

NX DESIGN SUITE

Intuitive tools for designing, compiling, and programming NX FPGA

NanoXplore, a European fabless company, is proud to offer innovative solutions in FPGA, SoC FPGA and ASICs technologies through a 100% European design and supply chain.

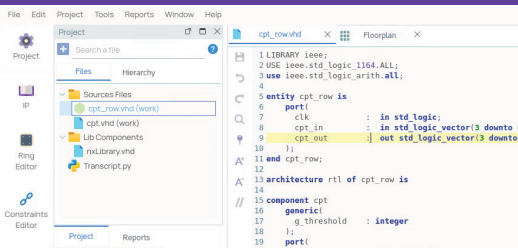
In partnership with ESA, CNES and the European Commission, NanoXplore offers sovereignty and ITAR-free solutions to European institutions and industries for Space, Defense and high-reliability systems.



A complete development suite

This software suite has been designed to provide tools focused on:

- » Reliability and robustness
- » Ease of use
- » Sovereignty
- » Performance



Key features

Unified and intuitive workflow:

- » Provides a modern graphical interface and a scripted Python interface to meet the needs of both novice engineers and automation experts.

Performance and reliability:

- » Continuous improvements in terms of routability, memory management, scalability, and Static Timing Analysis (STA).

User support:

- » A dedicated support team is available to assist you in using the tools.

Overview

NX DESIGN SUITE is a suite of proprietary tools from NanoXplore, dedicated to the design, compilation, and programming of radiation-hardened FPGAs from the NX range. It provides a complete flow from RTL description to the final bitstream, integrating synthesis, place and route, static timing analysis, and advanced tools for debugging and IP generation. It is a comprehensive suite of tools that guarantees a controlled software chain optimized for space and all high-reliability applications.

Key Differentiators

Developed in France, the NX DESIGN SUITE guarantees technological sovereignty and control. It reduces development cycles, optimizes design quality, and enables better process management thanks to clear reports and full automation via scripting.

Suite overview

Unified implementation flow – *Impulse*

- » Synthesis, place and route, STA, and bitstream generation
- » Consistent architecture modeling for all NanoXplore's FPGA families
- » Deterministic engines, essential for environments with severe constraints

Integrated IP ecosystem – *NXcore*

- » IP catalog optimized for NX architectures
- » IP tailored for space and high-reliability use cases

Automation & scripting – *NXpython*

- » Full workflow automation via Python
- » Batch mode for large-scale programs
- » Easy integration into CI/CD chains (qualification and software pipelines)

Advanced debugging & validation – *NXscope*

- » Real-time capture of internal FPGA signals

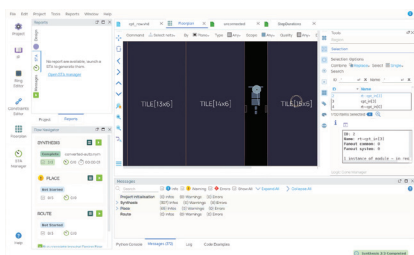
Design analysis & visualization

- » Floorplanner with real-time congestion visualization
- » Detailed timing, resource, and routing reports

Hardware interfacing – *NXbase2*

- » Tool for interfacing with NanoXplore FPGA boards with Flash and programming via JTAG

Impulse - The cockpit of the NX DESIGN SUITE



Impulse is the unified user interface for the NX DESIGN SUITE.

Designed as a modern and consistent working environment, Impulse brings together all NanoXplore FPGA development tools within a single platform. An easy-to-use GUI for project creation/editing, floorplanning, hierarchy visualization, logs, messages, and reports.

Impulse provides an optimized experience for engineers, project managers, and system teams, making it easier to understand the design and navigate through the flow stages.

Key features of Impulse

Integrated interface and guided workflow

- » Global view of the project: sources, scripts, IP, reports, bitstreams
- » Intuitive management of the NanoXplore FPGA flow
- » Launch and monitoring of stages (Synthesis → P&R → STA → Bitstream)

Modern user experience

- » Quick access to logs, messages, design artifacts
- » A clean and consistent visual style
- » Flexibility and efficiency: work with Python scripts, an intuitive GUI, or a combination of both

Advanced visualization

- » Dashboards providing a clear overview of resources, consumption, and timings
- » Direct integration of NX DESIGN SUITE tools (Floorplanner, Logic Cone Manager, etc.)

Collaboration & traceability

- » Project structuring that promotes reproducibility
- » Seamless integration with NXPython for automation
- » Improved readability for QA, validation, and architecture team

Architecture & Workflow

NX DESIGN SUITE structures a complete and deterministic flow:

1. Import & Synthesis
 - » Support for VHDL, Verilog, and mixed languages
 - » Optimizations adapted to radiation environments
2. Place & Route
 - » Architecture-aware routing for NanoXplore FPGA fabric
3. Static Timing Analysis (STA)
 - » Reliable management of clock domain crossings
 - » Worst-case scenarios considered: temperature and voltage
4. Bitstream Generation
 - » Bitstreams suitable for long-duration missions
 - » Secure configuration process
5. Hardware Validation
 - » Probing via NXScope

