

The new Epics based project Spiral2 at Ganil :

status and interrogations

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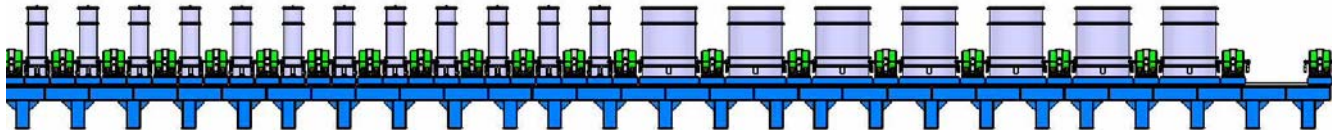
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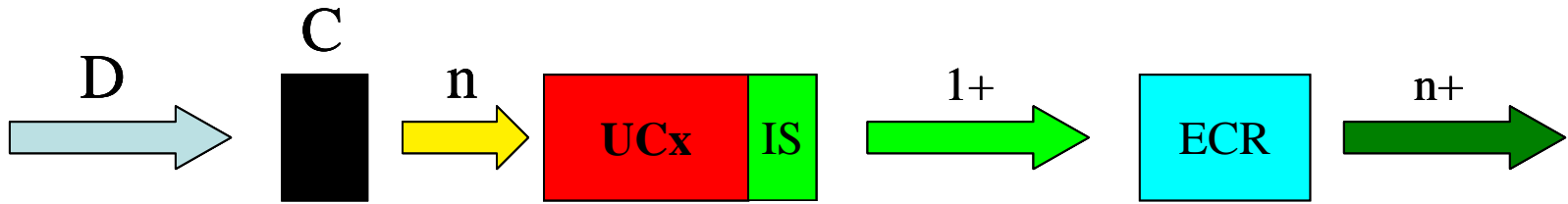
- The Spiral2 project
 - Objectives
 - Global design
 - Planning
- Controls environment
 - Collaborations
 - Project organisation
 - Epics choice
 - The existing Ganil control system
- Epics@Spiral2
 - Main options
 - Preliminary tests
- Interrogations

The Spiral2 project

(Spiral = Système de Productions d'Ions RAdioactifs en Ligne)

