Tezos Foundation Biannual Update





The rapid growth of the ecosystem is clearly evident with rising interest to build on Tezos from those both inside and outside of the Tezos community.

Preface



Dear Tezos community,

It has been a momentous six months since our first Biannual Update. The Tezos ecosystem and community continue to grow and gain momentum. When the new Council of the Tezos Foundation was appointed with me as President in February of 2018 we had two main objectives. The first was to get the Foundation back on track and the second was to help, along with the rest of the community, to move the Tezos project forward. As President, I have finished what I came to do and it is now time for someone else to continue the momentum we have all built over the past two years. But first, let's highlight some of the many milestones achieved by the community throughout the last six months.

The Tezos governance process continued to prove itself with the Babylon and Carthage upgrades. In addition to becoming the first public blockchain to upgrade itself automatically without requiring a hard fork, Tezos has shown that it is possible to establish a regular cadence of improvement that is not seen in other blockchain ecosystems. Congratulations to the Tezos community for setting this great example!

An important part of this steady progress is also thanks to the growth of the Tezos developer community. The Tezos Foundation surpassed its goal of training 1,000 new Tezos developers in 2019 by actually training 1,338 new developers and counting. This growth was extra apparent when over 450 Tezos enthusiasts gathered in New York City at the end of September for the first global Tezos conference. The event spanned two productive days and featured high-quality panels, workshops, and discussions on a wide range of topics pertaining to Tezos. In addition to the first global Tezos conference, local meetups and regional events continue to take place globally with increasing frequency and attendance.

The rapid growth of the ecosystem is clearly evident with rising interest to build on Tezos from those both inside and outside of the Tezos community. In September 2019, the Tezos Foundation announced its second cohort of Tezos ecosystem grants with 14 projects approved out of 38 applications. More recently, we were thrilled to announce the third cohort of ecosystem grants, with 21 new projects receiving grants out of 90 applications. Our latest request for proposals received 118 applications, which are now progressing through our review process (information on our grantmaking review process is available below in the Grants section). We're thrilled to see the growing interest to get involved in the Tezos ecosystem.

The Tezos Foundation is excited to build on the momentum that the Tezos community set throughout 2019. A variety of teams that have been tirelessly building on Tezos expect to launch their products in 2020 and we are thrilled to see these use cases go live. The Tezos Foundation will continue to support the project by providing resources to foster the long-term success of the Tezos protocol and ecosystem - here's to a bright 2020!

Kind regards,

Ryan Jesperson

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Role of the Tezos Foundation

Tezos is a technology that powers a distributed, peer-to-peer, permissionless network. No single entity owns, manages, or controls "Tezos". Understanding this paradigm is fundamental to understanding Tezos.

The Tezos Foundation is a Swiss foundation, supervised by the Swiss Federal Foundation Supervisory Authority which is part of the Swiss Federal Department of Home Affairs. Its purpose is the promotion and development of new technologies and applications, especially in the fields of new, open and decentralized software architectures, including the promotion and development of the Tezos protocol and related technologies.

As highlighted in the Tezos position paper, the success of any decentralized network is determined by the efforts of a robust, diverse, and flourishing community. The Tezos Foundation exists as a part of this ecosystem, alongside developers, scientists, network validators ("bakers"), enthusiasts and many others, all working towards the success of a platform that we believe will ultimately drive innovation on a global scale.

The Tezos Foundation's role within the community is to deploy resources that support the long-term future of the Tezos project. Grants and other capital deployment vehicles offer a strategic way to help community members, such as educational and research institutions, developers, or activists from all over the world to support the advancement of the Tezos project.

Tezos' potential rests in the hands of its community, which is among the strongest and most exceptional in the blockchain ecosystem. All interested parties are welcome to join the Tezos community and contribute to the project.

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The Past Six Months with Tezos

Selected events from the Tezos ecosystem



Tezos Foundation issues a grant to Truffle Suite to help make developing **Tezos smart contracts** easier by integrating Tezos to Truffle's tools

Tezos Agora, a governance explorer and discussion forum for Tezos. launched to complement the onchain amendment process

2019



14 projects receive funding in second cohort of ecosystem grant recipients

TQuorum Global Summit: 450+ attendees congregate for Tezos workshops & discussions



Tezos Foundation and Globacap partner to use Tezos in Globacap's product for primary issuance and securities administration

The Babylon amendment proposal is approved by Tezos stakeholders and automatically activated across the network



Tezos Foundation announces strategic partnership with Berlinbased Fundament Group to introduce a legal-tech solution for financial products on Tezos

Coinbase announces access to Tezos staking for its users

The Carthage amendment proposal is injected during the Proposal Period of the Tezos governance process

The French National Gendarmerie's Cybercrime Division, C3N, announces that it records judicial expenses via a smart contract on Tezos



Ledger announces the integration of Tezos staking and deposits / withdraws directly into Ledger Live

Research from TQ Tezos finds that 1.338 new developers were trained throughout 2019 to build on Tezos

September

October

November



SmartPy team announces the first open-source release of SmartPv and SmartPy.io

Nomadic Labs partners with Madrid-based IMDEA Software Institute to conduct scientific research in fields pertaining to Tezos

21 projects receive funding in third cohort of ecosystem grant recipients

Vertalo chooses Tezos as its default blockchain for digital securities issuance and management

2020

January

Facts & Figures

Some Tezos Foundation Highlights Since August 2019



new grants issued



USD M in assets (as of January 31, 2020)



Over 200 grant applications received and evaluated





new strategic partnerships



2nd independent external audit finalised by PwC Switzerland



Grants – Priorities & Process

A key activity of the Tezos Foundation is to deploy resources to entities and initiatives that will help to ensure the long term success of Tezos. The Foundation is focused on three grant categories:

Research, Education & Core Development Grants

Foster innovation, development and education about Tezos. These grants include a range of projects from online training courses to core protocol development.

Ecosystem – Tools & Applications Grants

Lower barriers to entry to help make Tezos as accessible as possible for developers and end-users of subsequent applications.

Community Grants

Support other organizations and initiatives that strengthen and grow the Tezos community to which the Tezos Foundation belongs.

The evaluation process for new grant applications normally takes between six and eight weeks. It is essential that prospective grantees and their projects are evaluated diligently to ensure that the deployed resources add proportional value to the Tezos ecosystem.

