Formalisation

Outline

Concepts

Interpretation

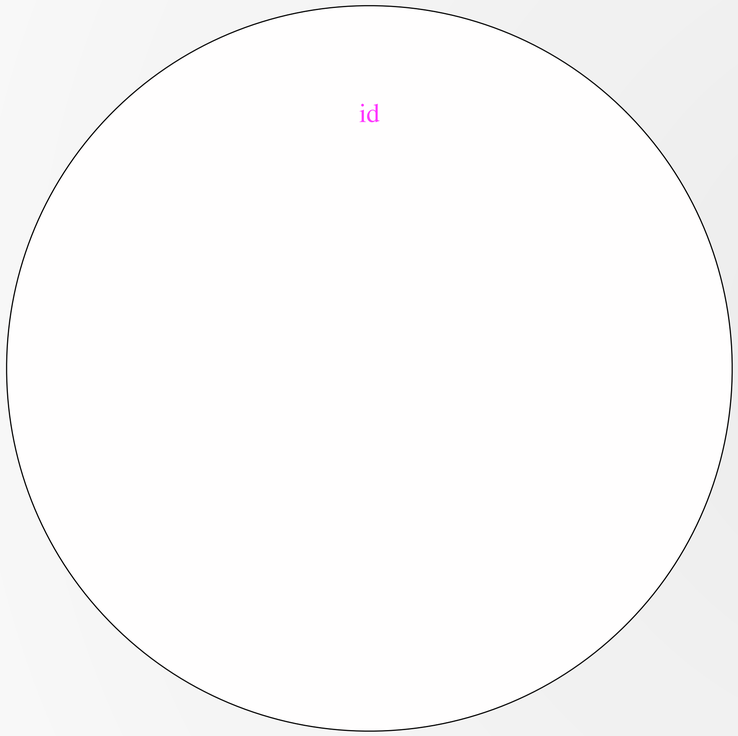
Execution

Optimisations

Concepts

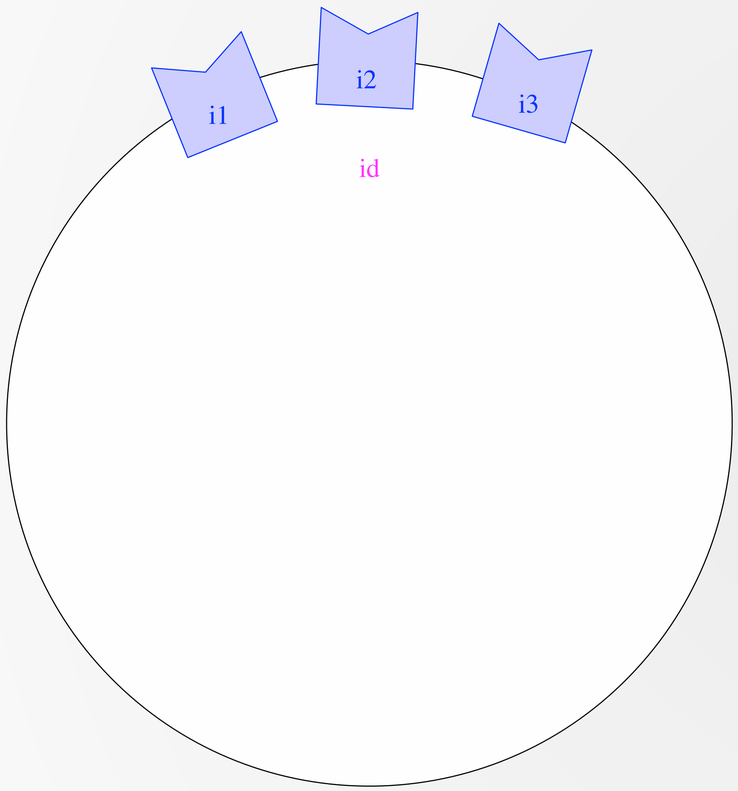
Behaviors

Behaviors



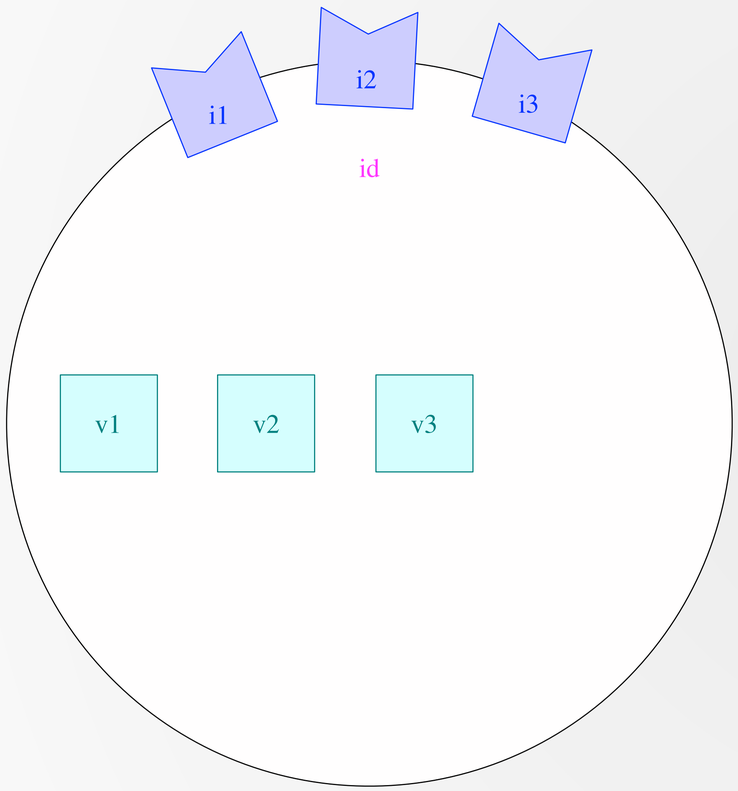
$$b = \langle id$$
$$id \in \mathbb{I}$$

Behaviors



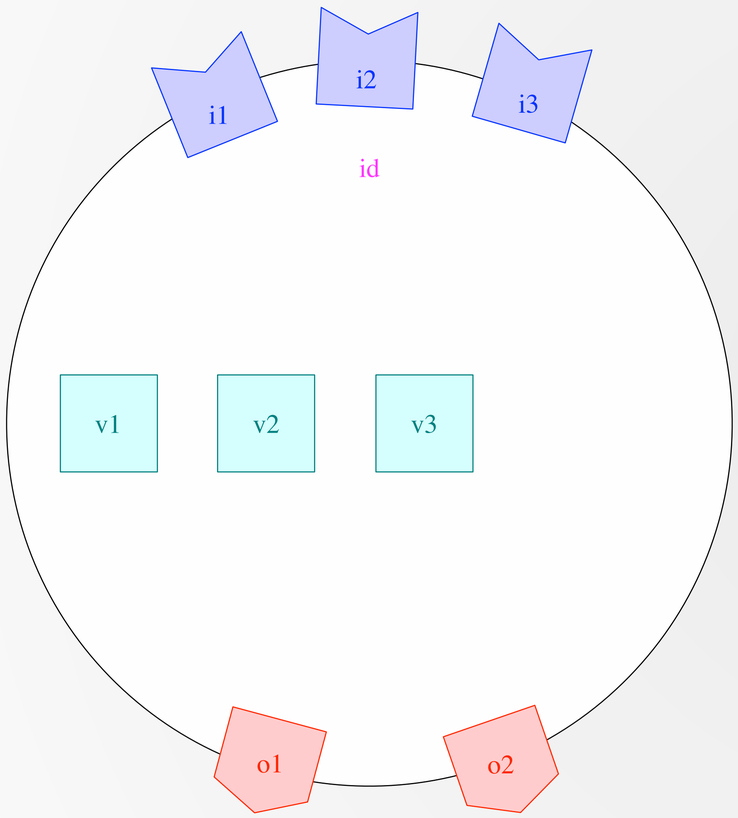
$$
\begin{aligned}
b &= \langle id, I \\
id &\in \mathbb{I} \\
I &\in \mathbb{I}'
\end{aligned}
$$

Behaviors



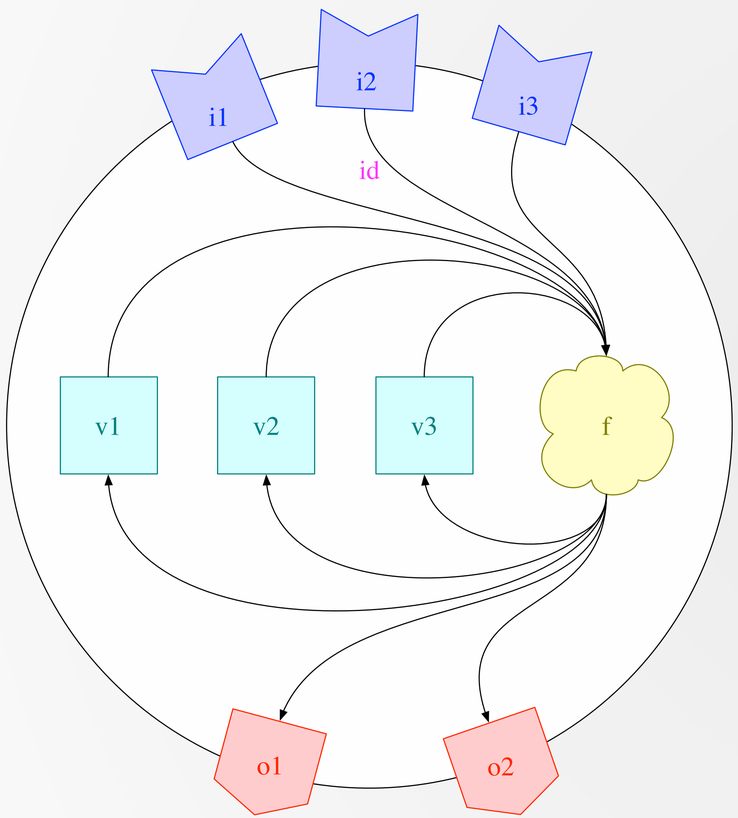
$$
\begin{aligned}
b &= \langle id, I, S \\
id &\in \mathbb{I} \\
I &\in \mathbb{I}' \\
S &\in \mathbb{I}^m
\end{aligned}
$$

Behaviors



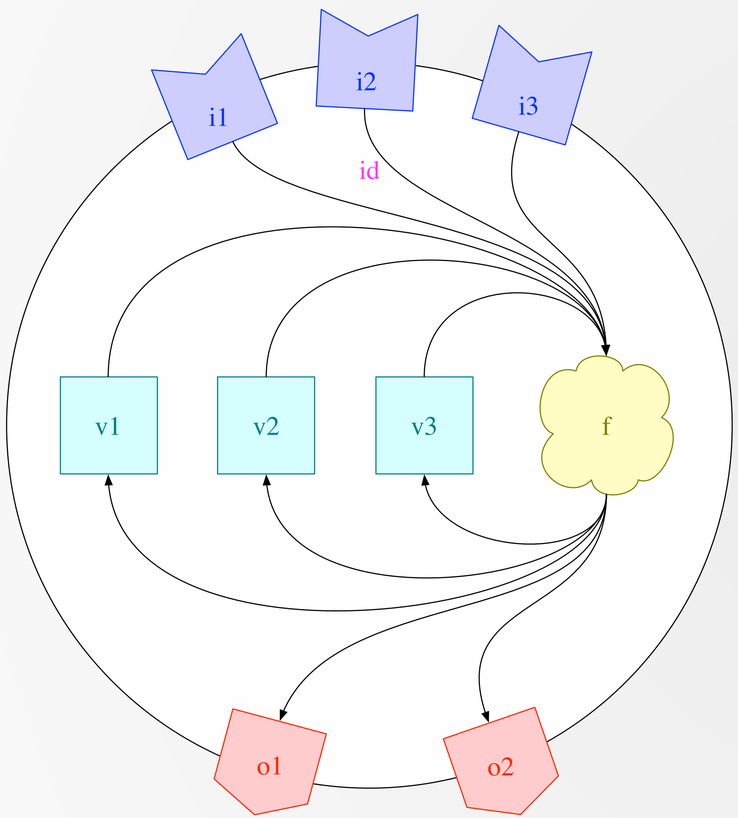
$$
\begin{aligned}
b &= \langle id, I, S, O \\
id &\in \mathbb{I} \\
I &\in \mathbb{I}^l \\
S &\in \mathbb{I}^m \\
O &\in \mathbb{I}^n
\end{aligned}
$$

Behaviors



$$
\begin{aligned}
b &= \langle id, I, S, O, f \rangle \\
id &\in \mathbb{I} \\
I &\in \mathbb{I}^{l} \\
S &\in \mathbb{I}^{m} \\
O &\in \mathbb{I}^{n} \\
f &\in (\mathbf{U}^{m} \times (\mathbb{I} \times \mathbf{U})^{*})^{\mathbf{U}^{m} \times (\mathbb{I} \times \mathbf{U})}
\end{aligned}
$$

Behaviors

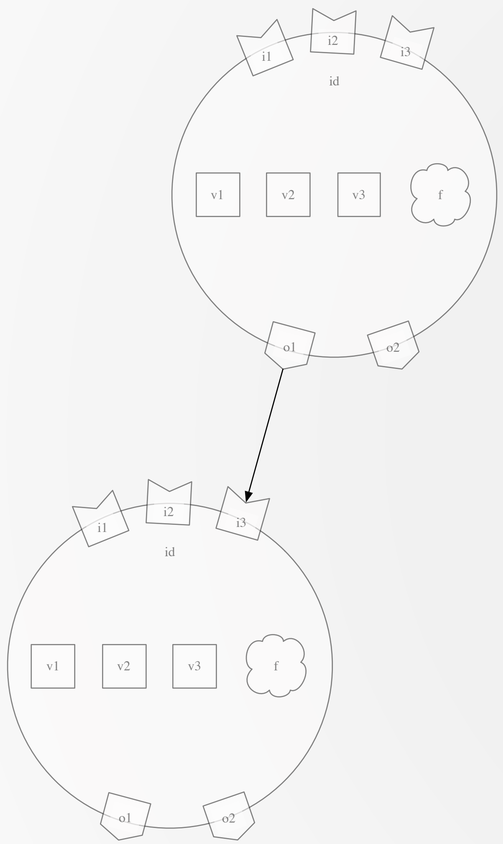


$$
\begin{aligned}
b &= \langle id, I, S, O, f \rangle \\
id &\in \mathbb{I} \\
I &\in \mathbb{I}^l \\
S &\in \mathbb{I}^m \\
O &\in \mathbb{I}^n \\
f &\in (\mathbf{U}^m \times (\mathbb{I} \times \mathbf{U})^*)^{\mathbf{U}^m \times (\mathbb{I} \times \mathbf{U})}
\end{aligned}
$$

$$\mathbf{B}_{l,m,n} = \mathbb{I} \times \mathbb{I}^l \times \mathbb{I}^m \times \mathbb{I}^n \times (\mathbf{U}^m \times (\mathbb{I} \times \mathbf{U})^*)^{\mathbf{U}^m \times (\mathbb{I} \times \mathbf{U})}$$

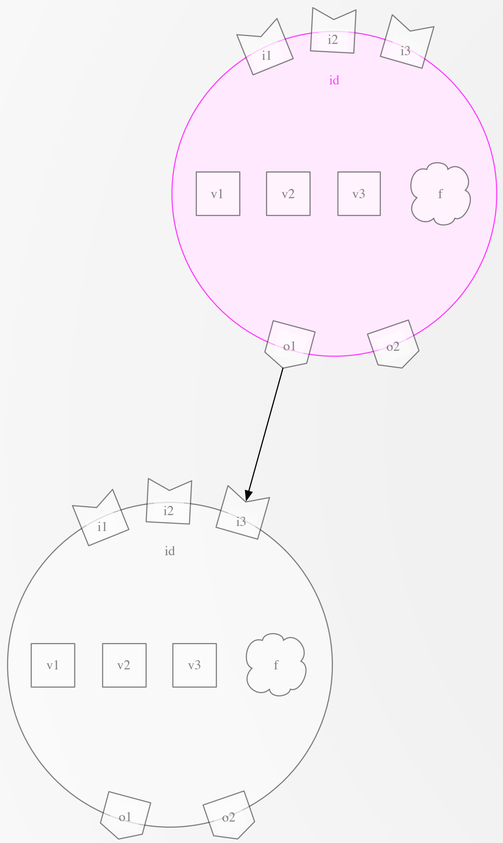
$$\mathbf{B} = \bigsqcup_{(l,m,n) \in \mathbb{N}^3} \mathbf{B}_{l,m,n}$$

Connexions



c

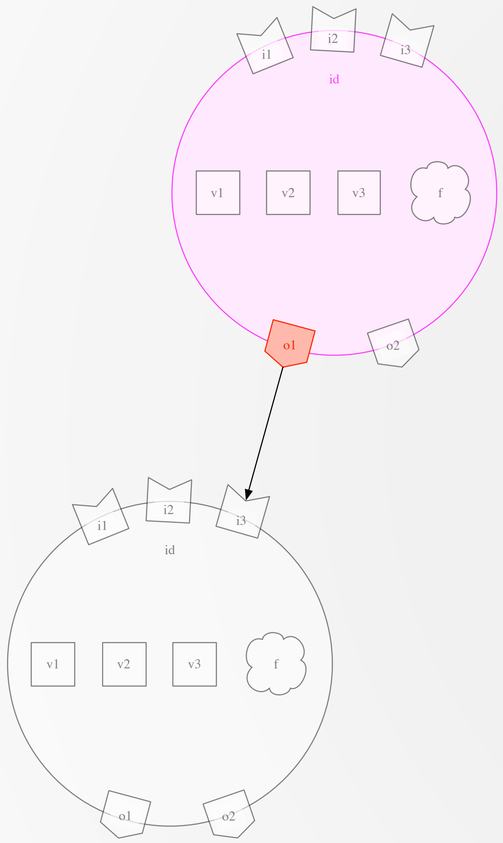
Connexions



$$c = \langle b_{source}$$

$$b_{source} \in \mathbb{I}$$

Connexions

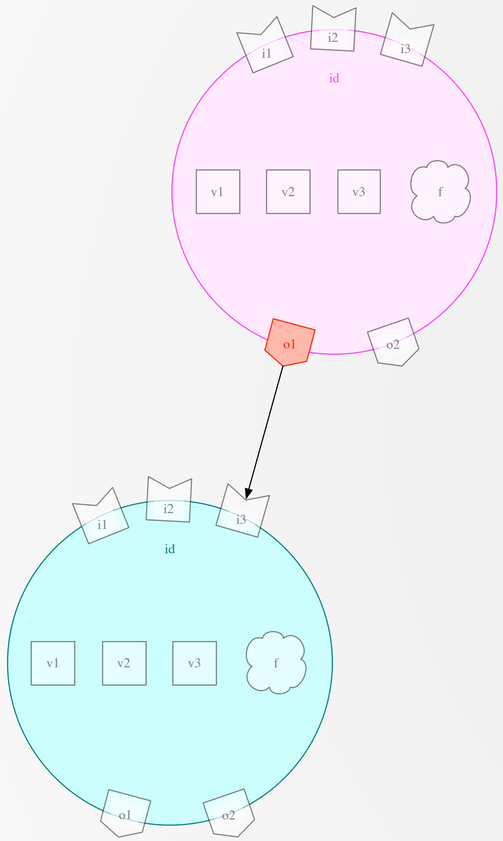


$$c = \langle b_{source}, p_{source}$$

$$b_{source} \in \mathbb{I}$$

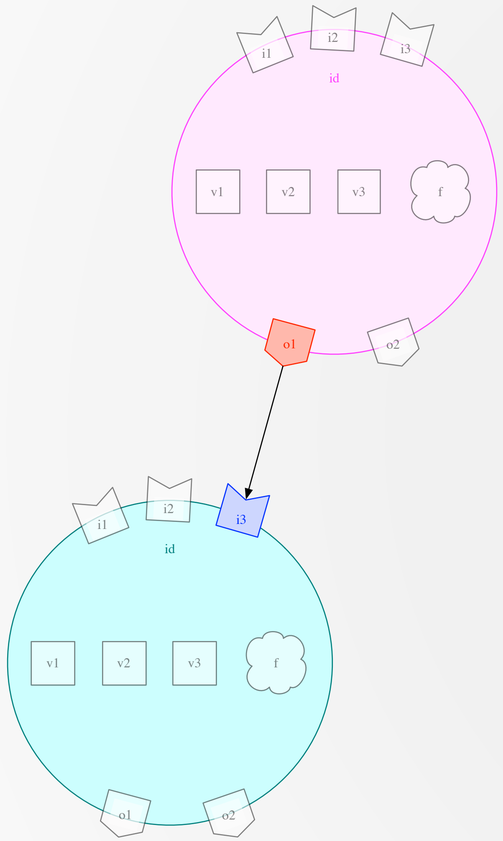
$$p_{source} \in \mathbb{I}$$

Connexions



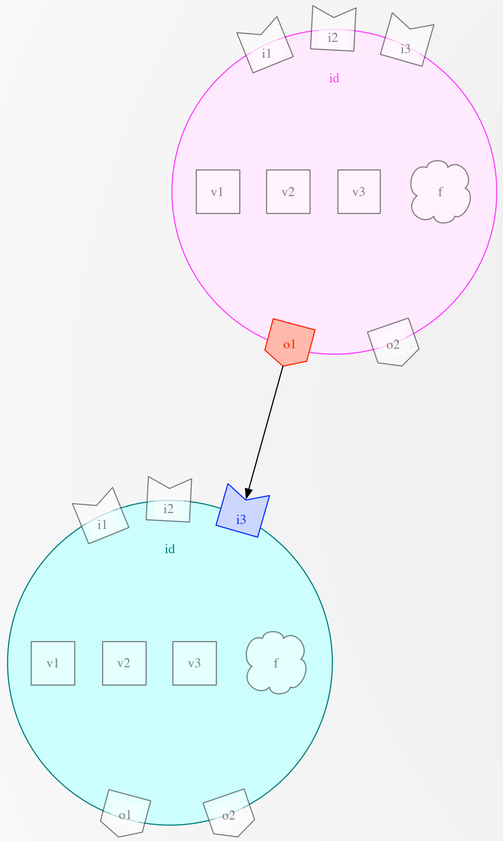
$$
\begin{aligned}
c &= \langle b_{source}, p_{source}, b_{destination} \\
b_{source} &\in \mathbb{I} \\
p_{source} &\in \mathbb{I} \\
b_{destination} &\in \mathbb{I}
\end{aligned}
$$

Connexions



$$
\begin{aligned}
c &= \langle b_{source}, p_{source}, b_{destination}, p_{destination} \rangle \\
b_{source} &\in \mathbb{I} \\
p_{source} &\in \mathbb{I} \\
b_{destination} &\in \mathbb{I} \\
p_{destination} &\in \mathbb{I}
\end{aligned}
$$

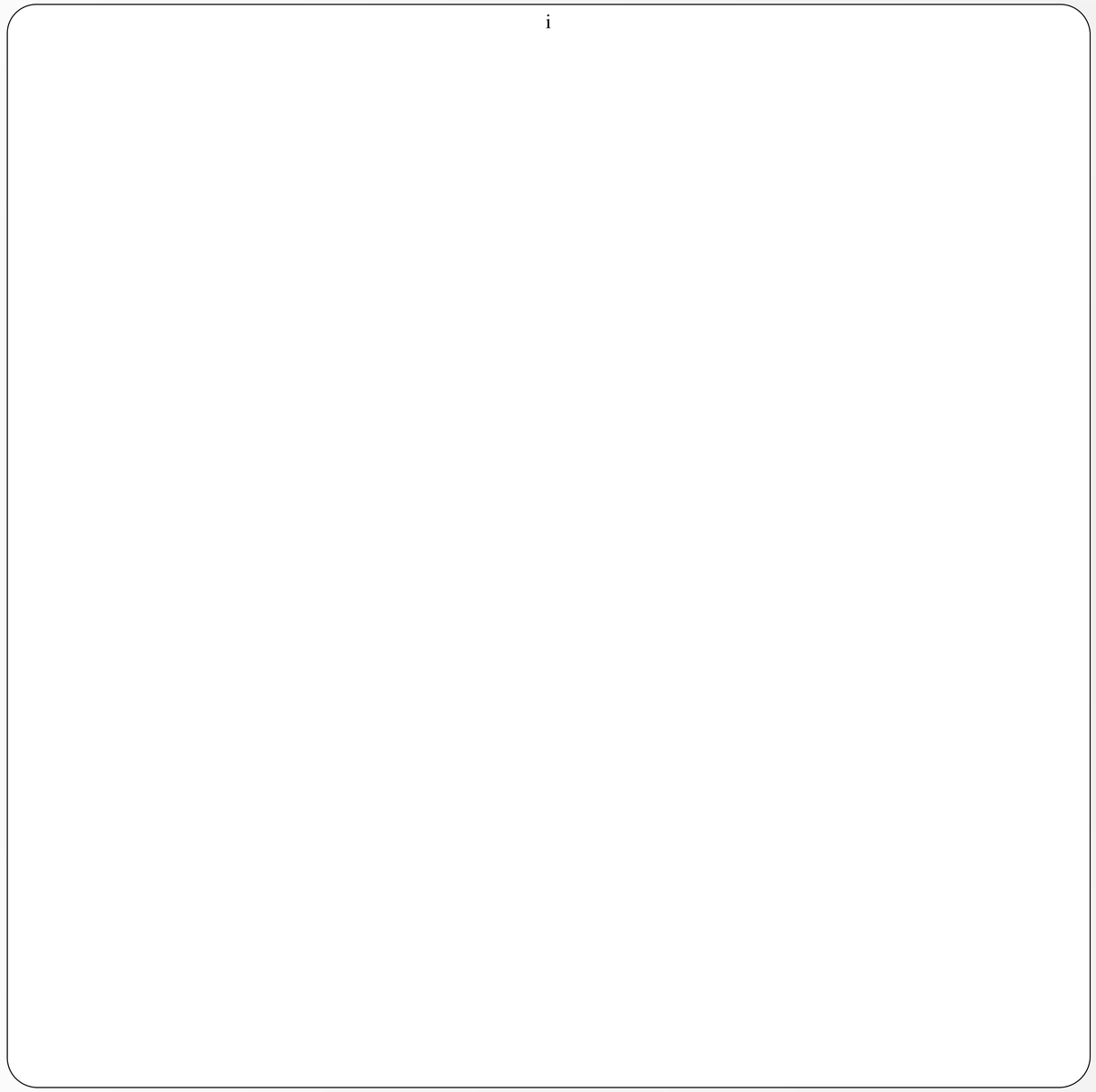
Connexions



$$
\begin{aligned}
c &= \langle b_{source}, p_{source}, b_{destination}, p_{destination} \rangle \\
b_{source} &\in \mathbb{I} \\
p_{source} &\in \mathbb{I} \\
b_{destination} &\in \mathbb{I} \\
p_{destination} &\in \mathbb{I}
\end{aligned}
$$

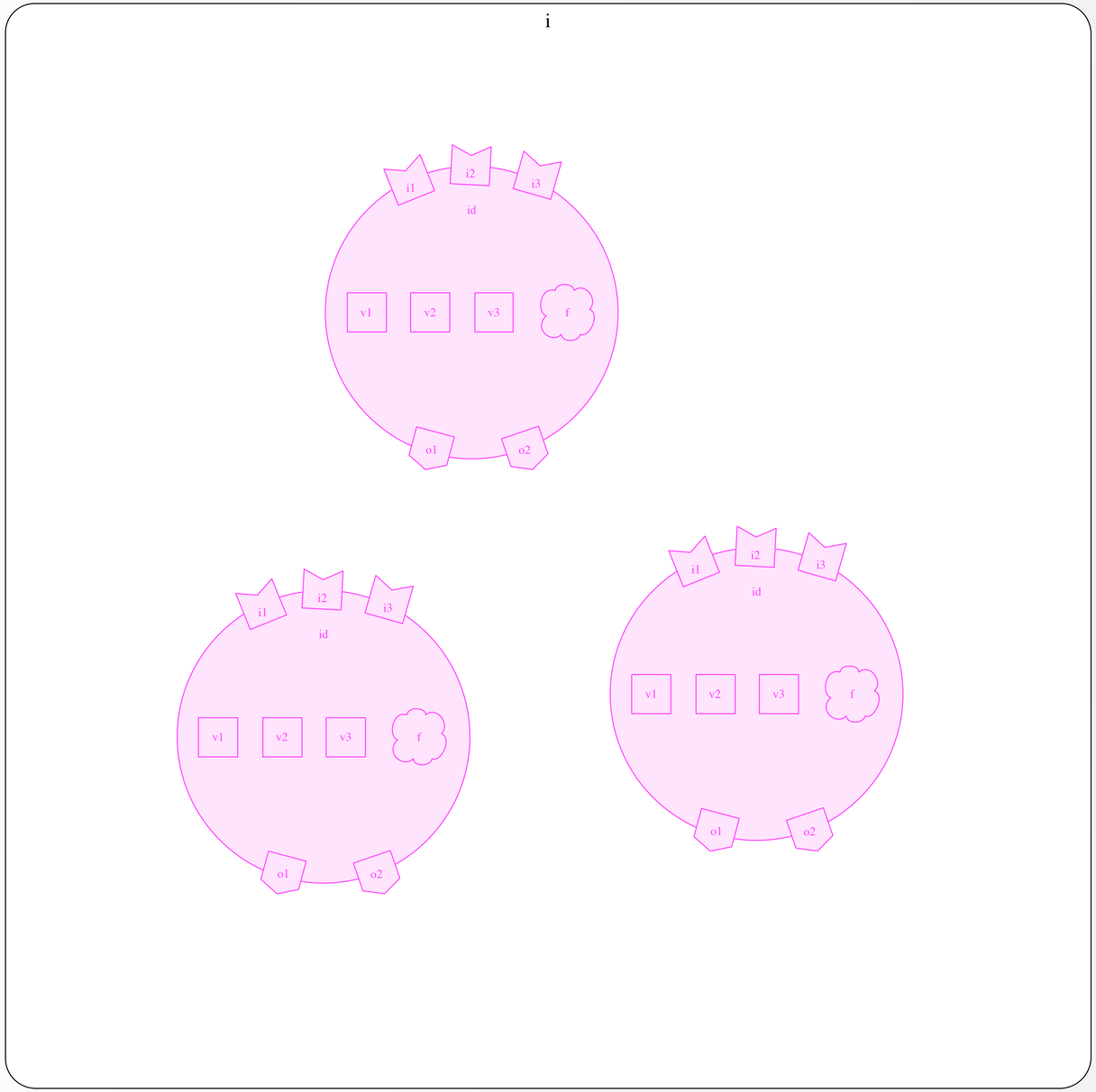
$$\mathbf{C} = \mathbb{I}^4$$

Interactors



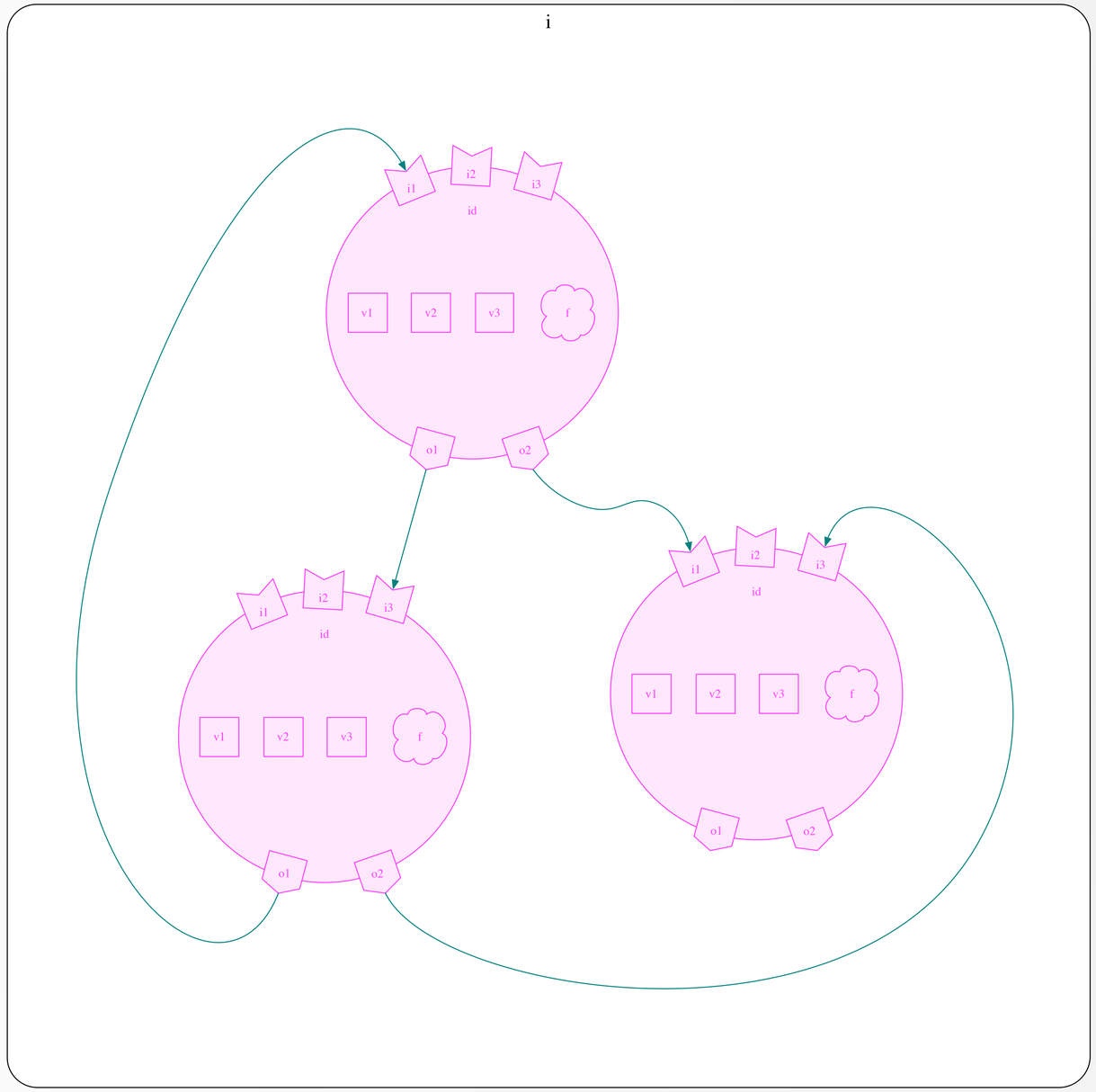
i

Interactors



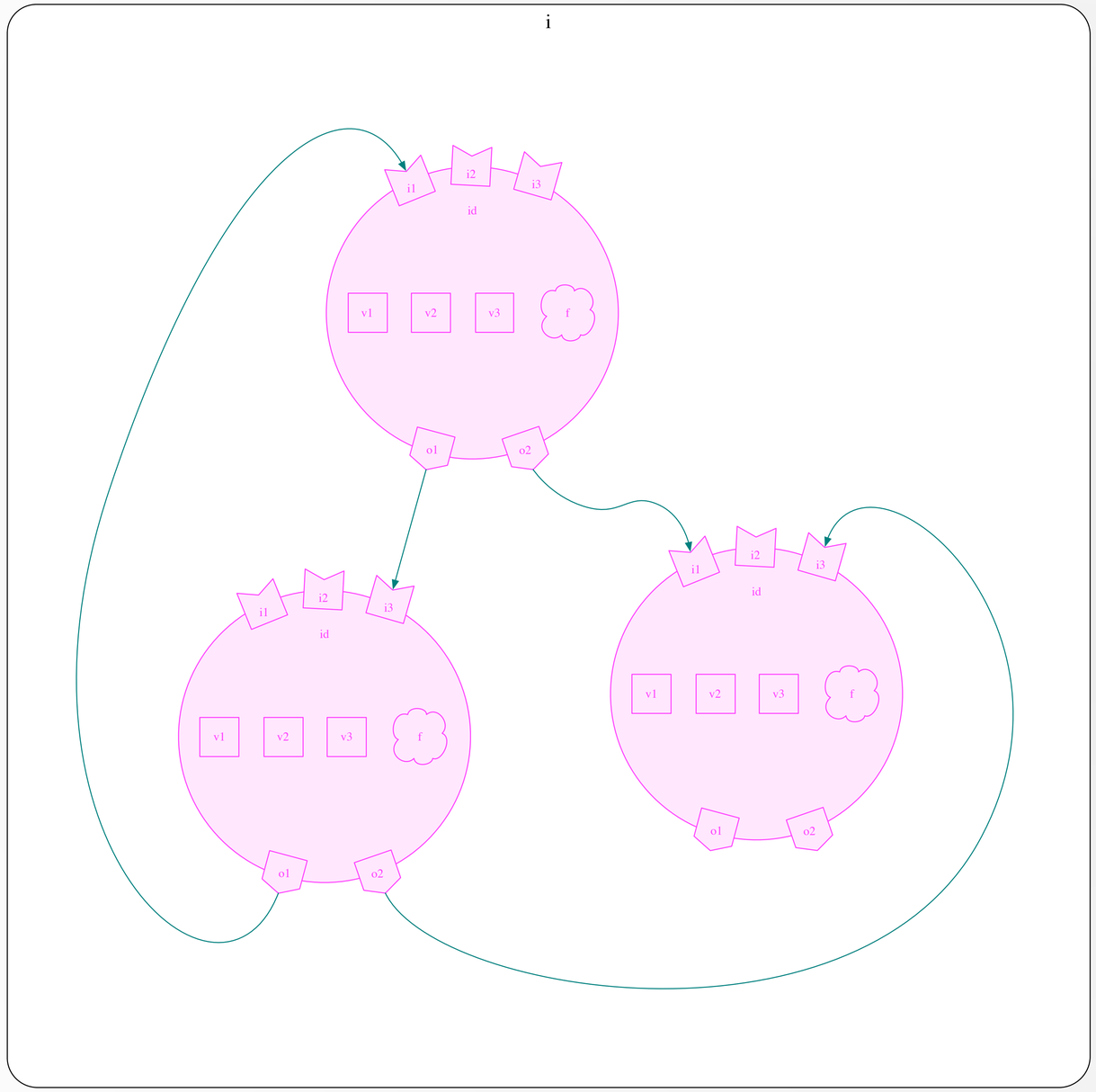
$$i = \langle B$$
$$B \in \mathcal{P}(\mathbf{B})$$

Interactors



$$
\begin{aligned}
i &= \langle B, C \rangle \\
B &\in \mathcal{P}(\mathbf{B}) \\
C &\in \mathcal{P}(\mathbf{C})
\end{aligned}
$$

Interactors



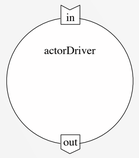
$$i = \langle B, C \rangle$$
$$B \in \mathcal{P}(\mathbf{B})$$
$$C \in \mathcal{P}(\mathbf{C})$$

$$\mathbf{I} = \mathcal{P}(\mathbf{B}) \times \mathcal{P}(\mathbf{C})$$

Interpretation

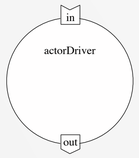
Interpretation

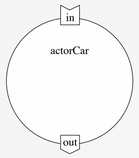
```
test interactor:
    driver : human actor
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor
```



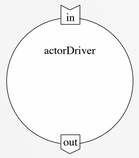


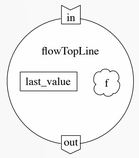
Interpretation

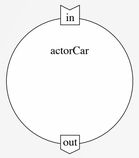
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow
```





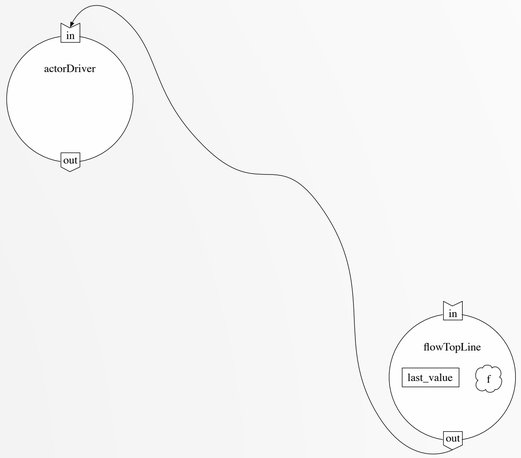


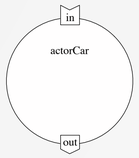
Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
```



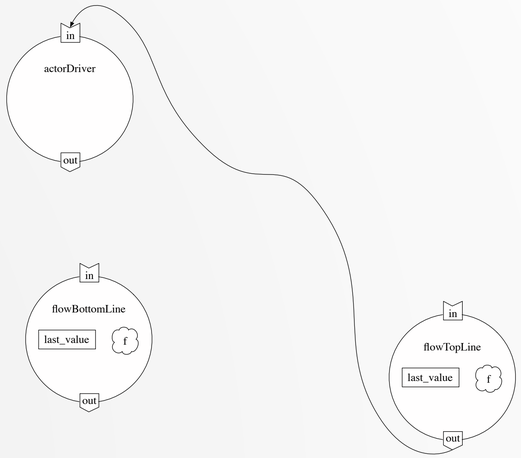


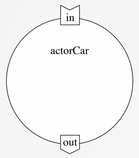
Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow
```



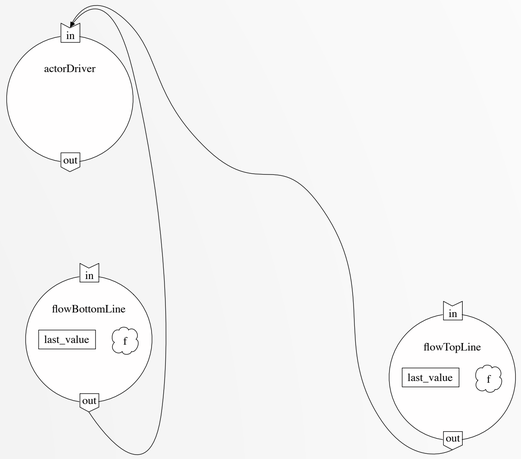


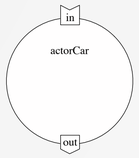
Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver
```





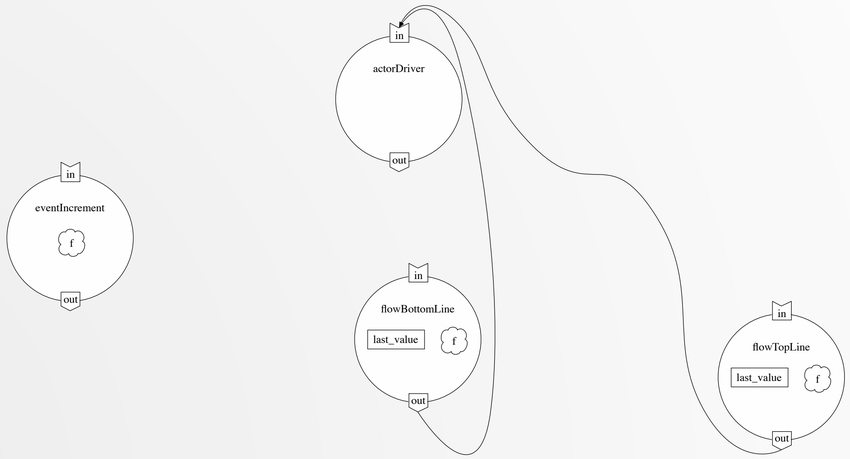
Interpretation

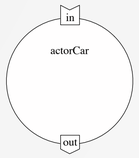
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event
```





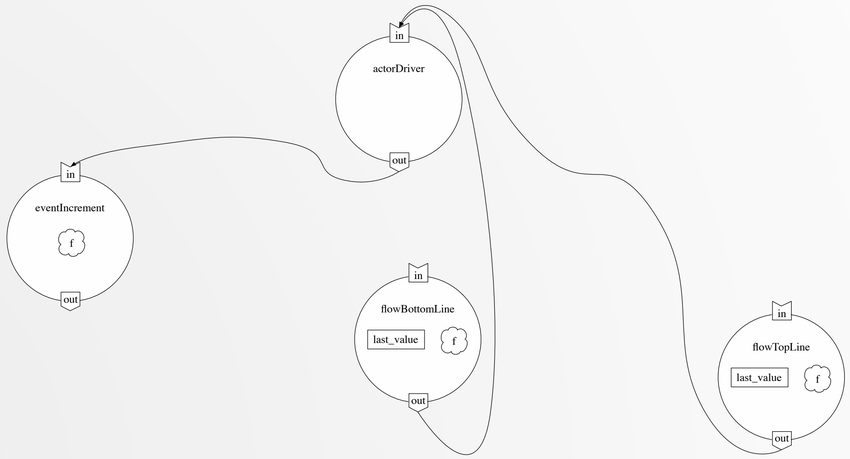
Interpretation

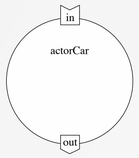
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
```





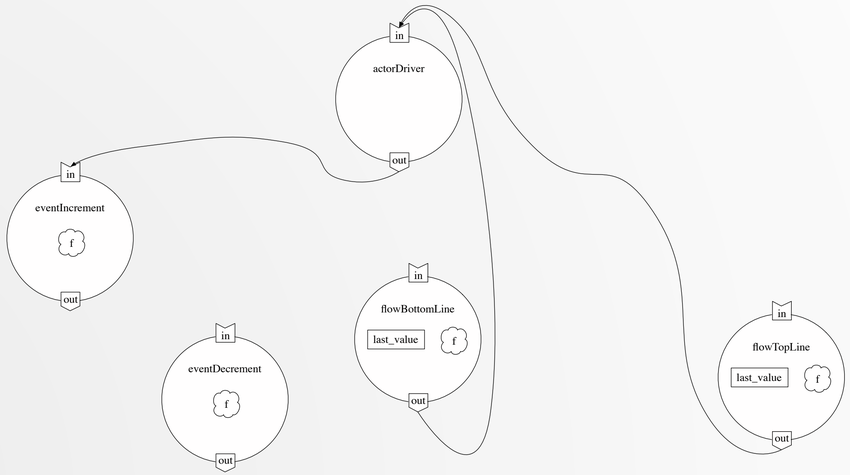
Interpretation

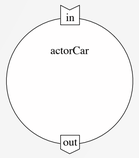
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event
```





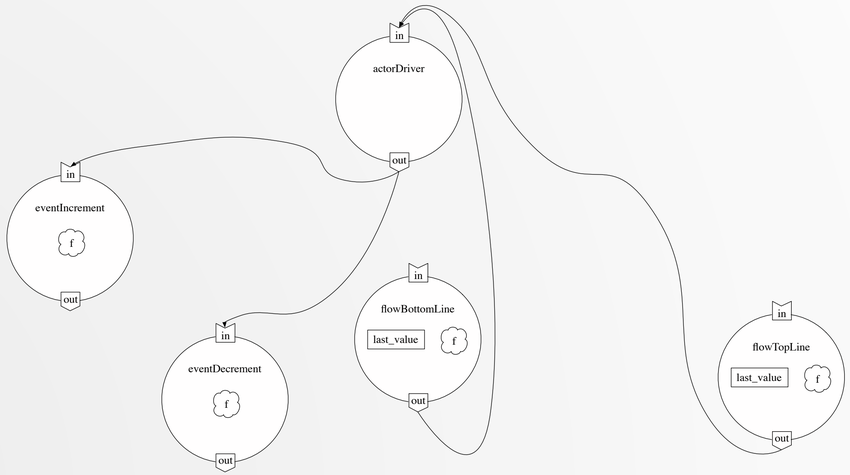
Interpretation

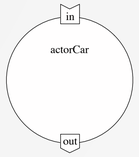
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver
```





