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POC (proof-of-concept) and its optimisation in a software company

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Abstract

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This thesis explores a POC (proof-of-concept) process in a software company with an intention to streamline it and improve POC success by shortening its cycle and reducing the amount of resources spent. In more depth the objective of this final year project is to provide the case company with an action plan to be observed when starting POC with a new customer. In software and technological companies POC, sometimes also referred to as “trial”, or “pilot” is a way to try an IT product or service before making a buying decision. The goal of POC is to test whether a given product or service provides capabilities and delivers the assurance that a customer can use it to solve their business and/or technical problem.

POC projects typically consist of a few stages and communication and information at each stage is crucial. Streamlining and shortening of each stage may play a great role in increasing project success and improving customer acquisition.

POC guidelines proposed in this thesis can be used by any software company which offers POC to its customers or wants to improve information flow with their customers overall. There is an indication that introducing tools to communicate with a customer, share and exchange information can be of a great benefit and lead to a higher customer satisfaction which is critical at the beginning of customer-vendor relationship.

Keywords: POC, trial, pilot, software, optimisation, communication, testing

List of Abbreviations

POC: A proof-of-concept stage. Sometimes also referred to as “pilot”, “trial”.

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1 Introduction

This thesis explores a POC (proof-of-concept) stage in a software company with an intention to streamline POC processes and improve POC success by shortening its cycle and reducing the amount of resources spent. In more depth the objective of this final year project is to provide the case company with an action plan to be observed when starting POC with a new customer.

In software and technological companies POC is a proof-of-concept stage or a pilot/trial, which is intended to try an IT product or service before making a buying decision (Veal, 2005; Cloudshare, 2021). Will a given product or service provide capabilities and deliver the assurance that a customer can use it to solve their business and/or technical problem? This is the question a POC helps to answer. POC is very common in the software industry with a vast majority of companies are offering such an option.

POC is not only applicable for software and information technology companies. POC is also used in testing any model or idea in different contexts, for example when preparing a schooling program (Banerjee et al. 2017) or when creating a new technological product (Pfeiffer, 2000; Haag & Anderl, 2018). Another industry for which POC plays a critical role is drug development (Karlsson et al. 2013). Proof-of-concept studies in this field are conducted to provide preliminary evidence of whether a drug is effective and safe to use before a full drug development is initiated.

Naturally, POC is a complex process, and it is not necessarily related to testing or trying one product or one idea, as there are also proof-of-concept centres, which aim at testing any projects, big or small, if they can potentially be successful commercially. For example, in the United States there are over 32 such centres, which help in commercialising university-based research (Bradley et al. 2013; Maia & Claro, 2013; Hayter & Link, 2015).

In this thesis a POC process was observed and explored at a case technological company. The case company builds and maintains a highly

complex technological product, which requires special skills and expertise. Thus, optimising POC processes is a key function to provide high quality services to the end customers who are at the beginning of their relationship with the case company.

2 Material and methods

The method used in this thesis for developing a set of guidelines is an analysis of existing POC processes and steps, finding its shortcomings and suggesting improvements. The thesis uses both qualitative and quantitative data to find areas of improvement of POC for the case company, so it is a mixed type of thesis.

To obtain data on existing POC setup, stages, and timeline, I analysed current documentation present at the company, and analysed POC projects which took place at the case company when I had a chance to work with the company for over a year.

Each POC project was analysed in detail during the whole project span for the following:

- Overall duration of the POC project
- Duration of each stage of the POC project
- POC project track (independent or coordinated)

Additionally, the underlying factors that affected the duration of each stage were evaluated to see whether it was dependent on the customer or the case company. Particular attention was paid to whether the factors were connected to a shortage of resources, lack of clear guidelines, expectations, and timeline etc. Each POC stage was then analysed in terms of implementing possible improvements, for which several improvements were developed and suggested.

2.1 Case company presentation

The case company is a private software company based in the European Union. It was established in the early 2010s by experts with over 20 years of cumulative experience in VoIP, SIP, WebRTC and its standards in IP telecom space and voice. Based on LinkedIn public information at the time of writing this thesis (October 2021), case company headcount is 14 people, with most of them having technical roles.

The case company builds tools for real-time VoIP, RTC and WebRTC visibility and monitoring, troubleshooting. The company works with small and large customers and helps them with VoIP/RTC/WebRTC packet capture, monitoring and troubleshooting. The company develops open source and commercial tools and also contributes to open source telecom projects (Freeswitch, Kamailio, OpenSIPS, Wireshark, etc). The case company products and tools services are deployed in many countries across multiple continents.

3 Current State Analysis of Existing System

This section describes the strengths and weaknesses identified in the existing POC setup through the Current State Analysis carried out in the IT department of the case company. It explains the potentials drawbacks with the existing system in detail and highlights the aspects needing improvement.

3.1 Overview of Existing System

The current state of the POC stage at the case company is depicted in Figure 1. In general, any POC has three main tracks: free (or independent), and paid (or coordinated), which is further divided into two types: guided and assisted). The split into free and paid POC is intended to free up resources of the case company's technical team in case a customer wants to maximise their learning and/or has enough resources to carry out an integration. As any POC is time consuming and requires the expert help, which is typically expensive and charged on per-hour basis, the coordinated setup is a paid option.

