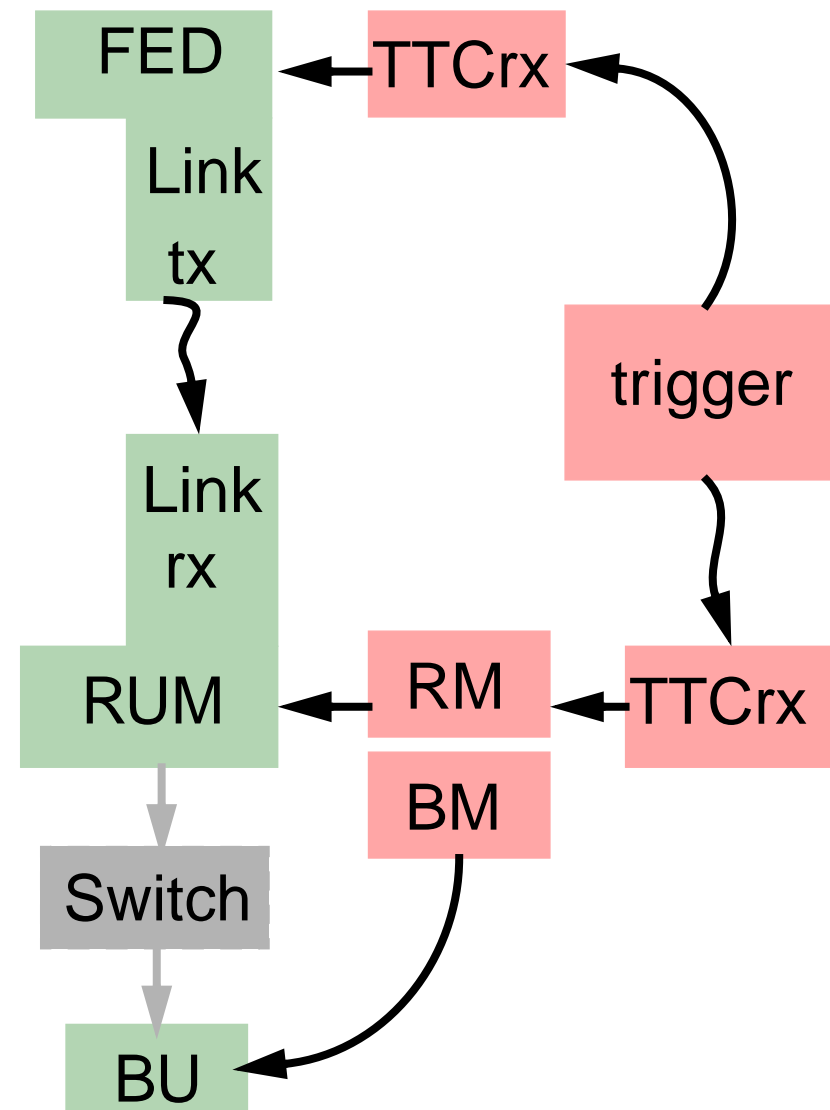


DAQ Column plans

- What is the purpose ?
- What do we have so far ?
 - hardware
 - software
- What do we need ?
 - hardware
 - software
- Next steps

What is the DAQ Column ?

