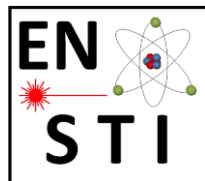




# CERN-MEDICIS Status and plans for 2017


Thierry Stora – ISCC 27<sup>th</sup> June 2017

Acknowledgements : S. Marzari, A. P. Bernardes, K. Kershaw, R. Catherall, J. Voltaire, S. Prodon, K. Johnston, U. Koster



# New radioisotopes in medicine

Vienna, February 10, 2017



**EANM Executive Office**  
 Schmalzhofgasse 26, 1060 Vienna, Austria  
 Tel: +43-(0)1-890427, Fax: +43-(0)1-890427-9  
 E-mail: office@eanm.org, URL: www.eanm.org

**CERN-MEDICIS**  
 "Studies for the production of key radioactive isotopes for medical diagnostics"




2015

**Advanced Accelerator Applications (AAA) Announces Pivotal Phase 3 NETTER-1 Study of Lutathera in Patients with Midgut Neuro Endocrine Tumors Meets Primary Endpoint and Data will be Presented in Presidential Session at the European Cancer Congress 2015**

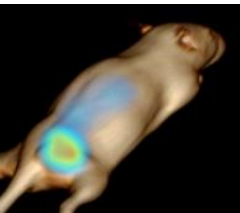
-- FDA Grants Priority Review to AAA's New Drug Application for Somakit-TATE, Lutathera's companion PET (Positron Emission Tomography) Diagnostic --

Sept 2015

<sup>177</sup>Lu SPECT/CT

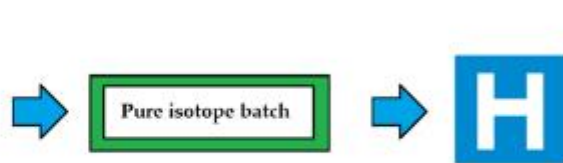
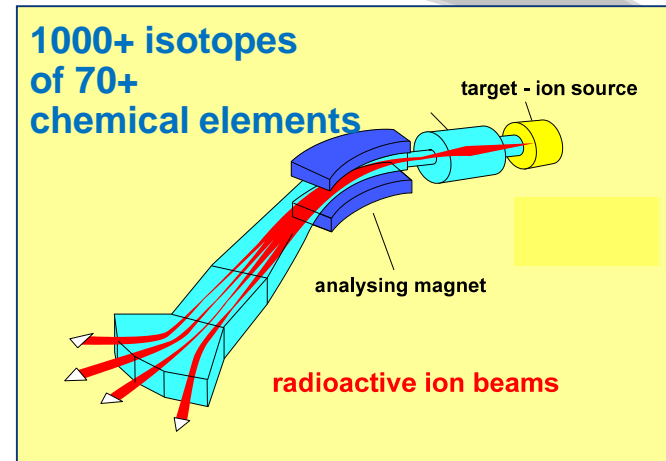
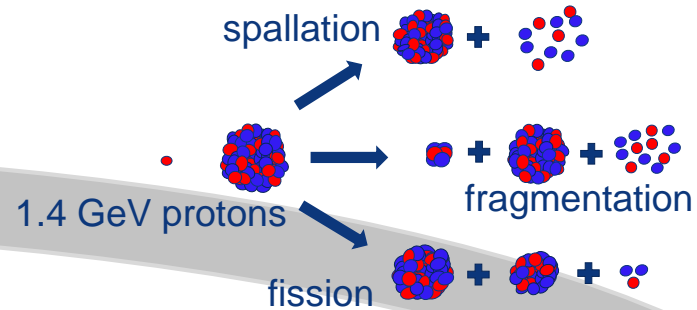
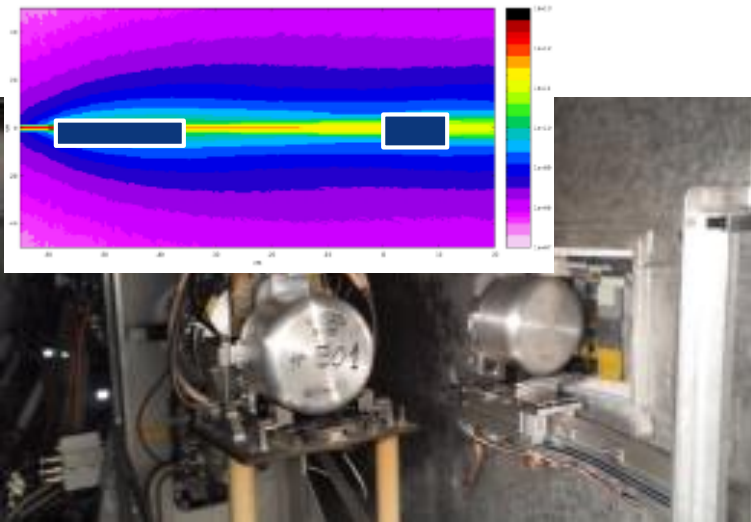