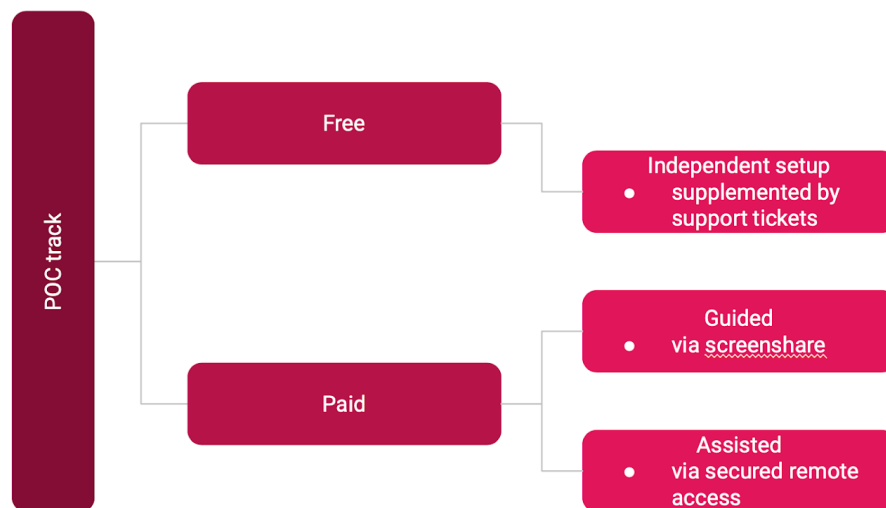


Figure 1: Schema of POC existing setup at the case company

Any POC project at the case company typically goes through 8-9 steps to be completed, depending on its type (coordinated or independent, Figure 2). Any project starts from a technical and a business discussion around existing issues with VoIP/RTP/WebRTC monitoring and desired goals.

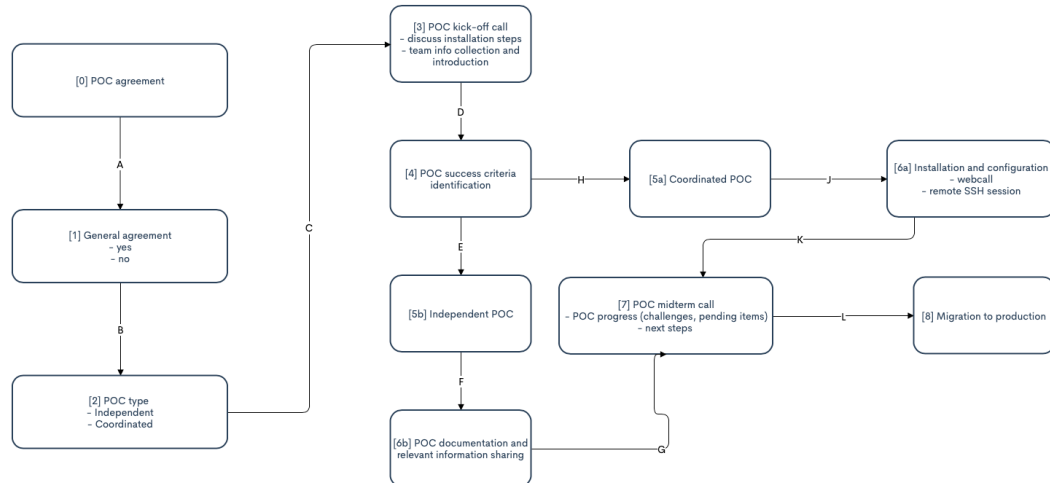


Figure 2: The case company existing POC setup, stages, and steps

The critical points of POC setup are stages [1] - general agreement on whether a customer goes through POC or not, [2] - to identify whether POC is coordinated or independent, [4] - to identify and agree on POC success criteria, [6a] - to go through installation and integration, and [7] - to setup a POC midterm call to identify possible issues and to discuss what was successful and what did not work well, and finally to agree on the next steps (Figure 2).

3.2 Staff/teams involved from the company side

The POC process is owned and run by two teams: a business development team (BD) and a POC team. The BD team is composed of business development professionals who are focused on initial stages of POC and they also lead a commercial discussion. The POC team is a technical team, composed of software engineers and software architects who take the lead on all technical aspects and product support during POC.

3.3 Staff/teams involved from the customer side

There are several people involved from the customer side, ranging from the technical side to the customer support side. This is because the monitoring system offered by the case company is used by multiple teams, not only to troubleshoot problematic calls, but also to convey the information to the end customer and to use it for business metric. The more people with different roles take part in the POC project, the more success they gain while integrating it to their existing processes. Overall, it is recommended that the following teams join the POC project from the customer side: a) Project Manager, b) Customer Success, c) Analytics, d) SysAdmin, e) VoIP/SIP/WebRTC Engineer, f) Network Engineer, g) Data Center or Cloud Engineer. Names and contact details of such people are requested and collected by email.