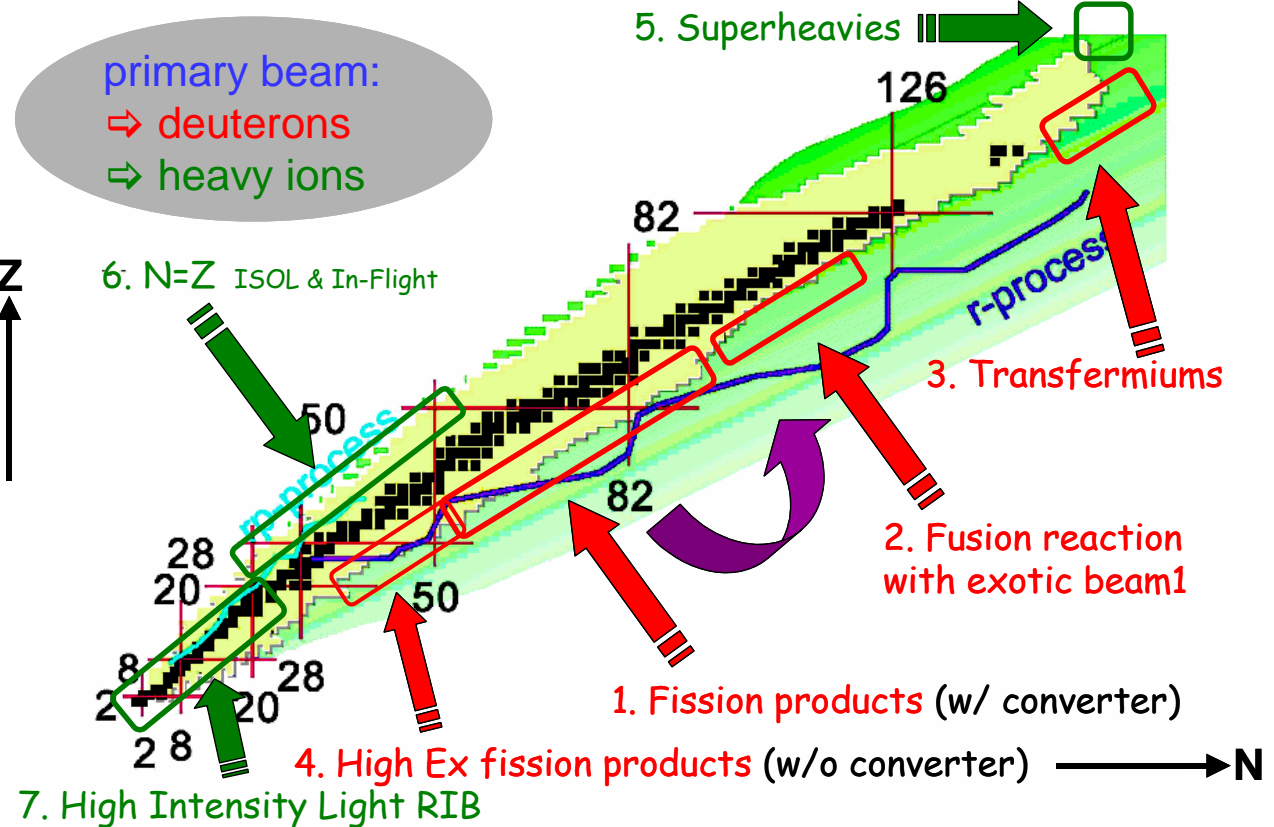


Spiral2 principle



10^{13} - 10^{14} fissions/s

Intermediate step between existing RIB facilities, and future projects like EURISOL or RIA.