Tb 149	Tb 152	Tb 155	Tb 161
4.2 h, 4.5 h	4.2 h, 17.5 h	5.32 d	6.90 d
1.18 MeV	1.18 MeV	1.18 MeV	1.18 MeV
1.18 MeV	1.18 MeV	1.18 MeV	1.18 MeV
1.18 MeV	1.18 MeV	1.18 MeV	1.18 MeV



C. Muller et al. *pnmed.112.107540v1*  
 F. Bucchegger et al.

# CERN-MEDICIS Principle: Isotope production in the HRS beam dump and mass separation in the lab



# The facility today and the remaining Work Packages

Groundbreaking ceremony  
3rd September 2013

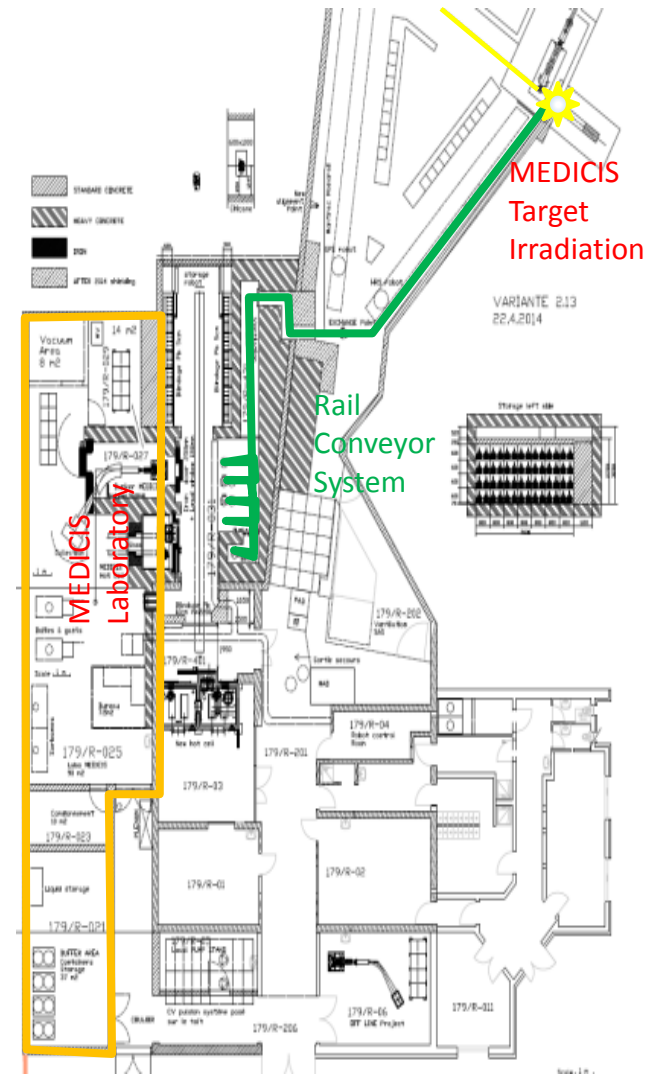


Building reception  
15th October 2014

Installation of beamline and laboratory:  
ongoing

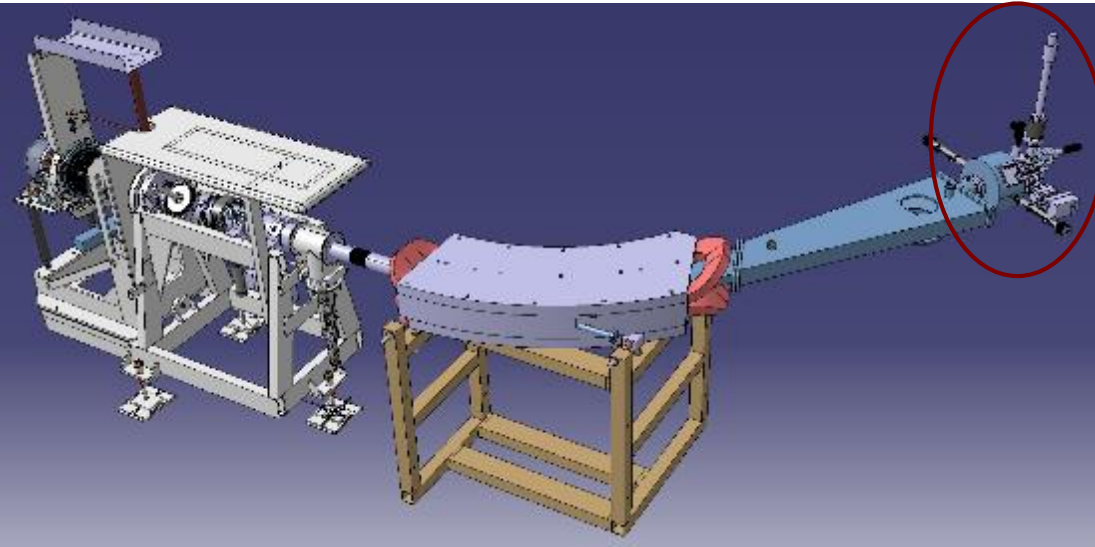
Commissioning & start-up end 2017 \*

*\*Pending budget, management and safety clearance*

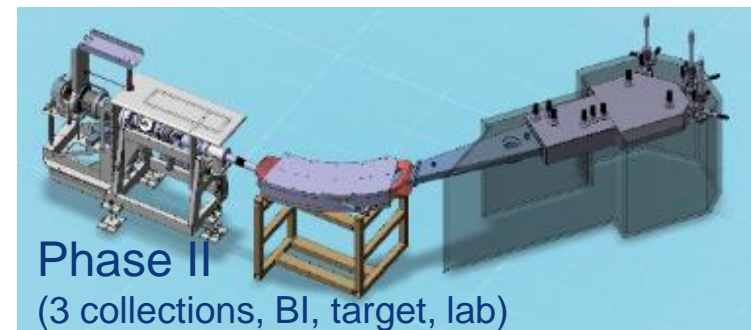
