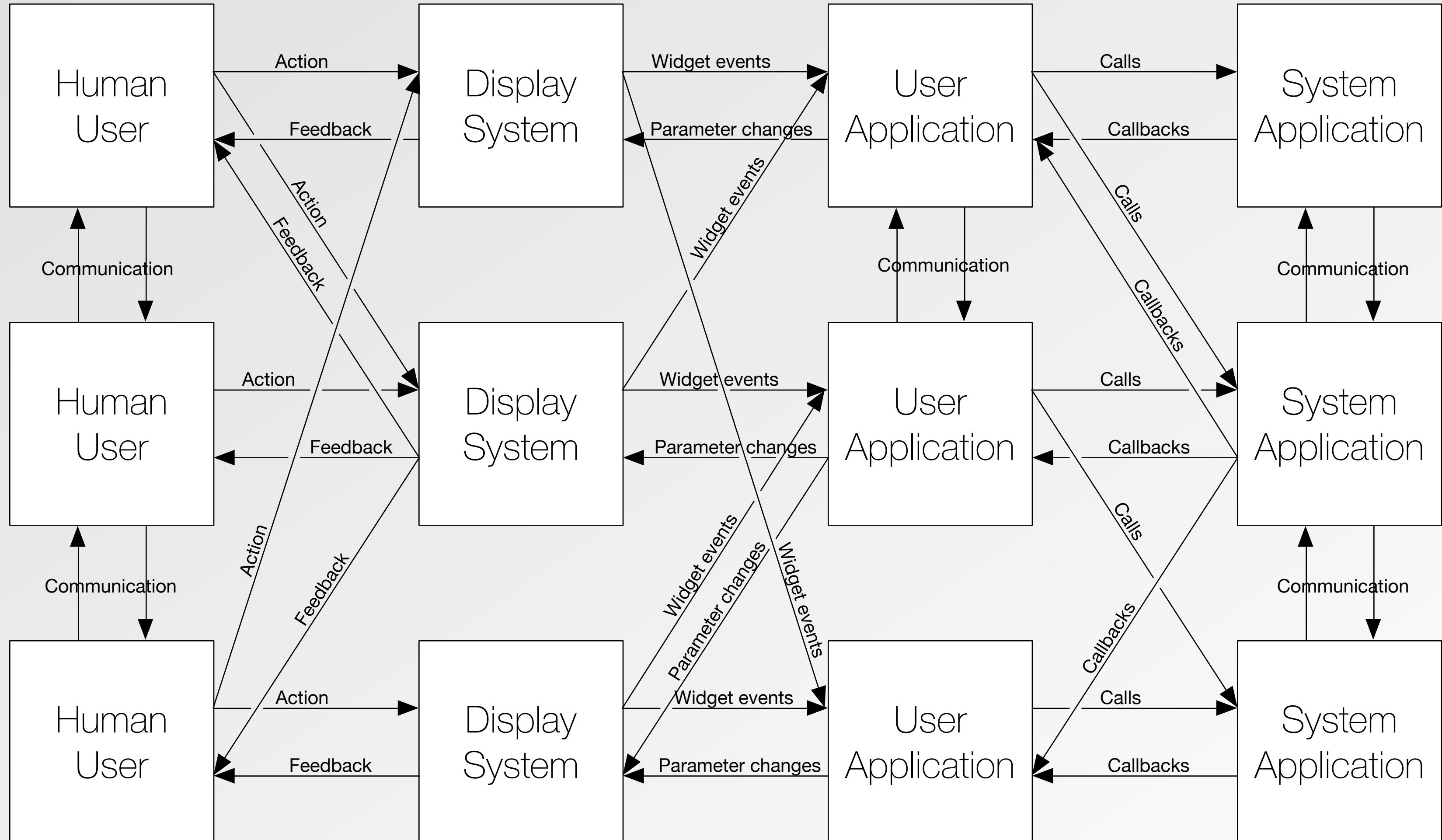
# Context



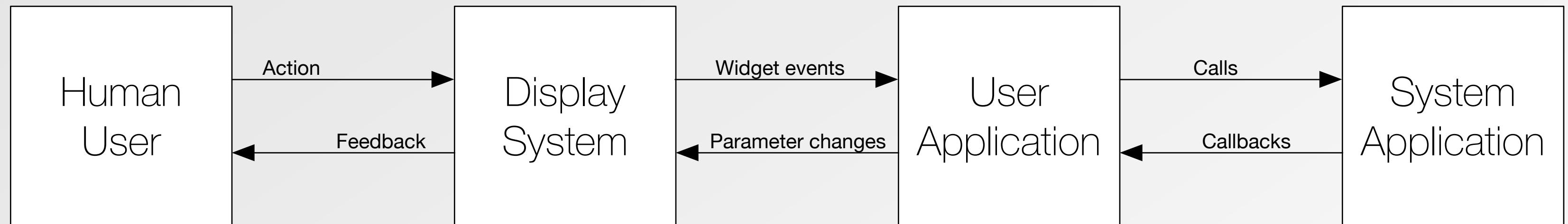
