FUSION FOR ENERGY

MARTe2 Users Meeting

EPICSv3 + EPICSv4 = EPICSv7

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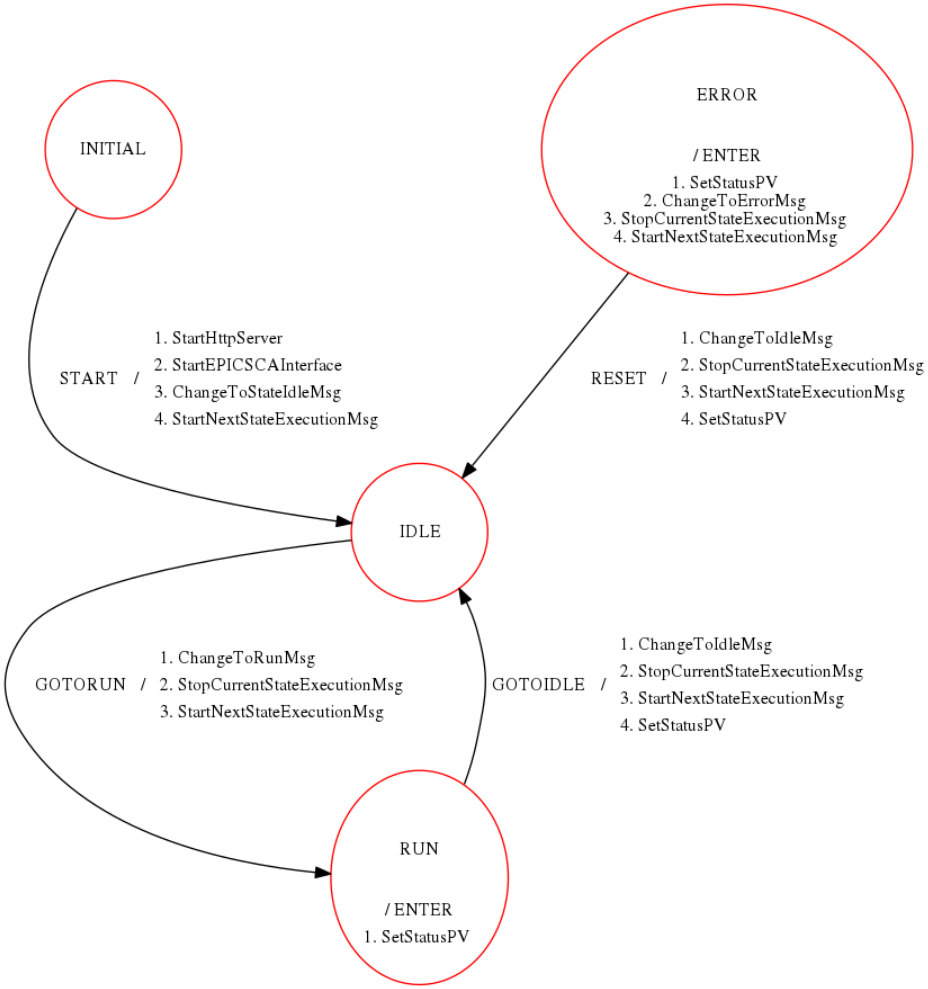
Objective

