

Lean Product Development

EY R&D Tax Credit Prototype



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Executive Summary

As the world of technology is advancing, EY sees significant potential in the use of automation to make the R&D tax filing process more efficient and simple for clients. Our group was tasked with developing a proof-of-concept that accomplished this goal. In our approach, we performed the following steps: targeted a specific market segment, prioritized the most significant user challenges, prototyped a solution to address these challenges, and determined future recommendations for the prototype.

First, we aimed to find the correct market segment. We decided to focus on medium-sized businesses, which are one tier below EY's current clientele. Constituting our target customers, they would derive the most value from our platform. We then prioritized our user problems.

Our most significant user needs can be divided into two broad user challenges. First, accountants do not know whether their firms' projects and expenses qualify for R&D tax credit. Second, R&D tax calculations are complicated and require historical knowledge. We prioritized these two user problems because they were preventing firms from efficiently claiming R&D tax credits. Tackling these problems would save time and money for EY and its clients. These are two of our key value propositions, and they guided the development of our prototype.

We decided to create a project management tool with three users: an accounting manager on the client's side, a project manager on the client's side, and an R&D tax expert on EY's side. Accounting managers would submit projects and expenses to be reviewed, EY's tax expert would then specify which projects and expenses qualify for R&D tax credit, and the project manager would then upload specific expense documentation. Our tool then automatically generates a claim for review from EY's tax expert. This prototype saves time and money for EY and its clients by accomplishing the following goals: ensuring that clients understand which projects and expenses qualify for credit, simplifying the process of obtaining the necessary R&D expense documentation, and automating claim generation.

Moving forward with the prototype, we see huge potential in this platform becoming a one-stop platform for generating automatically filled forms, such as IRS 6765, to make the claiming process even faster and simpler. This is our main recommendation for future prototype versions.

Overview

In the United States, the R&D tax credit is a dollar-for-dollar offset of federal income tax liability and, in certain circumstances, payroll tax liability. The R&D credit equals the sum of amounts calculated using two different kinds of expenses: (1) qualified research expenses (QREs) and (2) basic research payments (BRPs) (Bard, 2020). Types of expenses that qualify as QREs are:

- a. In-house expenses: They consist of wages paid to employees, supplies that are non-depreciable (including tangible properties), and expenses incurred in conducting research activities (such as computers, testing and designing of tools, etc.).
- b. Contract research expenses: 65-75% of any amount paid for a contract that is counted towards research activity.

Companies with gross receipts of more than \$250 million can be granted R&D tax credits of \$4.8 million. Although this is a significant opportunity, companies having less than \$250 million in gross receipts fail to take advantage of credits due to a lack of knowledge about R&D tax credits.

Goal

Our focus is to create a prototype that showcases a platform's workflow and helps EY claim R&D tax credits for their clients. The idea is to build an automated platform that obtains information about qualified projects and expenses. The tool should automate many processes, and human involvement should be limited to providing high-value inputs at key checkpoints.

The desired platform allows clients to obtain crucial information:

1. Projects that qualify for R&D tax credits
2. Research expenses involved in the projects that qualify for the tax credit
3. An estimate of credits that can be claimed

Market Opportunity and Competitive Landscape

Most R&D tax credits are claimed by medium-sized to large-sized firms. This is mainly because medium-sized and large-sized firms spend more than 50 times as much as small firms on R&D (Govindarajan and Baruch 2019). While this may imply EY should focus on both medium-sized and large enterprises, our automated R&D application should be targeted towards

medium-sized companies that are a tier below EY's typical clientele. Several reasons for our decision are outlined below:

1. Large companies are already able to afford EY's current R&D tax consultation services, which involve high costs. Medium-sized companies would desire a more affordable tool.
2. Due to the sheer size of their tax departments, large companies are more likely to already have R&D tax professionals. This indicates that our tool may be redundant for them.
3. Medium-sized companies represent an ideal balance between large and small companies. Given that the tool requires expert input, we want to make sure that the revenue generated from each client is large enough to offset the cost of expert inputs. Large companies claim lots of R&D tax credits but are less likely to utilize our tool (for the reasons outlined above). Small companies might find value in our platform but individually register very little R&D tax credits. By targeting medium-sized companies, EY will best be able to help clients save significant amounts of money through tax credit claims.

Since our platform is aimed towards medium-sized companies, EY will have to compete with boutique professional services firms that generally address this market segment. EY, however, has a more trusted and widespread reputation. Consequently, EY will be uniquely positioned to capture much of this market share. A more in-depth analysis of the competitive landscape is conveyed in Appendix A.

User Problems

On the client's side, there are two main user problems we seek to address. The first problem is that firms do not know if they qualify for R&D tax credit. The second problem is that calculations are complicated and require historical knowledge of past R&D expenditures. These user challenges are critical design drivers, as they prevent many medium-sized firms from obtaining R&D tax credit. They directly impact two main stakeholders on the client side: accounting professionals and project managers. In addition, the second user challenge impacts EY professionals, as it costs them large amounts of time to collect the necessary R&D data from clients. We outline the impact of these design drivers below. It is also important to note the distinction between our platform's users and customers. Our target customers consist of medium-sized companies, while our actual users consist of tax professionals and project managers.

1. Accountants do not know whether their firms' projects/expenses qualify for R&D tax credit

Firms desire to save money through tax credits. This goal is primarily owned by senior accounting professionals and CFOs, but this mission trickles down to junior tax accountants, who also desire to maximize tax credits while maintaining accurate financial records. However, many do not know whether their projects and expenses qualify due to a lack of specialized R&D knowledge and experience. This is supported by our customer discovery, as our team members reached out to over 40 tax accountants of various backgrounds and seniority levels. None of the tax accountants we talked to had R&D tax experience (Appendix A). As a result of this lack of R&D knowledge, accounting professionals often do not file for R&D tax credits, which helps them minimize the risk of costly IRS audits. This prevents medium-sized firms, our target customers, from being able to save money through R&D tax credits.