Evaluation Process

Step 1

Applications are initially vetted to ensure they fulfill the Tezos Foundation's formal requirements. Formal requirements are published for prospective applicants via a request for proposals (RFP).



Step 2

Applications that pass through the initial review phase are sent to the Tezos Foundation's Technical Advisory Committee (TAC), chaired by Tezos Foundation Council member Michel Mauny, for technical due diligence and evaluation. The list of current TAC members can be found at the bottom of this Biannual Update. The TAC does not make grant decisions itself, but rather offers advice on an application's technological strength and usefulness to the Tezos ecosystem.



Step 3

Applications that receive positive recommendations from the TAC complete a due diligence process before final decisions to approve, decline, or revise grant applications are made by the Tezos Foundation Council.

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Step 4

Final decisions about grant applications are communicated to applicants after they are made by the Tezos Foundation Council. Lastly, approved applicants collaborate with the Tezos Foundation to complete legal paperwork before a grant is finalised.

In some circumstances, when projects are of significant importance to the Tezos ecosystem, the Tezos Foundation will push applications through an out-of-cycle process. It is important to note that although these applications are expedited, they undergo the same due diligence process and require the same approvals. Grants are usually paid out in multiple installments. Such installments are subject to a payment schedule to ensure that predefined milestones are achieved. The Tezos Foundation controls payments and assesses milestone reports from grantees prior to follow-on payments. It may involve the TAC in this process if technical assessments are needed. The Tezos Foundation may not distribute follow-on payments for projects that do not hit their deliverables.

Grantees & Other Funded Entities

Since the first Biannual Update (August 9, 2019), the Tezos Foundation has committed funds to 78 new projects across 26 countries for a total amount of USD 37.6 M. 57 of the 78 new grants (73%) are to organizations or individuals that were not previous grant recipients. Some projects that previously received grants and are still active are not listed in this Biannual Update. Please see the Tezos Foundation's first Biannual Update for information on earlier grants.



Research, Education & Core Development Grants

The Tezos Foundation supports research on and education about a wide spectrum of domains pertaining to computer science such as distributed systems, cryptography, programming languages, and formal verification. A significant amount of resources are allocated towards supporting scientists and engineers at top-tier institutions and organizations around the world, as well as educational programs to train future talent. These initiatives, and others that contribute to core protocol development, are a top priority for the Tezos Foundation.

Grantees and Other Funded Entities:

- B9lab, UK**
- Blockmatics, USA
- BUIDL Labs, India
- Cryptium Labs, Switzerland
- DaiLambda, Japan* ***
- Freiburg University, Germany
- Kyoto University, Japan

- The Marigold Project / LIGO, France*
- Nomadic Labs, France* **
- OCamlLabs, UK
- OCaml Software Foundation, France
- OCTO Technology, France* ***
- SimpleStaking, Malta
- VDF Alliance, USA

Total: USD **11.2 M**

- * grantees that provide functions in several categories
- ** organizations that receive funding from the Tezos Foundation via service contracts or other appropriate agreements but are not grantees
- *** working to finalize an agreement

B91ab is a leading provider of blockchainspecific education and training. The Foundation supported B91ab to build a training program to teach developers how to create Tezos smart contracts in LIGO, SmartPy, and Michelson. So far, B91ab has trained about 250 new Tezos developers.

Blockmatics is a Brooklyn-based company that helps individuals and organizations leverage blockchain technology through education, research, and professional training. The Blockmatics team will release a course to train developers to write Tezos smart contracts in SmartPy, an intuitive and effective smart contracts language and platform for Tezos.

BUIDL Labs is a blockchain research and development lab under The Vantage Project, a team focused on solving user and developer adoption hurdles of decentralized networks. With this grant, the team will launch Zombies in the Room, an interactive code school that will onboard new Tezos developers by teaching them to write SmartPy smart contracts through building their own games.

Cryptium Labs, a Switzerland-based, security-oriented entity, is dedicated to distributed ledger research and protocol development. Cryptium Labs researches and develops a number of technologies to help advance the Tezos project. Notably, they work on consensus algorithms, privacy-preserving features, proof-of-stake and staking products, governance, smart contracts, sharding, and more. Cryptium Labs collaborated with other Tezos developers on the Babylon and Carthage upgrades and represents the Tezos project at conferences and events around the world.

DaiLambda, a software engineering company based in Kyoto, Japan, is dedicated to research and development of the Tezos core protocol and smart contracts. The DaiLambda team has extensive experience with OCaml, stemming from time in academia at Inria in Paris, and contributes to the growth of the Tezos ecosystem in Japan and the Greater Asia region through training and consulting engagements. Peter Thiemann is a full professor of Informatics at **Freiburg University** in Germany. Professor Thiemann received this grant for COOC (Contract Orchestration for Ocaml), a project to ensure a smooth interaction between OCaml and Michelson and to provide a framework that guarantees the correct orchestration of contract invocation from an application program in the OCaml language.

Kyoto University is the second oldest Japanese university and one of Asia's leading research institutions with 18 Nobel laureates, more than any other university in Asia. Kyoto University conducts research on the current, simple Michelson type-checking to develop static verification techniques for Michelson and higher-level Tezos smart contract languages. Their research team will create an accessible development tool for such verification techniques and contribute to the growth of the Tezos ecosystem in Japan and the Greater Asia region.

The Marigold Project is the team being the LIGO programming language, a friendly smart contracts language for Tezos. The Marigold team contributed to the Babylon upgrade and continues to collaborate with other Tezos development teams to improve the Tezos core protocol.

Nomadic Labs conducts ongoing research into formal verification of smart contracts. consensus algorithms, and possible zeroknowledge cryptography implementations for Tezos. Nomadic Labs continues to work on Michelson, a domain-specific language for writing smart contracts on Tezos, as well as an additional low-level language, Albert, which will serve as a compilation target for high-level languages. The team recently announced Tenderbake, a classical BFT-style consensus algorithm for public blockchains such as Tezos, and plans to propose the addition of privacy-preserving technologies to Tezos, among other things. Nomadic Labs collaborates with the global Tezos developer community to support development initiatives and streamline workflows across various teams and contributors to the Tezos project.



Adrian Brink, Cryptium Labs

At Cambridge University, OCaml Labs is a top-tier functional programming and multi-disciplinary computer science team. With this grant, the OCaml Labs team will migrate the Tezos codebase to the new duniverse build system, which will help improve the speed of Tezos builds and smooth the development workflow for developers. OCaml Labs is working with researchers at the Indian Institute of Technology Madras (IITM), one of the foremost institutes of national importance in India in higher technological education and applied research, on this project.