3.4 Key information to collect and share

For a successful POC project implementation and course it is crucial to collect a lot of information from the customer (Table 1). Most of it is collected before initiating the project. The current way of collecting such information is by email.

Table 1. Important information to collect from the customer and responsible team/s.

Information needed	Responsible team who collects the information
Success criteria - what does the customer want to achieve? 3 - 5 criteria essential to identify	POC
POC track: is it paid or is it free?	BD
POC team members from the customer side	POC
A high level diagram of the required setup (Servers (Database/Capturing Server), Switches (Capturing Agent/Port Mirrors))	POC
Compatible OS available on the host (virtual or physical)	POC
Description of Environment (hardware/access)	POC
Software Delivery (online, offline)	POC

Will the POC environment have outbound internet access?	POC
Is remote access possible?	POC
Virtualisation environment: VM or hardware host	POC

3.5 Setting up calls with customer

It is important not only to share and collect information with customers by means of sending/receiving it via email, but it is also important to have a live conversation with an online meeting/call. Such calls are often used to solve issues in real time by means of screen sharing for example.

There are different ways to set up a call by email. Most common is to provide a few times slot options to choose from by email or sending a calendar link connected to one of calendar platforms so that a respondent can book a slot that works best for him/her (Klenty Blog, 2021). Now, the case company arranges such calls by email.

4 Theoretical background

In software and Information Technology business POC stage is used to try an IT product or service before starting a full depth commercial relationship with a vendor. Vendors offering a POC option range from small to large companies and in general it is a rather common approach to show customers whether the product or service is worth the investment. A POC stage may last from a few days to a few months, on average being 14-30 days (author personal observation).

Depending on the complexity of a product or a service offered, a POC stage may require connecting a customer with a sales or a pre-sales team. This is typically the case if a product or a service is intrinsically complex and requires more than just a few clicks to install or to integrate. In other cases, a potential user is literally a few clicks away from getting started, and it takes very little time to sign up and either download a package, in case of a standalone product/service, or get started online if the product or service is in the cloud.

4.1 Free or paid POC

In terms of price, POC can be a free or a paid option. Typically, a POC for a product without integration is provided for free, while a high-end technological product typically has an integration or a POC fee as it requires multiple interactions with the technical team and integration may take some time. Such paid POC is often the case for many VoIP or WebRTC monitoring platforms including callstats (Callstats, 2021) or Voipfuture (Voipfuture, 2021). A good example of a free online POC is a 14 days POC of Pipedrive, a well-known CRM software (Figure 3). Other examples of free POC include Youtube premium (Figure 4), Google Drive (Figure 5), Microsoft Azure (Figure 6), Adobe products (Figure 7), Voipmonitor (Figure 8) and many more. It seems that the majority of large and known software companies provide a free trial option for consumers in the B2C space.

Try Pipedrive free for 14 days

Full access. No credit card needed.

✉ name@company.com

Continue

or access quickly



Google



LinkedIn

Figure 3: A screenshot of Pipedrive free trial (Pipedrive, 2021)

YouTube Premium

YouTube and YouTube Music ad-free,
offline and in the background

TRY IT FOR FREE

Prices start at €6.99/month

We'll remind you 7 days before your trial ends

Free trial for eligible new members only • Recurring billing • Cancel at any time

[Restrictions apply. Learn more here.](#)

Figure 4: A screenshot of YouTube Premium free trial (Youtube, 2021)

When we have to be apart,
Essentials keeps us
together

Let's start with your work email address

Work email address

For example, name@company.com

NEXT

Figure 5: A screenshot of Google Workspace Essentials trial (Google Workspace, 2021)

Azure Active Directory Premium free for one month

- ✓ Single sign-on to any cloud app
- ✓ Works with multiple platforms and devices
- ✓ Preintegrated with Salesforce.com, Office 365, Box and more
- ✓ Integrate with on-premises Active Directory
- ✓ Enforce Multi-Factor Authentication with SaaS
- ✓ Enterprise Scale and SLA

Get started with an Azure subscription


If you already have an Azure subscription move to the next step. If not sign up for a free Azure trial and get access to Azure Active Directory and dozens of other services.

[Create a free Azure account >](#)

Figure 6: A screenshot of Microsoft Azure trial (Microsoft Azure, 2021)

Your free trial includes full versions of Adobe apps.

Individuals Business Students & Teachers



Creative Cloud All Apps Plan

Get 20+ creative apps including Photoshop, Illustrator, InDesign, Premiere Pro, and Acrobat Pro.