2. R&D tax calculations are complicated and require historical knowledge

Some tax accountants can cross the initial hurdle of understanding which projects and expenses qualify. However, they are then tasked with determining the actual value of the qualified expenses and the appropriate documentation to justify their tax claim. As shown in Appendix B, obtaining the necessary documentation is critical to ensure the filing process is approved, as the IRS has rejected past tax claims that failed to provide substantial evidence (Kohl 2019). However, this information is mainly accessible to project managers and outside the visibility of tax accountants. Tax accountants consequently spend excess time collaborating with internal project managers to obtain the necessary documentation. This problem becomes aggravated because R&D tax filing requires historical knowledge of past expenditures on R&D. Recovering this past financial data is a slow process, and it takes time away from tax accountants and project managers from fulfilling their other responsibilities.

This inefficient process also poses difficulty for EY's current R&D tax service. Current EY tax consultants need to engage for lengthy periods with their clients to obtain the necessary documentation. As a result, EY's R&D service is unable to scale efficiently to serve many clients, as each client requires extensive collaboration.

Takeaway:

The above user challenges prevent companies from filing for R&D credit and make the filing process slower and costlier. To help EY and its client save time and money, these user challenges represent the most significant design drivers to be addressed.

Final Prototype

(The final prototype can be found at this [link](#))

Prototype Users

The final prototype is utilized by three types of users (the name in parentheses indicates the user profile):

1. A primary user at the client's end (Senior Accounting Manager)
2. Ancillary users at the client's end (Project Managers)
3. EY's R&D Tax Experts

Client's Side - Primary User:

The primary user, a senior accounting manager, is preferably a single person who spearheads the tax credit claim process within the organization. He or she has access to various projects within the organizations and has an understanding of the high-level expense groups for each project and department. Unlike project managers, however, he or she may not have access to individual expense documents and may not know the exact value of such expenses. To tackle this issue, the accounting manager can assign one or more project managers to a project.

Client's Side - Ancillary Users:

Project heads, department heads, and general project managers make up our ancillary users. We have named them "project managers" in our prototype, but this role can be played by anyone who has access to intimate expense information. In addition, these individuals should have access to documentation, such as receipts or bills, to substantiate these expenses.

Client's Side Responsibilities:

On the client's side of the tool, we have divided the information collected into two stages:

1. High-level project and expense overview
 - a. The information is submitted by the primary user.
2. Granular expense information and documents
 - a. The information is submitted by ancillary users.
 - b. Here, expenses are grouped by projects.

EY's Side - R&D Tax Expert:

The third type of user, an EY tax expert, can be a single person or multiple individuals depending upon the size and complexity of the client. The tax expert would provide key inputs at two stages:

1. Qualify projects and expenses as QRAs and QREs respectively
 - a. This causes the workflow to focus on a narrow list of projects and expenses that qualify.
2. Sign off on the final claim after reviewing all project and expense documents.

