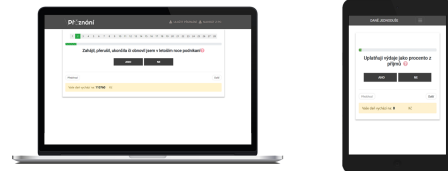


Interactive Form for Tax Returns

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Abstract

The goal of this project is to develop interactive forms for tax returns which are pretty easy to fill in for everyone without any experience in the economy or the tax law. The main purpose is to create simple forms for different types of people (e. g., businessman, employee, or student). The official application for tax returns (EPO) provided by The Ministry of Finance of the Czech Republic is complex. It offers many options which are usually unimportant for common users. Hence, it is often difficult to achieve the right result. This paper presents a new web application called “Přiznání” which solves the problem by providing a set of simple yes/no questions to the users. The questions are based on the experience of revenue officers and taxpayers who need to fill the forms every year. After answering all these questions, the user can download a correctly filled form which can be send off to the revenue authority. At the current stage, the application provides the form for people in business. It successfully generates the Personal Income Tax form—the official document containing the information about personal income tax. The forms for different types of people are being developed.

Keywords: Tax — Form — Web application

Supplementary Material: [Live Demo](#) — [GitHub Repository](#)

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1. Introduction

Almost every Czech adult person knows the pink paper form with a lot of input fields and descriptions which are difficult to understand. It is very easy to make a mistake and start over. Lots of people have to fill those forms in every single year. According to official statistics [1], more than two millions of Personal Income Tax [2] forms in the Czech Republic are filed every year. Personal Income Tax belongs to the most important incomes of almost every country in the world. Like Benjamin Franklin once said “*In this world, nothing can be said to be certain, except death and taxes.*”

The application called “Přiznání” offers a simple way of filling tax return forms. Instead of doing an-

noying paper work, users just fill in simple forms and generate the final tax return form which is ready for revenue authority. People can lose a lot of money if they are aware of all the non-taxable parts of the tax base[3], tax reliefs or tax credits. Hence, the important role of the proposed application is to show the users all of their possibilities a make this process as easy as possible.

The application is developed for the general public which means that the usage should be easy for everyone. The focus of this work is to create simple yes/no questions based on user experience (UX). Users do not need to know all the financial stuff, but they only need to answer some questions and fill in the answer fields with comprehensible titles and hints. They can view

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the form not only on their computer but also on other devices and download the Personal Income Tax form for example to their mobile phone or tablet.

2. Analysis of Requirements

User Experience belongs to primary assumption to create a product which is simple, elegant and satisfy user's needs. Leah Buley [4] defines User Experience as a process of gathering the maximum amount of information about a user and about things that motivate them. Based on that, you can create a product which will satisfy their needs. The key aspect of creating a successful product is to involve people to process—especially the process of creation graphical user interface.

2.1 Tax Return Form

However, first of all, it was necessary to learn at least basic information about the taxation system in the Czech Republic and what tax return form is. This app is created primary for the Personal Income Tax because it is the most familiar tax and some taxpayers need to fill the forms every year. The important thing to learn was what kind of requirements people have to meet to have a tax liability. I found four main groups of taxpayers: people in business, employees, students, and pensioners.

After that, other important things are sections of the Personal Income Tax: tax base, non-taxable parts of the tax base, and tax reliefs. In every section, there are specific fields with a specific description for a particular part of the tax.

2.2 Personas

We also need to understand who the user of our application is. In this case, I decided to create personas. Depending on information from revenue authority, I found out that the businesspeople and employees represent the majority of people with a duty to pay the Personal Income Tax. Students and pensioners are only a small group compared to businesspeople and employees.

