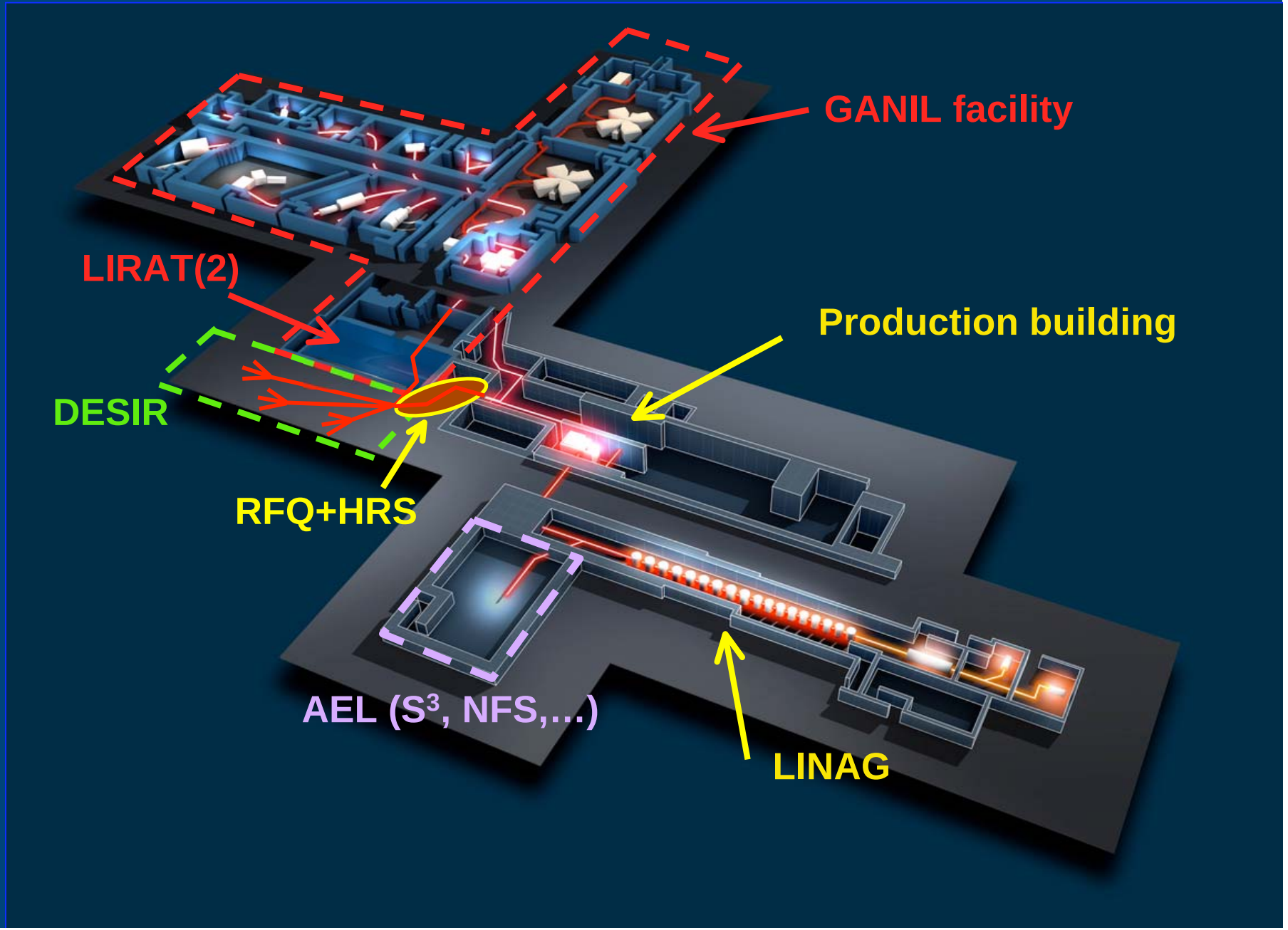
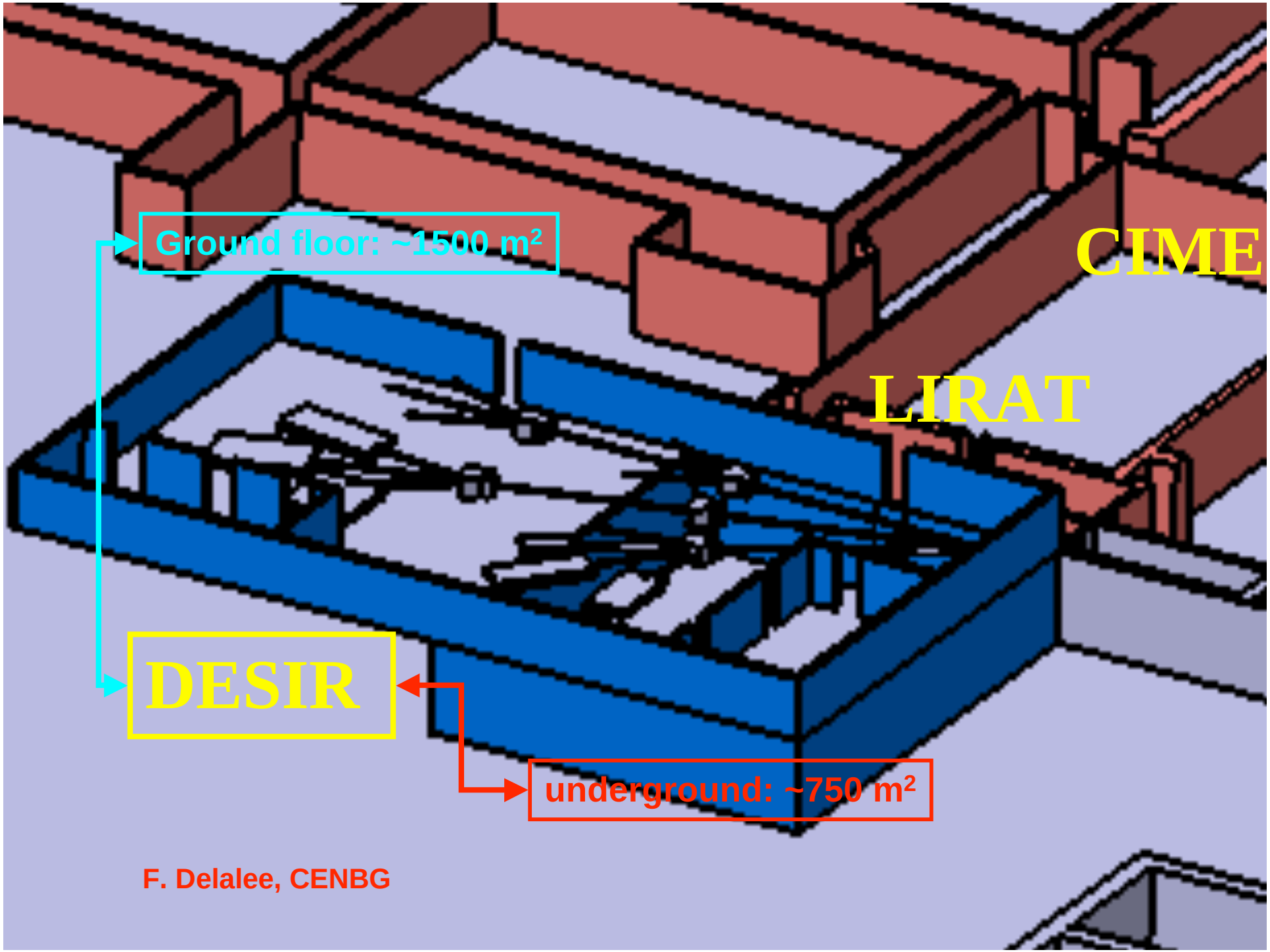
The DESIR facility @ SPIRAL2
Some technical aspects