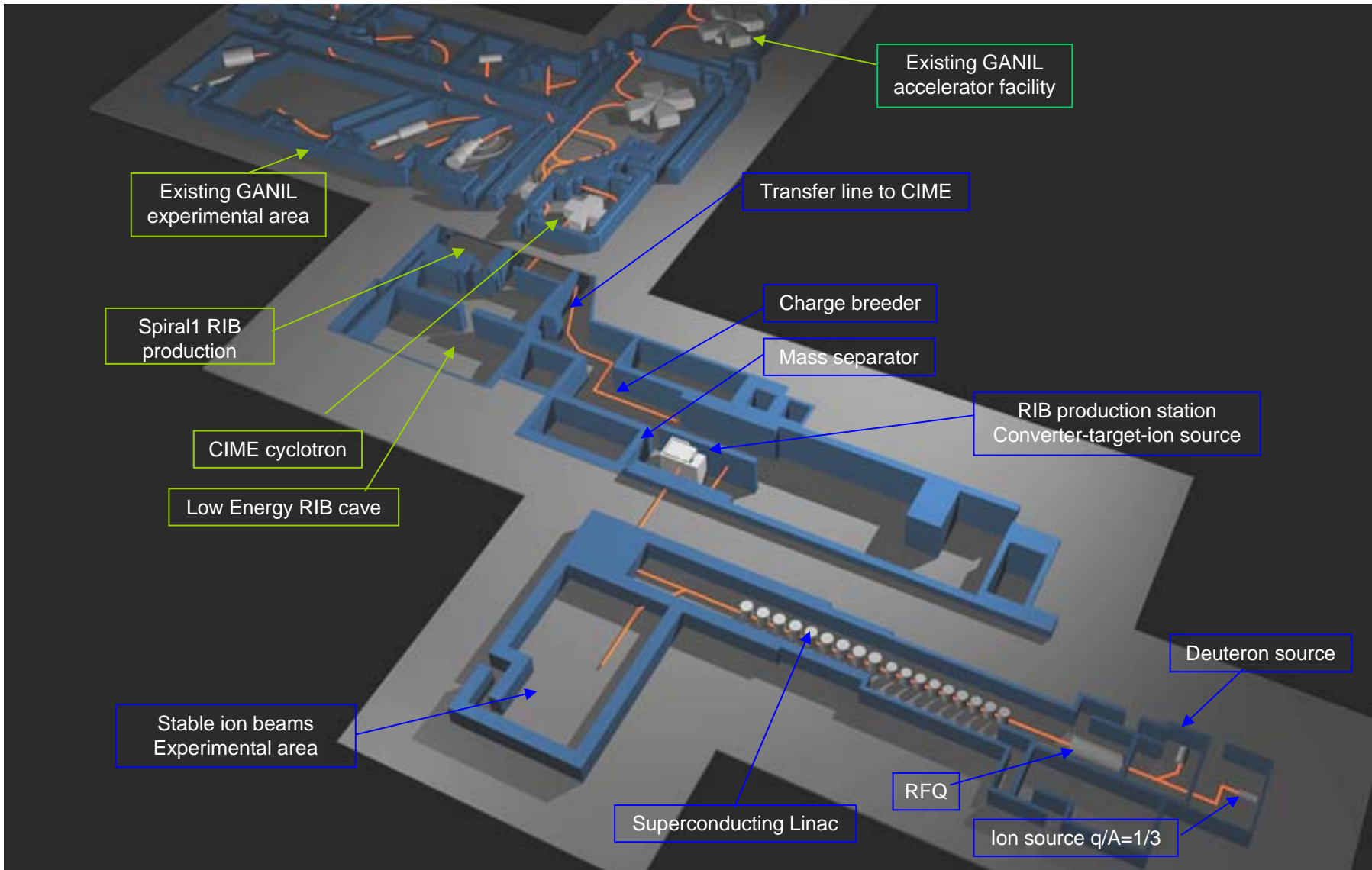


Project overview



