

Memorandum of Understanding

Number: 2019-10-051

"ForgeFed" Project

The parties: NLNet, fr33domlover, zPlus

given that:

- **NLnet** has the mission "to promote the exchange of electronic information and all that is related or beneficial to that purpose".
- **NLnet** manages the *NGI0 Discovery* Fund, a fund dedicated to **technologies on search, discovery and discoverability**. The fund was established with financial support from the European Commission's **Next Generation Internet** programme, under the aegis of DG Communications Networks, Content and Technology under grant agreement No 825322.
- **NLnet** collaborates with a number of other organisations within **NGI Zero** to help improve the quality, sustainability, accessibility and security of projects in a structured way.
- **Public collaboration** is essential for software and hardware developers to benefit from knowledge and skills of the wider community and contributes to trustworthy, transparent technology. Unfortunately, proprietary collaborative spaces take project ownership away from developers and **restrain open discovery and innovation**.
- **fr33domlover and zPlus** are experienced free and open source software developers, which have been working on technology to federate and connect online version control repositories using the W3C-protocol for decentralized social networking ActivityPub.
- **fr33domlover and zPlus** want to contribute these solutions to the public good, not as proprietary solutions, but as free and open source technologies that any person or application can use without restrictions and modify to their own needs and the needs of others.
- **NLnet** thinks that this project falls within its mission and the mission of the *NGI0 Discovery* Fund, and wants to facilitate such a contribution.

agree to the following:

- **fr33domlover and zPlus** have jointly written the proposal "*ForgeFed*" which is attached to this document as Annexe I. Annexe I forms an integral part of this Memorandum of Understanding. If and where statements in this annexe or other annexes are in contradiction with one or more statements in the main memorandum text, the statement or statements in the main memorandum text will prevail.
- **fr33domlover and zPlus** are voluntarily undertaking the project, and is solely responsible for all aspects of the project including planning and coordination as well as involving contributors and partners - as long as such happens in line with the terms and spirit of this MoU. The source code of the Project shall be made publicly available under a suitable free and open source software license, as recognised by OSI or FSF.
- **fr33domlover** shall act as signatory on behalf of the group, and confirms to be mandated to act as official point of contact in the context of this project; it is the responsibility of **fr33domlover** and the other grantees to notify **NLnet** in case of any changes or issues.
- **NLnet** commits to make a reservation for the amount of **50000 EUR** to **fr33domlover and zPlus** in order to support the "*ForgeFed*" project. The reservation is bound to the proposal as contained within *Annexe I* of this MoU.
- Should the project fail to complete the goals described in Annexe I, partially or in full, there is no other consequence than the termination of this MoU.

- **fr33domlover and zPlus** commit to keep the user and developer community up to date with progress made within the project at least every two months (more often is never a bad thing) and will maintain a public status page for the project to keep the wider internet community informed. As a courtesy, **fr33domlover and zPlus** may send non-public updates about the status of the project to **NLnet**, but there is no obligation whatsoever to do so - **NLnet** is not operationally involved with the project; its only interest is the public benefit that is the result of the project succeeding in reaching its goals.
- The validity of the Memorandum of Understanding is one calendar year (twelve months) from the date of signing. If the project is not finished at this point of expiry, and the work is still relevant, it may be prolonged based on mutual agreement between **NLnet** and the other parties to this Memorandum. Any *amendment* to the MoU only changes the validity period if it explicitly establishes a new time frame, otherwise the original validity period stays intact.
- Donations may be claimed up to the reserved amount within a maximum of six weeks after the end of the validity of the (amended) Memorandum of Understanding. Donations will be final when the specified milestones or previously agreed partial deliveries have been verified to have been completed. Payments will subsequently be made by wire transfer into the bank accounts designated by **fr33domlover and zPlus**. Payment requests submitted at a later date are at ones own risk.
- **NLnet** and **fr33domlover and zPlus** may issue one or more individual or joint public statements announcing the project and the financial support from NLnet and the *NGI0 Discovery Fund*. **fr33domlover** is also encouraged to visibly and vocally acknowledge this contribution and the contribution of the European Commission to the *NGI0 Discovery*¹ where possible — e.g. through the world wide web, promotional materials, in presentations and in source code.
- The involvement with any particular person(s) or organisations will be on the understanding that these coordinate their activities in agreement with **fr33domlover**, in the spirit of cooperation, and in an effort to achieve the results of the "*ForgeFed*" Project. **fr33domlover and zPlus** appreciate the support from the experts and organisations involved with NGI Zero to ensure that the results of *ForgeFed* will be of the widest possible benefit to all.
- This Memorandum of Understanding cannot be seen as any kind of employment agreement or business contract. **NLnet** nor any of the organisations within **NGI Zero** receive any goods or services as a result of this MoU. Any payments are to be made as charitable donations to **fr33domlover and zPlus** in the light of a voluntary contribution to the public benefit such as defined within the statutory mission of **NLnet foundation**. **fr33domlover and zPlus** are responsible for paying any and all taxes or other fees with regard to this grant, should there be any, and to inform any relevant authorities within their country of these donations should this be legally required.