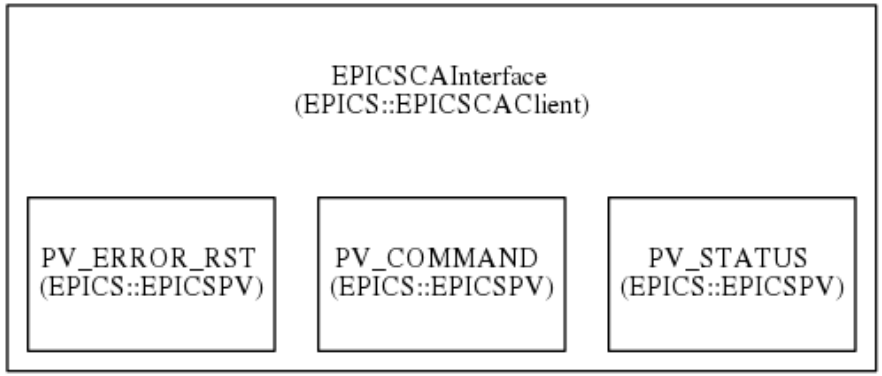
- Integration with EPICSv3
  - Monitoring
  - Commands (i.e. Messages)
  - *Non RT input data source**
- Integration with EPICSv7
  - Structures
  - Monitoring
  - *Non RT input data source**
  - *Commands (RPC)**