All information came from revenue authority in Otrokovice. It can be a little bit different in other parts of the country depending on the industry, agriculture, etc. In this region, the majority of employees submitting tax return forms are men. The reason is there are many factories or agricultural production and not that many office works. Overall, the percentage of men and women filling tax return forms are almost similar in the Czech Republic. Their average age is about 40. As for the businesspeople, this group is pretty much the same in all the country. Most taxpayers are men with

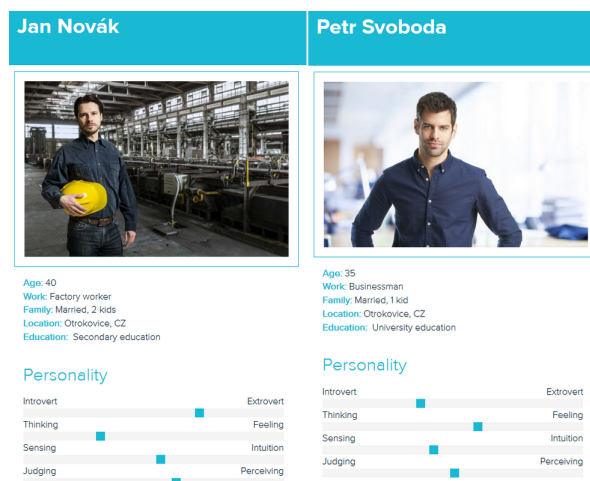


Figure 1. Example of persona for the "Přiznání" app. On the right side of the figure is a persona for employees group. On the right side is a persona for the group representing people in business.

an average age of 35. Figure 1 presents an example of personas.

2.3 Tax Return Form Submitting

In the Czech Republic, taxpayers have four options on how to submit their tax return form.

- Personally at revenue authority:** This is the simplest way how people can submit their forms in this country. Taxpayers can bring their filled and signed forms with all attachments to particular revenue authority. Taxpayers can acquire all forms at revenue authority or download it from the official website.
- Electronic submissions for financial authorities:** Taxpayers can submit their tax return form using official app. I will focus on the pros and cons of this app in the next section.
- Data Boxes:** Businesspeople with valid Data Box have a duty to submit the tax return form and communicate with all authorities via this system. If someone with Data Box does not use this system for submitting, he can be fined.
- At the post office:** This option is similar to the first one. Taxpayers can bring filled and signed forms with all attachments to a particular post office and send it to revenue authority. This option is good when a taxpayer is late during the last day of tax period, and revenue authority is already closed.

3. Existing Solutions

The Ministry of Finance of the Czech Republic has their own web application called "Electronic submissions for financial authorities" (EPO) with a lot of

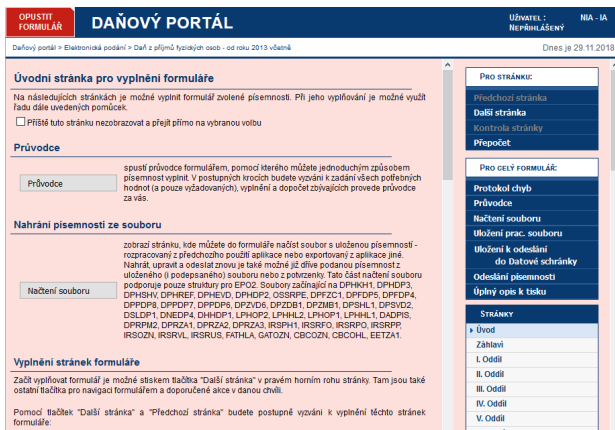


Figure 2. Analysis of the EPO non-responsive web application on computer—the Personal Income Tax form

useful functions for users. On the other, hand there are some disadvantages which will be discussed in this section. The primary purpose of EPO is to provide electronic forms for the most common taxes in the country. Users can export their tax return form into XML and then, they can send it with (or without) the electronic signature to the responsible authority.

3.1 Disadvantages of EPO

The main problem of this application is the graphical user interface (GUI). EPO is not responsive, so the filling their forms on other devices than a computer is not pleasant. The user interface is outdated, and it looks pretty confusing at first glance. Figure 2 presents a GUI of EPO app.