Workflow

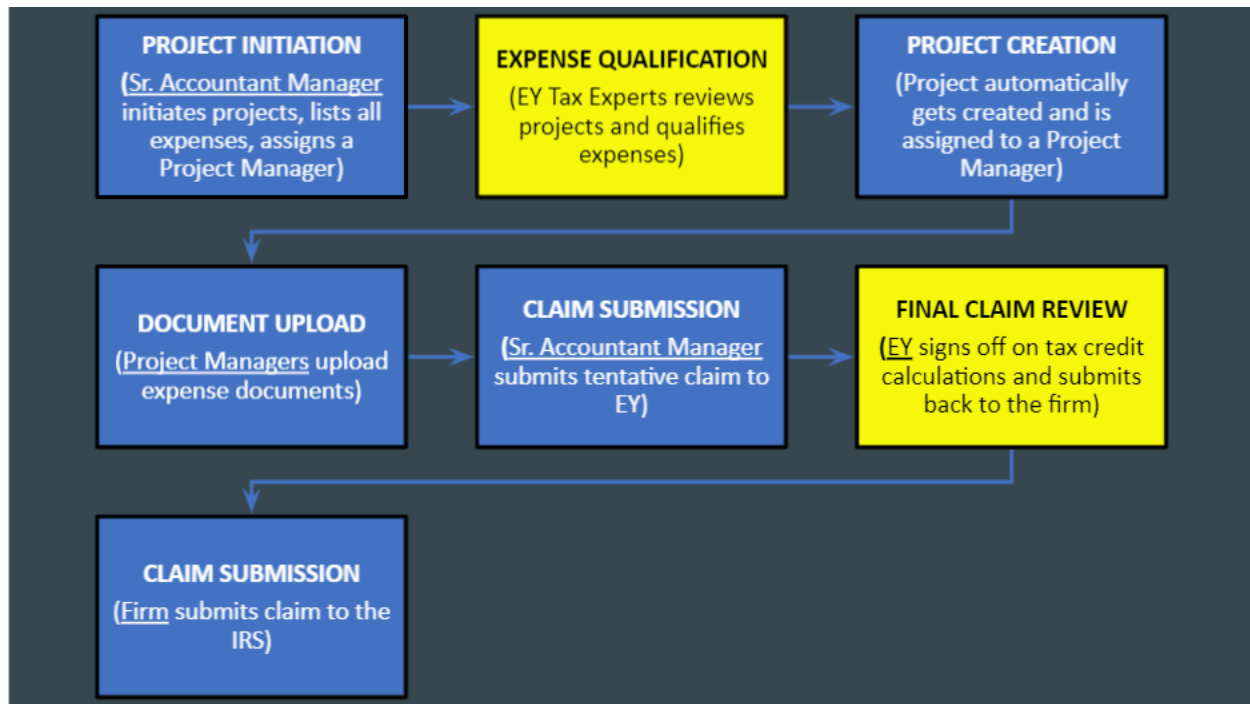


Figure 1: Workflow of the proposed prototype

The workflow above shows how our three users interact with the prototype. The process starts with the accounting manager initiating all projects that he or she wants to be qualified as QRAs. The accounting manager attaches project details and an estimate of the various expenses incurred within that project. He or she also assigns this project to a project manager who has access to detailed expense documents. Then, an EY expert reviews the project. Based on the details provided by the accounting manager, the EY expert decides whether to qualify the project as a QRA and the expenses as QREs. The project gets created and is assigned to the project manager on the platform. The project manager then uploads the documents corresponding to the qualified expenses. When all documents get uploaded for all qualified projects, the accounting manager can submit the final claim to EY. EY is expected to return pre-filled forms ready for submission to the IRS.

Prototype Windows

The prototype's window has been divided into two parts:

1. There is a left pane for navigation across different modules. Different users would see different modules based on their requirements and responsibilities. There are two types of modules: functional modules for the users to submit/review financial information and logistical modules to view one's profile information and contact other users. This combination of functional and logistical modules creates an efficient work environment for the users.
2. There is a main window that houses all the necessary information and buttons. This is where users can perform functional actions on our application, such as uploading documents or filling out text fields.

This layout remains consistent across all windows for all users. An example of a logistical module, a "Profile Information" window, is shown in Figure 2. This page is viewed by the primary user, an accounting manager. He or she would be able to see general information about his or her firm, role, contact information, and EY contact.

Sid Domala Senior Accounting Manager-Smith Energy		
Firm information		
Firm Name Smith Energy	Industry Oil & Natural Gas	Firm Type Privately Held Limited Corp.
Profile information		
Email siddomala@gmail.com	Role Senior Accounting Manager	Tax year 2020
EY Contact		
Primary EY contact floraguo@ey.com	Primary EY office location Ohio	Edit Information

Figure 2: Window Layout for Prototype

Figures 3, 4, 5, and 6 show the sequential workflow as the users interact with our online platform to perform their respective tasks.

The primary user (accounting manager) has 2 functional modules: “Project Review” and “File Claim”. As shown in Figure 3, the “Project Review” module allows the primary user to input general information about a project and an estimate of the project’s expenses.

Sid Domala
Senior Accounting Manager-Smith Energy

Tell Us About Your Planned Project

Get new projects reviewed by EY expert and see which expenses qualify for tax credit

Project Title: Project Manager:
File Reference: Project Description:


List Your Expenses

Expense Groups	Department	Estimate Expense	Upload Documents	Comments
Computers- Supplies	Accounts- Sourcing	\$10,000	Link <input data-bbox="1177 940 1198 961" type="button" value="+"/>	<input type="text"/>
Wages- Payroll	Central Payroll	\$1,000,000	Link <input data-bbox="1177 976 1198 997" type="button" value="+"/>	<input type="text"/>
Contractor- Maintenance	Accounts- Maintenance	\$50,000	Link <input data-bbox="1177 1012 1198 1033" type="button" value="+"/>	<input type="text"/>
Contractor- Supplies	Accounts- Sourcing	\$80,000	No Doc <input data-bbox="1177 1047 1198 1068" type="button" value="+"/>	<input type="text"/>
<input type="button" value="+ Add"/>				

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Figure 3: Project Review Window (as seen by the primary user)

After the client’s primary user inputs high-level information about a project and its expenses, the EY expert needs to review this information. As shown below in Figure 4, the EY expert has a single functional module called “Document Review”. This allows the EY expert to approve whether a project qualifies for tax credits and which individual expenses qualify for tax credits. After the EY expert makes this decision, the client’s accounting manager sees the result in the “Project Review” module (Figure 7 in Appendix C).



Profile Information
Company Profile
Document Review

Flora Guo
R&D Tax Consultant - EY

PROJECT 4 ^

Project Details

Qualified
Not Qualified

This project is qualified

Project Title: Project 4
File Reference: JJy-232-2021
Administrative Department: Northwest R&D Department
Project Manager: Maine R&D Lab Expansion
Project Description: Jaldhir Trivedi

Project Information

Expenses

Expense Groups	Expense Estimate	Documents	Comments	Status	Feedback
Computers- Supplies	\$10,000	View	Includes Computer Supplies	✓ Approved	Add Comments
Wages- Payroll	\$1,000,000	View	Scientists, HR, & Accounts	✓ Approved	Add Comments
Contractor- Maintenance	\$50,000	View	Building Maintenance	✗ Rejected	Add Comments
Contractor- Supplies	\$80,000	View	Chemicals/Lab Instruments	⌚ Review	Add Comments

Submit

Figure 4: Document Review Window (as seen by the EY expert)

If the project gets qualified, the secondary user (project manager) can submit documentation corresponding to the qualified expenses. This is shown in Figure 5, where the project manager has a “Submit Data” module. Examples of documentation include bills and receipts to provide proof of expenditures. After the project manager has uploaded all the necessary documentation, the client’s accounting manager can review this information (Figures 8 and 9 in Appendix C).