***Available as standard components but not demonstrated in this demo**

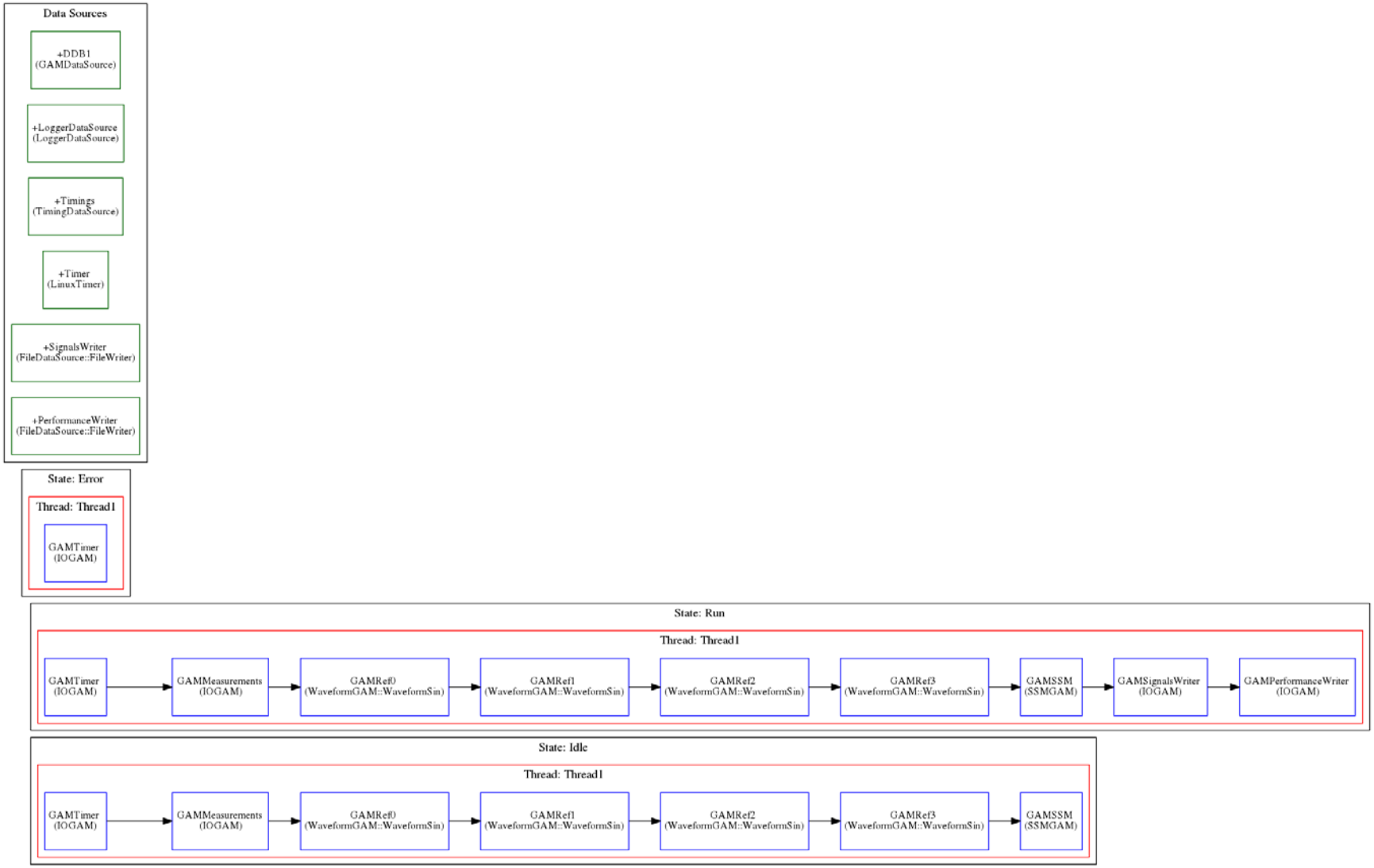
Example 1 – EPICSv3 commands

- EPICSCAInterface sends/receives messages to/from StateMachine



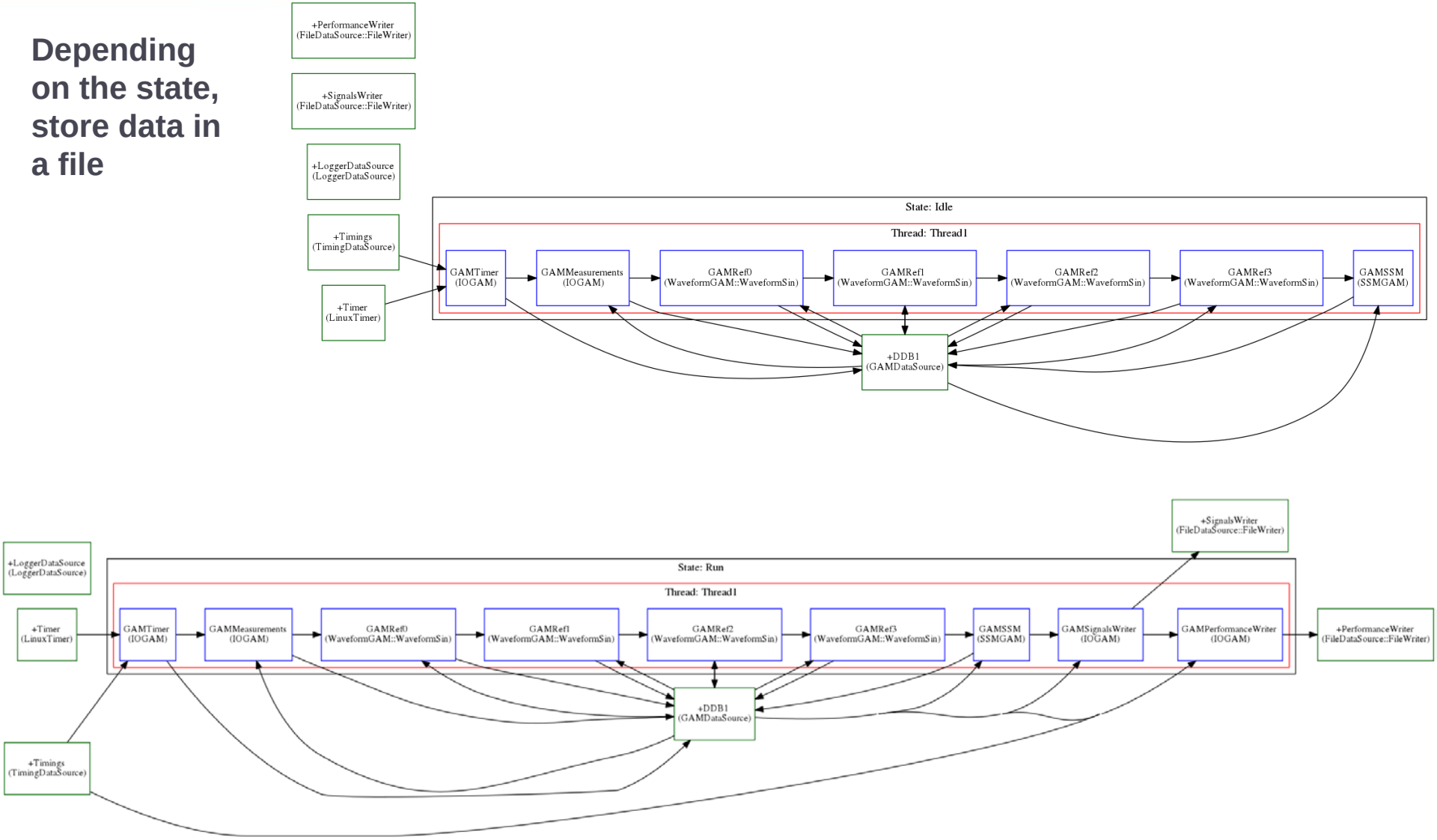


Example 1 – RT Components



Example 1 – RT Components

Depending on the state, store data in a file



Example1 – How to run

- Console #1

```
cd ~/Projects/MARTe2-demos-padova/Configurations
softIoc -d EPICSv3-demo.db
```

- Console #2

```