# Context



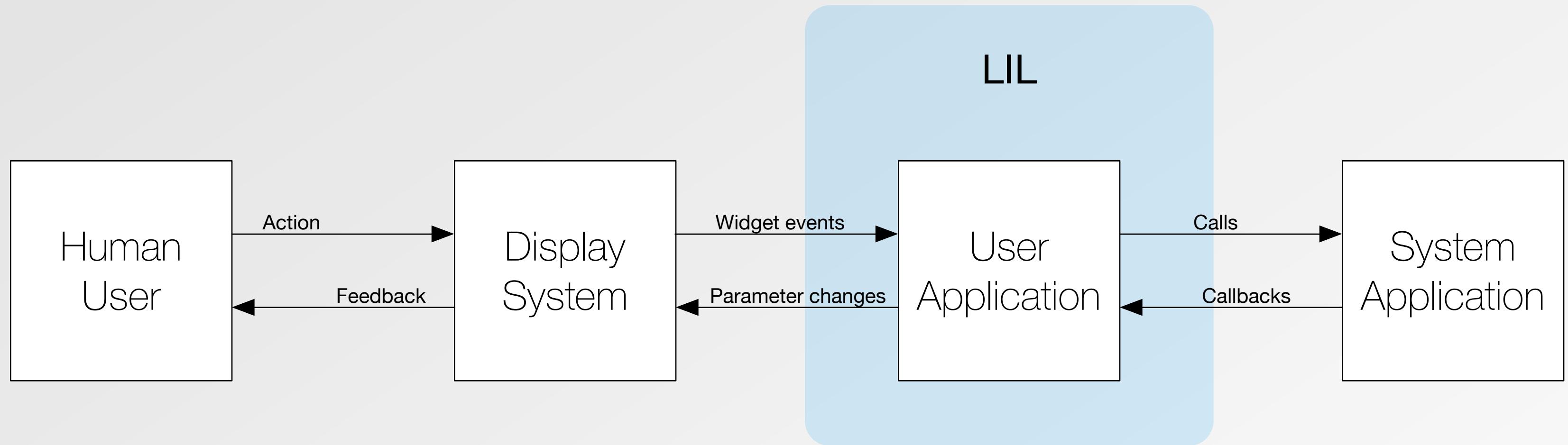
# Context : Overview



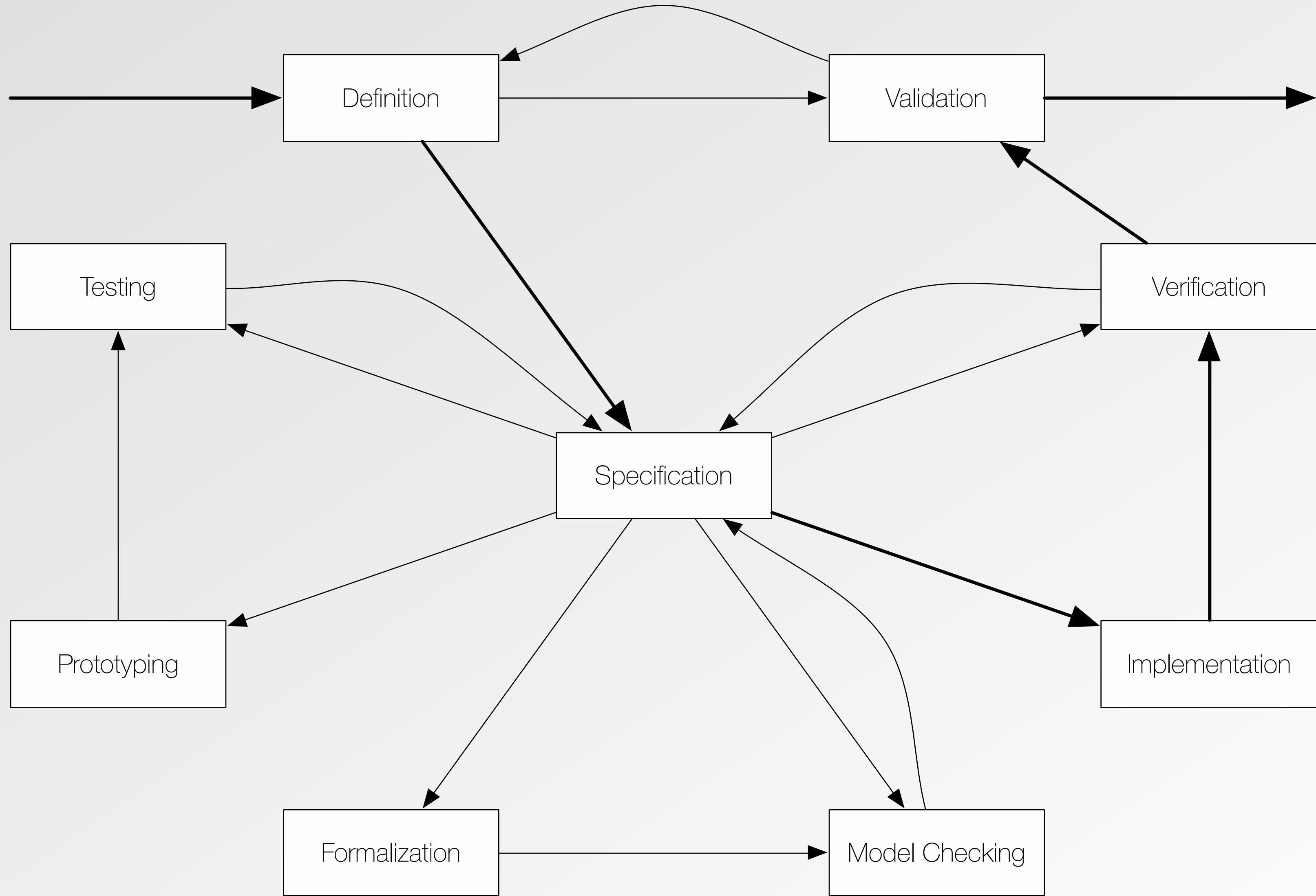
