D3.2 Customer Feedback Measurement
Version 0.6

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V0.3	Samir Ben Chaabane	Update
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V0.6	Samir Ben Chaabane	Final version

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Executive Summary

This report summarizes the work and methodology developed to capture and verify POP customer satisfaction during the first eighteen months of the project. The feedback from users on the quality of their POP CoE services is detailed and analysed in this report.

1. Introduction

As stated in the proposal, the objective of WP3 "Customer Advocacy" is to verify that the activities of the POP CoE are being performed to the satisfaction of our users and to represent them in the governance process of the project. The customer advocate collects feedback from users and then uses this information to influence project operations, to help ensure that the target of more than 90% customer satisfaction is met.

To achieve this, the methodology previously described in deliverable D3.1 is applied. This methodology comprises several types of interaction, with both the users - to collect their feedback, and with the POP analysts - to pass on this information in order to improve the quality of the service. This may involve:

- Invitations sent to users to fill in the appropriate survey, each time a POP service had been completed and the corresponding report sent to them.
- The survey feedback is passed on to the POP analyst who performed the service so that they can better meet the needs of users. The survey is published on the WP3 POP Wiki page[i].
- A given survey may be followed up by an interview, to explore or clarify certain issues or to better understand the user's expectations.
- The minutes of the interview are validated by the user and then published on the WP3 POP Wiki page.

All these actions not only help guarantee the best quality of POP services but also enable us to maintain links with POP users and so build a user community.

The following sections of the report detail the customer feedback and make some suggestions on how to maintain and enhance the quality of the services provided by the POP CoE.

2. Customer Survey, Setup and Feedback

2.1 Survey Setup

In deliverable D3.1, we described the methodology we have adopted to get honest feedback from POP users on the different services provided to them by POP. Essentially, this methodology is based on three questionnaires, which we have designed and implemented on a new platform compared to that used during POP1[ii]. This new platform, named EUSurvey[iii], is made available by the European Commission. The EUSurvey platform allows the easy creation and administration of surveys and the exportation, publication and statistical processing of their results. EUSurvey also guarantees the anonymisation of the completed surveys.

Two of the questionnaires correspond to the two services provided by POP:
- Performance Assessment (PA)
- Proof of Concept (PoC)

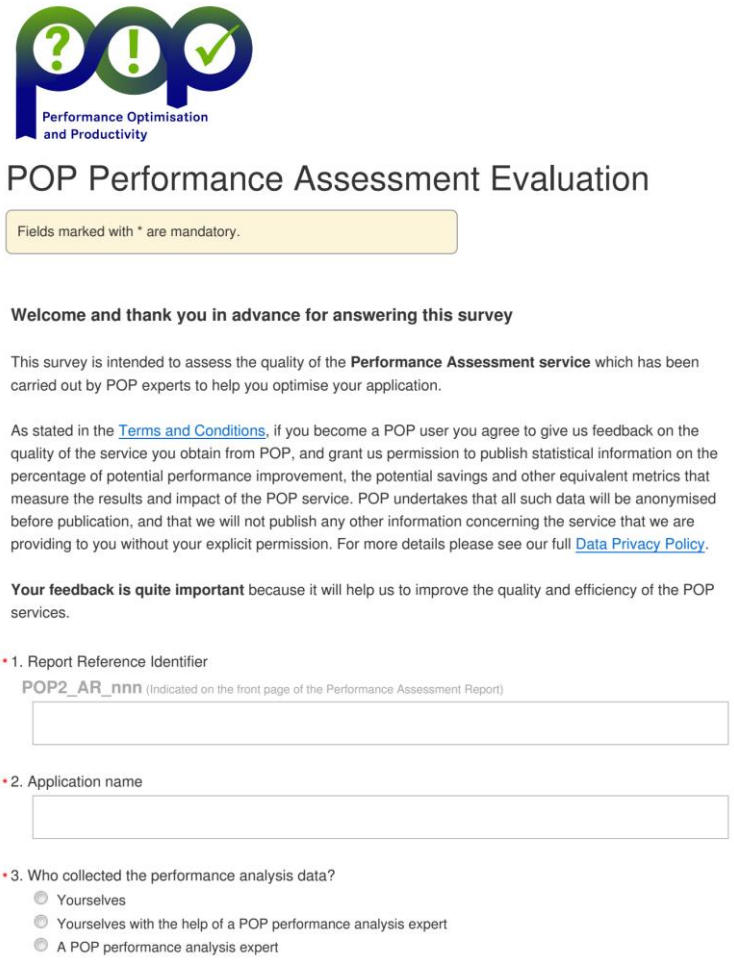

Figure 1: Screenshot of the PA survey generated by the EUSurvey platform

The relevant questionnaire is sent to POP users once they have received the report for the service they have just had.

