

# TANGO AT LULI

## TUPDP012

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#### ABSTRACT

Here is a synthetic view of the Apollon facility, from network to hardware and from virtual machines to software under Tango [1] architecture. We can here have an overview of the different types of devices which are running on the facility and some GUIs developed with the exploitation team to insure the best possible way of running the lasers.

#### PURPOSE

Remote control of 300+ Tango Control Systems devices including cameras, motors, gauges, calorimeters,... and experimental diagnostics.

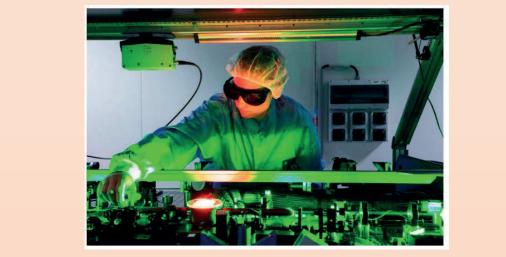
#### TANGO-CONTROL ADVANTAGES

Multi-languages, OS independent and tools for management and monitoring

#### **KEY FIGURES**

#### **APOLLON FACILITY**

- The Facility covers about  $\bullet$ 4,500 m<sup>2</sup>
- LASER hall in an ISO8 cleanroom
- Experimental rooms cover surfaces of 280 m<sup>2</sup> and 490 m<sup>2</sup> (allowing focal lengths of several tens of meters).
- 5 m-thick concrete walls provide full radio protection.

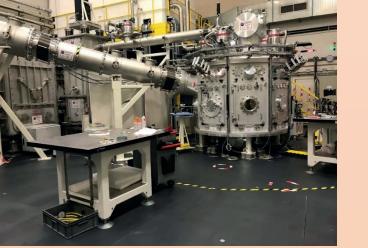




Control room



Compression and switchyard laser subsystem



Short Focal Area (210 m<sup>2</sup>)

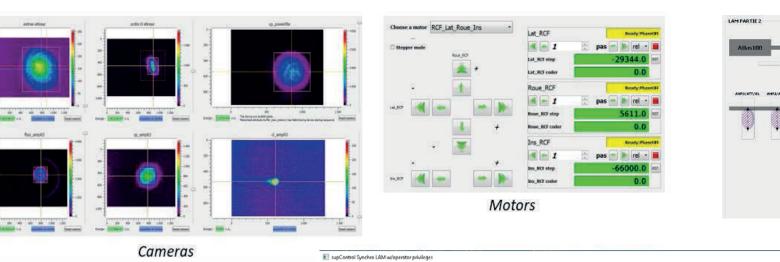
#### VERSIONS CURRENTLY USED

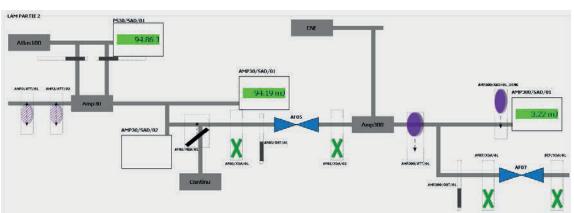
C2S Devices	Vacuum Devices (Soleil)
64-bit Windows 10	64-bit Linux Ubuntu 14.04 LTS 6
Python 3.8	Tango 9
Tango 9	NI LabView 2016
PyTango 9	
NI LabView 2022	
Currently updating to	
64-bit Windows Server 2022	
Datacenter on vSphere web client	
Archiving	GUI
Linux Ubuntu 20.04 LTS	Windows 10 64-bit
Tango 9.3.4	Python 3.8
HDB++: Devices version 2.0.0, GUI	Tango 9.3
Configurator version 3.1.1	PyTango 9.3
BDD: MySQL	PyQt5

Devices in operation	April 2019	April 2021	December 2022	Updated Estimation
Hypervisors	7	7	6	<8
Virtual Machines	33	49	54	60
Control stations	18	41	43	~50
CCD: laser beam CCD: plasma <u>diag</u> CCD: live exp. setup	42	59 12 8	62 12 8	~80 12(*) 8(*)
Calorimeters	16	18	19	>20
Motor channels: laser Motor interaction chamber Motor: diagnostics	66	93 25 ~15	100 ~50(*) 20	120 ~60(*) 30
Delay generators	10	12	12	~14