Plus:

- Step-by-step tutorials
- 100GB of cloud storage
- Adobe Portfolio, Adobe Fonts, and Adobe Spark

[See apps included](#)

7 days free, then US\$52.99 /mo [Start free trial](#)

Figure 7: A screenshot of Adobe Creative Cloud trial (Adobe, 2021)

- ⇒ We offer GUI server license (you host) or GUI in cloud (we host). The price is month/quarter/annual subscription including support maintenance and installation.
- ⇒ We accept USD and EUR via paypal, credit cards and bank transfer
- ⇒ If you would like to get formal quote please [register](#) and send quote request to info@voipmonitor.org

Demo	Server (you host)	Cloud (we host)
To see the GUI in action instantly please try our online demo version.	<ul style="list-style-type: none"> ⇒ 30 days trial ⇒ Full control ⇒ Unlimited data 	<ul style="list-style-type: none"> ⇒ 30 days trial ⇒ PBX Resource friendly (no database / no web server) ⇒ Minimal maintenance ⇒ Access from everywhere ⇒ Limited data
online demo	Server	Cloud

For European member states - you need to have valid EU VAT number to get prices without TAX. All other countries are without VAT (VAT = 0%). You can insert your EU VAT number during the registration or edit your profile.

Figure 8: A screenshot of VoIPmonitor trial (VoIPmonitor, 2021)

Free trial always requires creating an account with a work email address (for B2B products or services) or a personal email address (for B2C products or services). Based on author observations, in case of a B2B product or service online trial (Pipedrive, 2021; Hubspot, 2021), a credit card is not required, while for a B2C

product a credit card is almost always required (Adobe, 2021; Google Workspace, 2021; Youtube, 2021; LinkedIn, 2021). Typically, there is a reminder just before the trial ends to allow a user either cancel it or proceed with a buying decision (Figure 4). From a legal point of view, a user who intends to use the product/service agrees to terms and conditions of it when he/she installs it.

4.2 Complex POC with integration

What if a product or a service is complex and requires integration and technical team support? In this case “one-click” installation/integration is not possible and a pre-sales team is involved. Such complex POC setups typically require creating a set of processes to isolate POC stages, identify success criteria, and a series of steps and milestones to evaluate POC performance. As POC typically involves a few technical people from both a product/service provider and a customer, any way to shorten POC cycle, reduce the number of stages and resources involved while maintaining the required quality is essential. This is because a customer who gets started with POC is at the very beginning of customer-vendor relationships and possible delays or failures may have a serious impact on continuation of such relationships.

4.3 POC goals and milestones.

POC projects across various companies are not formalised and explained in great detail on company's websites, thus it is nearly impossible to say how companies organise, operate and evaluate POCs without being involved in it as a customer. There is no one process which works for all, or at least it is not known to the thesis author. Based on the author's experience, who worked for four different IT companies, and with over a hundred of IT companies as customers, a POC process is always unique for a given use case by nature, with POC success evaluation at the end of the project being the only common factor. Thus, streamlining POC is not about particular steps, but more about creating a set of guidelines for testing a given product, which helps a potential customer explore the product and make a buying decision based on their exploration.

In general, POC usually consists of the following steps.

1. Registration, creating a user account. Done by a customer.
2. Integration into customer's existing processes (from the business side) and/or technical integration if needed. Done in collaboration between a vendor and a customer.
3. Testing a product or service and trying different scenarios to test all possibly needed features of a product/service. POC exploration phase. Done by a customer.
4. Collecting feedback. Done by a customer.
5. Internal customer team discussion (if needed) about pros and cons of a product/service. A result of this step typically leads to a buying or rejection decision. Done by a customer.

Each step (1-5) may take considerable time and thus may and should be streamlined to improve communication and facilitate decision making process. POC success is driven by these steps and thus effective communication is the key.

4.4 Communication with a customer

Communication with a customer plays a major role not just in making sure that POC is successful, but at any stages of a project span. One special type of communication is relevant information and data/documents sharing. Naturally, email comes to mind when thinking about information sharing, but email is not real-time and it may be a cumbersome process to separate internal and external communication channels via email. Slack, one of the most popular communication platforms, published a guide on why a dedicated communication tool, such as Slack, is more efficient compared to email (Captain Time, 2021).

Overall, there is a plethora of services available aiming at providing flawless communication across teams and companies. A summary of such tools is provided in Table 2.

Table 2. Some of the communication tools and their characteristics.

Communication tool	Link	External communication possibility	Pricing model
Slack	https://slack.com/intl/en-fi/	yes	Subscription based
Element	https://app.element.io/	yes	Open source
Flowdock	https://www.flowdock.com	yes	Subscription based
Rocket.chat	https://rocket.chat	yes	Subscription based
Wire	https://wire.com/en/	yes	Open source
Mattermost	https://mattermost.org	yes	Open source

Each of the tools mentioned above has pros and cons and can be used for internal and external communication. Depending on company's preferences and resources available, open-source platforms (Element, Wire or Mattermost) or subscription-based platforms (Slack, Flowdock, Rocket.chat) may be taken into use.

4.5 Information/data sharing

Information sharing and efficient data flow is crucial to guarantee a project success in any industry or field, be it manufacturing, IT or winery (Forbes et al. 2010; Bowersox et al. 2003). Availability and quality of information is essential to provide a seamless synchronization of activities and processes and make the right decisions, and many organisations understand the importance of it (Lee, 2000; Omar et al. 2010; Ye & Wang, 2013). In turn, poor information flow and exchange poses a risk to businesses and may lead to distorted relationships with customers and business loss (Omar et al. 2010; Ramayah & Omar, 2010).