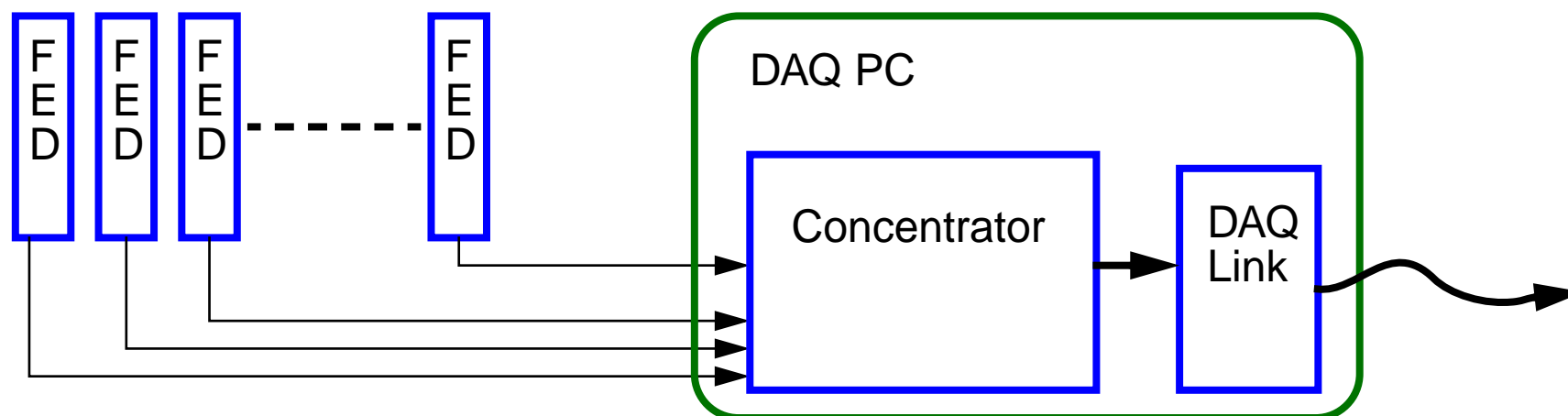
- Have a test bench to test DAQ components (hard and software)
 - Show the feasibility of the DAQ-architecture
 - Experience should lead to decisions to be taken for the final system architecture (see below)
 - More specific: it should grow to a vertical slice of the DAQ system (FED ---> BU)
 - Initially start with what is available at the moment
- Specific tasks : short term (until summer?)
 - Put the different hardware components we have together “**interoperability**”.
 - **Integrate** for the first time **software and hardware** to a “DAQ system”



contd.: What is the DAQ column

- Specific tasks : long term

- Incorporate the Run Control System (Legnaro has started the development)
- Measure data throughput and performance of hard- and software components.
- Prototype for data concentrator between FEDs and DAQ-Link



- Develop interface to Trigger, **study event throttling**
- **Error handling / recovery**
- Investigate and find final architecture of **RCN network** (technology, which components will be connected?)
- Determine the **Borderline Custom Hardware <---> Standard PC + software solution**

