

Implementation of on-line analysis library in NARVAL: the PRISMA case

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Outline

- 1 Basic ingredients
 - The NARVAL data acquisition system
 - The libPRISMA library
- 2 NARVAL's basic concepts
 - Overview
 - The actors
- 3 PRISMA data acquisition
 - The first Prototype
 - Integration in the AGATA DAQ

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NARVAL

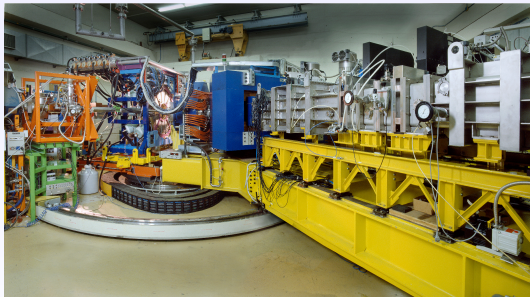
NARVAL

Nouvelle Acquisition temps-Réel Version 1.2 Avec Linux

- It is a distributed data acquisition system, written in Ada95
- It is currently being developed in Orsay
- It will be used to manage the AGATA DAQ
- It is needed to distribute the calculations of the on-line analysis among different computers

PRISMA

PRISMA is a large acceptance magnetic spectrometer for heavy ions.



It will be coupled with the AGATA demonstrator in Legnaro.

libPRISMA

libPRISMA

also known as the *PRISMA preprocessing library* is a **C++** library providing tools to analyze PRISMA data.

It is being developed in Legnaro by Enrico Farnea

It extract recoil information such as:

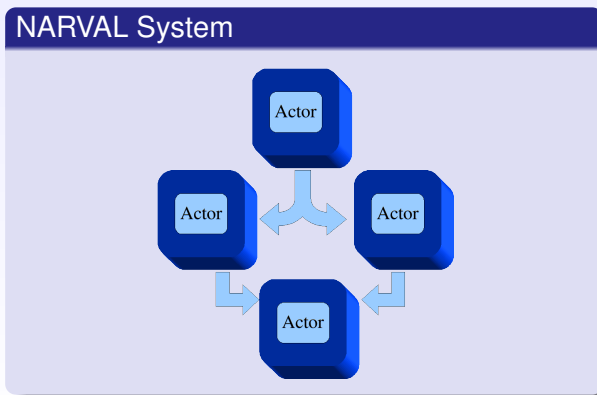
- the (vector) velocity
- the atomic number
- the mass number

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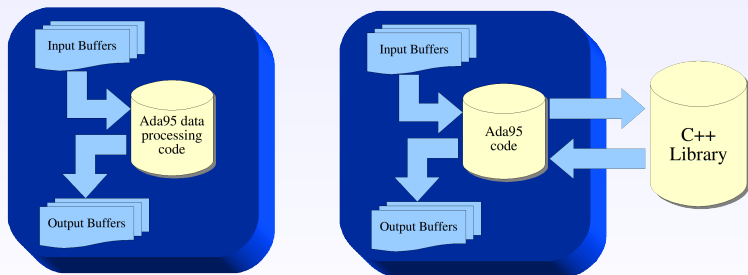
Why using NARVAL?

NARVAL is needed to split the calculations in various “blocks”



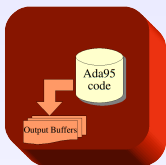
NARVAL Actors

An actor can be provided with the Ada code to elaborate data or it can be a generic one:



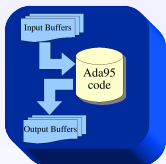
A generic actor can “link to” a C++ library