There are many tools and platforms to store and share information and data, which can be summarised in three main categories (Table 3). Overall, an email with attachments is still very common, however dedicated platforms are taking

over as they allow tracking information sharing, allow adding extra users with different read/write access rights, and more, with Dropbox being one of leaders in this category (Ian, 2021).

Table 3. An overview of some of the sharing tools

Sharing tool	Benefits	Disadvantages
Email and/or email attachments or links to sharing platforms	Ease of use, wide availability, free	Difficult to reshare, email box often full, missed emails
Google drive and/or similar (Dropbox etc)	Ease of use, wide availability	Paid for organisations
Existing communication platforms with an option to share data/documents	Sharing and resharing is easy, possible to track information flow	Paid and typically expensive for a small business

Sometimes it is important to collect information from a customer, which can also be done by one of the discussed tools (Table 3). For example, Google forms, a part of Google drive tools, may be used for such work.

4.6 Tracking project performance

How is progress followed and what to keep in mind? There are many tools to organise the workload, track project performance progress and manage teamwork. Some of these tools include Asana (Duffy & Moore 2021), Trello (Duffy, 2021) and Google Sheets (Mendelson, 2021) among others. Oftentimes such tools also have collaboration features including chats, calls, data and documents sharing. According to a Databox report, over 97% of companies use 1-2 project management tools, and 3% of companies use 3-5 project management tools (Ugbaja, 2021).

Overall, as was reviewed in this section, POC consists of few stages and communication and information at each stage is crucial. Streamlining and shortening of each stage may play a great role in increasing project success and improving customer acquisition.

5 Proposed solution/implementation

Challenges of time allocation are typically caused by slow or inadequate information flow at either a product/service provider company or a buyer company (internal communication) and by delays or slowness of communication between a product/service provider and a customer (external communication). During the period I worked for the case company (over a year), I had a chance to observe such challenges and its effects on POC in real-time in great depth.

5.1 Why a change is needed

As the thesis author worked with the case company for over a year, his first impression of the POC projects was such that there is a lot of variation across customers going through POC. To confirm this observation and to obtain data on the length of each POC stage for each customer at the case company, the length of each stage (A-K, Figure 2) was measured. The results are presented in Figure 7.

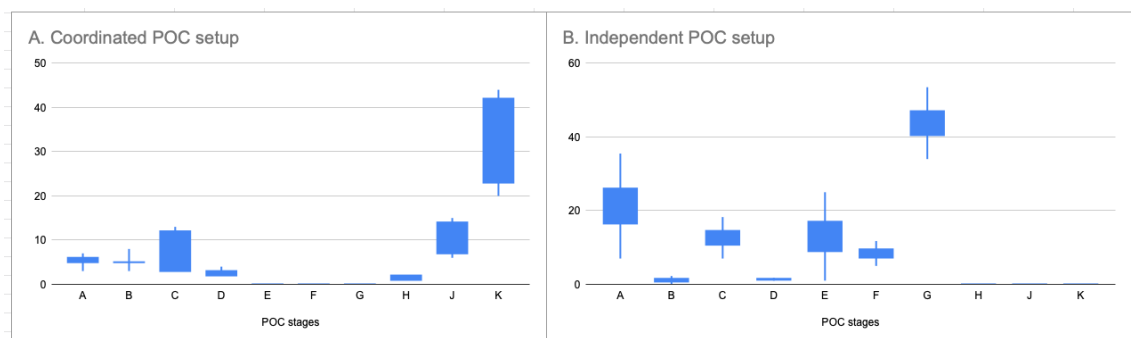


Figure 7. Length of POC steps in days for coordinated (A) and independent (B) setup (mean +/- medians, data ranges and outliers). Stages E, F, G are not applicable for a coordinated setup, stages H, J, K are not applicable for an independent setup. Stages are labelled according to Figure 2.

Based on the results, it was concluded that the first impression was correct, as there was indeed a lot of variation across customers (Figure 7). For example, the length of stage A (agreeing on whether a customer will engage with POC or not), was on average 26 days (range 7-45 days) for independent POC projects, while for coordinated POC projects it was only 6 days on average (range 3-9

days, Figure 7). Similarly, stages K/G (agreeing on a midterm POC call) were 42 days for coordinated POCs (range 20-63) and 47 days for independent POCs (range 34-60).

Overall, POC took on average 117 days (range 87-147) for independent POCs and 84 days (range 38-200) for coordinated POCs. Clearly, coordinated POC projects were more efficiently coordinated compared to independent POC projects when customers were responsible for the project length and went at their own pace.

Based on the results, almost all POC steps at the case company could benefit from shortening its length, mainly by improving information flow. The information is summarised in Table 4.

Table 4. POC steps and identified improvements. BD - business development team, POC - POC technical team.