Interpretation

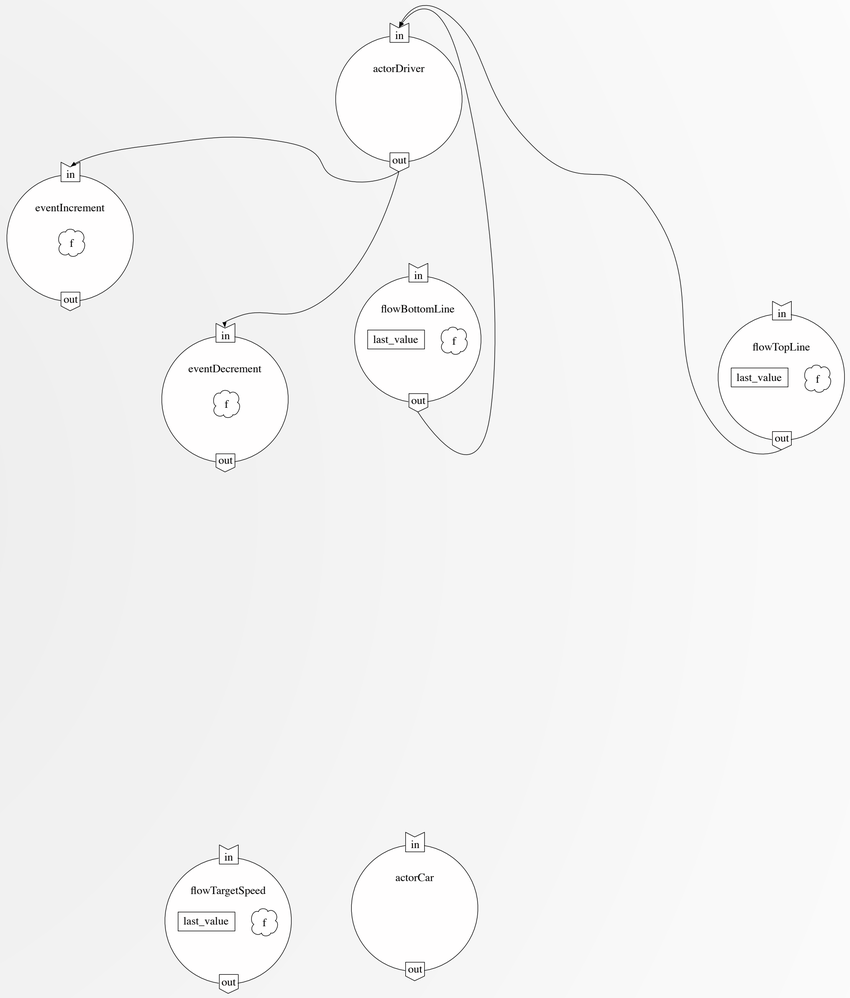
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow
```



Interpretation

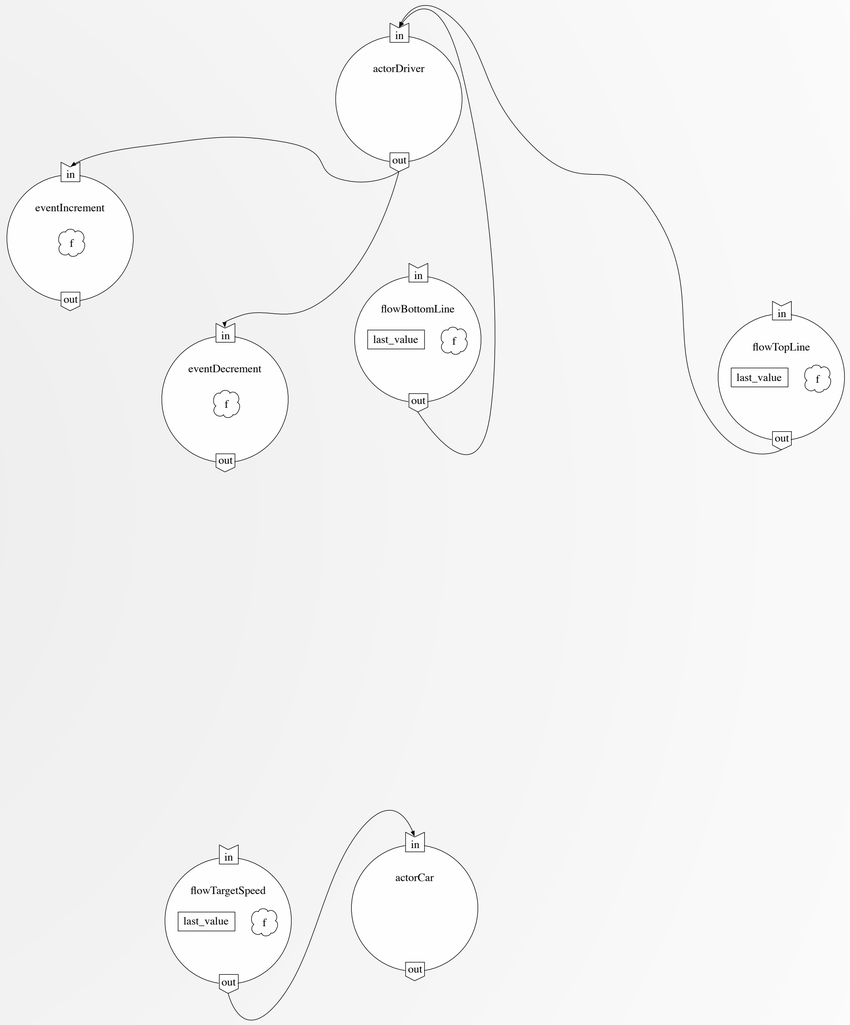
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
```



Interpretation

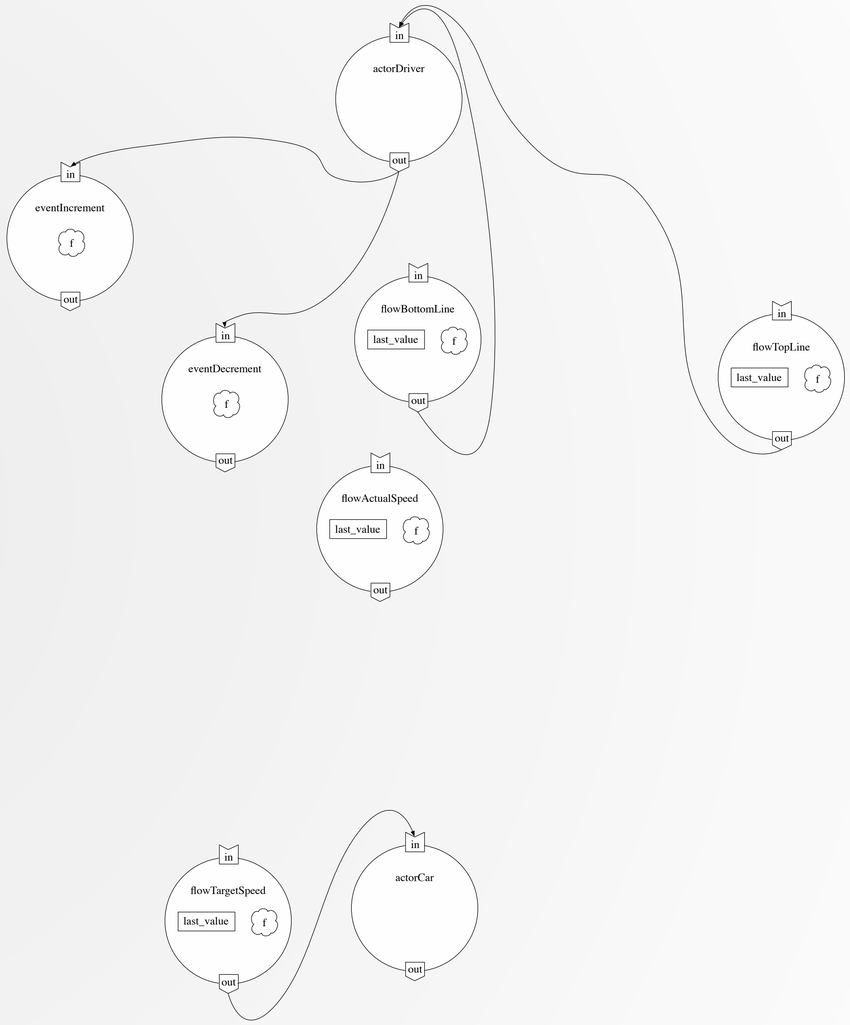
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow
```



Interpretation

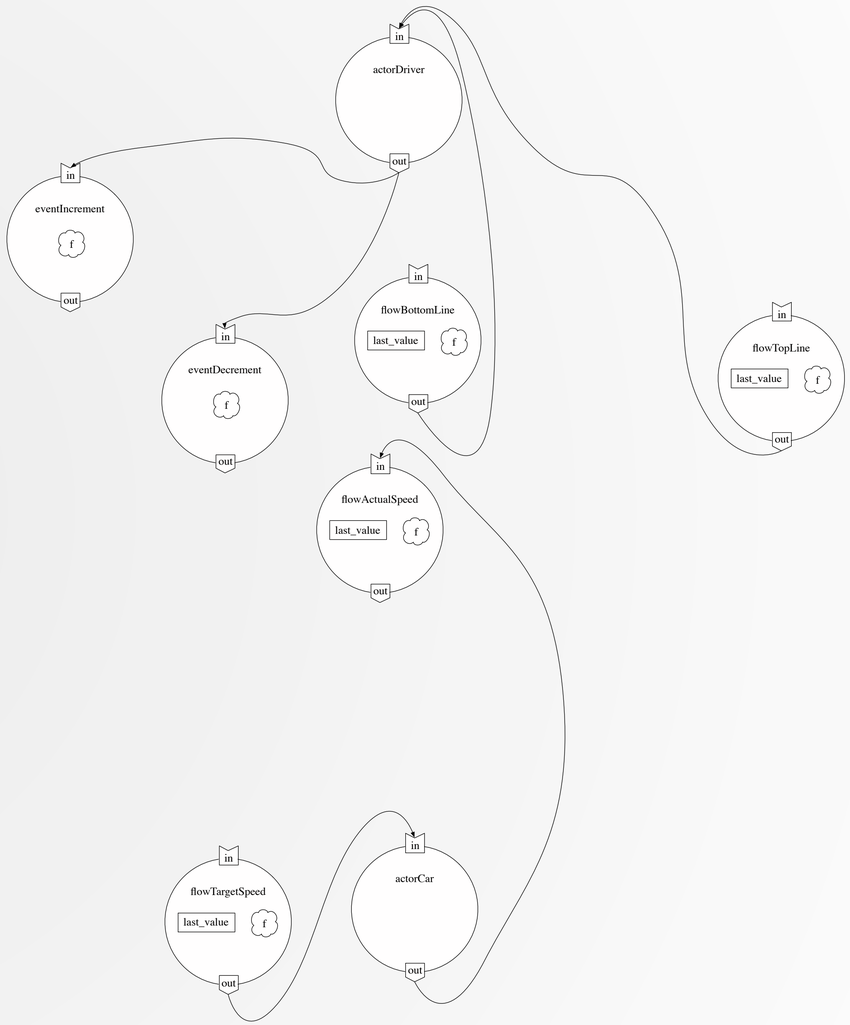
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car
```