# Context : Let's simplify



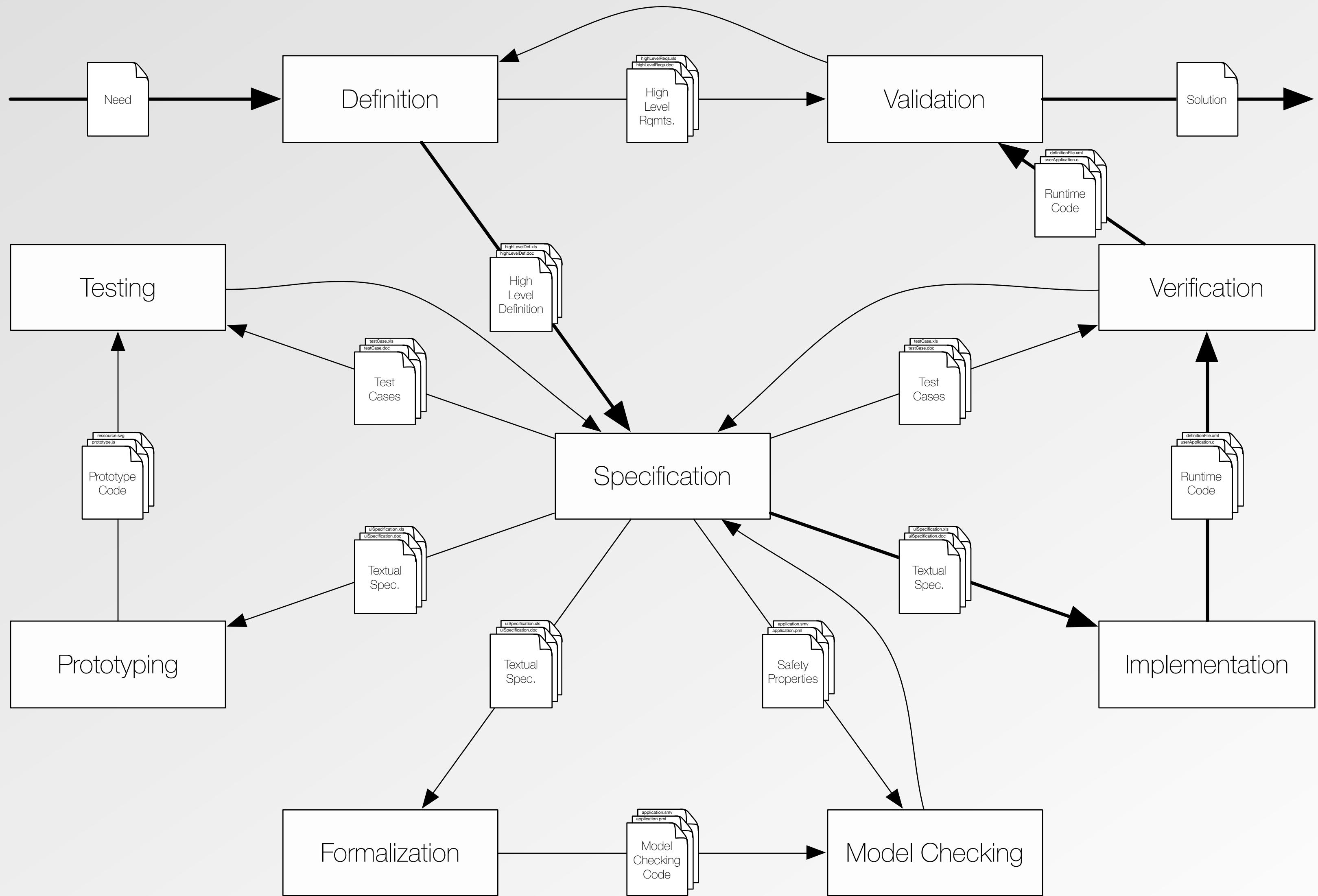
# Context : LIL