EY

Profile Information
Submit Data

Jaldhir Trivedi
Project Manager-Smith Energy

Project Summary

Project Title: Project 4
File Reference: JJy-232-2021
Administrative Department: Northwest R&D Department
Project Description: Maine R&D Lab Expansion
EY Expert: Flora Guo

Project Expenses

Expense Groups	Department Reference	Comments	
Computers- Supplies	Accounts- Sourcing	Includes Computer Supplies	Upload
Wages- Payroll	Central Payroll	Scientists, HR, & Accounting Employees	Upload
Contractor- Supplies	Accounts- Sourcing	Chemicals, Lab Instruments & Stationeries	Re-Upload

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Figure 5: Submit Data Window (as seen by the secondary user)

The accounting manager then can see an overview of all the projects' statuses. This is shown in the "File Claim" module in Figure 6. Here, it is evident that Project 4 has completed the "Data Collection" stage, as the project manager has uploaded all necessary expenses in the previous step. As documentation gets uploaded by the project manager, a tax claim is automatically generated, allowing the accounting manager to see an estimate of expected R&D tax credits to receive. This is shown by the red arrow under the "Concise Summary" section of this figure. When needed, the accounting manager can have the EY tax expert review this claim before submitting it to the IRS.

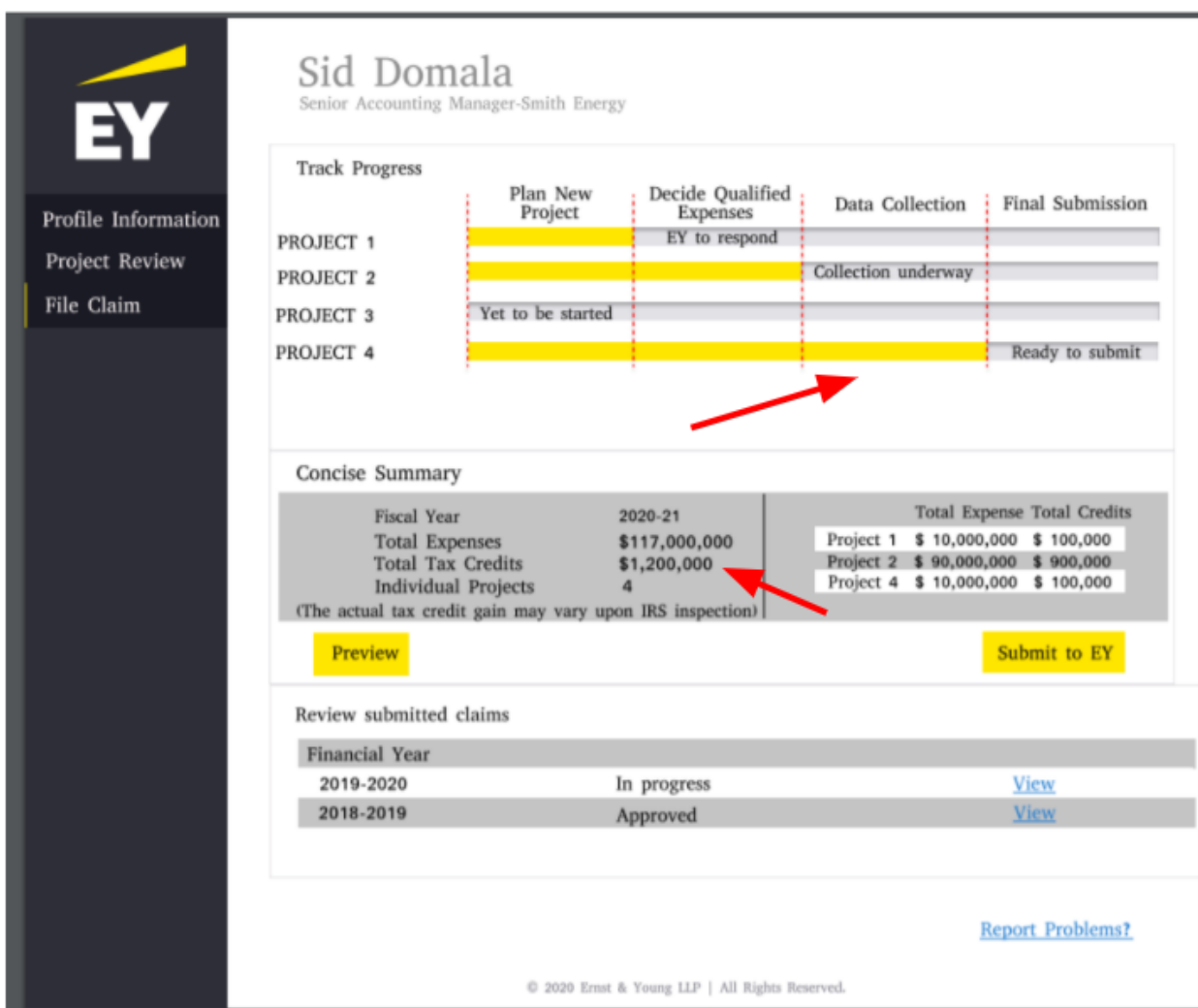


Figure 6: Claim Submission and Progress Tracker Window (as seen by the primary user)

Prototyping Process and Refinement

(Besides the final prototype, if one wants to access previous iterations of the prototype, then they can be accessed through this [link](#))

When creating our prototype, our primary goal was to prioritize our key user problems. We utilized user personas and user stories to meet customer expectations. Our client's user stories are shown in Figure 10 in Appendix C. These user stories expand on our list of core user problems by conveying the main goals of accounting managers and project managers. Both of these users desire an intuitive, cost-effective tool that allows them to save time.

We initially added comprehensive information to our prototype to make it powerful and thorough. However, there is a direct trade-off between the amount of information in a prototype and how understandable it is. Our main feedback received from our classmates, professor, and the EY team can be summarized in the below four points. All four points are correlated with increasing our prototype's clarity and feasibility.

Complex Language:

Our initial prototype utilized many bureaucratic words. Since our prototype provides a feature for accountants to upload project information, we had text fields containing the following phrases: "Upload White Paper", "Project Initiation", "QRE". These are technical terms that make our prototype less intuitive and easy to understand. In our final prototype, we replaced these terms with "Plan New Project", "see which expenses qualify", and "Tell Us About Your Planned Project." By using simpler, everyday language, we were able to enhance the usability of our platform. Since current R&D tax credit calculations require a substantial amount of legislative vocabulary, our use of intuitive language better incentivizes individuals to use our tool.