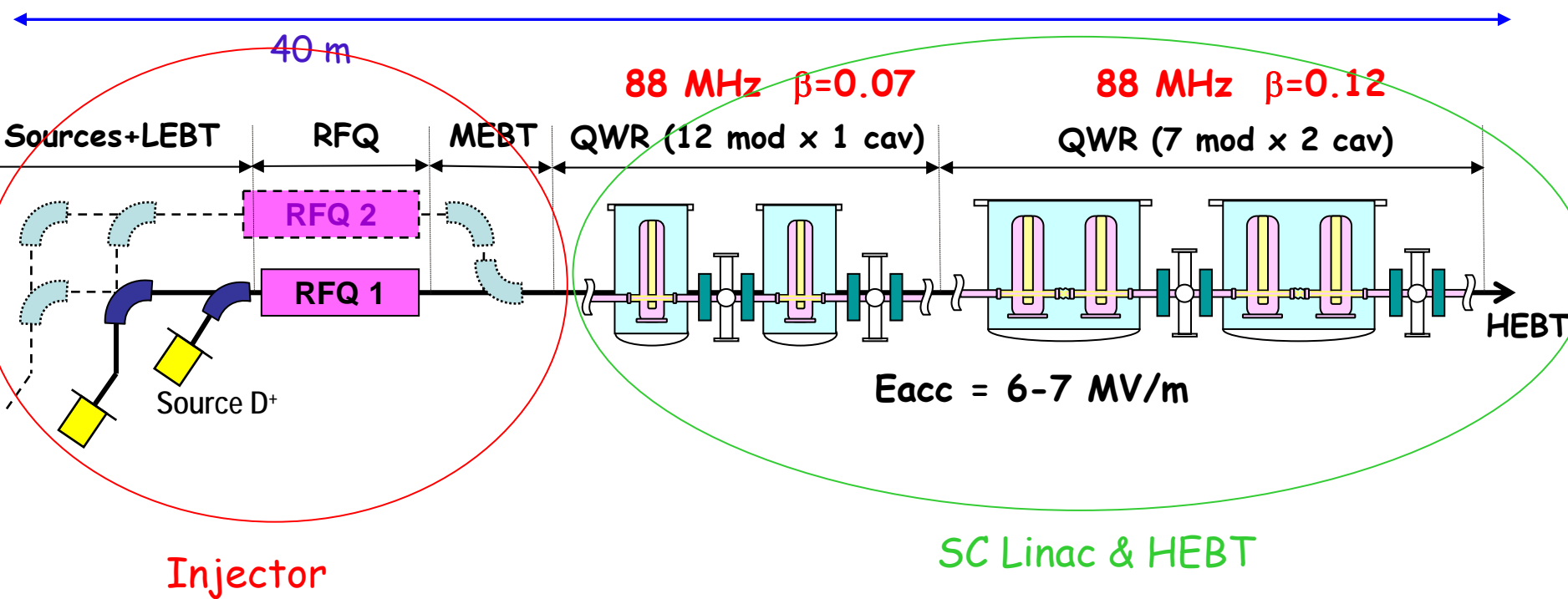
Existing

New (Spiral2)