Perimeter



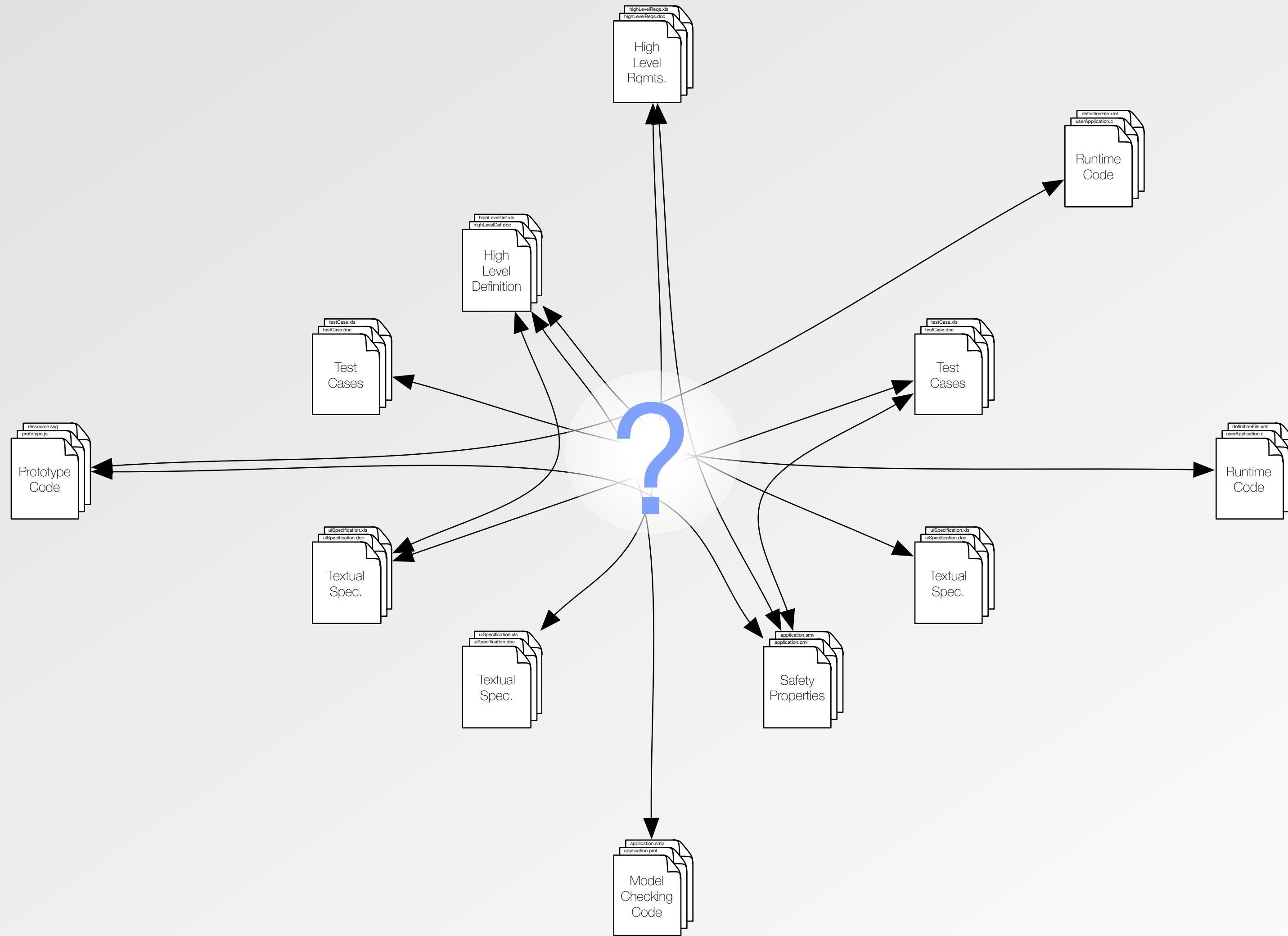
# Why is this interesting : HMI Design process



