# Some Suggestions for an Infrastructure at a Common Test Facility

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2. Micro-Pattern Gas Detectors (RD 51) Workshop
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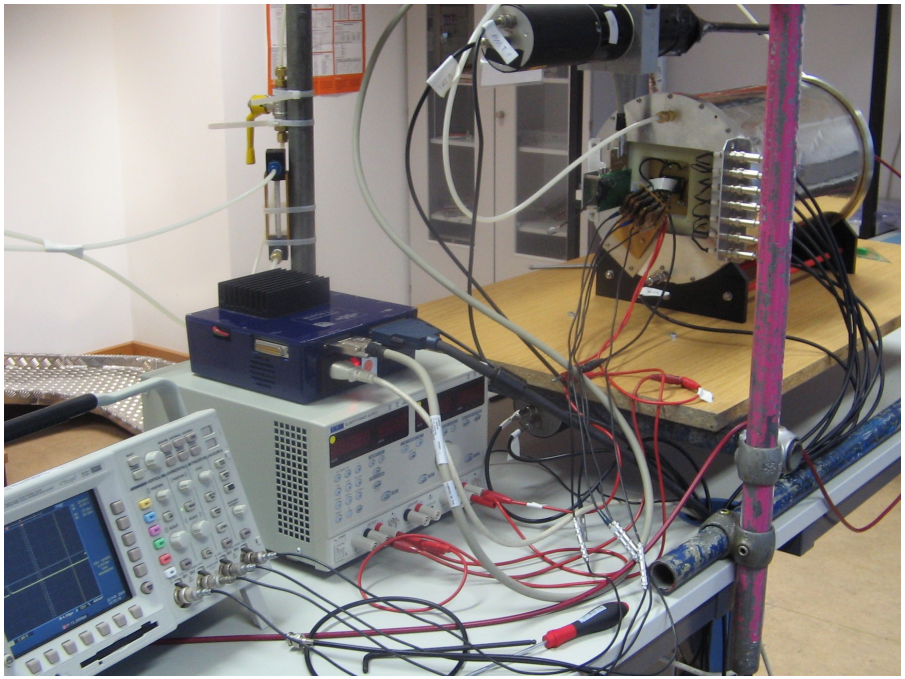
# Lab at Bonn:
# Test stand with cosmic rays



Drift distances up to 26 cm
Gas amplification: Triple-GEM
Readout: TimePix chip

Due to long drift distance and precise readout a good gas system is needed.

Requirements:
- mixing up to 3 components
- flows between few l/h up to 50 l/h
- constant pressure
- low pollution with oxygen and water

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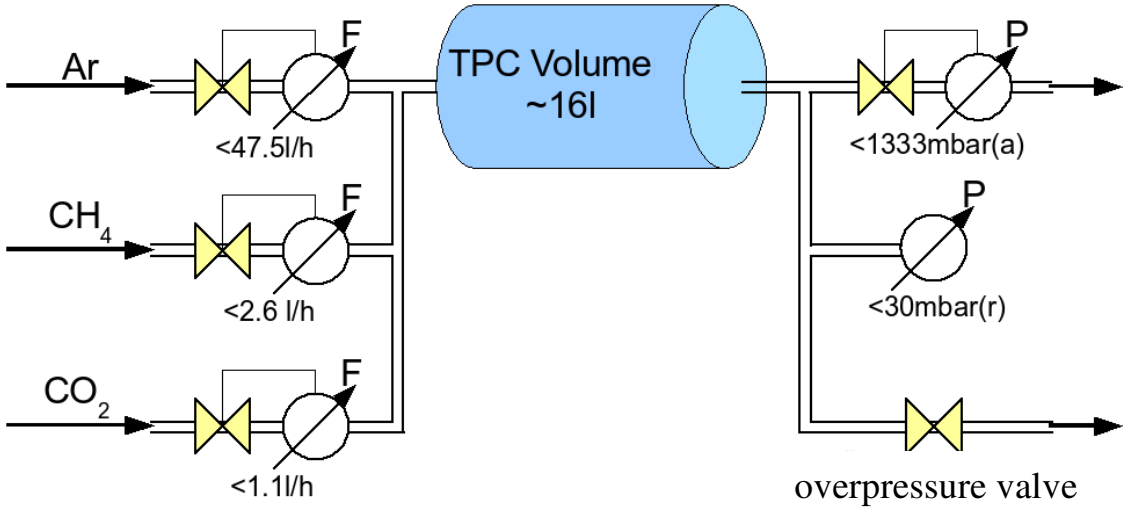
# Gas Setup: Design

