

LabVIEW

what is it, why use it?

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ENGINEERING
DEPARTMENT

Lightning talk
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IT Amphitheatre

How we got to use LabVIEW?

10'000 LHC magnets to test

What type of tests?

- Quench limit
- Quench heater performance
- Magnetic main field + harmonics
- Electrical insulation
- Protection diode
- Splice resistance
- Beam screen cooling
- Cryostat heat leak
- ...



20 different systems needed

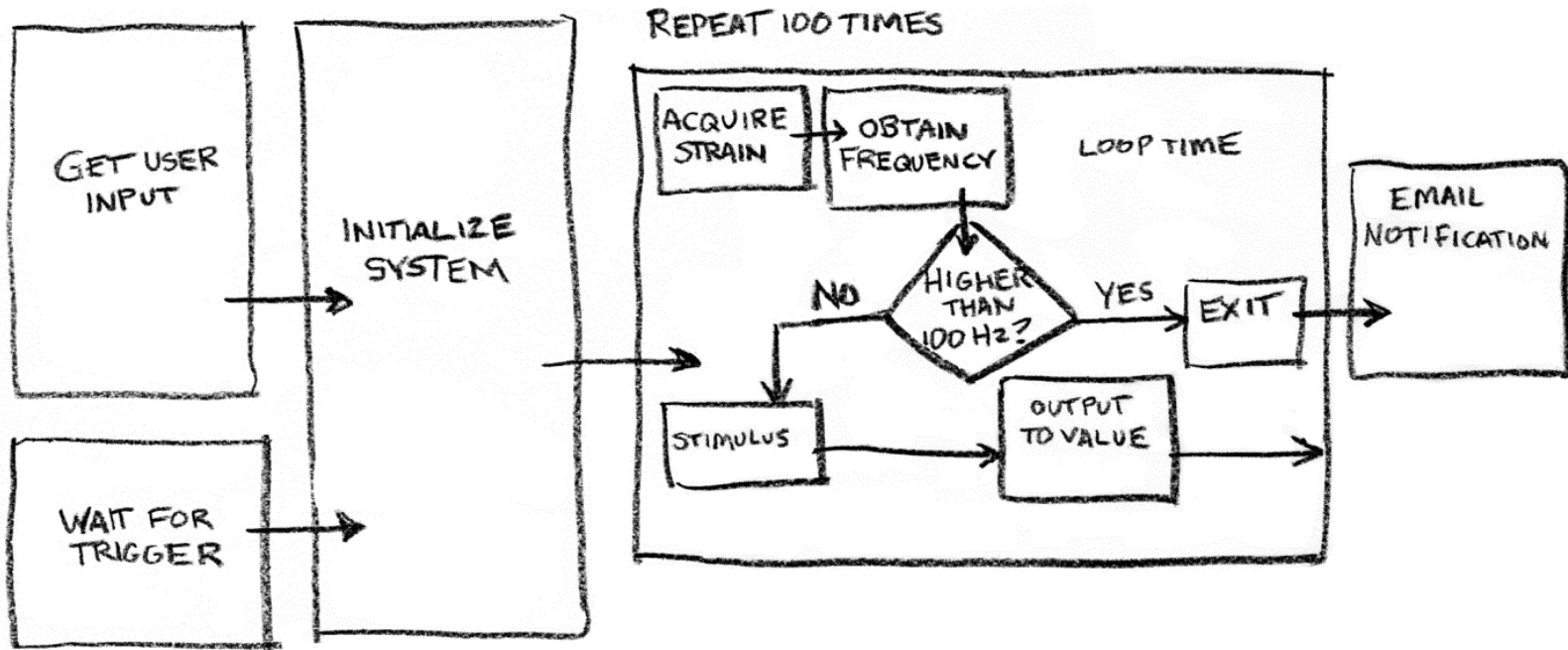
How could we do it, fast and with few?

