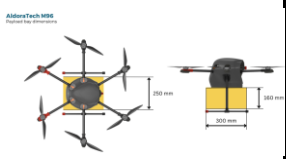
NewSpace Lab

The NewSpace Lab is an initiative promoted by the Generalitat de Catalunya, with the support of the Institut d'Estudis Espacials de Catalunya (IEEC), as part of the NewSpace Strategy approved by the Catalan Government in 2020.

Access to equipment for carrying out tests and developing components is an essential need within the space sector, and specifically within the scope of NewSpace. This initiative seeks to map the facilities linked to the NewSpace sector in Catalonia, with the aim of facilitating their use, promoting them at local and international level, and providing support for their improvement, either by maximizing the use of already existing equipment, or by developing other infrastructure where needs are detected.

A portal has been created, accessible to the public, to be a reference point for the equipments of the NewSpace sector in Catalonia to facilitate their visibility. An inventory of the existing infrastructures and capacities has been carried out, in collaboration with the companies and entities that own them. Below, you will find the list of those infrastructures which have been confirmed to be present on the portal:

- **If you are interested in any of these infrastructures, please let us know by sending an email to info-apec@ieec.cat and we will provide you with the necessary information and contact details. If you want to include or modify any data provided, please contact us at the same email address.**

Company/ Entity	Infrastructure/ Equipment	Description	Website	Image
Aldora Tech	**Manufacturing of composite materials, resin casting and injection of plastic**	Manufacturing of components in the prototype phase and final components. Also for testing benches and assembly tools. Manufacturing using composite materials, resin casting and plastic injection; using AldoraTech Manufacturing's proprietary process with which lead times and costs are reduced by an order of magnitude. This is a process designed to offer components that will require continuous iteration or with very short runs.	Manufacturing of composite materials, resin casting and injection of plastic	Consult website
	Unmanned aircraft for testing systems in free fall.	Testing of systems and elements in free fall and/or propelled using unmanned aircraft with a load capacity of up to 5 kg and a flight ceiling of up to 6000 m above sea level.	Unmanned aircraft for testing systems in free fall	
CIM UPC	**3D printing (FFF) Manufacture by Cast Wire (FFF)** **ED printing (FFF) metal piece**	It is used for the manufacture of prototypes or final parts. Its operation is based on a thread of thermoplastic material and an extruder that moves in the horizontal XY plane and the bench in the vertical Z plane. This thermoplastic solidifies immediately on top of the previous layer. With this technology we can manufacture parts in green with metal (steel) that once sintered with an oven we can obtain metal parts. Small prototypes, gift items, gadgets... The parts obtained can be used as prototypes in the technical office or as final parts in production processes (custom tooling), equipment (single parts), etc.	3D printing	

Company/ Entity	Infrastructure/ Equipment	Description	Website	Image
		Training programs in Manufacturing Digital. Models and assembly of projects Self-manufacturing of models and final parts Manufacturing of multi-material and/or multicolored parts		
	3D printing Stereolithography (SLA)	Additive technology for the manufacture of prototypes that require high precision of detail, good surface finish and appearance similar to technical plastics. Marketing presentations: Mirror finish identical to the final piece, ideal for promoting a product. Suitable for final parts without high mechanical demands. Tests with fluids, silicone molds.	SLA 3D printing	
	Centers of CNC machining Cover Maho DMU 50 Evolution HAAS VF 3ss Milltronics RH20	Possibility of manufacture complex parts, with great precision and as many repetitions as necessary. Mechanization of engravings. Pieces of reduced dimensions. mechanization of electrodes of reduced dimensions. Mechanization of reforms for thermal printing.	CNC machining centers	
	Wire EDM	Wire EDM machining is used to make high-precision cuts in conductive materials. It is possible thanks to the jump in electrical discharges that takes place between the electrode and the piece to be machined. It is a thermoelectric process, in which the sparks produced represent a point thermal source that will be responsible for melting the material of the piece, thus producing erosion. In addition, deionized	Electroerosion of son	

Company/ Entity	Infrastructure/ Equipment	Description	Website	Image
		water is used, which will help the jump and therefore the quality of the sparks, to cool the already eroded material and to remove the torn material. Cutting extremely hard materials and parts without mechanical effort Erosion of conductive materials Very thick metal parts Very small parts such as injector pins or needles for medical use. Pieces with very thin walls Cutting stacked materials Cutting tiny radii		
	3D printing Selective Laser Sintering (SLS)	It is used with thermoplastic materials for the manufacture of prototypes with good mechanical and functional properties that are therefore sometimes used as final parts. It uses a high-powered laser to melt plastic particles into powder layer by layer. The possibility of using composite materials with fiber (glass and carbon) and metals allows to expand its range of applications. This technology does not require support structures and allows one piece to be manufactured on top of the other. Product assembly validation: suitable for clips and to validate mechanisms and parts that must be assembled. Parts with complex geometries. Short series or final pieces in contact with aggressive liquids. Large scale prototypes	SLS 3D printing	