May 2020

¹ *NGI0 Discovery* was established with financial support from the European Commission's *Next Generation Internet* programme, under the aegis of DG Communications Networks, Content and Technology.

Annexe I: Project plan *ForgeFed*

The goal of the *ForgeFed* project is to enable collaboration of project development through the use of federation, thus breaking away from the the current model dominated by centralized, proprietary platforms. This document outlines the plan that we have prepared in order to accomplish such goal.

The project plan is organized in 4 parts: I) development and formalization of a **technical standard** for project management and version control service interoperability based on, and extending, ActivityPub; II) development of a **reference implementation, called Vervis**, which implements all the components of the specification and against which all other implementations can be tested for correctness and compliance with the standard; III) implementation of the standard in **an existing software forge** for encouraging wide adoption (we consider this approach more suitable than creating a new software forge from scratch). For this task we have identified *Pagure*, a forge used by the Fedora community and originally supported by RedHat; IV) writing any useful **documentation and guides** to assist developers who wish to adopt the standard in their applications.

1. Specification (20 subtasks)

The following subtasks involve research and writing of the technical specification. They will be done by **zPlus** and **fr33domlover** together.

[S1] C2S for the features already documented: a section of the specification dedicated to the Client-to-Server protocol (C2S), with description how commenting and how opening a ticket would be done in C2S. (Amount: 560 EUR)

[S2] Opening a merge request or patch: specification sections explaining how a merge request and a patch would be created across servers. (Amount: 560 EUR)

[S3] Following, addressing, verified inbox forwarding: specification sections defining the process of following forge-related objects and actors; the required or recommended recipients for the various activities; a mechanism for verified ActivityPub inbox forwarding. (Amount: 560 EUR)

[S4] Ticket dependencies: specification sections defining the process and federation of creating ticket dependencies, hosting, and deleting them. (Amount: 560 EUR)

[S5] Ticket updates and flow: specification sections defining how modifications of tickets are made, communicated and federated. (Amount: 560 EUR)

[S6] Merge requests and patches updates/flow: specification sections defining how modifications of patches and Merge Requests are made, communicated and federated, including new versions and including code review. (Amount: 560 EUR)

[S7] UI translation: specification sections defining how software user interface localization management services (such as Weblate) would be represented and interacted with in a federated manner, and how they would interact with other forge objects, such as repositories and tickets. (Amount: 560 EUR)

[S8] VCS remote push: specification sections defining how users' SSH keys would be uploaded, represented and published, and the process of announcing the pushing of commits to remotely-hosted repositories (i.e. ones hosted on different servers than the user's home instance) in a verifiable way. (Amount: 560 EUR)

[S9] Wiki: specification sections defining how wikis and pages would be created, modified and deleted, and how wikis are integrated with other project tools (eg. repository or tickets). This

feature should integrate XWiki if possible, since they are working on wiki federation. (Amount: 560 EUR)

[S10] Search, discovery, WebFinger, instance exploration: specification sections defining how search and discovery of projects across the federated network would work, whether/how the different types of actors would be represented in WebFinger, and a representation of the public projects and content that a server hosts. (Amount: 560 EUR)