Interpretation

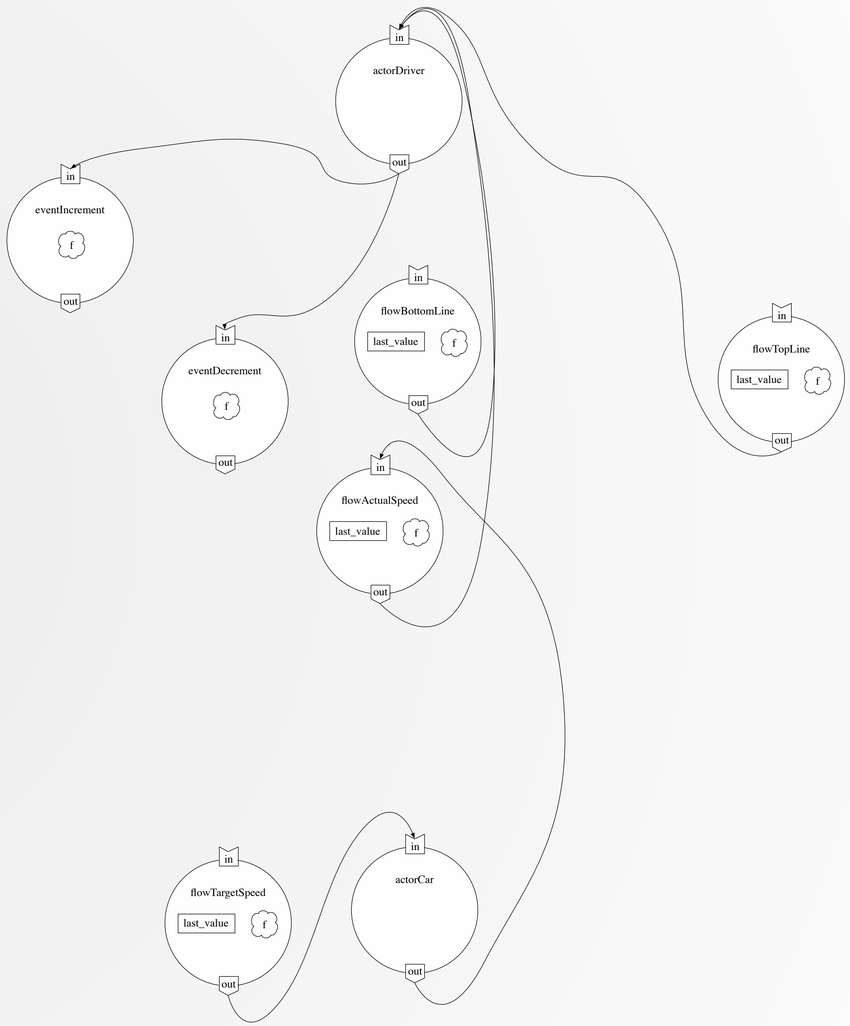
```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

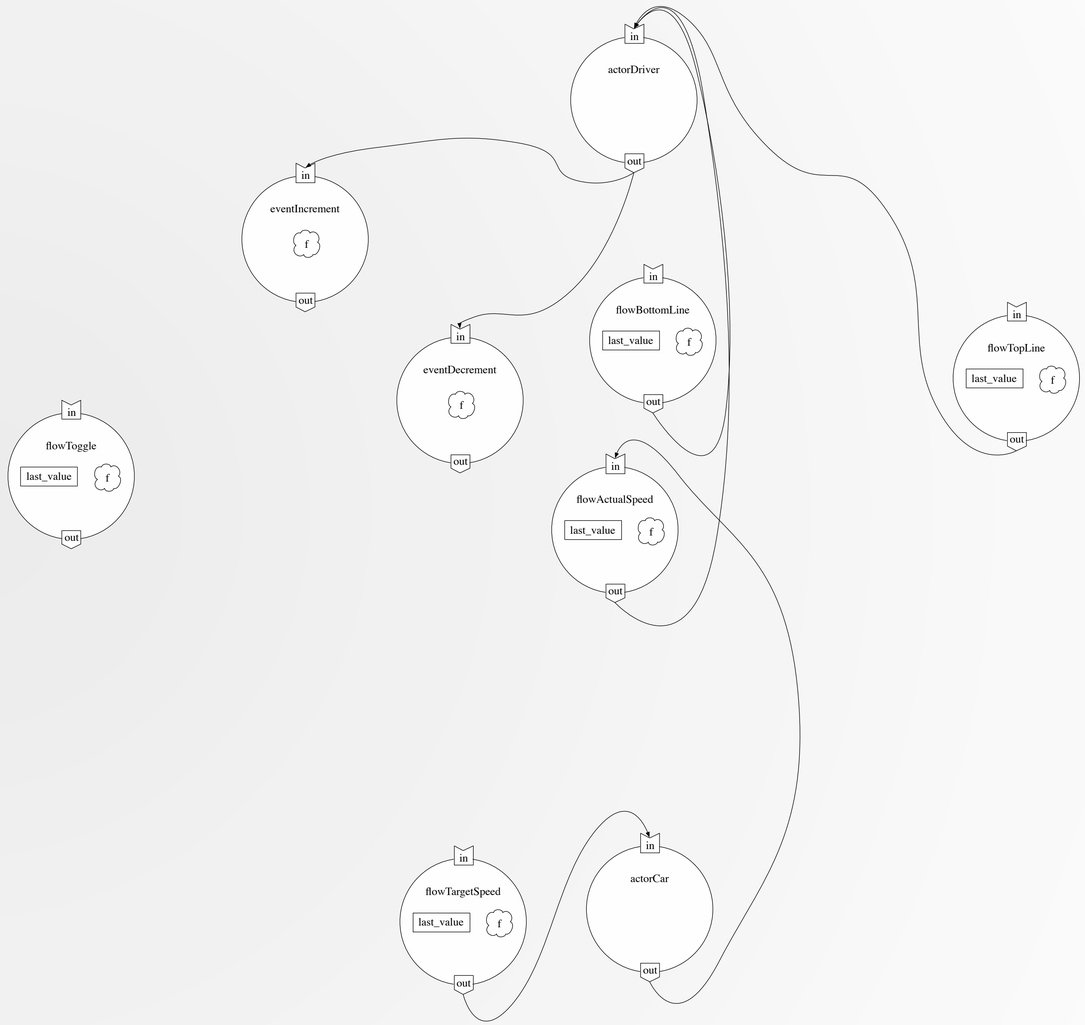
    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

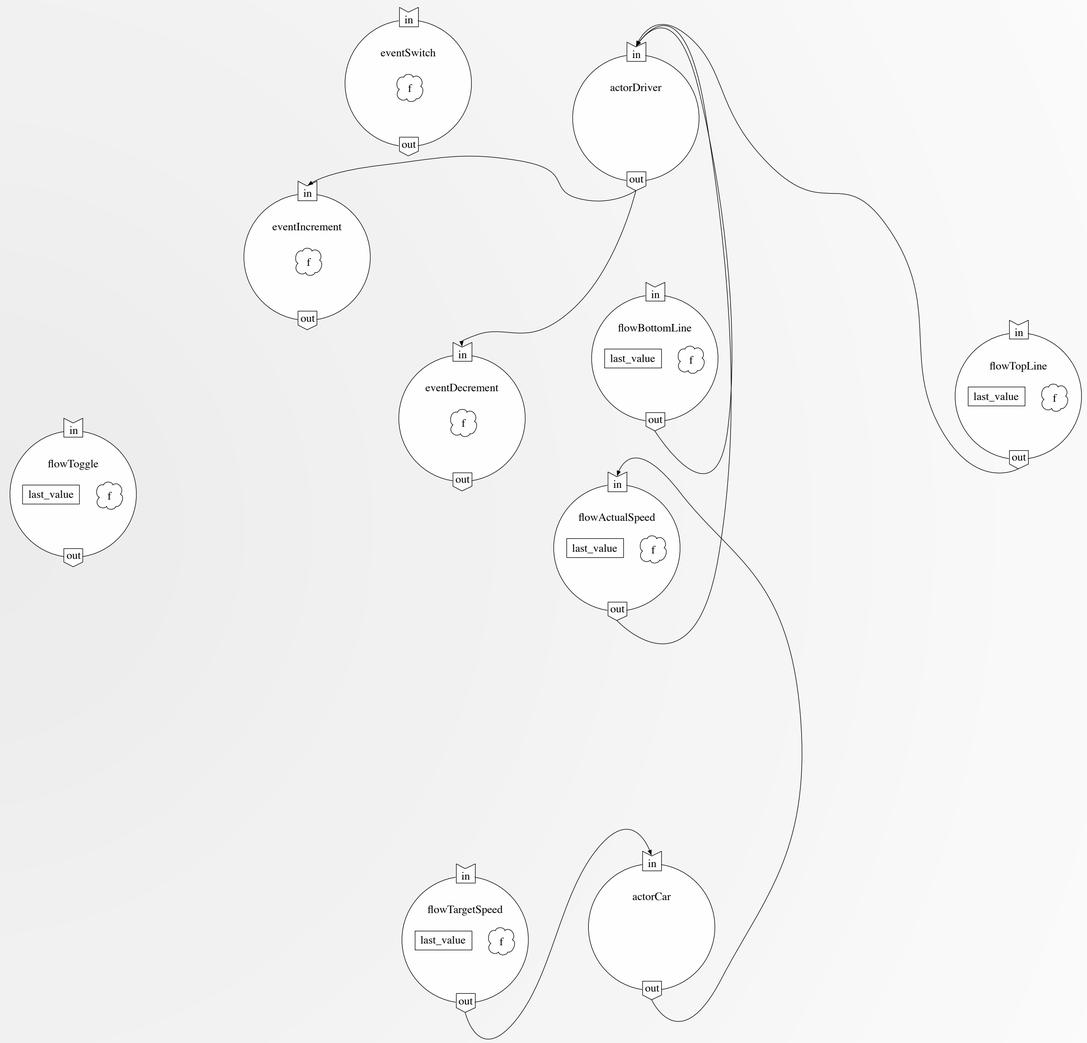
    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

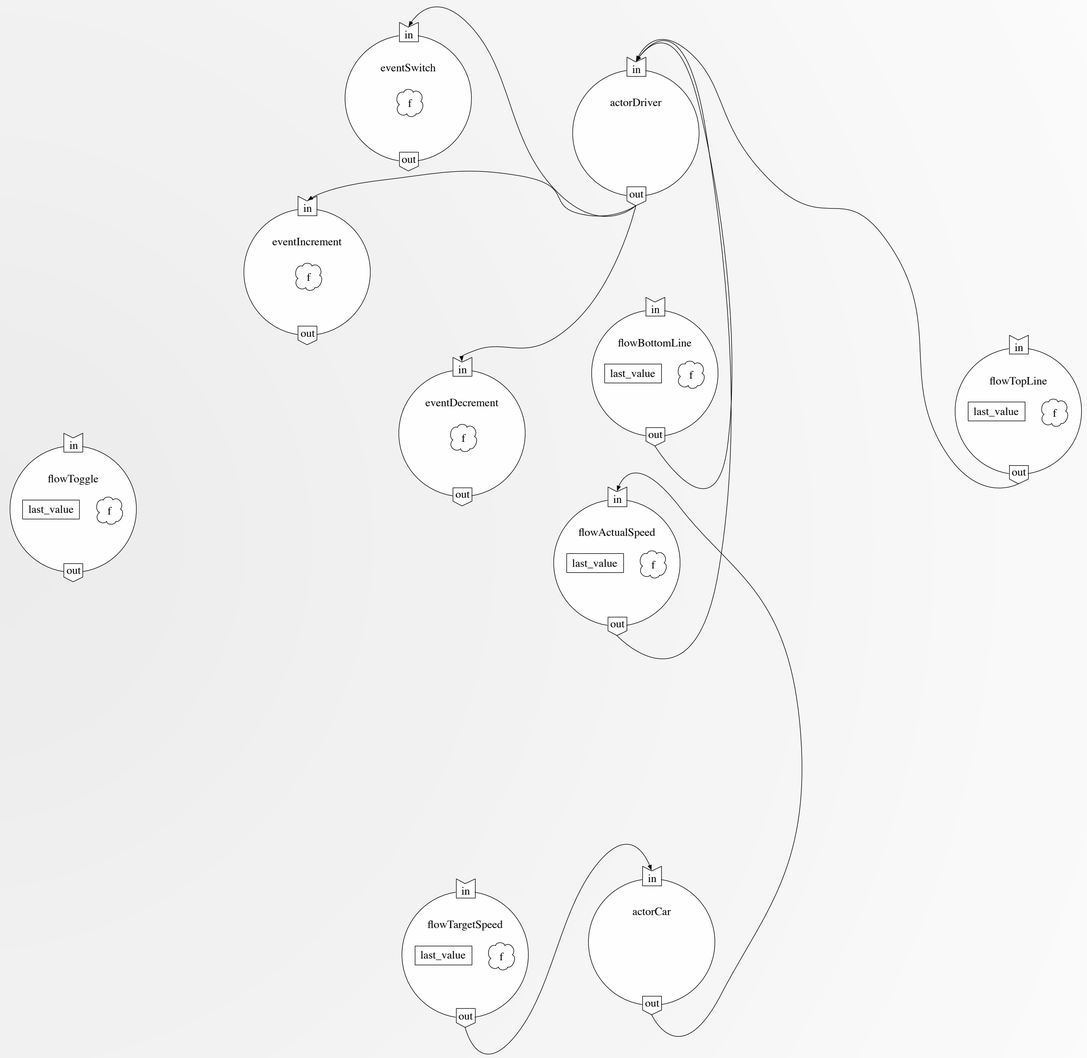
    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

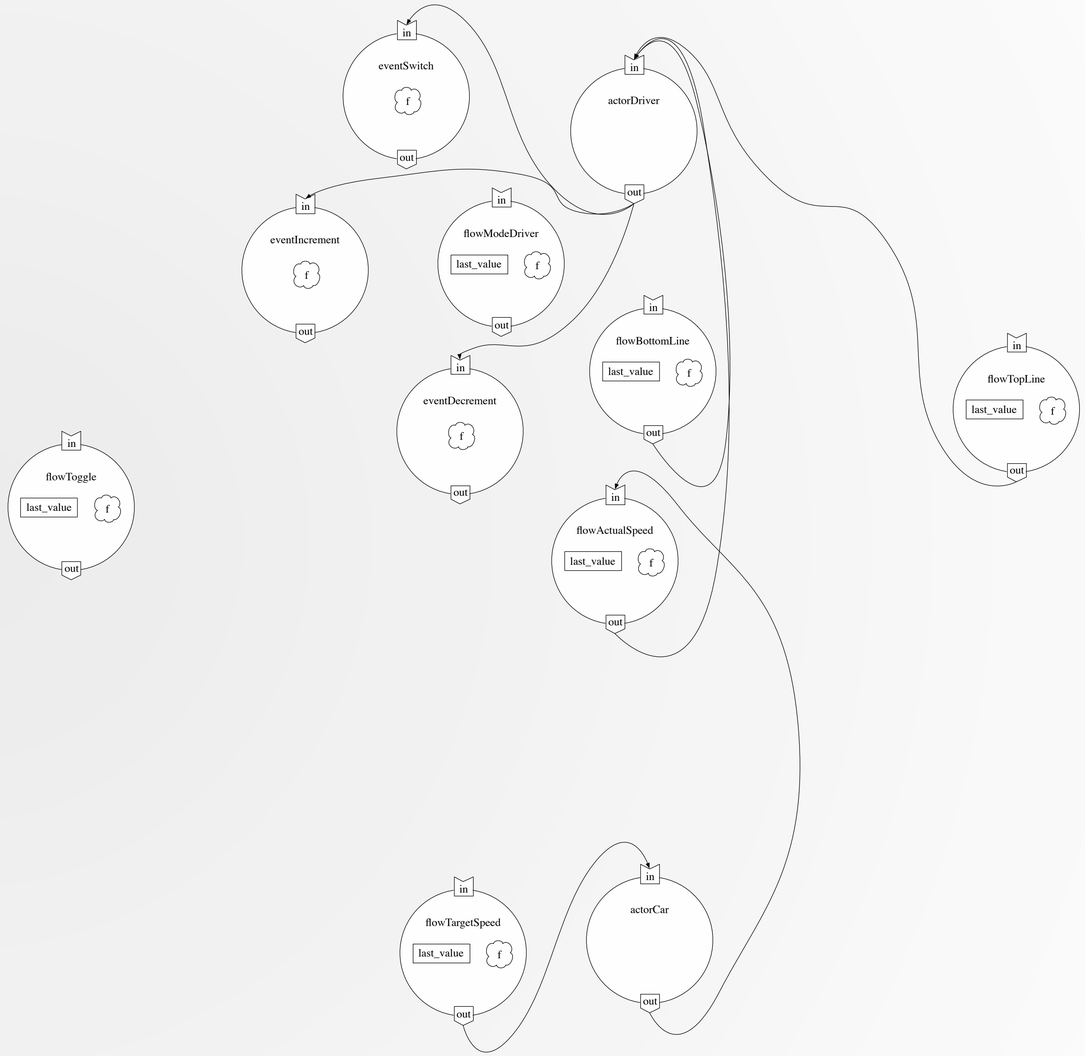
    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

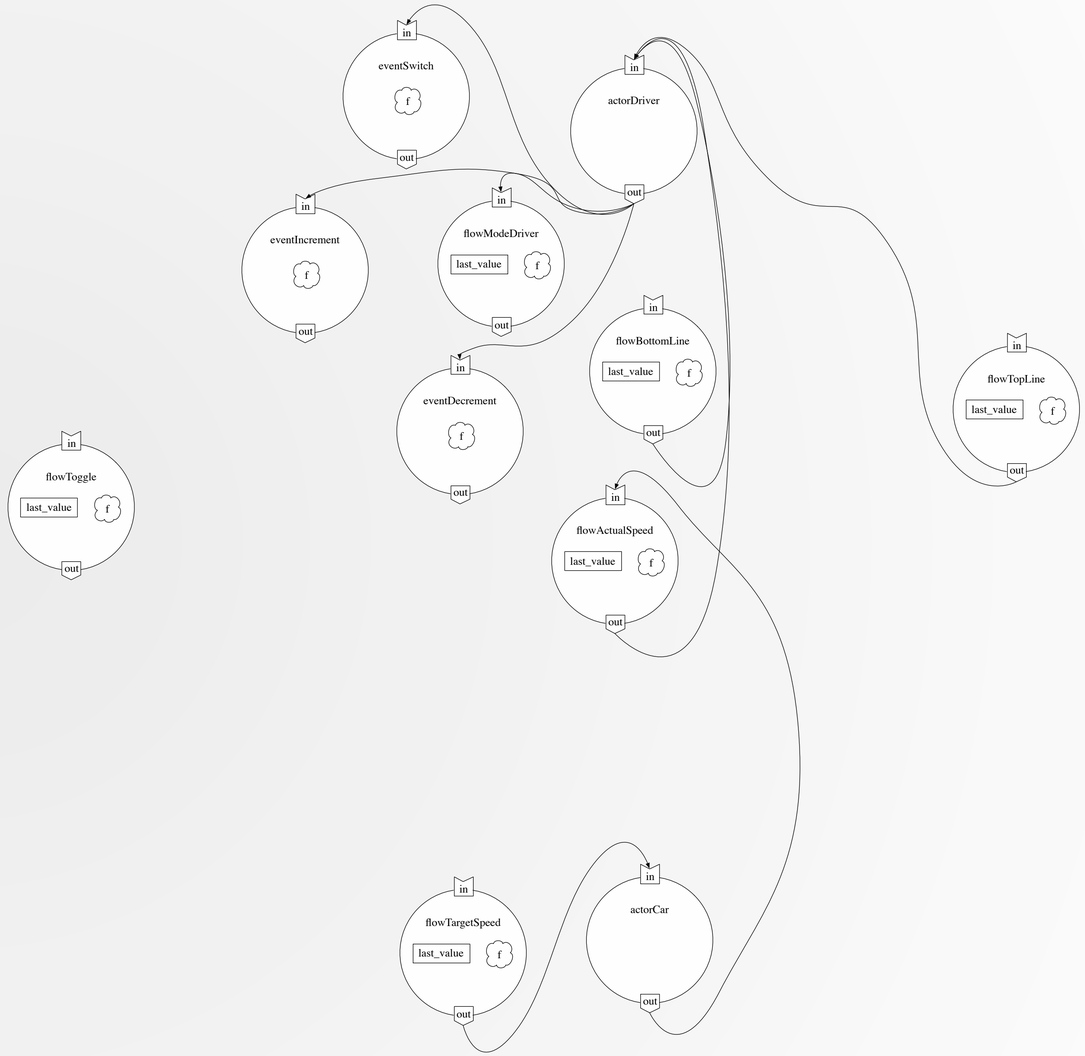
    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

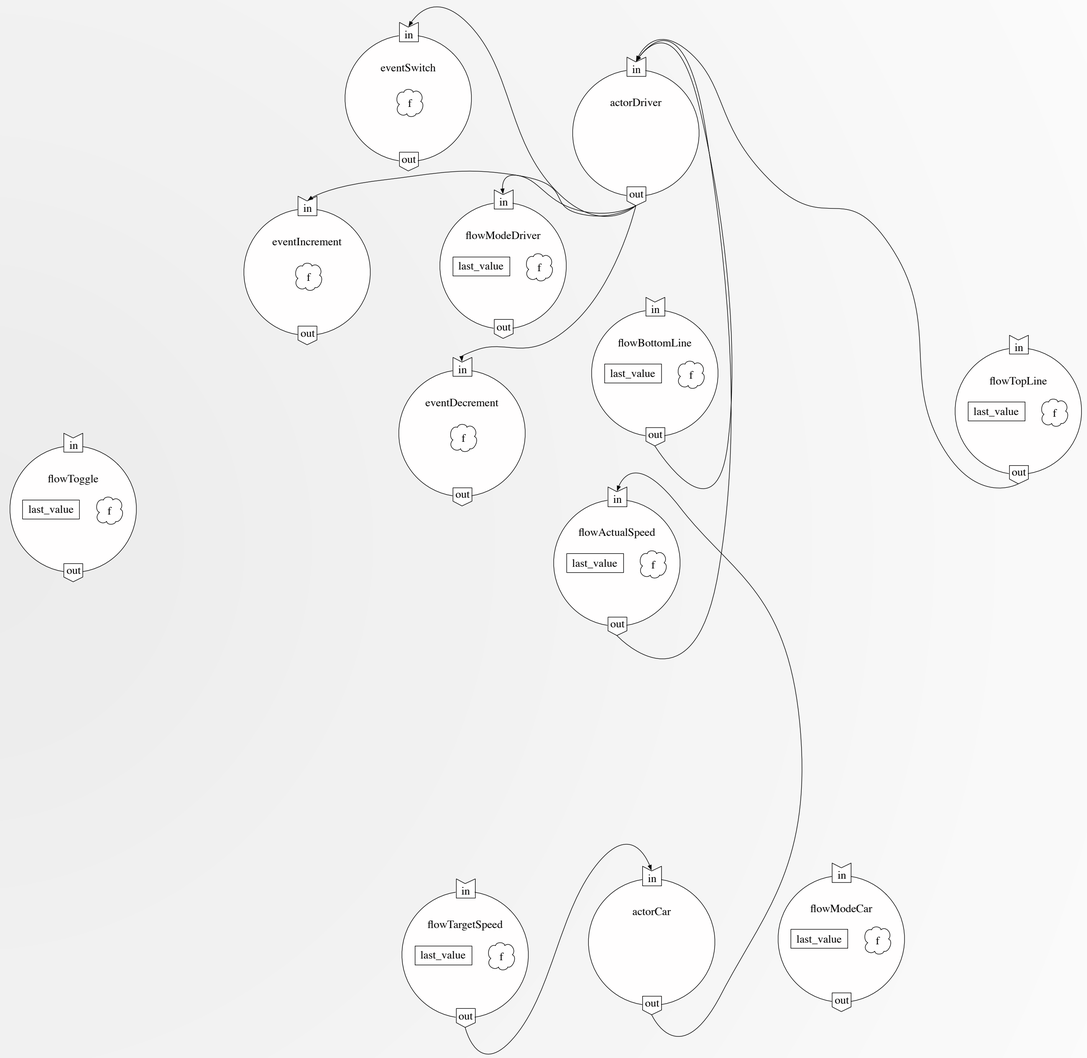
    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

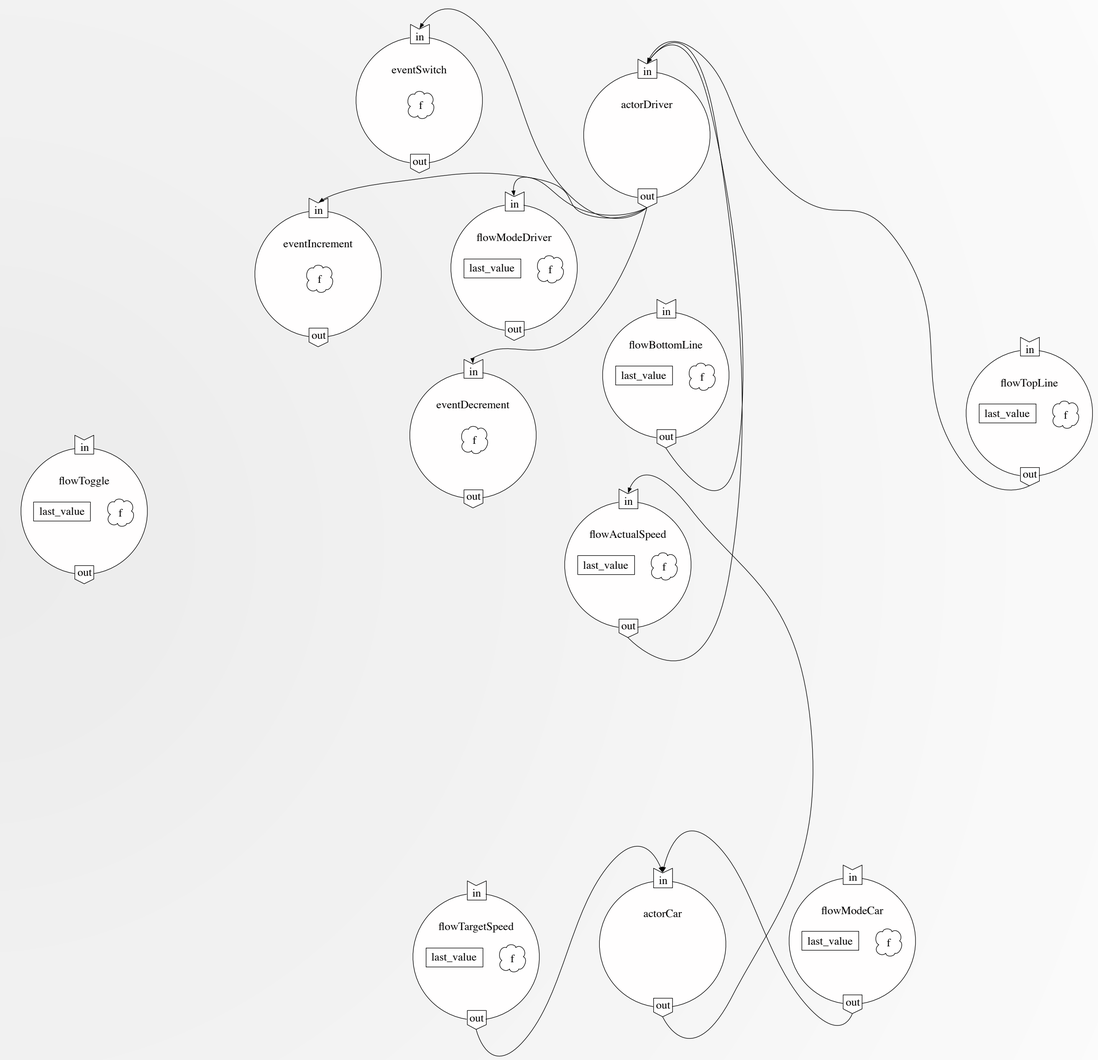
    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

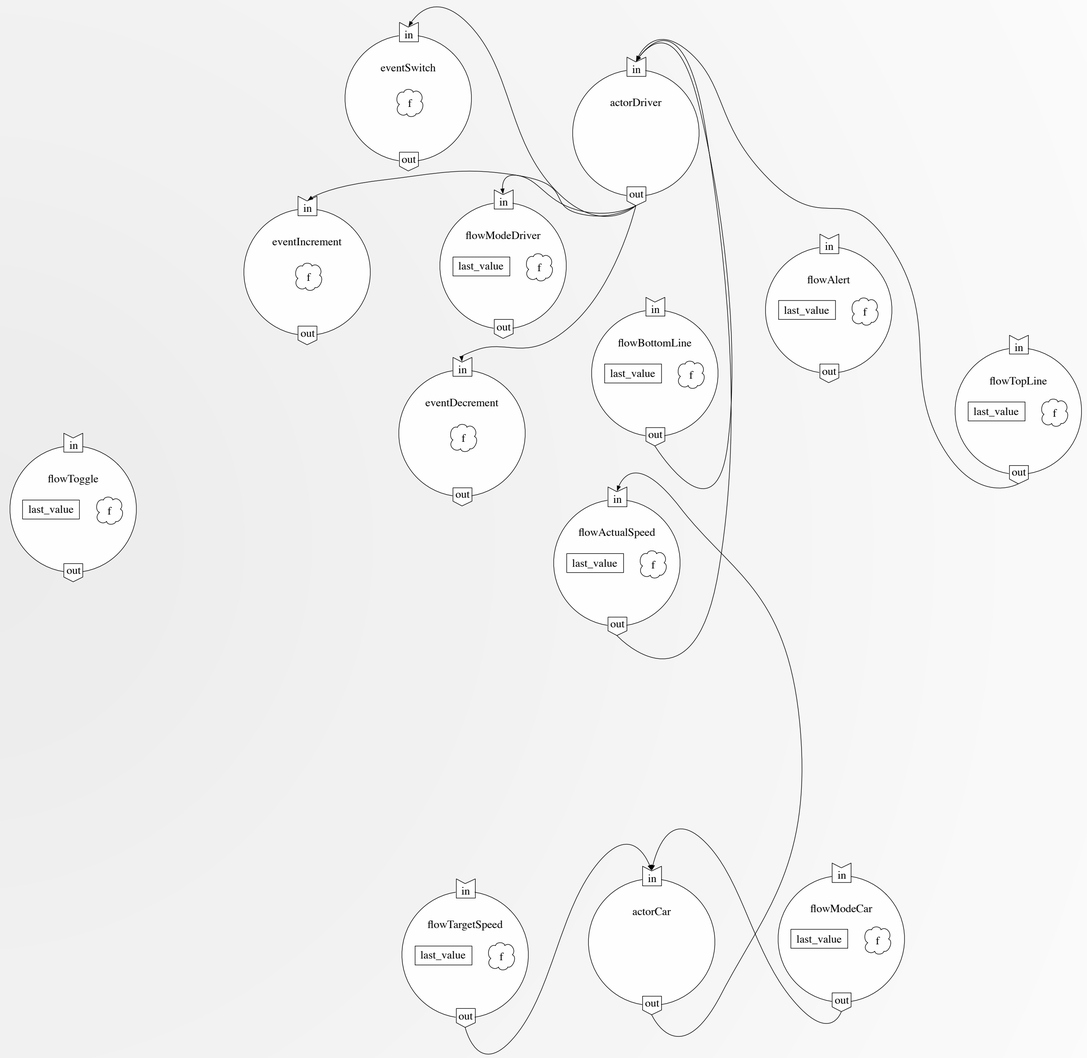
    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

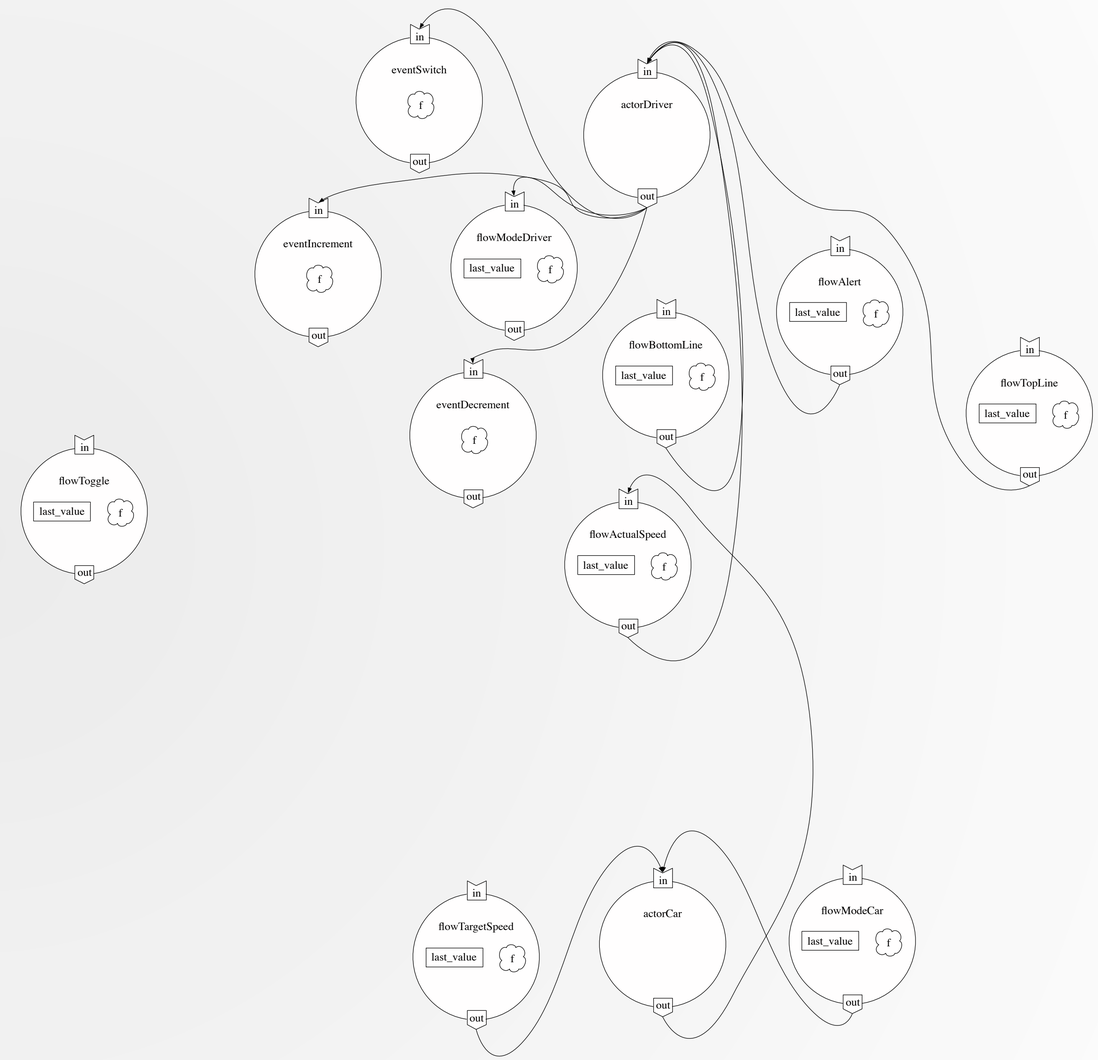
    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

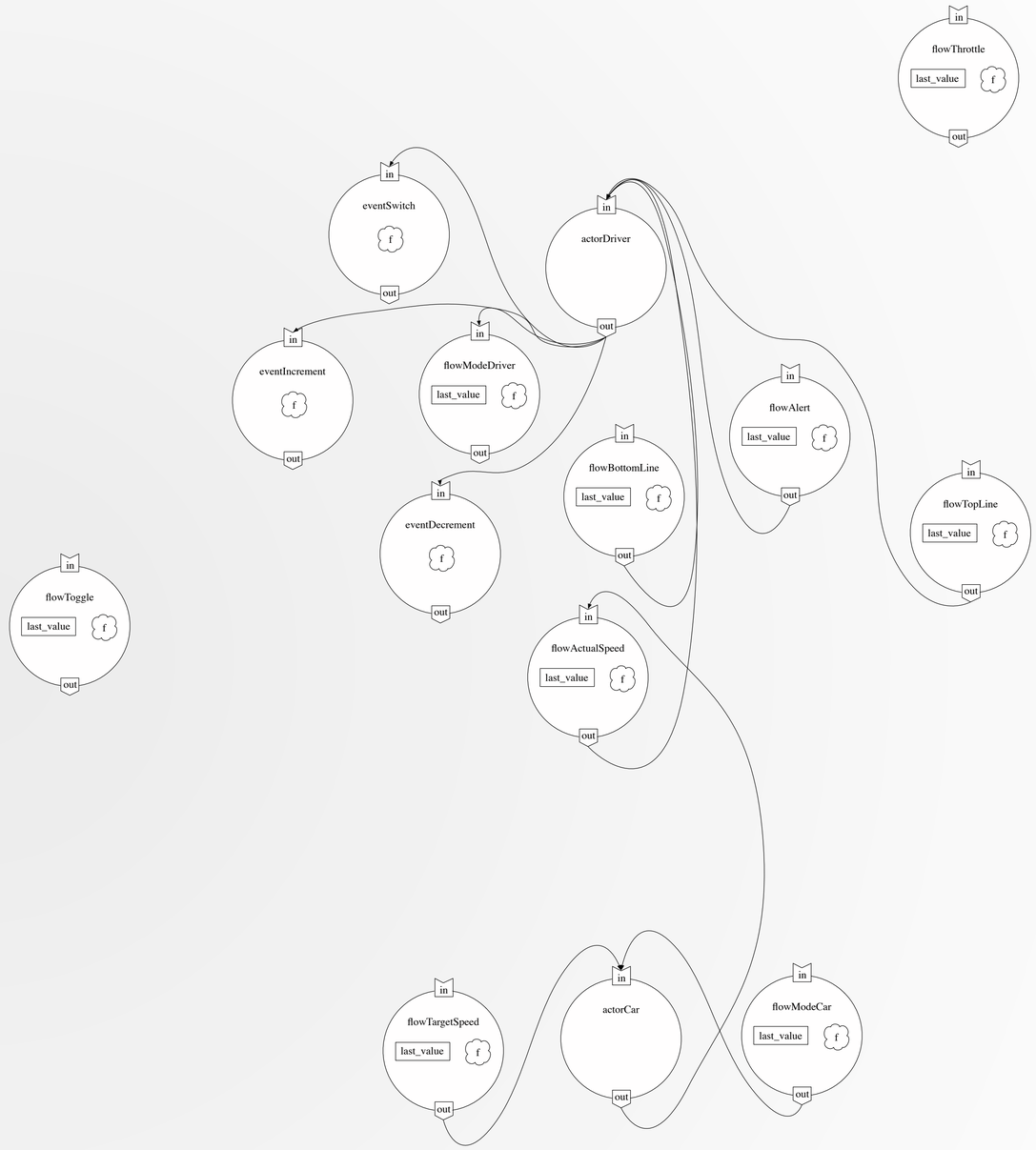
    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

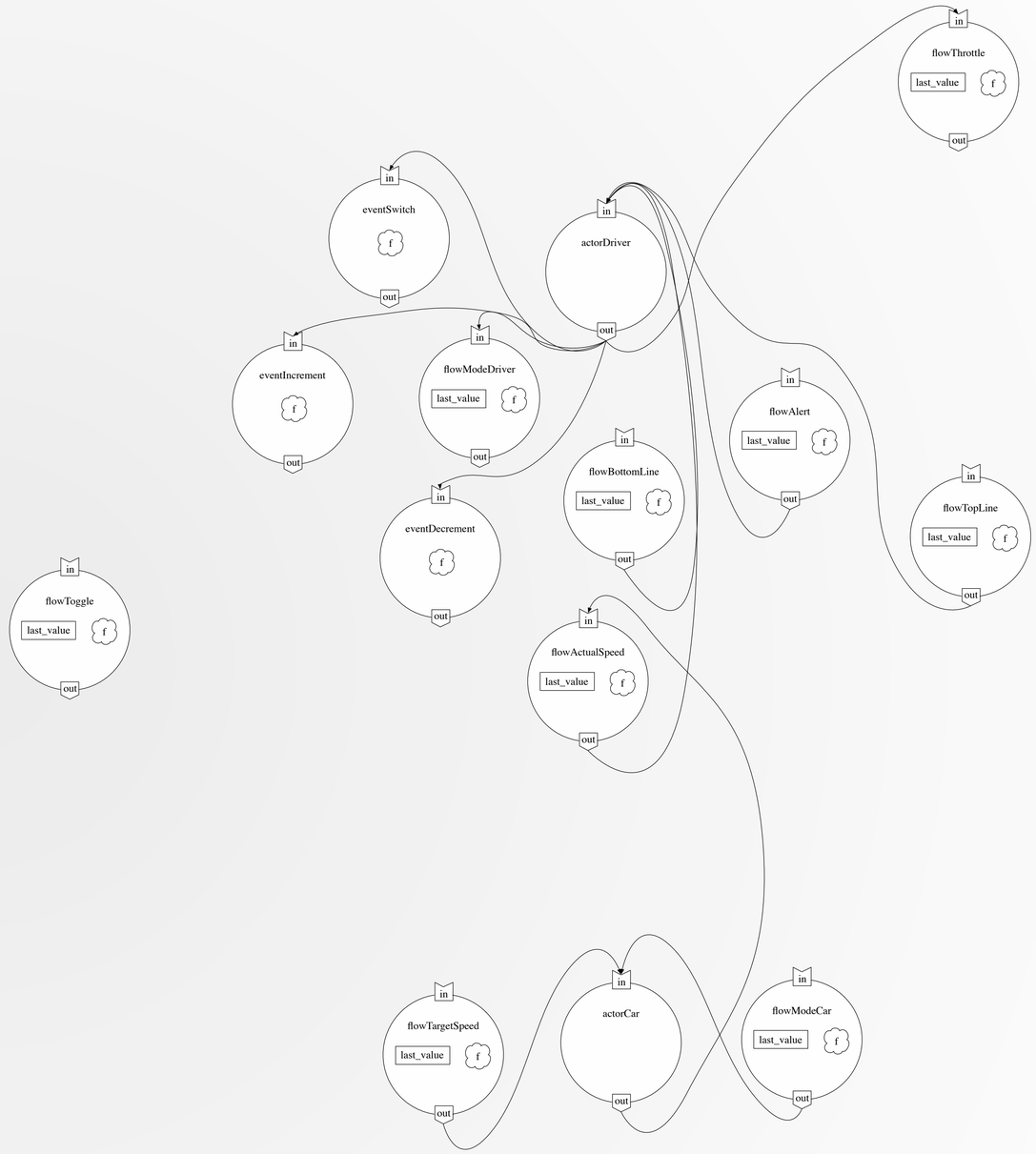
    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

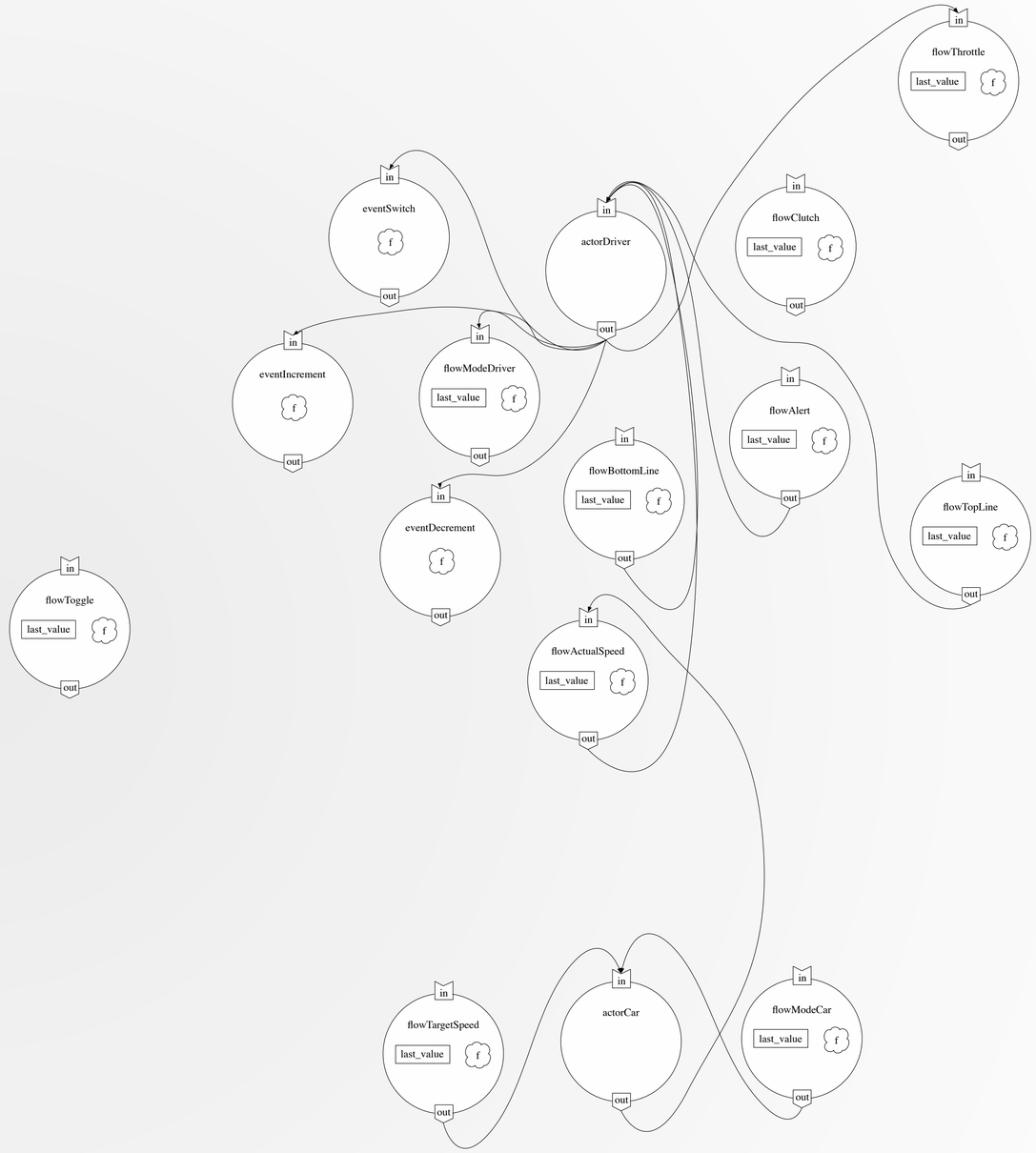
    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

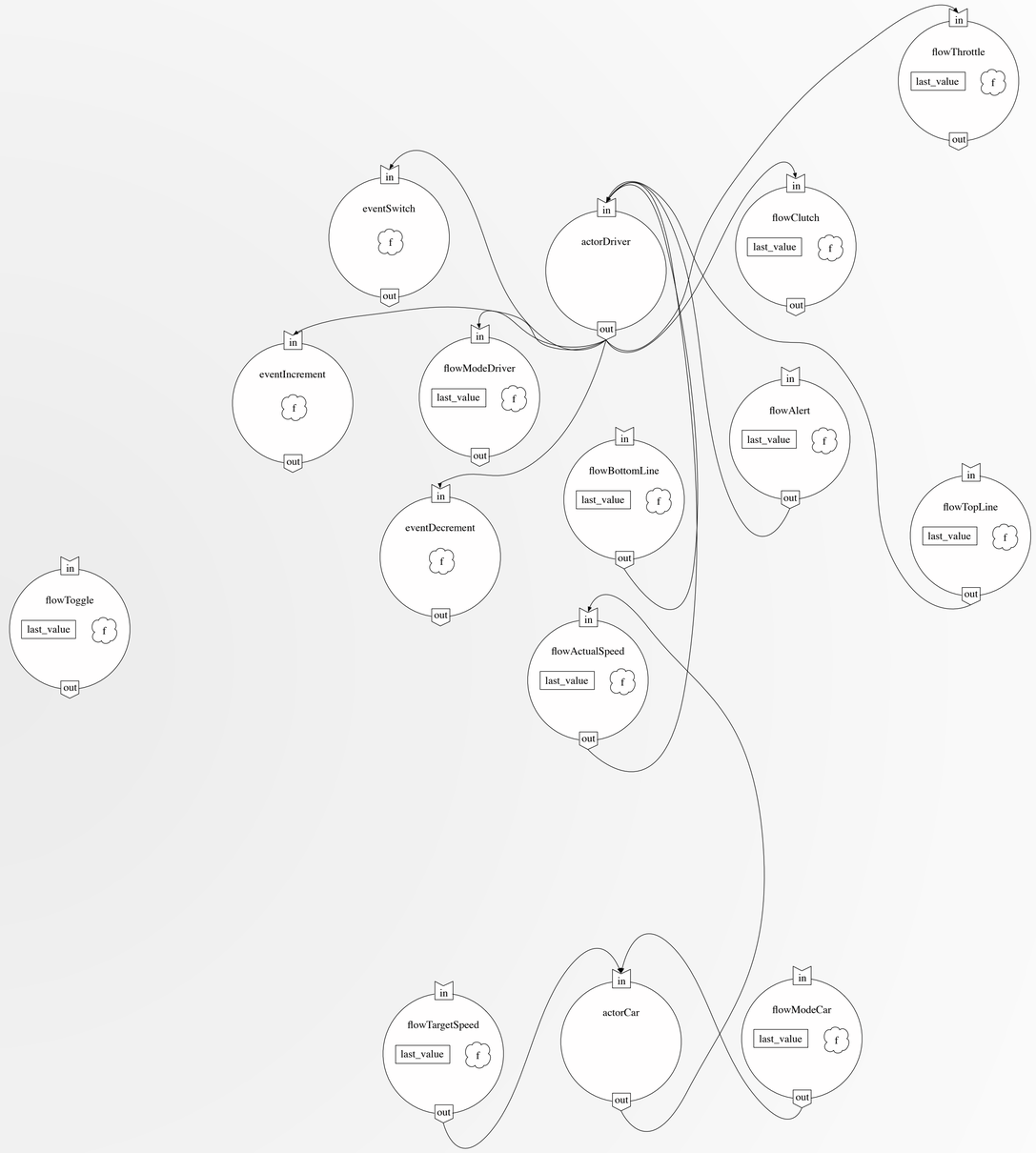
    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

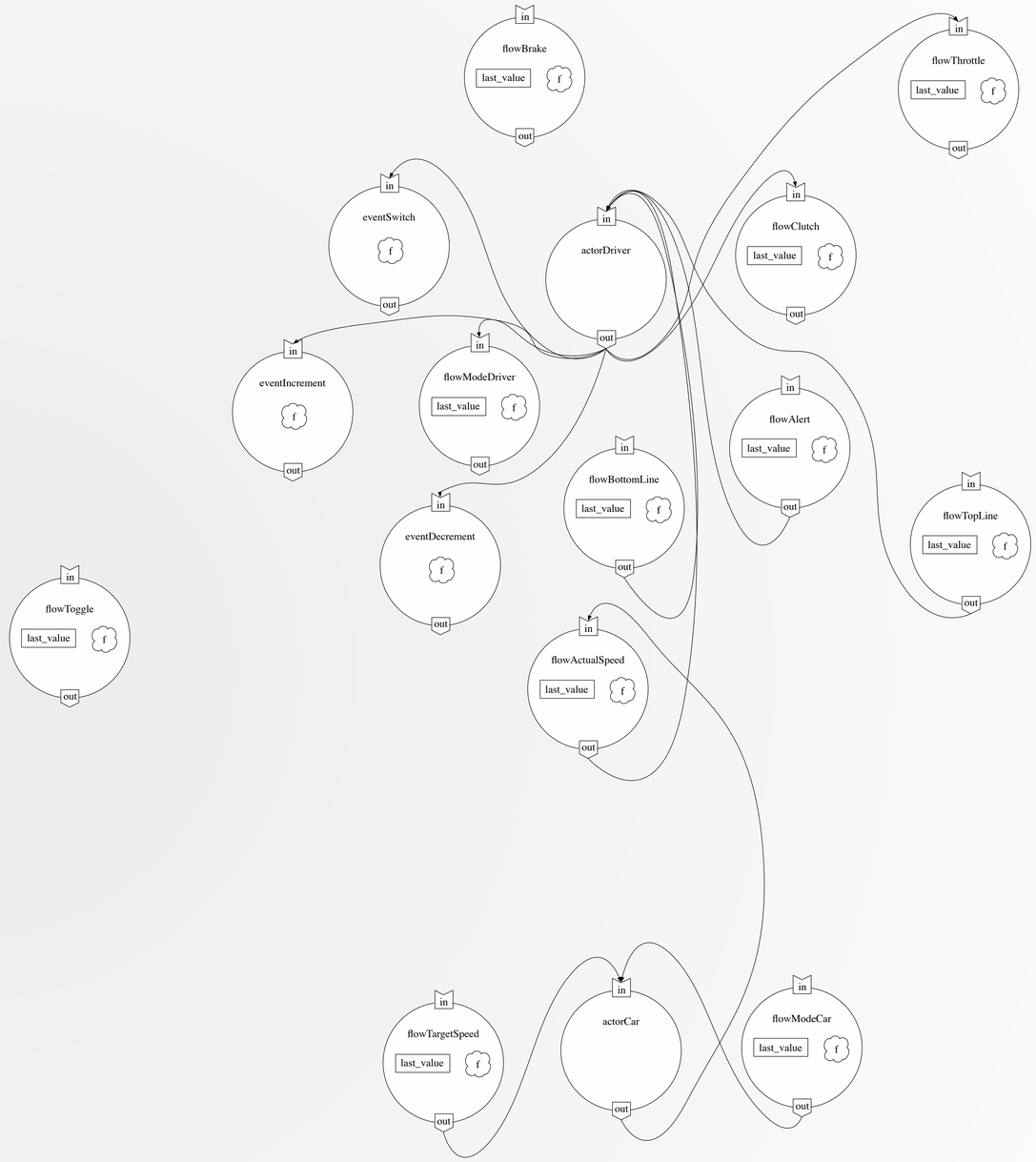
    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

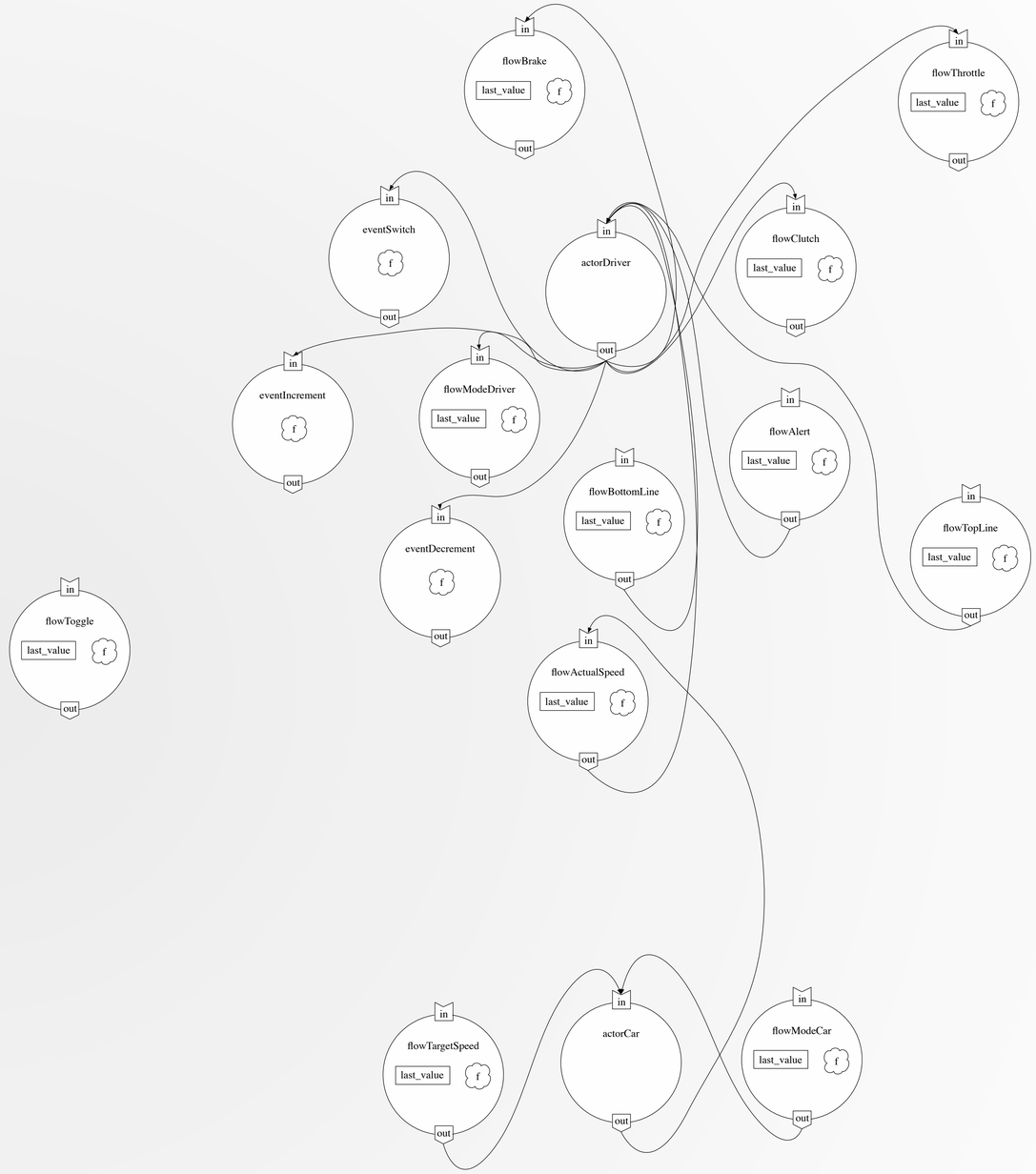
    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

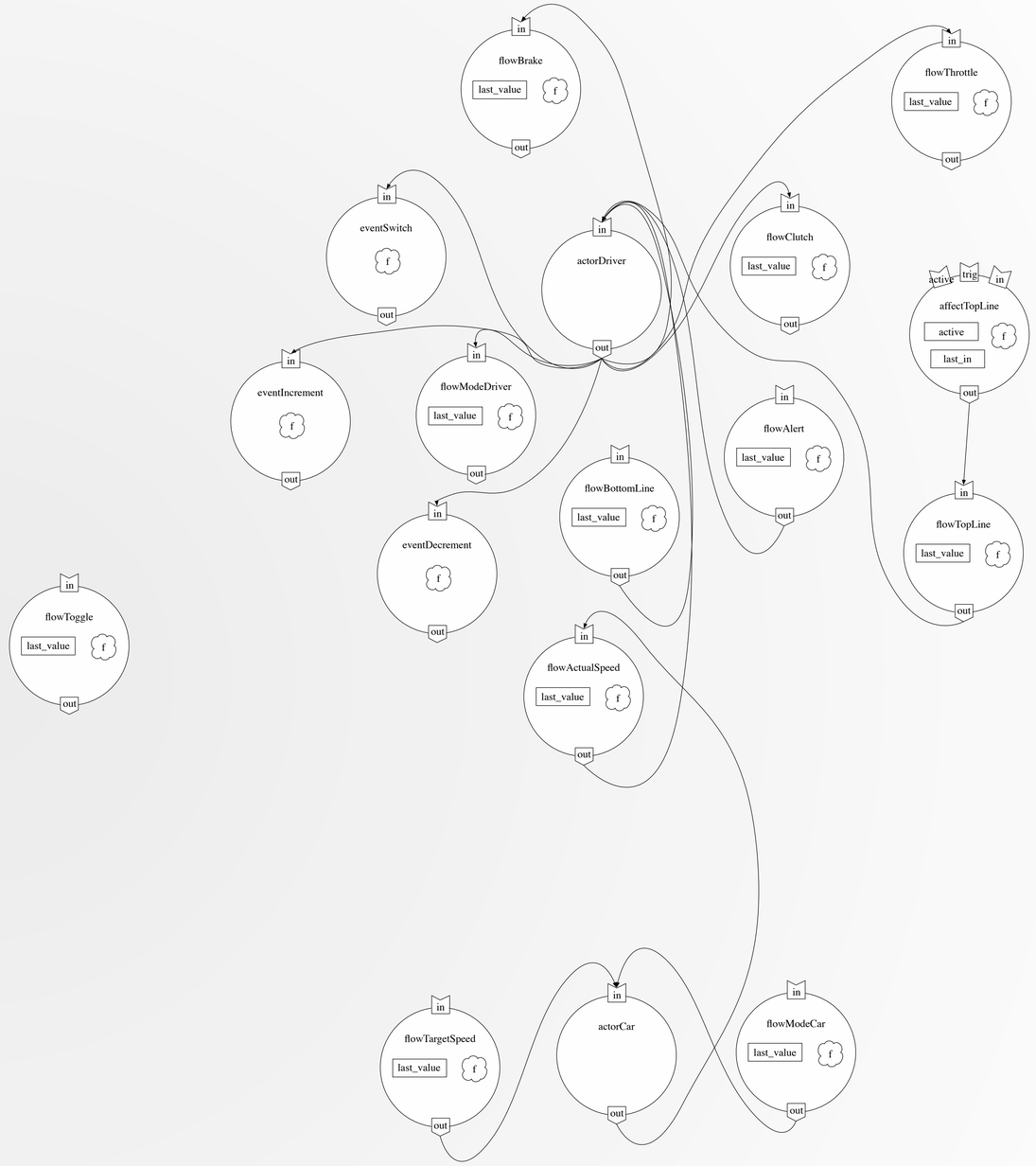
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine =
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

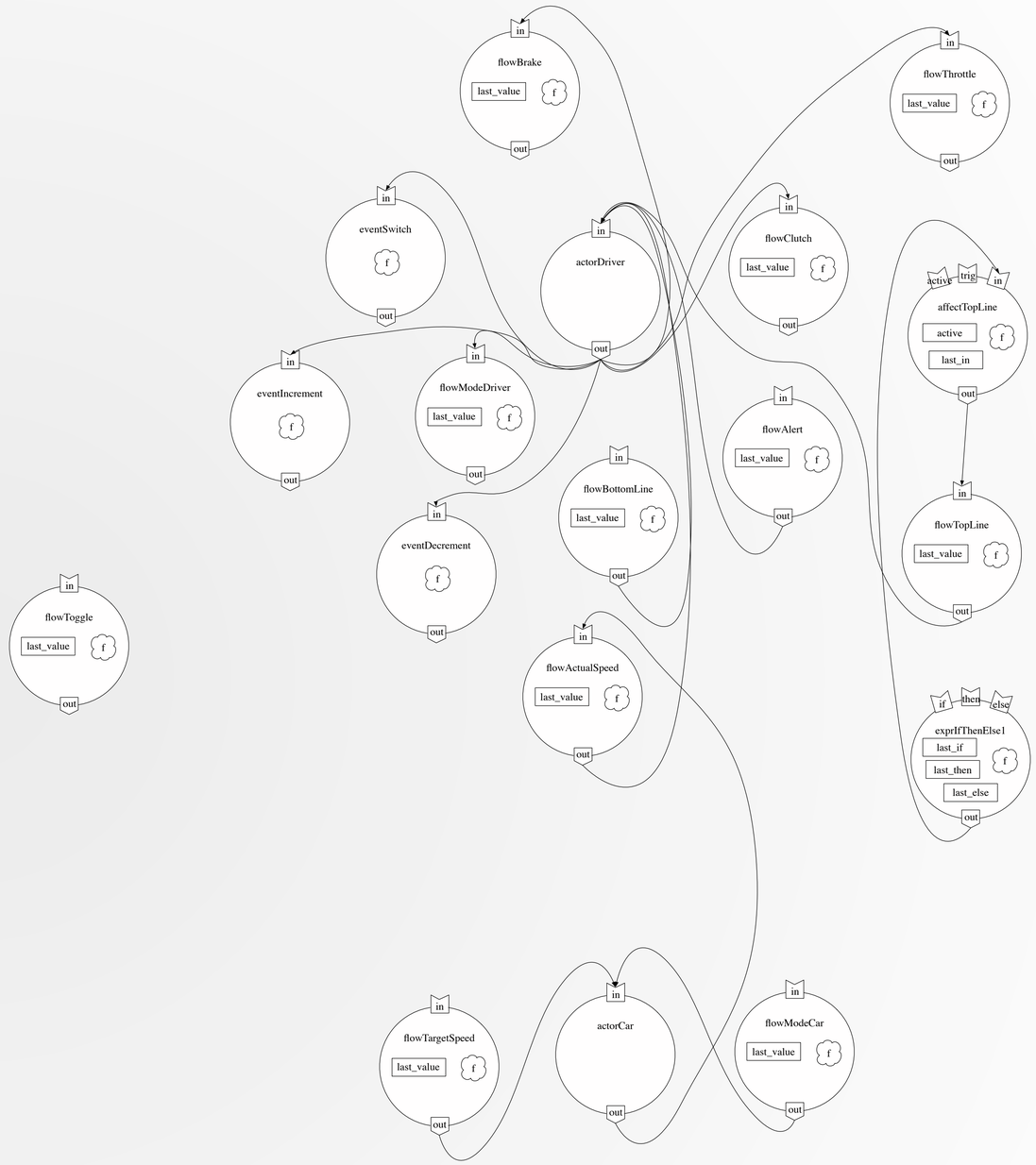
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

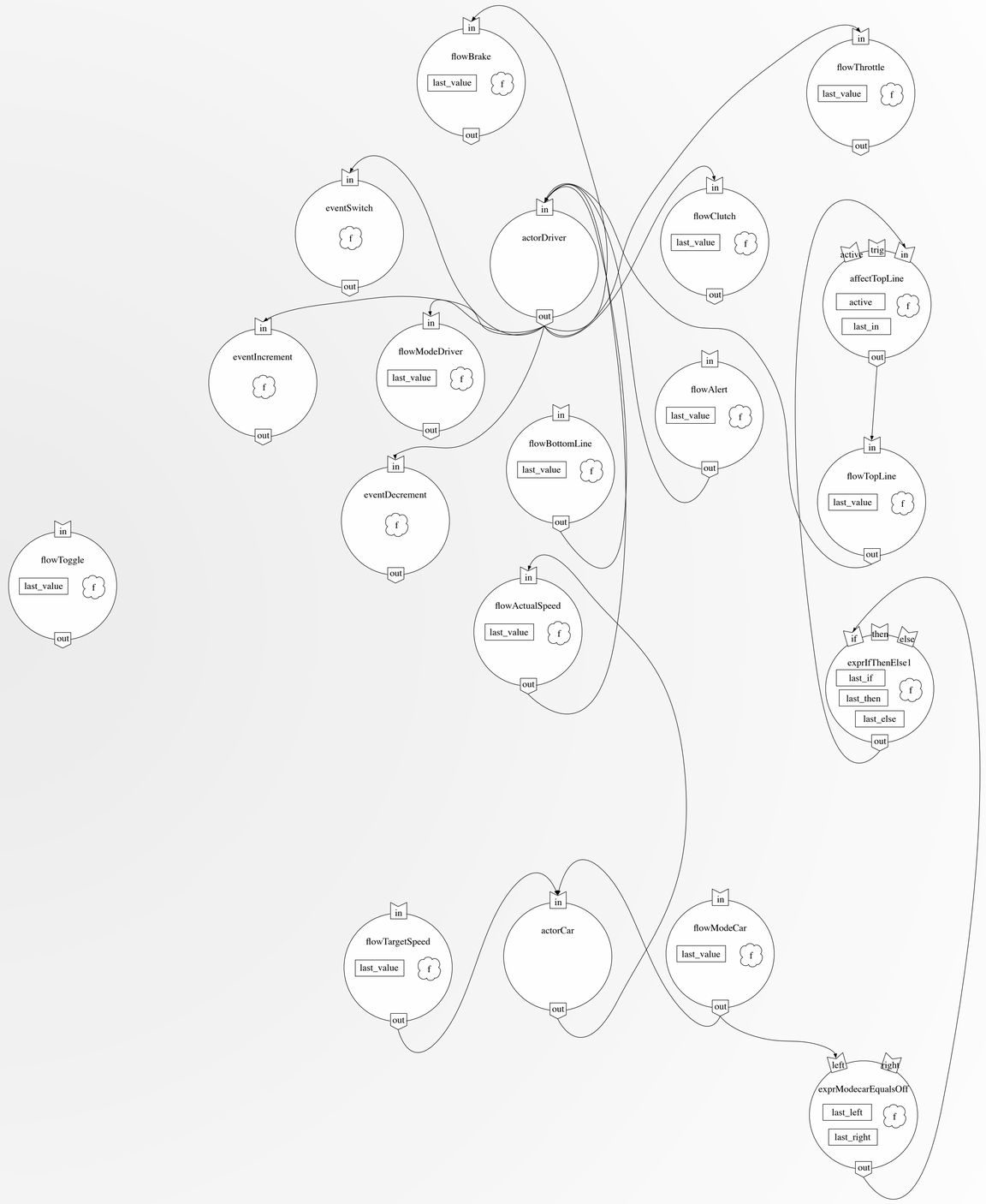
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off"
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

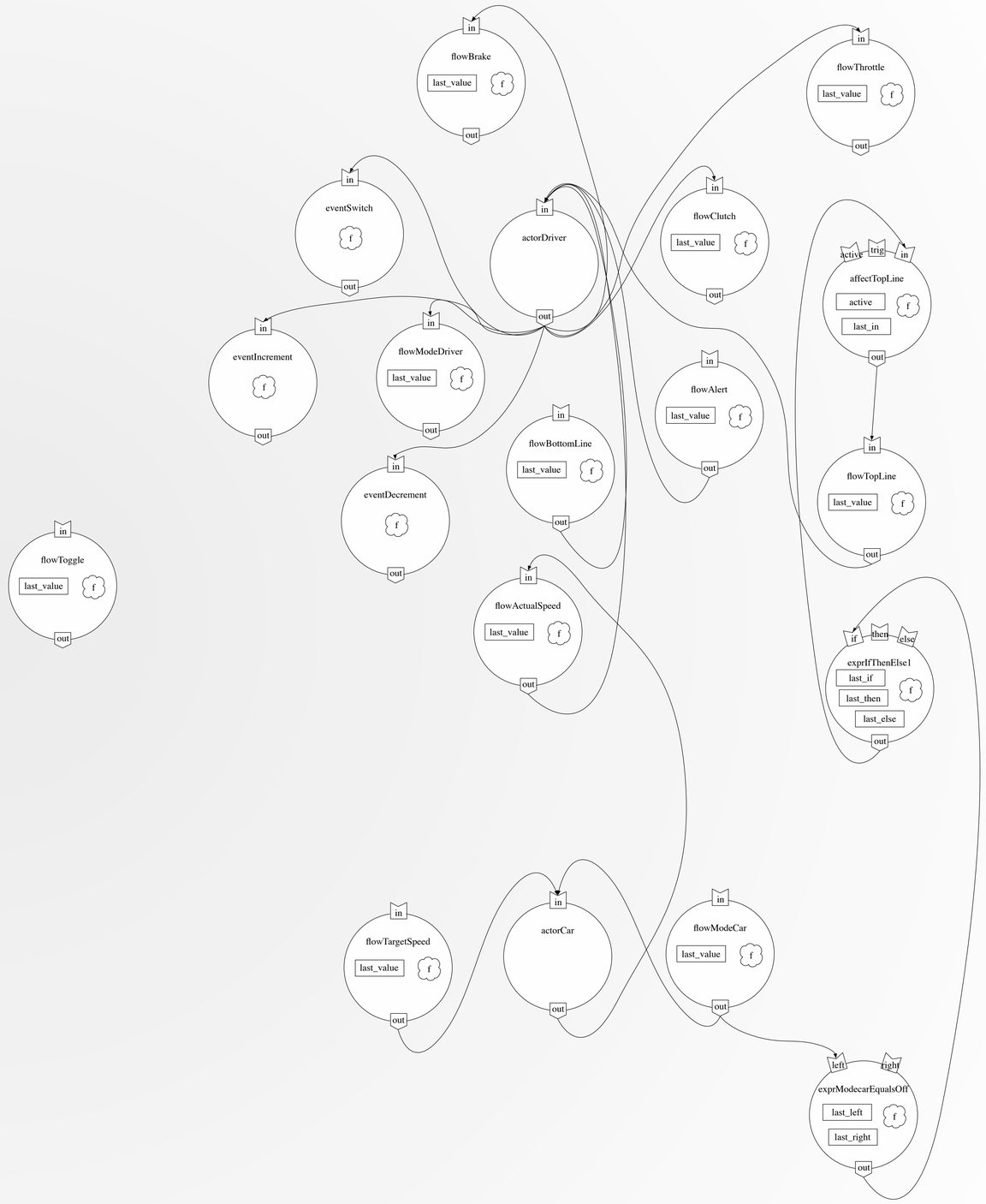
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km"
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

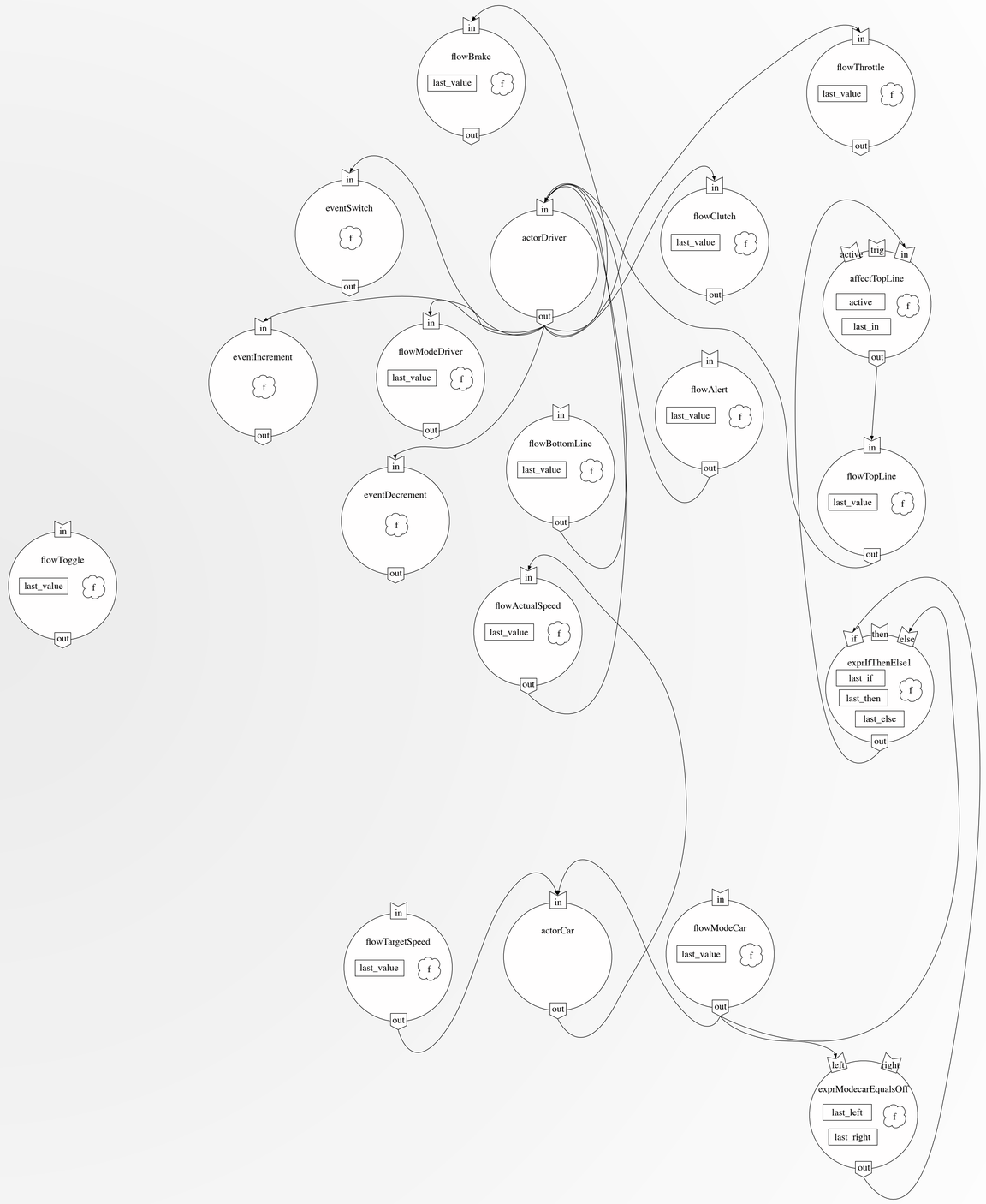
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

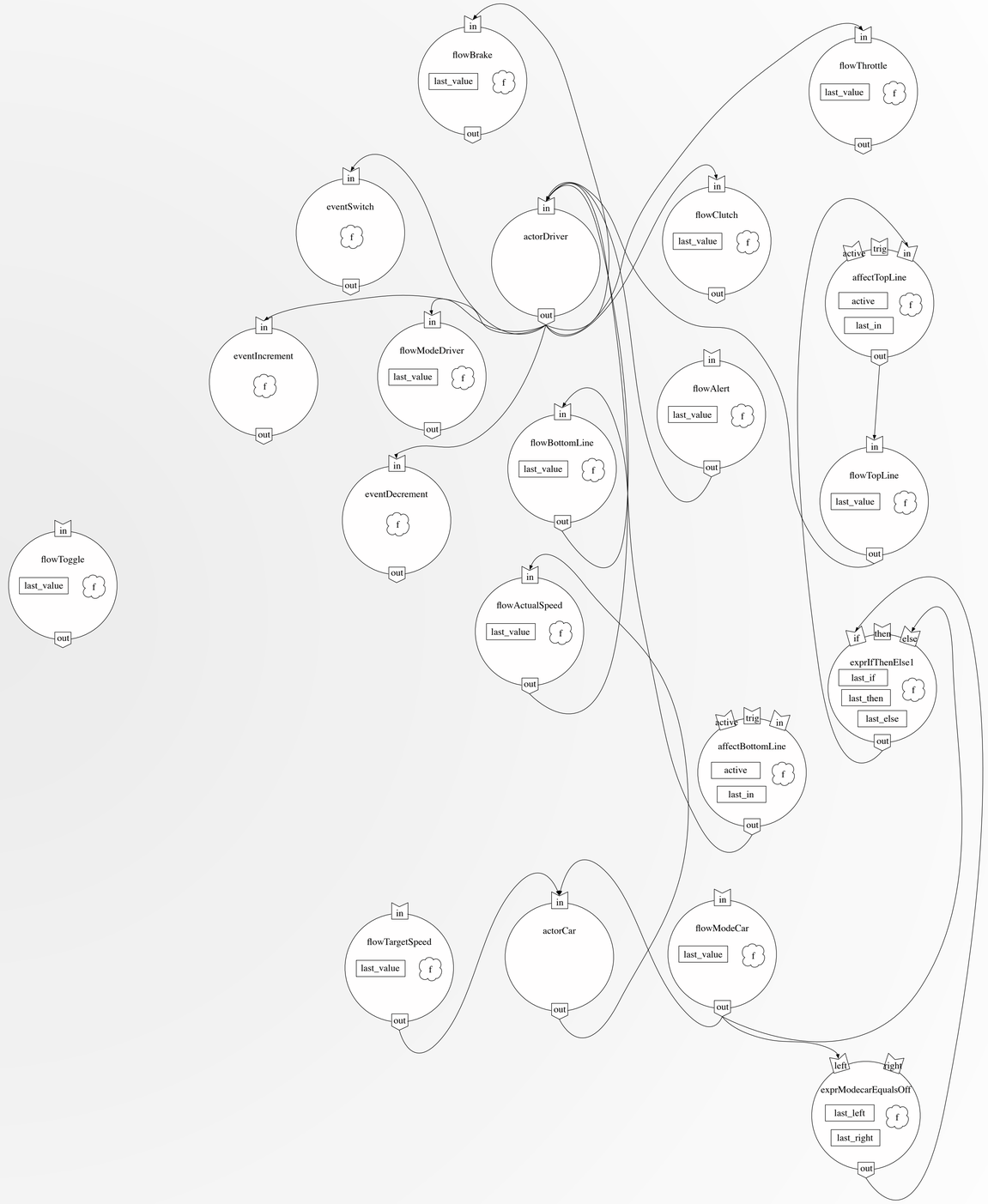
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine =
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

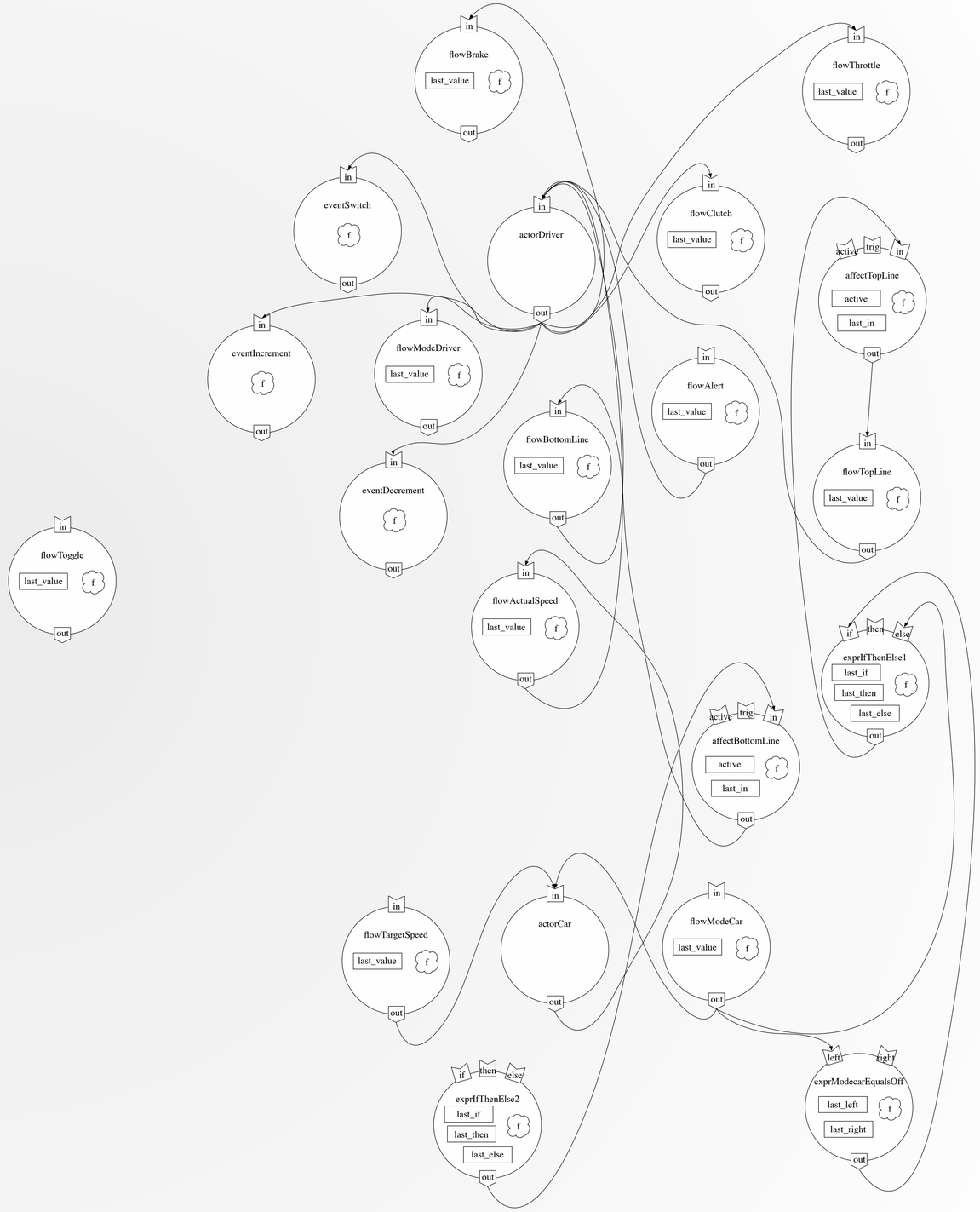
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

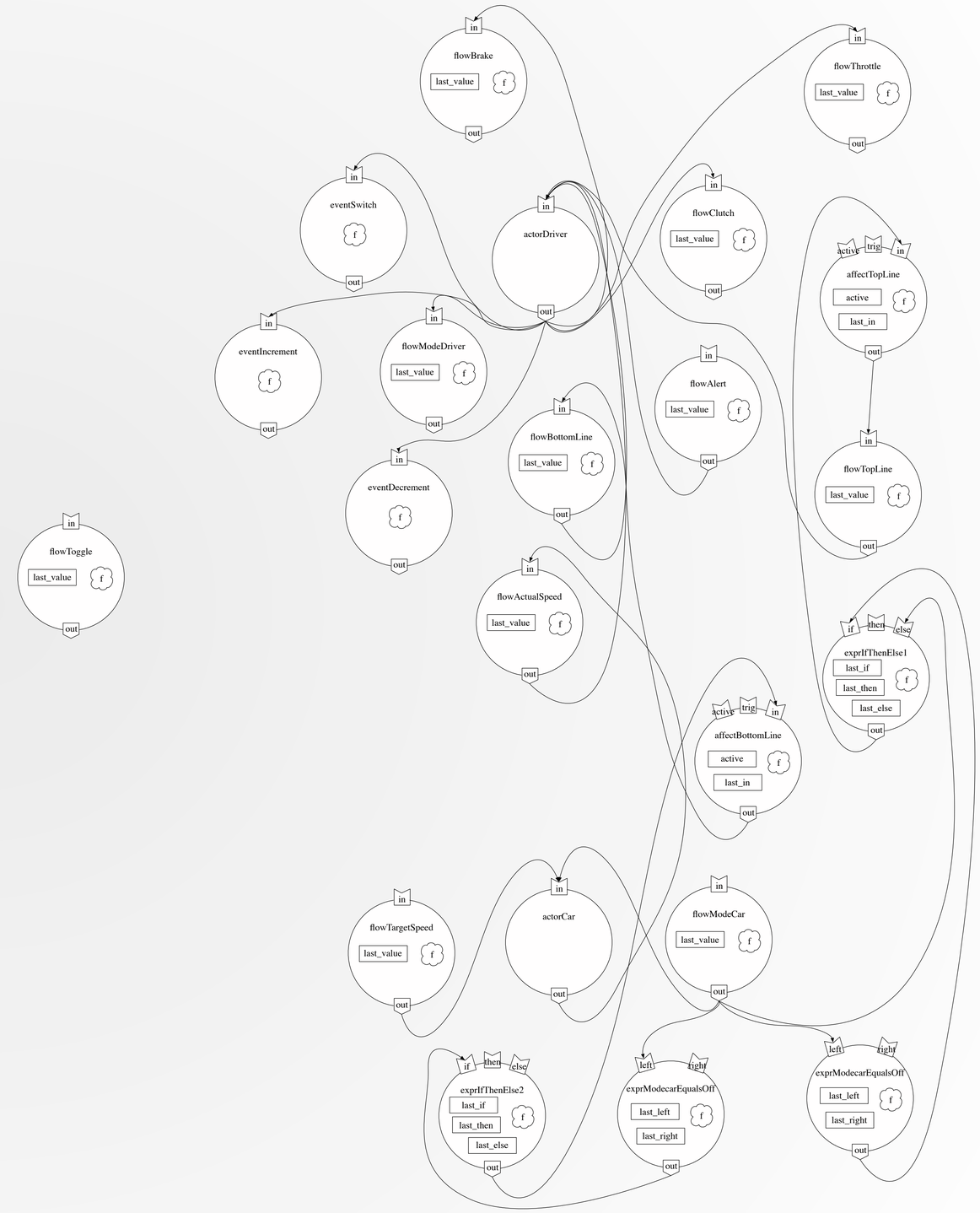
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off"
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

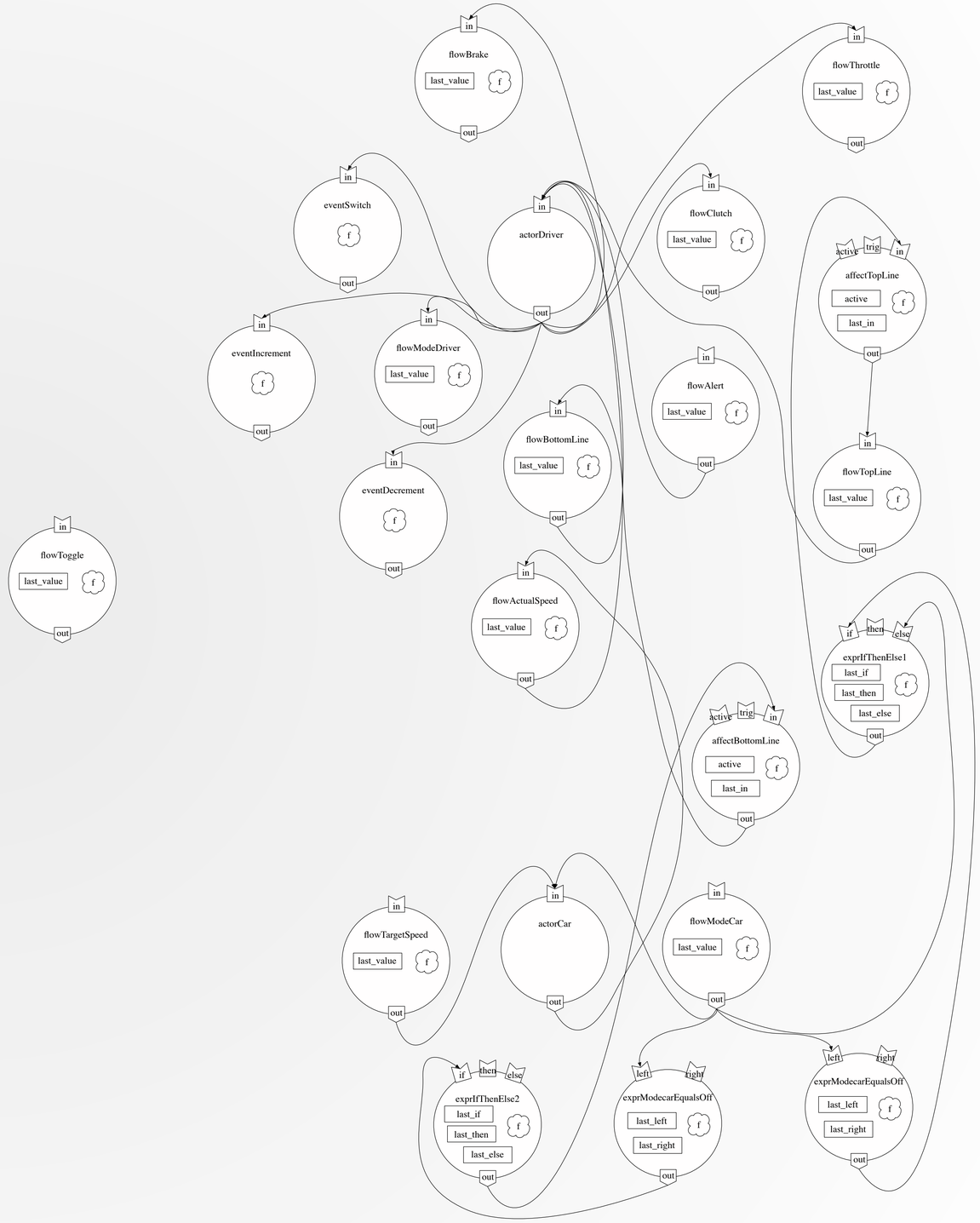
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km"
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

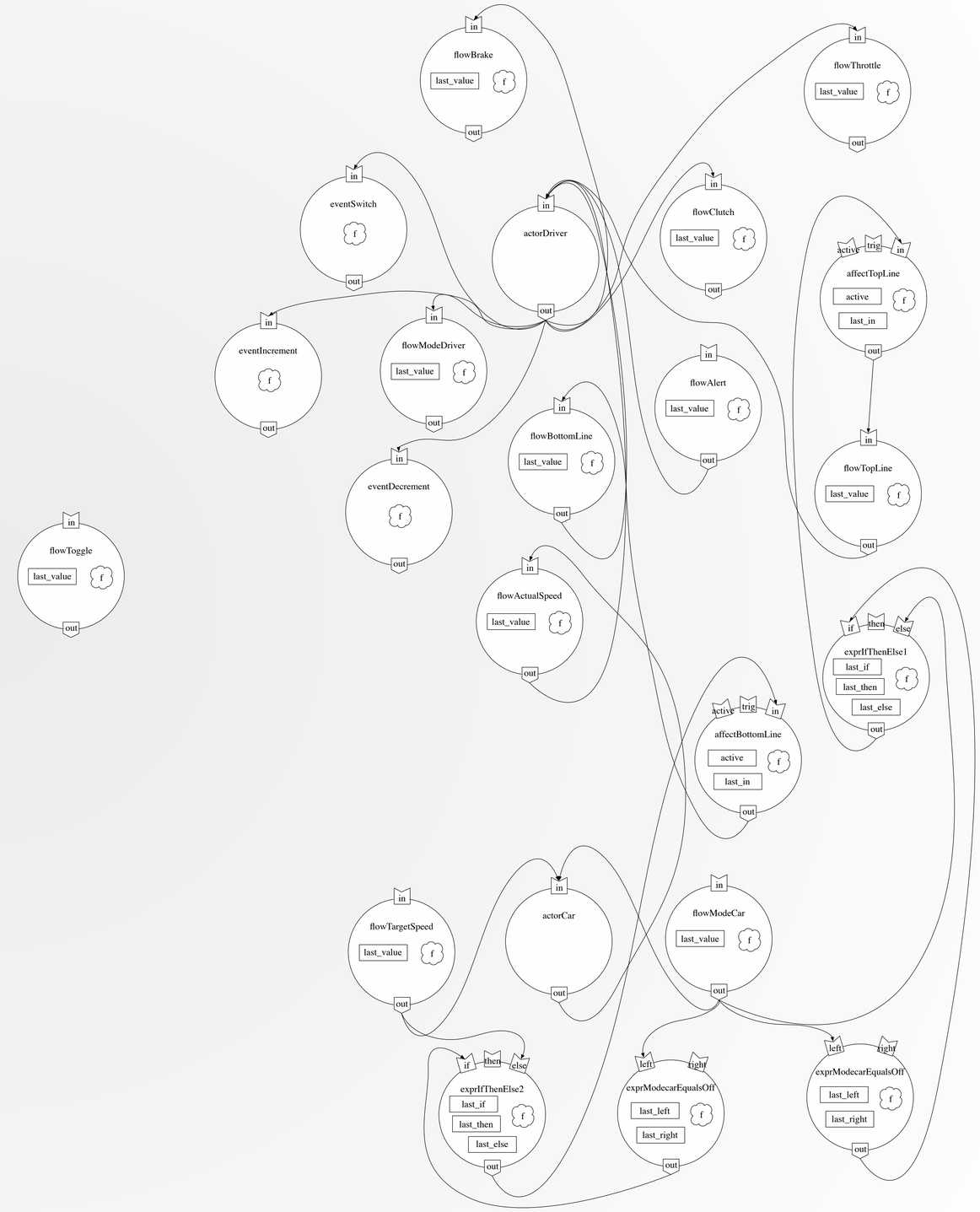
    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

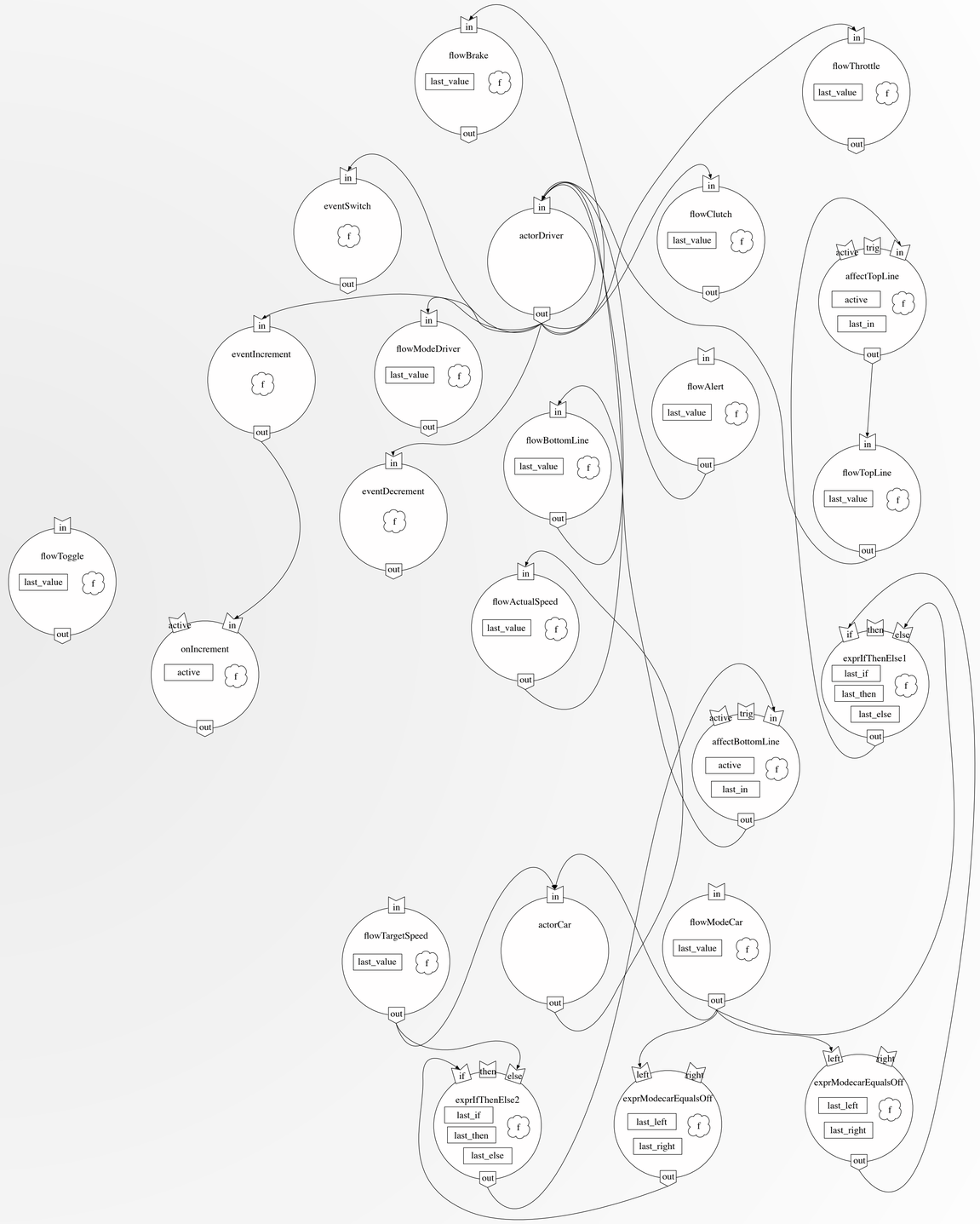
    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

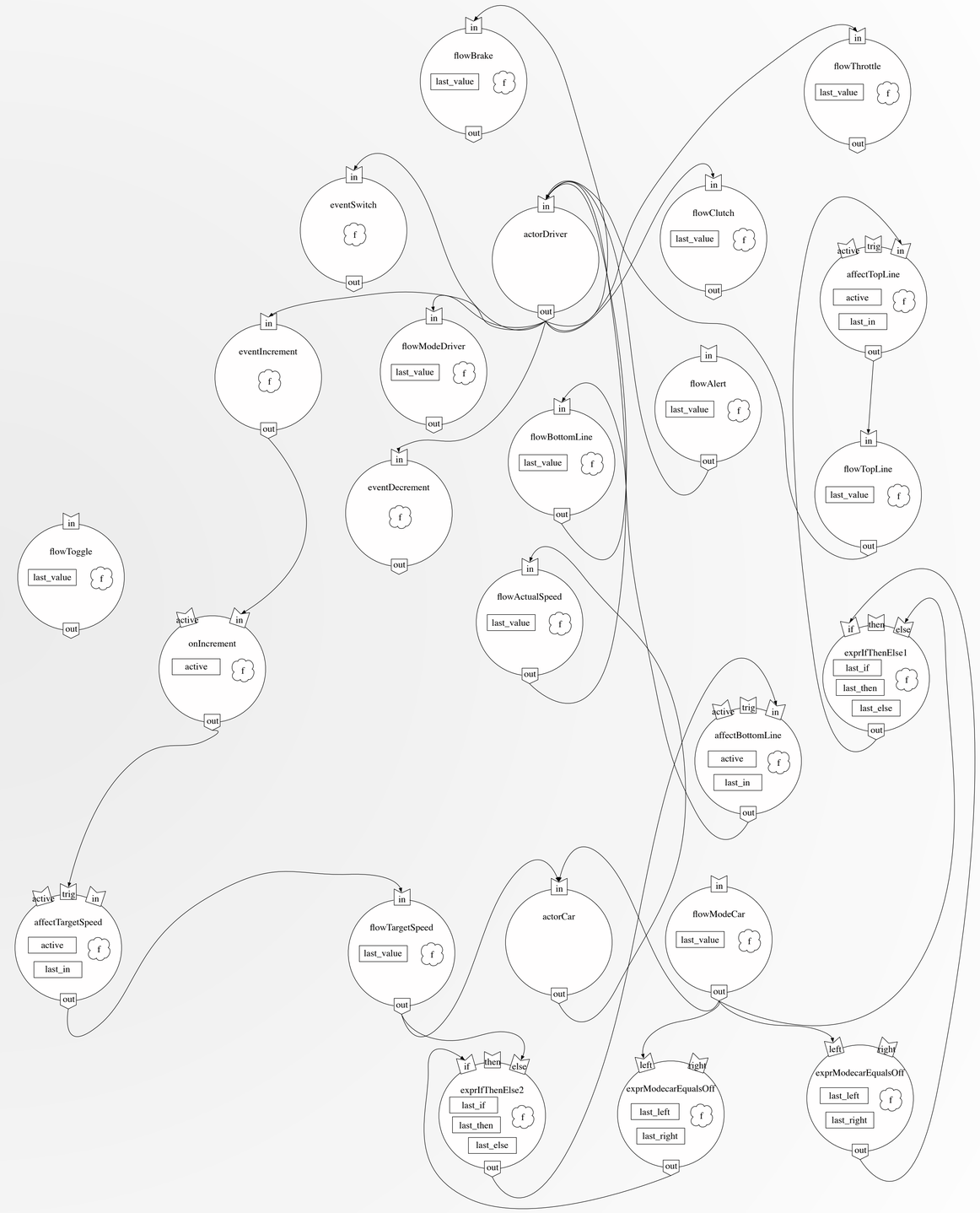
    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed =
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

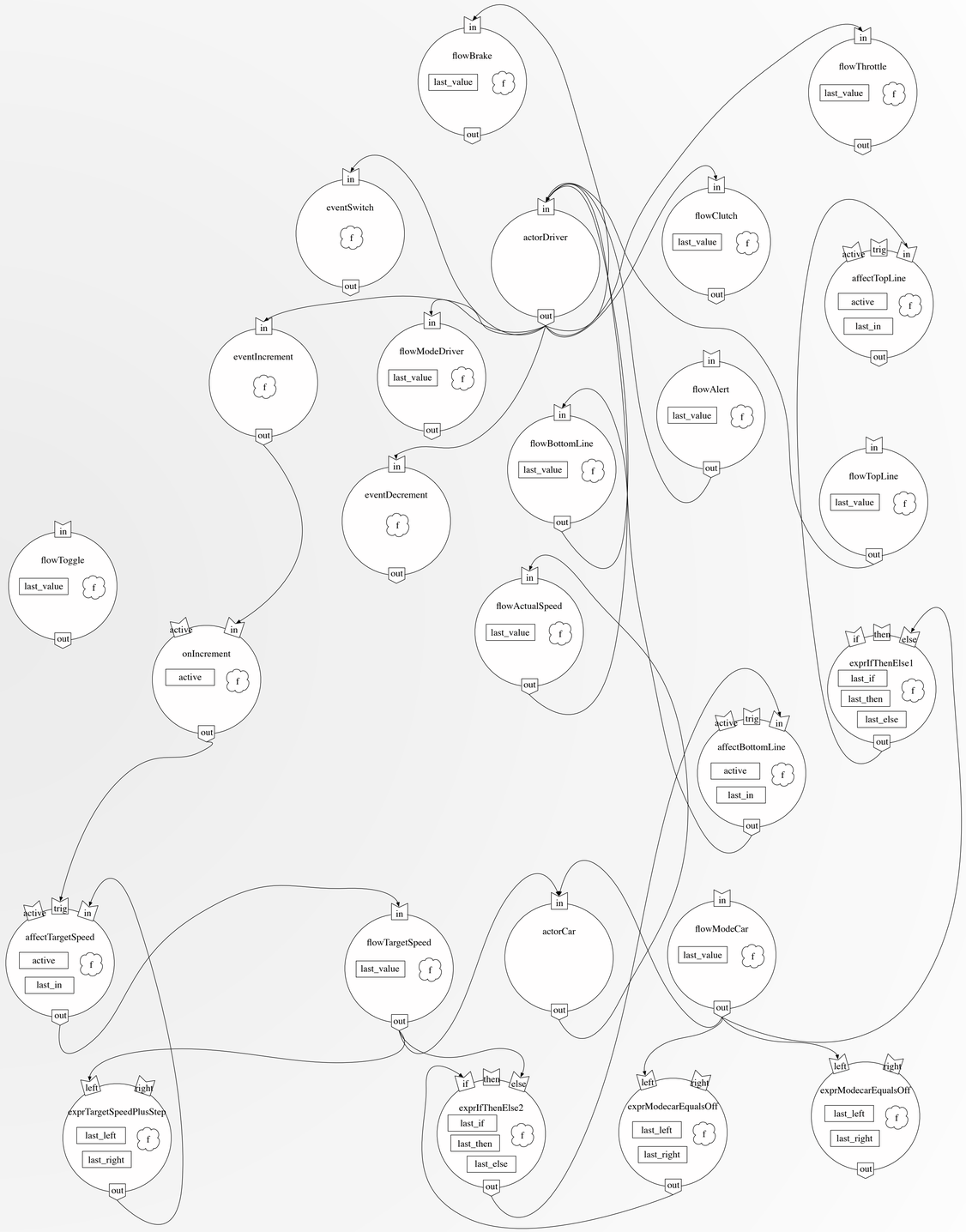
    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

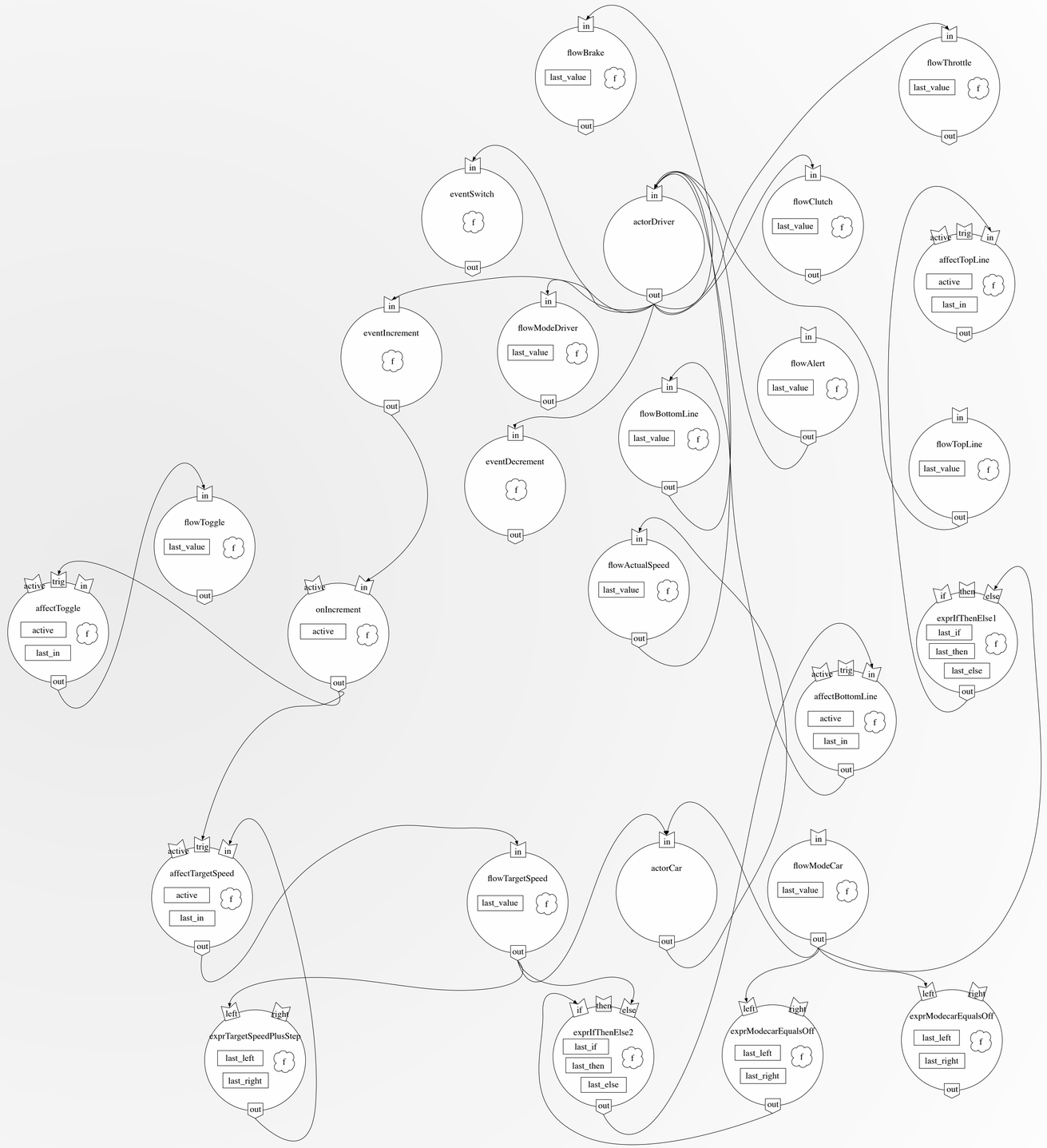
    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

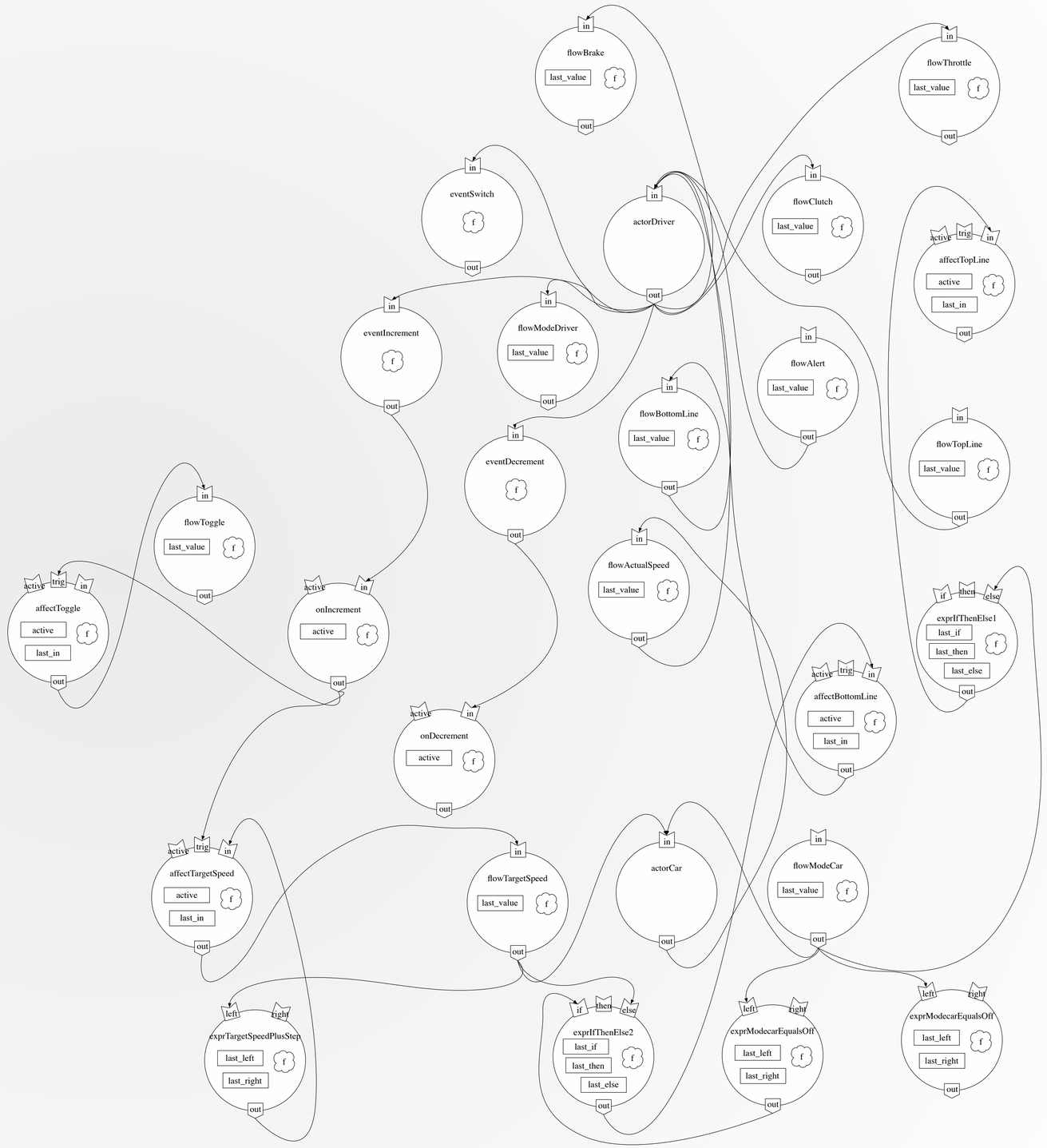
    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :
```