The third survey is related to the return on investment (ROI) observed by users after modifying their codes according to the recommendations of the POP analyst.

The EUSurvey platform generates an email with a unique link, inviting each POP user to answer the appropriate questionnaire. A user cannot answer the same questionnaire more than once.

Finally, some customers are invited to an audio interview, to clarify and expand upon certain aspects of the services provided and to better understand their expectations.

As mentioned in the POP Terms and Conditions[iv] and the Data Privacy Policy[v], POP undertakes that all the data gathered through these surveys are anonymised before publication. We would not publish any information concerning the service provided to the customer without their explicit permission. For each questionnaire, the customer is asked whether or not they consent to the results being published.

A summary of the feedback is presented to the other project partners at the monthly POP teleconference. During the six-monthly POP face-to-face meetings, a compilation of the surveys and interviews is presented, along with a statistical overview of the user feedback and a set of recommendations aimed at enhancing the quality of the services. This is done with a view to achieving our target of more than 90% customer satisfaction.

2.2 Customer Feedback

Each time a PA or a PoC is completed and the report delivered, the customer is invited to complete the corresponding survey. Once received, the answers are analysed and a copy is immediately sent to the leader of the team who performed the PA or PoC. The answers are also published in the WP3 section of the POP Wiki[i].

The following feedback will focus on PA surveys, given that the number of PoCs completed is small at this stage of the project. The return rate of completed surveys is fairly good: more than 79% of contacted customers have answered the questionnaire. Use of the EUSurvey platform makes it easier for non-responding customers to be systematically and rapidly reminded to answer the questionnaire. This reminder is accompanied by a personal e-mail, kindly inviting users to complete the survey.

By the 6th May 2020, a total of 35 completed PA surveys had been gathered, at the aforementioned response rate of more than 79%. More than 94% of these customers are either very satisfied or satisfied with the PA, as shown in Figure 2. A compilation of the answers to the PA survey is provided in Annex 1. In the next section, we will present an analysis of the customer responses.

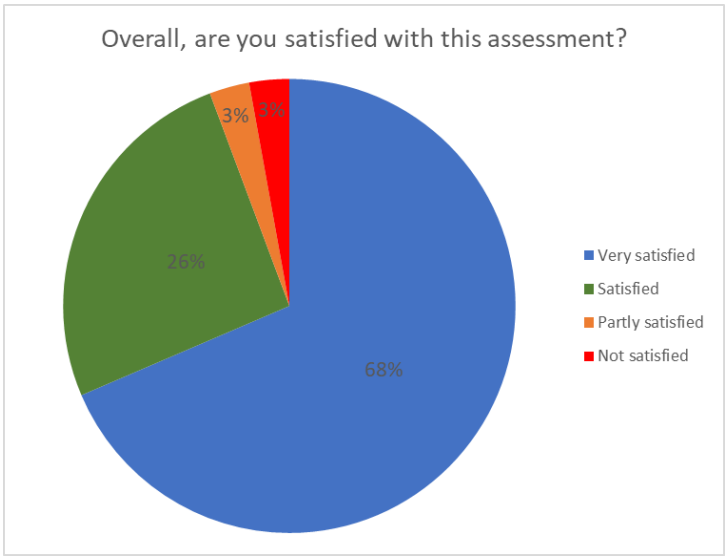

Figure 2: Customer satisfaction

More than 94% state that the assessment was efficiently or very efficiently carried out (see Figure 3). An interview is held with any customers who are not satisfied.

