



This checklist is designed to help those new to the JePPIX platforms to achieve a successful MPW outcome, and help them to understand which JePPIX services may be relevant for their project.

Should you have any questions, please always feel free to contact coordinator@jepPIX.eu.

A typical chip production cycle consists of activities in design, fabrication, test, chip packaging, and package test; frequently it has been found that new users of the JePPIX platforms see these elements as disconnected stages to be ticked off in sequence. Such an approach can lead to significantly extended timescales over what was originally expected by the user, compromised circuits and significantly increased costs. This checklist is designed to help the new user identify how they can plan their own development cycle, what they can do for themselves, what training is available to support them and when they should ask for it, and what other support services they may need. **This checklist will be relevant to all users new to the JePPIX platforms, regardless of expertise.**

PIC experience self-assessment

You are a first time platform user who would like to better understand platform capabilities and services. Such a first time user may be:

- A scientist with general expertise in aspects of photonics, but either no specific expertise in the characterization of a photonic integrated circuit (PIC), or no suitable facilities of their own.
- A scientist with general expertise in aspects of photonics, but either no specific expertise in packaging of photonic integrated circuits (PIC), or no suitable facilities of their own.
- An experienced designer with a broad experience of PICs wishing to fabricate a design on a platform unfamiliar to them.
- A photonics expert, but not a PIC expert; unfamiliar with design flow and seeking online resources to orientate themselves.



Benchmark your chip layout plan

How will you achieve your chip design?

- Expert designer who can do it themselves. Able to navigate PDKs, design manuals and deliver fab-accepted mask files at their own risk. JePPIX can provide the [Software Tools](#).
- Confident designer but would require a [professional design review](#) to reduce risk in the design implementation.
- Confident designer but requiring [training](#) on specific software packages and design manuals.
- Systems expert: I know the function I want, but would like a [professional design service](#) to (co-)create the PIC layout needed to achieve the desired functionality.
- Master's level understanding of photonics and would like to skill-up with a two-week intensive [expert PIC designer training](#).

The JePPIX consortium can help in all of these areas.

Benchmark your evaluation plan

How will you test your PIC? Ask yourself these questions:

- Do you have access to a comprehensive PIC evaluation laboratory capable of handling bare chips, for example with gel-pack release, vacuum tweezers, probes, fibers, precision manipulators, and test equipment such as current and voltage sources?
- Do you have access to a comprehensive photonics systems lab and so require PICs in easy-to-use connectorised packaged modules?
 - Are you able to use a [pre-specified JePPIX catalog package](#), with the relevant PIC design template?
 - Do you require a custom package and so will [require a custom template](#) from the packaging supplier?
- Do you require a professional service for PIC evaluation, i.e. need third party [test services](#)?
- Do you require a structured development program with supporting expert advice (see for example [ACTPHAST](#))?
- Do you have a good prototype already and are you now ready for a development program (see the [JePPIX Pilot Line](#))?



Getting started

These steps can be carried out by designers with sufficient expertise or with help from professional designers.

1. Identify the building blocks required to create your circuit function
2. Select the most appropriate [platform](#) and identify the foundry
3. Select your [suppliers](#) (software, design service, customized building blocks, packaging, characterization)
4. Apply for an MPW run completing the [Application Form](#)
5. Complete the Non-disclosure Agreement (NDA) and the End-User Statement to get Design Manual and Process Design Kit (PDK)
6. Provide JePIX with your Purchase Order to get a cell allocated for tape-in
7. Think through how you will evaluate your PIC
8. Identify electrical and optical inputs and outputs need connections and add test ports as needed
9. Perform [circuit simulations](#) to predict, confirm and optimise circuit performance at the functional level using calibrated models
10. Create your circuit layout with connections to the inputs/outputs allowed for the test and packaging template
11. Tape-in using the [MPW Secure Server](#) and react promptly to feedback during foundry design check week
12. Monitor progress through the fab using the MPW Secure Server and email updates provide