The forms are not user friendly despite many useful features. The layout of the page and arrangement of form inputs is similar to the layout of the paper. Although the EPO application offers forms for other taxes like Corporate Income Tax, Value Added Tax, Road Tax or Real Estate Tax, there is no filter for the selection of the form. Users can use a hint in every input field of the form, but the hint is represented by a small modal window which is not very well arranged. The user can maximize the window, but then, the window will cover the entire content of the page so the user can not see his answer.

3.2 Advantages of EPO

As I mentioned earlier, EPO has some very useful features and offers forms for the most important tax returns. If users do not complete the form, they can save it to their computer. Later, they can upload it and continue to do their task. However, the current version of the application does not allow permanent storage of unfinished documents on the server of the General Financial Directorate.

The automatic evaluation of critical errors is the second useful feature. If users make some critical mistakes in their form, the system disables to export/submit the form. It means that all critical errors have to be removed before the submission. Besides that, the occurrence of critical errors in the file prevents the detection of minor errors.

The taxpayer can also use a useful feature called "Guide" to make the work easier for the user, but the page is confusing because of the large amount of text.

4. Design

After the analysis of EPO, the taxation system in the Czech Republic and a representative sample of people obliged to fill in tax return forms, it was crucial to understand and model the needs of people using EPO. For these reasons, I scheduled several meetings with the manager of the Personal Income Tax department at revenue authority in Otrokovice. Before each meeting, it was necessary to write down what we want to discuss. Based on the gathered information, I summarized the results and created a workflow diagram with questions for every important field like types of income, non-taxable parts of the tax base, tax reliefs and tax credits. Figure 3 presents an example of a workflow diagram. After that, we met again and adjusted the questions to the final shape.

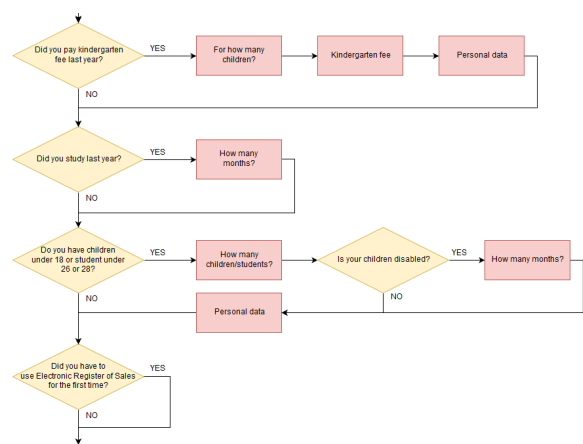


Figure 3. Example of some questions in workflow diagram based on the gathered information from revenue authority in Otrokovice

After creating the final workflow diagram and gathering all the information about common users, it was important to find out what types of errors users often do. Based on this information, I knew what questions need to be simplified and what parts of the workflow diagram are the most important. This knowledge helped me build the final version of the form for Personal Income Tax.

This app is available for the general public, so the

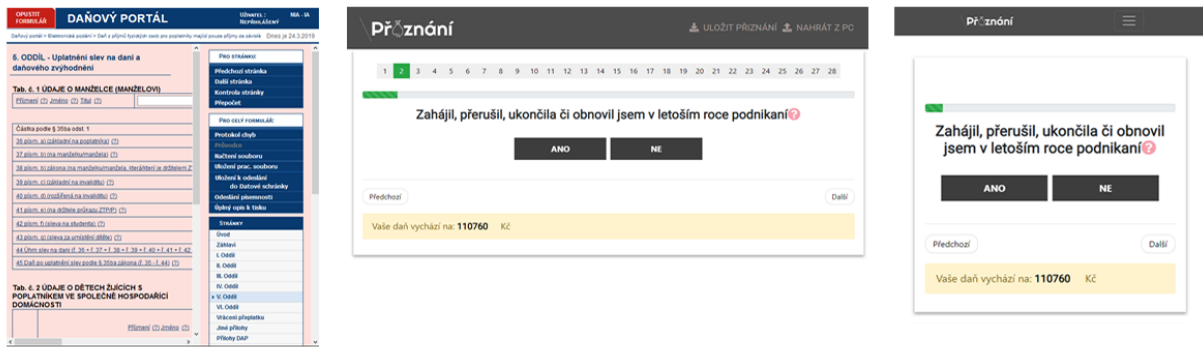


Figure 4. On the left side of this figure is non-responsive official web application EPO on computer and tablet. On the right side is “Priznání” app. Responsive web design (RWD) [5] is an approach to web design that makes web pages render well on a variety of devices and window or screen sizes.