\* : Depending on campaigns

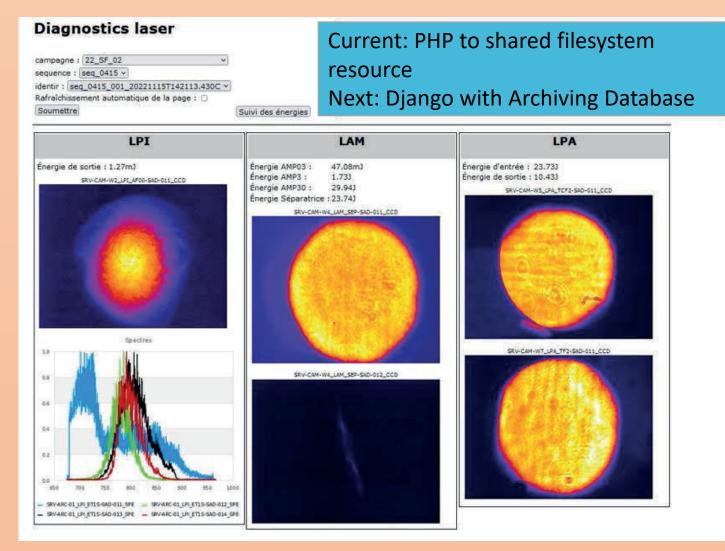
#### GUIS





Cameras	📧 supControl Synchro LAM w/operator privileges												- 0 X	📓 AtkPanel 5.4 : LPI_ETIS/SAD/011_SPE 🛛 🗆 🗡
a de la constante	Help Timing chart Save Load	(background-colors:	Off Limits DiffA	Warning <mark>Alert</mark>										File View Preferences Help
	Channel Info-diags' identification	Enable Mode	(CTRL) Tr	rig (CTRL)	Freq. (C	TRL) Ref.	(CTRL)	Delay (ms)	(CTRL)	Amplitude	(mV) (CTRL)	Impulse's width (m	s) (CTRL)	LPI_ET1S/SAD/011_SPE
555 WALLARD 2012	T1: SS1 vers E/S SSS	SEQ 🔹	(SEQ) 10	Hz 7	<b>\$\$1 •</b> (\$5	S1) TØ •	(10)	400,00000000	÷ (400.00000000)	5000	: 🔹 (5000)	10,000000	(10.000000)	Connected to the devJAZ device
datus Nakatrinkutering Dit.	T2:	TRIG .	(TRIG) 1/1	min - (1/min)	SS1	T0 •	(T0)	2,50000000	: (2.500000000)	5000	: (5000)	10,000000	(10.000000)	
Parves - Derver - Derver - Derver	T3:	TRIG .	(TRIG) 0.1	1Hz • (0.1Hz)	SS1 · ····	то -	(T0)	3,500006000	+ (3.500006000)	5000	÷ 🔹 (5000)	0,050000	(0.050000)	
And the second s	T4: Oscillo Amp-0.3 et 3.0	TRIG .	(TRIG) 1/	min • (1/min)	SS1	T0 -	(T0)	3,500150000	÷ (3.500150000)	5000	: (5000)	0,050000	(0.050000)	2° • • •
NALMAN - PERMIT - MUNICIPAL PROPERTY - MUNICIPAL PROPERTY - PERMIT	T5: PowerLite_flash	TRIG .	(TRIG) 10	Hz • (10Hz)	551	тю -	(T0)	3,186850000	: (3.186850000)	4000	. (4000)	0,010000	(0.010000)	·····
PRIMATE PRIMATA	T6: PowerLite_qswitch	TRIG .	(TRIG) 10	Hz • (10Hz)	SS1 ·	T5 •	(T5)	0,313137000	÷ 🛛 (0.313137000)	4000	÷ (4000)	0,010000	(0.010000)	1-
SFICI INTERNATIONAL	T7: Atlas12_clk	TRIG .	(TRIG) 1H	z • (1Hz)	SS1	T0 •	(T0)	2,999560000	: (2.999560000)	5000	: (5000)	0,050000	(0.050000)	
ENCEINTE DE TIR SFA SELLIMON SILLIMON SILLIMON SILLIMON SILLIMON SILLIMON SILLIMON	T8: Atlas12_trig	TRIG -	(TRIG) 0.1	1Hz • (0.1Hz)	SS1 · ···	то -	(T0)	2,999000000	+ (2.999000000)	5000	÷ (5000)	0,100000	(0.100000)	
	T9: Amp1_pokels_on	TRIG .	(TRIG) 10	Hz • (10Hz)	SS1	T0 •	(T0)	3,500057000	: (3.500057000)	5000	: (5000)	0,050000	(0.050000)	
	T10: Amp1_pokels_off	TRIG .	(TRIG) 10	Hz • (10Hz)	551	тю -	(T0)	3,501000000	: (3.501000000)	5000	: (5000)	0,050000	(0.050000)	0.5
	ON Change Laser Emission RF	Freq: 30.0MHz		900 700 600			~~ *						-RF frequency -RF amplitude	Latte manufactor
Vacuum	Device: Ext Change Clock		RF Amplitud	500 le: 767.12mV 400 300										and the second sec