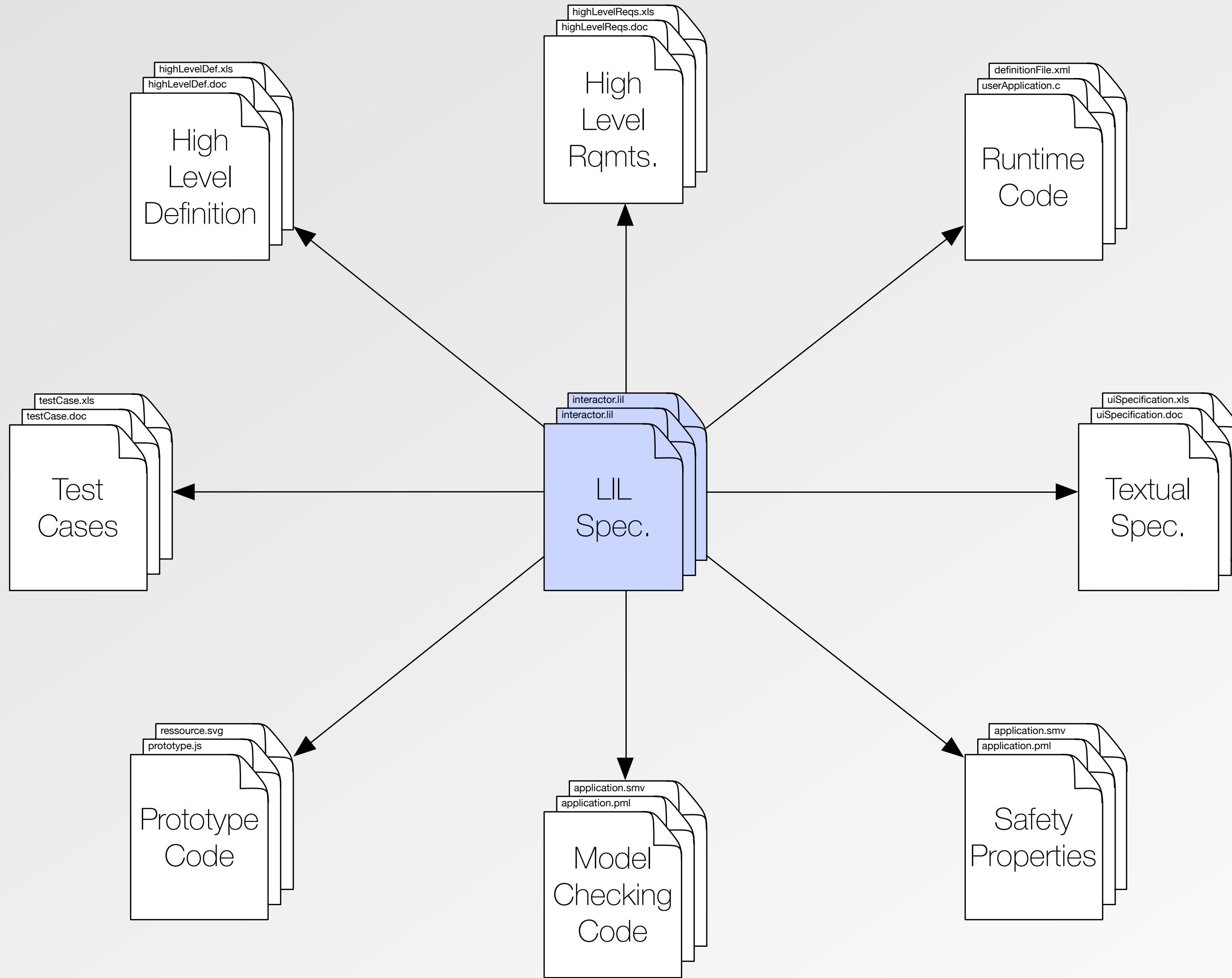
# Why is this interesting : HMI Design process artifacts