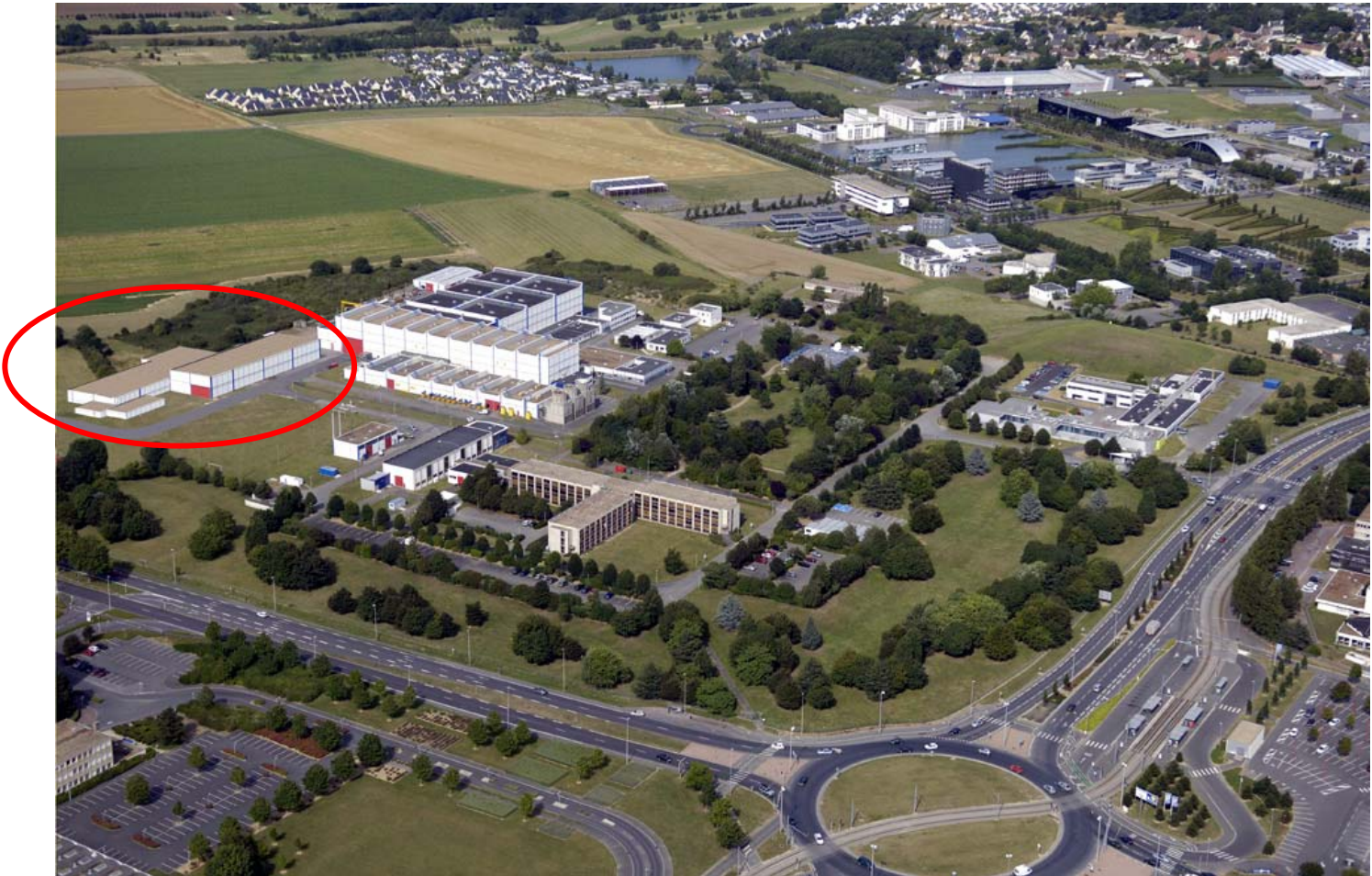
Spiral2 accelerator layout



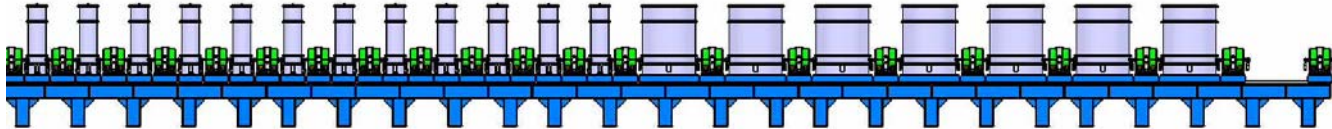
First installed and tested
at Saclay
11/2009 \Rightarrow 12/2010

Injector moved to Ganil
Whole accelerator installed and tested
at Ganil
09/2011 \Rightarrow 07/2012