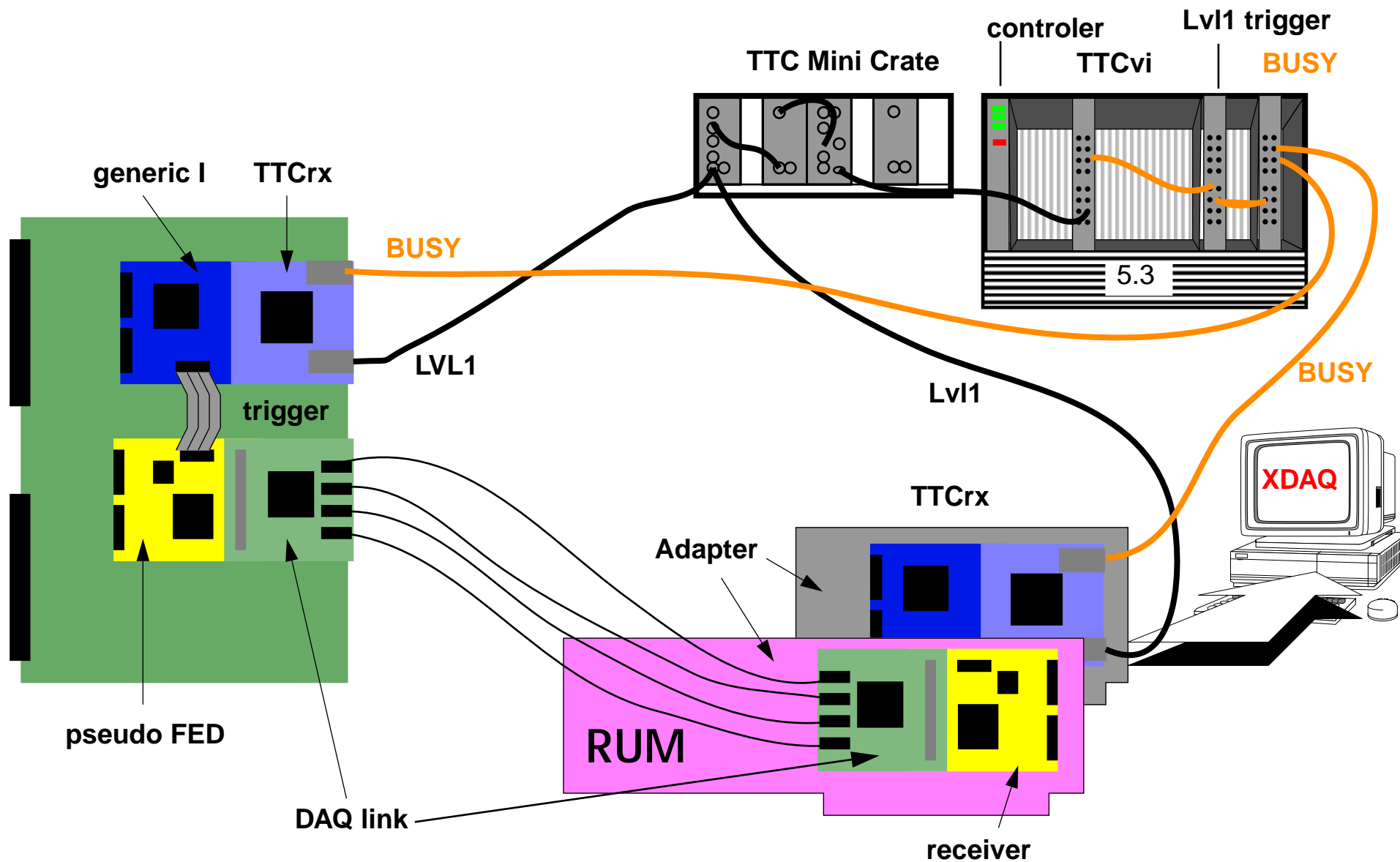
What do we have so far

- Hardware
 - **DAQ - Link** : Operable since last week
Can work as Pseudo FED (dummy data source) with some limitations
Some technical problems to be solved.
Receiving side for DAQ Column to be implemented
 - **RUM**: Module at CERN
Internal logic operational
Input and Output to be tested and debugged
 - **Trigger Interface** : A working TTC setup is in the Lab.
Hardware interfaces for the DAQ column have been developed (FPGA)
 - **Switch, BU** : Eventbuilder demonstrator is operational.

contd.: What do we have so far

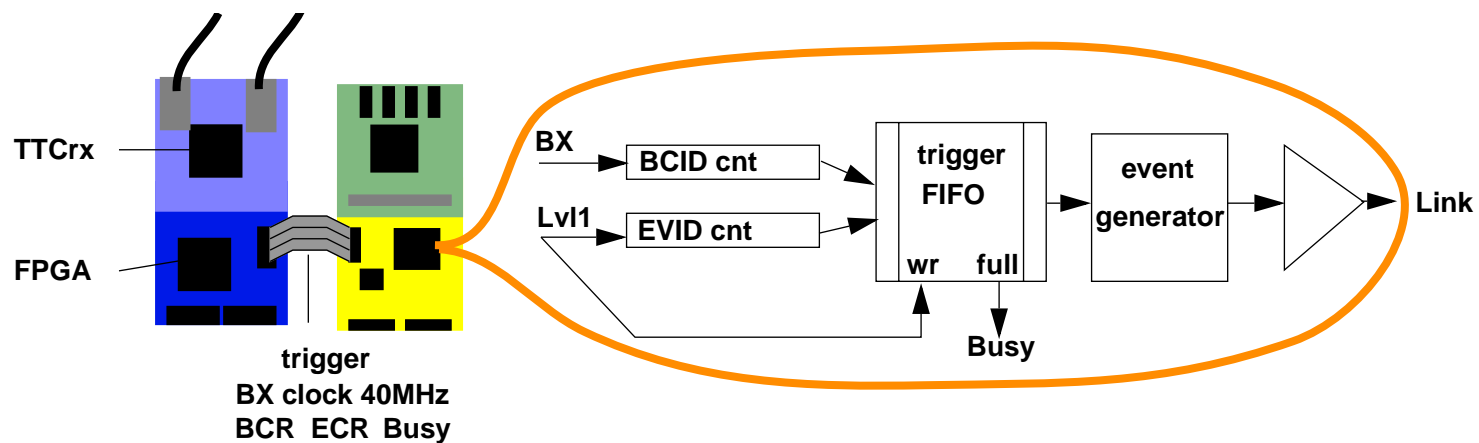
- Software
 - **XDAQ** : software framework for distributed DAQ systems
fully operational (used in test-beams)
contains functionality to :
configure DAQ system (boot, configuration, etc)
software implementation of DAQ components (RU, RM, BM, RUM...)
 - **Interface to DCS** : a bridge allowing to get data and put data into the DCS system from the DAQ system.