- How much time did we have?
 - 4 years, before magnets would start flooding in
- How many were we in the team?
 - 2 engineers
 - 3 technicians
 - 2 students



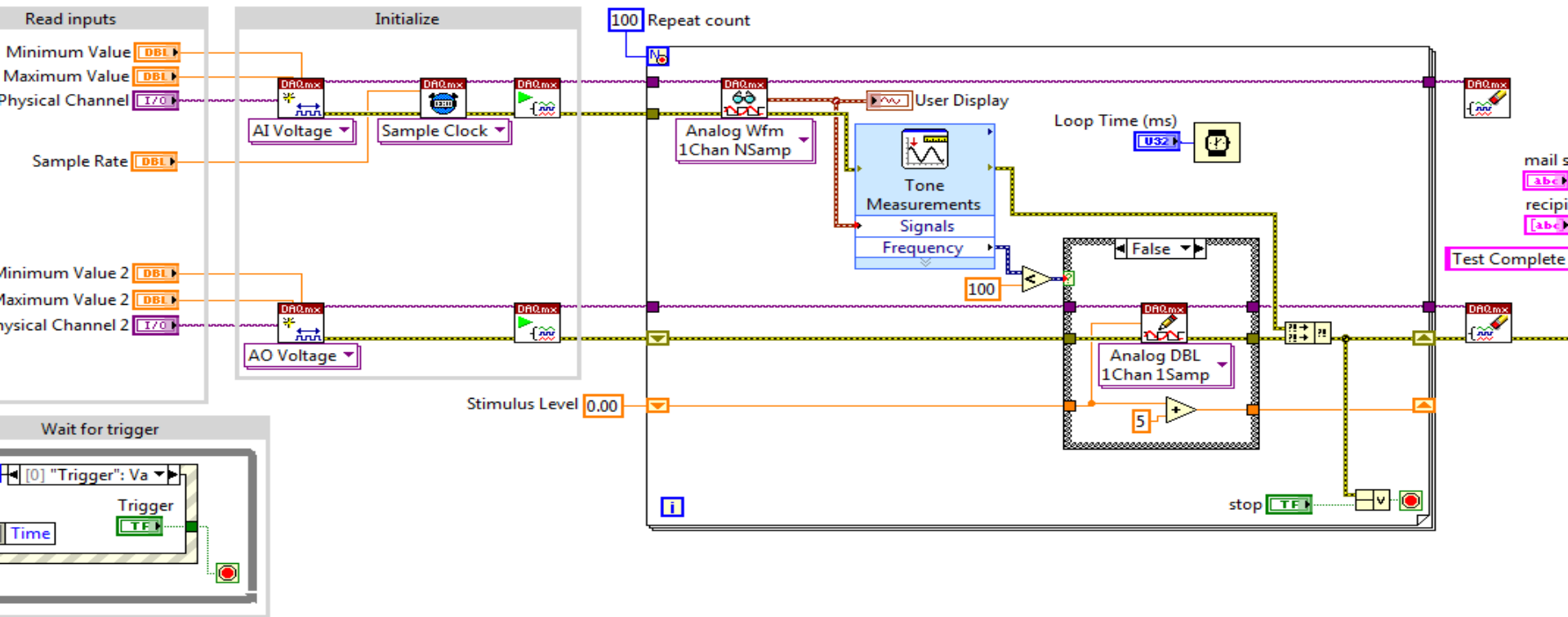
We were not so confident (panic!!)

We needed a miracle tool



Something that could translate our block diagrams into working systems!

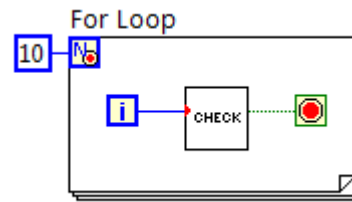
LabVIEW



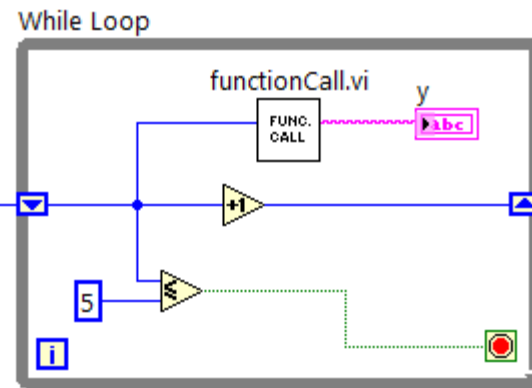
A **graphical, dataflow**-based programming language for parallel data acquisition and control systems