POC step	Description	POC track	People involved	Is improvement needed? If so, what improvement?
A	Mutual understanding on POC: yes or no	Coordinated	BD	No
		Independent		Yes, shortening*
B	POC track - independent or coordinated	Coordinated	BD	No
		Independent		No
C	POC kick-off cal setup	Coordinated	BD/POC	Yes, shortening*
		Independent		Yes, shortening*
D	Success criteria identification	Coordinated	POC	No
		Independent		No
E	Moving to actual POC	Independent	BD	Yes, shortening*
F	POC documents sharing	Independent	POC	Yes, shortening*
G	Midterm call setup to discuss POC progress and next steps	Independent	BD	Yes, shortening*
H	Moving to actual POC	Coordinated	BD	No
J	Installation and configuration	Coordinated	POC	Yes, shortening*
K	Midterm call setup to discuss POC progress and next steps	Coordinated	BD	Yes, shortening*
*critical stages				

What can be done to shorten the POC steps and improve information flow? As was shown in section 3.5, the main way of communication with customers at the case company is email. Emails may bounce, which could be soft and hard bounce (Mailchimp, 2021), due to wrong email addresses, clogged email boxes, emails marked as SPAM or simply not being read. As a result, response time can increase greatly and slow down POC projects considerably. However, the nature of information at the case company that needs to be collected from the customer is so that it can be requested as yes/no questions, multiple choice questions and/or free form questions, thus many tools for efficient collaboration and information sharing can be implemented.

5.2 Recommended tools and platforms

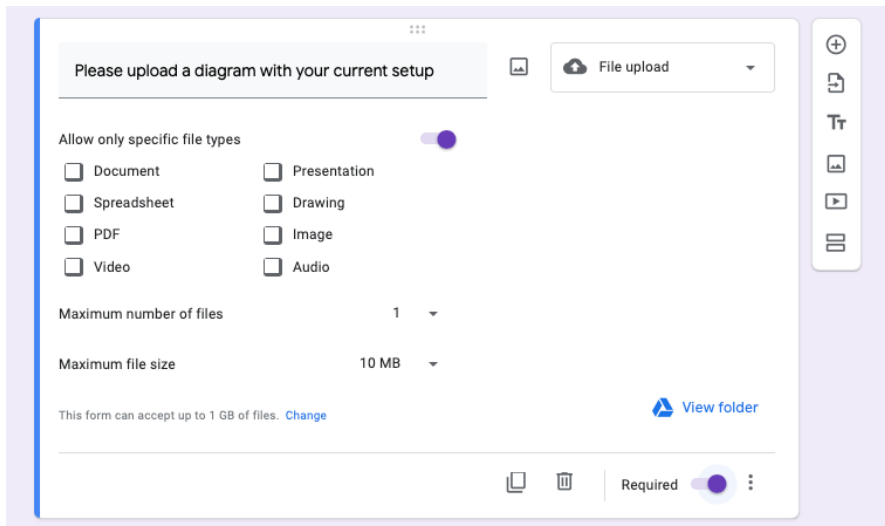
For collecting and sharing information from/to customer (Table 1), Google Forms are suggested (Graw, 2020). Initial questions about POC scope, track and as well as the team can be asked with one form with multiple sections.

Google Forms not only sends a notification about a form filled in, but also sends a form summary to a customer who filled it in. It also allows adjustments and changes to the information already provided, if needed. The forms may be configured so that they collect email addresses of recipients and in general the forms are easily customisable (Figure 8).

The screenshot displays the 'Settings' tab of a Google Form. At the top, there are navigation links for 'Questions', 'Responses', and 'Settings'. The 'Settings' section is divided into several categories:

- Make this a quiz:** A toggle switch is currently turned off. Below it, the text reads 'Assign point values, set answers and automatically provide feedback'.
- Responses:** A section header with an upward arrow. Below it, the text reads 'Manage how responses are collected and protected'.
 - Collect email addresses:** A toggle switch is currently turned off.
 - Send responders a copy of their response:** A dropdown menu is set to 'Off'. Below it, the text reads 'Requires Collect email addresses'.
 - Allow response editing:** A toggle switch is currently turned off. Below it, the text reads 'Responses can be changed after being submitted'.
 - REQUIRES SIGN-IN:** A section header.
 - Limit to 1 response:** A toggle switch is currently turned off.
- Presentation:** A section header with an upward arrow. Below it, the text reads 'Manage how the form and responses are presented'.
 - FORM PRESENTATION:** A section header.
 - Show progress bar:** A toggle switch is currently turned off.
 - Shuffle question order:** A toggle switch is currently turned off.
 - AFTER SUBMISSION:** A section header.
 - Confirmation message:** The text 'Your response has been recorded' is shown. To the right is an 'Edit' link.
 - Show link to submit another response:** A toggle switch is currently turned on.
 - View results summary:** A toggle switch is currently turned off. Below it, the text reads 'Share results summary with respondents'.
 - RESTRICTIONS:** A section header.
 - Disable auto-save for all respondents:** A toggle switch is currently turned off.