cd ~/Projects/MARTe2-demos-padova/StartUp
./Main.sh -l RealTimeLoader -f ../Configurations/RTApp-EPICSv3-1.cfg -m
StateMachine:START
```

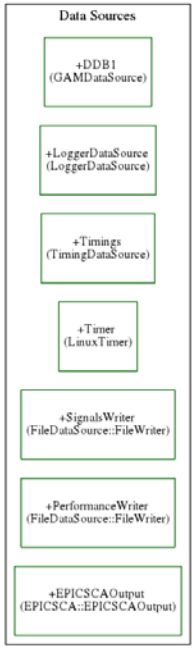
- Console #3

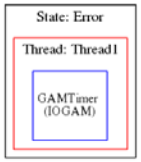
```
caput MARTE2-DEMO-APP:COMMAND 0
caget MARTE2-DEMO-APP:STATUS
caput MARTE2-DEMO-APP:COMMAND 1 && sleep 2
caget MARTE2-DEMO-APP:STATUS && sleep 5
caput MARTE2-DEMO-APP:COMMAND 0

#Open the file /tmp/RTApp-EPICSv3-1.csv and remove the last line

Octave
>graphics_toolkit('gnuplot');
>load('/tmp/RTApp-EPICSv3-1.csv');
>plot(RTApp_EPICSv3_1(:,1), RTApp_EPICSv3_1(:,2), RTApp_EPICSv3_1(:,1), RTApp_EPICSv3_1(:,6))
>legend('Reference0', 'Measurement0')
```

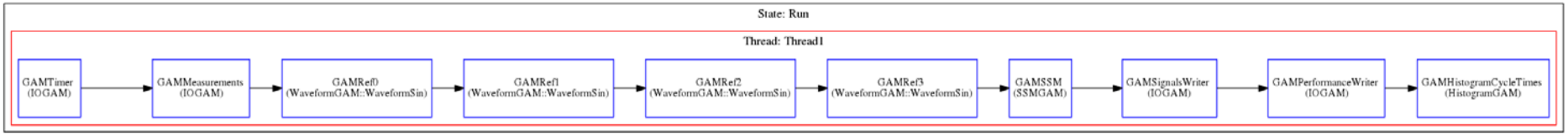
Example1 – Learn more

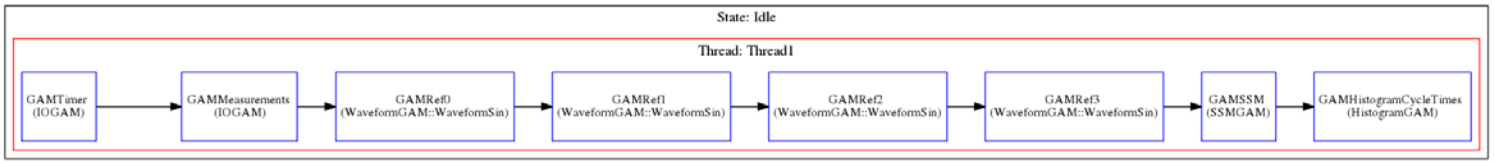
- View the configuration file
  - Check what are signals are stored in the file
  - Plot the error0 and the control0 signals
  - Some performance figures are also stored in a different CSV
    - Try to plot them