Comparison with text based languages

```
for (i = 0; i < 10; i++)  
{  
    if(check(i)) break;  
}
```

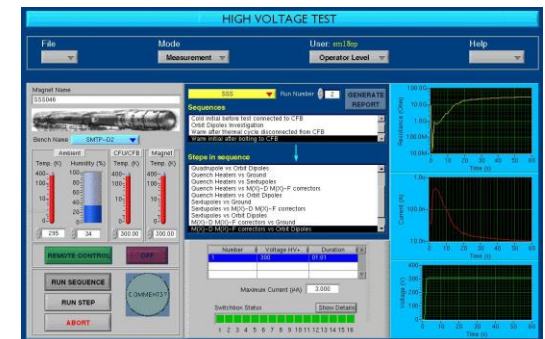
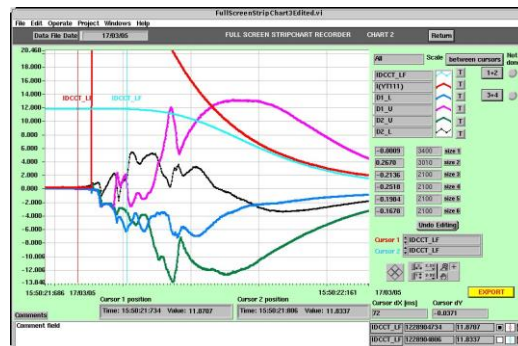
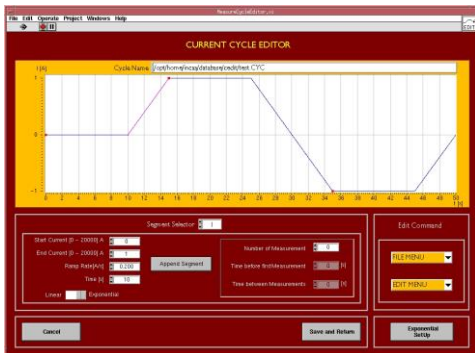
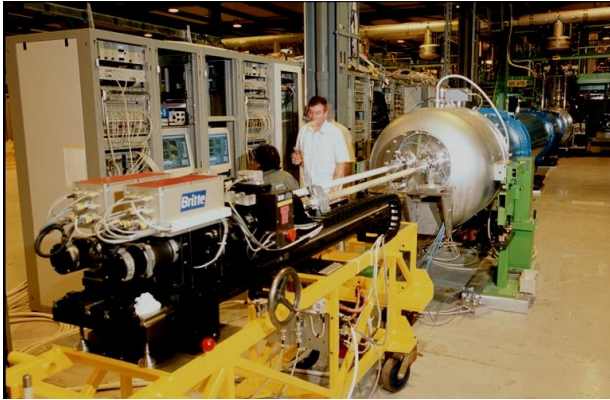


```
int x = 0;  
String y;  
while (x < 5)  
{  
    y = functionCall(x);  
    printf(y);  
    x++;  
}
```