maximum over pressure of 30 mbar

dynamic mixing of up to three components by

2 parallel flow meter with different range for each gas component

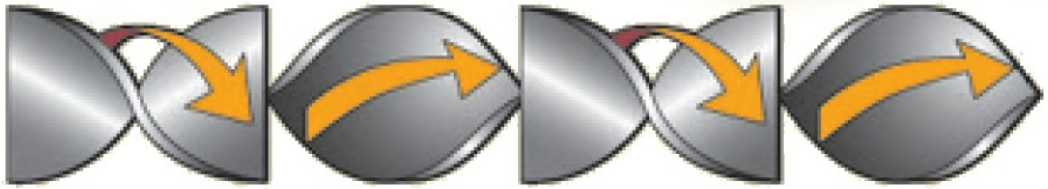
with a precision of 1 %




<u>plan:</u>

gas spectrometer will monitor gas quality

Mixing chamber without moving parts



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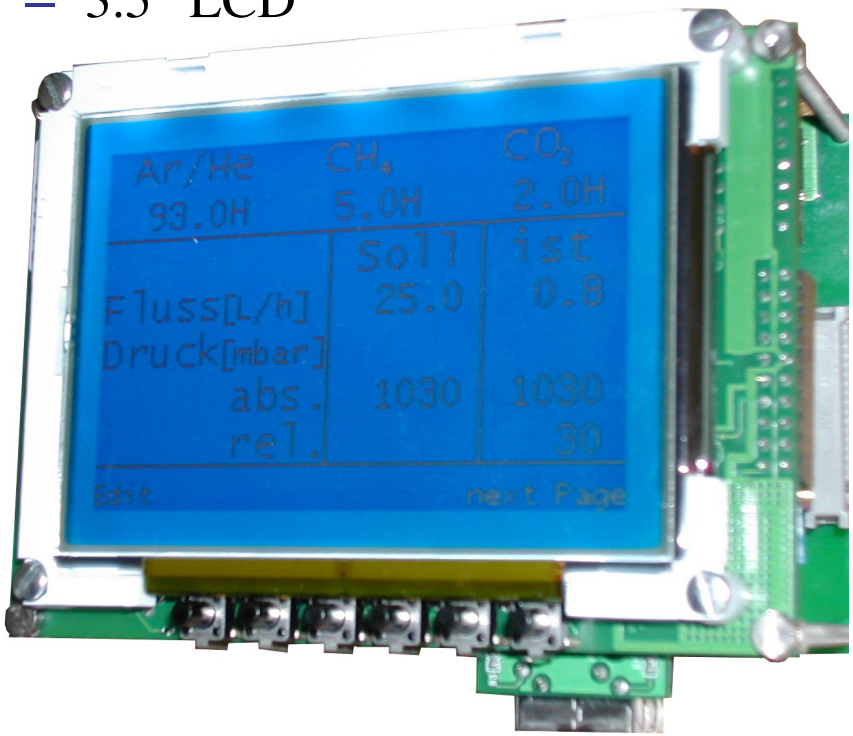
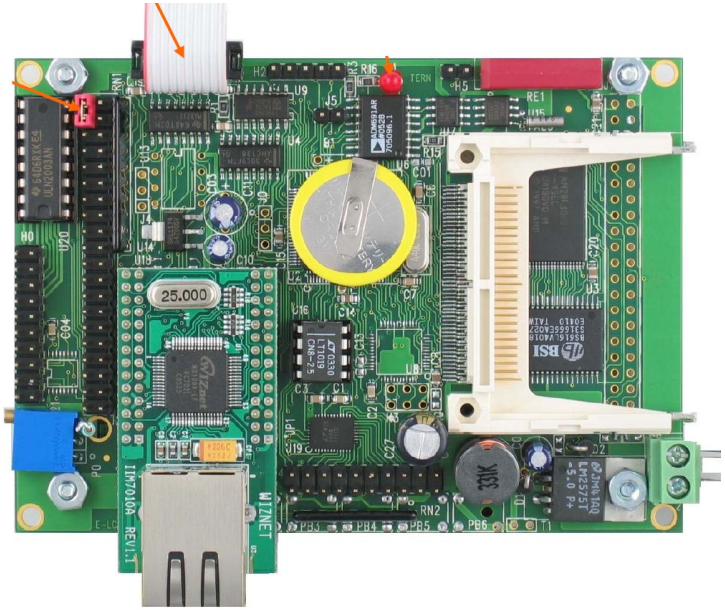
# Control Unit