[S11] Teams, groups, roles, access control: specification sections defining how federated teams and groups would be created and modified, how roles would be assigned to members, and how access controls would be defined, enforced and announced. (Amount: 560 EUR)

[S12] CI, CD: specification sections defining how Continuous Integration and Deployment services would communicate and interact with repositories. (Amount: 560 EUR)

[S13] Releases, packaging, package repos: specification sections defining how packaged releases of repository content or content derived from it would be created, published and manipulated, and linked with automatic CI builds. (Amount: 560 EUR)

[S14] Kanban: specification sections defining how kanbans and their contents would be created, managed and federated. (Amount: 560 EUR)

[S15] Forks, stars, software specific vocabulary for repos: specification sections defining how repositories could provide properties such as license, programming language, dependencies, etc., and how forking and starring of repositories is done, represented and communicated. (Amount: 560 EUR)

[S16] Verifiable builds: specification sections defining how software builds would provide build recipes and hashes of the results to allow for verifiable reproducible builds. (Amount: 560 EUR)

[S17] OCAPs: specification defining how Object Capabilities would be used for authorization and access control in forges. (Amount: 560 EUR)

[S18] GPG key publishing and commit/tag signature verification: specification sections defining how a user's personal GPG keys would be uploaded, published, used for verifying cryptographic signatures on commits and tags within repositories, and used for signing other kinds of objects such as tickets. (Amount: 560 EUR)

[S19] VCS specifics: specification defining the aspects of ForgeFed specific or unique to each version control system, in particular Git and Darcs, and how to use ForgeFed with these version control systems. If there's interest and feedback from the community, add Mercurial and/or SVN as well. (Amount: 560 EUR)

[S20] Migration/Import: specification defining how to migrate (or "import") a project from one instance to another including tickets, patches, wikis, and every other objects pertaining to the project. Migrations will allow complete "forks" of projects, and eliminate vendor lock-in. (Amount: 560 EUR)

2. Pagure (15 subtasks)

The following subtasks are software development work which gradually implements federation in Pagure (<https://pagure.io/pagure>), and will be done by **zPlus**.

[P1] Representation of ActivityPub actors for users, groups and repositories: users, groups and repositories have JSON-LD representations according to the specification, along with HTTP Signature keys for use when signing activities. (Amount: 1260 EUR)

[P2] Async delivery system: delivery of ActivityPub activities happens asynchronously in the background, and failed deliveries are automatically retried. (Amount: 1260 EUR)

[P3] Discoverability of instances via NodeInfo/ServiceInfo and the fediverse server discovery websites: implementation of NodeInfo/ServiceInfo and other requirements for allowing Pagure instances to be crawled by fediverse discovery websites like fediverse.party, fediverse.space, the-

federation.info. (Amount: 1260 EUR)

[P4] Federated discussion, threads and comments: via ActivityPub S2S, allow tickets and merge requests to receive comments from users of remote ForgeFed servers, and also support discussion of remote issues and merge requests. (Amount: 1260 EUR)

[P5] Opening and closing a ticket: via ActivityPub S2S, allow repository issues to be opened and closed by users of remote ForgeFed instances, and allow opening and closing of remote issues. (Amount: 1260 EUR)

[P6] Opening and closing a MR/patch: via ActivityPub S2S, allow merge requests to be opened and closed by users of remote ForgeFed instances, and allow opening and closing remote merge requests. (Amount: 1260 EUR)

[P7] Following, addressing, inbox forwarding: users and repos can be followed by remote users; users can follow remote users and repos; Pagure performs ActivityPub inbox forwarding when expected to do so by other ForgeFed servers. (Amount: 1260 EUR)

[P8] Ticket dependencies: creation, deletion, hosting: issues can be depended by remote issues, and can depend on remote issues, implemented according to the specification. (Amount: 1260 EUR)

[P9] Ticket updates/flow: issues can be modified by remote users, and users can modify remote issues, including priority, milestones, labels, assigned person. (Amount: 1260 EUR)

[P10] MR/patch updates/flow: merge requests can be modified by remote users, and users can modify remote merge requests. (Amount: 1260 EUR)

