

EPFL Research Facilities

EPFL missions:

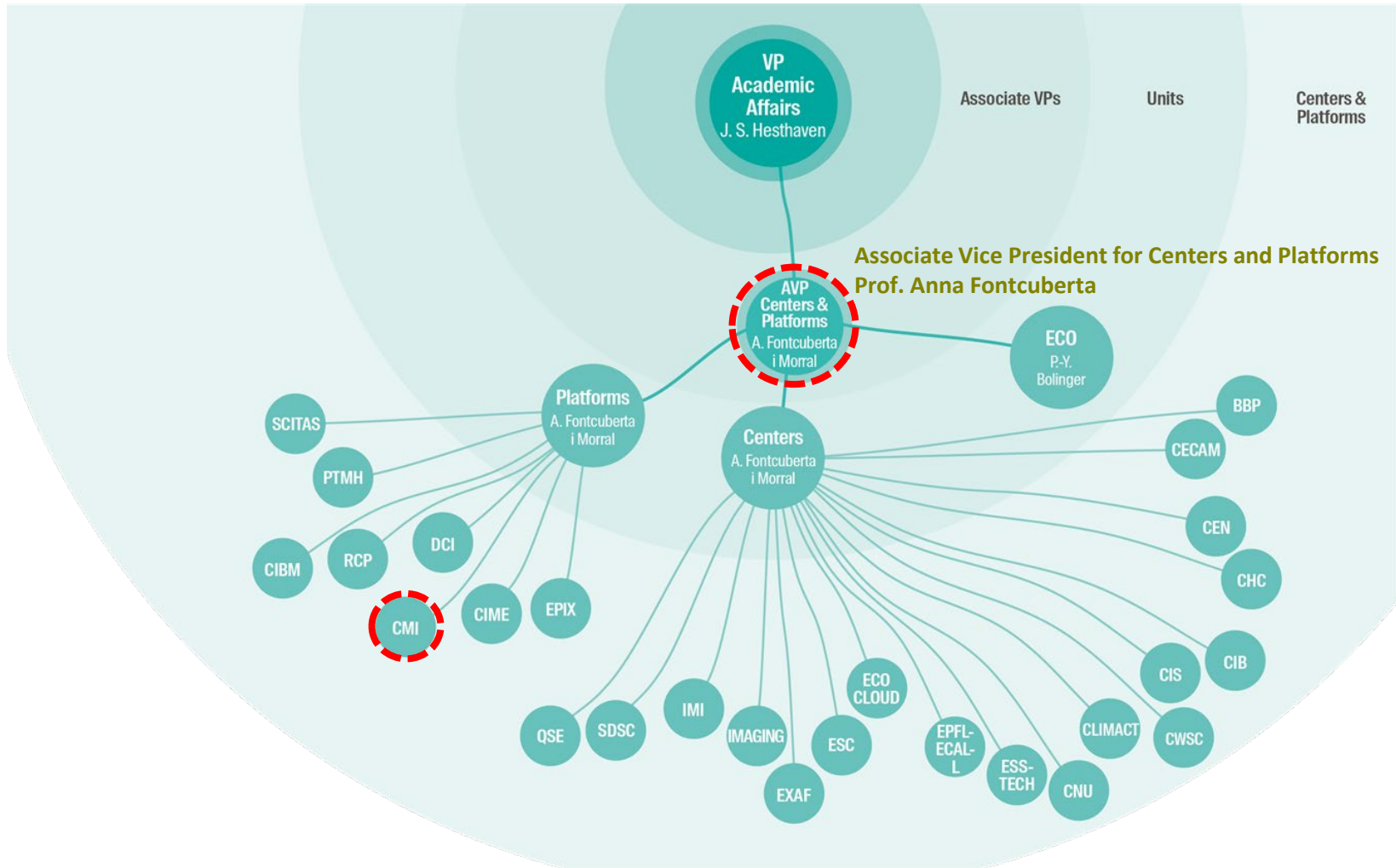
- Education.
- Research.
- Innovation & technology transfer to industry.

Shared research facilities:

- Access to cutting-edge technical equipment, instruments and tools.
- Sharing knowledge and expertise among users.
- Dedicated staff to maintain, teach and assist researchers.