Figure 8: Possible settings in Google Forms



The image shows a configuration panel for a file upload question in Google Forms. At the top, it says "Please upload a diagram with your current setup" and has a "File upload" button. Below this, there is a toggle switch for "Allow only specific file types" which is turned on. Underneath, there are two columns of checkboxes for file types: Document, Spreadsheet, PDF, Video, Presentation, Drawing, Image, and Audio. All these checkboxes are currently unchecked. Below the file type list, there are two dropdown menus: "Maximum number of files" set to 1 and "Maximum file size" set to 10 MB. At the bottom of the panel, there is a note "This form can accept up to 1 GB of files." with a "Change" link, and a "View folder" button. On the right side of the panel, there is a vertical toolbar with icons for adding, deleting, and other actions. At the bottom of the panel, there is a "Required" toggle switch which is turned on.

Figure 9: How to upload a file with Google Forms

As a result, some of the questions may be a file upload with restrictions on file type, which may of great help to receive only allowed file types (Figure 9). For example, several times a network diagram (Table 1) was sent as a file in djvu format (Fisher, 2021) via email, which was difficult to open and required a conversion to a pdf before it could be shared with the POC team.

Based on the information above, two Google Forms were suggested (Figure 10, 11).

POC initiation stage

[Sign in to Google](#) to save your progress. [Learn more](#)

*** Required**

Email *
Your email _____

Company name *
Your answer _____

What do you want to accomplish with the POC? Please list 3-5 most important success criteria for you below. *

Your answer _____

POC track *

Independent (free)

Coordinated (paid)

Team availability

We ask that you make the following resources, or skillsets, available to the POC Team.

Data Center or Cloud Engineer. If yes, please provide name/email. *
Your answer _____

Network Engineer. If yes, please provide name/email. *
Your answer _____

VOIP Engineer. If yes, please provide name/email. *
Your answer _____

SysAdmin. If yes, please provide name/email. *
Your answer _____

Analytics. If yes, please provide name/email. *
Your answer _____

Customer Success. If yes, please provide name/email. *
Your answer _____

Project Manager. If yes, please provide name/email. *
Your answer _____

[Next](#) [Clear form](#) [Back](#) [Submit](#) [Clear form](#)

Figure 10: Suggested form to collect initial POC related information from customers

The forms contained all required questions to collect basic information about internet access to customer setup, visualisation options and current setup. Information is collected with yes/no and multiple-choice questions (Table 1).

POC information form

anton.chernenko.mail@gmail.com [Switch accounts](#) Draft restored

The name and photo associated with your Google Account will be recorded when you upload files and submit this form. Only the email address you enter is part of your response.

***Required**

Email *

Your email address

Will the POC environment have Outbound Internet Access? *
The installation will attempt to download software from Internet-based software repositories.

YES (outbound firewall open)

YES (outbound firewall enforcing)

YES (via a proxy server)

NO INTERNET ACCESS

May we have remote access to the POC systems? *

YES (via the Internet)

YES (via VPN)

NO

POC information form

anton.chernenko.mail@gmail.com [Switch accounts](#) Draft restored

The name and photo associated with your Google Account will be recorded when you upload files and submit this form. Only the email address you enter is part of your response.

***Required**

Your current setup

Please provide us with a high level diagram of the required setup (Servers (Database, Capturing Server), Switches (Capturing Agent, Port Mirrors))

High-Level Architecture Diagram *

[Add File](#)

Virtualization *
Please indicate where POC will run

Virtual Instance

Hardware

Mix of Both Hardware and Virtual

Operating Systems *
Please indicate which operating systems will be utilized for the POC

Linux/RPM (RHEL, Centos, etc.)

Debian (Ubuntu, etc.)

Other

Send me a copy of my responses.

[Next](#) [Clear form](#) [Back](#) [Submit](#) [Clear form](#)

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Figure 11: A second suggested form to collect POC setup related information from customers

5.3 Communication channel/s

Collecting information is essential to initiate any POC project. However, once the project starts, daily/weekly communication comes into play. It is important to stay in sync with the customer to be able to help with any technical challenges that arise as the project progresses.

The case company already uses a CRM system to serve recurring customers with a support ticketing system. The CRM system (Zoho, 2021) allows creating multiple departments, for example, to submit tickets not only to the technical support team, but also to other departments such as sales or others. It is therefore recommended to create another department for POC projects (Figure 12) to serve POC customers. Whenever needed, either by a customer or the

case company, a support ticket may be initiated and responded quickly with a possibility to track the ticket and the time spent on solving a problem.