Three main kinds of actors



Producer

Only output buffer/s



Filter

Both Input and Output buffer/s



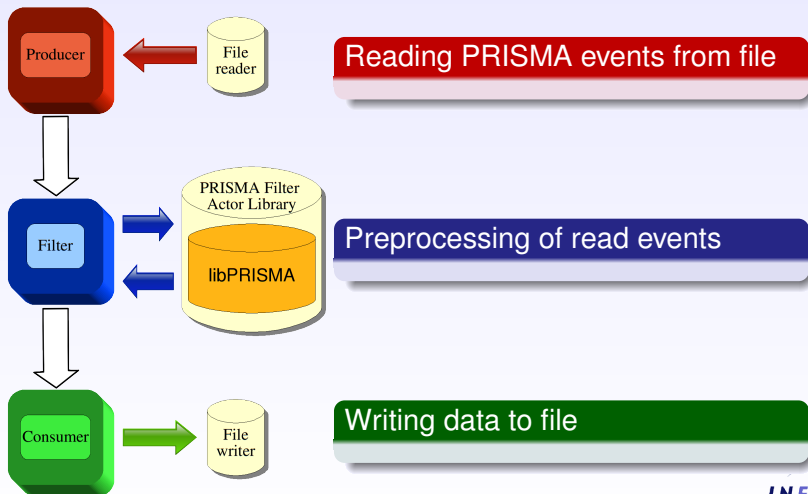
Consumer

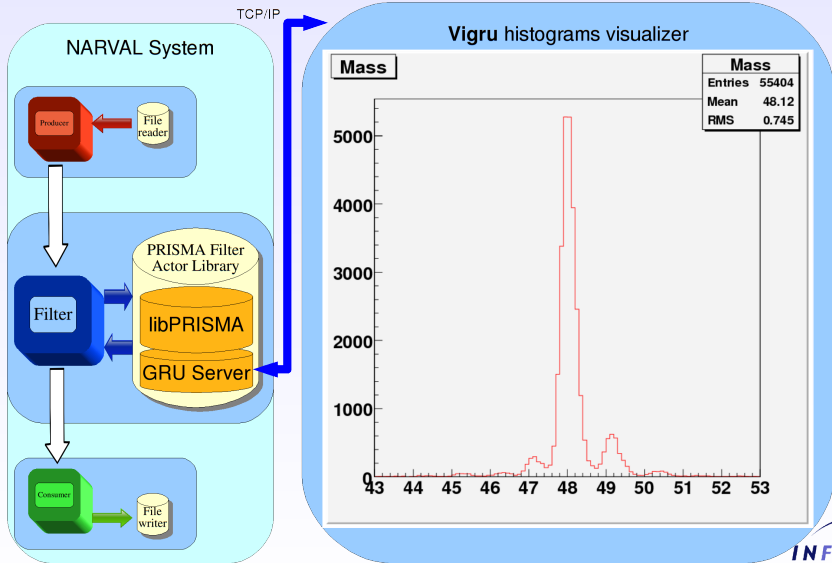
Only Input buffer/s

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The running prototype





Prototype topology

```

<configuration>
  <producer>
    <name>producer</name>
    <hostname>narval01</hostname>
    <binary_code>generic_producer</binary_code>
    <output_buffer_name>data1</output_buffer_name>
    <size output_buffer="data1">1000000</size>
    <port output_buffer="data1">eth1</port>
    <debug>info</debug>
  </producer>
  <intermediary input_buffers="1" output_buffers="1">
    <name>filter</name>
    <hostname>narval02</hostname>
    <binary_code>generic_filter</binary_code>
    <data_source source_port="eth1" source_buffer="data1">producer</data_source>
    <output_buffer_name>data2</output_buffer_name>
    <size output_buffer="data2">1000000</size>
    <port output_buffer="data2">eth1</port>
    <debug>info</debug>
  </intermediary>
  <consumer>
    <name>consumer</name>
    <hostname>narval03</hostname>
    <binary_code>generic_consumer</binary_code>
    <data_source source_port="eth1" source_buffer="data2">filter</data_source>
    <debug>info</debug>
  </consumer>
</configuration>

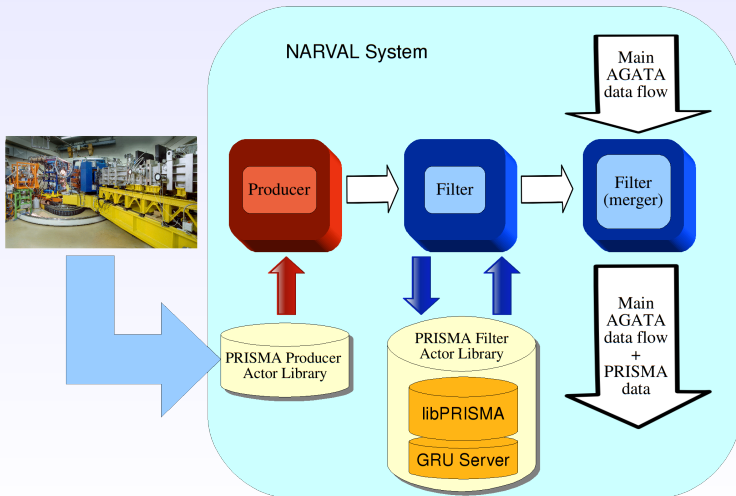
```

PRISMA filter actor library (header)

```
#ifndef _PRISMA_CLASS_H_
#define _PRISMA_CLASS_H_
#include "base_class.h"

class prisma_class : public intermediary
{
public:
    prisma_class ();
    void process_config (char *directory_path, unsigned int *error_code);
    void process_block (void *input_buffer,
        unsigned int size_of_input_buffer,
        void *output_buffer,
        unsigned int size_of_output_buffer,
        unsigned int *used_size_of_output_buffer,
        unsigned int *error_code);
    bool processEvent( unsigned short int* event, int size );
};
```

The future integration with AGATA DAQ



Thank you for your attention