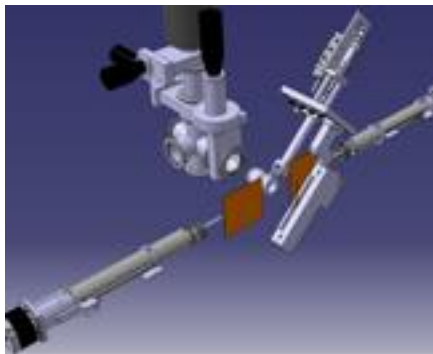


# From the last project review : Phase I + Phase II

## EDMS 1572421



- 1 collection point
- Standard target design
- Standard beam instrument box
- Laboratory with reduced equipment



# Some milestones



Ventilation and cooling



Magnet from Leuven refurbished

Personal Protection System (PPS):  
Commissioned last week



Remote handling : Robot + Rail Conveyor

		/ MLD
14:48	UNSEL	Target #596 removed from the HRS Front End. Target #597 installed on the HRS Front End.  Thanks to all no access in the target area as the target as been delivered from MEDICIS by the MONTRAC
		/JLG/CM/GL/AM

# Detailed planning review

## MEDICIS Planning review

Wednesday 17 May 2017, 16:00 → 17:50 Europe/Zurich

26-1-022 (CERN)