Control unit of the flowmeters and pressure controller is an embeddedPC with AM186 CPU

- feedback of flow and pressure with the help of high resolution ADC / DAC
- monitoring room temperature and air pressure
- remote control via RS232 or TCP/IP
- 3.5“ LCD

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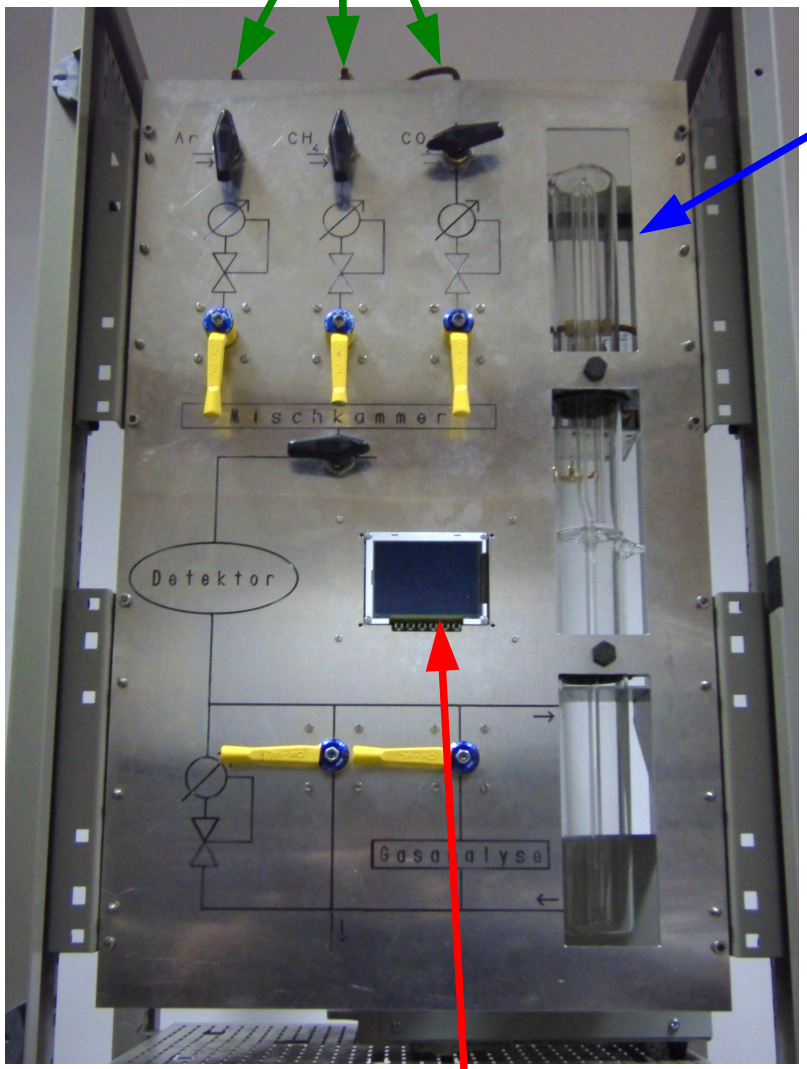
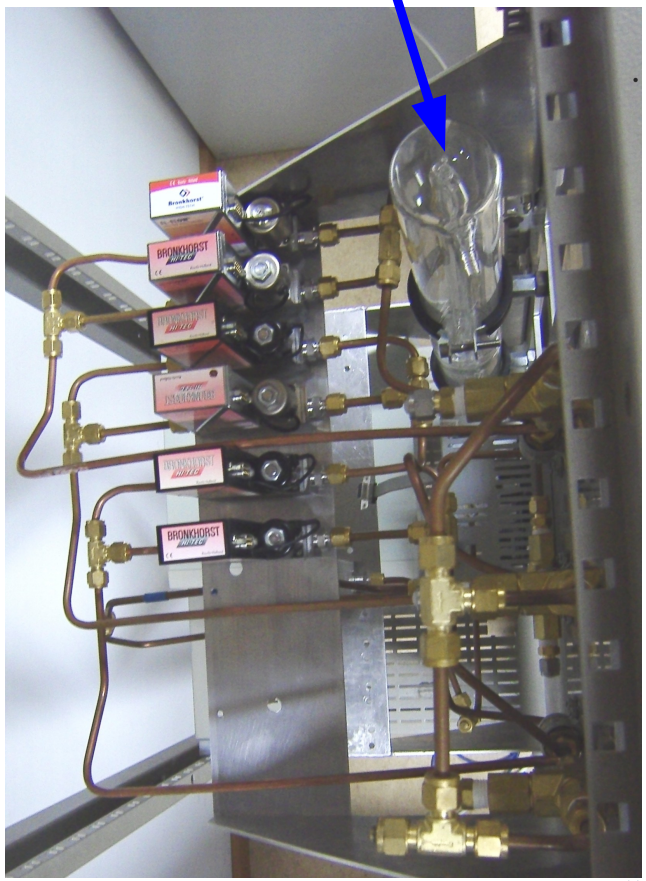
# Implementation