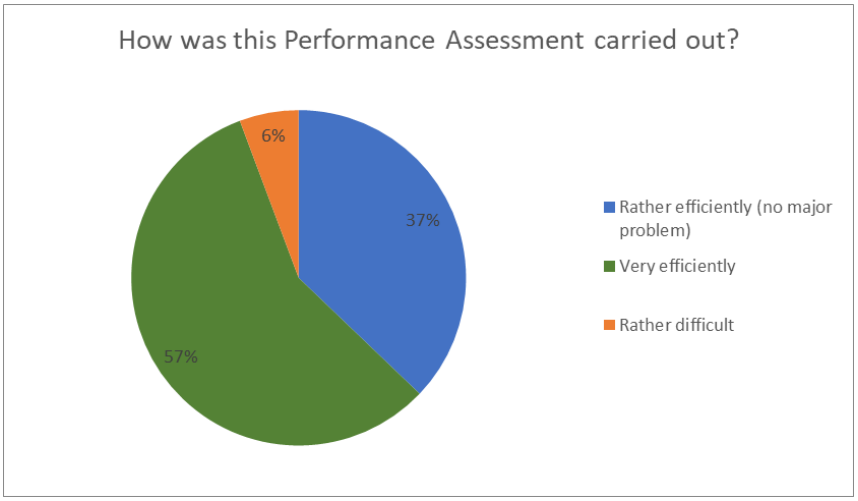

Figure 3: Efficiency with which the PA was conducted

The majority of users had a POP analyst collect the data needed for the analysis, a few users collected it with the help of an analyst and a single user collected the data unaided (see Figure 4).

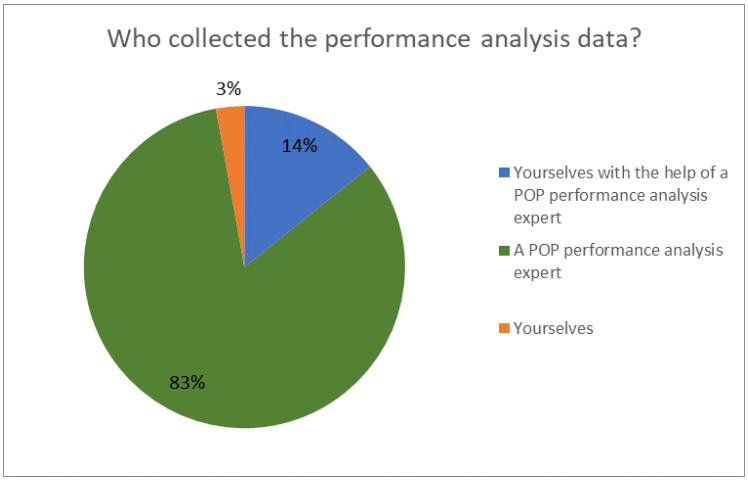

Figure 4: Who collected the performance analysis data?

Just over half of the customers did not already suspect the reasons identified for the lack of performance of their code, as shown in Figure 5.

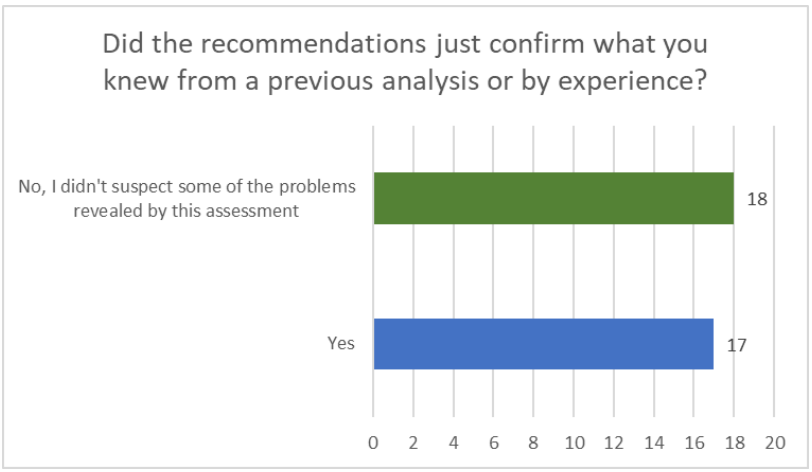

Figure 5: Prior customer awareness of the problems identified by POP

More than 83% of the customers (29 of 35) found the report delivered by POP to be “clear and easy to understand”. Only five users found it "somewhat difficult to understand". Some of the users who found the PA report difficult to understand were not very familiar with coding or with performance tools. The only customer who said that the report was not clear had not actually received the report by that time due to a mailing problem.