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    driver : human actor
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    increment : void event from driver
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    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

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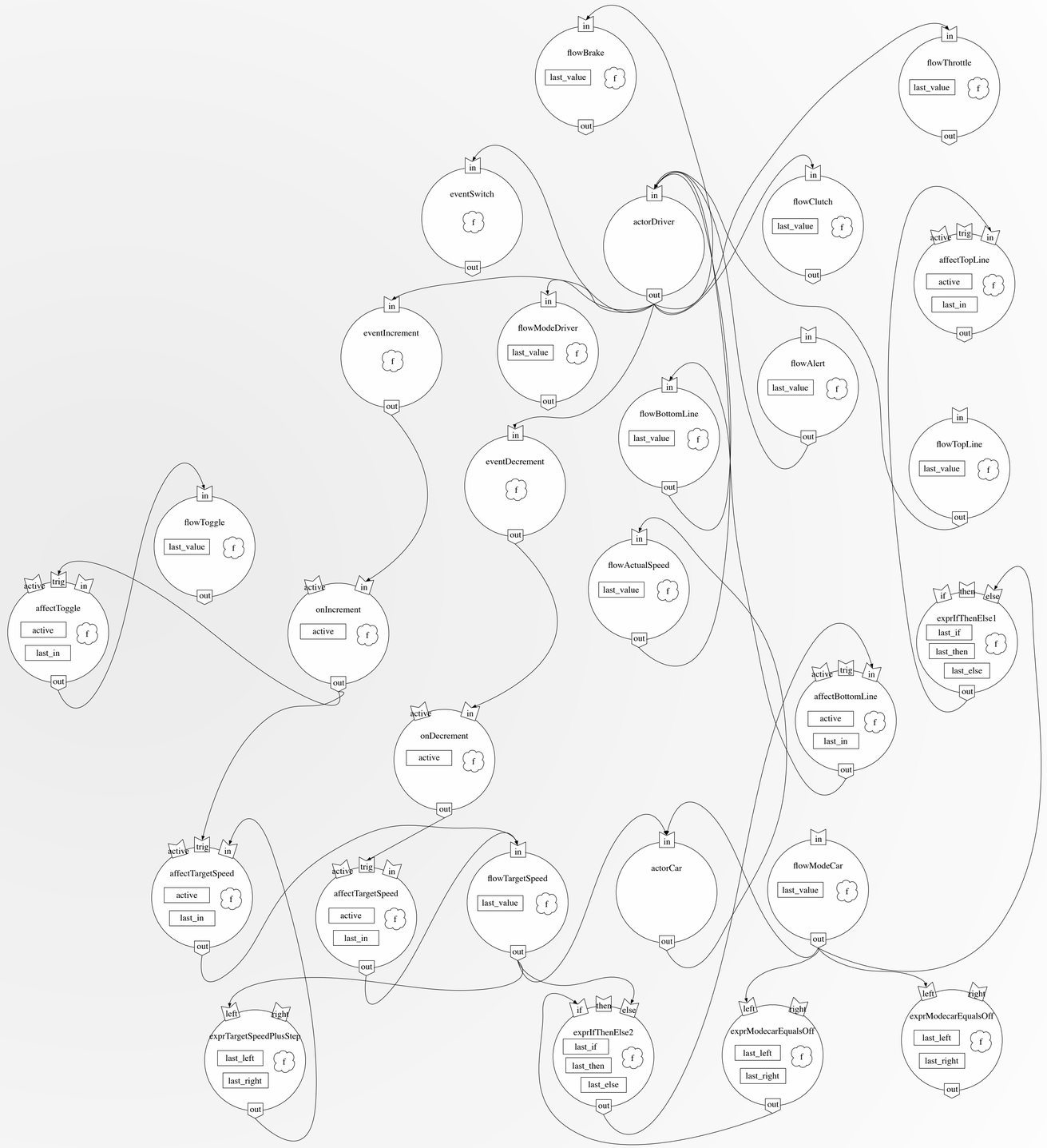
    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed =
```



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test interactor:
    driver : human actor
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    step : number constant
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    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
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    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
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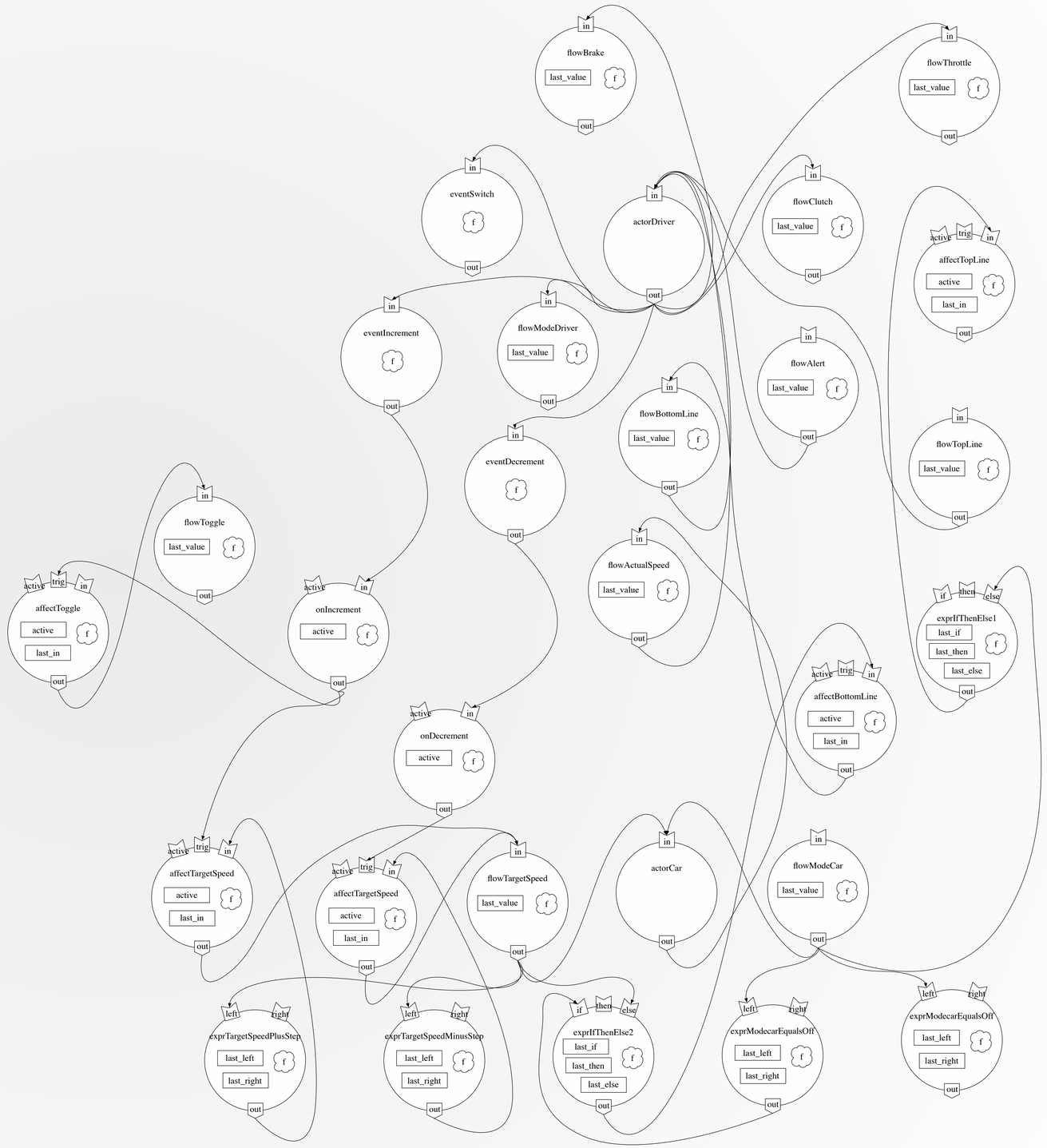
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
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    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

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    topLine = if modeCar == "Off" then "128920 km" else modeCar
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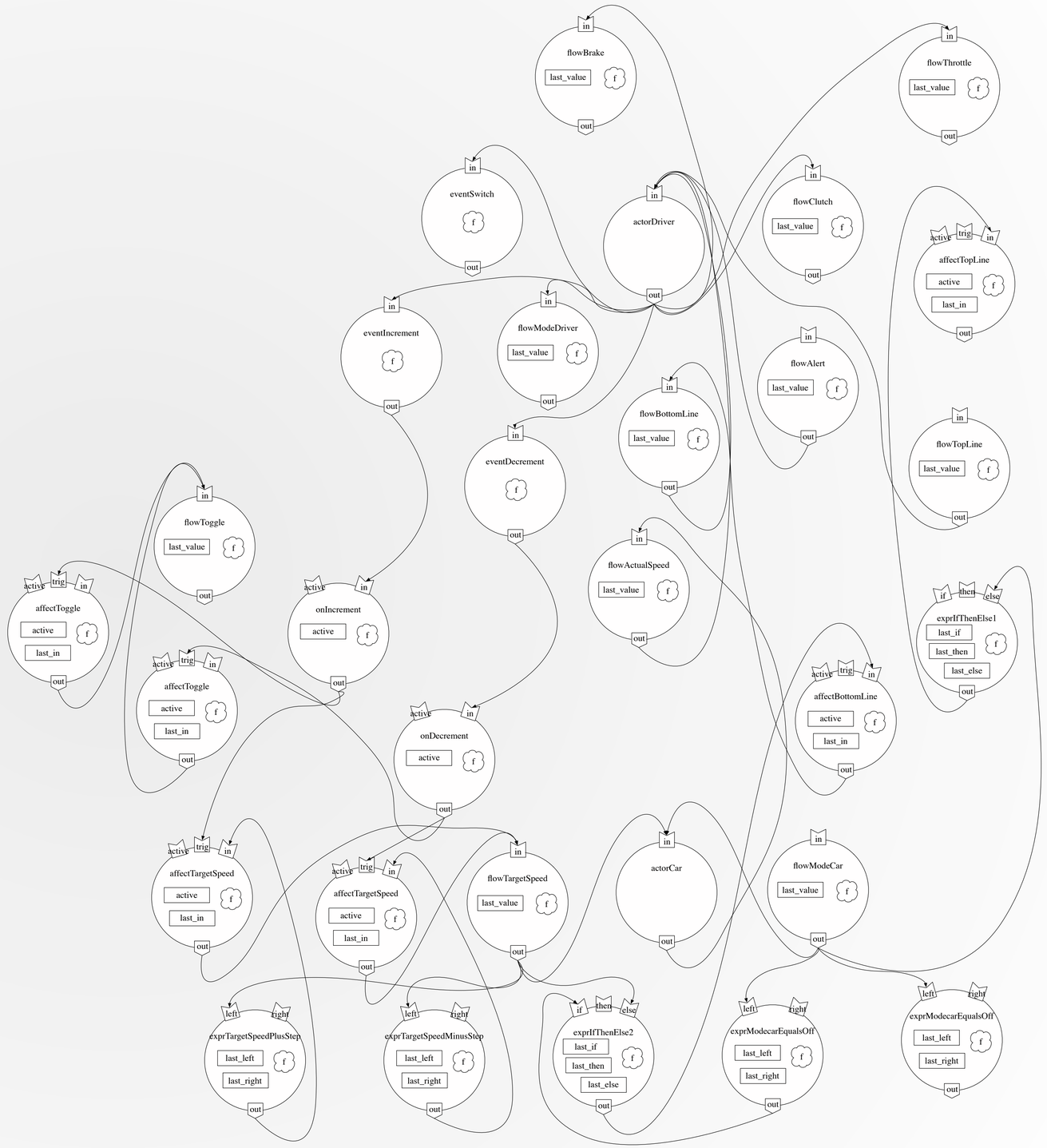
    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true
```



Interpretation

```
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    step : number constant
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    targetSpeed : number flow to car
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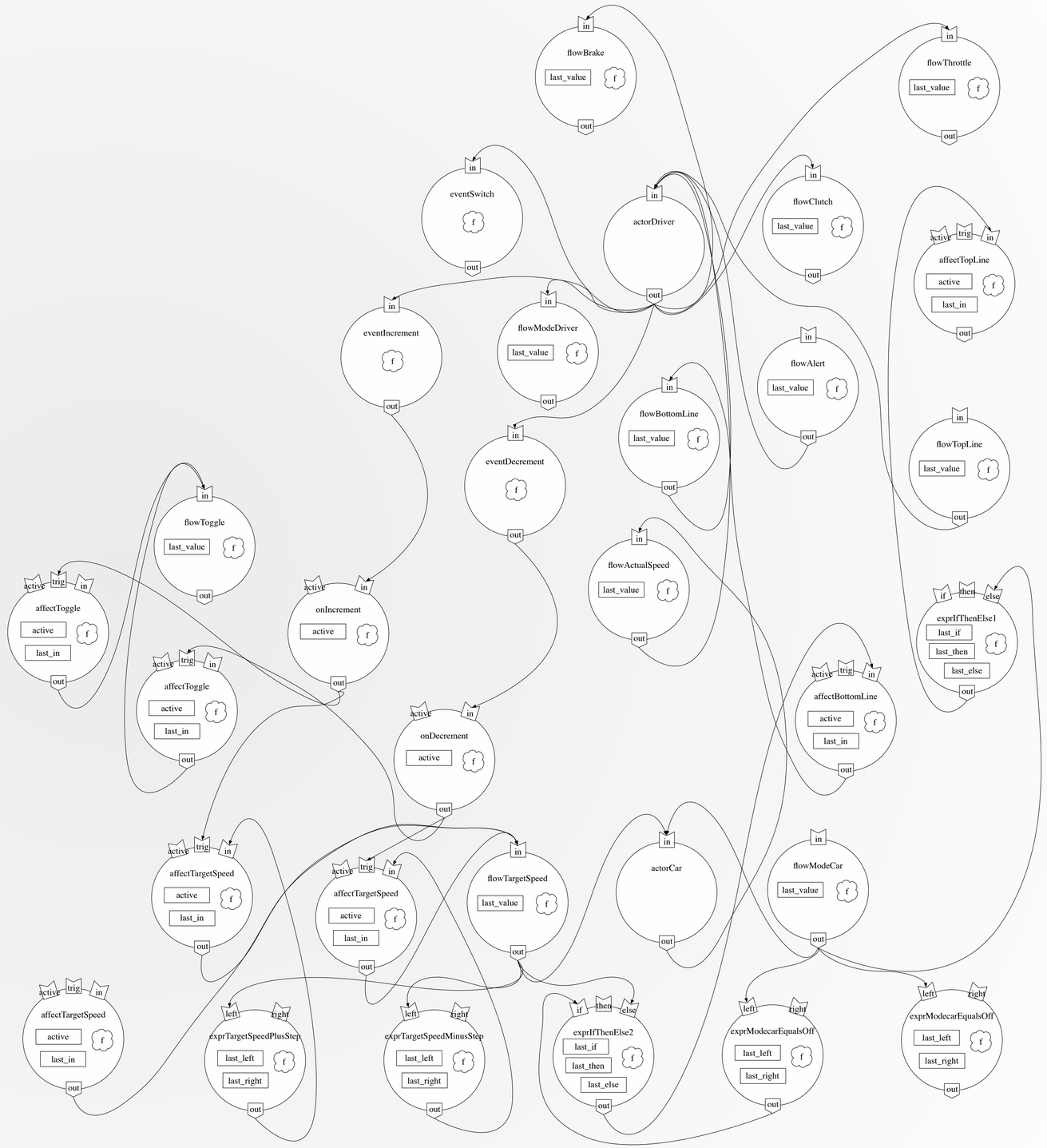
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed =
```