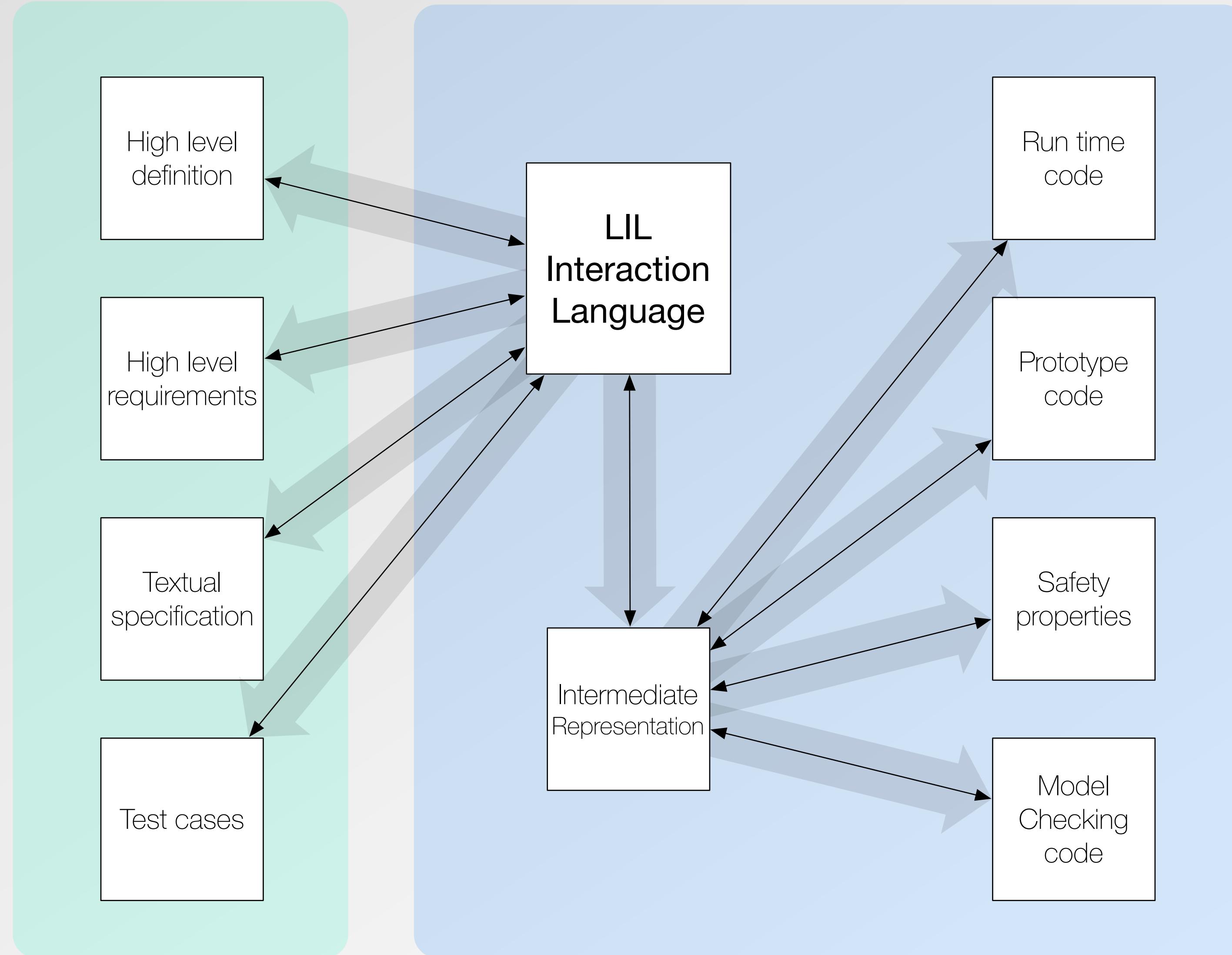
# Why is this interesting : How to link HMI design artifacts