#### DEDICATED WEBSITE FOR FINAL USERS

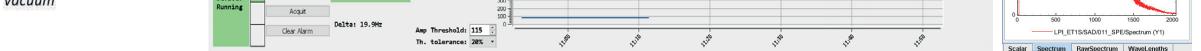


NEXT

Interested? Come and join us for an internship or contract!

#### AKNOWLEDGMENT & REFERENCES

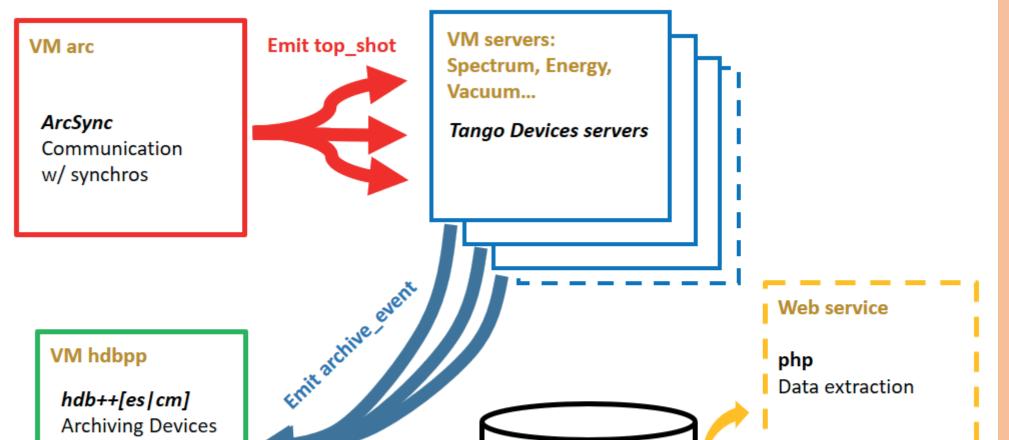
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#### MONITORING & ISSUES TRACKING