Interpretation

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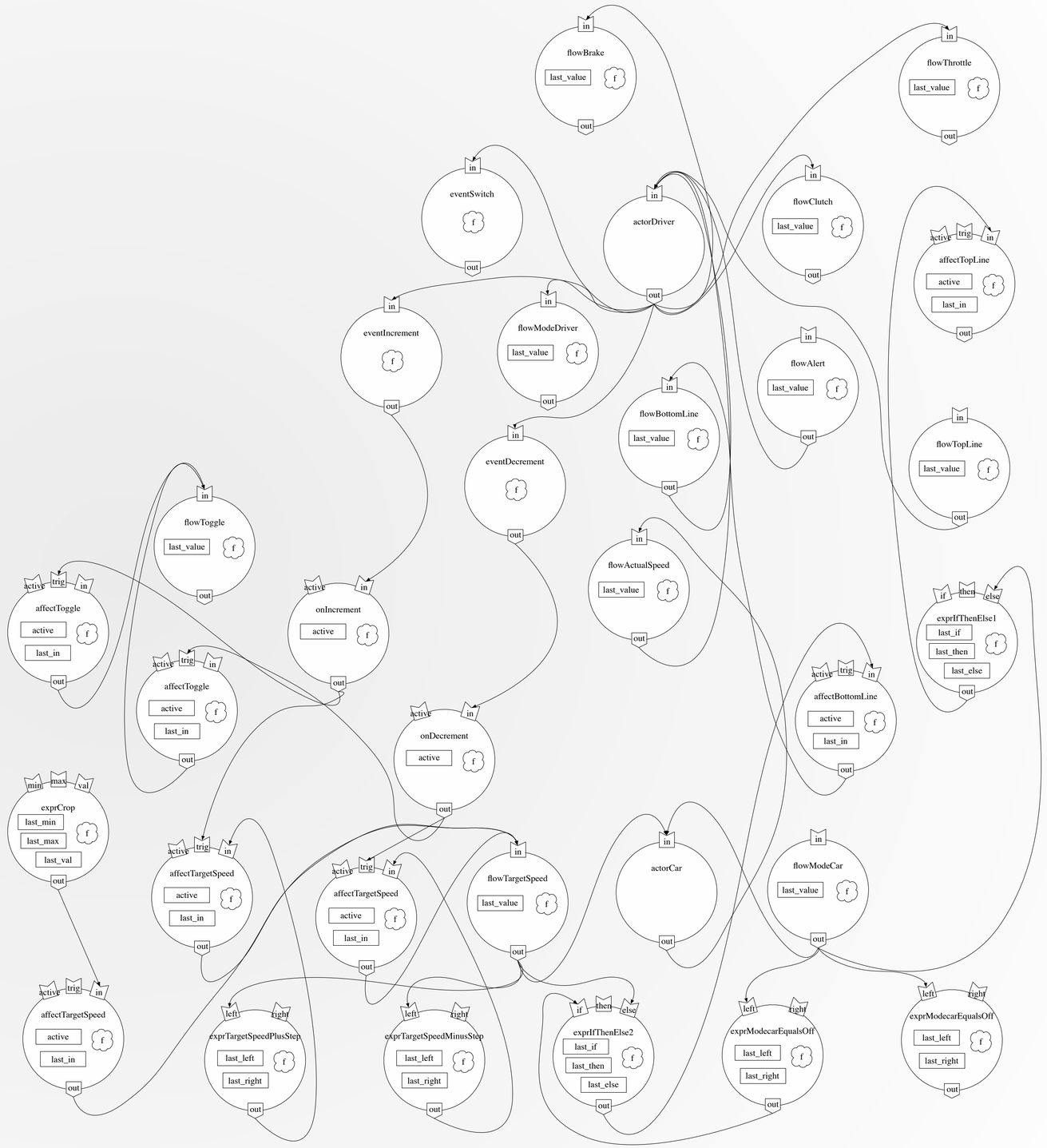
    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(
```



Interpretation

```
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    driver : human actor
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    increment : void event from driver
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    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

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    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

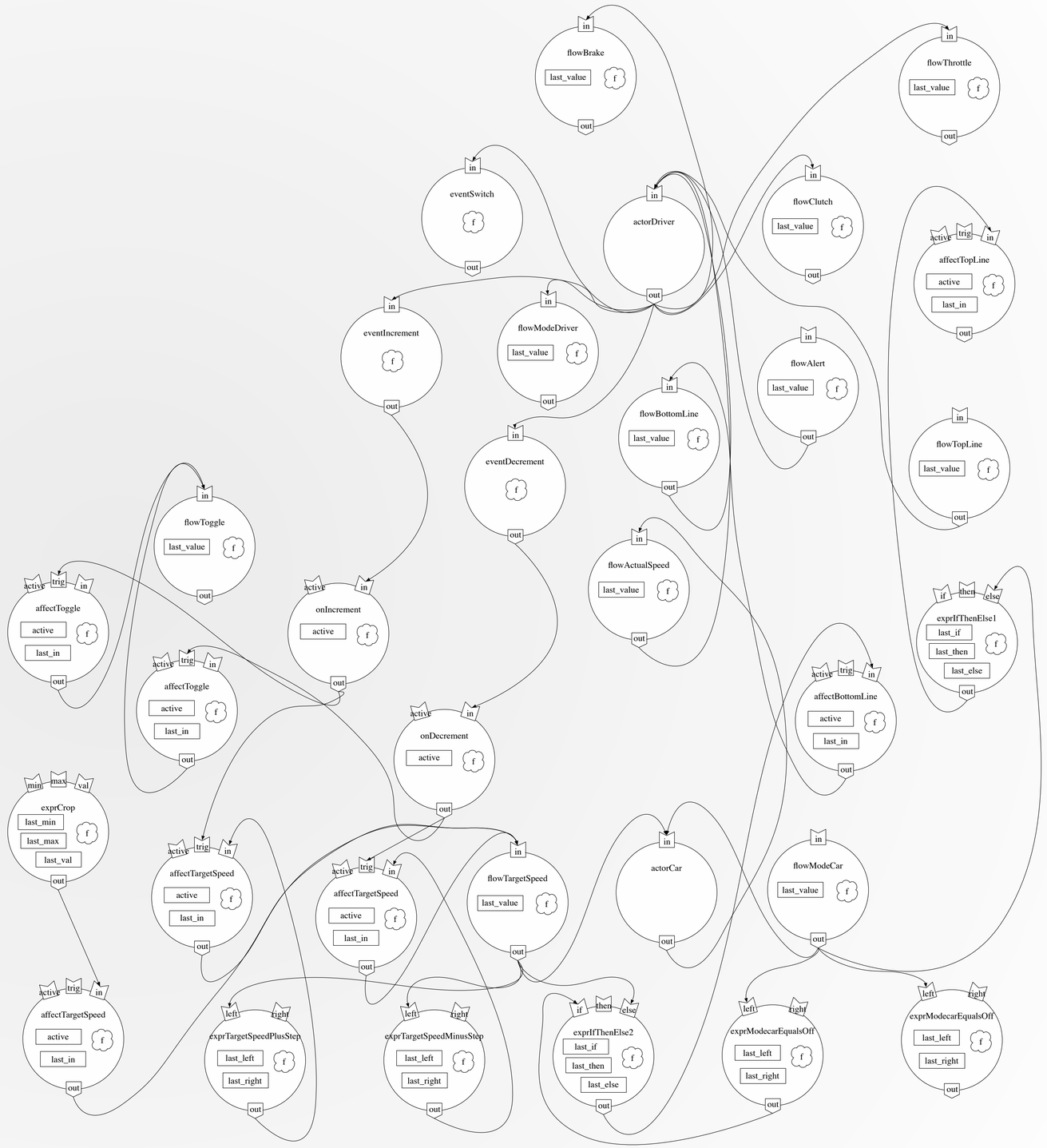
    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,
```



Interpretation

```
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    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

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    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

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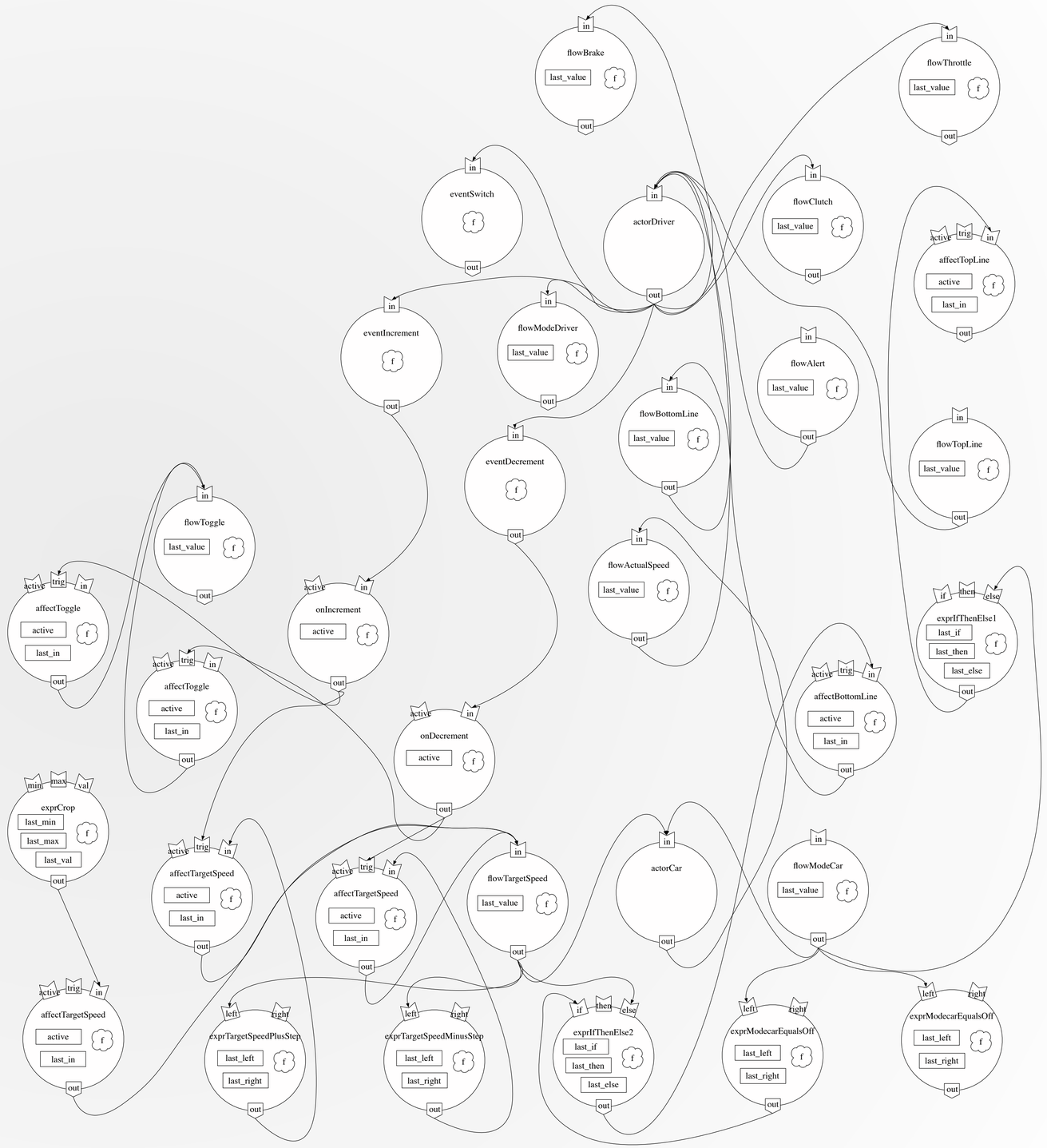
    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
```



Interpretation

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test interactor:
    driver : human actor
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    step : number constant
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    topLine : text or number flow to driver
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    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

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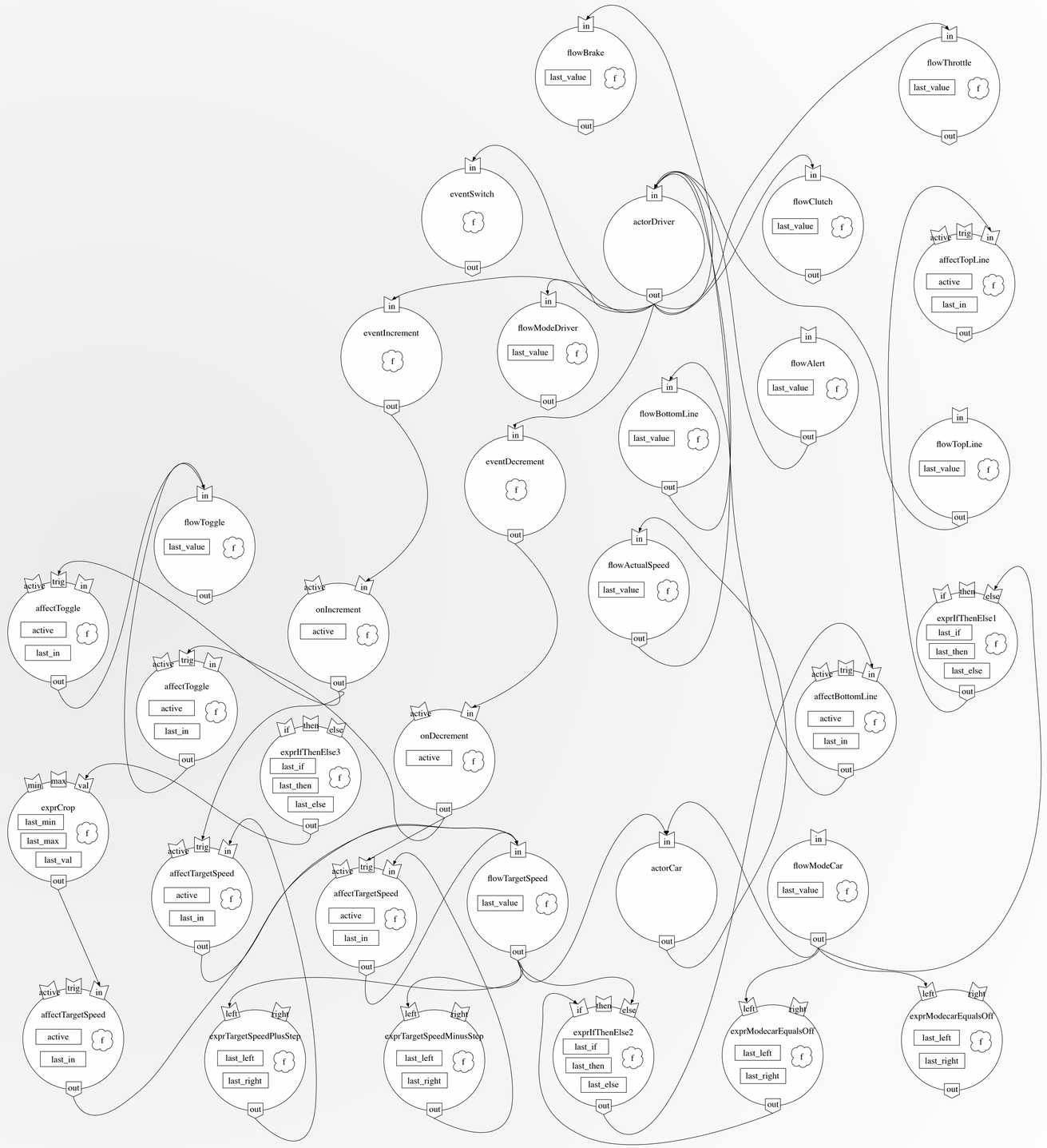
    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if
```



Interpretation

```
test interactor:
    driver : human actor
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    step : number constant
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    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

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    throttle : number flow from driver
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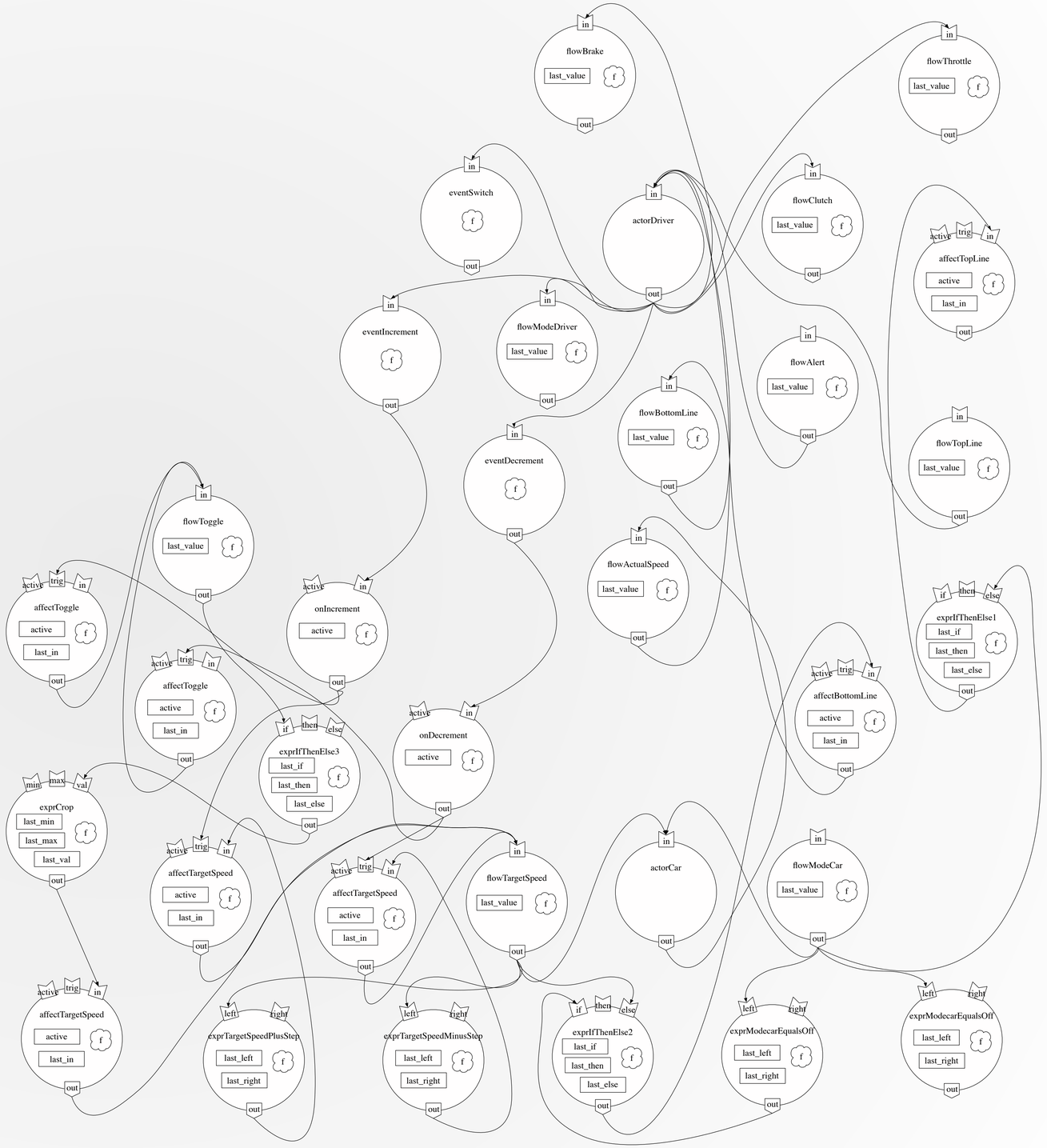
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle
```



Interpretation

```
test interactor:
    driver : human actor
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    step : number constant
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    topLine : text or number flow to driver
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    increment : void event from driver
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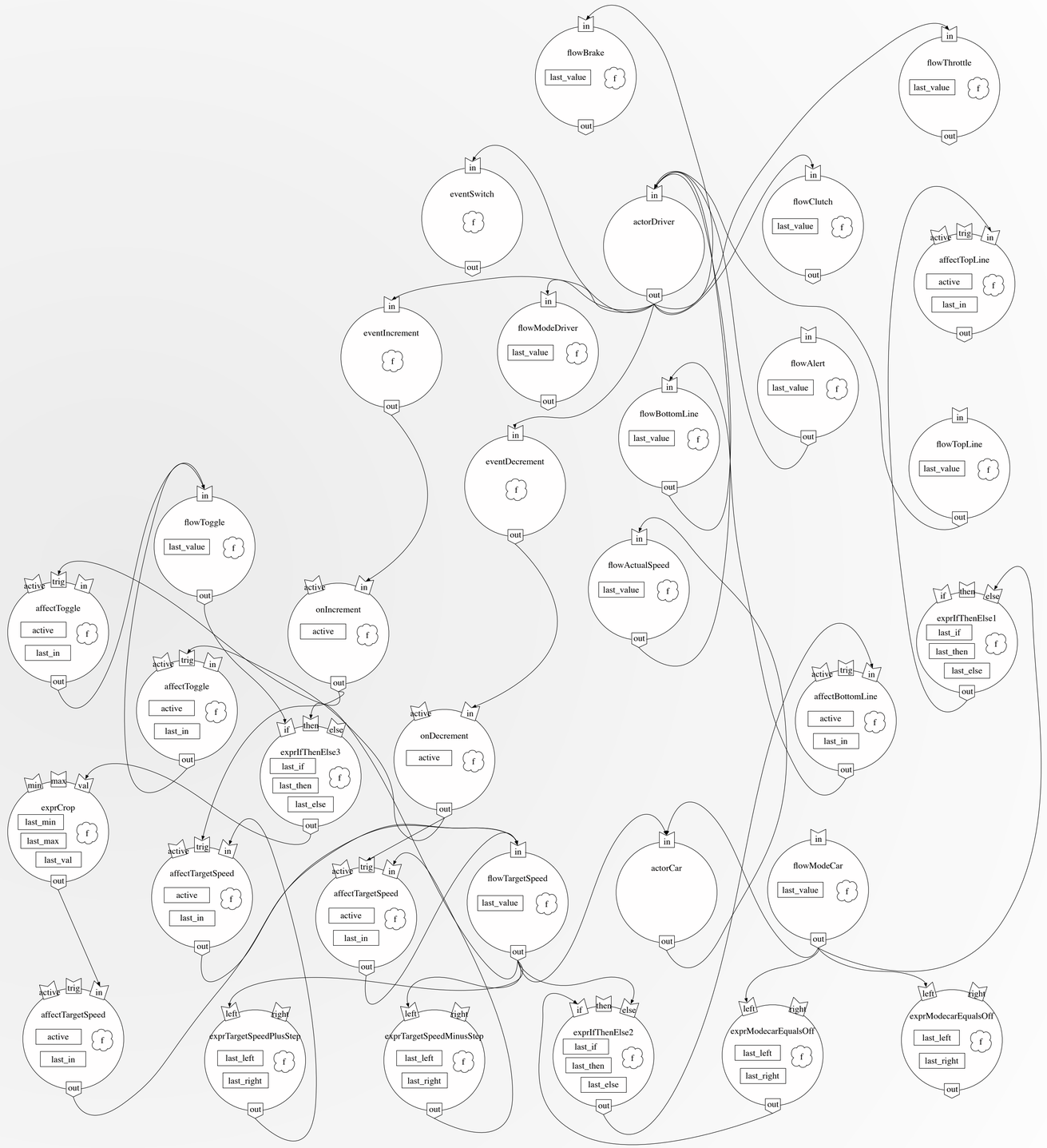
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed
```



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test interactor:
    driver : human actor
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    step : number constant
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    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

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    modeDriver : mode flow from driver

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    throttle : number flow from driver
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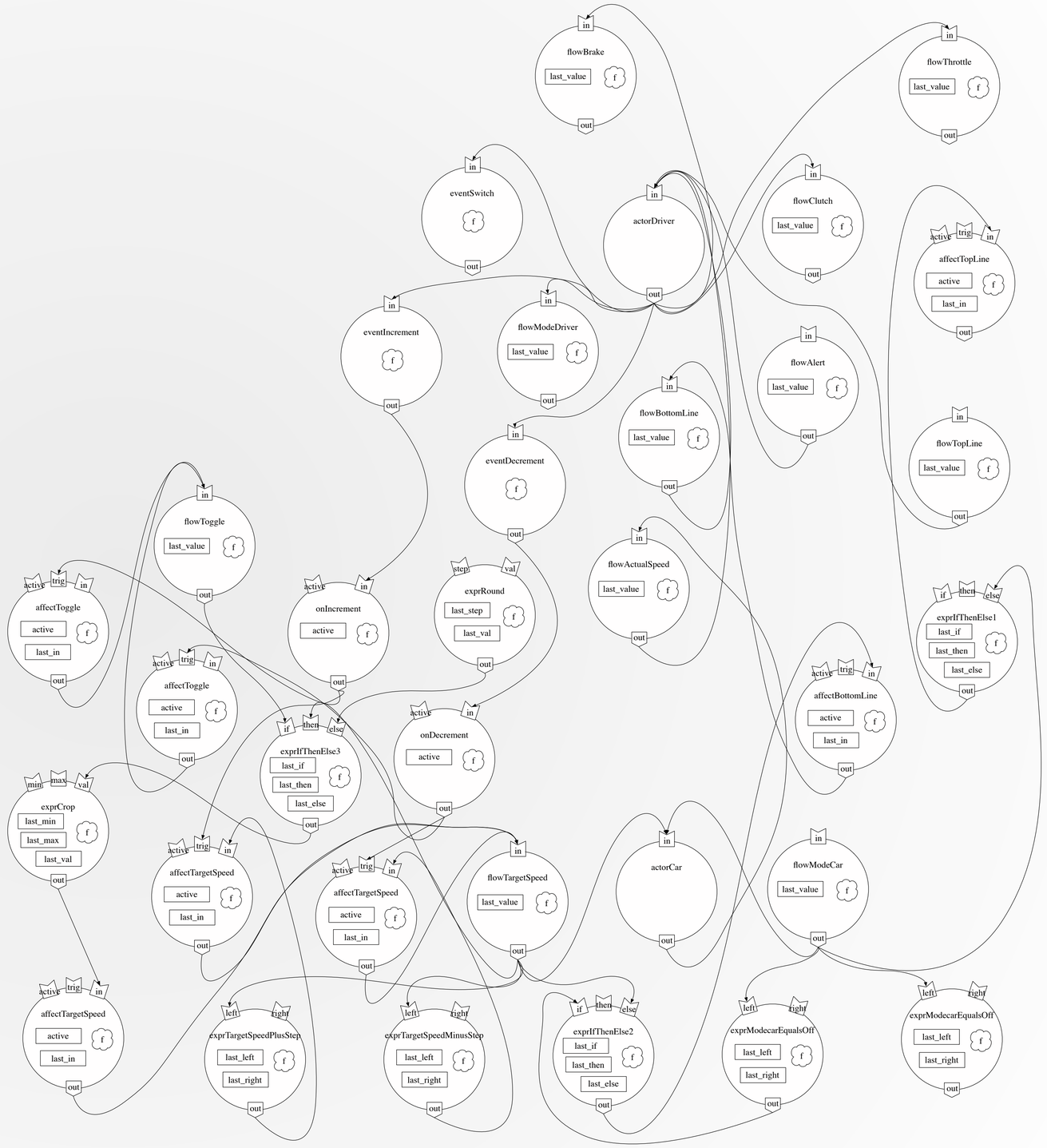
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(
```



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    driver : human actor
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    step : number constant
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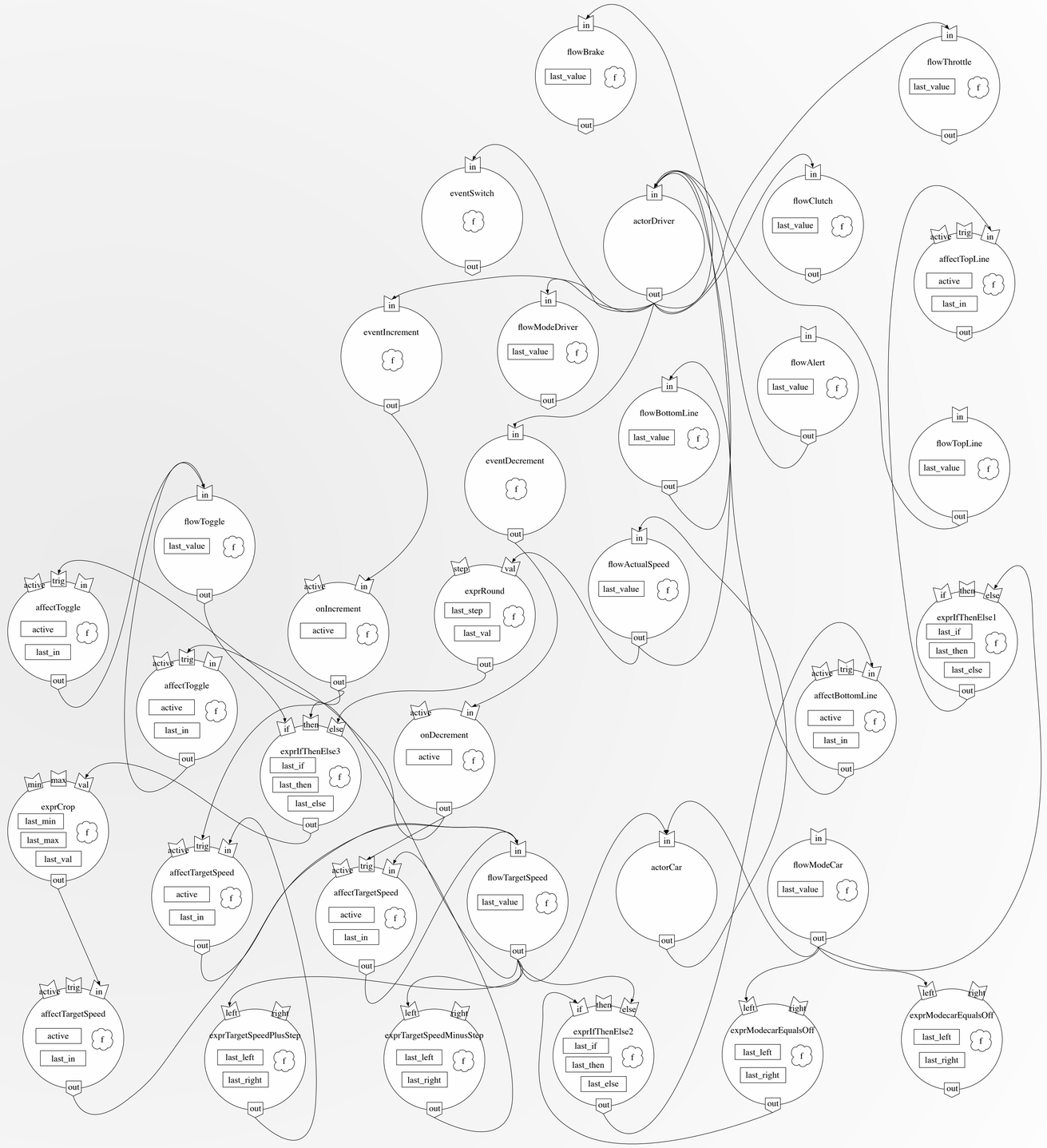
    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,
```



Interpretation

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test interactor:
    driver : human actor
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    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
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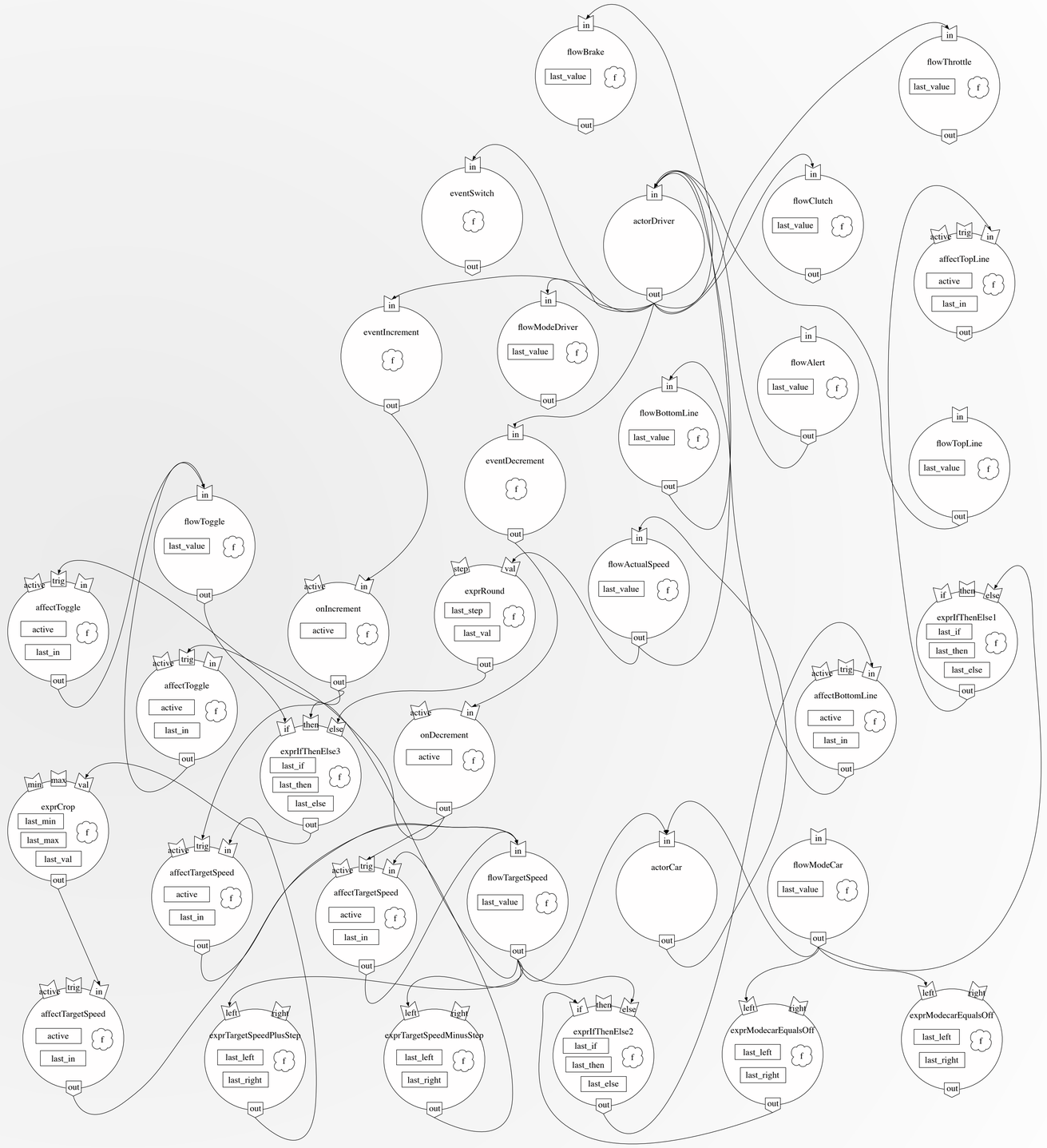
    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))
```



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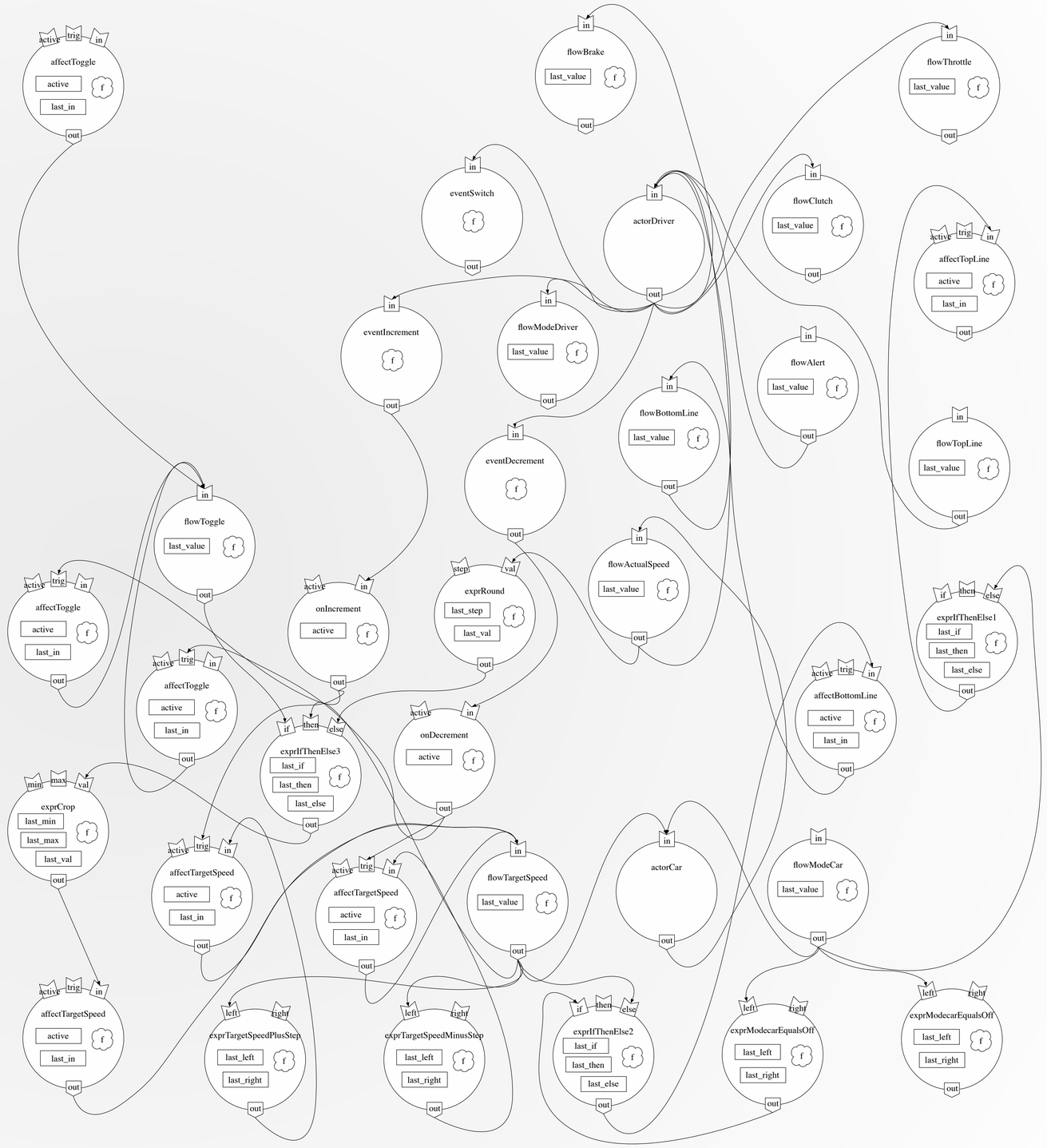
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle =
```



Interpretation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

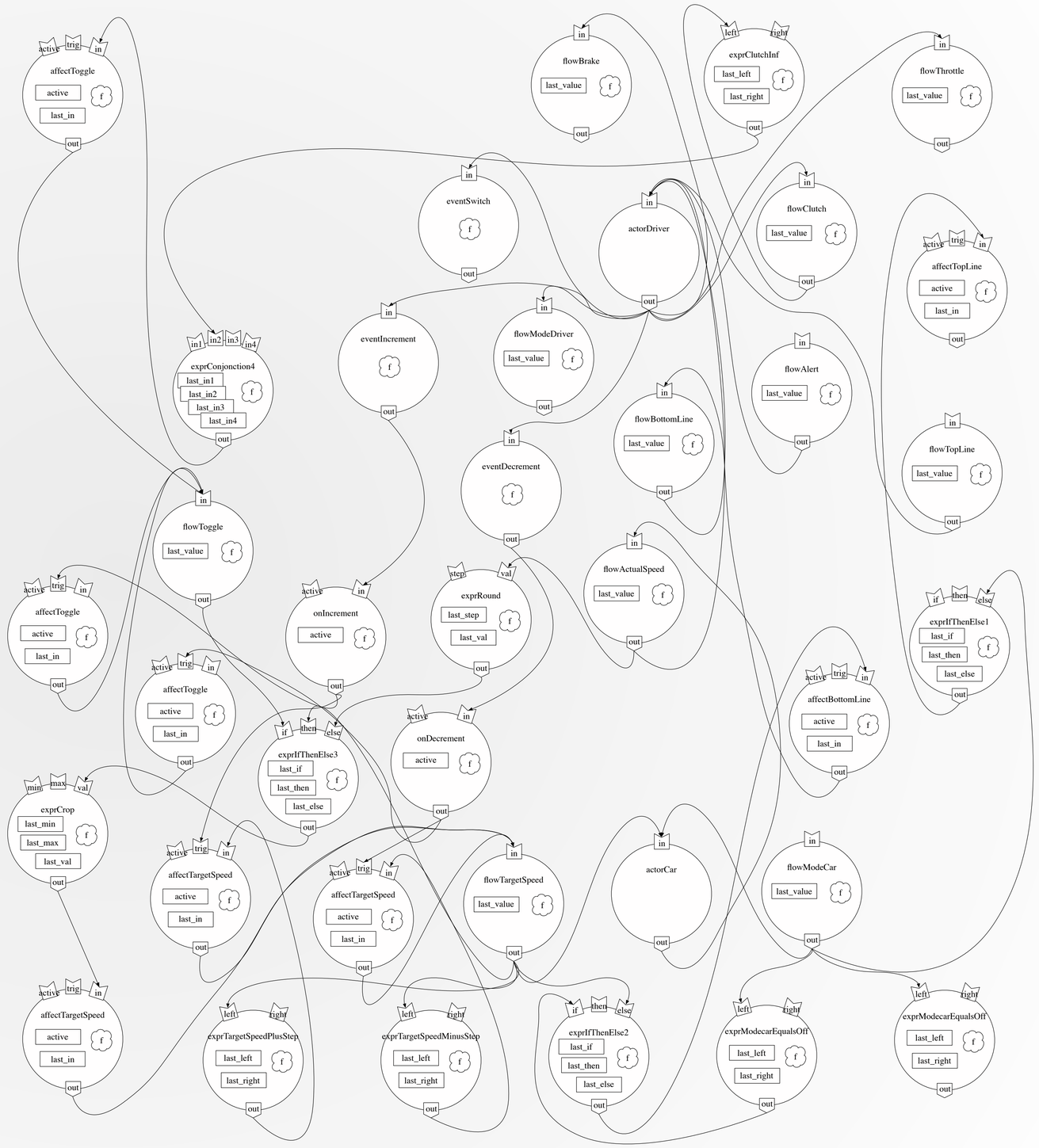
    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 &&
```



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test interactor:
    driver : human actor
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    step : number constant
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    topLine : text or number flow to driver
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    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
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    on increment :  targetSpeed = targetSpeed + step
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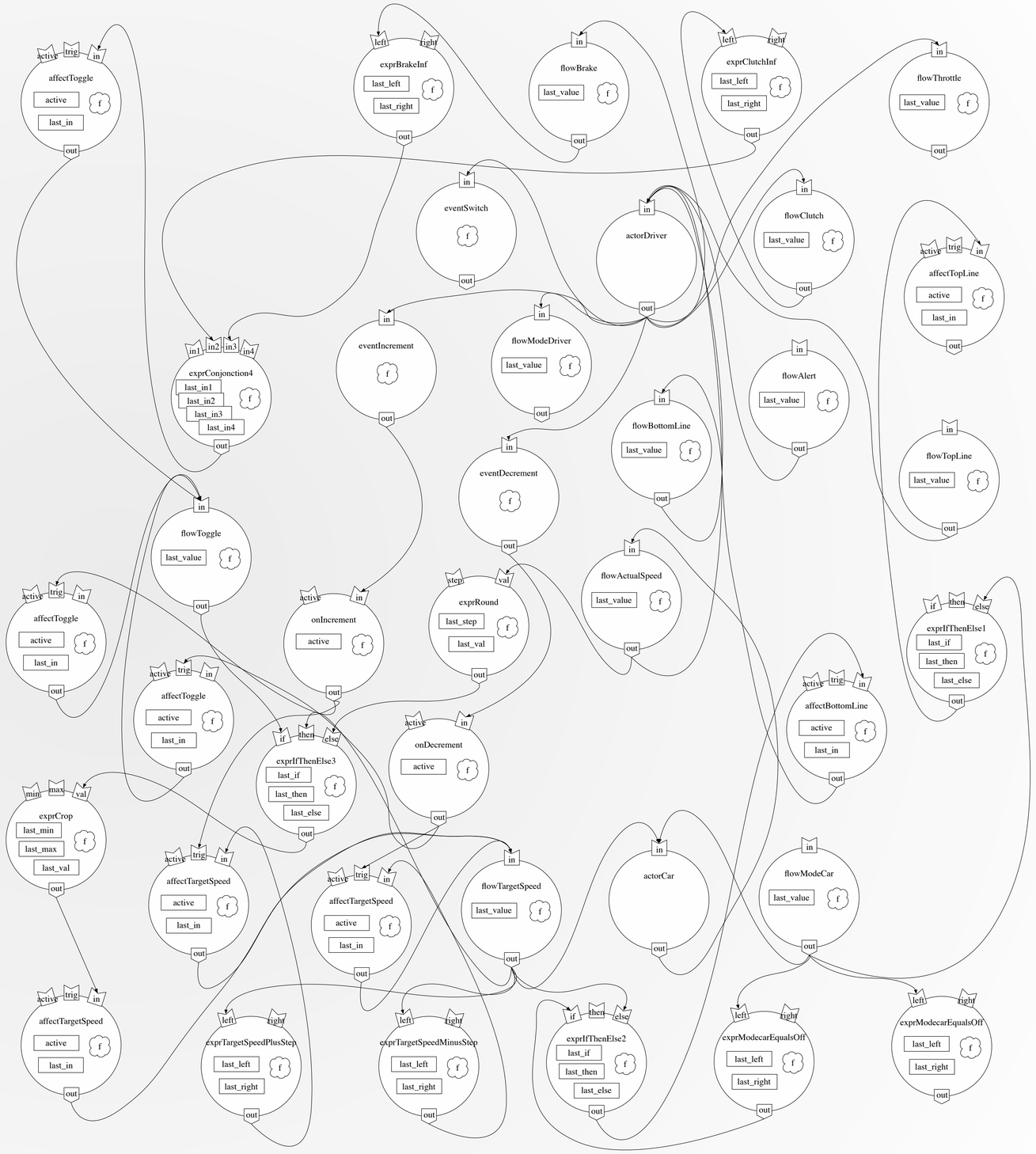
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01
```



Interpretation

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    driver : human actor
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    step : number constant
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    topLine : text or number flow to driver
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    targetSpeed : number flow to car
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    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