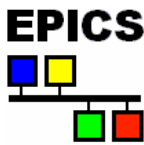
Future physical installation



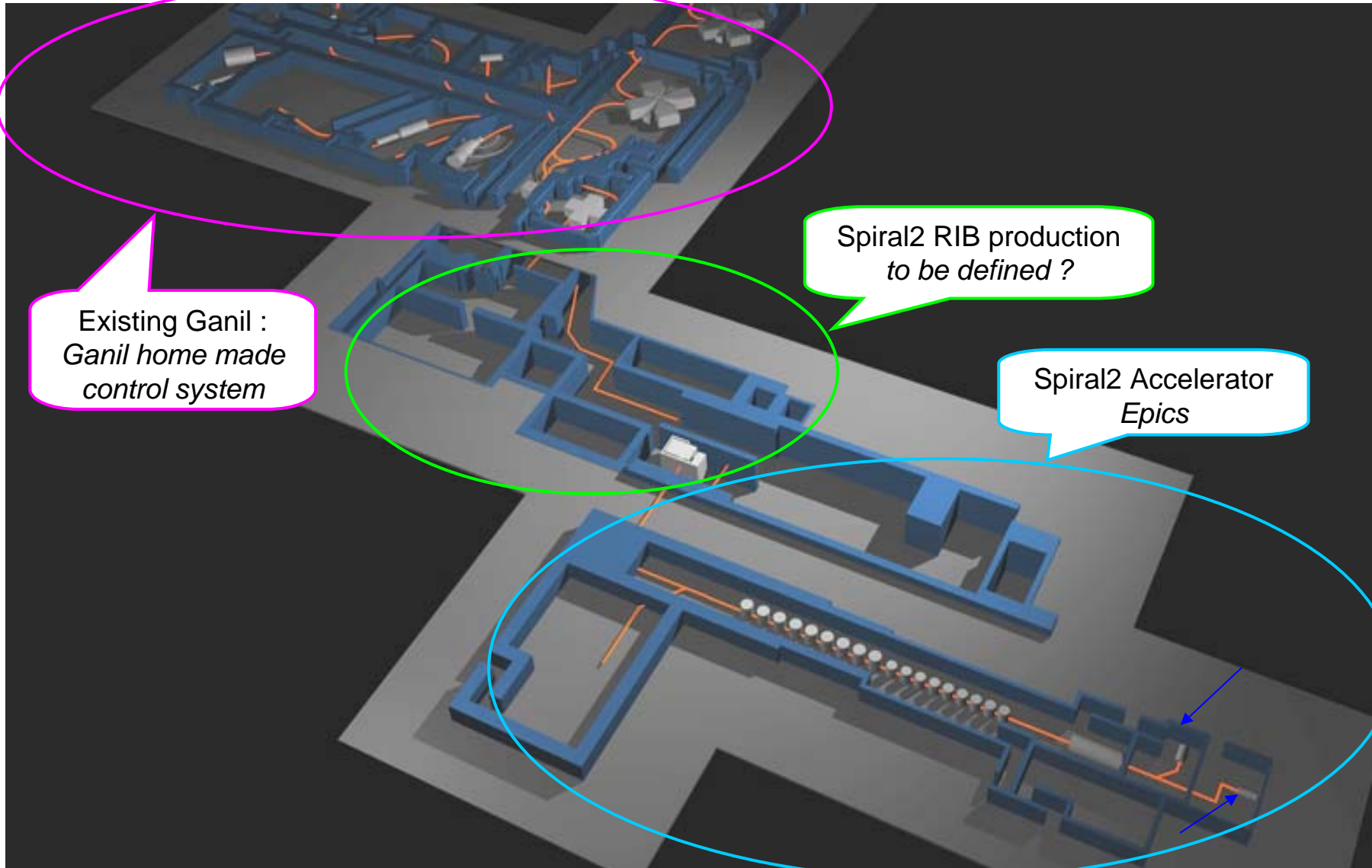
Controls environment



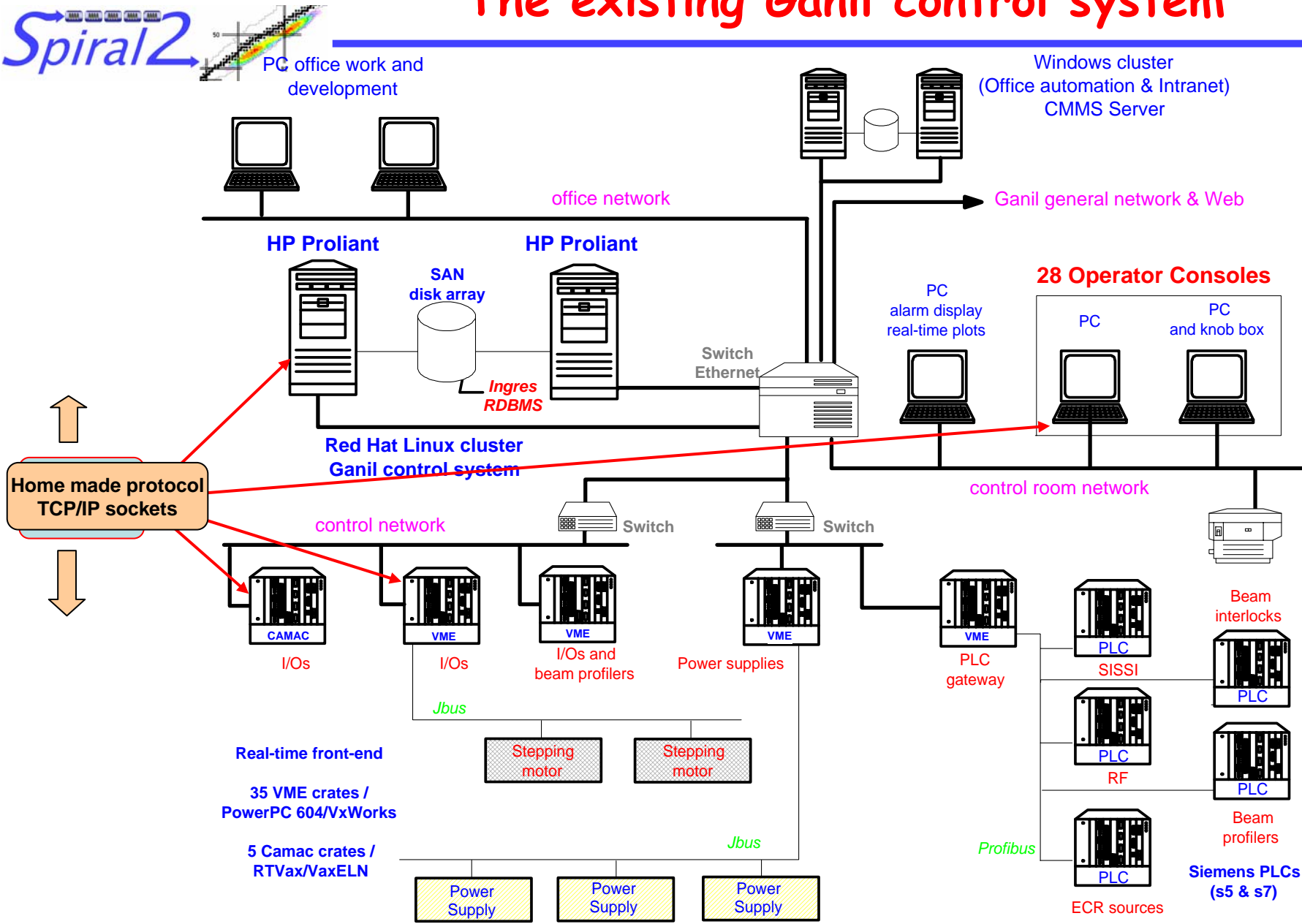


- Injector (sources, LEBT, RFQ, MEBT) to be first tested at Saclay
 - Dapnia/SIS responsible for the injector controls ⇒ 
 - Collaboration for some developments
 - ✓ Beam testing device (IPHC, Strasbourg)
 - ✓ Specific items (Ganil, Caen)
- Injector then moved to Ganil
 - Knowledge transfer from Saclay people to Ganil staff
 - Learning process to be followed
 - ✓ Epics concepts and technology new at Ganil
 - ✓ Need to understand and integrate Saclay developments
- Accelerator controls
 - Ganil responsibility
 - Epics based (coherence and homogeneity)
 - Two main goals