DESIR: Désintégration, excitation et stockage d'ions radioactifs
(Decay, excitation and storage of radioactive ions)

- **The DESIR hall and the RFQ-HRS ensemble**
- **Technical issues**
- **Safety issues**

SPIRAL 2 LAYOUT




Ground floor: ~1500 m²
CIME
LIRAT
DESIR
underground: ~750 m²
F. Delalee, CENBG

DESIR building

Ground-floor: ~ 1500 m^2

* experimental area: 1500 m^2
* laser room: 30 m^2
* stable ion source + RFQ cooler/buncher: 15 m^2

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* Control room: 20 m^2
* Acquisition room: 30 m^2
* Meeting room: 25 m^2
* Kitchen: 12 m^2

DESIR building

Underground (?): ~ 750 m^2

* technical workshop: 40 m^2
* grey room: 15 m^2
* grey room: 25 m^2
* assembling area: 25 m^2
* assembling area: 30 m^2
* assembling area: 40 m^2
* storage area: 4*10 m^2

* racks for operation: 30 m^2
* HV supplies (beam lines): 30 m^2
* HV supplies (equipments): 30 m^2
* power supplies (c/c racks): 10 m^2
* electricity room: 15 m^2

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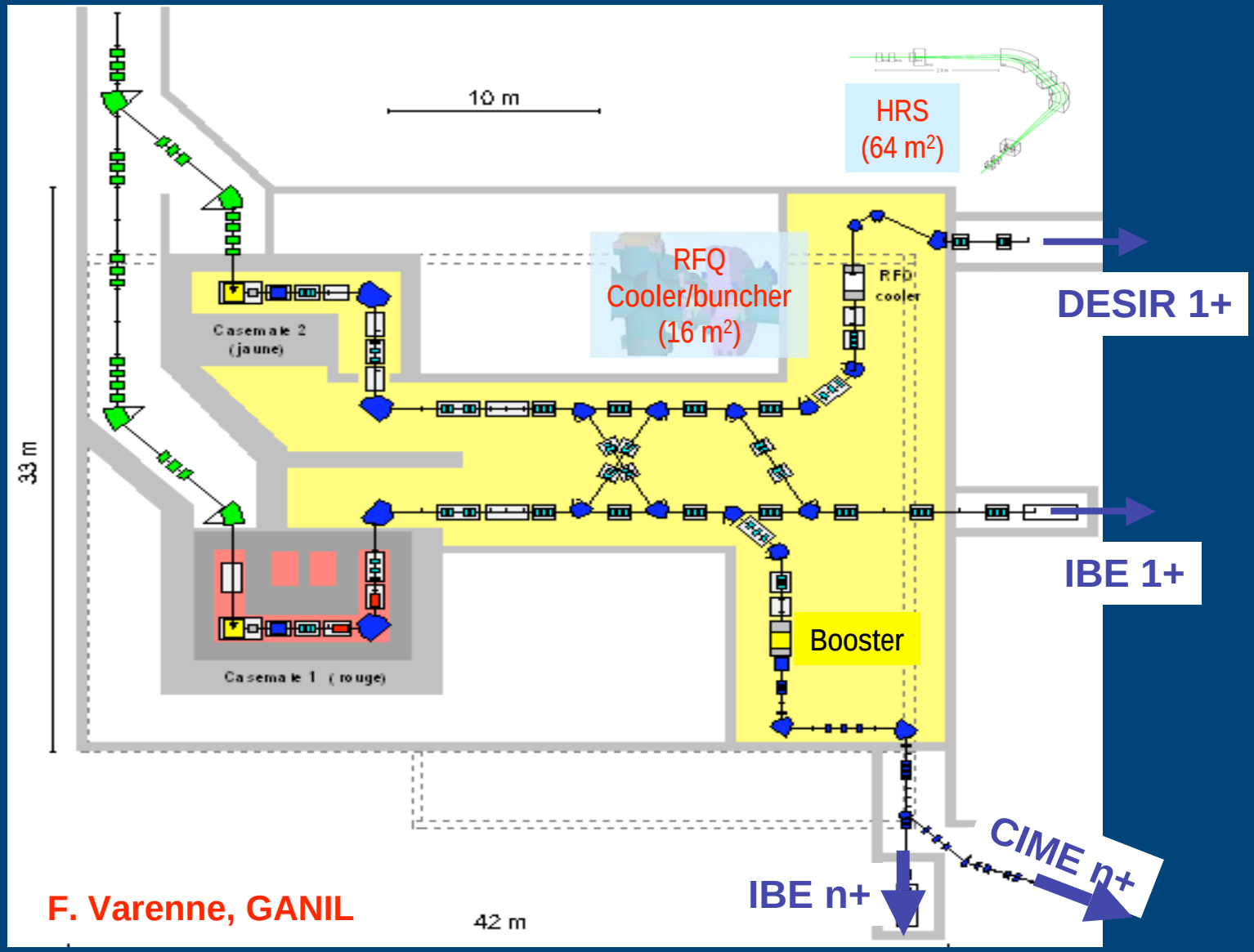
* liquid nitrogen tank (outside)
* gas storage (baloon?)

RFQ-HRS ensemble



F. Varenne, GANIL

Technical issues

DESCRIPTION		
	Responsable	Gilles BAN
	Activité	RFQ cooleur
	Description de l'activité	mise en paquets et refroidissement des faisceaux
	N° Téléphone	02 31 45 24 21
	courriel	ban@lpccaen.in2p3.fr
	Implantation	à décider, probablement bâtiment production, côte DESIR
	Remarques	
	Taille :	16 m2
	servitudes :	air comprime + He, Ne, Ar réseau informatique électricité 220V électricité de puissance système de récupération de gaz eau de refroidissement eau de ville climatisation azote liquide

>> Next step (early 2008): precise description of the different elements + supply requirements + accesses + safety

Technical issues

Gas handling: storage, filtration, release

* preparation:

  - 5 RFQ * 1 m3 * 5 interventions/an = 25 m3/an

  - beam lines : (Φ_{16cm}*300 m = 6 m3) * 5 interventions/an
    = 30 m3/an

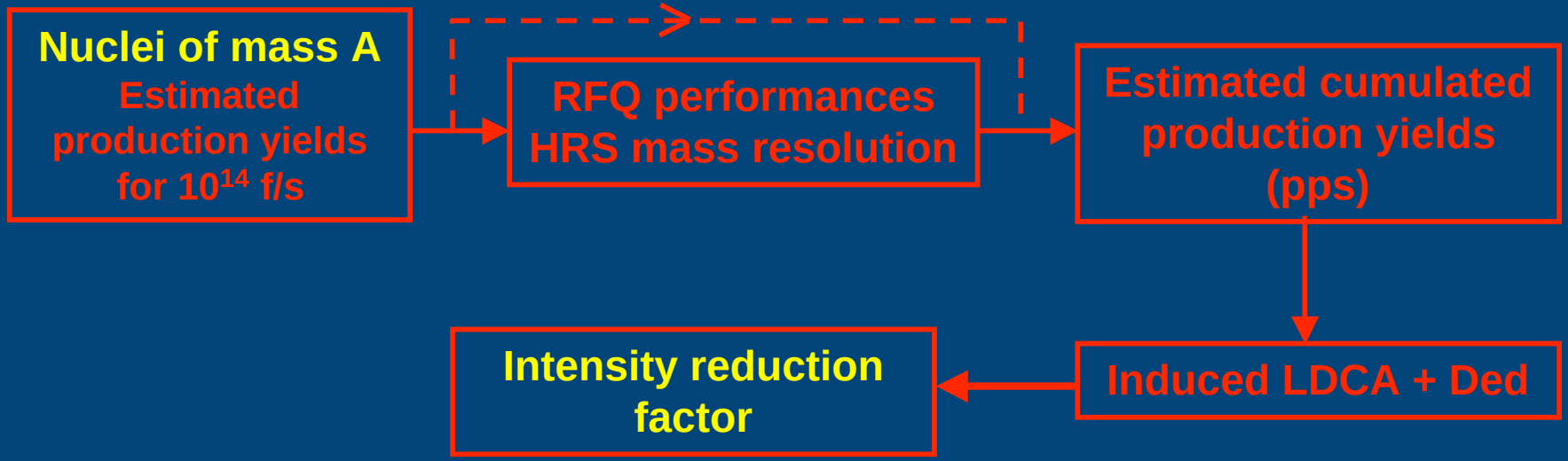
* permanent: (5_{RFQ} * 5 m3/an) = 25 m3/an

>> global: 25 m3/an (permanent) + 55 m3/an (preparation)

Safety issues

Readily accessible experimental areas >> Green zone

- **Ded < 25 μSv/h**
- **LDCA < 1**



Safety issues

Nuclide	Yield (10^{14} f/s)	Cumulative Yield	Induced LDCA	Intensity reduction	RFQ rejection factor	HRS masse resolution ΔM(A;N,N-1)	ΔM(A;N,N-2)	ΔM(A;N,N-3)	ΔM(A;N,N-4)	ΔM(A;N,N-5)	ΔM(A;N,N-6)
^{78}Ni	4,E+05	4,E+05	<1			1,E-04	3,E-04	4,E-04	5,E-04	5,E-04	6,E-04
^{78}Cu	2,E+08	2,E+08	<1			2,E-04	3,E-04	4,E-04	4,E-04	4,E-04	
^{78}Zn	8,E+09	8,E+09	2	2		9,E-05	2,E-04	2,E-04	3,E-04		
^{78}Ga	3,E+10	4,E+10	8	8		1,E-04	1,E-04	2,E-04			
^{78}Ge	1,E+10	5,E+10	11	11		1,E-05	7,E-05				
^{78}As	5,E+08	5,E+10	5	5		6,E-05					
^{78}Se	2,E+06	5,E+10	0								
Total	5,E+10	2,E+11			?						

- systematics performed for $66 \leq A \leq 172$ (n-induced fission)
- RFQ performances and HRS mass resolution?
- Ded to be considered

>> impact on scientific program?

>> local gas storage before further treatment?

>> DESIR safety report to be produced before June 2008

LDCA

$$LDCA = \frac{1}{(1/(lae/d/t)) * Dpui}$$ (Bq / m³)

Lae : Annual limit for the external exposure : 20 mSv

- **d : Standard pulmonary flow : 1.2 m³/h**
- **t : Work time for 1 year : 2000 h**
- **Dpui : Sv/Bq (given by the regulation)**