Project Qualification:

In our initial prototype, the tax accountant would start the workflow by submitting expenses to an EY consultant, who would then determine whether or not those expenses qualified for R&D tax credit. However, this is not practical, as there is a chance the project itself does not qualify for R&D tax credit. We had falsely assumed that users would have a substantial understanding of QREs and the IRS 4-part test. To fix this feasibility issue, we added functionality that allows the EY consultant to approve or reject overall projects before examining the expenses. To better educate tax accountants about what type of projects they should submit, our tool also allows them to view the status of past projects and learn about R&D tax guidelines. Adding these minor features made our prototype much more viable in a real-world setting.

Distinction Between Users:

There are multiple users in our prototype: the client's tax accountant, the client's project manager, and the EY tax consultant. When interacting with our prototype, all these users should have slightly different capabilities and see different screens. However, our initial prototype showed identical screens for all users. This made it harder to convey the different functionalities of our various users. To fix this clarity issue, we changed the left navigation pane to better demarcate the differences between our users. For example, we ensured only the project manager would have a "Submit Data" page, which is not provided to the tax accountant. In addition, we added distinct profile names and job roles to the top of each page, so it is easily understood who is interacting with the prototype. These changes made our prototype more comprehensible when transitioning between the various users in our workflow.

Readability:

The final piece of feedback was to increase the font size and readability of our prototype. To fit in maximum information in some of our pages, we had initially used small font size. However, this prevented many individuals from being able to read the details on our pages. To fix this, we moved elements around to better utilize our white space. This provided us with enough room to increase the font size, which helped elevate our tool's readability.

Addressing User Problems

Below, we outline how our final prototype solves our two most pressing user problems.

1. Accountants do not know whether their firms' projects/expenses qualify for R&D tax credit.

To tackle this user challenge, our tool organizes expenses into projects and allows EY experts to qualify projects and expenses that are submitted by the client. This ensures that the client's accountants can accurately file R&D tax claims. In addition, the IRS prefers project-based documentation for R&D tax filing. As a result, this feature prevents the likelihood of an IRS audit and helps the client maximize R&D tax credits. We can consequently provide one of our key value propositions: helping the client save money.

2. R&D tax calculations are complicated and require historical knowledge

Our tool contains several features to automate claim generation, which mitigates this user problem. Since project managers can upload specific expense information for every project, our

tool can produce accurate tax claims. Before, tax accountants would have to expend large amounts of time in working with project managers to produce the appropriate documentation, as tax accountants would not be aware of the exact expense values. This problem is exacerbated by the fact that past R&D expenditure information is needed for the tax filing process. Our tool stores this past R&D expense information, so our platform can automate claim generation without requiring this input from the client. By storing past R&D expense information and serving as a centralized interface for project managers to upload specific expense documentation, our platform can efficiently determine the exact R&D expense values needed. This saves time for tax accountants and project managers in figuring out these costs.

Optimized Process:

Our tool saves time for clients and EY for an additional reason. The workflow is a staged process that incrementally takes in inputs from the clients and EY. Hence, if a client submits an unqualified project, the process would stop before additional information is submitted and reviewed. The alternative would be a linear process. In a linear process, clients would assemble and submit all the possible documents at once, and EY experts would sign off on this final claim submission. This method is prone to errors from clients, causing a significant amount of back and forth interactions when the EY experts review the claim at the end. The process would also require clients to add documents for all expenses, including those which are later rejected as unqualified for R&D tax credits. Hence, our staged process would save time for clients and EY, which is our second key value proposition.

Takeaway:

Our digital solution saves money for clients by allowing them to accurately file for R&D tax credits without fear of audits. By serving as a centralized repository that obtains expense documentation from clients and allowing EY tax experts to review expenses, our platform saves time in calculating complicated R&D tax claims. Saving time and money for clients is one of EY's main goals. However, EY will also benefit from saved time by being able to efficiently scale its services to many companies. This enables EY to serve many customers at once and capture large amounts of market share without excess time and personnel. It is evident that our current online tool, containing the ideal balance between automation and human involvement, would best serve the interests of EY and solve pressing user problems.

Recommendations for the Future

Our prototype addressed user problems regarding the R&D tax credit preparation process from three different perspectives: helping clients identify qualified research and expenses, helping project managers provide proof and documentation for these expenses, and helping EY's R&D tax consultants easily collect and analyze this information. However, there are still some areas of improvement for our prototype. We consequently propose the following features to further enhance the user experience.

Recommendation 1: More Automated Features/ Computer-Aided Plugins

Currently, our prototype is designed as an interactive platform, which requires a considerable level of human involvement from both the client and EY sides. The website does not contain any integrated tools that help clients generate specific tax documents. In future versions, we believe automated features can be added to increase the level of assistance. For example, once the clients submit all their projects to EY, the system can create a pre-filled R&D tax form, such as Form 6765 (Appendix D), based on the expenses provided by the clients. This feature not only assists EY experts but also gives the clients a sample of the final product. Many computer-aided plugins can also be used in our tool to perform keyword scanning and document editing. We believe technology can make life easier for both EY and its clients, allowing us to further enhance our value propositions.

Another significant part of the claiming process is manually qualifying projects and expenses for R&D tax claims. This process can be automated if enough data is collected. For example, a project might be automatically qualified for a client if a project of similar nature was deemed qualified by an expert in the past. However, to ensure accuracy in R&D tax filing and prevent costly IRS audits, manual qualification is ideal for the initial phase of the product.