 - ✓ Injector control system integration
 - ✓ Linac and HEBT line controls to be developed using the same technologies as the injector ones

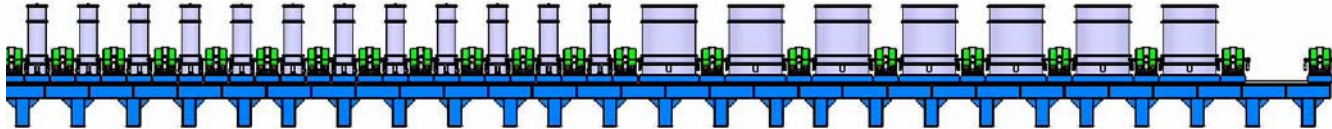
Rare ions beams control



The existing Ganil control system



Epics@Spiral2

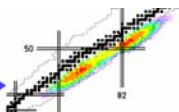




- Epics 3.14.8.2
- VME IOCs
 - VxWorks 6.3 (planned, currently 5.5)
 - MVME 5500 (planned, currently MVME 2304)
 - ✓ PowerPC 7457 (1 GHz)
 - ✓ 512 Mb
 - VME64x to be used for the LLRF interface (Saclay FPGA board)
- Field buses
 - Jbus (~Modbus/RTU) on RS485 serial line
 - ✓ Stepping motors
 - ✓ RF amplifiers
 - Modbus/TCP (Linux / VxWorks ? ; CPU or slave board ?)
 - ✓ Power supplies
 - ✓ Beam profilers
- Siemens s7 PLCs (Linux / VxWorks ?)