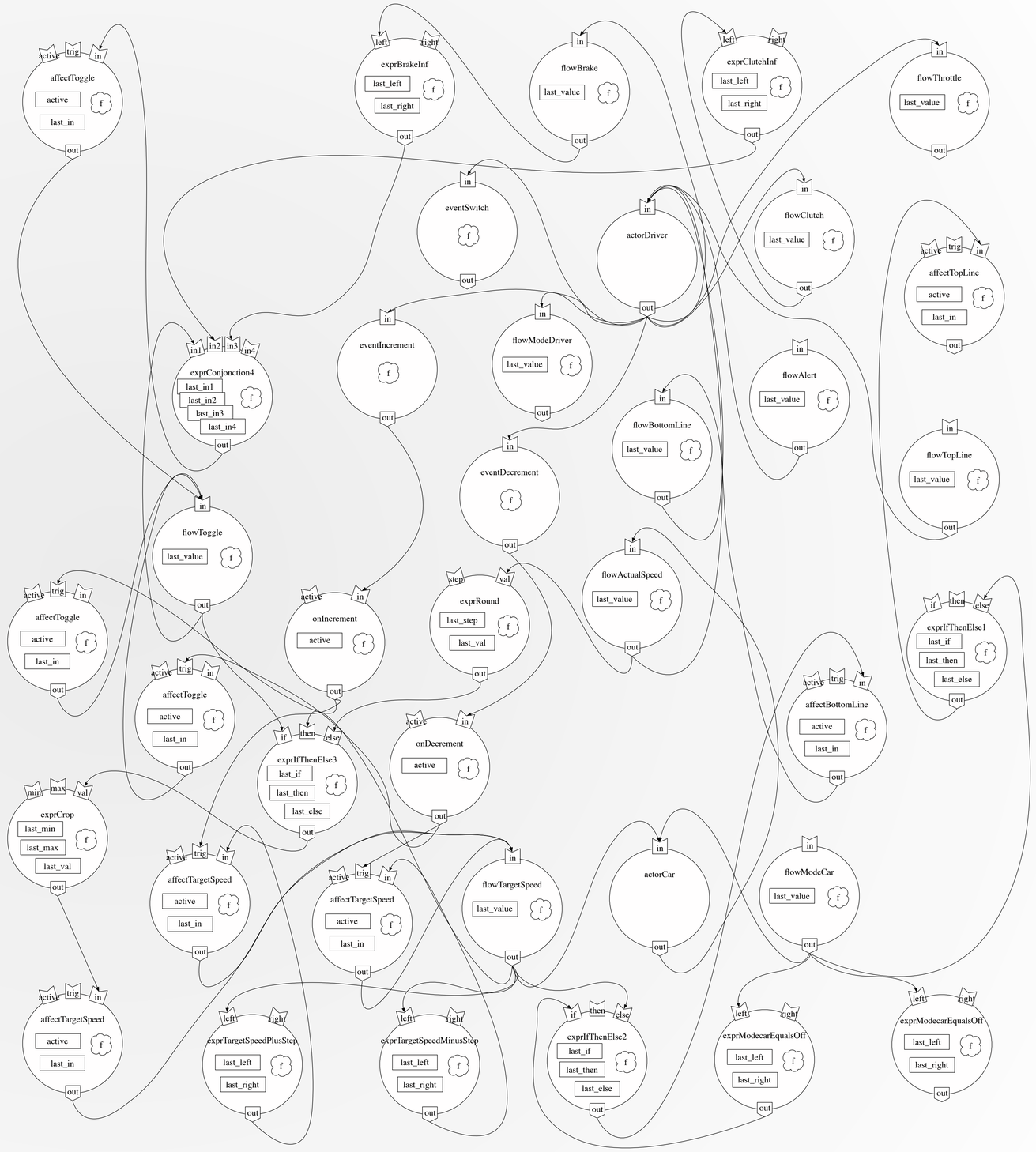
    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle
```



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    on increment :  targetSpeed = targetSpeed + step
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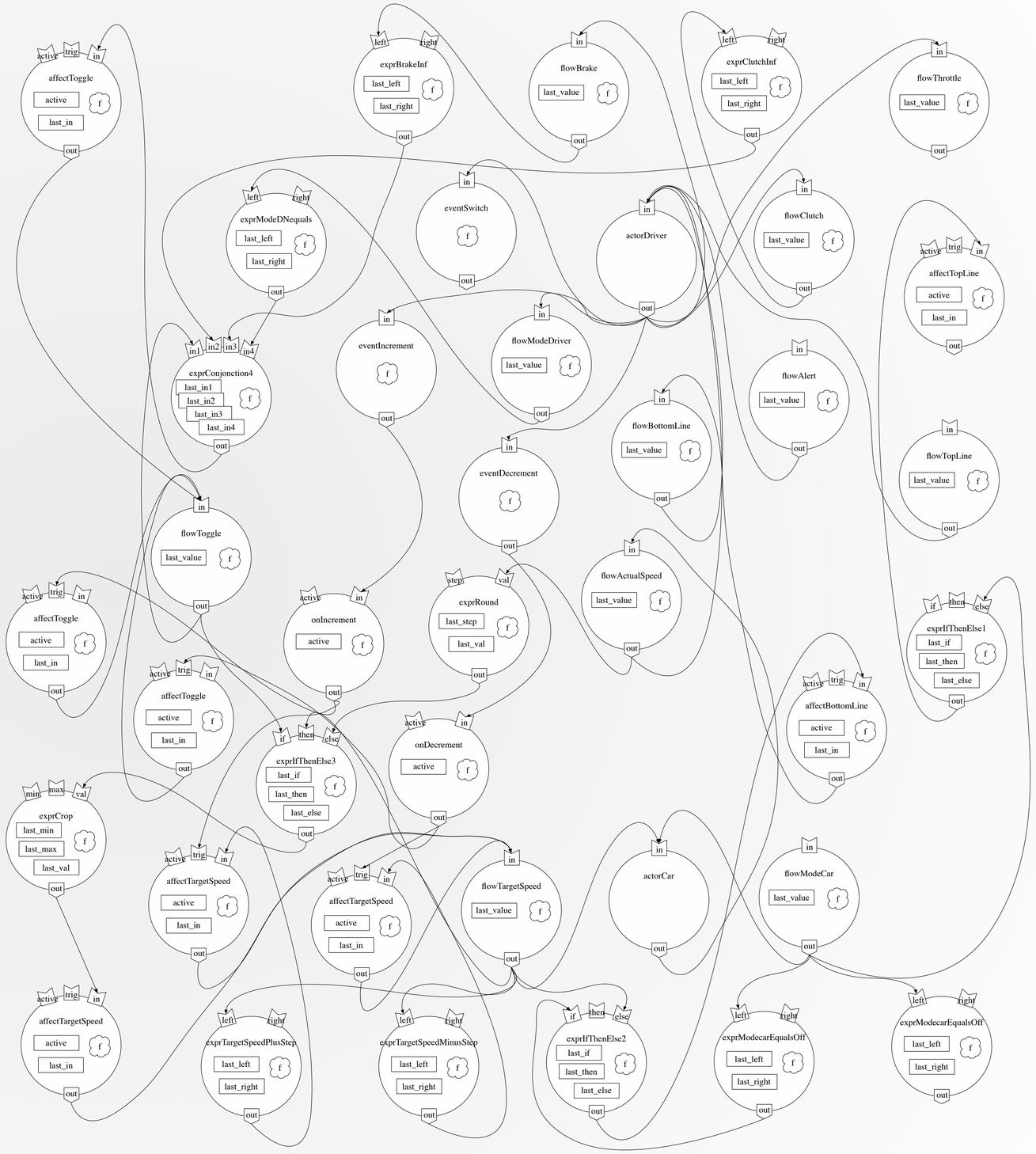
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"
```



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    modeCar : mode flow to car

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    clutch : number flow from driver
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    topLine = if modeCar == "Off" then "128920 km" else modeCar
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    on increment :  targetSpeed = targetSpeed + step
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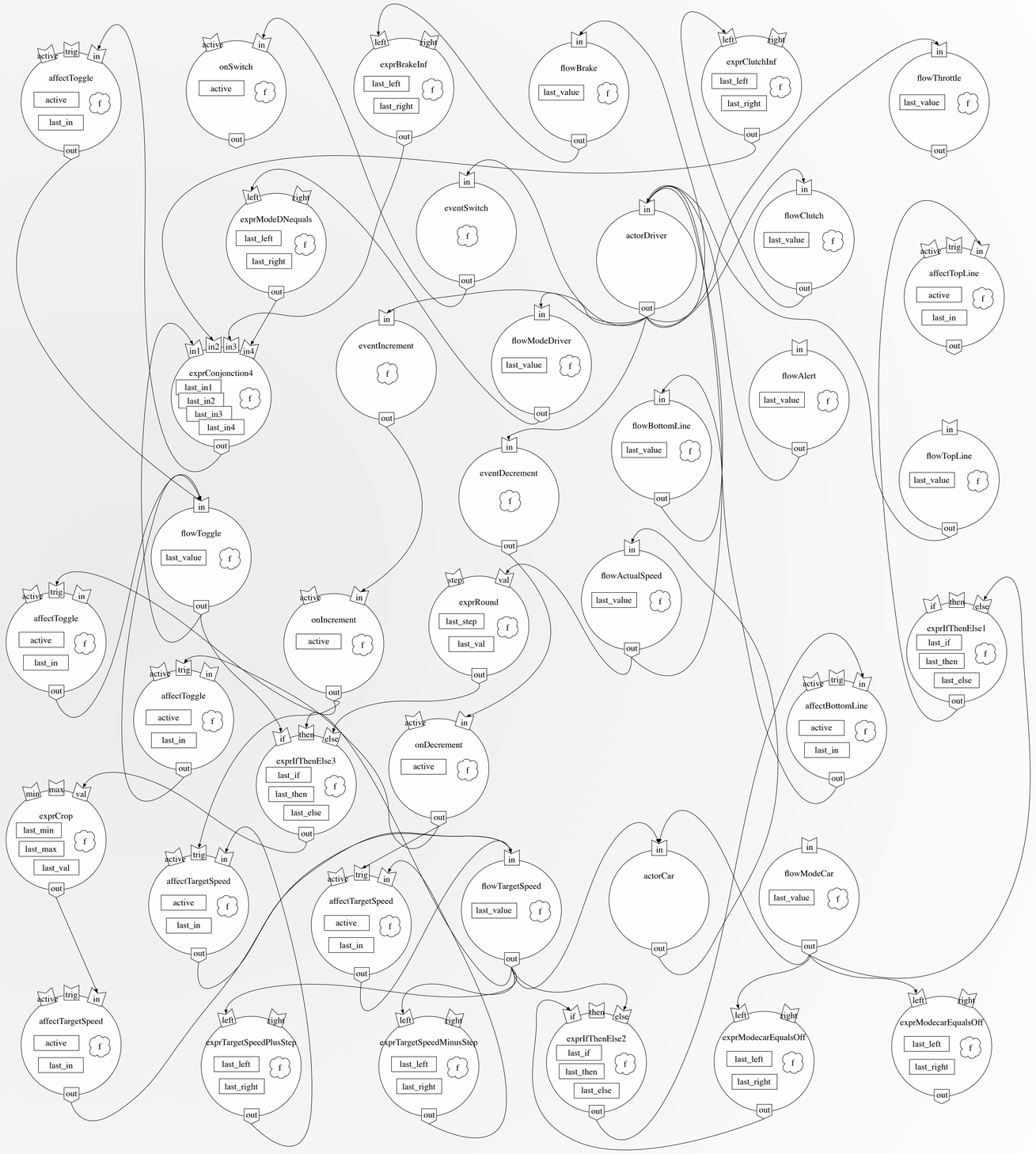
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch :
```



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    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

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    topLine = if modeCar == "Off" then "128920 km" else modeCar
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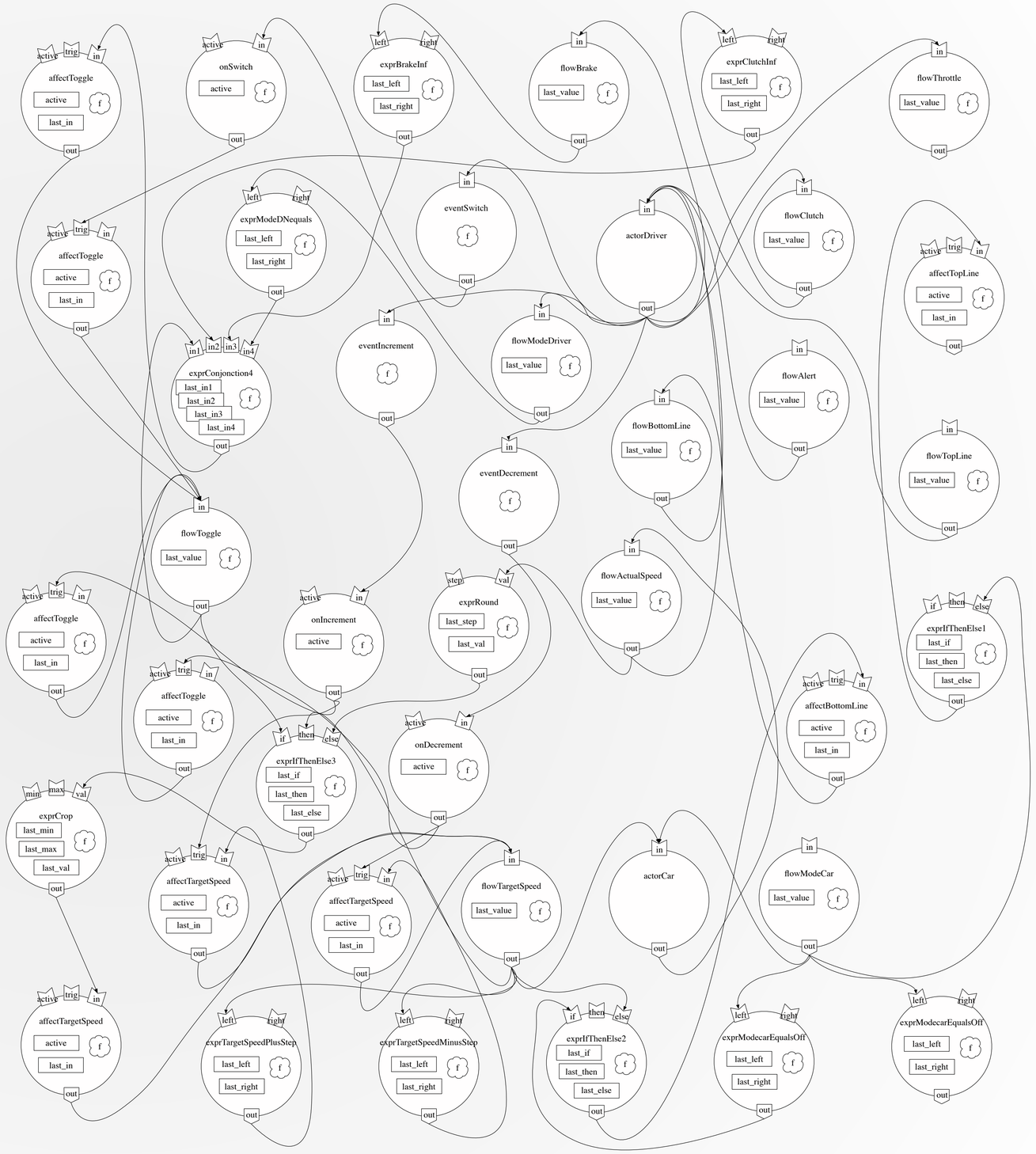
    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle =
```



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    modeCar : mode flow to car

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    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
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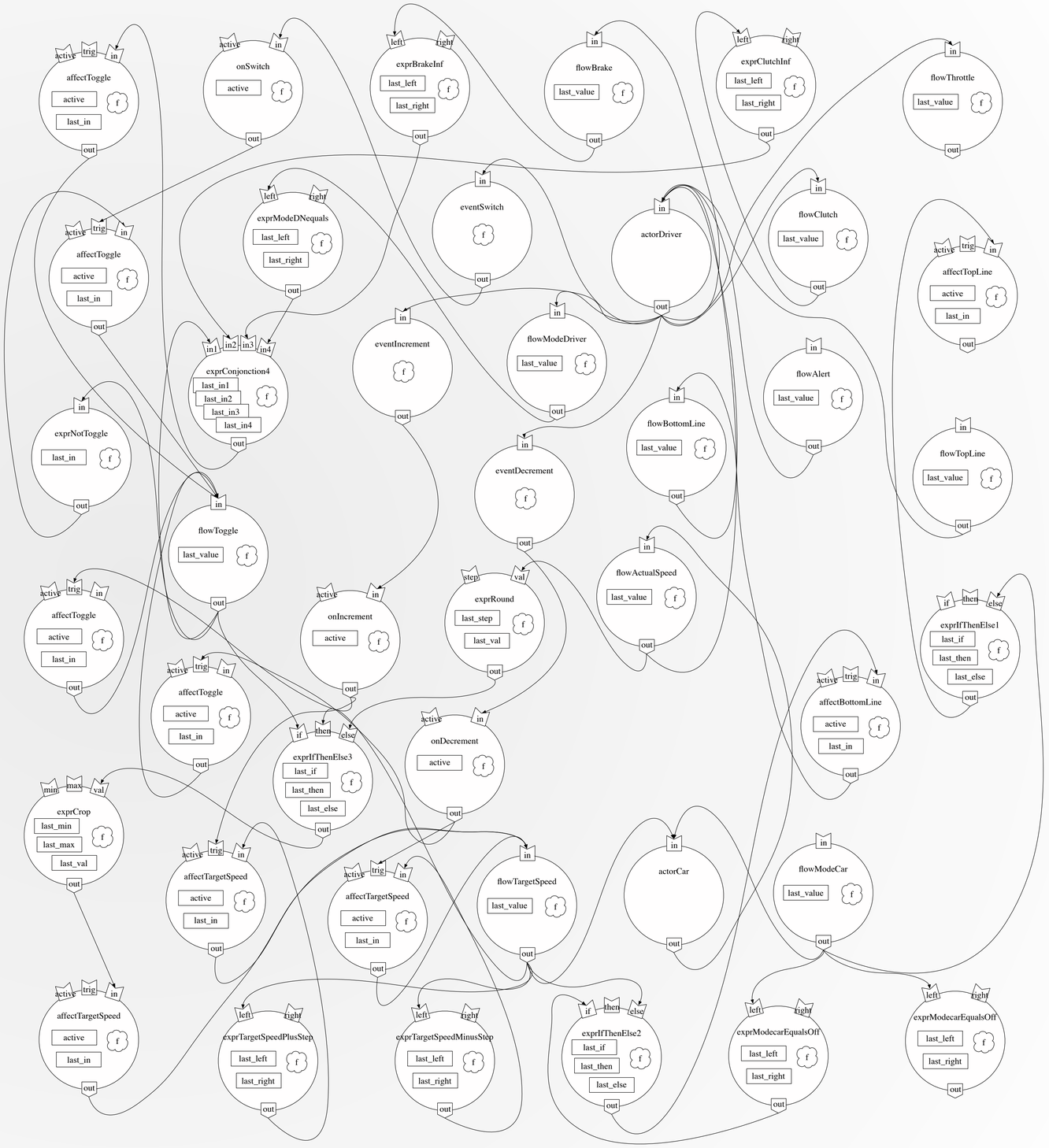
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle
```



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    throttle : number flow from driver
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    topLine = if modeCar == "Off" then "128920 km" else modeCar
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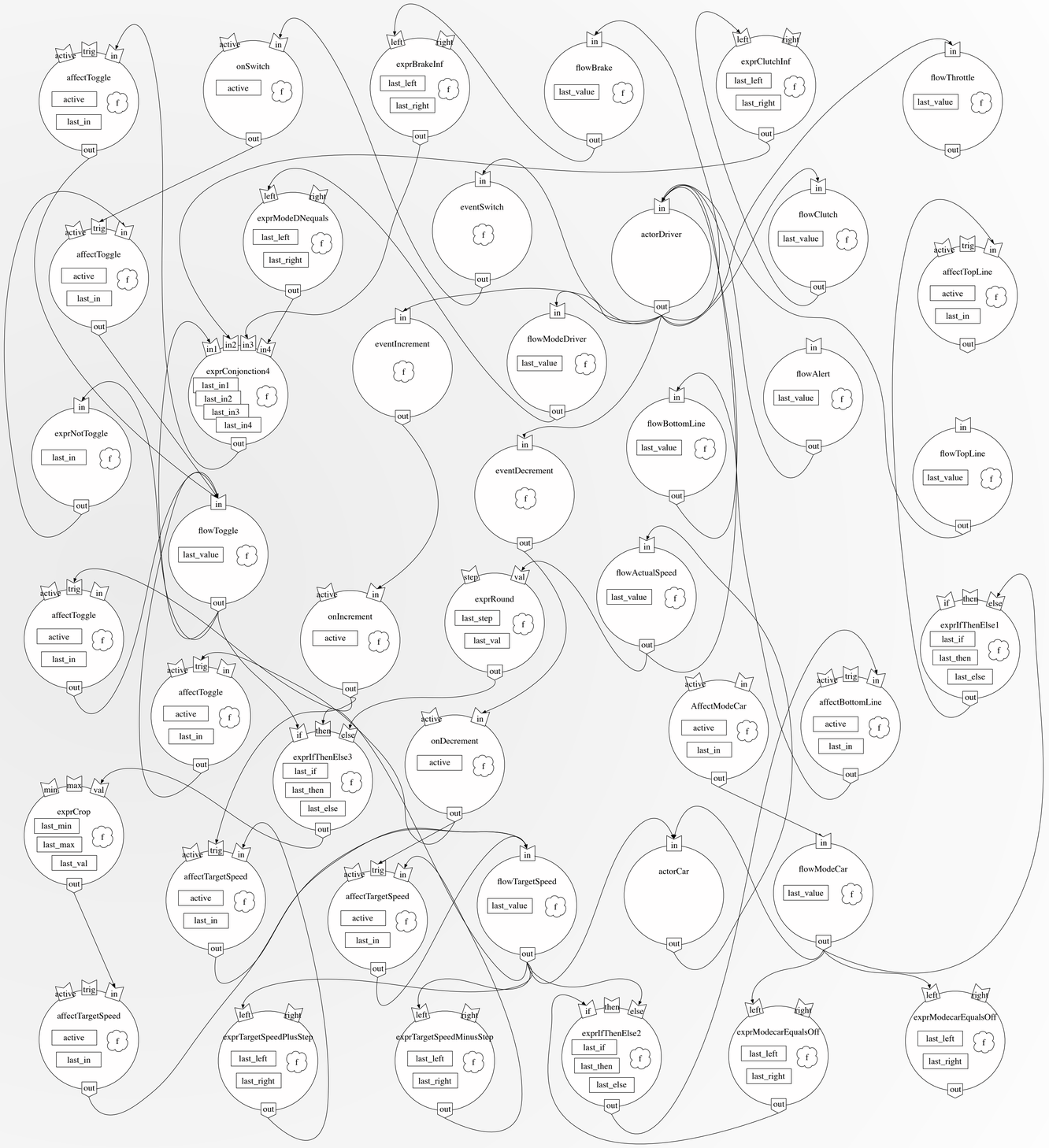
    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar =
```



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    modeCar : mode flow to car

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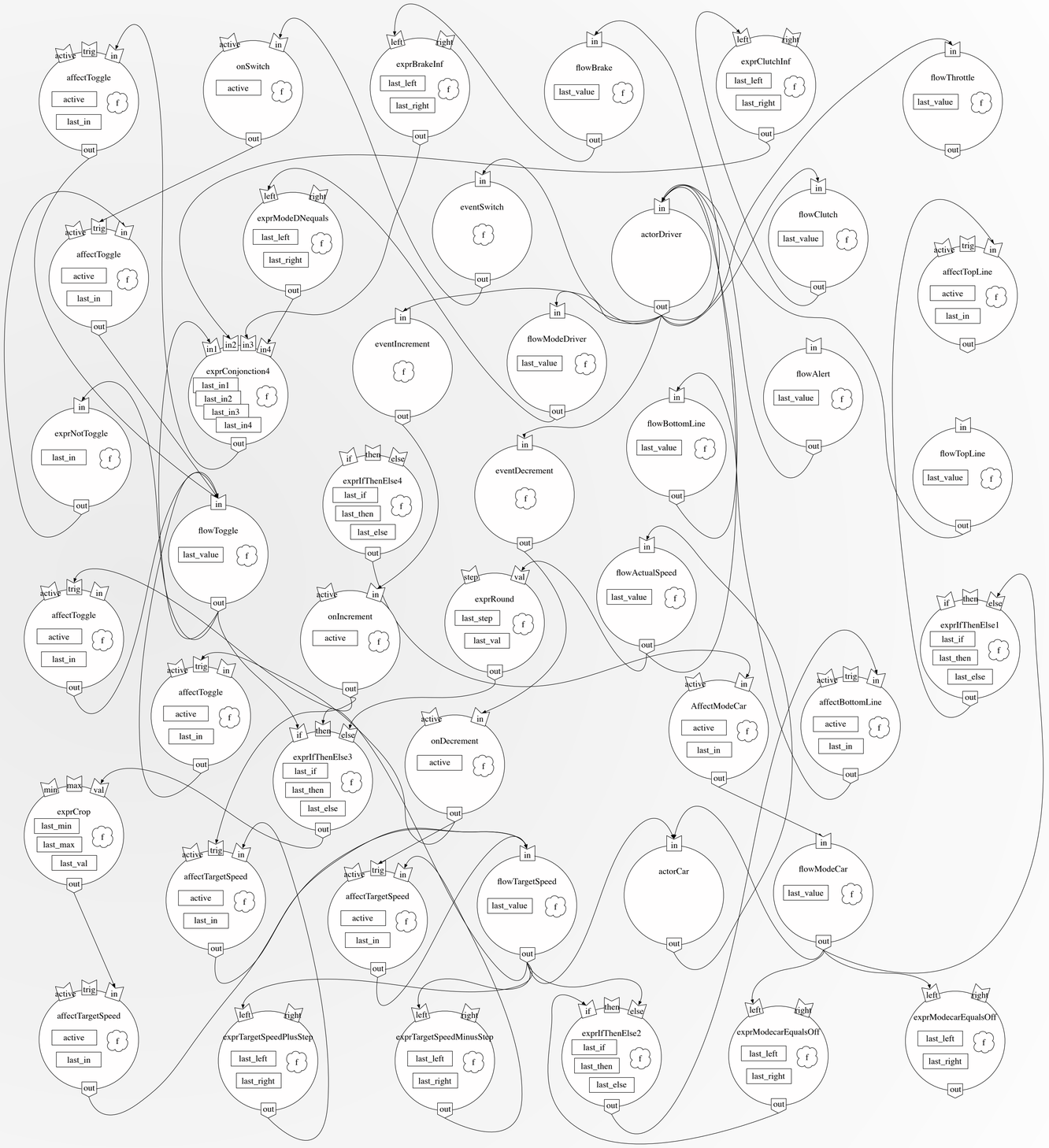
    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if
```



Interpretation

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    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

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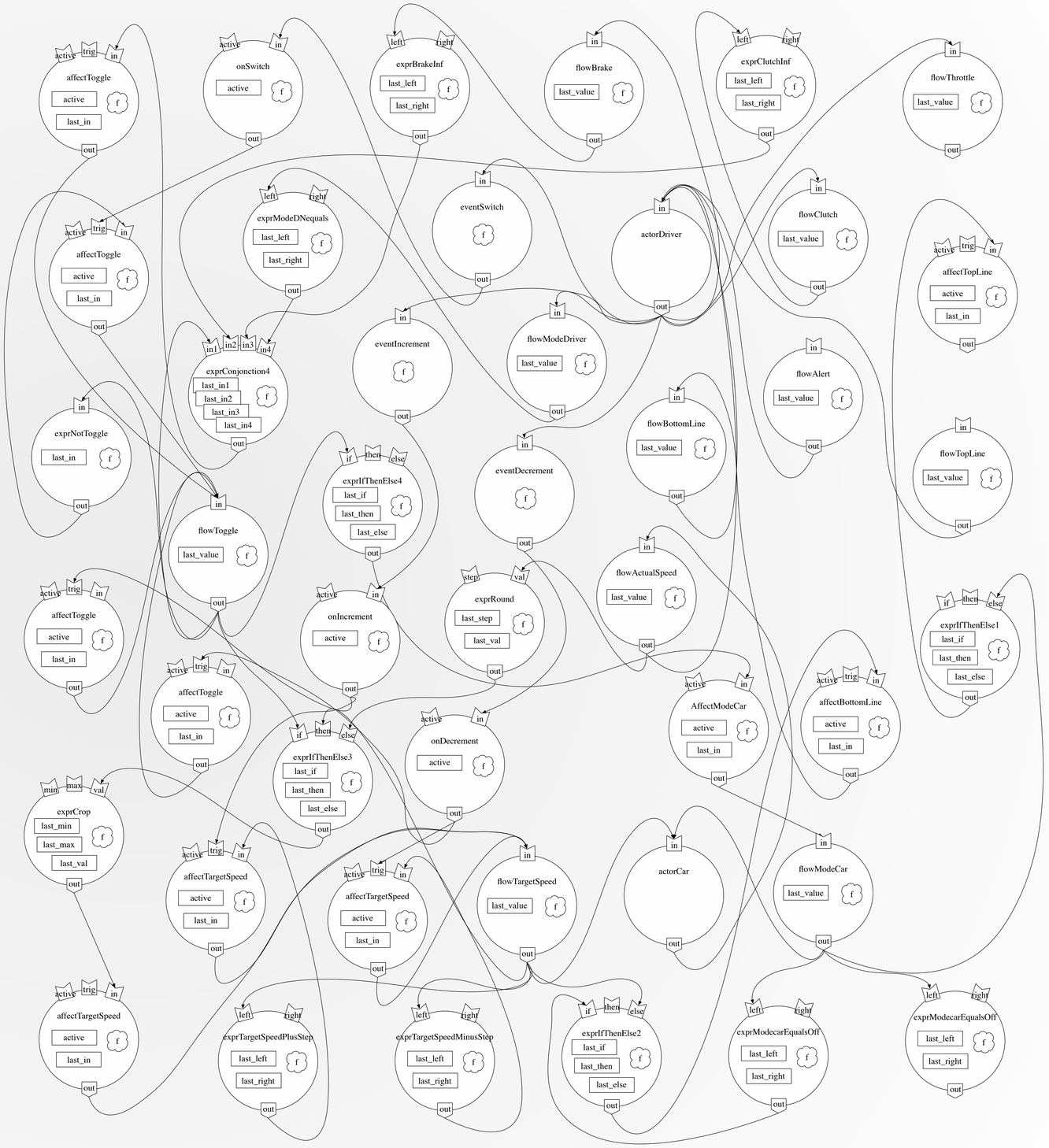
    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if toggle
```



Interpretation

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    switch : void event from driver
    modeDriver : mode flow from driver

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    throttle : number flow from driver
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    topLine = if modeCar == "Off" then "128920 km" else modeCar
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    on increment :  targetSpeed = targetSpeed + step
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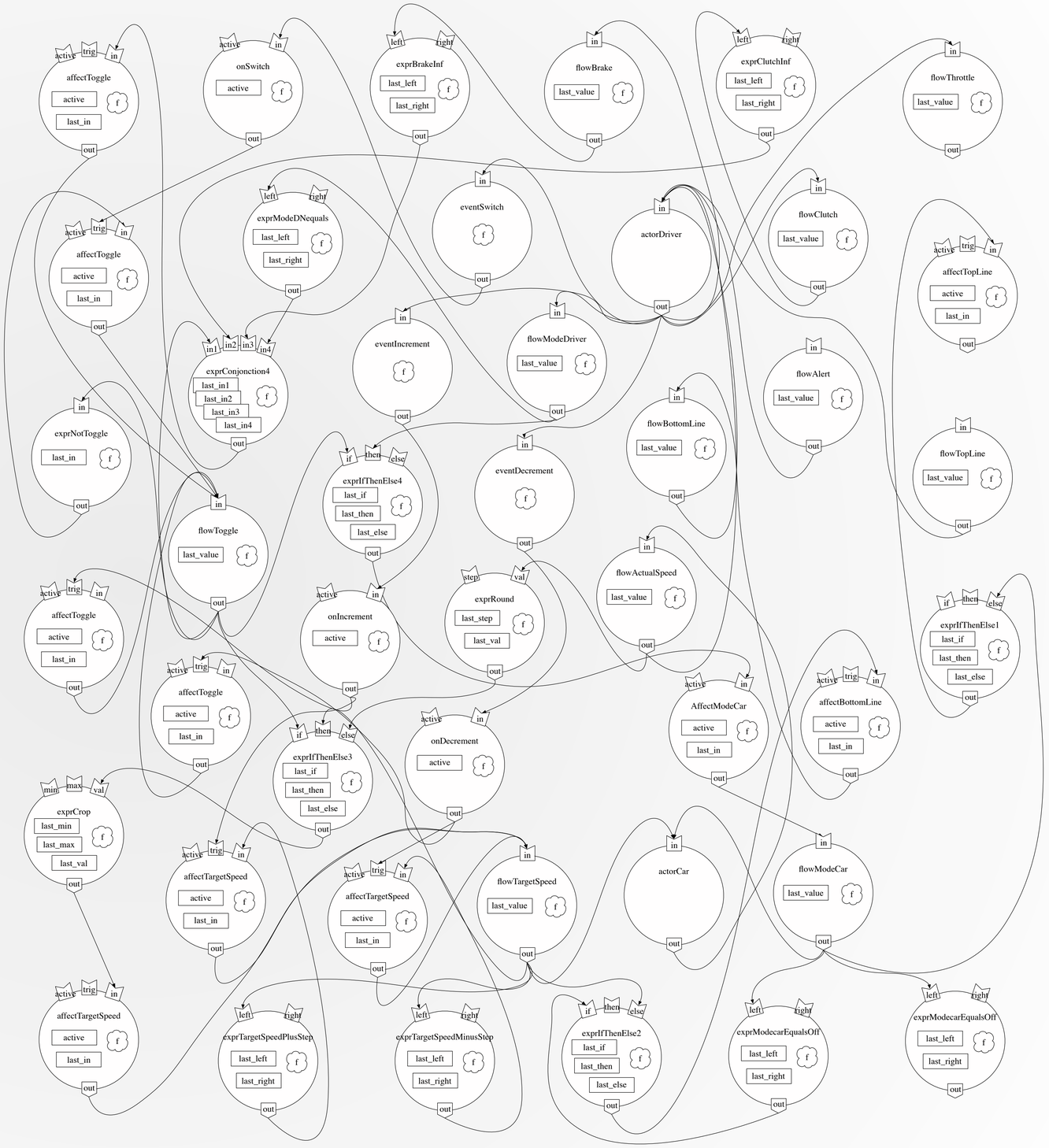
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if toggle then modeDriver
```



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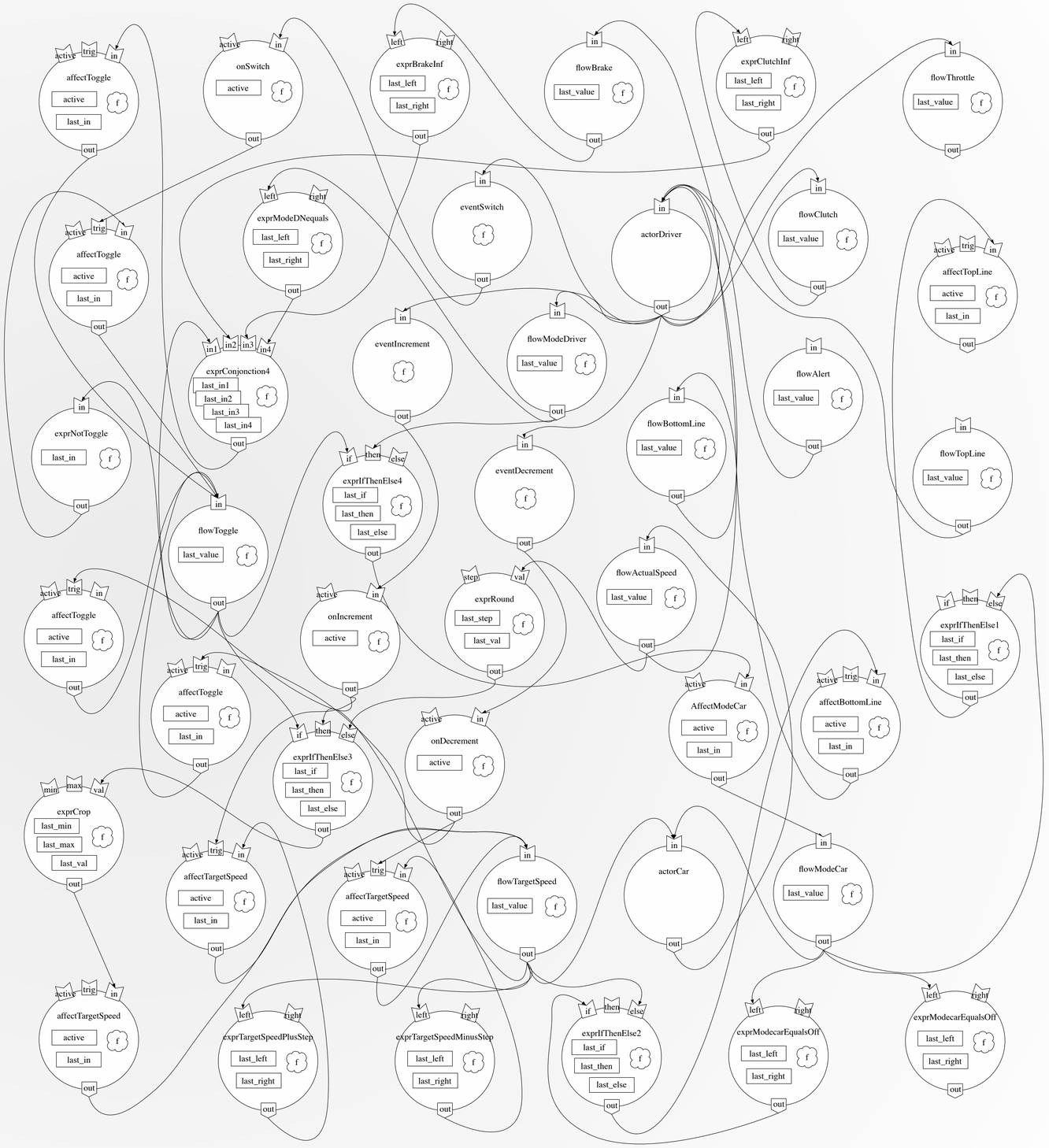
                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if toggle then modeDriver else "Off"
```



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    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
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    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

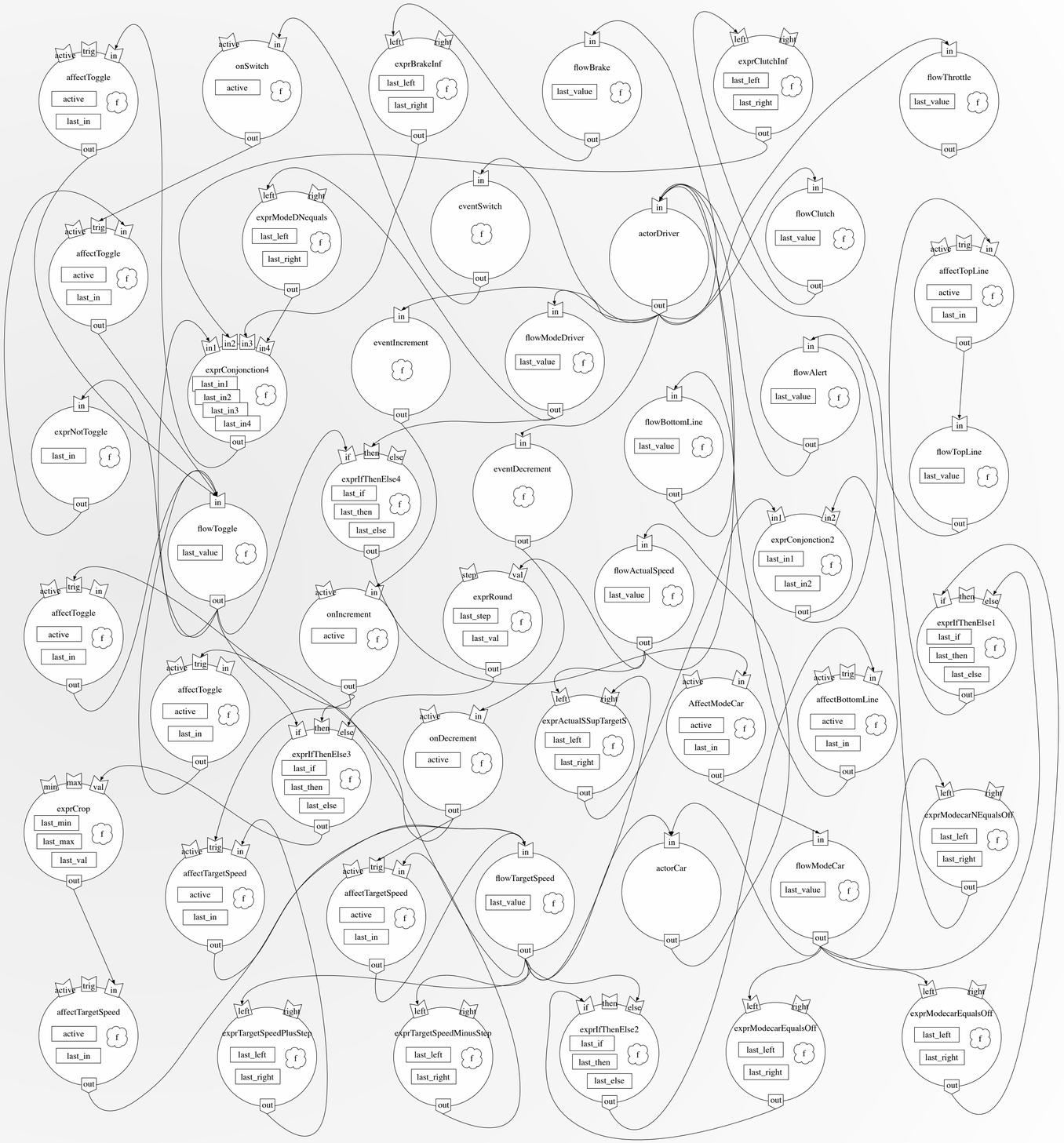
    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