gas input




2*30 cm double-sided bubbler




embeddedPC

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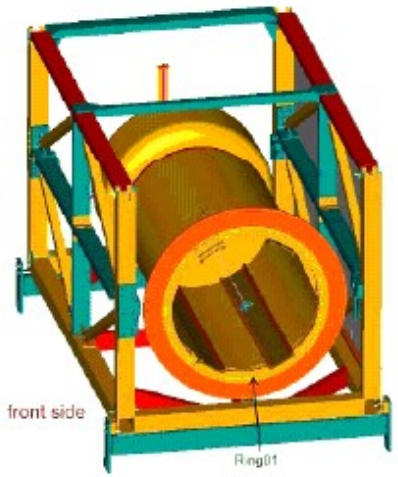
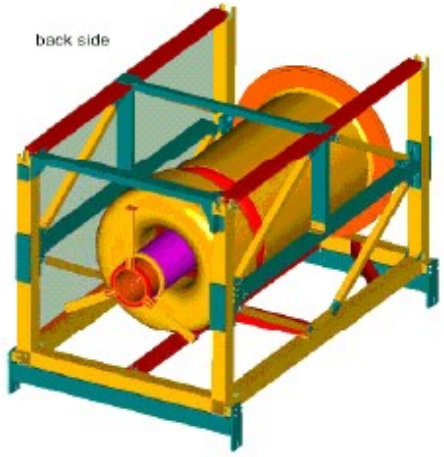
# EUDET test stand at DESY, Hamburg

Large Prototype TPC with: inner Diameter 720 mm,
outer diameter 770 mm
wall thickness 25 mm
length 610 mm

see talk by Takeshi Matsuda on Monday

Additionally: cosmic ray trigger (scintillators)
silicon strip hodoscope
5 GeV $e^-$ -beam
1.2 T solenoidal magnet (superconducting)