The graphics helps understanding

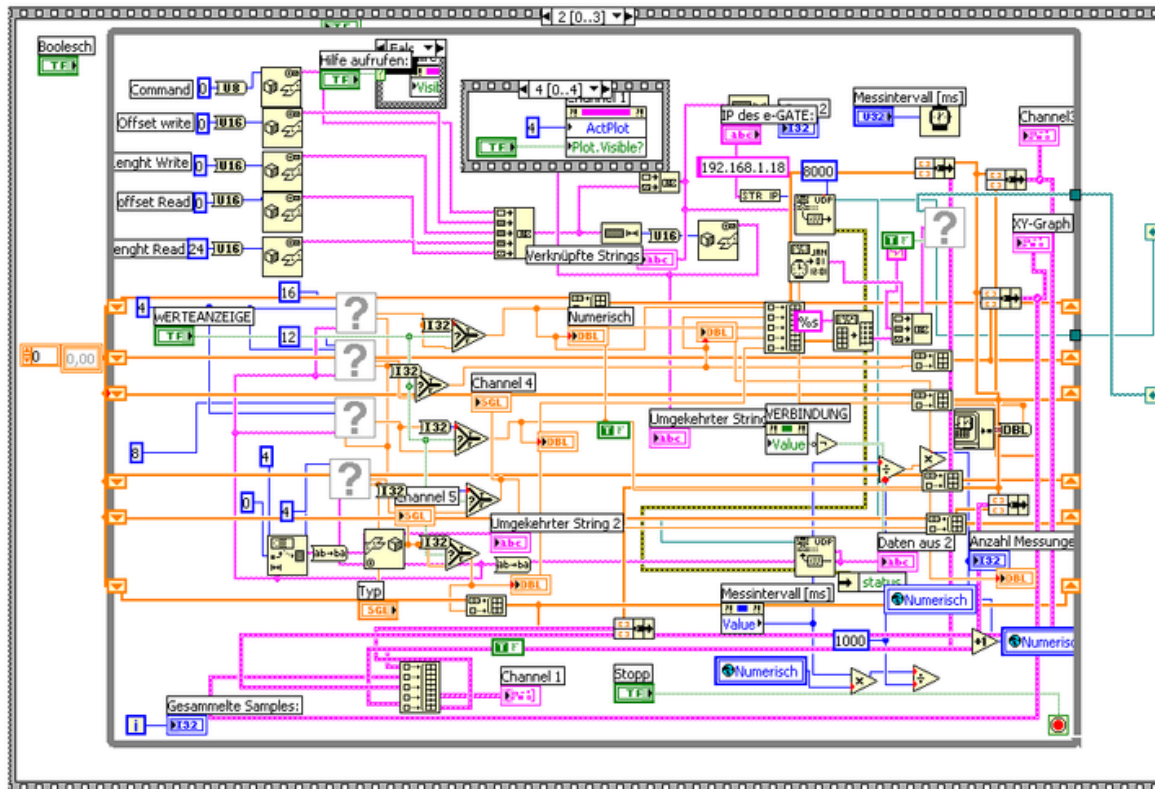
All systems ready in time!



for the 10'00 magnets to be tested

LabVIEW got popular ...

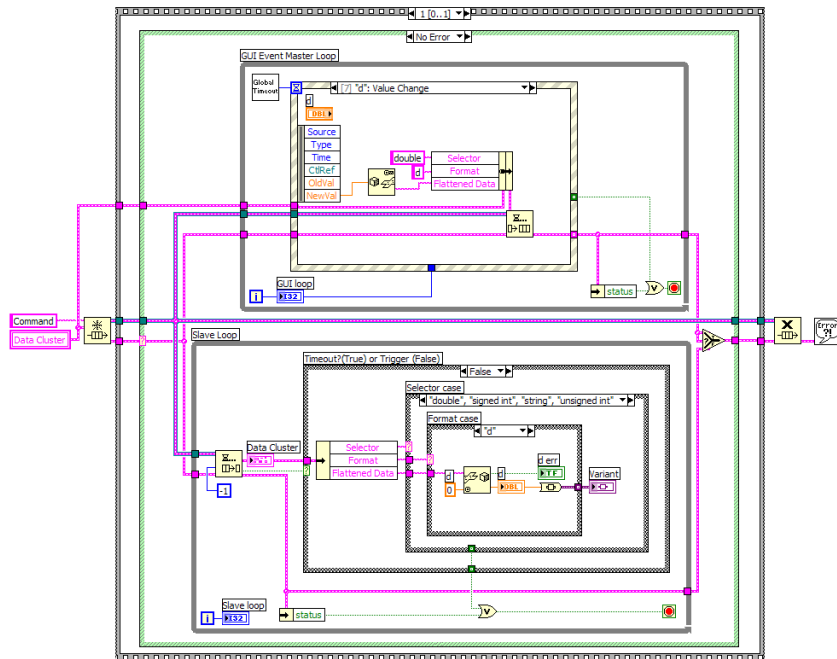
... but something went wrong



Spaghetti code was produced a lot (and it's a mess!!)