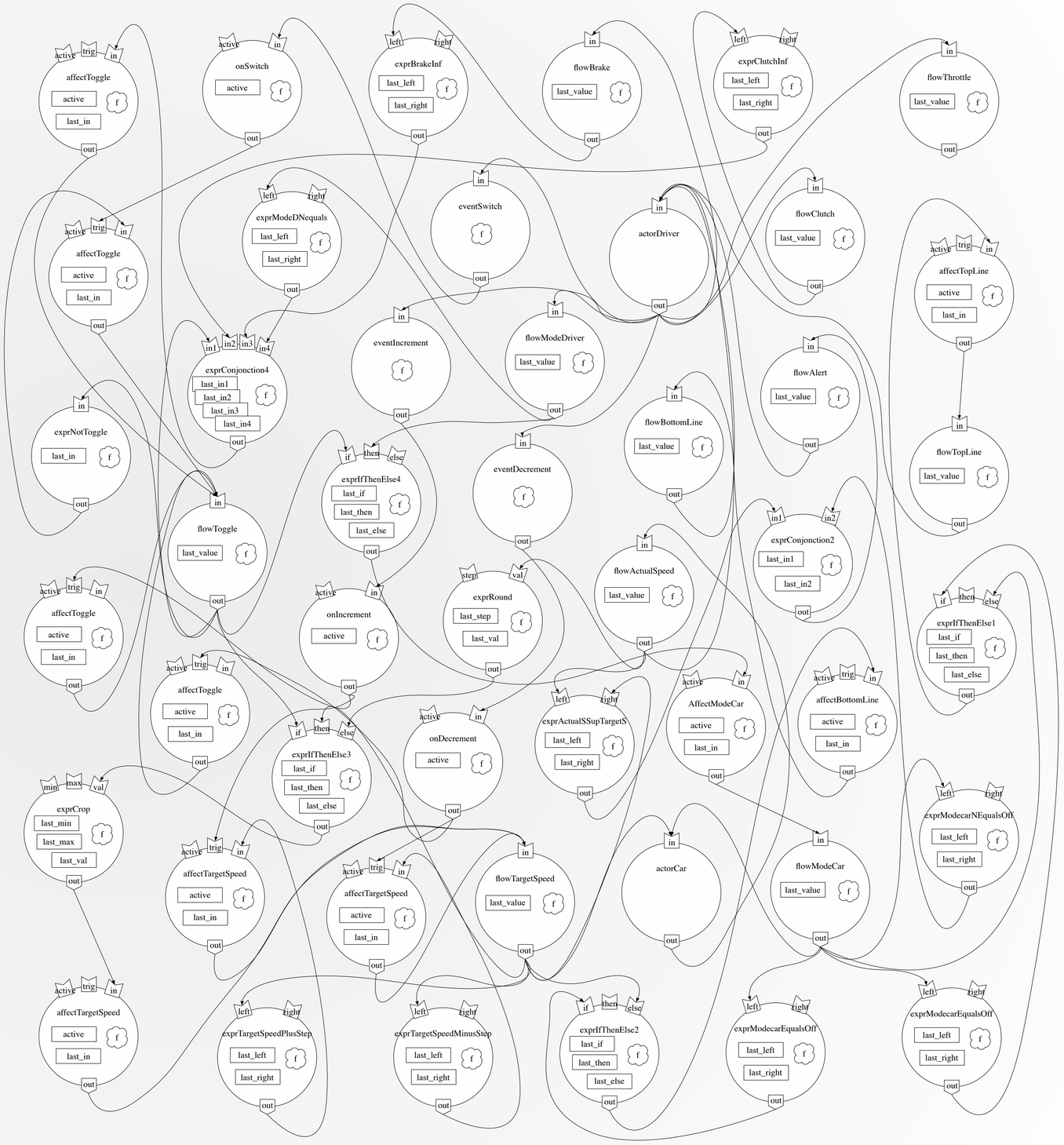
    modeCar = if toggle then modeDriver else "Off"

    alert = actualSpeed > targetSpeed && modeCar!="Off"
```



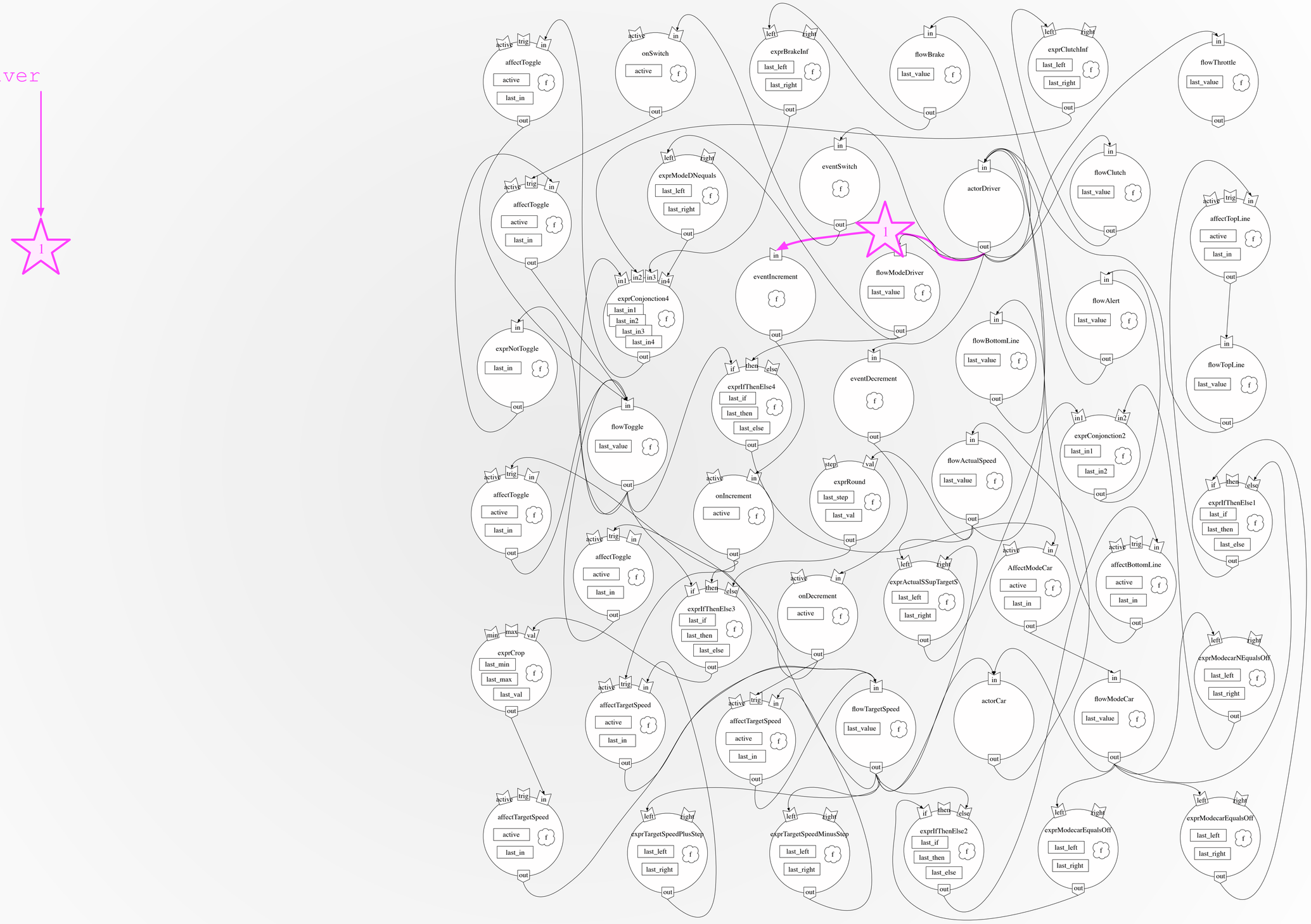
Execution

Executable Interactor



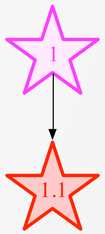
Event propagation

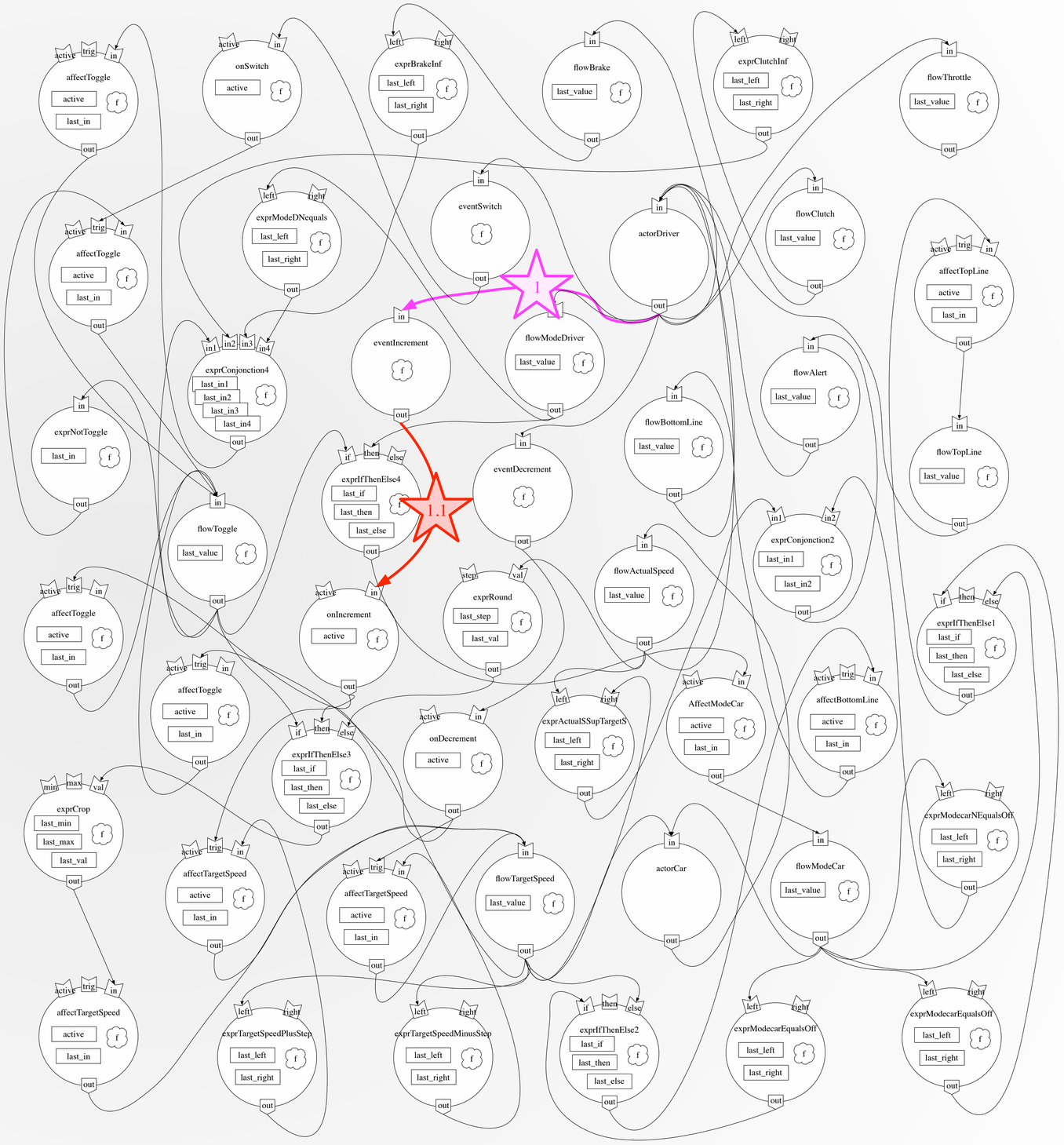
increment from driver



Event propagation

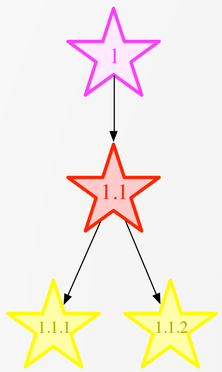
increment from driver

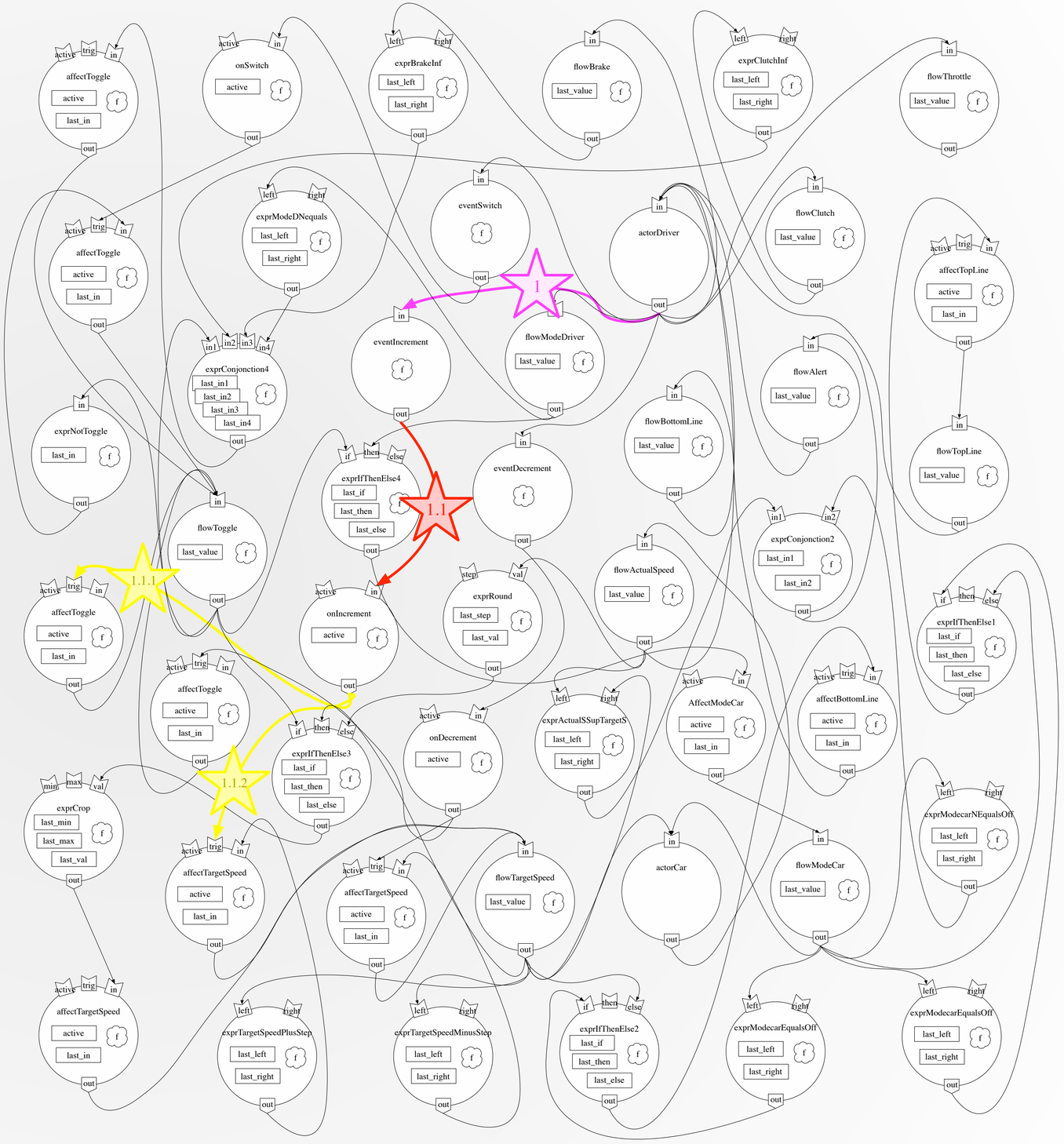




Event propagation

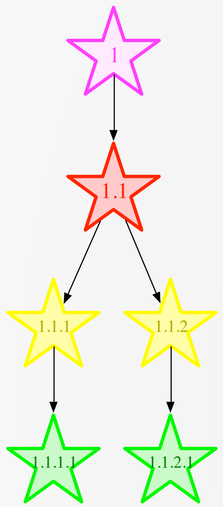
increment from driver

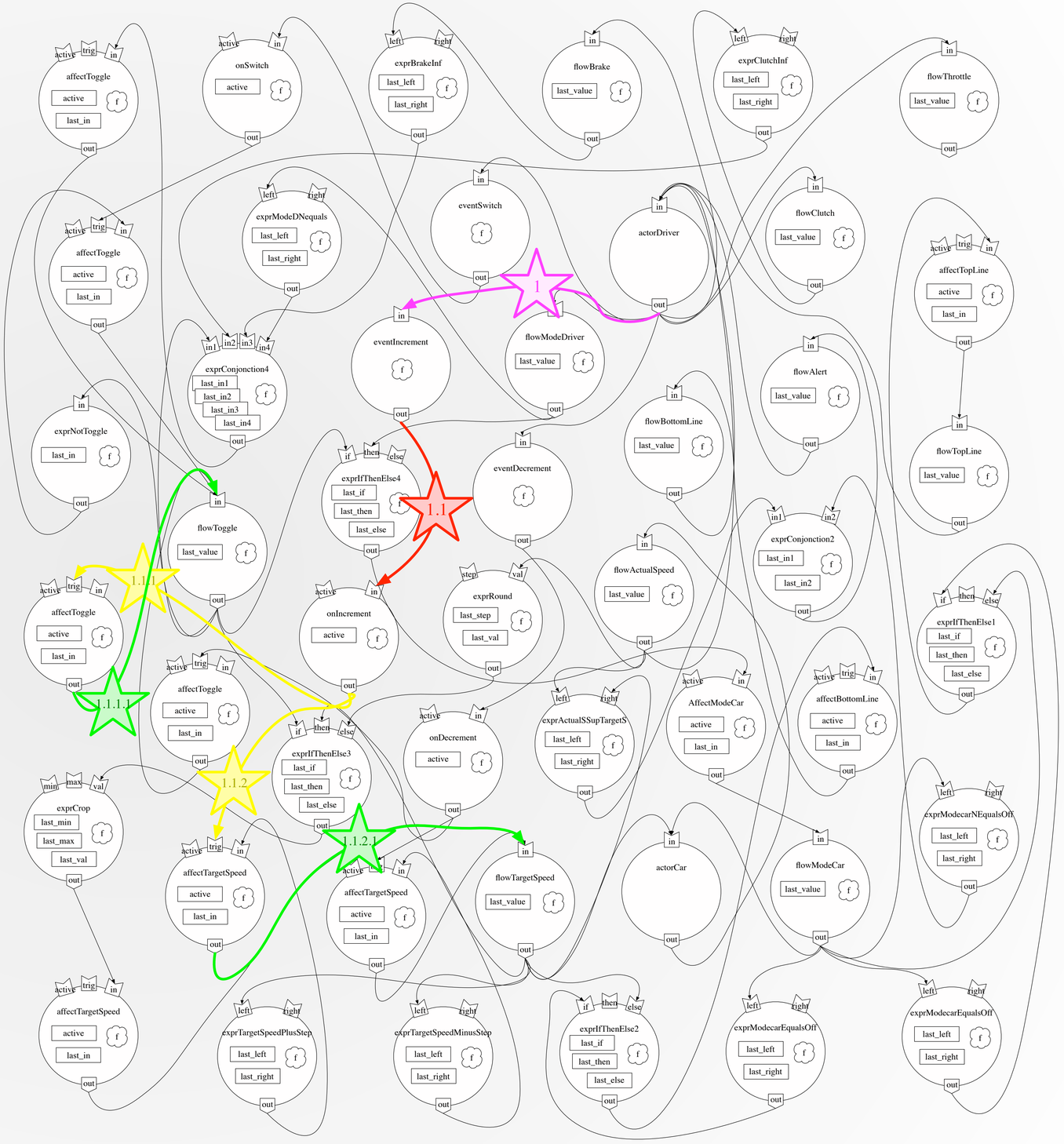




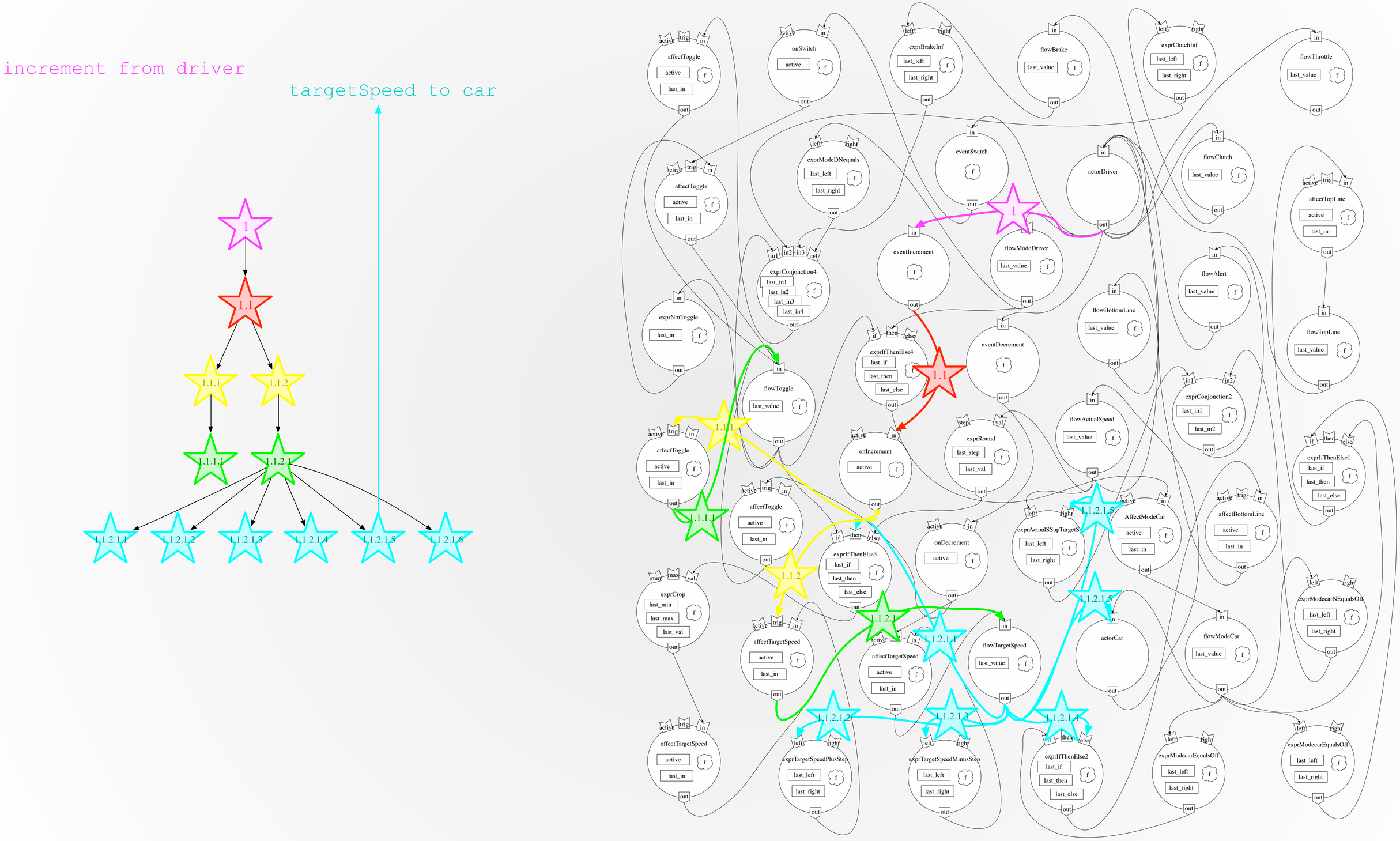
Event propagation

increment from driver





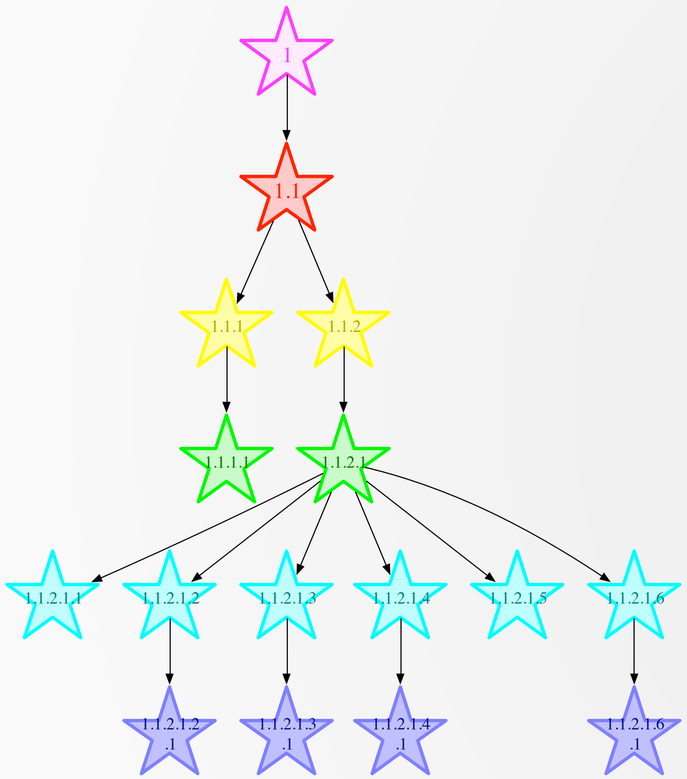
Event propagation

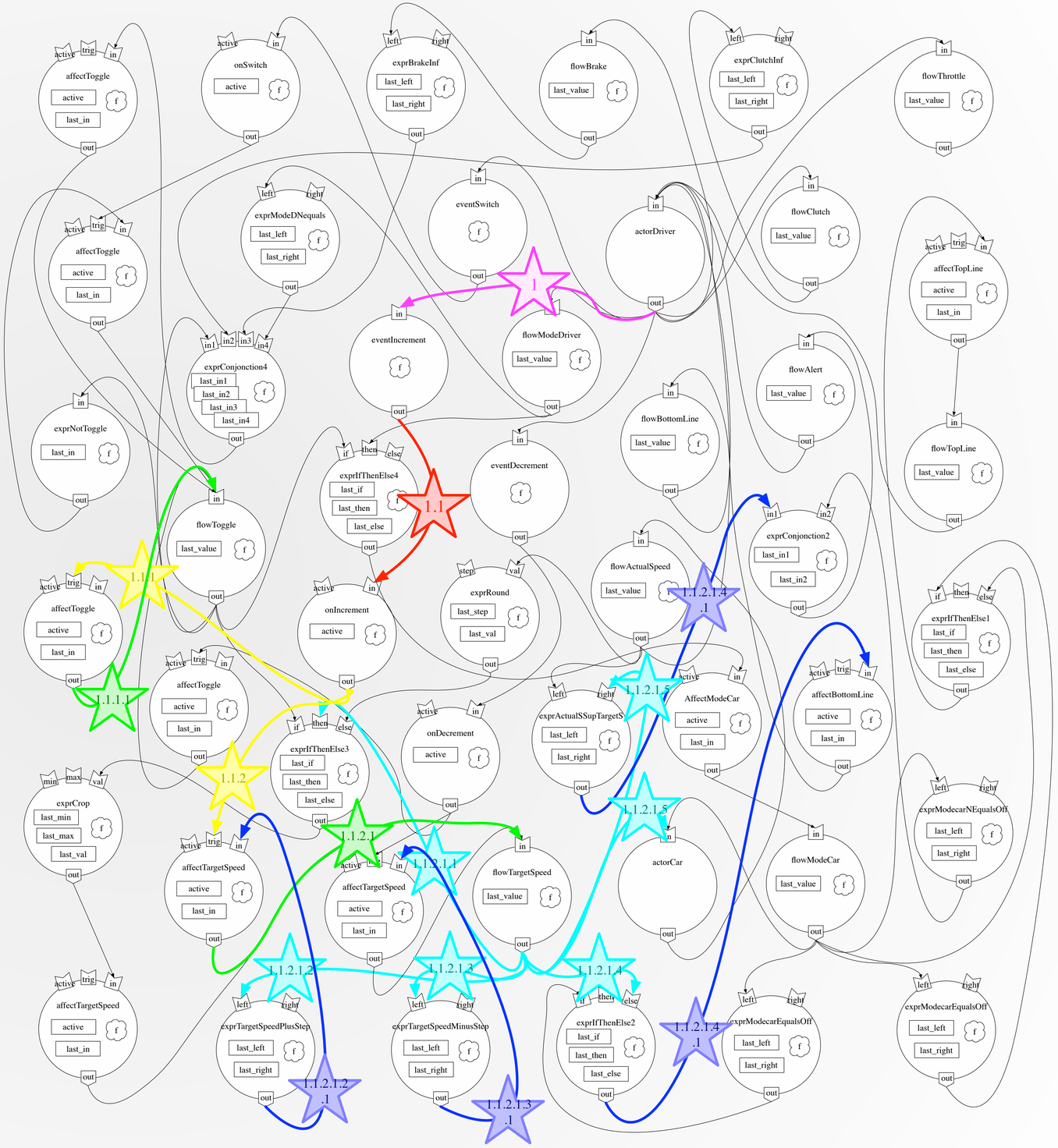


Event propagation

increment from driver

targetSpeed to car

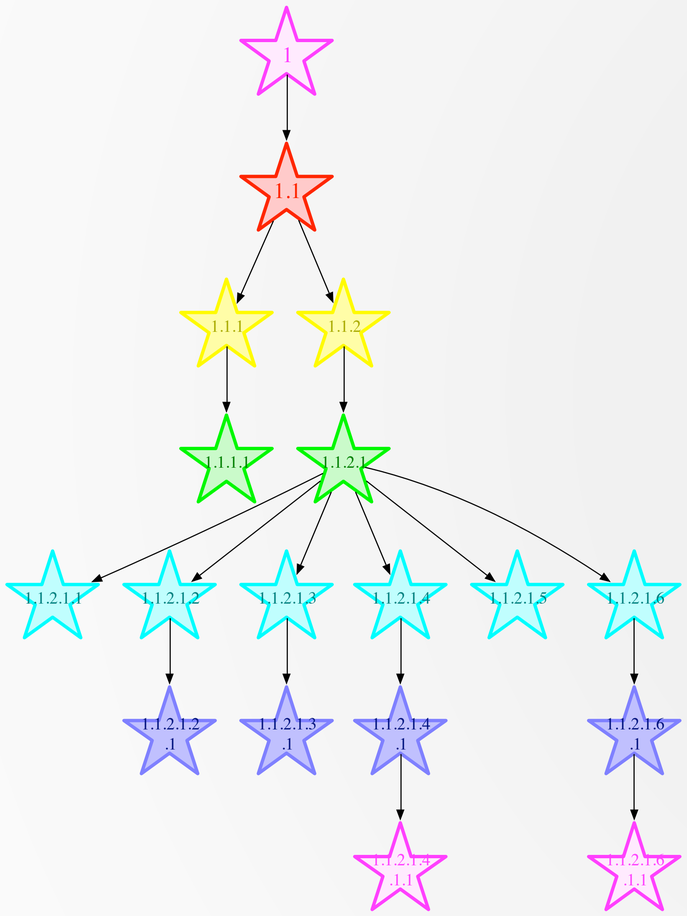


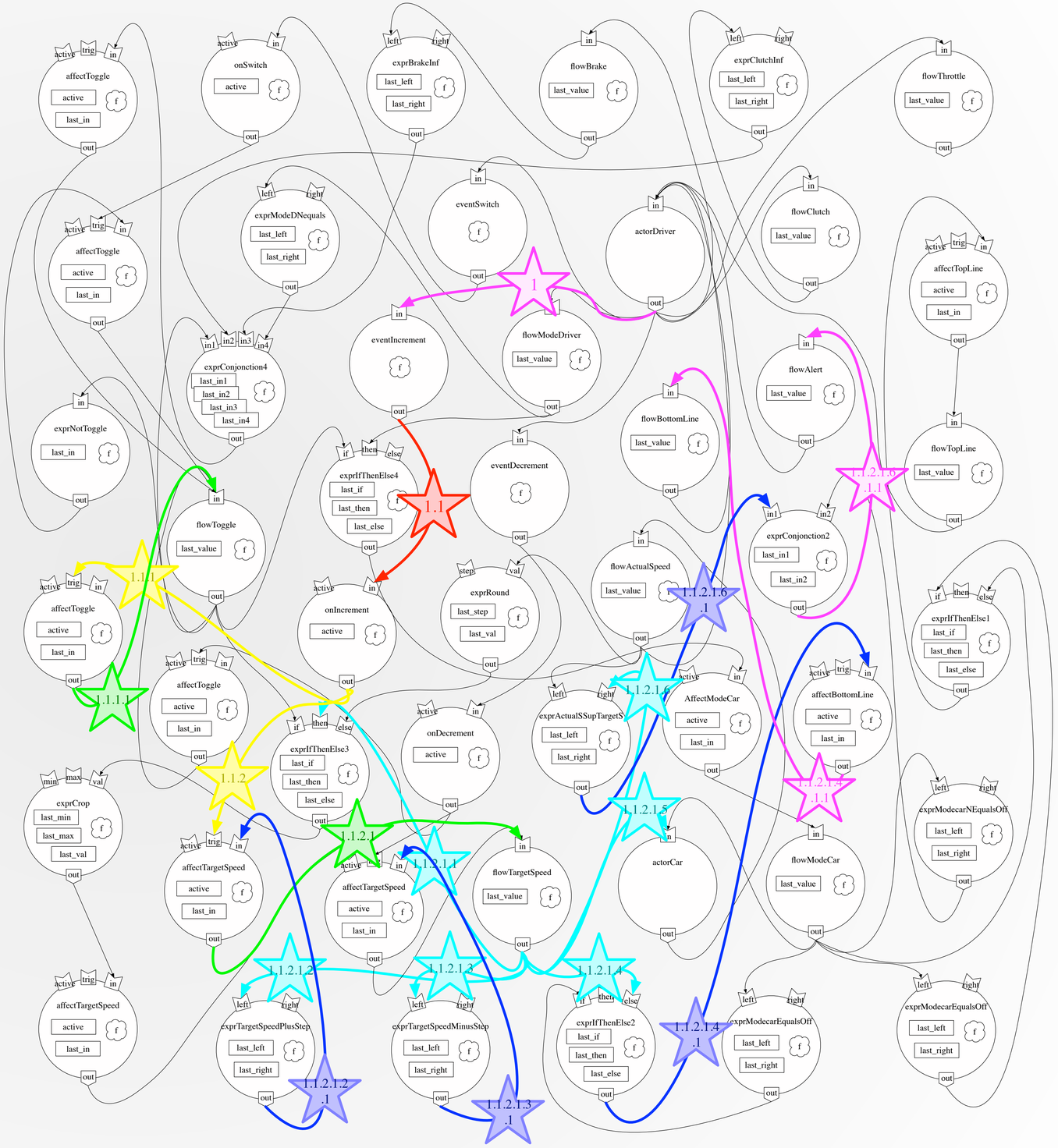


Event propagation

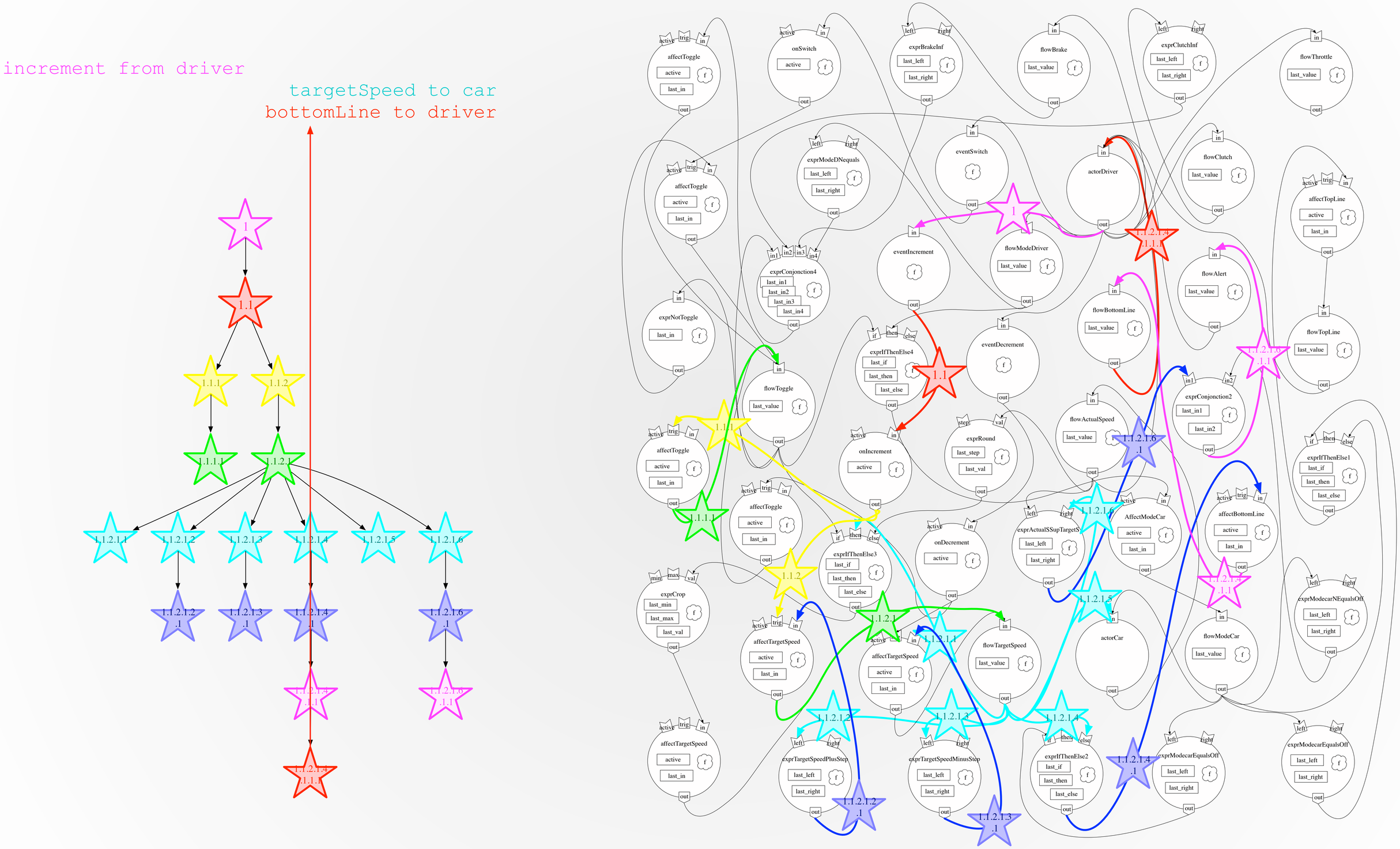
increment from driver

targetSpeed to car





Event propagation

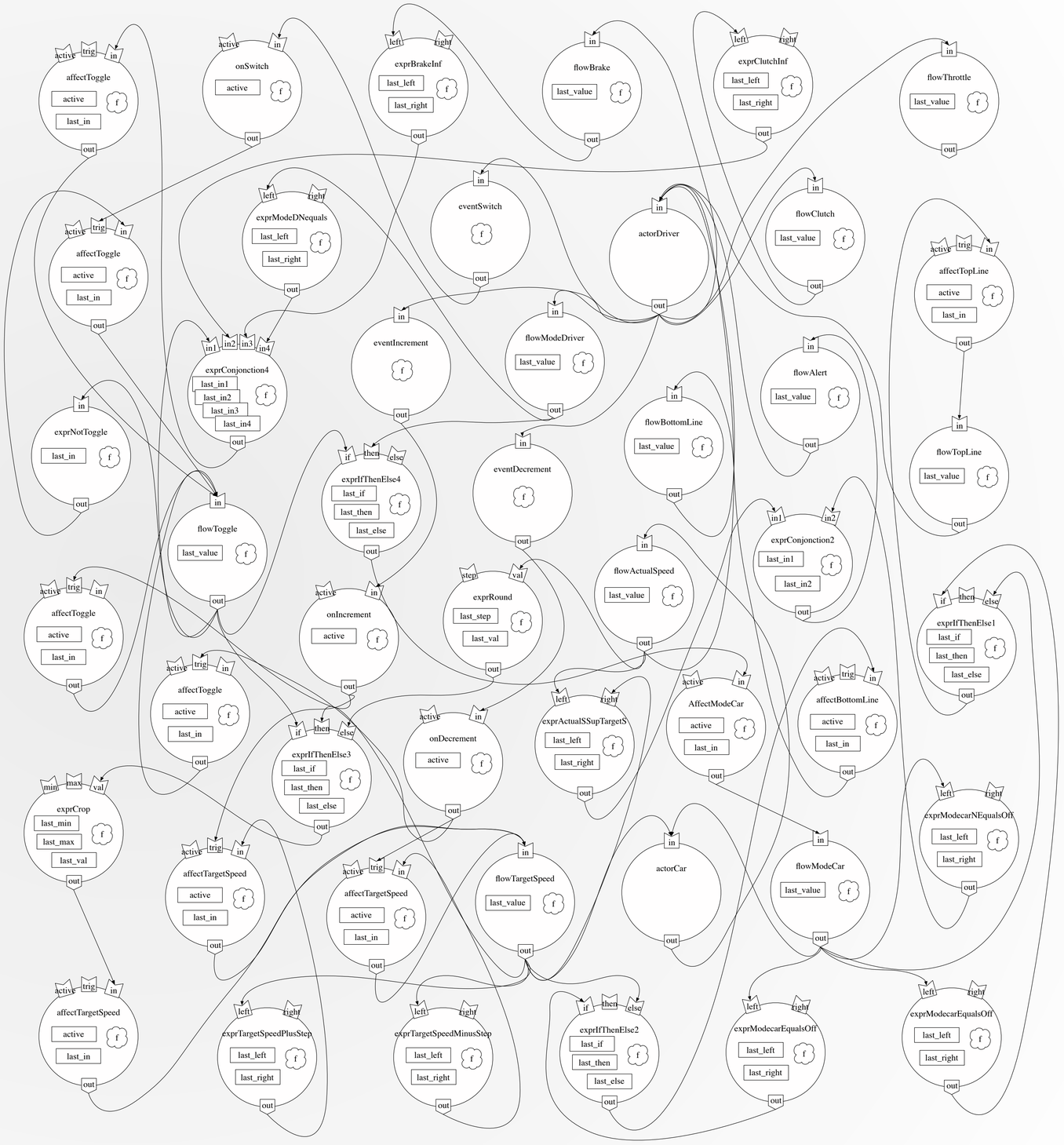


Event propagation

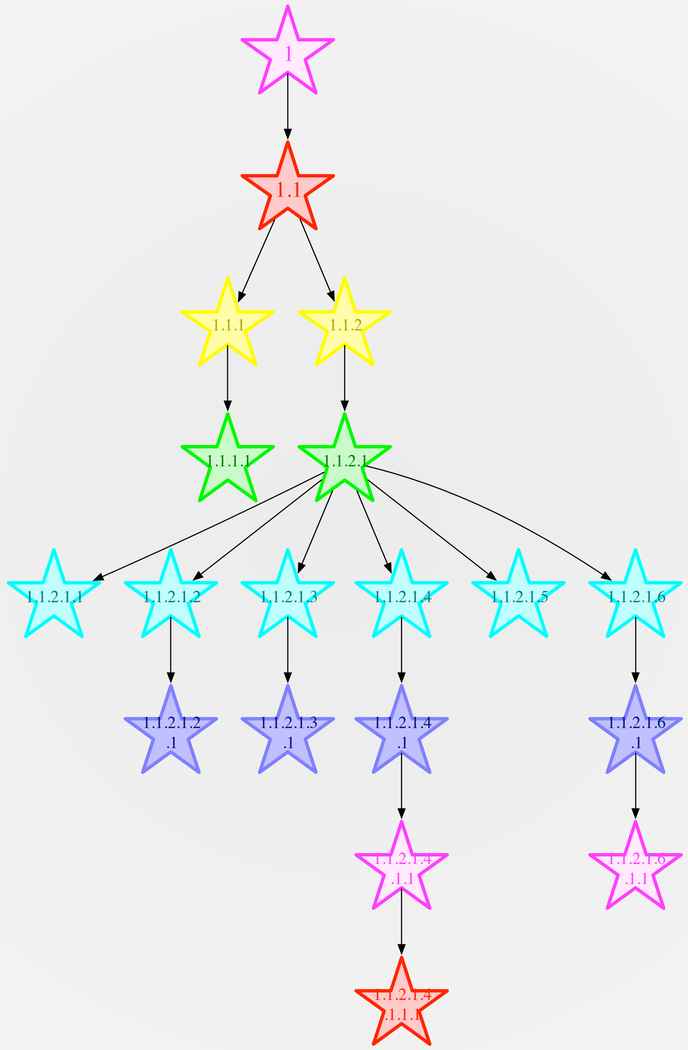
increment from driver

targetSpeed to car

bottomLine to driver



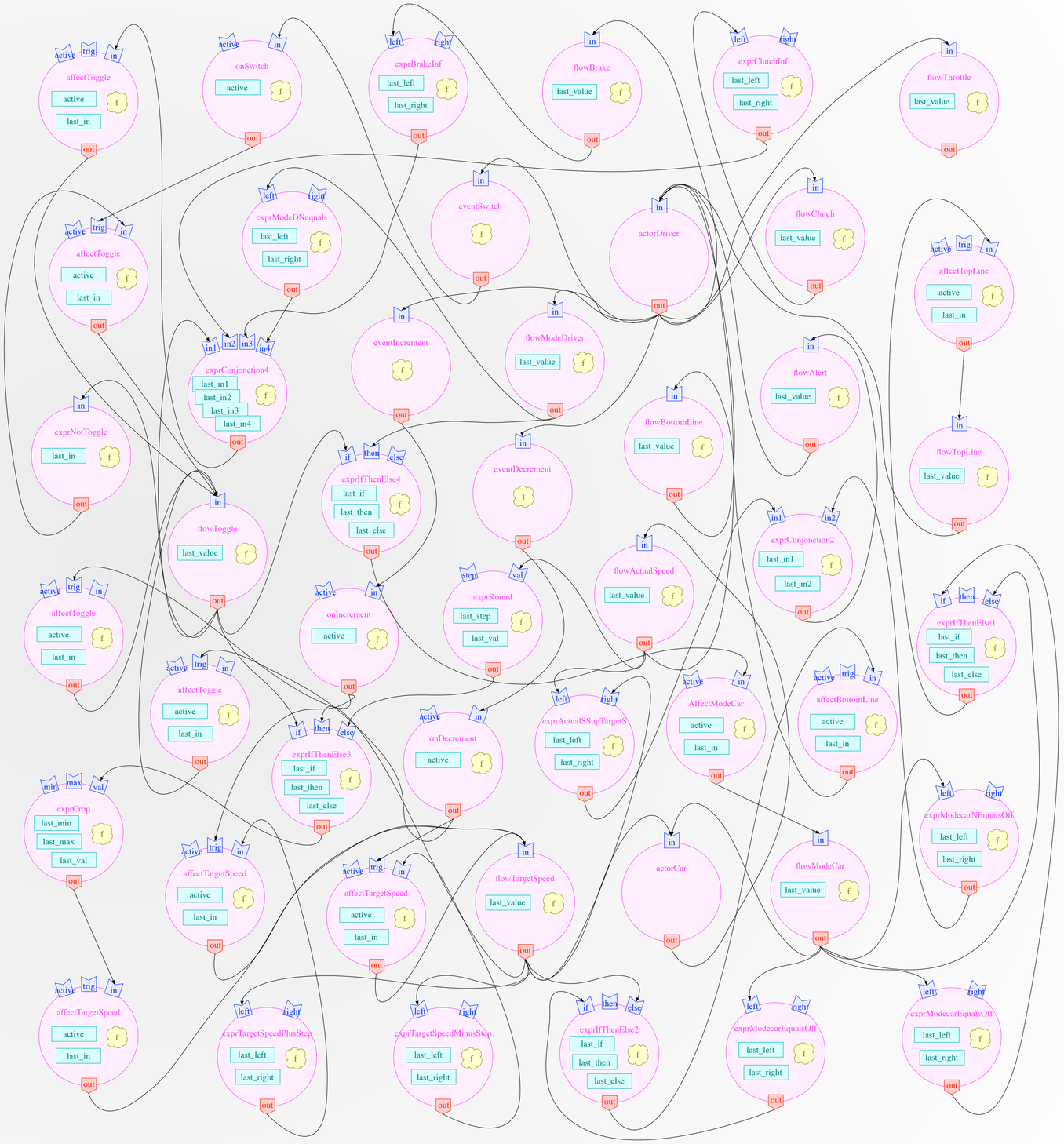
Event propagation overview



Optimisation

Pre optimisation Metrics

47 behaviors
76 state variables
45 transition functions
93 input ports
47 output ports
69 connexions



Duplicate behavior optimisation

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

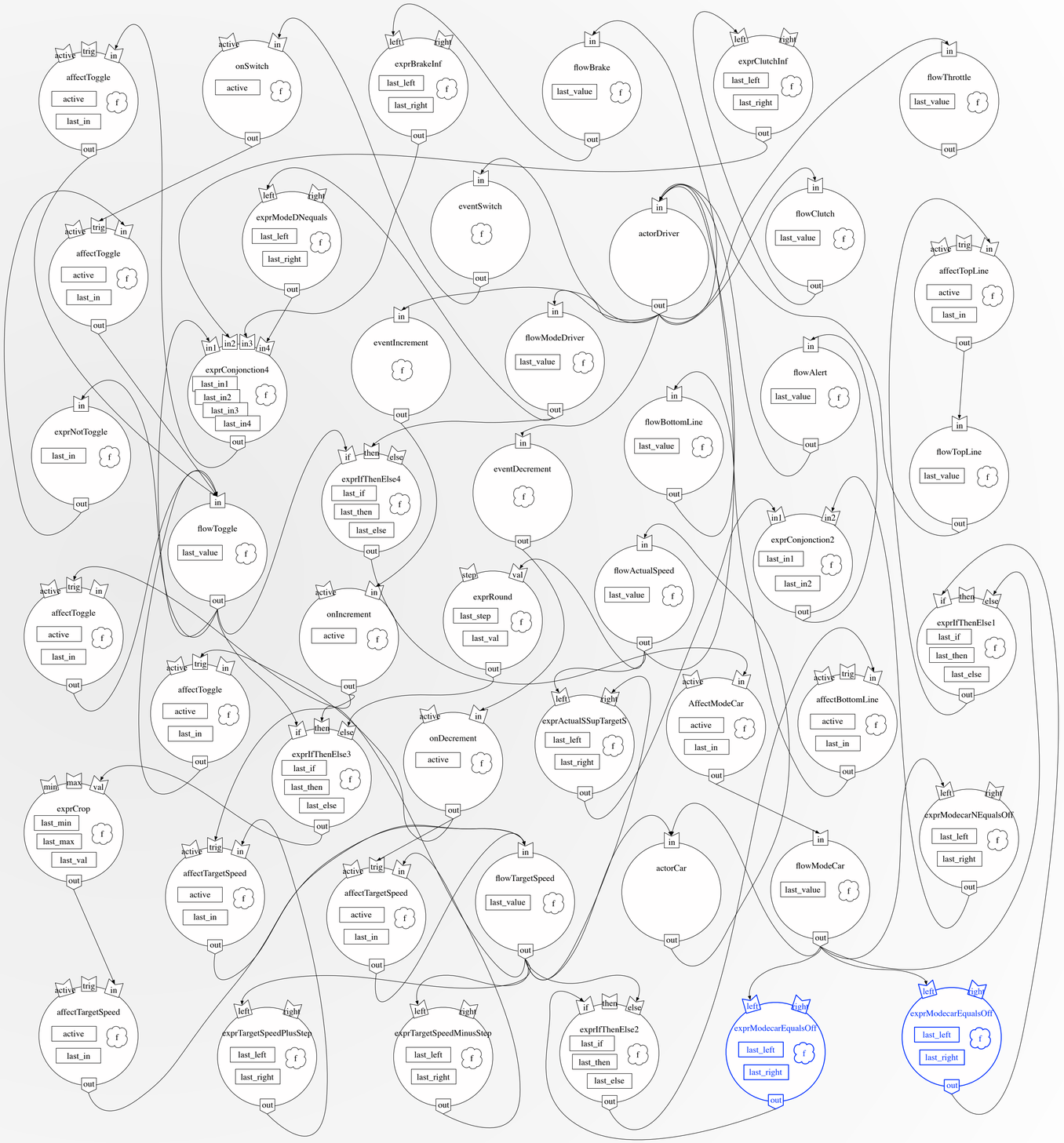
    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if toggle then modeDriver else "Off"

    alert = actualSpeed > targetSpeed && modeCar!="Off"
```