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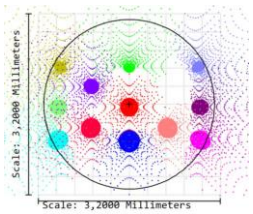
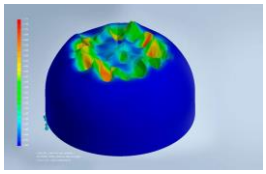
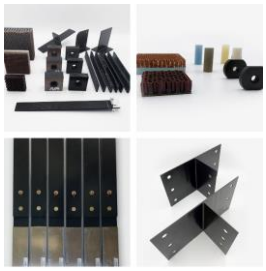
CD6	**Mechanical workshop**	Our mechanical workshop has expert staff and advanced machine tools, as well as optical and mechanical metrology tools for dimensional and optical quality control of the generated prototypes. Mechanical CAD design service.	Mechanical workshop	
	Electronics workshop	Our electronics workshop has different tools used to program various types of 8 and 16 bit microcontrollers, for firmware development for programmable devices such as CPLD, PIC and FPGA, tools for manufacturing PCBs in short runs, and instrumentation of the latest generation for its quality control (optical spectrum analyzers, digital oscilloscopes,...) for the development of the electronic part of advanced prototypes. Custom electronic design services.	Electronics workshop	
	Prototyping room	Space of 60 m2 available immediately, and space of up to 200 m2 nearby to integrate, adjust and test experimental devices and prototypes designed and built at the Center or by third parties. It is located next to the workshops and contains all the necessary equipment for its full operation.	Prototyping room	
	Advanced optomechanical design	Trained staff and extensive experience in different optical and mechanical software packages and their interrelationship in real prototypes that end up being built (OpticStudio, CodeV TracePro, ASAP, ANSYS, , ProEngineer)	Advanced optomechanical design	
	Photometry laboratories	Laboratory for control and characterization of all types of light sources (UV to THz). Power meters, advanced polarimeters, spectrum meters, photometers, radiometers, supercontinuum lasers...	Photometry laboratories	

Company/ Entity	Infrastructure/ Equipment	Description	Website	Image
Compoxi	**Design and Calculation of structures**	Design and calculation of structures advanced for instruments, satellites, launchers and other orbital vehicles.	Design and Calculation of structures	
	Qualification of new materials and structures	Qualification of materials and components and subsystems according to mission and development requirements complete of the QTP and manufacture of all the elements necessary for the rating.	Qualification of new materials and structures	
	Manufacturing structures	Manufacturing of structural components for satellites, launchers and other orbital vehicles, from unique pieces to series manufacturing for macro-constellations	Manufacturing structures	
GUTMAR	**Machinery, Laboratories, Assembly Rooms and Engineering**	Manufacturing area 12,500 m2 with more than 50 latest generation CNC machines for manufacturing and assembly of aerospace assemblies.	Machinery, Laboratories, Assembly Rooms and Engineering	Consult website
Institute of Photonic Sciences Foundation (ICFO)	**Platform NM3**	The platform includes highly specialized equipment for micro- and nano-manufacturing, located in clean room spaces dedicated, nano-characterization teams and general facilities for chemistry, biology and of post-process. It also includes facilities advanced mechanical and electronic engineering. The institute also hosts specific R&D facilities dedicated to design, manufacture, characterization, integration and prototyping of photonic chips; components, devices and subsystems essential for space technologies, with a focus on technologies quantum and its ICT applications (communications,	Platform NM3	Consult website

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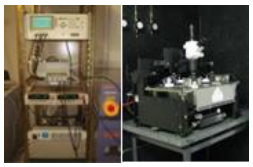
		memories, processing of information, sensors, medicine).		
IFAE	**Mechanics laboratory**	High-precision mechanical workshop: 4-axis CNC machines, wire cutting, penetration EDM, planer and verification equipment. Large dimensions (0.7-1m)	Mechanical laboratory	Consult website
	Clean rooms	Set of clean rooms with different grades of particles (100k, 10k and 1k) dedicated to microelectronic packaging and its quality and integration control. 100 laminar flow booth	Clean rooms	Consult website
	Cryostat	Cryostat for space instrumentation cold tests (not very big, small satellites ok)	Cryostat	Consult website
	Optical laboratory	Optical room with reading equipment (ESO NGC) and infrared filter wheel. Infrared detectors. Sensor reading tests by space with the ESO NGC system	Optical laboratory	Consult website
	Shielded room	Shielded room of 24 m2	Shielded room	Consult website
IMB-CNM (CSIC)	**Laboratory of detectors of radiation for space applications**	The Laboratory of Radiation Detectors (LabRad) is dedicated to the characterization of semiconductor radiation sensors and radiation detector systems. The laboratory is a category 2 radioactive facility authorized by the Nuclear Safety Council (CSN) to work with encapsulated radiation sources.	Radiation detectors	
	Design and testing of space integrated circuits and systems	Our experience in the field of design includes modeling, simulation and synthesis of circuits, IPs and growth to systems on a chip (from VHDL/Verilog to ASIC / FPGA), support and training of users, purchasing and general management of CAD , CAD development for internal use, development of libraries and	Design and CAD service Characterization of ICs	