OCaml is the functional programming language that is used to implement Tezos. The "Learn-OCaml" project aims to increase the usage of OCaml in education and promotes its mainstream adoption. This grant helps the OCaml Software Foundation improve its current OCaml MOOC ("massive open online course"), develop a new OCaml MOOC with automatically graded exercises, and launch a collaborative project to build an advanced and interactive textbook to more effectively teach functional programming in OCaml to a wider audience. OCTO Technology is a French consulting and IT realization firm within Accenture Digital. With this grant, the OCTO team will build and launch Tezos Academy, a freely available online platform that will teach LIGO smart contract development in a fun and user-friendly manner.

SimpleStaking is an active Tezos development team led by Juraj Selep. The SimpleStaking team received a grant to implement a secure, trustworthy and open-source Tezos node in the Rust programming language, a popular language with a focus on safety. In phase 2 of the project, SimpleStaking will create a testing environment to secure interoperability between the OCaml and Rust nodes, develop a resilient mempool, expand the number and depth of security-focused tests, optimize the storage module, and add support for hardware wallets.

The VDF Alliance is a collection of worldclass academic, non-profit, and corporate collaborators building open-source hardware for the blockchain ecosystem. The Tezos Foundation joined the VDF Alliance to support research and development that will hopefully improve the security and scalability of blockchain protocols like Tezos.

Ecosystem – Tools & Applications Grants

The Tezos Foundation supports many teams building tools that will help developers of varying skill levels build novel applications on Tezos and contribute to the growth of its ecosystem. To date, the Tezos Foundation has focused on four main areas within this grantmaking category: programming languages and libraries, block explorers and analytics, smart contract development, and infrastructure. A fifth category, applications, has emerged in recent months.



Istvan Deak, Stove Labs

Grantees and Other Funded Entities:

Programming Languages and Libraries

- Anchorage, USA
- Archetype, France
- Brice Aldridge, USA
- Cryptonomic, USA
- The Marigold Prject / LIGO, France*
- Nomadic Labs, France* **
- SmartPy, USA**
- Sotez, USA
- TezosKit, USA
- TQ Tezos, USA* **

Block Explorers

- Baking Bad, Russia
- Cryptonomic, USA
- Everstake, Ukraine
- Figment Networks, Canada
- Papers / AirGap, Switzerland
- Tezos-nodes, Russia
- TzStats, Germany

Smart Contract Development

- Baking Bad, Russia
- Catsigma, Asia
- DaiLambda, Japan*
- Madfish Solutions, Ukraine
- Nomadic Labs, France* **
- Protofire, Puerto Rico
- Runtime Verification, USA
- Tezsure, India
- Truffle Blockchain Group, USA

Infrastructure

- Agile Ventures, Czech Republic
- Baking Bad, Russia
- camlCase, USA
- Catsigma, Asia
- Cryptoeconomics Lab, Japan
- ECAD Labs, Canada
- Equisafe, France
- fabr(x), USA
- Madfish Solutions, Ukraine
- OCTO Technology, France* ***
- Papers / AirGap, Switzerland
- Stove Labs, Slovakia
- Tezos Rio, Brazil
- TQ Tezos, USA* **

Applications

- Ackee, Czech Republic
- Blockdaemon, Ireland
- Ejara, Cameroon
- Electis, France
- Sword Group, France
- Tezos Satoshi's Treasure, Asia

Total: USD**13.2** M

** organizations that receive funding from the Tezos Foundation via service contracts or other appropriate agreements but are not grantees

^{*} grantees that provide functions in several categories



Alessandro De Carli, AirGap/Papers

Programming Languages and Libraries

In order to make Tezos as accessible as possible, the Tezos Foundation supports engineers creating open-source software that helps lower barriers to entry to Tezos development.

Anchorage is a qualified custodian that provides an advanced platform for cryptocurrency custody. With this grant, the Anchorage team expands the scope of its open-source library to support creating and invoking Tezos smart contracts in the Go programming language.

Archetype, built and maintained by Edukera, is a domain-specific language to develop Tezos smart contracts, with a specific focus on contract security. Archetype provides a predefined set of security properties and enables one to specify contract properties with logic formulas. Go Tezos, created by Tezos developer Brice Aldrich, is a popular Go library that exposes and builds upon the Tezos RPC (remote procedures call). Brice continues to improve Go Tezos by adding additional features, such as smart contract deployment and more RPCs, and increasing test coverage.

ConseilJS is a library developed by **Cryp**tonomic for building applications on Tezos. The library is connected to the Nautilus infrastructure for high-performance analytics provided by the Conseil blockchain indexer and for live chain data and operations via an integrated Tezos node. ConseilJS aims to give developers better data to work with and to make it easier to access that data in more development environments through tools like Docker.

LIGO, developed by **The Marigold Project**, is a friendly smart contracts language designed for developing larger contracts than those typically written in Michelson. An imperative language that compiles down to clean Michelson code, LIGO currently supports three different syntaxes: Came-LIGO for OCaml-like syntax, PascaLigo for Pascal-like syntax, and ReasonLIGO for Reason-like syntax.

Michelson, maintained by **Nomadic Labs**, is the programming language for Tezos smart contracts and was designed with formal verification in mind. Even though it is a rather low-level, stack-based language, its static type system eliminates a whole class of programming errors before the execution of smart contracts. Nomadic also works on Albert, an intermediate smart contract programming language intended to serve as a compilation target for high-level languages.

SmartPy, developed by Smart Chain Arena, is an intuitive and effective language that gives developers the tools needed to write smart contracts using Python syntax that compiles down to Michelson. The language includes a set of high-level primitives, SmartML, a new virtual machine written in OCaml, and a compiler to translate SmartML into Michelson. Smartpy.io is a web-based editor and integrated development environment based on SmartPy that lets users simulate, debug, test, and analyze SmartPy smart contracts.

Sotez is a barebones JavaScript library for simply and intuitively interacting with the Tezos blockchain. It is maintained by Andrew Kishino, a long-time Tezos community member and developer, working mostly in JavaScript as a Senior Software Engineer at Twilio. This grant accelerates the development of Sotez and adds additional functionality to the library to make it more advanced and suitable for wider adoption.