EPFL Research Facilities

Associate Vice Presidency for Centers and Platforms (AVP-CP)

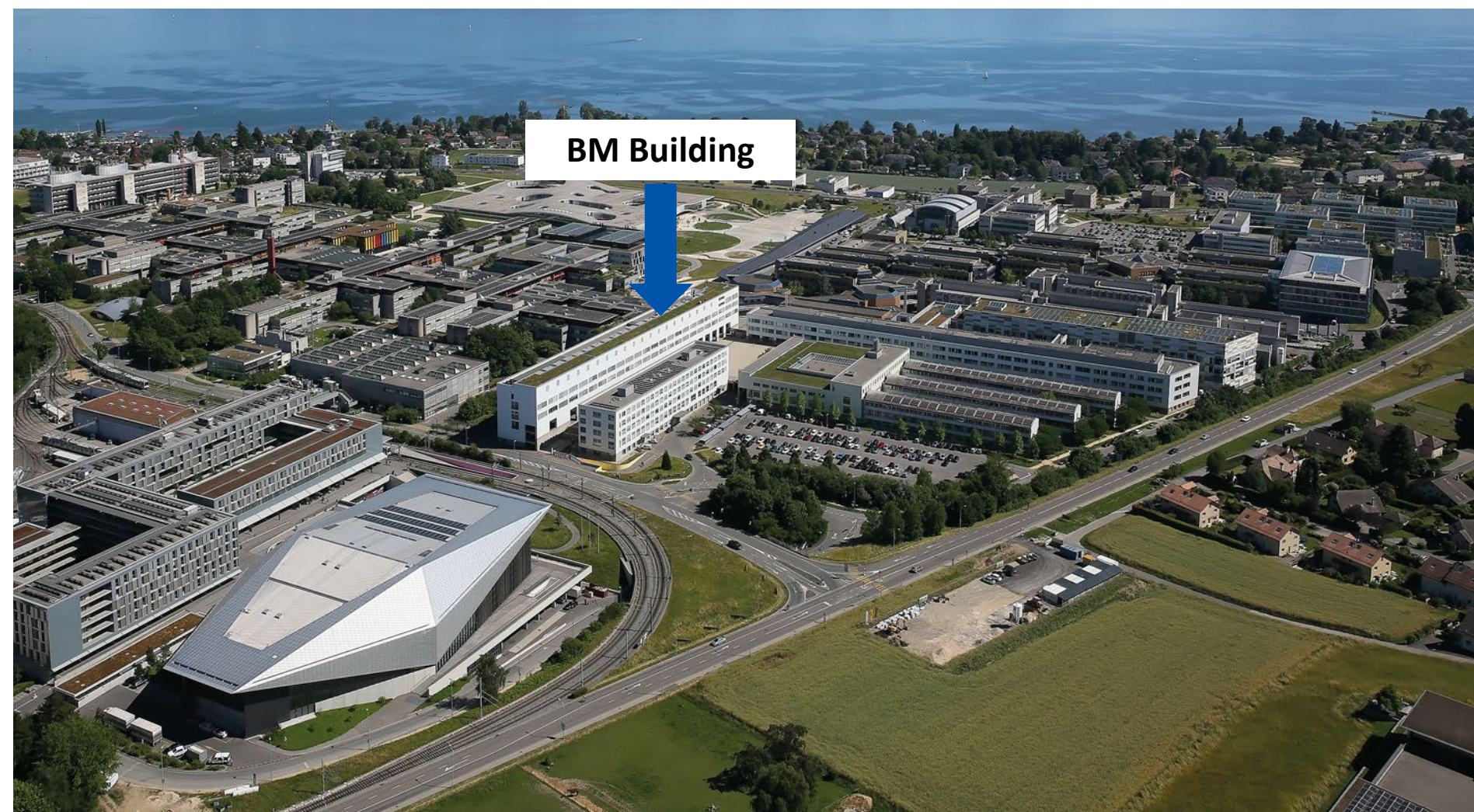


EPFL Research Facilities

CMi is one of the 8 platforms reporting to the AVP-CP

 Center for Biomedical Imaging (CIBM) 	 Interdisciplinary Center for Electron Microscopy (CIME) 	 Center of Micro-NanoTechnology (CMi) 	 Dubochet Center for Imaging (DCI) 
 Technology Platform for Hydraulic Machines (PTMH) PTMH	 Research Computing Platform (RCP) RCP	 Scientific IT and Application Support (SCITAS) 	 New! EPITAXIE (EPIX) info à venir EPIX