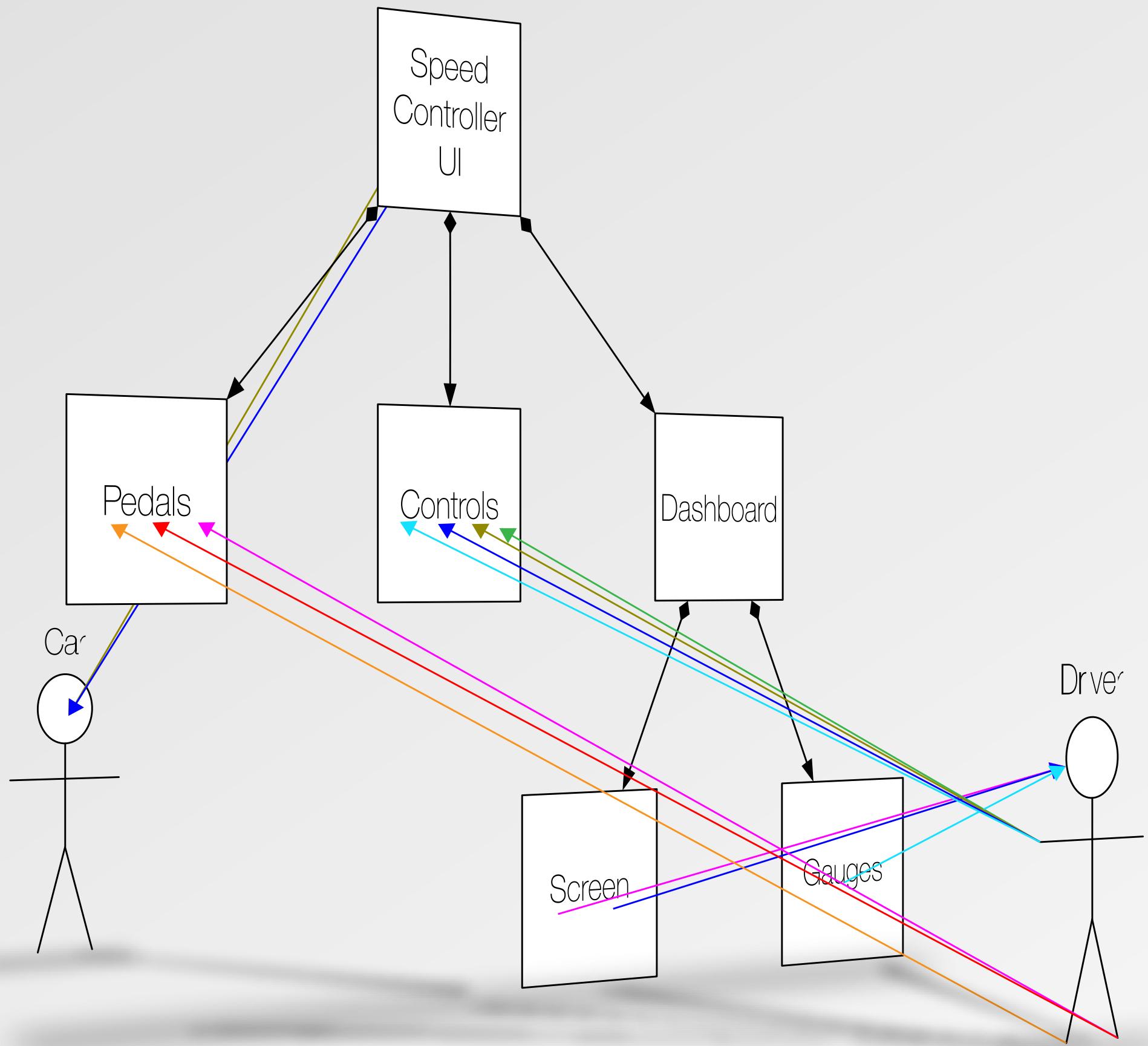
# Why is this interesting : A pivot language