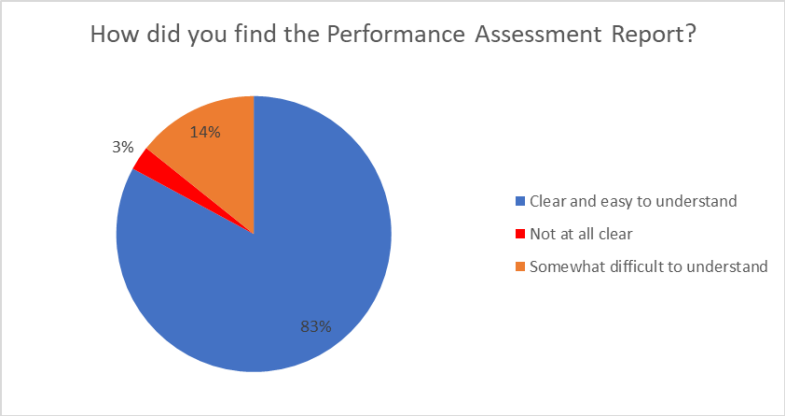

Figure 6: Customer opinions on the reports

The adoption of PowerPoint presentations summarising the results of the PA, either sent instead of or in addition to the reports, in accordance with the wishes of the user, has improved understanding.

We report in Table 1 some of the customer comments on the Performance Assessment report they received.

Report Id.	Customer comment
POP2_AR_030	It was not so clear understanding performance projections making assumption on the values of some metrics. But conversations with experts were very important
POP2_AR_031	Some more explanation about performance projections were needed
POP2_AR_004	I have not received yet the final report
POP2_AR_025	I personally am not an informatician / IT-expert so it takes some more time to understand some plots

Table 1: A sample of customer comments on their reports

The principal problems detected by the Performance Assessments are summarized in Figure 7. These are essentially load imbalance, poor scalability, inefficiency of communication and inefficient use of simultaneous threads.
Some of the customer comments about these problems are listed below:

- Hardware issues on specific nodes of the machine
- The scalability of the Instructions Per Cycle has an unexpected behaviour.
- The analysis gives us a more detailed comprehension of the MPI communication patterns, compared with previous analysis

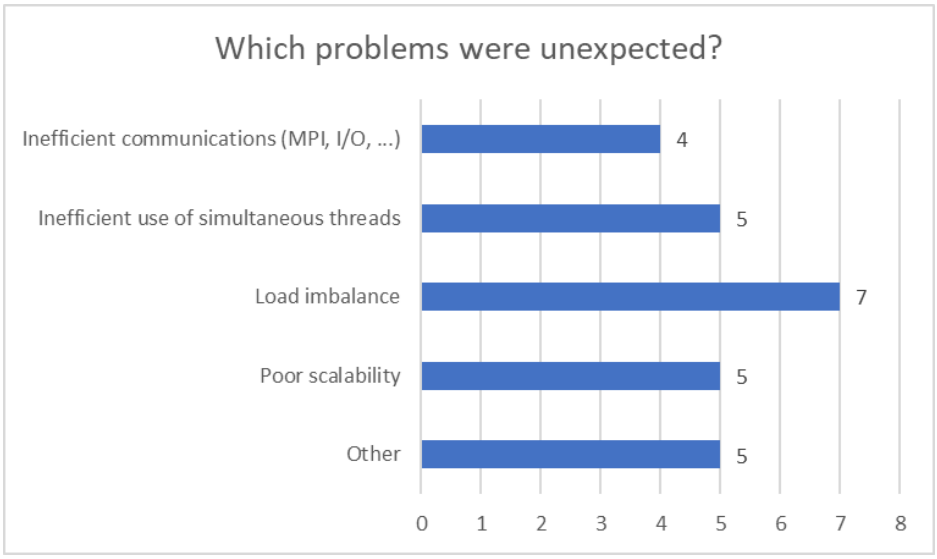

Figure 7: Unexpected sources of inefficiency

We also asked the customers about the effort that was required from them during the PA. Their answers varied greatly, from 0.2 person days to 60 person days. The mean of the responses is about 6 days. This highlights that the effort required by the customer depends on several factors: the type of the code, its complexity, its programming language, the method of parallelization, the type of the machines, etc.