Implementation of DAQ Column at early stage

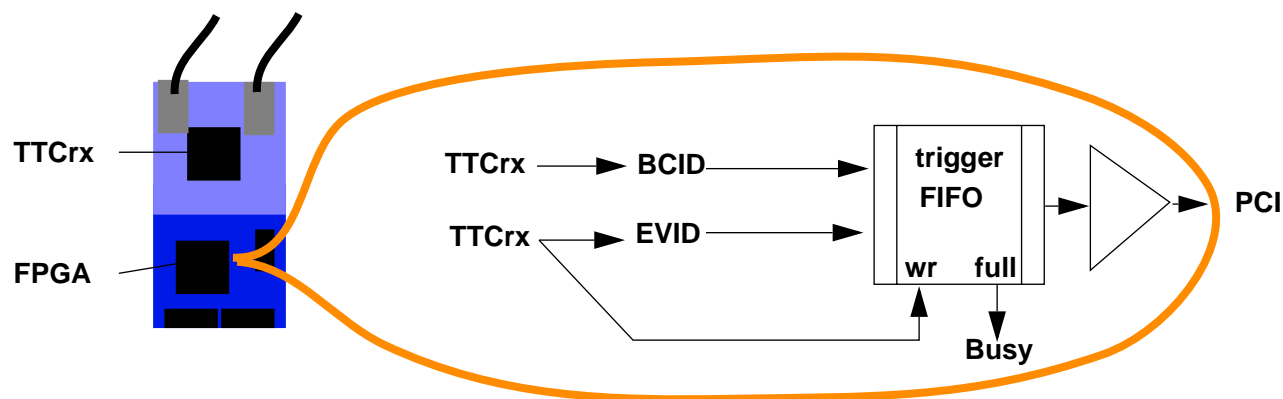


Interface to TTC

- At pseudo FED:



- In RM (PC, XDAQ):



What do we need ?

- Hardware

- **RCN :** No dedicated hardware solution available
Currently RCN information comes via PCI from PC which hosts RUM
- **Data Concentrator:** Concentrates data from FEDs in order to optimally exploit DAQ-Link bandwidth
- **BU :** Not yet available at CERN

- Software

- **Run Control :** not available yet
development started in Legnaro
- **Information service :** (service to distribute and log errors, infos, debug messages)
nothing available yet
(being developed with the Run Control package)
- **Hardware specific software :** Every hardware component needs configuration, start, stop, ...
This software should be integrated in XDAQ.
- **Performance optimized software :** In order to determine the borderline software vs hardware
Example : Hardware RUM vs Software RUM

Next Steps

- Build a DAQ column Pseudo-FED --> RUM
- Build the RUI
 - Implementation by FPGA programming
 - Sits on a the Gneric II card, which carries the DAQ Link
- Integrate TTCrx board with Generic II
 - some hardware interface lines
- Develop software for XDAQ environment
 - needed for all hardware components
 - some control program must be developed (in XDAQ framework) until RC is available

30% hardware , 70 % software work

Aim : Have this column until july