EPFL Center of MicroNanoTechnology (CMI):



CMi video clip

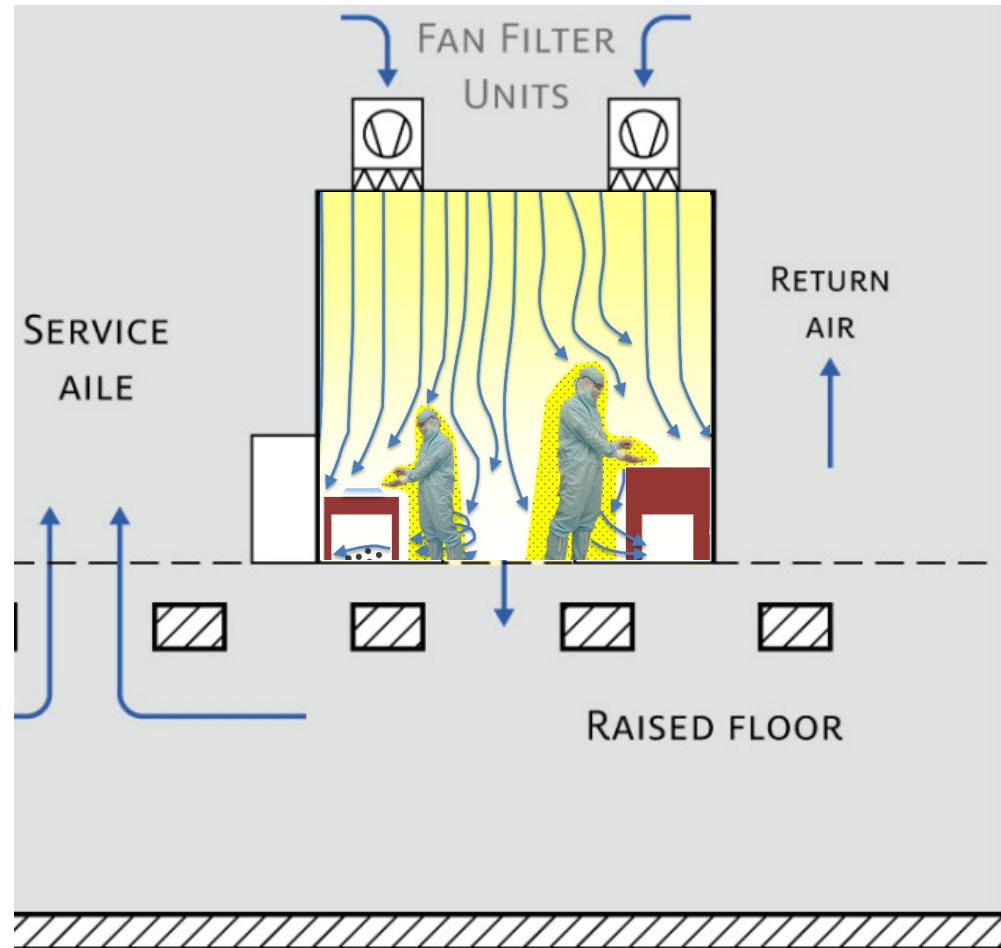
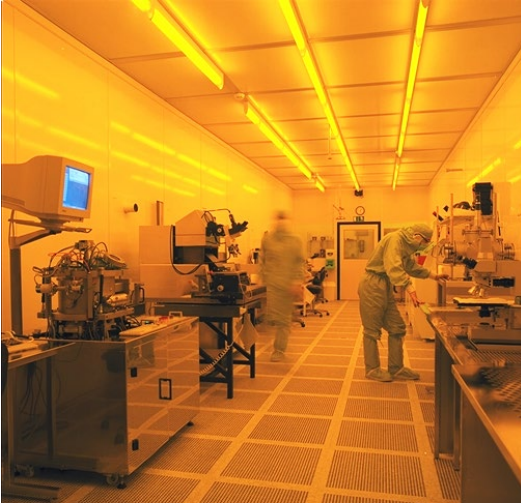


Video credits: EPFL CMi

https://www.youtube.com/watch?v=SQ8DZdX7_4w

EPFL Center of MicroNanoTechnology (CMI):

