Topics
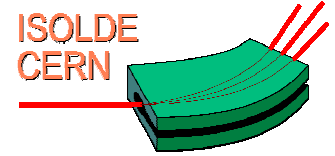
→ Isolde operation: Organisation and areas of activity

→ Technical problems in 2006:

2006 startup

Other breakdowns during 2006 run

Causes and solutions for 2007

→ Future operation: REX

Other projects

OP/ISO

1 physicist   4 technicians   1 fellow

Operation   Change & setup targets
                   Run separators
                   Check beam quality
                   Piquet service

User support   Safety
                   Training
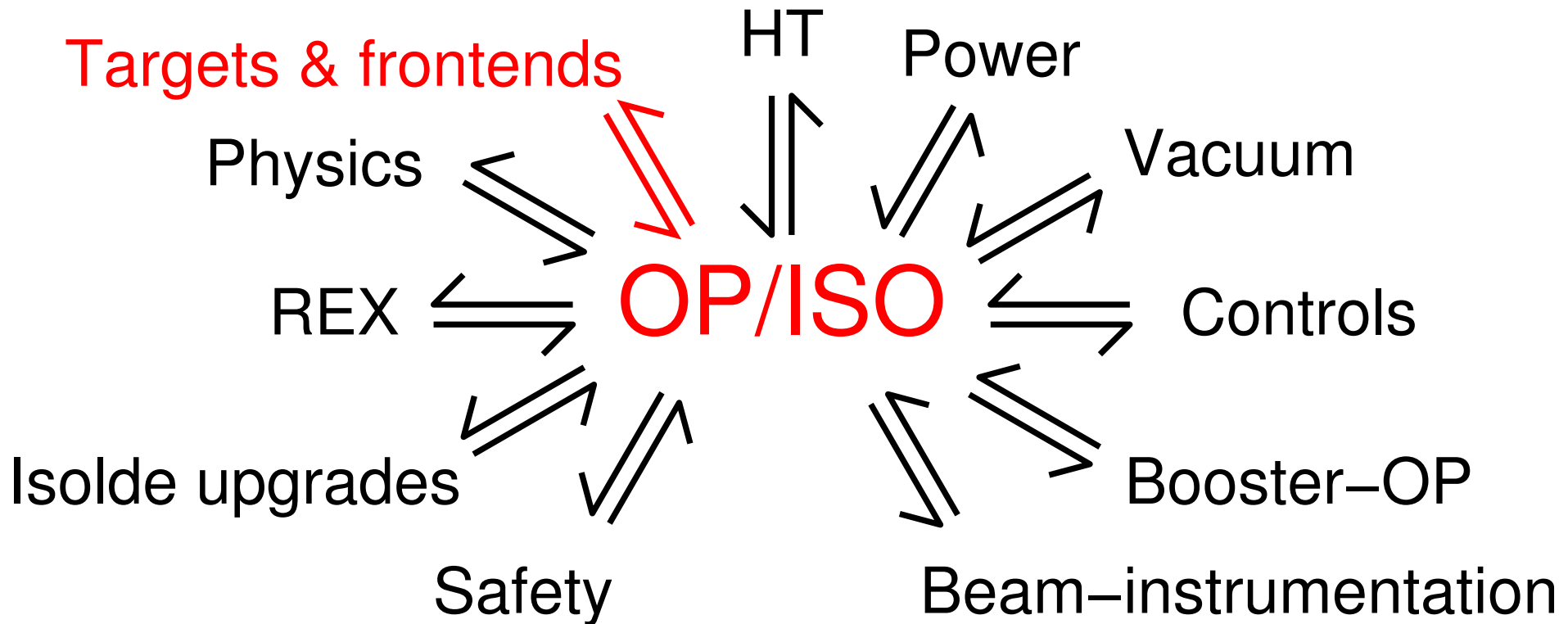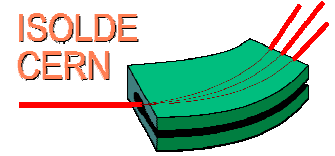   Equipment repairs
                   Controls software & hardware

Repairs, consolidation & upgrades
                   Specify test & debug new software & hardware
                   Beamline modifications
                   Orphaned equipment
                   Support & planning during shutdown & startup
                   Plan, support and follow−up interventions
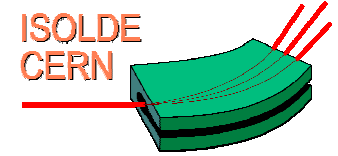   Implement safety recommendations

Isolde Operation

Targets & frontends

HT   Power

Physics   Vacuum

REX   OP/ISO   Controls

Isolde upgrades   Booster–OP

Safety   Beam–instrumentation

Development cycle

The development cycle can be extremely heavy, especially for software:

Concept

Functional design

Detailed specification

Redraft of specification in expert jargon

Follow implementation

Installation

Testing

Debugging

Training users

Several iterations

The first two runs were cancelled, owing to numerous technical problems. Many problems could have been caught during startup testing, but testing time was lost due to shutdown over–run.

Major issues:

⇌ Numerous minor interventions during 1st 3 weeks of physics
⇌ White powder in compressed air, affecting vac & beam instrum.
⇌ GPS switchyard: shorted bender plate
⇌ GPS switchyard: bent deflector blocked central beamline
⇌ Tapestation brokedown a number of times (elderly and fragile device)

RP support affects the number of parallel interventions which can be performed.

Conclusion & possible improvements:

⇌ No common technical cause of faults
⇌ 2 week testing period before physics, including a testing plan
⇌ Somebody follows the shutdown work to ensure that it stays on–track

ISOLDE
CERN

Major breakdowns: –– No catastrophes!