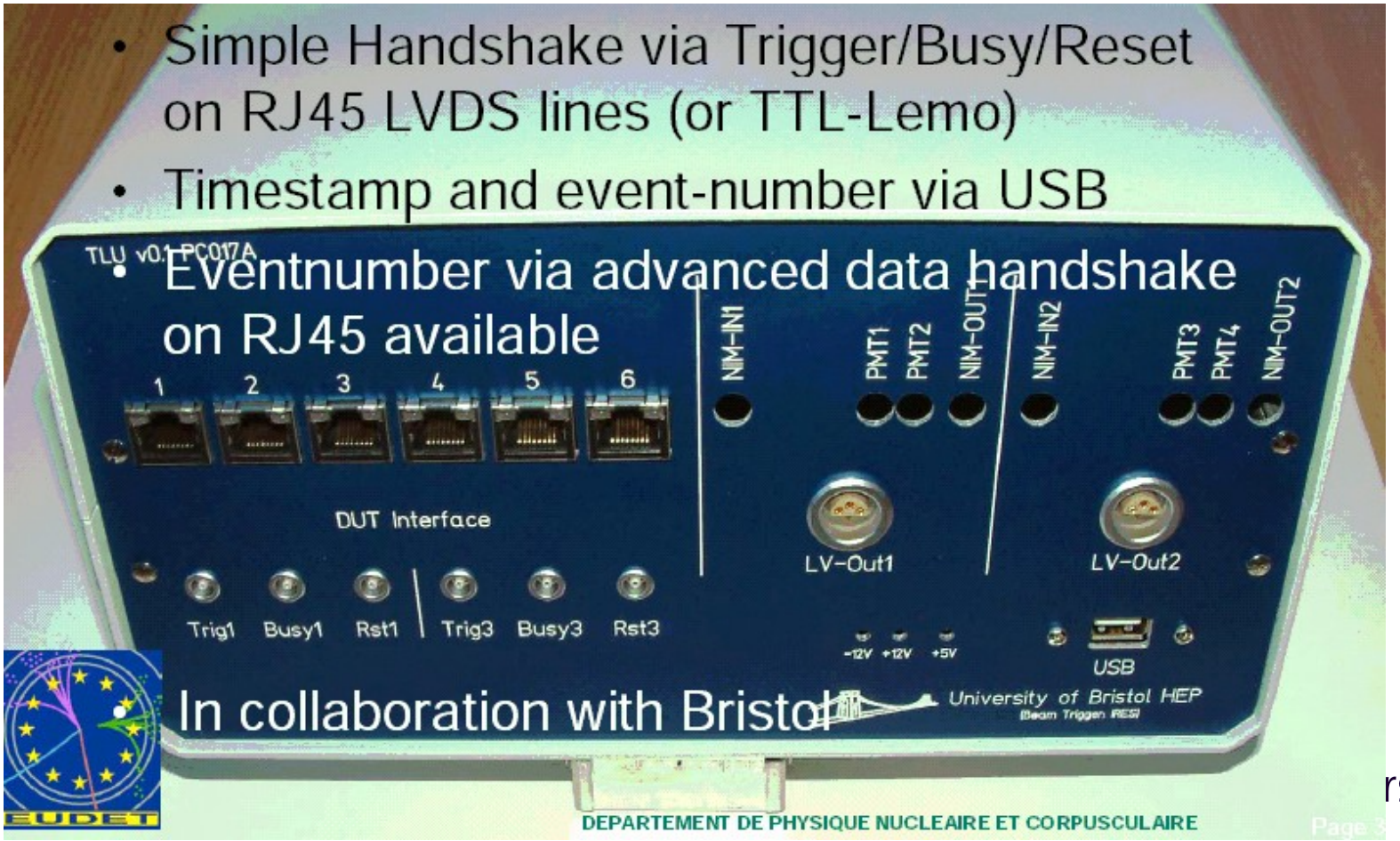


# Trigger Logic Unit

To synchronize the data taking from different subsystems

(silicon strip hodoscope, several TPC readout modules with varying readout electronics)