Planning-1.pdf

Planning-1.pptx

Planning actualisé 15.05.2017		avril 2017		mai 2017		juin 2017		juillet 2017		août 2017		sept. 2017		octobre 2017		novembre 2017		décé																				
		14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	5
Taches																																						
	RESPONSABLE																																					
5b	Robot Medicis: tests avec points d'échange programmation et tests	programmation trajectoires				tests interfaces PPS				----->																												
19a	Finir Montrac + Tests	modifications mécaniques				tests interfaces PPS																																
31	Frontend, Boris Tube et services (air comprimé, power, control, water)	cablage Boris T.				syst. refr. Boris T. connections services				conn. Eau		Align. final																										
31a	System Gaz et patch pannel HT	Pascale+Erman.+Christ.				définition				production		Installation																										
13	Lisol Magnet séparateur, water connection, diffuseur et rebouchage	Vincent+Julien+Yury				install. alimentations et contrôles				Chassis diffuseur		conn. Eau		Align. final		Rebouchage																						
18a	Mise en service final ventilation + process	Alexandre								Modif. ventilation Process		Mise en service full 179																										
20b	PPS Access Medicis	Eva+Didier				installation et cablage				test interfaces		Mise en service																										
21	General Safety MEDICIS	Ana-Paula+Denis																																				
22	Radioprotection MEDICIS	Alexandre+Ali																																				
23	Upgrade réseau secours et UPS et armoire de distribution R-023	René Necca+Ana-Paula				installation armoire R-023																																
25	Adaptation Hot Cell ISOLDE	Ana-Paula+Paul				Modification SAS hot cell pour Robot																																
26	Vacuum decay et storage Tanks	Vincent				design Decay tubes				Delivery and install. Tanks and decay tubes																												
28	Vacuum Equipment (intégration, piping, valves, pumps etc.) et control	José+Abel				intégration, piping, chassis pompes primaires				install. équipement				install. équipement																								
8	Chemins de câbles et cablage	Georgi				installation Racks+chemins				Cablages				Chemins de cables Bunker																								
29	Power Equipment, HV et contrôle	Julien				installation				install. porte				Tests P				Tests HT																				
32a	Diagnostic box, contrôle et Chassis	Vinc.+Will.+Gerrit+Yury				-----> production				Chassis				installation		mise en service contrôle																						
32b	Collection system	Stefano+Christophe				final design				Production				Installation et tests																								
32c	Peripheral shielding	Keith+Stefano				Specification				order				installation																								
32d	Transfer Trolley	Keith+Stefano				Specification				order				delivery																								
33	Laboratory Equipment (sorbonne, pailasse, etc...) et antichambre	Nhat-Tan				-----> Specification				order				Livraison sorbonnes, installation, tests																								
33a	Radio chimie Module (mock up, et final design)	Bernard				-----> définition, mock up tests				final design		order		delivery																								
33b	Antichambre de la sorbonne	Keith+Stef.+Nhat-tan				définition				order				installation																								
33c	Radioactive storage et Complementary shielding pour fume hood	Nhat-Tan				définition				design				order				delivery																				
33d	Quality control, packing, shipping	??				définition				design				order				delivery																				
38	Interlocks	Pascal				-----> définition				install. boitier				cablage																								
37	Contrôle ligne MEDICIS	Cedric				-----> définition				-----> mise en service, tests																												
	FINAL COMMISSIONING	Thierry				----->																																

# Tentative commissioning & operation planning

- Starting-up:
  - Stable commissioning in September
  - Start with low isotope activities irradiated at CERN and at ILL (169Er) in October/November.
  - Meeting soon to clarify Collab budget + start-up

Plans - 14th May 2017 - T. Stora		Resources/responsible		MEDICIS Operation and Commissioning																											
				Calendar																											
				22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
<b>V1.0</b>				June						July				August				September				October				November				December	
<b>Separator Commissioning with stable</b>		STI-Promed-OP																													
Test target prod (Isolde geometry, high density) subsystems																															
beam commissioning																															
<b>Separator Commissioning with radioactive</b>		STI-Promed-OP																													
target irradiation																															
target coupling																															
beam separation&shipping																															
<b>Protons to ISOLDE HRS neutrons at ILL (for 169Er production)</b>		PH-UIS/Johnston (11/05)																													
<b>Isotope Production at MEDICIS</b>		ILL/Koster																													
target prod		STI/contractor																													
target irradiation		STI/																													
beam separation&shipping		STI/ RP																													



# Safety clearance

- Descriptive and draft demonstrative parts of the safety file has been handed over and comments received.