We think that the actual effort demanded should not be more than a few days, since the installation of the performance tools and the gathering and analysis of the data are performed in the majority of cases by POP experts.

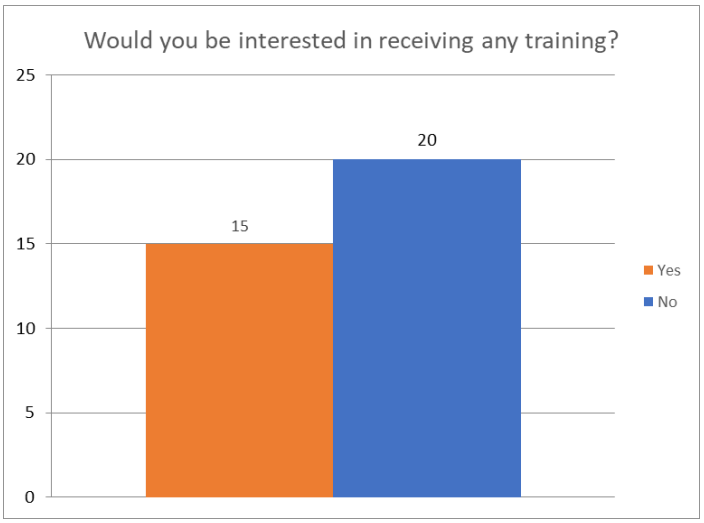

Figure 8: Customer interest in receiving training

Only 15 of the customers wished to receive training on the tools used by POP to perform the Performance Assessments, as shown in Figure 8. Some of the

customers are not familiar with the analysis tools but have no wish to do the analysis themselves.

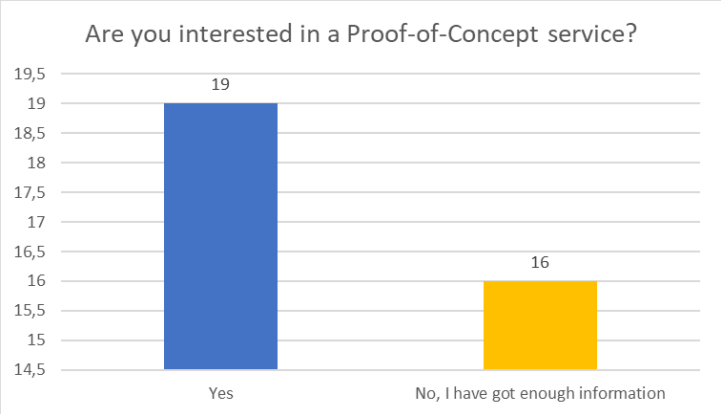

Figure 9: Customer interest in a Proof of Concept

Over half of the customers wished to continue their collaboration with POP by requesting a PoC (Figure 9). Sixteen PoCs have already started. The PoC is an extended study of the code that should demonstrate the effectiveness of the recommendations made in the Performance Assessment. Some other customers wished to continue the collaboration with POP by submitting further applications for Performance Assessments, eleven either intend to or have already done so (Figure 10).

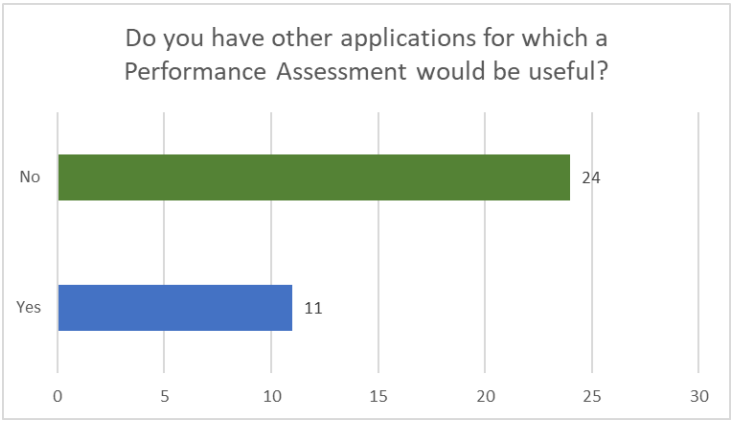

Figure 10: Customers who wish to submit further applications for a PA

Almost 59% of customers have plans to modify their codes in line with the recommendations made in the Performance Assessment, as shown in Figure 11. Other customers prefer to wait for the development of new versions of the code or to first undertake a Proof of Concept. The customers who intend to modify their codes expect to do so in a fairly short time, generally before the end of 2020 (Figure 12).