- Continuous air supply through filters. Laminar flow top to bottom.
- Tight control of working conditions (temp, humidity, UV-light)



EPFL Center of MicroNanoTechnology (CMi):

Concentration max allowed of particles (particles/m³ of air)
 Particles sizes equal or superior to that given below

(0.5um
particles/ft³ of air)

Class ISO	0.1 µm	0.2 µm	0.3 µm	0.5 µm	1 µm	5 µm	Class US FS209
ISO 1	10	2	0	0	0	0	
ISO 2	100	24	10	4	0	0	
ISO 3	1 000	237	102	35	8	0	1
ISO 4	10 000	2 370	1 020	352	83	0	10
ISO 5	100 000	23 700	10 200	3 520	832	29	100
ISO 6	1 000 000	237 000	102 000	35 200	8 320	293	1 000
ISO 7	∞	∞	∞	352 000	83 200	2 930	10 000
ISO 8	∞	∞	∞	3 520 000	832 000	29 300	100 000
ISO 9	∞	∞	∞	35 200 000	8 320 000	293 000	

EPFL Center of MicroNanoTechnology (CMI):

Cleanroom environment requires special cloth, compatible tools, lint free paper.

- Body may contaminate by:

Flakes of dead skin

Hair

Touch by hand

Breathing

- Wrong cloth may release:

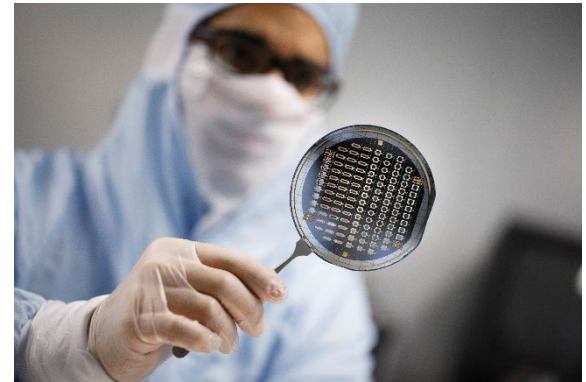
Fibers

Dust

- Wrong tools may create:

Particles

Dust





Engineering Sc.		Basic Sc.	Life Sc.	Ext. Acad.		Companies		
STI-IBI-BIOS	STI-IEM-PHOSL	SB-IPHYSGR-GA	SV-GHI-UPKIN	AML_FR_BioPhysics	UNIGE_GAP	ABC_Lab	Ligentec	Rolex_Bienne
STI-IBI-CLSE	STI-IEM-POWERLAB	SB-IPHYSHQC	SV-GHI-UPPERSAT	CERN_BE_dept	UNIGE_Physique	ActLight	Limula	Safran_Sensing
STI-IBI-LBEN	STI-IEM-PV-LAB	SB-IPHYSLASPE	SV-IBI-UPDEPLA	CERN_EP_dept	UNIL	Adaptiv_Biosysteme	Lionix_Intl	SEED
STI-IBI-LBMM	STI-IEM-SCI-SC	SB-IPHYSLLEB	SV-IBI-UPLUT	CSEM_T1	UNIL_ISTE	Advanced_Fiber_Re	LSPR	Sensirion
STI-IBI-LBNC	STI-IGM-EMSI	SB-IPHYSLMSC2	SV-ISREC-UPBRI	CSEM_T4	UNI-SUSSEX-PH-IQT	Aleva	Lumiphase	Sigatec
STI-IBI-LBNI	STI-IGM-ETA-LAB	SB-IPHYSLNS	SV-ISREC-UPORICCHIO	CSEM_T5		Alpes_Lasers	Lunaphore	Silicon_Austria_7
STI-IBI-LNE	STI-IGM-LMTS	SB-IPHYSLPBS	SV-PTECH-PTBET	CSEM_V1		AMO	Luxtelligence	Silicon_Austria_9
STI-IBI-TNE	STI-IGM-LNET	SB-IPHYSLPL	SV_SSV-TP1	CSEM-Allschwil		Annaida	Mackinac	SoHHytec
STI-IEL-GR-SCI	STI-IGM-LRESE	SB-IPHYSLPQM1		CSEM-Muttenz_Cent		ArcoScreen	MCH-processing	Sunbioscience
STI-IEL-INL	STI-IGM-MICROBS	SB-IPHYSLQM		ECAL		Axetris	Meister-Abrasive	SwissflexMicro
STI-IEM-ALCHEMY	STI-IGM-NEMS	SB-IPHYSLQP		Eidikos_Logariasm		Bloesch	Melexis	Swistor
STI-IEM-AQUA	STI-IMX-FIMAP	SB-IPHYSLUMES		ETHZ_D-BSSE_BEL		Bruker	Microcrystal	SYANDSE
STI-IEM-GALATEA	STI-IMX-INE	SB-IPHYSLQIL	Computer & Communication	ETHZ_D-BSSE_QDB		Confovis	MicroR_Systems	XeedQ
STI-IEM-HYLAB	STI-IMX-LMGN	SB-ISIC-LAS	IC-IINFCOM-SENS	ETHZ_D-ITET_IDEAS		Corintis	Miraex	XRnanotech
STI-IEM-ICLAB	STI-IMX-LMSC	SB-ISIC-LIMNO		ETHZ_D-MAVT_MNS		Creal	Mistic	Xsensio
STI-IEM-LAFT	STI-IMX-LP	SB-ISIC-LND		ETHZ_D-MAVT_Nanop		Deeplight	Morphotonix	
STI-IEM-LAI	STI-IMX-SMAL	SB-ISIC-LPDC		ETHZ_D-PHYS_LFKP		Doppl	Nanoga	
STI-IEM-LANES	STI-INX-LSBI	SB-ISIC-LPI		HES-SO-GE_inSTI		Enlightra	Nanoworld	
STI-IEM-LAPD	STI-SCI-AXS	SB-ISIC-LSCI	Civil Engineering	HES-SO-NE_HEARC		EXALOS	Novagan	
STI-IEM-LMIS1	STI-SCI-JVH	SB-SCI-RH	ENAC-GE	Metas		FEMTOprint	Oxford_Ionics	
STI-IEM-LMIS2	STI_SEL	SB-SPC-II	ENAC-IIE-LGB	PSI_LSB		Freshape	Parithera	
STI-IEM-LMIS4	STI_SMT-TP1	SB-SPH-GE		UCLouvain_IMMCC		GB_Microfab	Pi_Imaging	
STI-IEM-LO	STI_SMT-TP2			UNI_Tokyo		Gersteltec	Piemacs	
STI-IEM-LPMAT				UNIBAS		Hexisense	Q_Ant	
STI-IEM-LPQM2				UNIBAS_2		ID_Quantique	Richemont	
STI-IEM-NAM				UNIFR_Chemistry		Imina	Roche-ITB	
STI-IEM-NANOLAB				UNIGE_DPNC		Infrascreen	Rolex	
50 (309)		22 (100)	11 (23)	32 (53)		69 (134)		

↑
of laboratories

↑
of users

- Total: 563 users belonging to 184 laboratories or companies
- Each cell represents a laboratory headed by a Professor
- 71% of our users are from EPFL and 21% are from industry

CMi users: step-by-step access

1. Safety and behaviour in the cleanroom

- Formal presentation of CMi facilities and CMi rules
- Cleanroom visit
- Process flow template + MCQ test link**



11	Photolith - expo + develop Machine: MA or Direct laser + ACS200 Mask: CD = 20um Double side align	
12	Dry Etch - Back Side Material: SiO2 Machine: SPTS Depth: 0.5 µm	
13	Resist Strip Material: AZ1512 - 1.1µm Machine: Tegra + Remover	
14	KOH Etch - Back Side Material: Si Machine: KOH Wetbench Depth: 525 µm	

2. Project approval by CMi process engineers (~1 week)

- Process flow review by a technical committee
- Access to CMi granted (username, password)