Recommendation 2: Better Utilization of Historical Data

Right now, our proposed workflow includes storing historical data for future tax filing. This allows clients to view past project information to better understand what projects/expenses qualify for R&D. In addition, this allows our prototype to automate the claim generation process, as our tool has all the necessary data for these calculations. However, more EY interfaces are required to allow EY experts to see past information. Because the R&D tax credit approval process is vague and not always objective, keeping historical data can help EY expertise better understand the current standards and better prepare future claims. Moreover, it may increase customer engagement, as EY can use this data to make business suggestions to their

clients. For example, if a client wants to pursue a specific project, our platform can then examine the historical data and immediately advise whether this will save them money. Hence, with more enhanced utilization of client historical data, EY can form a long-lasting partnership with their customers.

Recommendation 3: Frequently Asked Questions

One of the key user problems is that clients are not familiar with R&D tax credit. Even experienced accountants may still be confused about the process and calculations. Hence, a "Frequently Asked Questions" (FAQ) page would be very useful to clients and EY. When we performed R&D tax credit research, most of the search results consisted of competitors' FAQ web pages. From the perspective of a potential client, a well-established FAQ page would help build a trustworthy relationship and increase the chance of converting website visitors into clients. As a result, the FAQ page can serve as a free advertisement for EY.

Recommendation 4: Statistical and Graphical Analysis

In addition to more comprehensively utilizing historical data, EY could better visualize the clients' data for clients. This is incredibly useful, as it allows clients to intuitively understand their project portfolio, see the distribution of R&D expenses, and prioritize specific innovation projects. All of these capabilities are key goals of current management teams (Davila, 2013). As a result, this feature would further enhance our tool's ability to provide supportive guidance to our primary user, the financial or accounting manager. Adding this feature is very cost-effective. It will only require basic statistical tools, such as bar graphs and trend lines. In addition, it will end up as a key value differentiator when compared to competitors' platforms.

Recommendation 5: Further Security Levels/Sensitive Document Protection

Some clients might be concerned with submitting confidential documents online. In our current prototype, we tried to resolve this issue by developing two levels of client-side users: accounting managers and project managers. In our case, the ancillary users do not have access to information other than his/her project. However, this security measure might not be sufficient for some clients. EY should fulfill this demand by developing more comprehensive protection: dividing projects, documents, or people into different security levels. This would ensure that employees have different access rights and functionalities (copy, download, edit, etc.) for certain documents. An additional possible solution is adding passwords for documents. All of these security measures also apply to historical data, IRS responses, and statistical analysis. These features would dispel the anxiety of potential users and attract them to our platform.

Takeaway:

The above recommendations would allow EY to accomplish the following:

1. Capture more users through an FAQ page and better information security
2. Retain current users by providing data analysis/visualization and recommendations about planned R&D projects
3. Save time by automating the process of filling out R&D tax forms

We recommend adopting our current solution and pursuing these recommendations. By serving as a repository of R&D expense information, connecting accounting managers and project managers to an EY tax expert, and providing a staged workflow for maximum productivity, our current prototype already addresses the most critical user problems. Specifically, our platform can help accountants understand which projects/expenses qualify for R&D tax credit and mitigate current complexities with R&D calculations. If EY pursues these recommendations, EY will be able to more efficiently help future and current clients maximize R&D tax credits. This would further allow our solution to deliver its two key value propositions, saving time and money for EY and its clients.

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Appendix A

Competitive Landscape

Currently, most competitors in the R&D Tax Credit Market can be divided into three broad categories, Big 4 firms serving large companies, boutique professional services firms serving medium-sized and small companies, and technologically advanced firms serving startups. Many of these companies; such as Deloitte (Big 4), Kruze Consulting (boutique professional services), and Mainstreet (technologically advanced), have built software platforms that automate the process of gathering expense documentation from clients (Deloitte, Kruze, and Mainstreet, 2021). These products are very similar to our proposed tool. However, our main competitor is not Big 4 firms even though EY traditionally competes with other Big 4 firms. For our online platform, the main competitor would be boutique professional services firms that target medium-sized companies. EY will be able to capture more clients in this market segment since EY carries a stronger reputation that is globally recognized and trusted. This will greatly help EY in converting medium-sized companies into actual users of our software platform.

Customer Discovery


In total, we talked to 40 individuals by reaching out to tax accountants on LinkedIn and tax accountants within our network (ex: friends of friends). These tax accountants had varying degrees of experience and seniority in the finance field. They can be classified into various categories: junior tax consultants, standard tax accountants, senior accounting managers, accountants working in the Big 4, accountants working at boutique professional firms, and private accountants. None of these individuals had previous experience working with R&D tax filing and did not have plans to become accustomed to the R&D tax filing process. While 40 people is a small sample size, our results provide evidence that R&D tax filing is a niche area unfamiliar for general tax accountants.

Appendix B

Many companies rely on tax accountants instead of R&D specialists to file for R&D tax credits. This is a mistake since obtaining maximum tax credits and substantiating credit claims are better suited for individuals with the required engineering knowledge. An example of this common mistake occurred with a milling company in 2019 when Siemer Milling Company's accounting

department failed to provide sufficient information to satisfy one of the four R&D constraints (Kohl 2019). The IRS ruled that Siemer failed to prove that its projects satisfied the four-part QRE test (whether the project was to develop a new or improved business component, to eliminate uncertainty, to experiment with various alternatives, and/or simply technological in nature). This decision was backed by the tax court and shows the implications of providing insufficient justification and documentation.