TezosKit, created by Tezos developer, Keefer Taylor, is a Swift SDK (software development kit) that powers Tezos on iOS and macOS. This grant allows Keefer to accelerate the development of TezosKit to take advantage of smart contract features introduced in recent protocol upgrades and improve application development on mobile. Additionally, Keefer will build-out secure key storage on mobile and productionize the SDK through an independent external security audit. Morley and Lorentz are smart contract development frameworks developed by a team with representatives from camlCase, Serokell, and TQ Tezos. Morley is a library designed to make writing smart contracts in Michelson pleasant and effective. Lorentz is a powerful meta-programming tool that lets developers write smart contracts directly in Haskell, one of the most popular functional programming languages.

Block Explorers

The Tezos Foundation has also made it a priority to fund the development of opensource block explorers and other tools to help community members analyze the Tezos blockchain.

Baking Bad is an active Tezos development team that builds a variety of widely used products in the ecosystem. This grant supported the team with the development of TzKT, a lightweight, API-first, account oriented block explorer for the Tezos blockchain.

Arronax by **Cryptonomic** is a block explorer and a blockchain analytics tool all rolled into one. Built with ConseilJS and powered by the Conseil API, Arronax offers traditional block explorer data with a flexible front-end interface that allows for a wide range of drag and drop querying and data exploration. Mininax is a minimal retro-inspired block explorer for Tezos acting as a tool to work with Arronax, letting users access Arronax data if they're unsure of how to structure a query.

TezTracker is a Tezos block explorer built by the **Everstake** team. This grant helps advance the development of TezTracker to add greater analytical capabilities and insights about Tezos on-chain activity for users.

Figment Networks is a professional staking services company and contributor to the Tezos ecosystem. With this grant, Figment Networks will open-source a high-level analytics, alerting, and governance tool for the Tezos ecosystem, with a goal to provide the most useful information for Tezos bakers and delegates. Papers, the team behind the AirGap wallet, is an active development team in the Tezos ecosystem. The Papers team continues to improve tezblock, a Tezos block explorer, by adding more advanced baking and governance data through integration with Tezos Agora, Tezos smart contracts and assets support, and other key metrics and data visualizations.

Tezos-nodes is a service that rates public bakers and monitors the node performance of non-public bakers. The Tezos-nodes team will soon release iOS and Android applications for its service to help Tezos stakeholders more effectively evaluate Tezos bakers.

Blockwatch Data, led by Alex Eichhorn, received an additional grant to accelerate the development of TzStats, a Tezos block explorer, and its underlying blockchain indexer, tzindex. In addition to ensuring compliance with future protocol upgrades, TzStats will also allow users to track upcoming Tezos token standards. A recent API upgrade included the addition of features such as implicit on-chain events, contract interface hashes, and entrypoint filters and statistics.

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The Tezos Foundation funds tools to help lower barriers to entry for Tezos smart contract development.

Smart Contract Development

Tezos supports institutional-grade smart contracts. The Tezos Foundation funds tools to help lower barriers to entry for Tezos smart contract development and the applications that will follow.

In addition to its analytics tools, **Baking Bad** builds software to help improve Tezos smart contracts development: 1) BetterCallDev [Hub] – a tool to help developers manage all of their Tezos projects (i.e. a decentralized GitHub); and 2) IMichelson – a Jupyter (interactive notebook) kernel based on a custom Michelson interpreter with runtime type checking, syntax coloring, and basic autocomplete functionality.

Built by Tezos developer **Catsigma**, Misualizer is a tool that allows users to visualize all possible behaviors of Tezos smart contracts and trace all of their internal transactions to get complete pictures of different entry points.

DaiLambda is building a prototype of a web application that will allow users to create their own smart contracts from available templates in an intuitive and informative manner. The purpose of this project is to lower the burden of developing high-quality smart contracts using formal methods.

Madfish Solution is a Ukraine-based company with over three years of blockchain development experience. After having won first place at the first Eastern European Tezos Hackathon in September 2019, the Madfish Solutions team continues to develop and improve eth2tez, a transpiler from the Solidity programming language to LIGO.

Mi-Cho-Coq is a specification of Michelson using the Coq interactive theorem prover. This provides a formal specification of the syntax and semantics of Michelson, as well as a framework to verify smart contracts. Mi-Cho-Coq is maintained by **Nomadic** Labs. **Protofire** is a blockchain and smart contracts development team that created an initial version of a liquidity pool smart contract accompanied by a basic client to demonstrate the contract's functionality and tutorials explaining the implementation. In phase 2 of the project, the team is building upon its first implementation by adding functionality for lending and borrowing.

Runtime Verification is a company that uses runtime verification-based technigues to improve the safety, reliability, and correctness of software. Phase I of this project resulted in a formal semantics and reference implementation of Michelson in the K Framework. The K language is designed to make language definitions as readable as possible while still ensuring a K semantics has a precise mathematical meaning. Phase II of this project will result in the creation of a unit testing environment capable of loading an initial state and exiting before proper contract execution to help in testing the Michelson language at a finer granularity.

Tezsure is a Tezos-based insurance platform. This grant helps the Tezsure team continue to build Tezster, a testing tool for Tezos development, by implementing more advanced features, producing tutorials and explainer videos, and adding example smart contract templates.

Truffle Blockchain Group, the team behind the world-class development environment Truffle Suite, received a grant to help developers more easily build on Tezos. The collaboration resulted in an initial integration of Truffle tools with Tezos protocols and languages. This will help make developing Tezos applications easier by lowering barriers to entry and providing Tezos developers with a set of industry-leading tools in one accessible location. Tezos is the first public, non-EVM (Ethereum Virtual Machine) smart contracts platform to be supported in Truffle's suite of tools.

Infrastructure

Infrastructure is essential to a thriving blockchain ecosystem. In the case of Tezos, projects building critical infrastructure like financial primitives and asset standards make it easier for developers to use these public goods to build novel applications on Tezos.

Agile Ventures is an in-house software development team and consultancy group that has worked on a number of projects since 2016, most recently Happy Tezos, a Tezos delegation service, and TaaS, a service that provides a WebSocket endpoint allowing application developers to collect real-time information from the Tezos blockchain. Continuing from its work on TaaS, the Agile Ventures team will create and provide a free instance of an open-source solution exposing a GraphQL API endpoint.