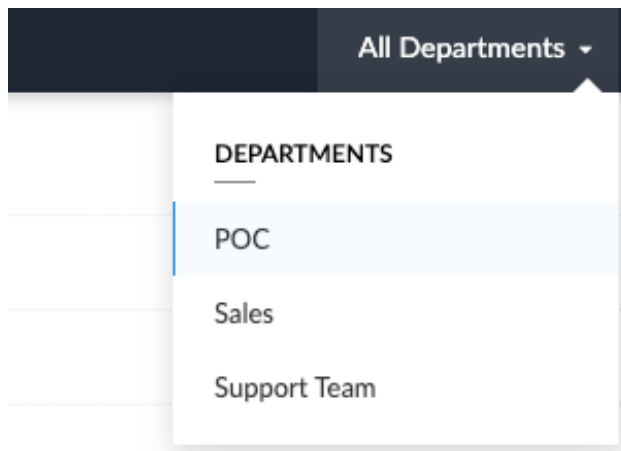


Figure 12: A new department (POC) can be added to the CRM system

5.4 Sharing internal communication channels with customers.

The case company uses few communication platforms, such as Slack (Slack, 2021a) and Element (Element, 2021). Though Slack recommends adding external users to company channels for efficient information flow (Slack, 2021b), it seems to be excessive to add POC customers to those platforms for two reasons. Firstly, adding a POC department to the CRM is a more viable option, as otherwise the technical support team will be overloaded with messages and support requests from POC customers via Slack/Element messages and requests. Secondly, communication platforms work best for internal communication and for communication with partners, though Slack has built an integration with Zendesk, a customer support tool, to allow messaging with internal experts without leaving Zendesk (Slack, 2021b).

5.5 Setting up calls with customer

Setting up a call with a customer can be time consuming, as confirmed by stages C, G, K (Table 4) with high variation. Indeed, sending emails back and forth to choose a meeting date, oftentimes with different time zones, can be intimidating (Klenty Blog, 2021). It is recommended to test one of the calendar platforms, for example Calendly, which allows a customer to select a slot that

works for them (Calendly, 2021). The platform considers time zone differences, and it also allows creating templates with blocked time slots when no meetings/calls can be organised. An example of such template is provided below (Figure 13).

The screenshot shows the 'Edit One-on-One Event Type' interface in Calendly. At the top, there is a navigation bar with 'Home', 'Availability', 'Integrations', 'Help', and 'Account'. Below this, a 'Back' button is on the left, and 'Your event type is ON' is on the right. The main content area is titled 'Invitee language - English' and includes a 'view live page' link. The event details are as follows:

- What event is this?**: 15 Minute Meeting, No location given
- When can people book this event?**: 15 min, 60 rolling calendar days

Under the 'Additional Options' section, there are five toggleable features:

- Invitee Questions**: Name, Email + 1 question
- Workflows** (TRY IT): Set up automations around your events, such as email and text notifications, thank you emails, etc.
- Notifications and Cancellation Policy**: Calendar Invitations, No Reminders
- Confirmation Page**: Calendly confirmation page, no active links
- Collect Payments**: no payment method

Figure 13: An exemplary template for calendar invites from Calendly

To facilitate setting up calls with customers, two Calendly templates were created, one for a POC kick-off call (stage C) and another one for a mid-term POC call (stage G, K, figure 14).

The figure shows two side-by-side screenshots of the 'Edit One-on-One Event Type' page. Both pages are for 'English' language and were last edited on 23 October 2021. The left page is for a 'POC kick-off call' and the right page is for a 'POC midterm call'. Both pages have a 'Back' button and 'Your event type is OFF' indicator.

Left Page (POC kick-off call):

- What event is this?**: POC kick-off call, Google Meet
- When can people book this event?**: 45 min, 20 rolling calendar days
- Additional Options**:
 - Invitee Questions: Name, Email + 1 question
 - Workflows (TRY IT): Set up automations around your events, such as email and text notifications, thank you emails, etc.
 - Notifications and Cancellation Policy: Calendar Invitations, No Reminders
 - Confirmation Page: Calendly confirmation page, no active links
 - Collect Payments: no payment method

Right Page (POC midterm call):

- What event is this?**: POC midterm call, Google Meet
- When can people book this event?**: 30 min, 10 rolling calendar days
- Additional Options**:
 - Invitee Questions: Name, Email + 2 questions
 - Workflows (TRY IT): Set up automations around your events, such as email and text notifications, thank you emails, etc.
 - Notifications and Cancellation Policy: Calendar Invitations, No Reminders
 - Confirmation Page: Calendly confirmation page, no active links
 - Collect Payments: no payment method

Figure 14: Templates for a POC kick-off call (left) and a midterm call (right) in Calendly

6 Summary and Conclusions

This thesis can be used by any software company which offers a POC/pilot stage to its customers or wants to improve overall information flow. For example, suggested Google Forms to collect and share information may help in reducing time spent on stages C, E, F, J and K (Table 4). Working with calendar platform tools may help in reducing stages C, G and K (Table 4). To author's knowledge, suggested set of improvements have not been considered to its full extent by the case company yet. However, there is an indication that the work was beneficial for the company.

A lot of information in this thesis was not possible to share publicly, such as company names and other sensitive details. Hopefully, a responsible person from the case company will use this thesis alongside the internal data to make customers' experience even better.

Based on findings from this thesis, several recommendations to the case company were proposed. The recommendation may be applied by any software company with a POC/pilot offering:

1. Create a process for a POC/pilot stage with a proposed timeline, milestones, and clear expectations
2. Offer as little flexibility with POC for potential customers as possible. It is recommended to have a general solution which can demonstrate basic functionality and no customisations.
3. Rely on external and internal tools to automate the process as much as possible, for example, to book web calls, share information and documentation etc. Some of the tools were suggested in the thesis.
4. Walk a customer through the process before a POC/pilot is initiated to avoid unpleasant surprises and bottlenecks.

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