Coding standards, training, certification

Templates



Training

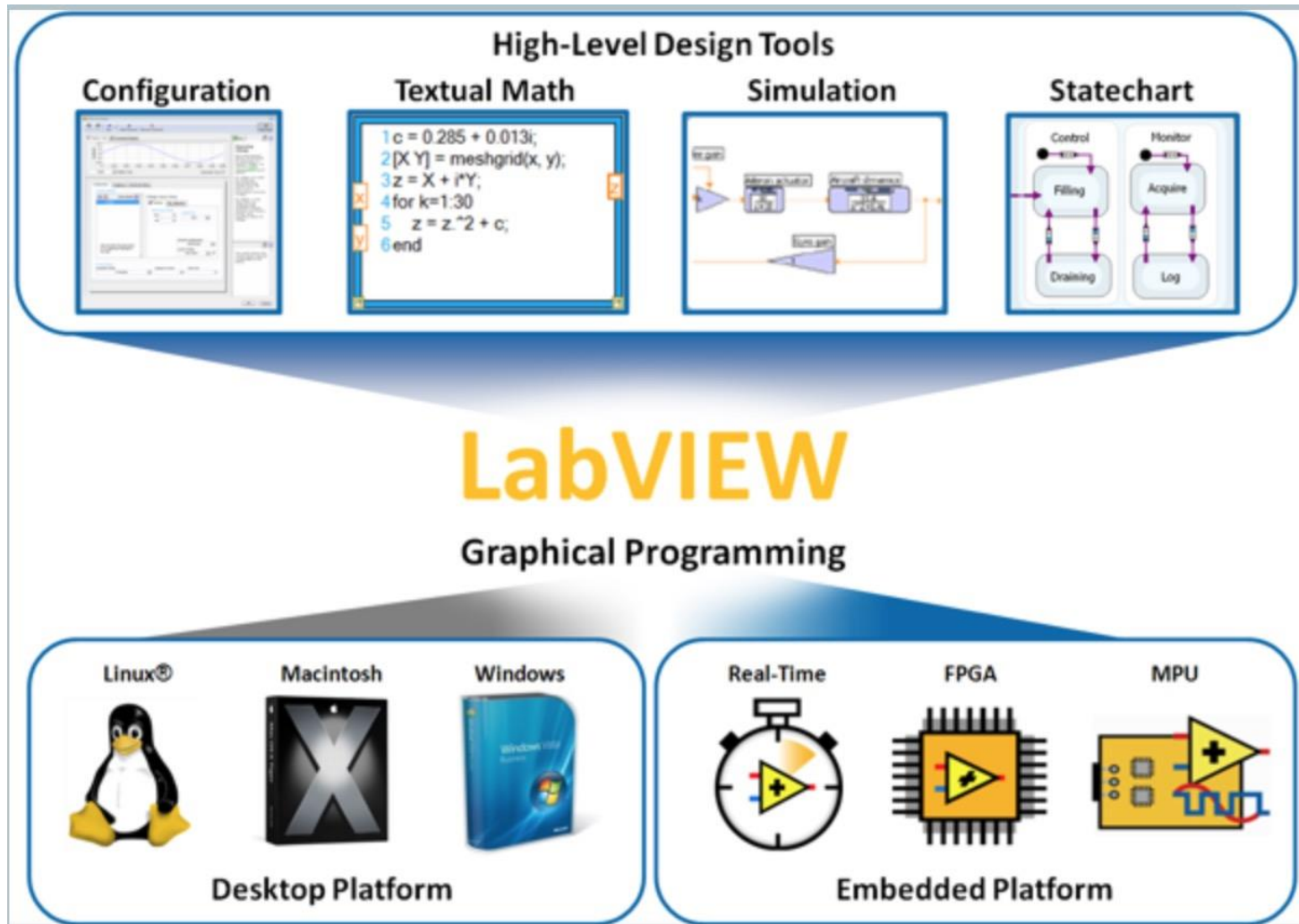


Certification



Structure your code, get certified !

LabVIEW real-time and FPGA



makes coding embedded systems easy

Renewed interest from students

LabVIEW evening workshops @ CERN in 2016



- No previous knowledge req.
- Tutor was a student
- Teaching for fun

- 6 evenings in IdeaSquare
- 18:00 to 20:00
- Certification exam at the end for the brave ...

150 students signed up!

Join us for the next session

LabVIEW evening workshops will restart in April 2017!



- New tutor
- Same building: 3179
- Renewed fun

Join us and spread the word!

Thank you for your attention !