Duplicate behavior optimisation

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test interactor:
    driver : human actor
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    step : number constant
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    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
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    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
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    on increment :  targetSpeed = targetSpeed + step
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    targetSpeed = crop(minTarget,maxTarget,
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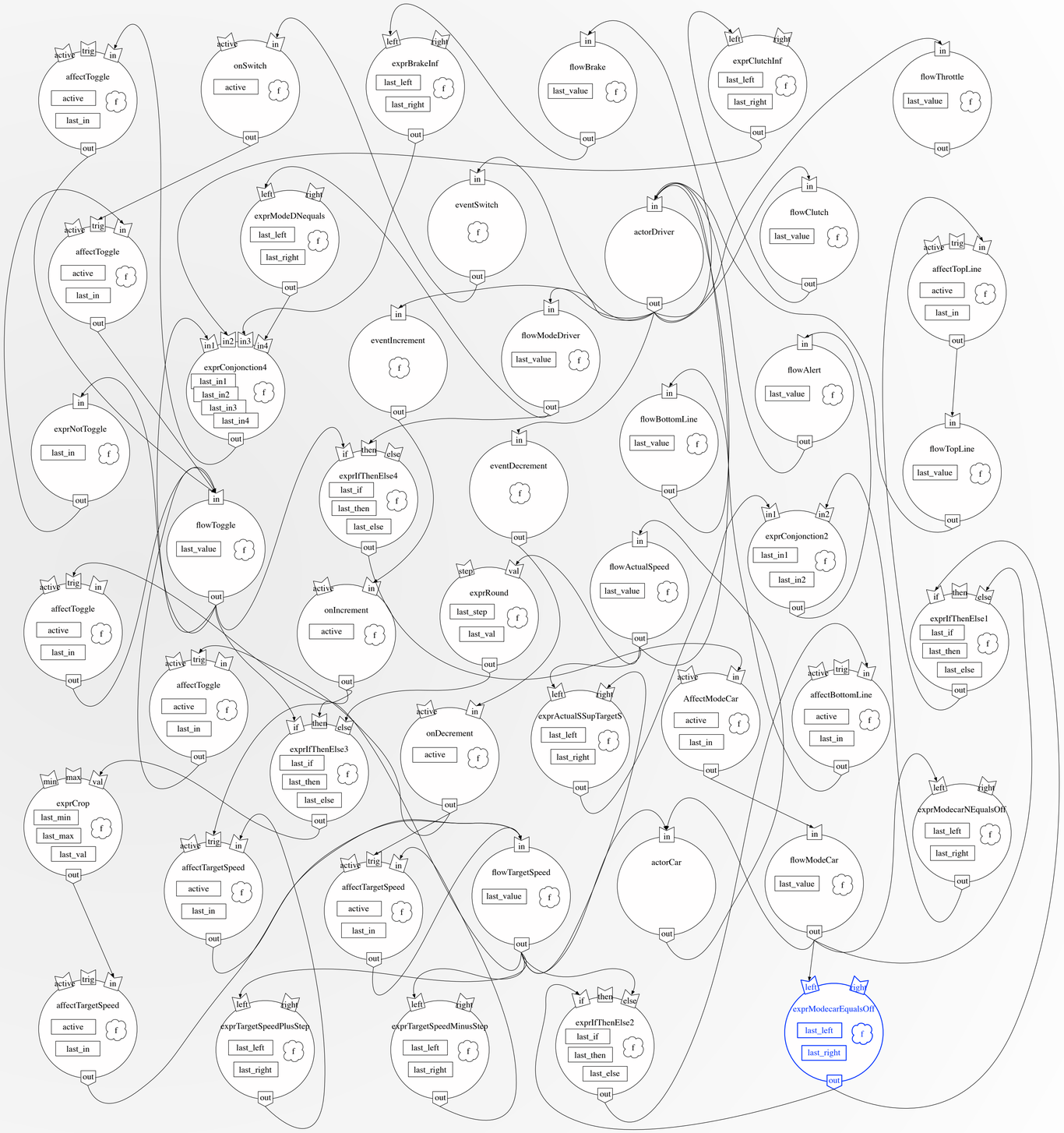
    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if toggle then modeDriver else "Off"

    alert = actualSpeed > targetSpeed && modeCar!="Off"
```



Always active affectations simplification

```
test interactor:
    driver : human actor
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    step : number constant
    minTarget : number constant
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    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

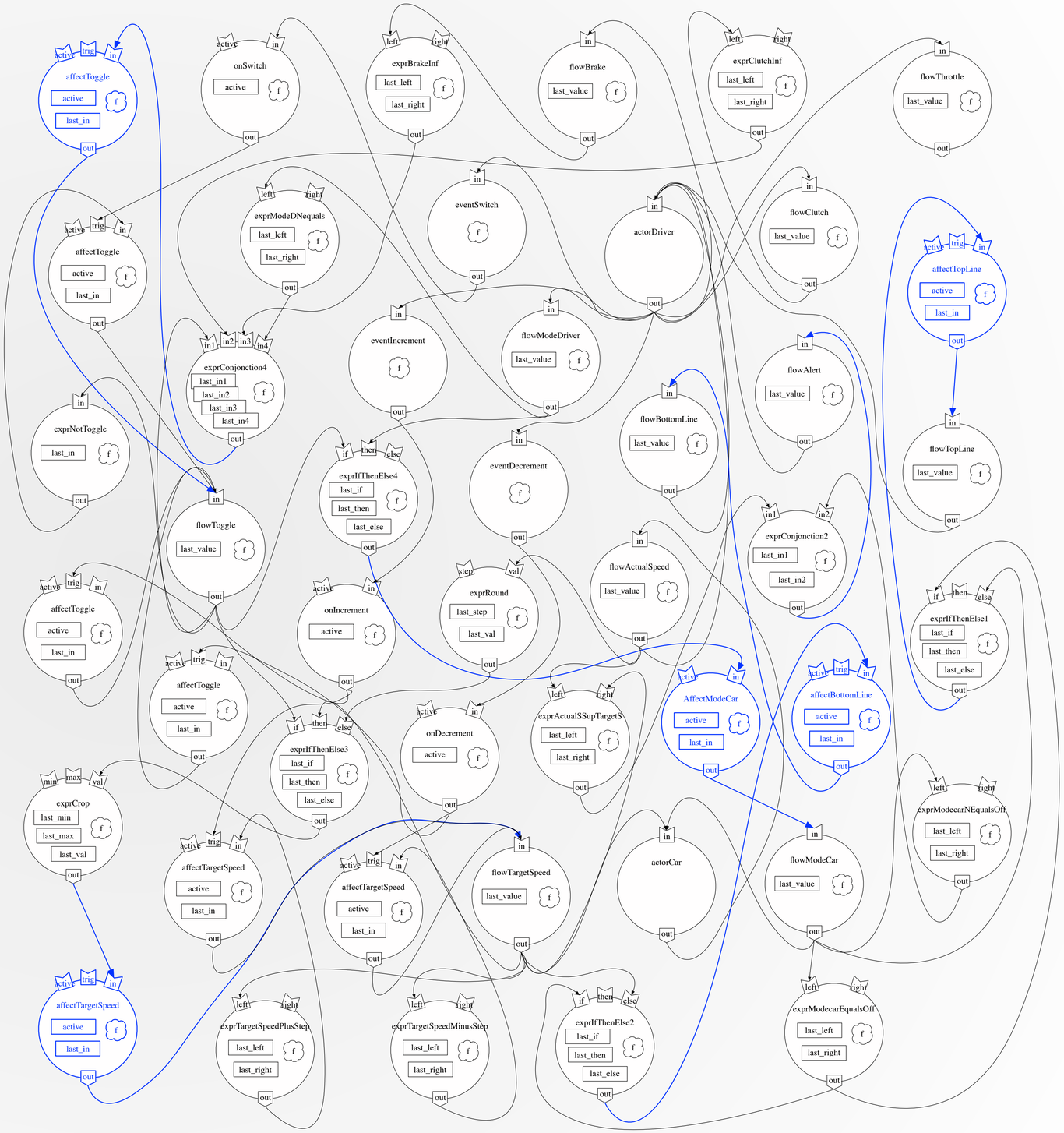
    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if toggle then modeDriver else "Off"

    alert = actualSpeed > targetSpeed && modeCar!="Off"
```



Always active affectations simplification

```
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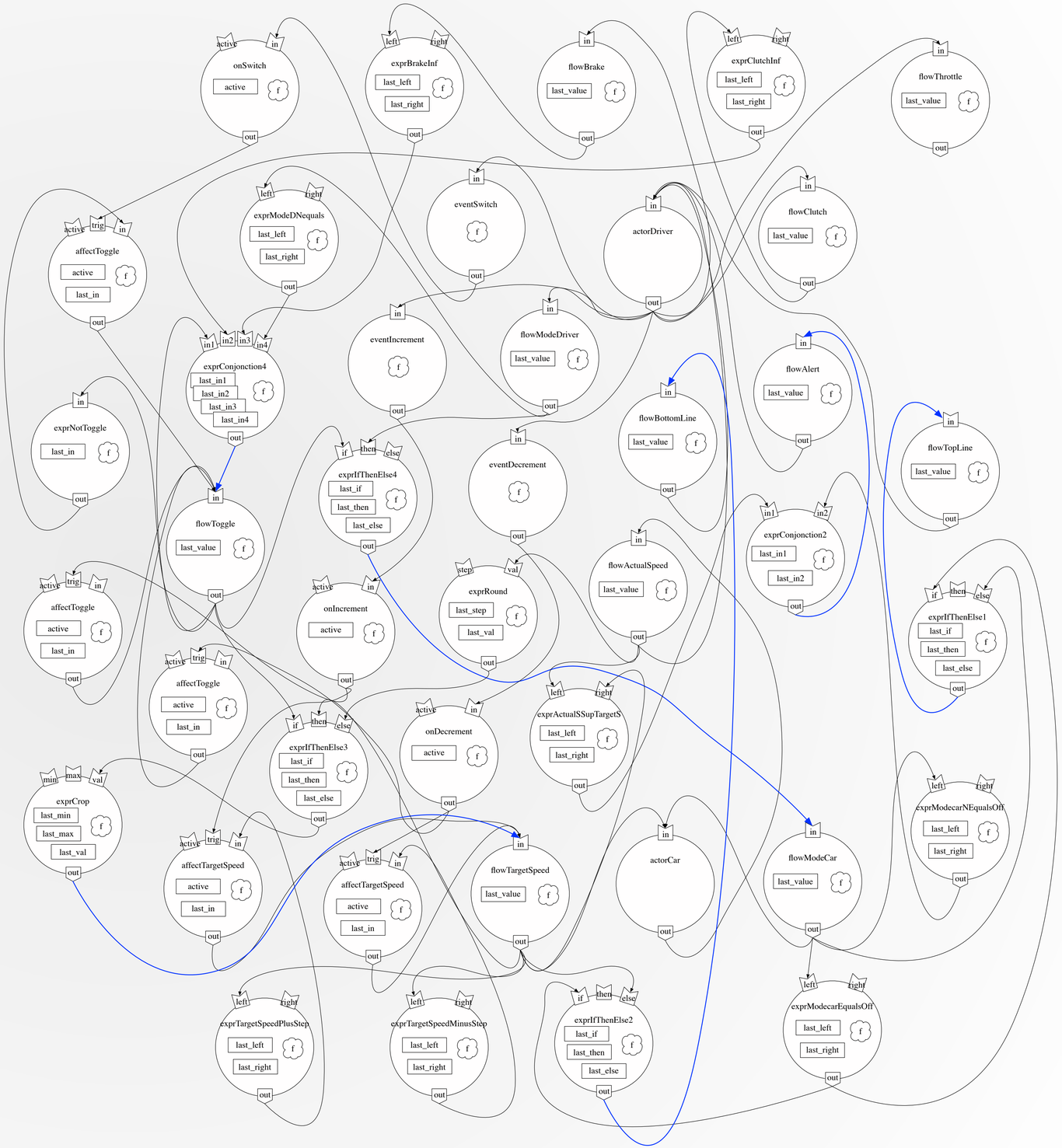
    modeCar = if toggle then modeDriver else "Off"

    alert = actualSpeed > targetSpeed && modeCar!="Off"
```



Single dispatch events simplification

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
    modeDriver : mode flow from driver

    modeCar : mode flow to car

    alert : boolean flow to driver

    throttle : number flow from driver
    clutch : number flow from driver
    brake : number flow from driver

    topLine = if modeCar == "Off" then "128920 km" else modeCar
    bottomLine = if modeCar == "Off" then "1234 km" else targetSpeed

    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
    on decrement :  targetSpeed = targetSpeed - step
                    toggle = true

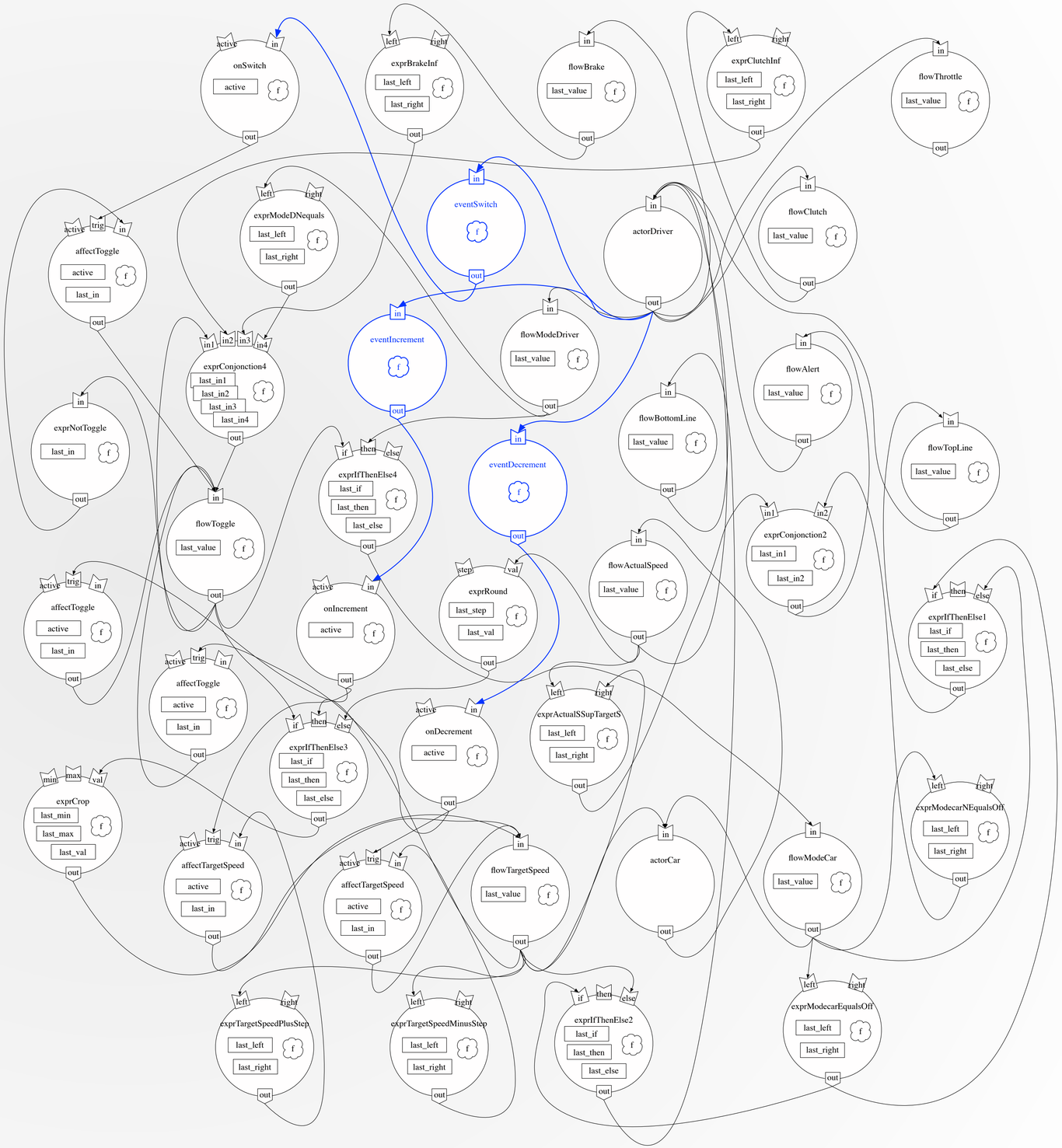
    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if toggle then modeDriver else "Off"

    alert = actualSpeed > targetSpeed && modeCar!="Off"
```



Single dispatch events simplification

```
test interactor:
    driver : human actor
    car : system actor

    step : number constant
    minTarget : number constant
    maxTarget : number constant

    topLine : text or number flow to driver
    bottomLine : text or number flow to driver

    increment : void event from driver
    decrement : void event from driver

    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

    switch : void event from driver
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    modeCar : mode flow to car

    alert : boolean flow to driver

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    brake : number flow from driver

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    modeCar = if toggle then modeDriver else "Off"

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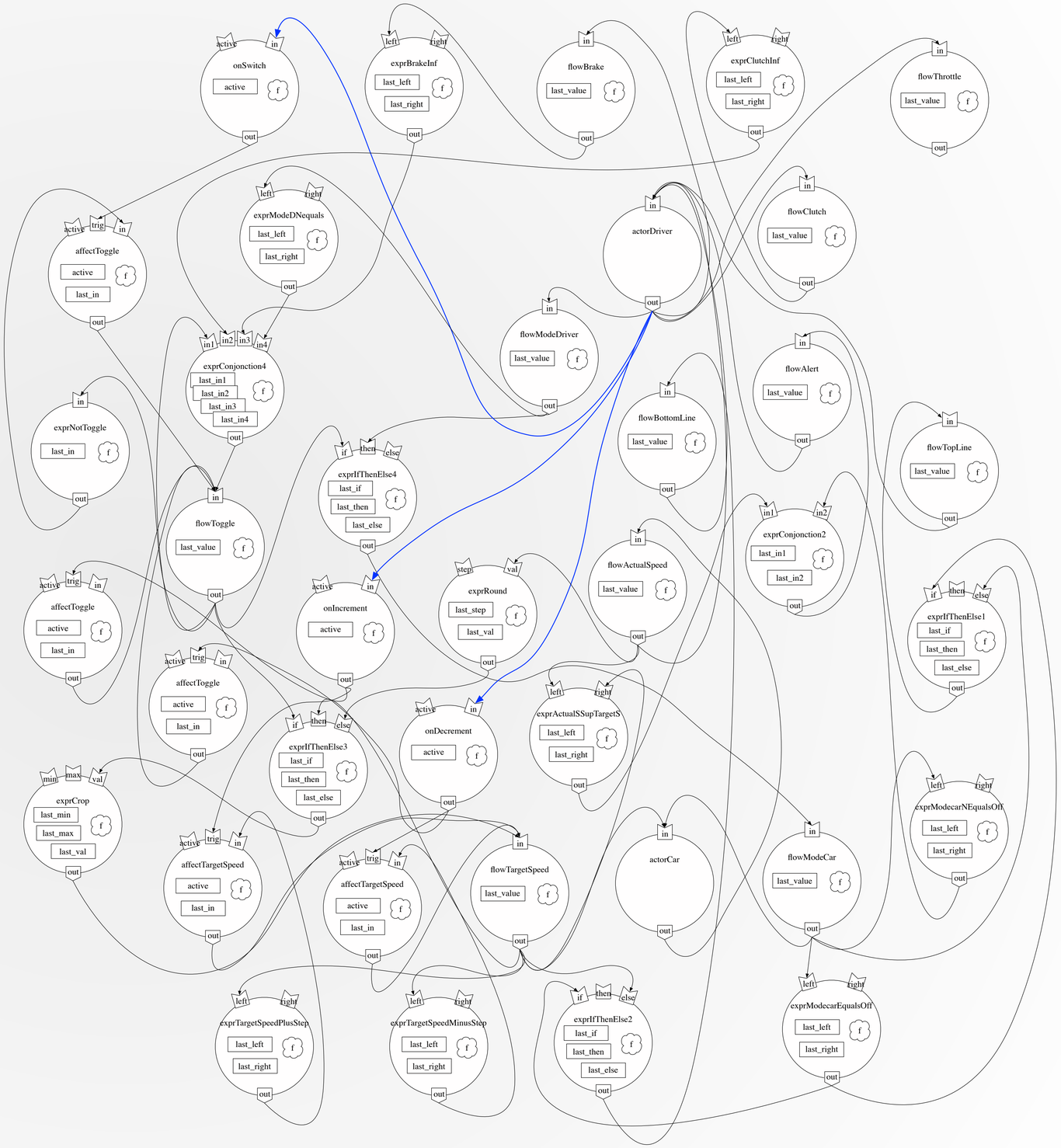
```



Expression simplification

```
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    step : number constant
    minTarget : number constant
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    toggle : boolean flow

    switch : void event from driver
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    modeCar : mode flow to car

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    modeCar = if toggle then modeDriver else "Off"

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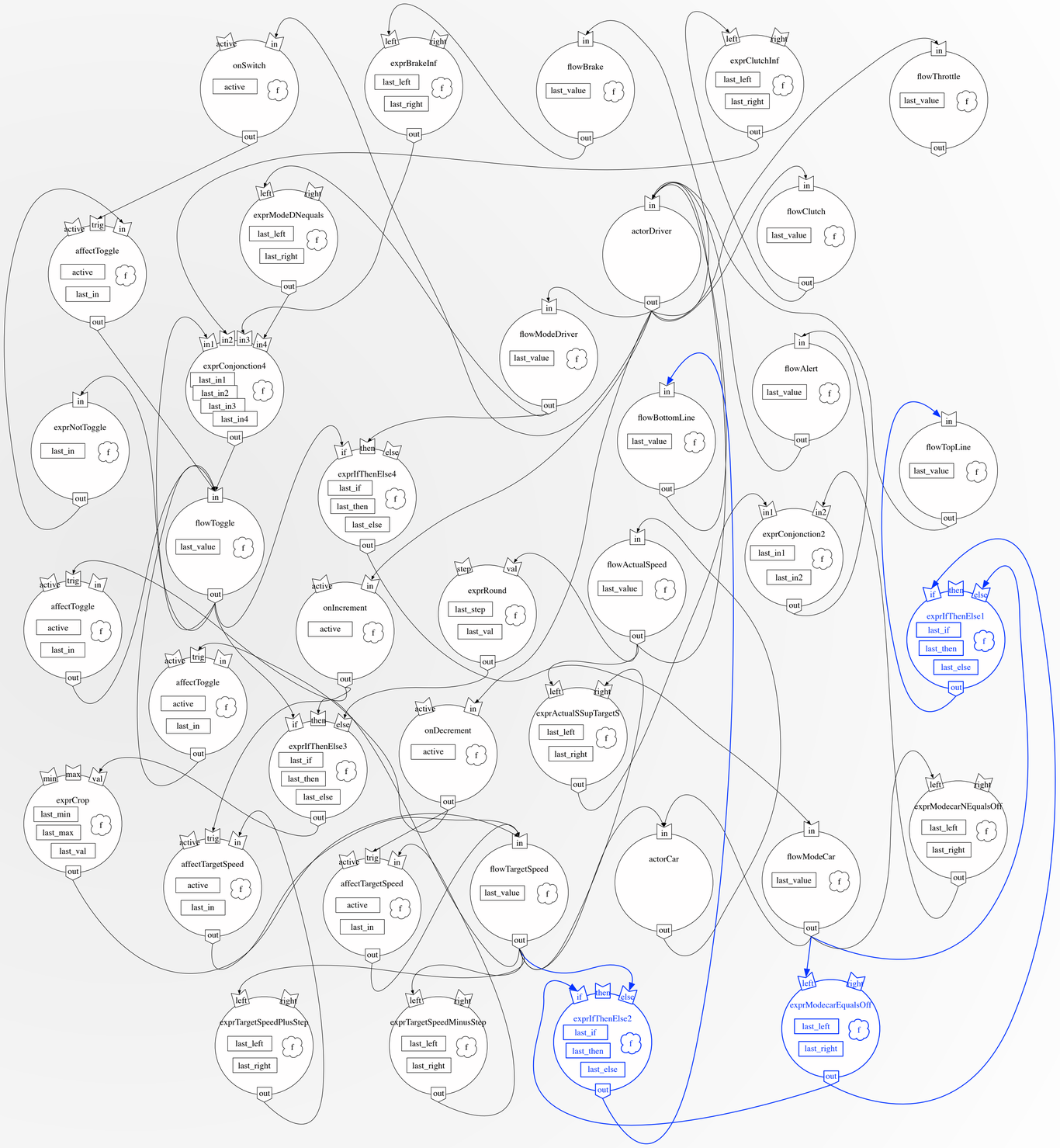
```



Expression simplification

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    driver : human actor
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    step : number constant
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    targetSpeed : number flow to car
    actualSpeed : number flow from car to driver

    toggle : boolean flow

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    modeCar : mode flow to car

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    modeCar = if toggle then modeDriver else "Off"

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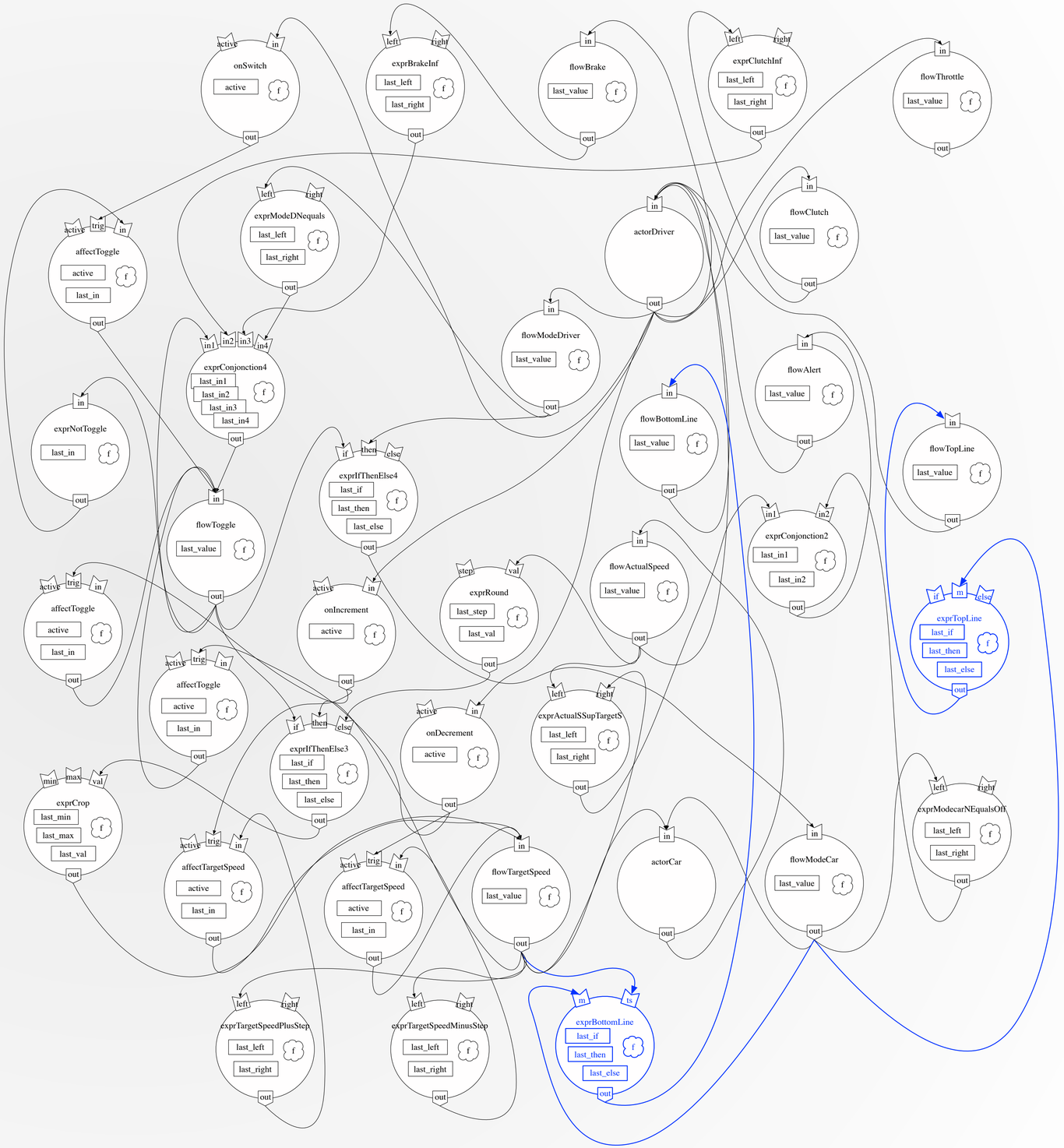
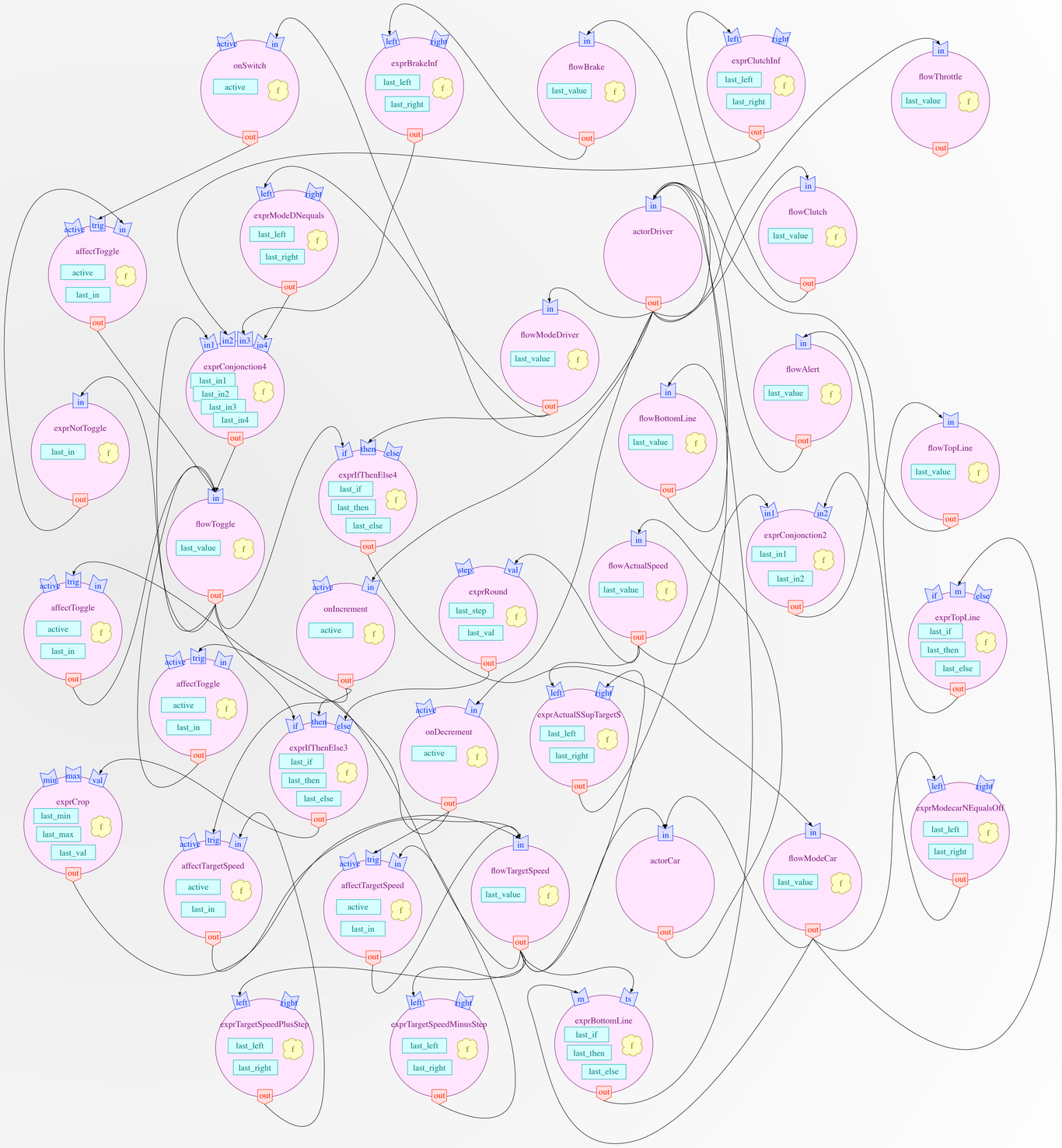
```



Post Optimisation Metrics

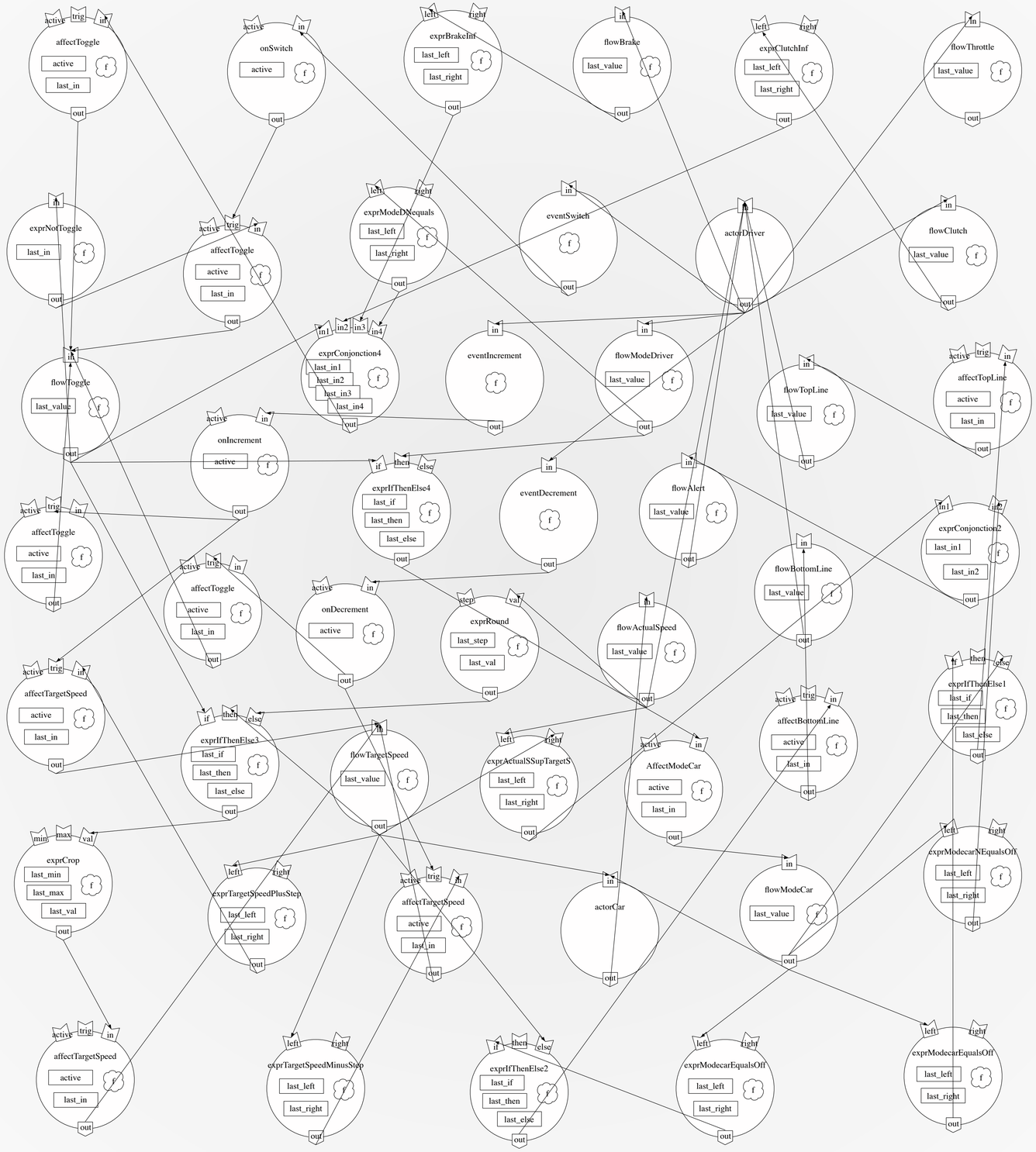
37 behaviors
62 state variables
35 transition functions
71 input ports
37 output ports
58 connexions

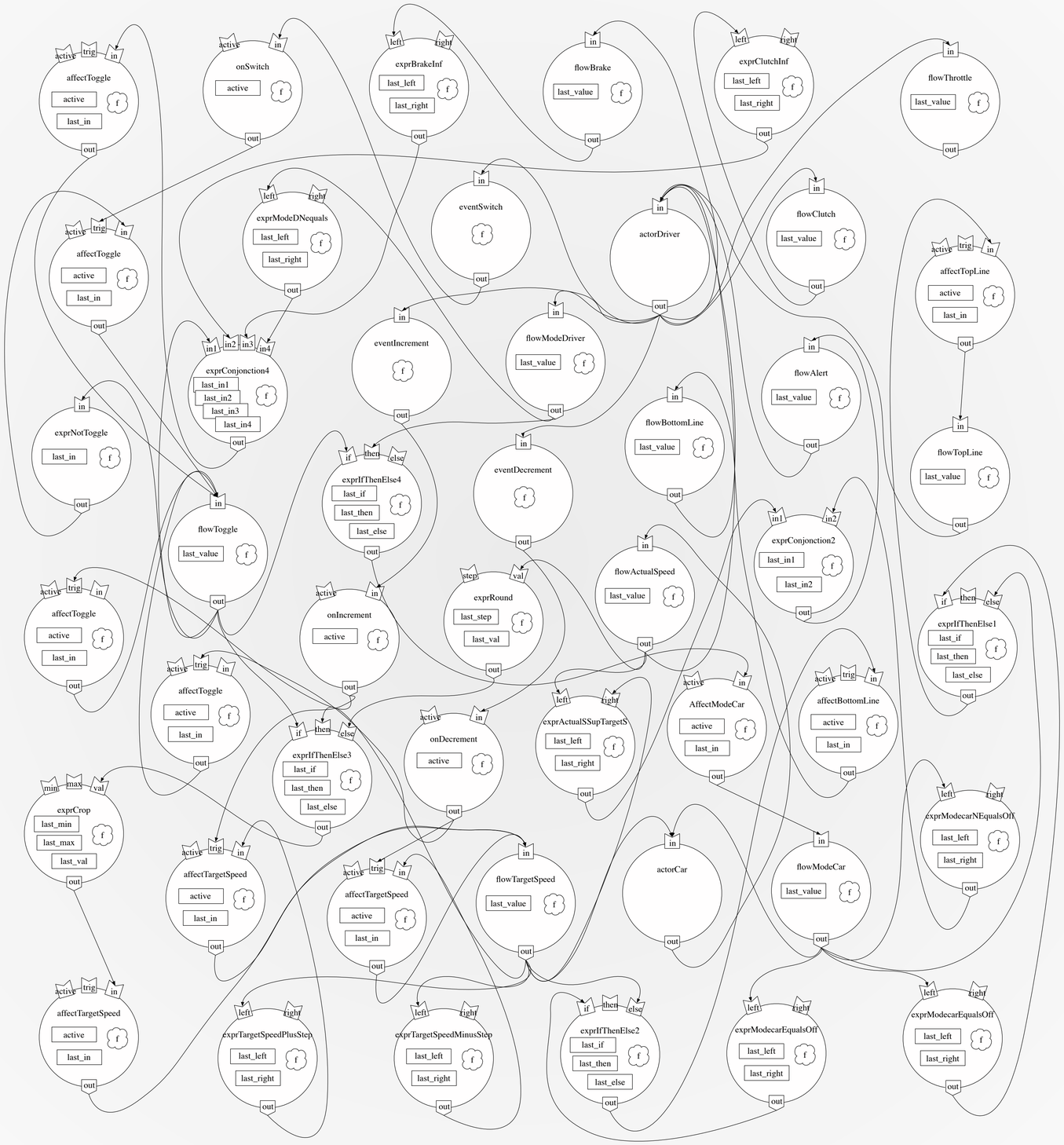
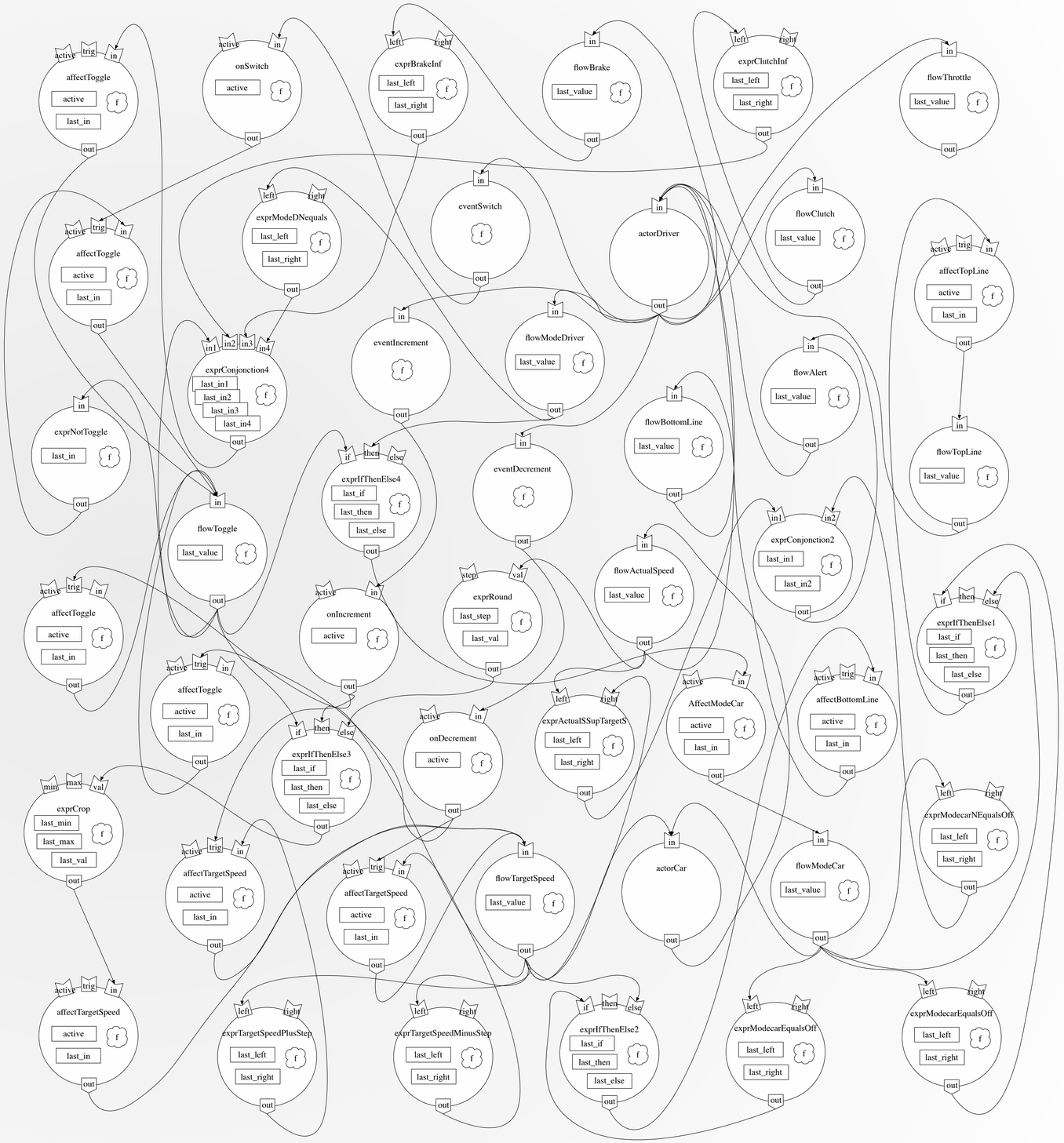


Post Optimisation Metrics

47 - 10 = 37 behaviors
76 - 12 = 62 state variables
45 - 10 = 35 transition functions
93 - 18 = 71 input ports
47 - 10 = 37 output ports
69 - 11 = 58 connexions

Thank you


affectToggle
active
last_in
onSwitch
active
exprBrakeInf
last_left
last_right
flowBrake
last_value
exprClutchInf
last_left
last_right
flowThrottle
last_value
exprNotToggle
last_in
affectToggle
active
last_in
exprModeDNequals
last_left
last_right
eventSwitch
actorDriver
flowClutch
last_value
exprConjonction4
last_in1
last_in2
last_in3
last_in4
eventIncrement
flowModeDriver
last_value
flowTopLine
last_value
affectTopLine
active
last_in
flowToggle
last_value
onIncrement
active
exprIfThenElse4
last_if
last_then
last_else
eventDecrement
flowAlert
last_value
affectToggle
active
last_in
affectToggle
active
last_in
onDecrement
active
exprRound
last_step
last_val
flowActualSpeed
last_value
flowBottomLine
last_value
exprConjonction2
last_in1
last_in2
affectTargetSpeed
active
last_in
exprIfThenElse3
last_if
last_then
last_else
flowTargetSpeed
last_value
exprActualSSupTargetS
last_left
last_right
AffectModeCar
active
last_in
affectBottomLine
active
last_in
exprIfThenElse1
last_if
last_then
last_else
exprCrop
last_min
last_max
last_val
exprTargetSpeedPlusStep
last_left
last_right
affectTargetSpeed
active
last_in
actorCar
flowModeCar
last_value
exprModecarNEqualsOff
last_left
last_right
affectTargetSpeed
active
last_in
exprTargetSpeedMinusStep
last_left
last_right
exprIfThenElse2
last_if
last_then
last_else
exprModecarEqualsOff
last_left
last_right
exprModecarEqualsOff
last_left
last_right


affectToggle
active
last_in
onSwitch
active
exprBrakeInf
last_left
last_right
flowBrake
last_value
exprClutchInf
last_left
last_right
flowThrottle
last_value
exprModeDNequals
last_left
last_right
eventSwitch
actorDriver
flowClutch
last_value
affectTopLine
active
last_in
exprConjonction4
last_in1
last_in2
last_in3
last_in4
eventIncrement
flowModeDriver
last_value
flowAlert
last_value
exprNotToggle
last_in
flowBottomLine
last_value
exprIfThenElse4
last_if
last_then
last_else
eventDecrement
flowTopLine
last_value
flowToggle
last_value
exprConjonction2
last_in1
last_in2
flowActualSpeed
last_value
exprRound
last_step
last_val
onIncrement
active
exprIfThenElse1
last_if
last_then
last_else
AffectModeCar
active
last_in
affectBottomLine
active
last_in
exprActualSSupTargetS
last_left
last_right
onDecrement
active
exprIfThenElse3
last_if
last_then
last_else
exprCrop
last_min
last_max
last_val
exprModecarNEqualsOff
last_left
last_right
affectTargetSpeed
active
last_in
flowTargetSpeed
last_value
actorCar
flowModeCar
last_value
exprTargetSpeedPlusStep
last_left
last_right
exprTargetSpeedMinusStep
last_left
last_right
exprIfThenElse2
last_if
last_then
last_else
exprModecarEqualsOff
last_left
last_right

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    topLine = if modeCar == "Off" then "128920 km" else modeCar
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    on increment :  targetSpeed = targetSpeed + step
                    toggle = true
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                    toggle = true

    targetSpeed = crop(minTarget,maxTarget,
        if toggle then targetSpeed else round(actualSpeed,step))

    toggle = clutch < 0.01 && brake < 0.01 && toggle && modeDriver!="Off"

    on switch : toggle = !toggle

    modeCar = if toggle then modeDriver else "Off"

    alert = actualSpeed > targetSpeed && modeCar!="Off"
```