Company/ Entity	Infrastructure/ Equipment	Description	Website	Image
		design kits for internal and external technologies, Management of external kits Back-end: P&R, delay extraction / post annotation and post layout functionality and failure simulation. The Integrated Circuits and Systems Test Laboratory is managed by the Electronic/Microelectronics Engineering Service and gathers all the equipment needed to test and characterize integrated circuits and systems digital/analog/mixed/ RF.		
	White room	Sala Blanca of micro and nano manufacturing of 1500 m^2 class 10^2-10^4 (e.g. photolithography equipment, furnaces, etc.)	White room	
	Advanced Encapsulation, physical inspection and reliability by space.	White room of 40 m^2 class 1000 with advanced encapsulation and integration equipment (e.g. wire-bonding and welding equipment). The physical characterization laboratory includes: a Gen-5 scanning acoustic microscope (Sonoscan), a thermal cycling / aging test bench for reliability analysis of devices and power systems. In addition, a climatic chamber is available.	Advanced encapsulation Advanced physical characterization	
	Thermal characterization	He Laboratories of Thermal Characterization covers all aspects related to thermal management, local electrothermal characterization and reliability and robustness studies addressed in any microelectronic system. It also allows the physical signatures of failure to be determined by analyzing hot spots, or functional problems under bias.	Thermal characterization	

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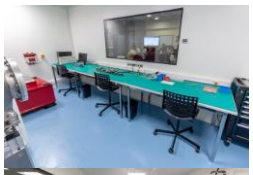
	Electrical characterization of power devices	The Laboratories of Electrical Characterization of Power Devices allow for both static and dynamic electrical evaluation of power devices, whether developed in the clean room or of commercial origin.	Electrical characterization of power devices	
	Laboratory of Radiation Detectors	The Laboratory of Radiation Detectors (LabRad) is dedicated to the characterization of semiconductor radiation sensors and radiation detector systems. The laboratory is a category 2 radioactive facility authorized by the Nuclear Safety Council (CSN) to work with encapsulated radiation sources.	Laboratory of Radiation detectors	
Nanosat Lab - UPC	**Clean room**	Integration and tests of Cubesats and nanosatellites: ISO 8 clean room of 26 m2 equipped with instrumentation and tools for the integration and tests of CubeSats and nanosatellites. ISO-7 certified. Monitoring and control of operations from an outside room. Electrical interface with external room including instrumentation, power supply, signal generators, prototypes and others. Digital buses including Ethernet and USB, among others. Standard power connectors.	Clean room	 
	Thermal and Vacuum Chamber (TVAC)	Thermal and Vacuum Chamber (TVAC) Trinos Vacuum Projects of 50 cm (diameter) by 52 cm (length), 250 liters of capacity. 10^-5 mbar at 25ºC, 10^-8 mbar at -196ºC. Temperature range from -196ºC to +300ºC. Heating system through three infrared lamps and cooling system with liquid nitrogen. HVAC useful for thermal and pressure tests that emulate outdoor conditions, including inside the	Thermal and Vacuum Chamber (TVAC)	

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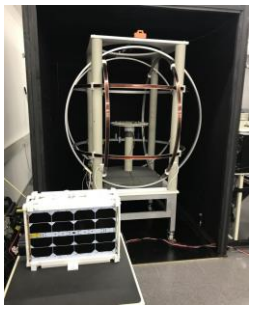
		clean room		
	Vibration table	Data Physics vibration table: armature diameter: 174.5 mm; maximum sinusoidal force: 7325 N; maximum random force: 5000 N; maximum acceleration: 120 g; vibrator mass: 640 kg; frequency: 5 Hz to 3 kHz. Accelerometers: 2x 10g 8640A10T, 3x 50g 8640A50T and 1x 500g 8702B500. Vibration table that emulates launch conditions for CubeSats, including inside the clean room	Vibration table	
	Helmholtz coil	Helmholtz coils – Serviciencia SL: Dimensions: 1.42 m × 1.26 m × 1.31 m; air cushion platform surface: 0.125 m2; Magnetic field generated: 1.51 µT/A; Maximum intensity: 800 µT; maximum current: 4.0 A @ DC; orthogonality error: 0.2. Helmholtz coil for tests and calibration activities of various subsystems	Helmholtz coil	
Stage 2	**Open work space**	Access to private office, open work space (coworking). Access to workshop and tools.	Open work space	   

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	Prototyping workshop	Workshop equipped with: - Soldier station - 3D printers (extrusion and resin) - Vacuum machine - Laser cutter - CNC - Electronic tools	Prototyping workshop	
	Event space	Open and diaphanous space to carry out: Events, Demo Days, Product presentations - Large meetings, Workshops - Caterings etc.	Event space