Example 2 – EPICSv3 monitoring







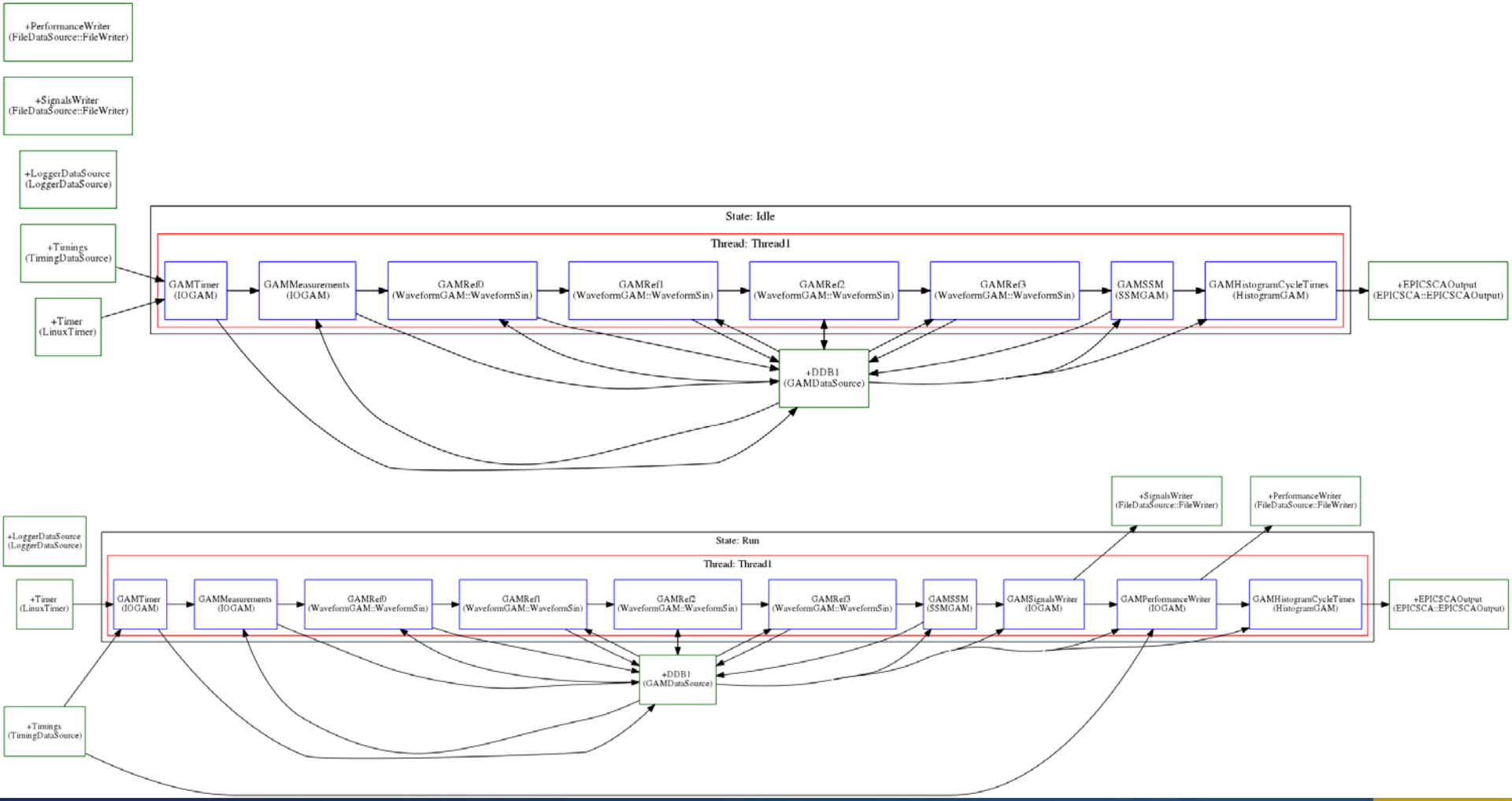


Objectives

- Monitor some outputs of the system using EPICSv3

Example 2 – RT Components

- Depending on the state, store data in a file
- Always monitoring



Example2 – How to run

- Console #1

```
cd ~/Projects/MARTe2-demos-padova/Configurations
softIoc -d EPICSv3-demo.db
```

- Console #2

```
cd ~/Projects/MARTe2-demos-padova/StartUp
./Main.sh -l RealTimeLoader -f ../Configurations/RTApp-EPICSv3-2.cfg -m
StateMachine:START
```

- Console #3

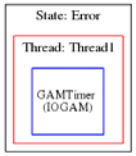
```
camonitor MARTE2-DEMO-APP:HIST-IDLE-CT
```

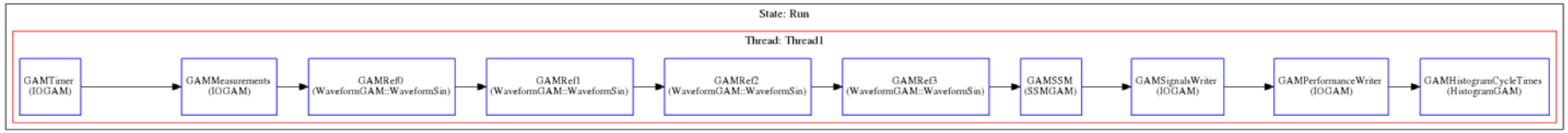
Example2 – Learn more

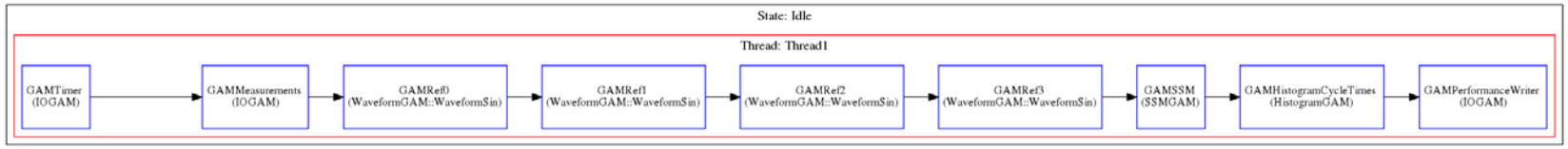
- Export as an EPICS variable also the Measurement0 (MARTE2-DEMO-APP:MEASUREMENT0)

- Use an EPICSCAInput and an EPICSCAOutput to connect a control output to a measurement input