TECHNICAL MEETING 26 APRIL 2017

Wednesday 26 Apr 2017, 09:00 → 17:30 Europe/Zurich

24-1-016 (CERN)

09:00 → 09:15 **Café de bienvenue** 15m

09:15 → 10:30 **Discussion dossier de sûreté MEDICIS** 1h 15m

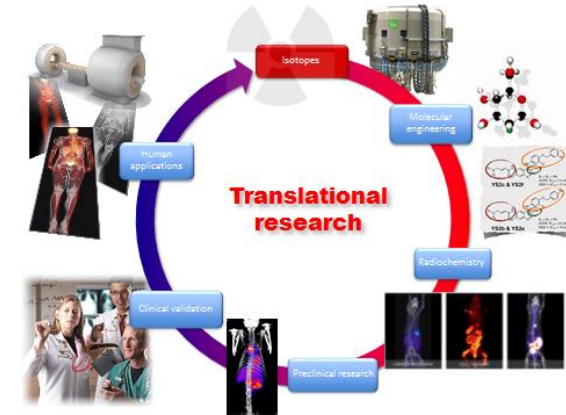
Speakers: Ana-Paula Bernardes (CERN), Joachim Vollaire (CERN), Thierry Stora (CERN)

Technical\_meeting... Technical\_meeting... VOLLAIRE-RP-MED... VOLLAIRE-RP-MED...

- Request to visit by OFSP, the Swiss authorities, for end of August/beginning of September.

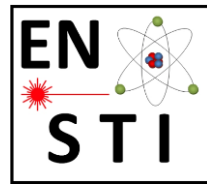
# CERN-MEDICIS partners

- Dr. Forni (Clin. Carouge, Geneve)
- Prof. Morel, Prof. Buehler, Prof. Ratib\* (HCUGE, Geneve)
- Prof. R. Jolivet ( CERN/UNIGE, Geneve )
- Prof. D. Hanahan (ISREC, EPFL, Lausanne)
- Prof. J. Prior (CHUV, Lausanne)
- Prof M. Huysse, prof. P. van Duppen, prof. T. Cocolios (KUL, Univ. Leuven)
- Prof. S. Lahiri (SINP, Kolkata)
- Prof. A. Goncalves, Prof. A. Raucho (CT2N, Lisbon)
- Prof. F. Haddad (ARRONAX)
- Dr. F. Bruchertseifer, Dr. A. Morgenstern (JRC-ITU, Karlsruhe)
- Prof. S. Judge, Prof P. Regan, (National Physical Laboratory, Surrey)
- Dr. N. Vd Meulen, Dr. C. Mueller (Paul Scherrer Institut, Villingen)
- Dr. U. Koester (ILL, Grenoble)
- Prof. Siem (Univ. Oslo)
- Prof. Wendt (Univ. Mainz)
- FABIS (if grant)
- EANM (under discussion)
- ISOLDE GL (ex-officio)

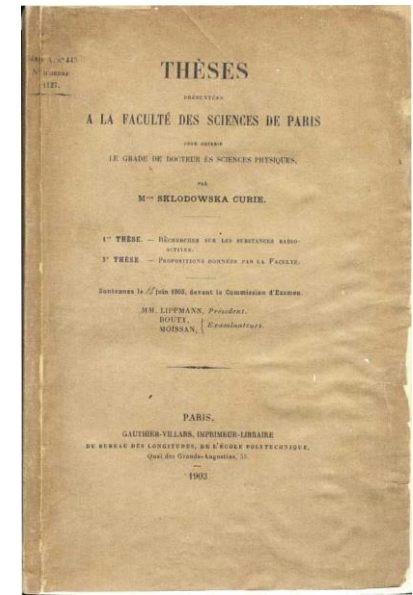


"Noah, tell me again who's your project sponsor?"