[P11] VCS remote push and SSH key publishing: users' SSH keys are published according to the specification; commits can be pushed by local users and by users of remote forges who have been given access, and both local and remote push events are announced in a verifiable way according to the specification. (Amount: 1260 EUR)

[P12] Releases, forks and stars: repos can be forked and starred by remote users; users can fork and star remote repos; repositories releases are announced according to the specification. (Amount: 1260 EUR)

[P13] Search, discovery, instance exploration: there are search and exploration pages, and they can display both local and remote actors (users, repositories). (Amount: 1260 EUR)

[P14] Teams, groups, roles, access control: groups can have remote members; users can become members of remote groups; roles and access controls can be defined and assigned according to the specification. (Amount: 1260 EUR)

[P15] OCAPs: Object Capabilities are used according to the specification, for authorizing federated access to resource modification and to viewing non-public resources. (Amount: 1260 EUR)

3. Vervis (15 subtasks)

The following subtasks are software development work which continues the implementation of federation in Vervis (<https://dev.angeley.es/s/fr33domlover/r/vervis>), and will be done by **fr33domlover**.

[V1] Discoverability of instances via NodeInfo/ServiceInfo and the fediverse server discovery websites: implementation of NodeInfo/ServiceInfo and other requirements for allowing Vervis instances to be listed by fediverse discovery websites like fediverse.party, fediverse.space, the-federation.info. (Amount: 1260 EUR)

[V2] Opening and closing a ticket: via ActivityPub S2S, allow issues to be opened and closed by users of remote ForgeFed instances, and have some UI for opening and closing remote issues. (Amount: 1260 EUR)

[V3] Opening a MR/patch: via ActivityPub S2S, allow merge requests to be opened and closed by

users of remote ForgeFed instances, and have some UI for opening and closing remote merge requests. (Amount: 1260 EUR)

[V4] Ticket dependencies: creation, deletion, hosting: issues can be depended by remote issues, and can depend on remote issues, implemented according to the specification. (Amount: 1260 EUR)

[V5] Ticket updates/flow: issues can be modified by remote users, and users can modify remote issues, including priority, milestones, labels, assigned person. (Amount: 1260 EUR)

[V6] MR/patch updates/flow: merge requests can be modified by remote users, and users can modify remote merge requests. (Amount: 1260 EUR)

[V7] VCS remote push and SSH key publishing: user SSH keys are published according to the specification; commits can be pushed by remote users who have been given access, and the push is announced according to the specification. (Amount: 1260 EUR)

[V8] Releases, forks and stars: repos can be forked and starred by remote users; users can fork and star remote repos; repo releases are announced according to the specification. (Amount: 1260 EUR)

[V9] Wiki: wikis and their contents can be created and manipulated by remote users, ideally interoperating with XWiki federation. (Amount: 1260 EUR)

[V10] Search, discovery, instance exploration: there are search and exploration pages, and they can display both local repos and known remote repos. (Amount: 1260 EUR)

[V11] Teams, groups, roles, access control: teams can have remote members; users can become members of remote teams; roles and access controls can be defined and assigned according to the specification. (Amount: 1260 EUR)

[V12] OCAPs: Object Capabilities are used according to the specification, for authorizing federated access to resource modification and to viewing non-public resources. (Amount: 1260 EUR)

[V13] GPG key publishing and commit/tag signature verification: user's personal GPG keys can be uploaded, published, and used for verifying cryptographic signatures on commits and tags according to the specification. (Amount: 1260 EUR)

[V14] Client: development of a dynamic client application that supports at least viewing and manipulation of tickets and merge requests, commenting, viewing of repos and users, search and exploration, and communicates with the Vervis server according to the specification, using ActivityPub C2S, OAuth2 and vocabulary defined in the specification. (Amount: 1260 EUR)

[V15] Migration/Import: development of migration/import function for repositories, tickets and other project data according to the specification. (Amount: 1260 EUR)

4. Documentation (1 subtask)

[D1] Implementation guide: a detailed human-friendly document with suggestions, recommendations and code examples, that guides developers in the process of implementing ForgeFed in their own applications. (Amount: 1000 EUR)