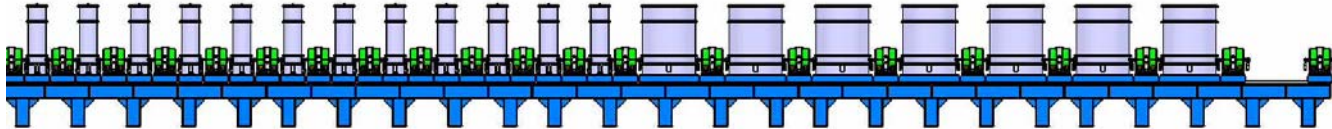


- Man Machine Interface & servers
 - Red Hat Enterprise Linux 4
- GUI tools
 - EDM
 - Java
- Epics common tools
 - SNL
 - StripTool
 - Burt
 - ...
- Databases
 - Use of Irmis
 - RDBMS
 - ✓ MySql ?
 - ✓ Ingres (historical reasons) ?
 - ✓ Oracle ?



- Development of a beam profilers interface
 - Modbus/RTU (Modbus/TCP planned) through StreamDevice (V2) and AsynDriver (V4.6)
 - Specific record type (based on Gensub)
- Siemens S7 interface based on the s7plc driver (Linux)
- Evaluation of Irmis (V2)
- Naming conventions
- Injector control design (Daphnia Saclay)
 - VME crates
 - ✓ Ion source $q/a=1/3$ & LEBT1
 - ✓ Deuteron source & LEBT2
 - ✓ RFQ & MEBT
 - ✓ LLRF (VME64x)
 - RFQ
 - Rebunchers
 - Validation of I/O drivers (ADC, DAC, Digital ...) on ADAS boards

Interrogations ...





- Java IDE choice ?
 - NetBeans
 - Eclipse
 - ✓ VE
 - ✓ Jigloo
- Plotting Java library ?
 - Teechart
 - Jclasschart
 - JFreeChart
 - Other ?
- Java / Epics interface ?
 - JCA
 - CAJ

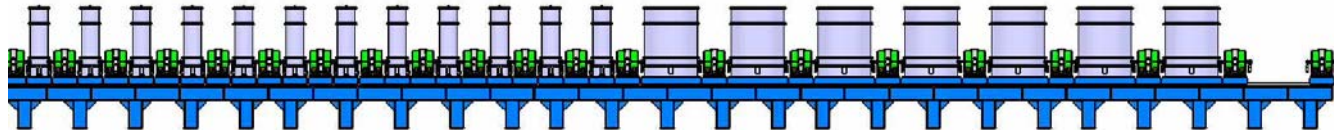


- Epics records database management ?
 - VDCT + Irmis
 - ✓ "reverse engineering"
 - Generation of db files from a relational database
 - ✓ Equipment configuration tool
 - ✓ Creation of the Epics records processing chains
 - ✓ EpicsOra ?
 - More basic equipment description management
 - ✓ VDCT templates
 - ✓ db files macros ("\$" substitution performed into st.cmd file)
- Management of many equipment ?



- Home made design ?
- Use of XAL ?
 - Seems very attractive and powerful ... But ...
 - Ability to be adapted in our environment ?
 - ✓ Size and complexity of the Java code
 - ✓ Database definition and XML hierarchy
 - ✓ Use of BRICKS
 - Only one person being able to work on this topic : does it make sense to go this way in such conditions ?
 - Does XAL impose a specific Epics database design ?
 - Use of a CEA Saclay design modelisation code (TraceWin)
 - ✓ Off-line program to be used at the background of the control system
 - ✓ Gateway between TraceWin and Epics PVs
 - ✓ Use of the PCAS ?

... Answers ?



Thanks for your attention !