See you at 4pm for the visit



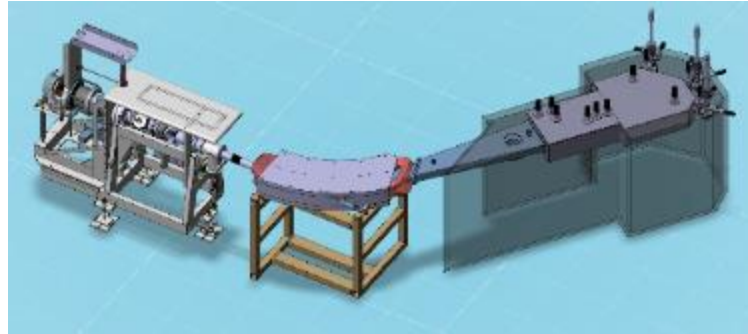
Thank you



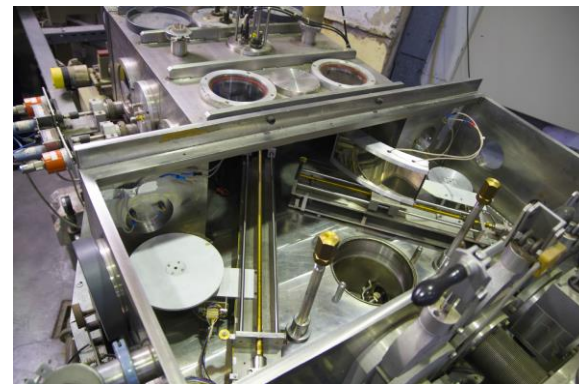
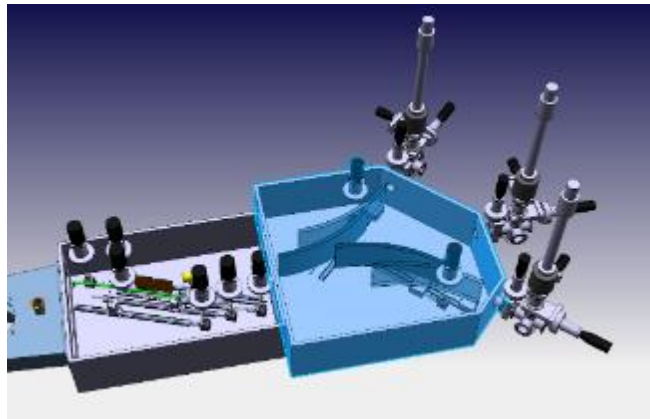
# RESERVE



# Phase II : New systems



3 collection points:  
Electrostatic switchyard  
Beam diagnostic box



# Phase II : remaining work packages

Table edited from detailed discussions with WP holders  
Included in Management Report EDMS 1572421  
In circulation next week

LISOL Separator	WP holder	Budget	Manpower
Target	S. Marzari EN-STI	60	1 FTE missing
Switch Yard	S. Marzari EN-STI	120	Available
Collection Chamber	T. Stora EN-STI	100	Available
Wide range Instrumentation box	W. Andreazza BE-BI	100	Available
Laboratory Equipment	T. Stora EN-STI	180	Available

Total: 0.6MCHF

Presently not available

Pending decision from ATS sector management

# Phase I : Planning

Work Package/Planning	16-I	16-II	16-III	16-IV	17-I	17-II	17-III	17-IV
<b>PHASE I</b>								
Ventilation				DSO t				
Safety alarm systems								
RP monitoring								
Shielding, air locks								
Access/interlock								
Safety file			File	Review	Permit			
Power converters				*				
Cooling								
Magnet								
Target								
Front End								
Collection box								
Beam Instr box		standard						
Separator control								
Vacuum								
Lab equipment								
Commissioning								
<b>Operation</b>								<b>Phase I</b>

Table edited from detailed discussions with WP holders

Included in Management Report EDMS 1572421

In circulation next week for approval by GLs

\* Synergy with ELENA project