Example 3 – EPICSv7 monitoring





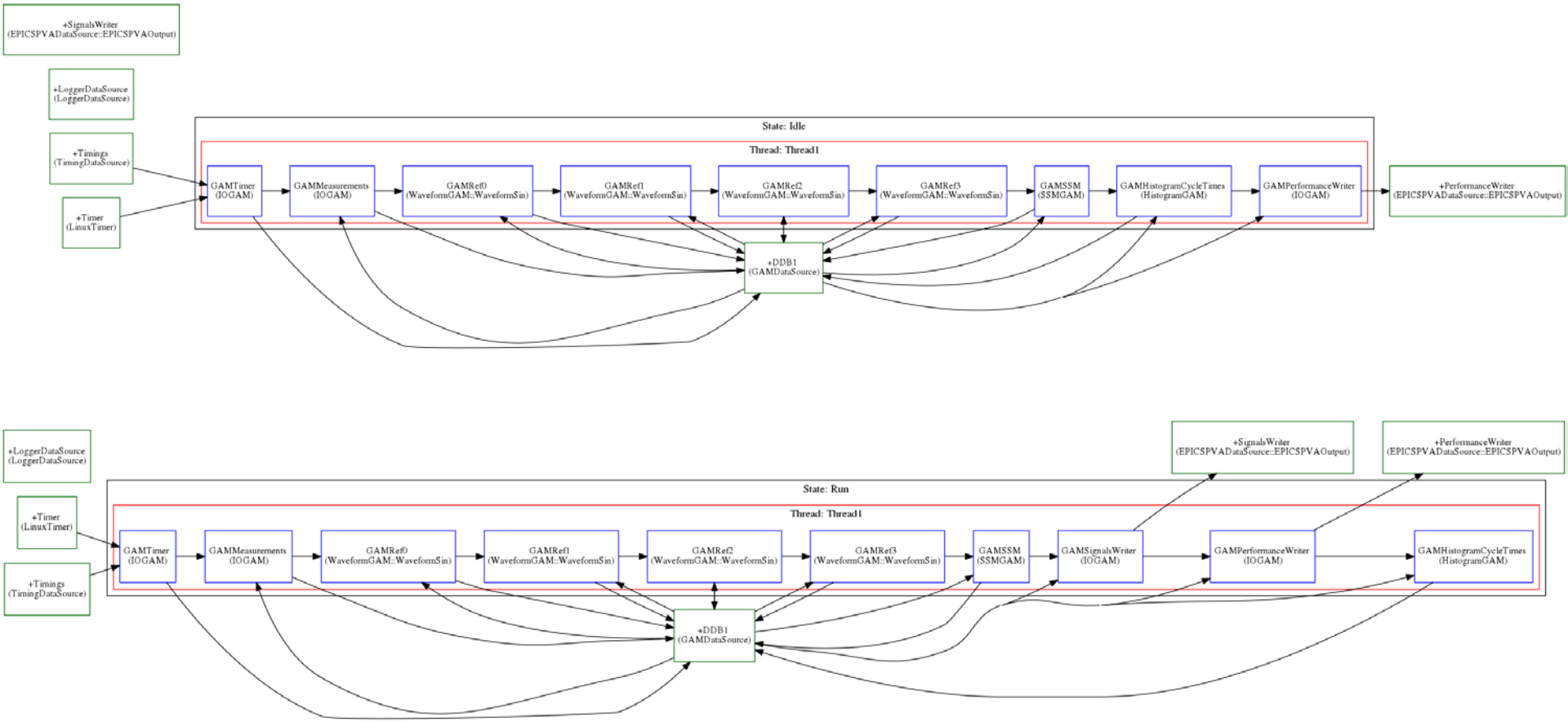


Objectives

- Monitor the outputs of the system using EPICSv7
- Note how information can be better organized with structured types

Example 3 – RT Components

- Note in the configuration file that the types are now structured



Example3 – How to run

- Console #1

```
cd ~/Projects/MARTe2-demos-padova/Configurations
softIoc -d EPICSv3-demo.db
```

- Console #2

```
cd ~/Projects/MARTe2-demos-padova/StartUp
./Main.sh -l RealTimeLoader -f ../Configurations/RTApp-EPICSv7-1.cfg -m
StateMachine:START
```

- Console #3

```
caput MARTE2-DEMO-APP:COMMAND 1
pvmonitor MARTe2-Demo-App:Statistics
pvmonitor MARTe2-Demo-App:Signals
caput MARTE2-DEMO-APP:COMMAND 0
```

Example3 – Learn more

- Export the State variables in the EPICSv7 structures
- Create a configuration file that allows to proxy from/to EPICSv3 to/from EPICSv7
  - Note the EPICSv3 db file must be update with any new variables that might be required

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