Adding to its list of products in development, **Baking Bad** works on Atomex STO Gate, a collection of flexible program modules to provide various atomic swap implementations for digital securities ("security tokens") and other Tezos asset standards.

camlCase is an active team in the Tezos ecosystem focused on decentralized finance (DeFi), development, and education. camlCase was awarded a grant to support its development of Dexter, a decentralized exchange protocol on Tezos. The protocol being developed by camlCase was inspired by Uniswap, a decentralized exchange protocol that enables automated asset exchange.

In addition to Misualizer, **Catsigma** is also the developer of TezBridge, a tool that allows users to interact with applications built on Tezos from their web browsers without requiring them to download browser extensions. Catsigma received an additional grant to improve the documentation of Tez-Bridge with detailed text manuals, screen recorded GIFs for all features, an improved "playground", and several complete application examples. **Cryptoeconomics Lab**, a distinguished team based in Tokyo, Japan, received a grant to implement Plasma on Tezos. Plasma is a layer-2 scaling technique to increase transaction throughput on blockchains. Furthermore, Crptoeconomics Lab will integrate Tezos to its application development toolset, Plasma Chamber, for its Plasma layer on Tezos.

ECAD Labs is a software & services consultancy that delivers and manages projects in the areas of software development, systems engineering, open-source development, and support. ECAD Labs received a grant to develop a Grafana data source plugin for Tezos and improve Signatory, a Tezos remote signer. ECAD Labs is also involved in the development of Taquito, a TypeScript library suite for development on Tezos.

Equisafe, with the support of Nomadic Labs and OCTO Technology, received a grant to create asset standards and a smart contract package for the issuance and compliant transfer of financial instruments on the Tezos blockchain. The Nyx standards will leverage Tezos to automatically secure and execute over 160 predefined business rules.

Fabrx is a cloud company for web3 (blockchain) technologies. Through this project, Fabrx produced a protocol-level trigger and events platform (IFTTT - "If This Then That") for the Tezos blockchain, supporting automated API methods and trigger-based functions for applications.

In addition to eth2tez, **Madfish Solutions** received grants to build the following pieces of infrastructure: 1) QuipuSwap – a protocol enabling a seamless exchange of tokens / assets on Tezos in a secure, decentralized, and censorship-resistant manner; and 2) Thanos – a fully-featured wallet focused on user experience (UX) with integrated support for various Tezos asset standards, dApps, explorers, etc.

OCTO Technology is a French consulting and IT realization firm within Accenture Digital. Through this project, the OCTO team will build and launch Tezos Link, an HTTP API to the Tezos network. Papers collaborates with other Tezos development teams to create a wallet interaction standard to help users interact with applications built on Tezos from their browsers. Using this standard, a browser extension, Beacon, is under development to allow any application developer to easily incorporate a wallet via a generic implementation.

Stove Labs received a grant to implement a non-fungible token (NFT) as well as support the development of the Tezos Satoshi's Treasure Hunt. Stove Labs, led by Matej Sima, is an active Tezos development team that builds a number of products, such as Granary, a Tezos smart contracts and application development toolkit, and facilitates training sessions to onboard new Tezos developers.

Tezos Rio is a team of Tezos developers and community members based in Rio de Janeiro, Brazil. Led by Luiz Milfont, Tezos Rio builds software and tools for other developers, bakers, and end-users. Products actively under development are TezosJ, a Java SDK for Tezos, and TAPS, an automatic payment system for Tezos bakers.

TQ Tezos houses a technology team building Tezos-based solutions and open-source software for enterprises and developers. Among a variety of products in development, TQ Tezos, in collaboration with other Tezos developers, spearheads the development of a standard for a unified token contract interface, supporting both a wide range of token types (e.g. fungible, non-fungible, non-transferrable, etc.) as well as multi-asset contracts.

Applications

End-user applications help facilitate the adoption of Tezos and growth of its ecosystem. The Foundation issues grants to projects building applications targeting a variety of real-word use-cases based on Tezos.

Ackee is a mobile development company located in Prague and Berlin. Ackee is building a Proof-of-Concept iOS application that will demonstrate how to use its TezosSwift library, which is forked from Keefer Taylor's TezosKit.



First Eastern European Tezos Hackathon, September 2019

Blockdaemon provides blockchain infrastructure and node management services for developers and enterprises. With this grant, the Blockdaemon team will create a CLI-based application that is capable of downloading, configuring and running a Tezos node. The application will be pluginbased so that it can be easily extended for a wide variety of use cases.

Ejara is a mobile application that supports cryptocurrencies and tokenized assets uniquely tailored to the African market. With this grant, Nzinghaa Lab, the team behind Ejara, will develop and integrate smart contracts to its product to enable secure wallet backup and key recovery, Bitcoin-Tezos atomic swaps, and a cross-chain key registration and recovery system on Tezos.

Electis is a non-profit organization aiming to promote new usage of technology for democracy and voting, with particular expertise on blockchain technology and enabling concrete voting projects. With this project, the Electis team will organize an electoral vote across 10-20 different universities in 2020 using a common Tezos-based application that is in development.

Sword Group is an international consulting and IT services company and one of the main system integrators in the electronic content management space. Through this project, the Sword Group will build opensource software to fight document fraud (e.g. faked invoices) by storing a document's proof of authenticity on the Tezos blockchain.

Tezos Satoshi's Treasure Hunt is a multiplayer game of skill where people can solve difficult puzzles to receive tez (Tezos tokens) from a prize pool of 1 million tez. This Tezos Hunt is built on top of a set of smart contracts, allowing hunters to be immediately rewarded, in tez, for using their problemsolving skills to beat puzzles.

Community Grants

Tezos was designed to be a digital commonwealth. The protocol was deliberately written to empower individual members of the community through censorship-resistant transactions, a proof-of-stake based consensus algorithm, and built-in on-chain governance. These design choices were made to foster a collaborative, open, and global community. To ensure communities around the world have the support they need to succeed, the Tezos Foundation provides funding to entities who support community development, events, and other efforts that grow the Tezos ecosystem.