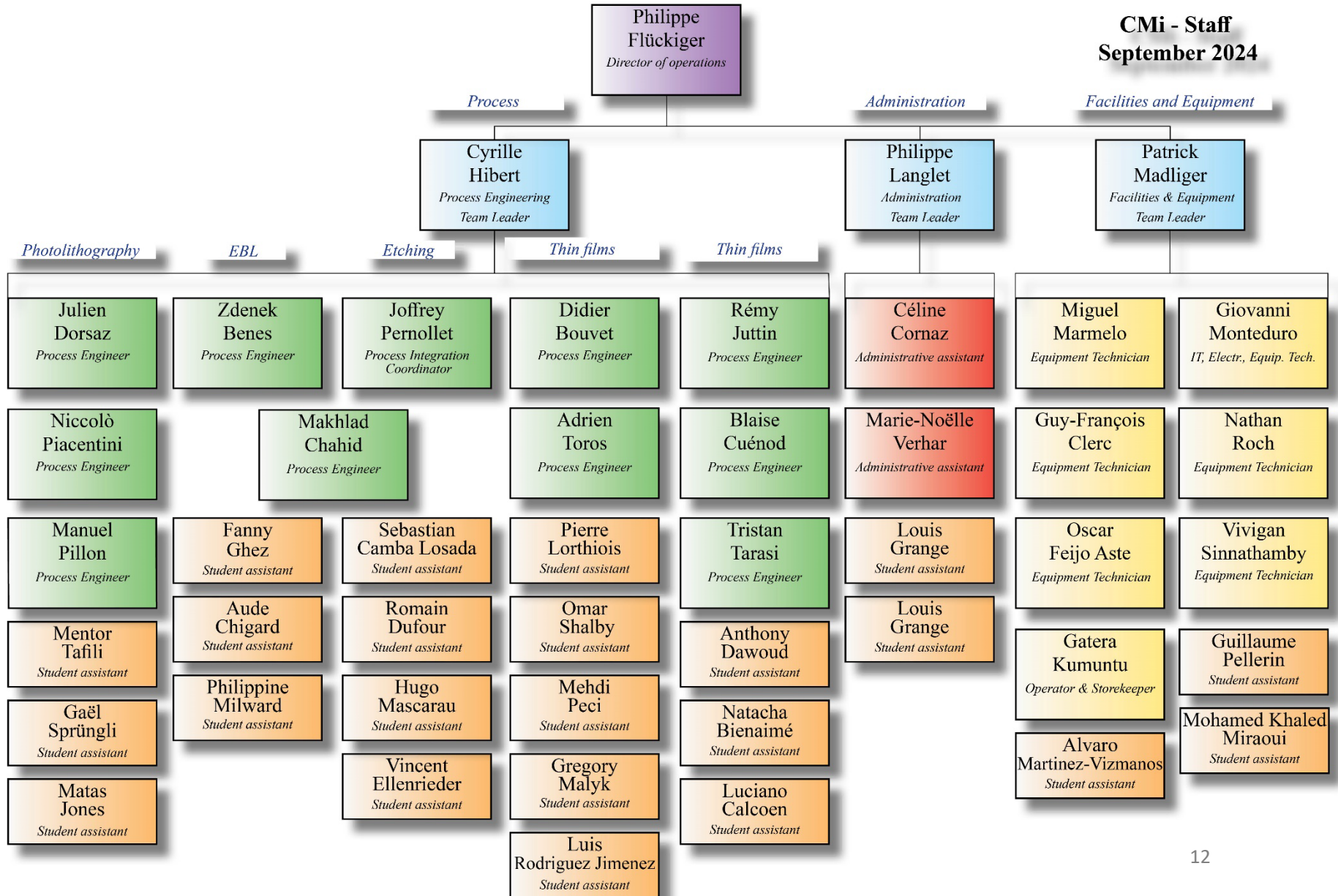


3. Start working in the cleanroom (few weeks)

- Trainings** (on the agreed technology)
- Rights to book equipment
- Work on your own according to process flow
(reservation, login, processing, logout...)



CMi - Staff September 2024



Work regulated by EPFL (LEX 4.7.1):

- Student enrolled at EPFL can be assigned to teaching or various scientific or administrative tasks.
- Employed for **max three different positions**.
- **Max of 15 hours per week during the semester**. Work full time (41 hours per week) possible during university holidays.
- Paid **CHF 25.00/ h (gross)**

Work offered by CMi: at least 4 positions from February 2025

- Trained by CMi staff on specific processing tools.
- Allowed to practice on their own to gained extended practical experience.
- Involved in the daily process control routine of the cleanroom (**1.Electronics maintenance**)
- Trained to teach users (**2.Photolithography 3.Dry Etching**) or to provide fabrication services (**4.Dicing**)
- Flexible working hours (adjustable individually per assistant & per semester).

Conditions:

- Plan for a Master at EPFL.
- Mostly available during summer break.
- Local accommodation for quick commute and availability “on demand” during holidays.