

The Eurosystem's technical onboarding package for digital euro prototyping

The Eurosystem has compiled a technical onboarding package that contains the necessary information for participants to the digital euro prototyping exercise to technically integrate their front-end prototype with the back-end prototype developed by the Eurosystem. This set of documents provided the companies involved with the necessary information to achieve compatibility with the back-end infrastructure, but without restricting their innovation potential. The work on a prototype for a digital euro has started this summer and is an integral part of the digital euro investigation phase. With the publication of this technical onboarding package, the Eurosystem also promotes transparency and collaboration with the private sector.

The digital euro investigation phase is exploring how a digital euro could look like. It calls for practical experiments to test functional designs and to explore the technical feasibility of options without pre-committing to any design-choices, the work on which continues. This is building on the past where the Eurosystem already has conducted several experiments¹, all with a focus on different use cases and technologies.

The aim of this prototyping exercise is primarily to learn, by testing how potential back-end solutions can integrate with front-end prototypes developed by companies with a track record in the area of payment services. The prototypes in the experiments will therefore simulate end-to-end transactions in digital euro. The data used is fictional data. No personal data is being used in the exercise.

The experimental work involves five companies, each working on a specific use case. The [selected use cases for the prototyping](#) are peer to peer (i.e., person to person), point of sale (initiated by the person who pays), point of sale (initiated by the once who wants to receive the payment), e-commerce and offline payment. The selected companies had been chosen following a public call for expression of interest in April.

The design of the prototype does not pre-empt any technology choice nor commit the Eurosystem to providing a digital euro. The prototype experiments aim to increase the Eurosystem's knowledge on technologies for a digital euro. Therefore, in the *back-end* the Eurosystem will focus on specific technologies which are expected to generate the biggest increase in knowledge. Specifically, the

¹ More information can be found under "Experimentation work" on https://www.ecb.europa.eu/paym/digital_euro/investigation/profuse/html/index.en.html

Eurosystem will test a data model of end user holdings based on unspent transaction output (UTXO). There are no plans to re-use the prototypes in the subsequent phases of the digital euro project. The prototyping exercise is expected to be completed in the first quarter of 2023 when the ECB will also publish its findings. The full specifications for the application programming interface (API) to be developed during the exercise will also be published with the conclusion of the prototyping experiments.

The prototypes consist of user applications, wallet service and back-end

The *user applications*, co-developed by the five selected firms, include parts like smartphone apps, or payment acceptance devices for merchants such as card readers. In the *user application*, a user can initiate a payment. This payment is then processed by the *wallet service*. The combination of these two components, *user application* and *wallet service* is referred to as *front-end*. There, it will be checked for completeness and sent to the *back-end*. The *back-end* settles the payment. The *back-end* will be developed for the prototype by the Eurosystem, in parallel with the work on the *front-end* prototypes. At the end of the prototyping phase end-2-end transactions will be tested.

The prototype providers have the choice to develop only the *wallet service* or the *user application* or covering both functions.

Offline solution: payments between devices without internet connection

One of the five use cases explores developing an offline solution for a digital euro, i.e., an end-to-end solution capable of payments between devices without internet connection. As such an offline payment is settled between the devices, the prototype “offline digital euro” is different from the prototype “online digital euro” as the latter is settled in the core ledger.

For a more detailed explanation of technical terms please refer to the digital euro [glossary](#).