Appendix C




- Profile Information
- Project Review
- File Claim

Sid Domala
Senior Accounting Manager - Smith Energy

PROJECT 4 ^

Project Summary

Project Title:	Project 4
File Reference:	JJy-232-2021
Administrative Department:	Northwest R&D Department
Project Description:	Maine R&D Lab Expansion
Project Manager:	Jaldhir Trivedi



This project is qualified

Project Information

Expenses


Expense Groups	Expense Estimate	Documents	Comments	Status	Feedback
Computers- Supplies	\$10,000	View	Includes Computer Supplies	✓ Approved	Add Comments
Wages- Payroll	\$1,000,000	View	Scientists, HR, & Accounts	✓ Approved	Add Comments
Contractor- Maintenance	\$50,000	View	Building Maintenance	✗ Rejected	Add Comments
Contractor- Supplies	\$80,000	View	Chemicals/Lab Instruments	✓ Approved	Add Comments

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Figure 7: Project Review Window (as seen by the accounting manager after the EY tax expert approves/rejects a project and its expenses)



Profile InformationProject ReviewFile Claim

Sid DomalaSenior Accounting Manager-Smith Energy

All the required documents for project 4 have been uploadedGo

Project Summary

Project Title:Project 4Project ManagerJalldhir Trivedi

File Reference:JJy-232-2021EY Expert:Flora Guo

Administrative Department:Northwest R&D Department

Project Description:Maine R&D Lab Expansion

Project Information

Project Expenses

Expense Groups	Expense Estimate	Status	Documents
Computers- Supplies	\$10,000	✓ Uploaded by Jalldhir Trivedi	Link
Wages- Payroll	\$1,000,000	✓ Uploaded by Jalldhir Trivedi	Link
Contractor- Supplies	\$80,000	✓ Uploaded by Jalldhir Trivedi	Link

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Figure 8: Project Review Window (as seen by the accounting manager after the project manager uploads all necessary expense information)

Profile Information

Project Review

File Claim

Sid Domala

Senior Accounting Manager-Smith Energy

Project Summary

Project Title:

File Reference:

Administrative:

Project Description:

Project Information

Project Expenses

Expense Groups

Computers - Support

Wages - Payroll

Contractor - Support

Back

Wage Payroll

160% +

WORK CLASSIFICATION	ST OF OT	DAY AND DATE							TOTAL HOURS	RATE OF PAY	GROSS AMOUNT EARNED	FICA	Fed Tax
		Wed 22	Thur 23	Fri 24	Sat 25	Sun 26	Mon 27	Tue 28					
		HOURS WORKED EACH DAY											
LATHERER JOURNEYMAN	ST	7.00	7.00	7.00	0.00	0.00	0.00	0.00	21.00	49.73	1,342.71	75.86	212.00
	OT	2.00	2.00	0.00	0.00	0.00	0.00	0.00	4.00	74.00			
	DT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
CARPENTER - APPR. 1YR	ST	7.00	7.00	7.00	0.00	0.00	7.00	0.00	28.00	22.01	616.28	34.32	90.00
	OT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
	DT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
CARPENTER - APPR. 4YR	ST	7.00	7.00	7.00	0.00	0.00	7.00	0.00	28.00	40.47	1,211.62	70.68	226.00
	OT	1.00	1.00	0.00	0.00	0.00	0.00	0.00	2.00	58.93			
	DT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
OPERATING ENGINEER - BACKHOE	ST	7.00	7.00	7.00	0.00	0.00	7.00	7.00	35.00	69.31	3,684.63	208.15	710.00
	OT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
	DT	3.00	3.00	3.00	0.00	0.00	0.00	0.00	9.00	139.02			

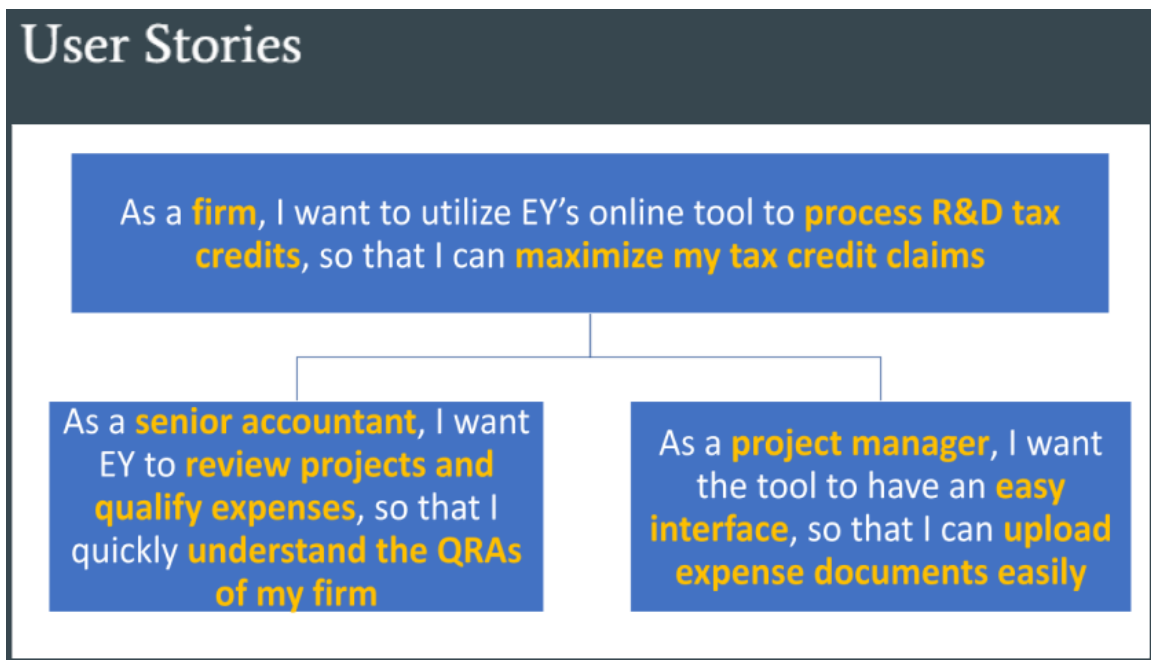
Done

Documents

[Link](#)
[Link](#)
[Link](#)