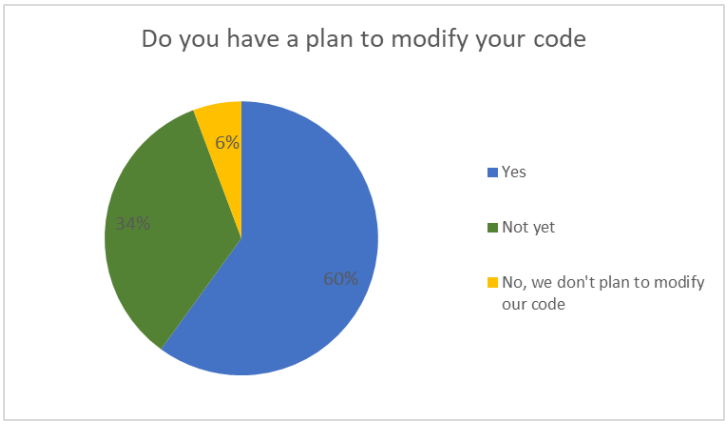

Figure 11: Customers who plan to modify their code

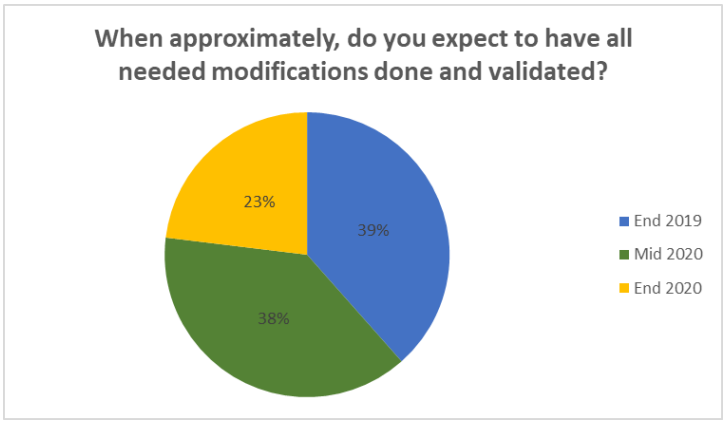

Figure 12: Expected date to get modifications done and validated

We also asked the customers if they are prepared to pay for such services after the end of this project: 73% of them said they are not sure and 15% said they can't pay for such services (Figure 13). This will help inform WP2 in developing a plan for the sustainability of such activities.

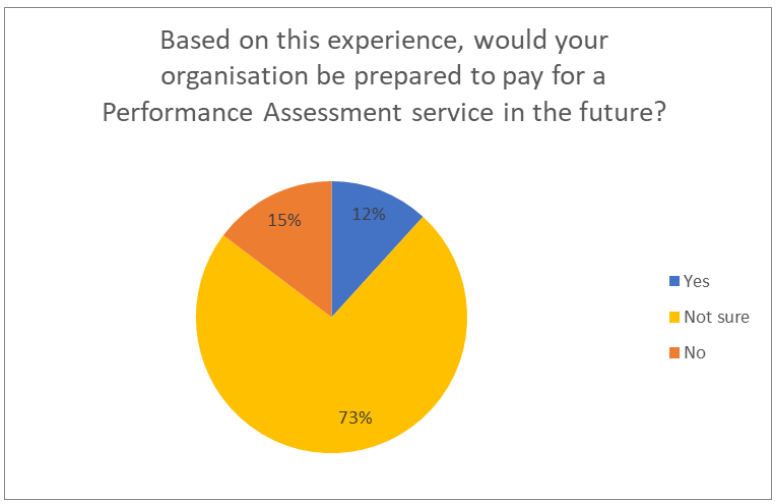

Figure 13: Customer willingness to pay for a Performance Assessment

Table 2 summarizes some of the arguments of the users who are "not sure" whether they would pay for such services. The few customers who would be willing to pay for a Performance Assessment suggest that they could only do so up to a few thousand Euros.