Input:
up to 4
scintillator
signals

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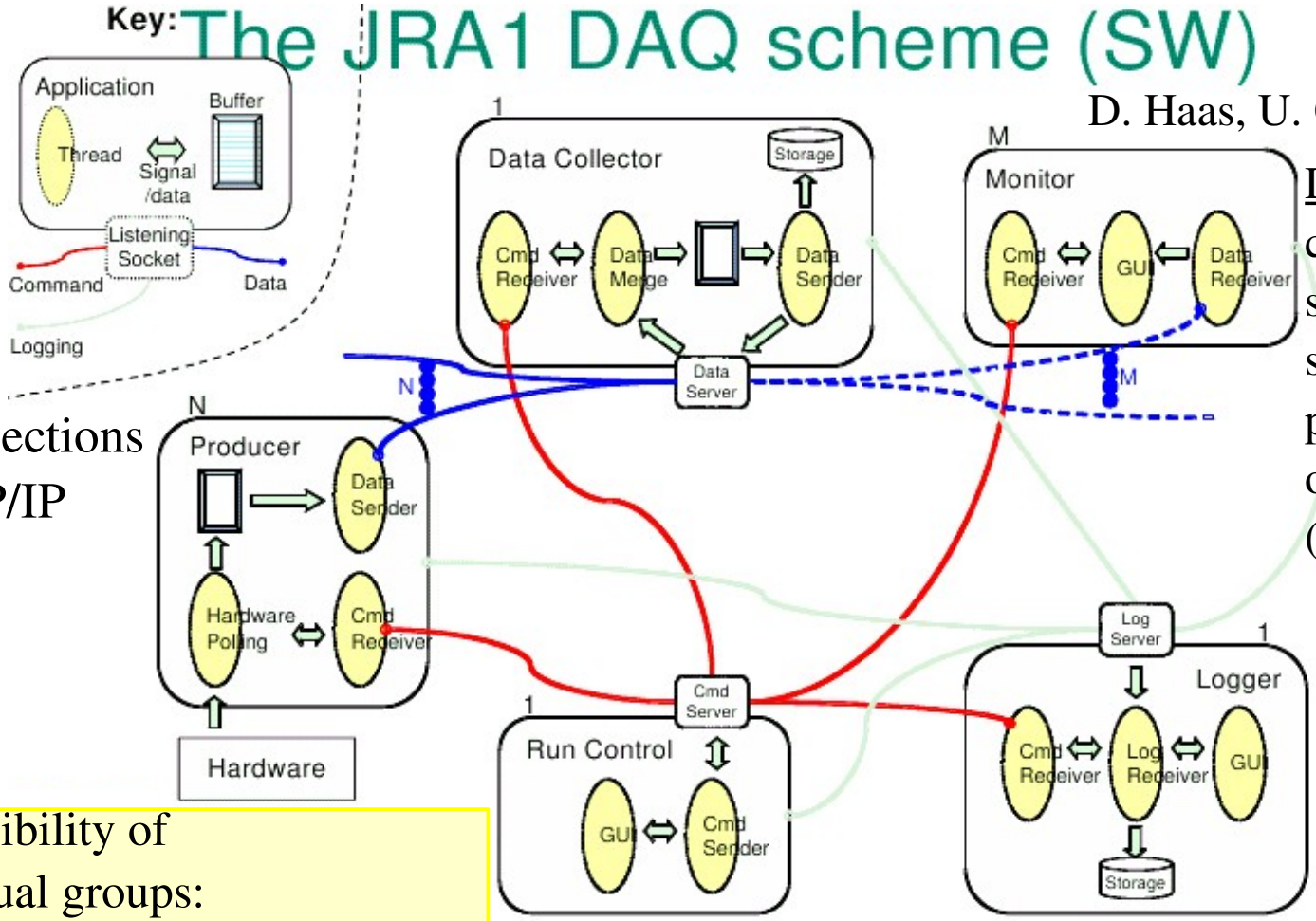
# Data Acquisition CommonDAQ




D. Haas, U. Genf

all connections are TCP/IP

Data Collector: collects and synchronizes data stream from all producers to one output stream (LCIO)

current test: 600 Hz
goal: 1kHz (6-9 months)

responsibility of individual groups:
read out data after receiving trigger from TLU,
raw data steam to data collector

start runs
gives start signal to producers
controls slow control

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