Grantees and Other Funded Entities

- Norn Community, Russia
- Reason Association, Austria
- Tezos Brazil, Brazil
- Tezos China, Greater China
- Tezos Commons, USA
- Tezos India, India
- Tezos Israel, Israel

- Tezos Japan, Japan
- Tezos Korea, South Korea
- Tezos Southeast Asia, Singapore
- Tezos Ukraine, Ukraine***
- Tezos.help, Sweden
- TQ Tezos, USA* **

Total: USD**13.2** M

- * grantees that provide functions in several categories
- ** organizations that receive funding from the Tezos Foundation via service contracts or other appropriate agreements but are not grantees
- *** working to finalize an agreement



The Norn Community's TezosNotifierBot is a popular Telegram bot used to monitor various events on the Tezos blockchain, such as transactions, delegations, missing block endorsements, double baking, etc. With this grant, the Norn Community improved its @TezosNotifierBot for Telegram and expanded the bot to support other notification channels as well.

The **Reason Association** is a non-profit organization that focuses on the practical research, development, and promotion of the ReasonML and OCaml programming languages. This grant helps the Reason Association grow the ReasonML community by releasing more effective learning materials and tools, and producing Tezos-related content and resources to help encourage more members of the ReasonML community to get involved in the Tezos ecosystem.

Tezos Brazil is a team that engages in business, product, and community development. Through these initiatives, Tezos Brazil promotes the adoption and growth of the Tezos project and ecosystem in the continental-sized country. **Tezos China** is a non-profit organization based in the Greater China region that was established to facilitate the growth of the Tezos ecosystem in China and the rest of Asia. Tezos China hosts meetups, engages in business development initiatives, and conducts educational and training sessions to help advance the Tezos project in the region.

Tezos Commons is a North American non-profit foundation dedicated to organizing grassroots community interests. Tezos Commons provides programs for community building, education, promotion, and collaborative open-source software initiatives. Founded in 2018, Tezos Commons strives to support the ideas, individuals, and organizations dedicated to building the digital commonwealth.

Tezos India serves the largest democracy in the world by supporting individuals and entities who are eager to use Tezos. Its goal is to grow the Tezos developer community and advance the Tezos project in India through workshops, meetups, and hackathons.

Tezos Israel is an entity whose mission is to educate, train, and grow the Tezos ecosystem 25

in Israel. Tezos Israel's activities focus on technical and business development by collaborating with start-ups, corporations, and various government agencies to introduce the potential benefits of realizing projects on Tezos.

Tezos Japan is a non-profit organization focused on supporting enterprise activities, engineering engagements, and the Tezos community in Japan. Tezos Japan engages with companies of all sizes, runs technical education seminars, and hosts communitydriven events throughout the region.

Tezos Korea is a non-profit organization that collaborates with Korean universities and hosts events, provides education, and supports technical development. Tezos Korea handles business consulting and facilitates the adoption of Tezos in Korea.

Tezos Southeast Asia is a non-profit organization based in Singapore leading Tezos adoption and awareness throughout the region. The team offers technical incubation and mentoring for startups looking to build on Tezos, implementation consulting, and educational events to help grow the Tezos ecosystem in Singapore and the rest of Southeast Asia. **Tezos Ukraine** is a non-profit organization run by Ukrainian blockchain enthusiasts and long-time Tezos community members. Its mission is to facilitate and expedite the growth and advancement of the Tezos project in Ukraine and the CIS (Commonwealth of Independent States) region.

Tezos.help was built by Klas Harrysson in 2017 to help guide new members into the Tezos community and serve as an active repository of various Tezos resources. As part of this project, Klas expanded the original Tezos.help website into a full-fledged, self-sustaining library of all relevant Tezos ecosystem projects and resources.

TQ Tezos is a New York City-based organization that focuses on driving adoption and awareness of Tezos. In addition to building Tezos-based solutions and open-source software for enterprises and developers, it engages in business development, helps startups and enterprises adopt Tezos for a variety of exciting use cases, and works closely with other Tezos organizations and community members on marketing, events, and ecosystem development initiatives.



IMDEA Software and Nomadic Labs sign research agreement



Financial Services

The financial services sector requires from their partners not only market-leading technology solutions, but also a marketleading focus on compliance. The Tezos Foundation's industry-leading compliance standards including regular audits by PwC Switzerland, a Big4 firm, and a focus on supporting regulatory compliant projects on a global scale is a perfect fit for the financial services sector and has begun to foster the adoption of Tezos in that space.



Taurus Protect, digital assets storage solution

Digital Securities on Tezos

The Tezos Foundation believes that digital securities (sometimes called "security tokens" or "tokenized securities") will be one of the first widespread use-cases on Tezos. Smart contracts managing all aspects of the life cycle of a security could solve some of the current limitations of incumbent financial infrastructure. The benefits of digital securities include immediate term efficiency gains and cost savings, the potential to unlock globally distributed supplies of capital, and the creation of certainty around ownership rights and provenance.

The Tezos Foundation as well as Tezos ecosystem entities around the world partner with companies at every level of the digital securities value chain to develop and integrate Tezos as the new underlying technology for tomorrow's capital markets.

Selected collaborations with issuance platforms

Fundament Group

The Berlin-based Fundament Group will launch the first digital security in Germany, regulated by the financial market authority, BaFin. Fundament is building end-toend infrastructure for digital securities including distribution channels to end-users. Tezos is the default blockchain offered for Fundament's products.

Globacap

Globacap is a London-based primary issuance and administration platform for digital securities, regulated by the UK's FCA (Financial Conduct Authority). Globacap is also a partner of many digital securities exchanges, offering a secondary market for blockchain-based digital securities. Tezos will be offered as the preferred underlying blockchain for all issuances via Globacap.

Securitize

Securitize is a platform to deliver trusted global solutions for creating compliant digital securities, including funds, equity, fixed income and real estate. Securitize has integrated Tezos to its offering, which will be available to issuers from around the world.

Taurus Group

Taurus Group is a Swiss financial services company building a next-generation platform to trade, invest and protect digital assets. Taurus is also a leading B2B (business-to-business) service provider in Switzerland for cryptocurrency custody. Taurus will promote Tezos as its blockchain technology partner and will integrate Tezos as blockchain for digital securities issuances on its platform. Taurus will enable digital securities projects with financial institutions in Europe and provide additional access to Tezos based digital assets.

Vertalo

Vertalo is a cap table, compliance, and investor onboarding-platform utilizing blockchain technology to connect and enable the digital asset economy. As an SEC-registered Transfer Agent, Vertalo supports the ongoing asset management needs of private companies, broker-dealers, and investors and will use Tezos as the default blockchain for its clients.