big task is to create a responsive website. Responsive design allows for the content of a website to respond to its environment or device which is very important. Based on research, in 2018 more than 50% of overall traffic was used by other devices (mobiles and tablets) than desktop [6]. If you think of your content on a website as water, and pour it from one device to another the water remains the same, but the shape, environment, and view of the water is changed.

5. Implementation

The application is web-based. It uses HTML5 and CCS3. The front-end part of the application uses the Twitter Bootstrap framework. The interaction of users with the user interface is handled mainly by Javascript and its useful libraries.

5.1 Specification of Questions

The whole web is created with the HTML templating engine called Pug.js. It provides simpler Pug syntax for specification of webpage structure, which can be compiled into the HTML code, understandable by a browser:

```
.form-group.col-md-6
  label
    | Question
    +napoveda('Title of help',
      'Description of help')
  input#id.form-control(
    placeholder='placeholder...',
    type='text',
    required='')
```

Pug.js also has powerful features like conditions, loops, includes, mixins which allow creating reusable code working with user input or reference data. Every question defined in the workflow diagram was implemented in separate Pug.js file. It allows to reuse the

questions in different forms or simply modify the questions.

5.2 Form Printing

The Javascript library called jsPDF is used for printing tax return forms. This library provides all functions for generating PDF files in client-side JavaScript. As an output file, I choose the PDF format. Since it is the most common format for storing documents, the majority of users will not have any problem to open it and print it for their revenue authority. For quicker generating, the library works with base64 data [7], which is a scheme that represents binary data in an ASCII string format by translating it into a radix-64 representation.

5.3 Form saving

One of the main function of every form is the ability to save answers. Some users want to stop filling their forms after a few questions and save their form to their devices. For this reason, I used a simple CSV (Comma-separated values) file which is simple and manageable. The CSV file stores input ID and its value from the user in plain text. Each line of the file is a data record separated by a comma:

```
kapitalMajetekPrijem,5414
prijmyOstatni,61546
vydajeOstatni,4511
```

6. User Testing

In the beginning of the project, the prototype was tested by group of people with different education, age, computer skills, and experience. With the results of this test, I decided that the best solution for this problem is to create simple yes/no form where taxpayers will see all their choices. If the answer is “yes” users will have to fill additional fields related to that

question. However, if the users will choose “no“ they will be moved to another question.

The output of this project is tax return form for Personal Income Tax. Testing of functionality and correct output have been done in collaboration with the manager of Personal Income Tax department at revenue authority in Otrokovice.

7. Conclusions

This paper described the information about the web application for interactive forms for tax returns. The main importance of this project is to provide simple forms for the taxpayers who are forced to fill the in tax return forms on their own. It is beneficial to help people understand what discounts they can use and what kind of incomes they have to pay for.

As the first step of a project, the theoretical analysis was made. It was important to understand the taxation system in the Czech Republic, what kind of non-taxable parts of the tax base, tax reliefs or tax credits can people apply and what fields have to be filled in. Also, it was also necessary to analyze the official EPO application. I identified their strengths and weaknesses and used the knowledge to implement a new solution the “Příznání” app.

The main challenge was not to provide another application with many options and possibilities, but clear and simple forms, where users will not be lost. Individual questions can be reused for another forms and another taxes.

At the current stage, the first form for businesspeople is implemented and successfully generate complete personal income tax form. At the next stage, more forms will be added. Based on information from revenue authority, I have already selected the most important groups such as businesspeople, employees or student. This app contains a form for businesspeople at this moment so for the next two groups forms will be added.

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