⇌ Target coupling failed (unexpected change to target components)
⇌ HRS target pumping failed, damaging target
⇌ Water leak on proton beamline serving GPS (BTY.QDE209)
⇌ Target area ventillation PLC stopped after power cut
⇌ Vacuum PLC stopped after power cut
⇌ Robot control terminal failed
⇌ Wrong proton beam settings for liquid metal target
⇌ Ageing insulators on GPS & HRS reduced beam energy from 60 to ~30kV

Conclusion & possible improvements:

⇌ Again, no common technical cause of faults
⇌ New vistar screens with better status information
⇌ Better planning & setting priorities when recovering from breakdowns?
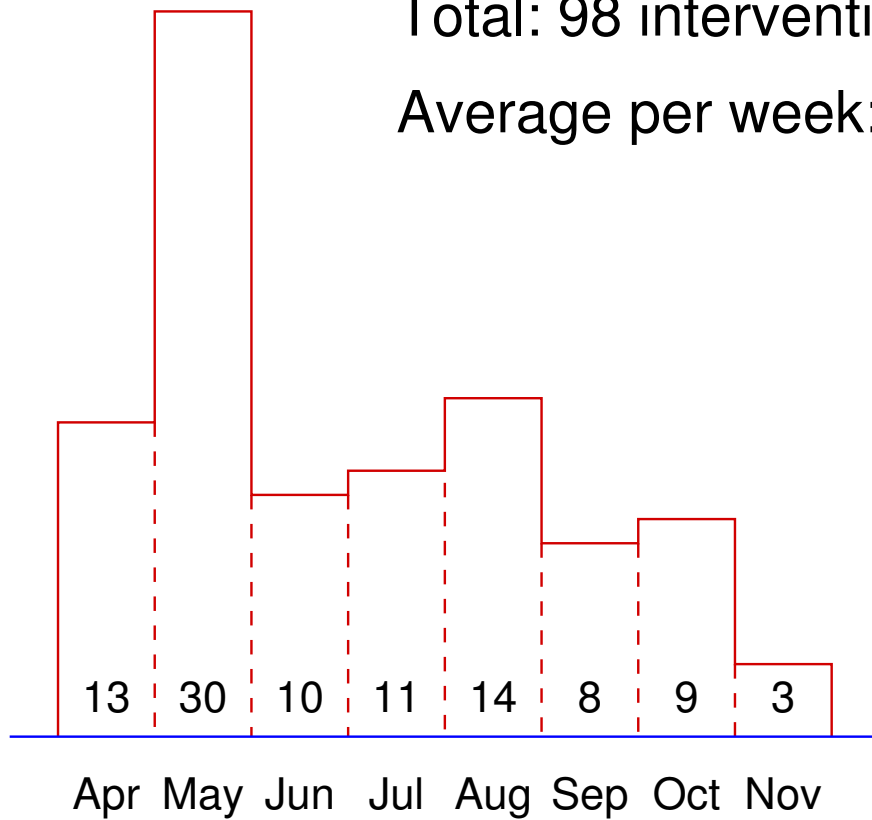⇌ Vacuum support in 2007?

Intervention Statistics
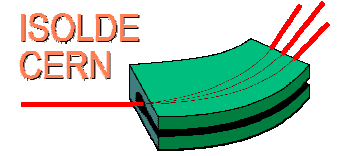
Total: 98 interventions, 204.5 hrs in ICR

Average per week: 3.2 interventions, 6.6 hrs

Of the 26 longest call–outs:
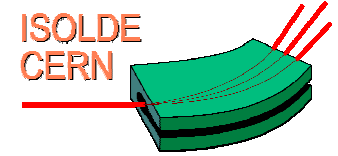
    6x target heating
    5x yield check
    5x misc. user support
    4x vacuum failure
    6x other (including 1x inexperience with HRS)

13	30	10	11	14	8	9	3
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov

Feedback

Proton beam parameters

to be surveyed by software

status displayed on new vistar screens

Request for greater OP "presence"

routinely establish contact with users
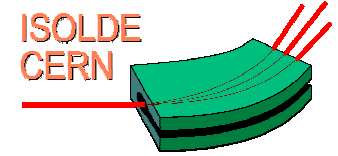*before* the start of the run

make time for refresher separator course

ensure OP/ISO knows the parameters of the run

Request for greater OP/ISO experience

More training with plasma ion–sources

REX

REX may be considered as a "whole machine" in itself
Of the 5 posts created for REX, none came to operation
OP/ISO should take over the operation of REX
REX requires 2–3 people during startup before each experiment

Currently we are five: 4 for Isolde + 1 for REX
A team of 7 could incorporate REX operation in same style as Isolde
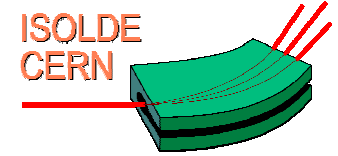With a team of 5, we need to set clear and realistic priorities

Other projects

eg. REX controls; RFQ installation & commissioning;
Replacement tapestation; New Offline separator;
Emittance meters; Beamline sharing; HRS slits ...

What are the priorities, and what is the next step?

Conclusions

⇌ Don't bite off more than we can chew in the shutdown

⇌ RP & Vacuum support

⇌ Closer hands–on coordination of startup and repairs

⇌ More training for OP/ISO techs, especially ion–sources

⇌ Development process is very heavy; especially software

⇌ REX: Define resources for operation
        Set priorities across Isolde
        Re–work operation style to suit