# Results : LIL ecosystem



# Example : Speed controller



# Example : LIL in use

```
speedController interactor:
```

Interactor Defintion

```
theDriver : human actor  
theCar : car actor
```

Structure

```
theDashboard : dashboard interactor  
theControls : speedControls interactor  
thePedals : pedals interactor
```

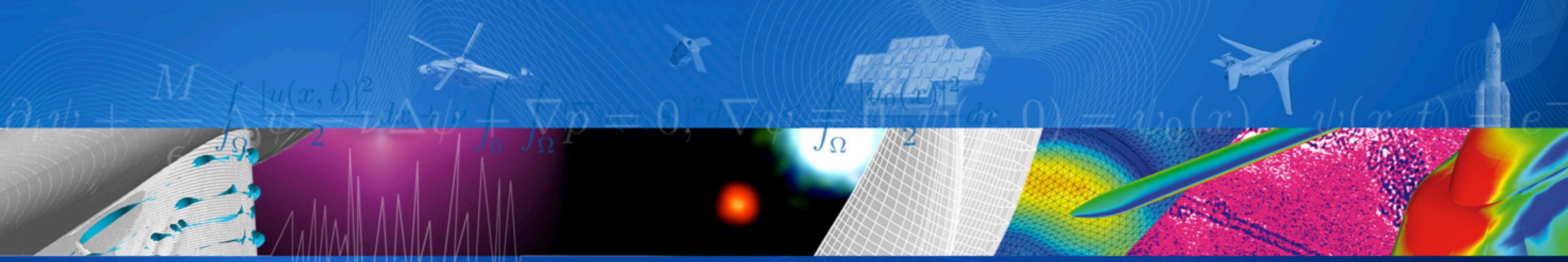
Composition

```
increment : void event from theControls  
decrement : void event from theControls  
toggle : boolean event from theControls  
desiredSpeed : number flow to theCar  
actualSpeed : number flow from theCar to theDashboard  
selectedMode : mode flow from theControls  
desiredMode : mode flow to theCar  
actualMode : mode flow from theCar to theDashboard  
alert : boolean flow to theDashboard
```

Data flow

```
on increment : desiredSpeed = desiredSpeed + 5  
on decrement : desiredSpeed = desiredSpeed - 5  
30 < desiredSpeed < 150  
alert = actualSpeed > desiredSpeed or desiredMode != actualMode  
desiredMode = if toggle then selectedMode else OFF
```

Behavior



Thank you



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