Selection of announced Use Cases

Alliance Investments

Alliance is the leading property developer in Manchester, UK, who has announced tokenizing GBP 500 M of UK real estate, and partnering with the Tezos Foundation, tZero and digital securities advisory boutique, Megadolon, for its first digital security project, the River Plaza in central Manchester (GBP 43 M).

Andra Capital

The Silicon Valley Coin, representing an interest in Andra Capital's Open-Ended Fund, is a tradable digital security based on Tezos and breaks the mold of traditional venture capital investing by leveraging blockchain technology. The Fund invests in leading late-stage, private technology companies that are backed by top tier VCs valued at USD 500 M or higher, and leaders in their industries.

Baanx

Baanx has developed a proprietary platform for mobile banking applications including a wallet, payment rails and KYC/ AML and operates as a distributor for third parties. Baanx holds an e-money license in the United Kingdom. The core product is white-labeling the Baanx decentralised cryptocurrency bank, exchange, and payment system. Baanx products also include a cryptocurrency mobile payment app with a physical and virtual VISA debit card option, issued already in 30 countries. Tezos will be integrated as a payments currency.

Previously announced collaborations in the digital securities space continue unabated. Tezos ecosystem entities and the Tezos Foundation have been working intensively on projects like the integration of Tezos at BTG Pactual, a leading investment bank in Latin America, in preparation for the upcoming USD 1B STO (security token offering) of ReitBz. Additionally, the launch of ERX (Elevated Returns Exchange), the first SEC approved securities token exchange in Thailand with Tezos as the underlying blockchain, will launch in 2020.





Other Use Cases in the Pipeline

In addition to the announced partnerships, the Tezos Foundation and other Tezos ecosystem entities have been working on many projects that will be announced later in 2020. The focus of these upcoming projects is not only financial services, and more concretely digital securities, but also on other use cases including payments, CBDC (central bank digital currencies), DeFi, gaming / sports / media, and supply chain. Projects and partnerships in these fields are currently being built and will mature over time.

Tezos Foundation funded entities and public bakers

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Grants (All active grants during the period)

1	Austria	1	14 Japan	(
2	Brazil	1	15 Korea	i
3	British Virgin Isl.	1	16 Malta	1
4	Cameroon	2	17 New Zealand	i
5	Canada	2	18 Puerto Rico	1
6	China	3	19 Russia	0
7	Czech Republic	3	20 Singapore	1
8	France	11	21 Slovakia	i
9	Germany	3	22 Sweden	1
10	Hongkong	1	23 Switzerland	0
1	India	2	24 UK	4
12	Ireland	1	25 Ukraine	4
13	Israel	1	26 USA	2

Strategic partnerships (Locations of all strategic partnerships as of January 31, 2020)

1	Brazil
2	Germany
3	Switzerland
4	Thailand
5	UK
6	USA

Public bakers

6 2

(As of February 4, 2020, mytezosbaker.com)

Argentina	1	14 Hongko
Australia	3	15 Hungar
Austria	1	16 India
Azerbaijan	1	17 Ireland
Belgium	1	18 Israel
Brazil	2	19 Italy
British Virgin Isl.	1	20 Japan
Canada	6	21 Luxemb
Cayman Islands	2	22 Malaysi
China	7	23 Malta
Denmark	1	24 Mexico
France	6	25 Netherl
Germany	5	26 New Ze



ng	1	Philippines	1
,	1	28 Russia	2
	1	²⁹ Singapore	2
	1	30 Slovenia	1
	1	31 South Korea	8
	4	32 Spain	1
	5	33 Sweden	1
ourg	1	34 Switzerland	7
r	1	35 Turkey	1
	3	36 UK	Ę
	1	37 Ukraine	2
inds	5	38 USA	2
ıland	1		



Financials

To most effectively fulfill its mandate to provide resources to promote the Tezos project and ecosystem, the Tezos Foundation continuously improves its effectiveness, efficiency and transparency. As the grantmaking process is essential in providing resources to the ecosystem, the Tezos Foundation has created an initiative to further streamline this process and provide more transparency to the wider community by making grant information such as deliverables and milestones publicly available. More information will be released as this project progresses.

The Tezos Foundation is the only large-scale blockchain organisation to publish weekly updates and detailed Biannual Updates. Biannual Updates provide the community and outside observers with insights into the Tezos Foundation's finances and operations.

The Tezos Foundation adheres to the asset management strategy that is established and reviewed by the Tezos Foundation Council on a regular basis. Cryptocurrency prices are constantly monitored and, since the first Biannual Update in August 2019, the Stability Fund has remained untouched.

Furthermore, the Tezos Foundation is the only large-scale blockchain organisation to be audited by a "Big4" auditor, PwC Switzerland. The 2018 statutory audit is now complete and as customary and mandated by Swiss law, the audit report has been filed with the Swiss Federal Supervisory Authority for Foundations.

We are proud to be part of a small group of organizations with significant cryptocurrency holdings that received an unqualified audit report for the fiscal year 2018. An unqualified audit report is issued when an independent external auditor concludes that an organization's financial statements are fairly and appropriately presented in accordance with Swiss law. The 2019 financial audit, also conducted by PwC Switzerland, is underway and the Tezos Foundation will issue a statement when it is complete. For the fiscal year 2019 and due to legal requirements, the Tezos Foundation transitions from Swiss accounting standards to international financial accounting standards (IFRS). The Tezos Foundation is well prepared for this next milestone.

Financials

Asset held of January 31, 2020 had a market value of USD 635 M compared to USD 652 M on July 31, 2019.)





The Foundation's cryptocurrency assets are stored in several secure custody solutions.

15% 16%

Stability Fund

TF holds a conservative and diversified portfolio with liquid assets such as Bonds, ETFs and Commodities at Swiss Banks.



FIAT

The Foundation holds fiat with several banks in multiple jurisdictions. 97% in USD, 2% EUR and 1% in CHF and GBP.



Tezos (XTZ)

The Foundation does not have plans to liquidate the XTZ from its genesis block allocation or related baking rewards.



Other Investments

Other assets are predominantly strategic equity or debt investments or cryptocurrencies such as Ethereum.



Council & Committees of the Tezos Foundation

In order to provide the Tezos community with more transparency about the Tezos Foundation's organization and governance, outlined below are the functions and responsibilities of the Tezos Foundation's bodies.