LAM_C2S/DLY/001_GFT	i LAM_AMP3/SAD/011_CAL	I LPI_ET1S/SAD/012_SPE	LAM_P03/SAD/021_CCD		i LPO_P300/SAD/052_CCD	TUR						
i LAM_C2S/DLY/002_GFT	i LAM_AMP30/SAD/011_CAL	i LPI_ET1S/SAD/013_SPE	i LAM_PS03/SAD/011_CCD	i LPI_ET1S/SAD/011_CCD	i LPO_P300/SAD/061_CCD							
i LAM_C2S/DLY/003_GFT	i LAM_AMP300/SAD/011_CAL	i lpi_et1s/sad/014_spe	I LAM_PS300/SAD/011_CCD	i LPI_ET2S/SAD/011_CCD	i LPO_P300/SAD/062_CCD							
i LPA_C2S/DLY/001_GFT	i LAM_AMP300/RET/011_CAL	[	i LAM_PS300/SAD/012_CCD	i LPI_ET2S/SAD/021_CCD	i LPO_P30/SAD/011_CCD					Wiki Activité	Connexion Feuille de route Explorateur de sou	
i LPI_C2S/DLY/001_GFT	I LPA_TCF2/SAD/011_CAL	LPI_XPW/MIR/011_PZO	I LAM_PS30/SAD/012_CCD	i LPI_ET2S/SAD/031_CCD	LPO_P3/SAD/011_CCD	wiki: WikiStart	- 10					
LPI_C2S/DLY/002_GFT	i LPA_TF2/SAD/011_CAL	i LPI_XPW/MIR/012_PZO	LAM_PS3/SAD/011_CCD	LPI_HCP/SAD/011_CCD	i SFA_SFBF2/SAD/011_CCD	Bienvenue sur le Trac "C Généralités	c "Controle-C	commande Supe	ervision" wp8			
LPI_C2S/DLY/000_GFT	i LPI_AF00/SAD/011_CAL	i LPO_Atlas12/MIR/011_PZO	i LAM_PS3/SAD/021_CCD	i LPI_OP1P/SAD/011_CCD	i SFA_SFBF2/SAD/012_CCD		loppeurs en relat	ion avec le WP8 (Cont	trôle-Commande Acquisit	tion) de déposer et d'échan	ger les informations de développe	ments.
SFA_C2S/DLY/001_GFT	i LPI_AMP3P/SAD/011_CAL	i LPO_Atlas12/MIR/012_PZO	i LAM_SEP/SAD/011_CCD	i LPI_PBCP/SAD/021_CCD	i SFA_SFIC1/SAD/011_CCD	Accès vers la page des alias o Règles de codage et de nommag		améras, moteurs, éne	ergies, synchro sur les m	osaïques et Custom GUI.		
SFA_C2S/DLY/002_GFT	I LPI_ET1S/SAD/011_CAL		i LAM_SEP/SAD/012_CCD	i LPI_PBCP/SAD/031_CCD	i SFA_SFIC1/SAD/021_CCD			e des Device Servers	Tango) doivent être effe	ctués à l'aide des template	s suivants :	
	i LPI_HCP/SAD/011_CAL	i LAM_AF01/SAD/011_CCD	i LPA_CF2/SAD/011_CCD	LPI_XPW/SAD/011_CCD	i SFA_SFTF2/SAD/011_CCD	Gestion						
LPA_CF1/SFW/001_SEQ	i LPI_OSCS/SAD/011_CAL	i LAM_AF01/SAD/021_CCD	i LPA_CF2/SAD/012_CCD	i LPI_XPW/SAD/021_CCD	i SFA_SFTF2/SAD/012_CCD	des 🚱	3					
LPA_CF2/SFW/001_SEQ	i LPI_PBCP/SAD/021_CAL	i LAM_AMP03/SAD/021_CCD	i LPA_TCF2/SAD/011_CCD	i LPO_P300/SAD/011_CCD	- test	incidents 🌱						
LPA_TF1/SFW/001_SEQ	LPO_P3/SAD/011_CAL	I LAM_AMP03/SAD/031_CCD	LPA_TCF2/SAD/021_CCD		C2S/DAEMON/001_MOT	Accueil					cidents, par l'intermédia	ire de tickets. changer avec l'utilisateur jusqu'à la clôtu
LPA_TF2/SFW/001_SEQ	i LPO_P30/SAD/011_CAL	i LAM_AMP300/SAD/011_CCD	LPA_TF2/SAD/011_CCD	i LPO_P300/SAD/021_CCD		Nouvel incident						
SFA_SFIC1/SFW/001_SEQ	i SFA_SFTF2/SAD/011_CAL	i LAM_AMP300/SAD/012_CCD	i LPA_TF2/SAD/012_CCD	i LPO_P300/SAD/022_CCD	i C2S/DAEMON/001_VID	Vos incidents(4)						Tous les incident
SFA_SFTF1/SFW/001_SEQ		i LAM_AMP30/SAD/011_CCD	i LPI_AF00/SAD/011_CCD	i LPO_P300/SAD/031_CCD		∫ <sup>®</sup> Å traiter (1)♠	Numé	ro Technicie	en Demander	ur Catégorie	Sous-catégorie	Installation
SFA_SFTF2/SFW/001_SEQ			i LPI_AMP003/SAD/011_CCD	LPO_P300/SAD/032_CCD	EXP_C2S/LFA/001_AS	<b>(</b> ) Tous les états			v	v v		• •
SFA_SFTF4/SFW/001_SEQ	LPI_ET1S/SAD/011_JAZ	L LAM_AMP3/SAD/011_CCD	LPI_AMP2P/SAD/011_CCD	LPO_P300/SAD/041_CCD								
		I LAM AMP3/SAD/021 CCD	LPI_AMP3P/SAD/011_CCD	LPO_P300/SAD/042_CCD								
	LPI_ET1S/SAD/011_SPE			LPO_P300/SAD/051_CCD								





Special thanks to Tango community colleagues who shared experience and helped construct and develop Apollon Control System [1] Tango Controls website: <u>http://www.tango-controls.org</u> [2] POGO is a Tango Controls class generator

### CONTACT

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#### VM bdd (Work in progress, MariaDB & next: testing Database phase w/ 1 user) Insert into Database

### **CONFERENCE LINK**

See our other poster TUMBCMO32 in the session on DevPylon and DevVimba **Tango** devices.



Keywords: Facility installation, upgrade, TANGO, Network, GUI