Guidelines

Figure 9: Project Review Window - Specific Document (the accounting manager can review individual documents uploaded by the project manager by clicking on “Link” in Figure 8)



Appendix D

Form 6765 (Rev. December 2020) Department of the Treasury Internal Revenue Service	Credit for Increasing Research Activities ▶ Attach to your tax return. ▶ Go to www.irs.gov/Form6765 for instructions and the latest information.	OMB No. 1545-0019 Attachment Sequence No. 676
Name(s) shown on return		Identifying number
Section A—Regular Credit. Skip this section and go to Section B if you are electing or previously elected (and are not revoking) the alternative simplified credit.		
1	Certain amounts paid or incurred to energy consortia (see instructions)	1
2	Basic research payments to qualified organizations (see instructions)	2
3	Qualified organization base period amount	3
4	Subtract line 3 from line 2. If zero or less, enter -0-	4
5	Wages for qualified services (do not include wages used in figuring the work opportunity credit)	5
6	Cost of supplies	6
7	Rental or lease costs of computers (see instructions)	7
8	Enter the applicable percentage of contract research expenses. See instructions	8
9	Total qualified research expenses. Add lines 5 through 8	9
10	Enter fixed-base percentage, but not more than 16% (0.16) (see instructions)	10 %
11	Enter average annual gross receipts. See instructions	11
12	Multiply line 11 by the percentage on line 10	12
13	Subtract line 12 from line 9. If zero or less, enter -0-	13
14	Multiply line 9 by 50% (0.50)	14
15	Enter the smaller of line 13 or line 14	15
16	Add lines 1, 4, and 15	16
17	Are you electing the reduced credit under section 280C? ▶ Yes <input type="checkbox"/> No <input type="checkbox"/> If "Yes," multiply line 16 by 15.8% (0.158). If "No," multiply line 16 by 20% (0.20) and see the instructions for the statement that must be attached. Members of controlled groups or businesses under common control, see instructions for the statement that must be attached	17
Section B—Alternative Simplified Credit. Skip this section if you are completing Section A.		
18	Certain amounts paid or incurred to energy consortia (see the line 1 instructions)	18
19	Basic research payments to qualified organizations (see the line 2 instructions)	19
20	Qualified organization base period amount (see the line 3 instructions)	20
21	Subtract line 20 from line 19. If zero or less, enter -0-	21
22	Add lines 18 and 21	22
23	Multiply line 22 by 20% (0.20)	23
24	Wages for qualified services (do not include wages used in figuring the work opportunity credit)	24
25	Cost of supplies	25
26	Rental or lease costs of computers (see the line 7 instructions)	26
27	Enter the applicable percentage of contract research expenses. See the line 8 instructions	27
28	Total qualified research expenses. Add lines 24 through 27	28
29	Enter your total qualified research expenses for the prior 3 tax years. If you had no qualified research expenses in any one of those years, skip lines 30 and 31	29
30	Divide line 29 by 6.0	30
31	Subtract line 30 from line 28. If zero or less, enter -0-	31
32	Multiply line 31 by 14% (0.14). If you skipped lines 30 and 31, multiply line 28 by 6% (0.06)	32
33	Add lines 23 and 32	33
34	Are you electing the reduced credit under section 280C? ▶ Yes <input type="checkbox"/> No <input type="checkbox"/> If "Yes," multiply line 33 by 79% (0.79). If "No," enter the amount from line 33 and see the line 17 instructions for the statement that must be attached. Members of controlled groups or businesses under common control, see instructions for the statement that must be attached	34

For Paperwork Reduction Act Notice, see separate instructions.

Cat. No. 13700H

Form **6765** (Rev. 12-2020)

Section C—Current Year Credit

35	Enter the portion of the credit from Form 8932, line 2, that is attributable to wages that were also used to figure the credit on line 17 or line 34 (whichever applies)	35	
36	Subtract line 35 from line 17 or line 34 (whichever applies). If zero or less, enter -0-	36	
37	Credit for increasing research activities from partnerships, S corporations, estates, and trusts	37	
38	Add lines 36 and 37	38	
	<ul style="list-style-type: none"> • Estates and trusts, go to line 39. • Partnerships and S corporations not electing the payroll tax credit, stop here and report this amount on Schedule K. • Partnerships and S corporations electing the payroll tax credit, complete Section D and report on Schedule K the amount on this line reduced by the amount on line 44. • Eligible small businesses, stop here and report the credit on Form 3800, Part III, line 4i. See instructions for the definition of eligible small business. • Filers other than eligible small businesses, stop here and report the credit on Form 3800, Part III, line 1c. <p>Note: Qualified small business filers, other than partnerships and S corporations, electing the payroll tax credit must complete Form 3800 before completing Section D.</p>		
39	Amount allocated to beneficiaries of the estate or trust (see instructions)	39	
40	Estates and trusts, subtract line 39 from line 38. For eligible small businesses, report the credit on Form 3800, Part III, line 4i. See instructions. For filers other than eligible small businesses, report the credit on Form 3800, Part III, line 1c	40	

Section D—Qualified Small Business Payroll Tax Election and Payroll Tax Credit. Skip this section if the payroll tax election does not apply. See instructions.

41	Check this box if you are a qualified small business electing the payroll tax credit. See instructions <input type="checkbox"/>		
42	Enter the portion of line 36 elected as a payroll tax credit (do not enter more than \$250,000). See instructions	42	
43	General business credit carryforward from the current year (see instructions). Partnerships and S corporations, skip this line and go to line 44	43	
44	Partnerships and S corporations, enter the smaller of line 36 or line 42. All others, enter the smallest of line 36, line 42, or line 43. Enter here and on the applicable line of Form 8974, Part 1, column (e). Members of controlled groups or businesses under common control, see instructions for the statement that must be attached	44	

Form **6765** (Rev. 12-2020)

Figure 8. IRS 6765 Form