Report Id.	Customer comment
POP2_AR_015	Not sure if our organisation can pay for these services.
POP2_AR_016	No funding available
POP2_AR_017	Own expertise in house
POP2_AR_023	The motivation for us is to obtain an independent and unbiased performance assessment on systems that we do not have access to using metrics that we do not
POP2_AR_030	It depends on the cost. After this experience, we think we could get an approximated Performance Assessment by our own. Expertise from POP is surely an added value; therefore, the cost should be bound to the delta of what we could get by our own and what can be obtained with an expert assessment.
POP2_AR_034	difficult to make any prediction whilst the corona problem and its impact on businesses ongoing
POP2_AR_035	This would require a change in company policy for money allocated for computing services other than specific HPC vendor related, which is outside my area of responsibility.
POP2_AR_052	We are academic institution and it would depend on funding situation/restriction associated with funding. However, we probably include funding for such services into budget of our future grant applications.
POP2_AR_051	Would need to be more cost effective than just increasing cluster resource.

Table 2: Customer comments about paying for PA services

Finally, almost 86% of customers would recommend POP services.

2.3 Interviews

To increase our understanding of the customer experience, some users are invited to audio interviews. These interviews can be an opportunity for us to answer their questions and to improve the follow-up communication from the POP team. By the 6th May 2020, six such invitations had been issued. Two interviews have now taken place and followed up with recommendations to the POP team on how to better meet customer expectations. These interviews

are a very useful way to expand on the feedback gathered via the questionnaire.

2.4 Recommendations

Even though the feedback on the services delivered by POP is very satisfactory, an in-depth analysis of the responses to the questionnaires has allowed us to make a few recommendations to the POP team on how they could improve POP services.

In summary:

- Some of the customers find that the report is somewhat difficult to understand: **systematically organise a (virtual) meeting with the customer to present the results of the PA or PoC**.
- One of the customers said that they had not received the report: **verify that the customers have received the final report and maintain contact with the customers after report delivery.**
- Some of the customers have only a limited understanding of scientific programming: **tailor the explanation in the report to the understanding of the user.**
- **Reduce the delay in answering customers when they request a service.**
- **Motivate the customers to answer the surveys.**
- **Motivate the customers to continue the collaboration with an additional PA or a PoC.**
- **Create success stories with the customers for dissemination purposes.**

3. Conclusion

During the first eighteen months, several Performance Assessments have been performed and some Proof of Concepts have started. The customers are systematically invited to fill in the survey related to their type of service. The EUSurvey Platform sets up the survey, retrieves the answers and facilitates their analysis, in an anonymous manner. We note some dysfunctions (slowness or unavailability) of the platform and the inability to change the person managing the survey once it has been created.

The feedback from the customers is very helpful for us and shows that the services provided by POP are of excellent quality. More than 94% of the customers are satisfied with POP services and judge them to have been conducted efficiently or very efficiently. Our KPI of 90% customer satisfaction is therefore being exceeded. In addition to this, more than 83% of customers found the report to be “clear and easy to understand” and over half wished to continue their collaboration with POP by requesting a PoC. Some improvements have been identified, which should help maintain the good

quality of POP services and help to both retain existing customers and attract new ones.

Acronyms and Abbreviations

- CoE – Centre of Excellence
- D – deliverable
- DoA – Description of Action (Annex 1 of the Grant Agreement)
- EC – European Commission
- HPC – High Performance Computing
- KPI – Key Performance Indicator
- NAG – Numerical Algorithms Group
- PA – Performance Assessment
- PoC – Proof of Concept
- POP – Performance Optimisation and Productivity
- ROI – Return On Investment
- WP – Work Package

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[i] POP Wiki Page, https://wiki2.pop-coe.eu/index.php5/WP3
[ii] POP1 refers to the first phase of POP, Oct 2015-March 2018, Grant agreement 676553
[iii] https://ec.europa.eu/eusurvey/
[iv] POP Service Terms and Conditions, https://pop-coe.eu/sites/default/files/public/popw1/POP2_Terms_and_Conditions.pdf
[v] POP Data Privacy Policy, https://pop-coe.eu/contact/privacy-policy