The Tezos Foundation Council

Foundation Council

The Foundation Council has the overall responsibility to manage and administer the Foundation, its assets and to define the Foundation's strategy. In line with the Foundation Charter, the Foundation Council has delegated the operational and asset management duties to the Executive Committee of the Foundation. The Foundation Council appoints and constitutes itself. It is currently composed of seven members including the president of the Foundation.

Executive Committee

The Executive Committee is entrusted by the Foundation Council with the operational and asset management duties of the Foundation. In addition, the Executive Committee implements the Foundation Council's resolutions and is, among others, to some extent responsible for investment decisions fostering the Foundation's purpose.

Audit Committee

The Audit Committee monitors the Foundation's financial and business reporting, including financial statements and tax matters. The audit process includes reviewing the activities, adequacy, and effectiveness of the Foundation's statutory auditor (PwC Switzerland).

Investment Committee

The Investment Committee provides recommendations and advice to the Foundation Council and the Executive Committee about all investments of the Foundation outside of regular grants and ordinary asset management.

Technical Advisory Committee

The Technical Advisory Committee was established to provide recommendations and advice to the Foundation Council and the Executive Committee on all technical matters of the Tezos protocol, including but not limited to technological priorities to be funded by the Foundation. The TAC includes external members from throughout the Tezos community.

Nomination Committee

The Foundation Council recently appointed a Nomination Committee to evaluate and propose new members to the Foundation Council. We refer to the Tezos Foundation website for more information regarding the future governance structure.



The Tezos Foundation Executive Committee

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The Executive Committee is entrusted by the Foundation Council with the operational management of the Tezos Foundation.

Foundation Council

The Tezos Foundation Council is composed of accomplished professionals who lead the Tezos Foundation as it supports the Tezos protocol and ecosystem. Individually, they bring expertise and insights from their respective fields. Collectively, they form a Council full of unique backgrounds and experiences from all over the world.



Hubertus Thonhauser, Alexis Bonte, Michel Mauny



Ryan Jesperson

Ryan is the Chair of the Tezos Foundation Council. Most recently he was the Chief Operating Officer of Divvy, a FinTech company. Ryan received a BS degree, cum laude, from Brigham Young University, and an MBA from the Fuqua School of Business at Duke University.



Alexis Bonte

Alexis is the co-founder and CEO of online gaming company eRepublik Labs, which is part of the Stillfront Group, where Alexis holds the position of Group COO. He is also a venture partner at Atomico where he advises on new investments in France, Spain, Portugal and Eastern Europe, as well as sources and accelerates growth in the aamina, blockchain and travel verticals.



Lars Haussmann Lars is the Head of Corporate Management and Company Administration at Haussmann Treuhand AG. He has extensive experience in corporate management, administration, and accounting matters in demanding and complex situations.



Ryan Lackey

Ryan is a serial entrepreneur in the computer security space with a long history of involvement in digital cash and cryptography projects, starting from participation on the cypherpunks mailing list in the early 1990s. In addition to co-founding HavenCo. the world's first offshore datahaven, in 2000 as a defense satellite contractor in Iraq, he built and then sold a trusted server computing startup to Cloudflare.



Michel Mauny

Michel is Chief Scientific Officer at Nomadic Labs, on leave from INRIA (the French National Institute for Computer Science and Applied Mathematics), where he was a senior researcher and more recently Chief Executive Officer of the Inria Foundation.



Marylène Micheloud

The first Swiss woman to have a Master's degree in Computer Science from Geneva University, Marylène worked as a researcher, expert and professor. For eleven years, Marylène was the director of RERO, the Library Network of Western Switzerland (covering four universities and six Swiss cantons).



Hubertus Thonhauser Hubertus is Managing Partner of Enabling Future, a family office backed VC firm investing in social impact creating tech companies. Previously he was co-founder of Babil Games, MENA regions leading mobile games publisher, acquired by Stillfront Group in 2016. Prior to 2010 Hubertus held various C-level and board roles in the regulated casino- and digital gaming industry.

Foundation Commitees

Executive Committee

Hubertus Thonhauser Chair of the Investment Committee

Ryan Jesperson Chair of the Foundation Council

Ulrich Sauter General Counsel

Roman Schnider Chief Financial Officer / Head of Operations

Investment Committee

Hubertus Thonhauser Chair

Ryan Lackey Chief Security Officer

Lily Liu Co-Founder of earn.com

Ulrich Sauter General Counsel

Roman Schnider Chief Financial Officer/Head of Operations

Audit Committee

Lars Haussmann Chair

Ryan Jesperson Chair of the Foundation Council

Ulrich Sauter General Counsel

Roman Schnider Chief Financial Officer / Head of Operations

Technical Advisory Committee

Michel Mauny Chair

Jacob Arluck Co-Founder of TQ Tezos

Bruno Bernardo Research Engineer at Nomadic Labs

Adrian Brink Co-Founder of Cryptium Labs

Benjamin Canou Chief Technology Officer of Nomadic Labs

Jun Furuse Director of Tezos Japan Foundation

Caleb Kow President of Tezos Southeast Asia

Ryan Lackey Chief Security Officer

Rob Witoff Chief Technology Officer of Polychain Labs

Nomination Committee

Alexis Bonte Member of the Foundation Council

Ryan Lackey Chief Security Officer

Ulrich Sauter General Counsel

Hubertus Thonhauser Chair of the Investment Committee We seek to empower persons and entities from all over the world to create a robust and decentralized digital commonwealth.

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Tezos Foundation

Get Involved with the Tezos project at tezos.com Learn more about the Tezos Foundation at tezos.foundation

> The Tezos Foundation is a non-profit Swiss foundation with domicile at Dammstrasse 16 in 6300 Zug, Switzerland. The Tezos Foundation is supervised by the Swiss Federal Foundation Supervisory Authority ("SFSA") which is part of the Swiss Federal Department of Home Affairs. The Tezos Foundation's purpose is the promotion and development of new technologies and applications, especially in the fields of new open and decentralized software architectures including the promotion and development of the Tezos protocol and related technologies. This Biannual Update is not the Tezos Foundation's official activity update due to the SFSA. All the information in this Biannual Update is published in good faith and for general information purposes only. The Tezos Foundation does not make any warranties about the completeness, reliability and accuracy of the information contained herein. Unless otherwise stated, all data, information and pictures contained in this Biannual Update are produced by, and belong to the Tezos Foundation as its intellectual property.