BSc Thesis

Reactive User Interface for Px-Statbanks

- A Prototype

Helgi Poulsen

NVD*Rit* 2017:15

NÁTTÚRUVÍSINDADEILDIN
Faculty of Science and Technology
FRÓÐSKAPARSETUR FØROYA
University of the Faroe Islands

Heiti / Title	***Reactive User Interface for PX-Statbanks - Prototype*** Reaktivt nýtslumarkamót til Px-hagtalsgrunnar – Eitt Frumsnið
Høvundar / Authors	**Helgi Poulsen**
Vegleiðari / Supervisor	Kári Holm Johannesen, Hagstova Føroya Torbjørn Andreas Lisberg, Hagstova Føroya
Ábyrgdarvegleiðari / Responsible Supervisor	Kári Holm Johannesen, Hagstova Føroya
Ritslag / Report Type	BSc ritgerð, KT-Verkfrøði *BSc Thesis, Science in Software Engineering*
Latið inn / Submitted	??. jan 2020

NVD*Rit*	2020:xx
©	Náttúruvísindadeildin og høvundarnir
ISSN	1601-9741
Útgevari / Publisher	Náttúruvísindadeildin, Fróðskaparsetur Føroya
Bústaður / Address	Nóatún 3, FO 100 Tórshavn, Føroyar (Faroe Islands)
☎ ⁼ 🖷 ⁼ @	+298 352 550 ⁼ +298 352 551 ⁼ nvd@setur.fo

ABSTRACT

Short summary of the contents... a great guide by Kent Beck how to write good abstracts can be found here:

https://plg.uwaterloo.ca/~migod/research/beckOOPSLA.html

FOREWORD

Forewords here

ACKNOWLEDGEMENTS

In any project it is very important to have guidance. In this project we had Mr.Benadikt Joensen as our supervisor. We are very grateful for the help he provided us through this project from start to finish.

We also want to give all our classmates that helped us with various problems that we encountered.

We also want to give a special thanks to our classmates Fróði H. Joensen and Bergur I. Johansen for providing smart solutions when it came to the coding.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LISTINGS

ACRONYMS

DRY Don't Repeat Yourself

API Application Programming Interface

UML Unified Modeling Language

Part I

FUNDAMENTALS

> Success is neither magical nor mysterious. Success is the natural consequence of consistently applying the basic fundamentals.
>
> *Jim Rohn*

1 INTRODUCTION

National statistical offices disseminate official statistics in statbanks where it is available to citizens and institutions via web interfaces.

All the statistical offices in the Nordic region and in several other countries around the world use an installation of the statbank application, PxWeb, to disseminate official statistics.

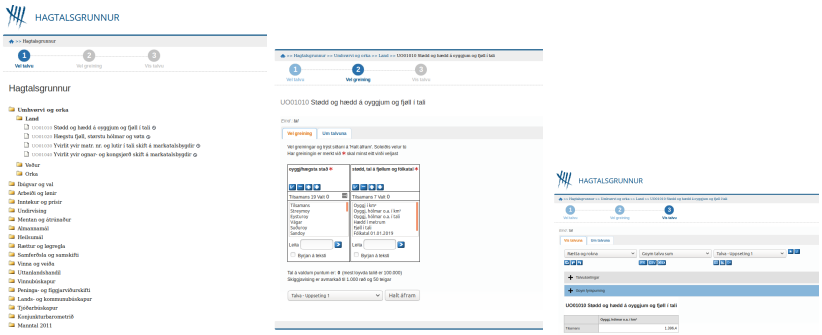
PxWeb is lead by Statistics Sweden and developed in cooperation with other national statistical offices, among them Statistics Norway and Statistics Finland.

1.1 STATEMENT OF THE PROBLEM

User research performed in the Faroe Islands shows that many of the mediocre and novice users have a difficult time using the PxWeb interface. Similar findings have been found by other statistical offices, which are using the PxWeb statbank application. This is therefore a cross-national problem since users in several countries using PxWeb are facing the same usability issues.

One of the main challenges for the users across different sectors is to find the right data in the statbank. The user interaction tends to involve many clicks to get data and when the data finally is returned from the application it often is not what user is expecting. This often results in users giving up in finding the right data.

The user journey in the statbank starts by navigating the folder structure and then finding the right table1a. When the user has found a relevant table the user has to choose multiple categories from several statistical variables1b and then click the submit button to display the data1b. If the data is not what the user is expecting the user has to go over this procedure once again.



(a) List (b) Selectors (c) Result

In ISO 9241[1] usability is defined as the effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments. In this case this means users finding the right data in the statbank.

Effectiveness is the accuracy and completeness with which the users can achieve specified data in PxWeb. Efficiency is the resources expended such as time or number of clicks in relation to the accuracy and completeness of getting the right data. Satisfaction is the comfort and acceptability of the work system to its users and other people affected by its use.

From a usability perspective it seems that there is a lack of effectiveness and efficiency in the PxWeb application. This requires a new approach to get and display the data from the statbank application.

1.2 SIGNIFICANCE OF THE STUDY

In this thesis I am aiming to improve the effectiveness and efficiency of the application by developing a prototype of a new web interface that exploits and utilizes the API in the PxWeb statbank. I aim to establish a direct communication between interface and the API in order to get data, manipulate data and displaying data instantly.

In this approach the user will instantly be shown data when the user has chosen a category from a statistical variable. This differs significantly from current approach where the user has to choose multiple categories in several statistical variables and then click the submit button to get the data.

This new approach reduces the number of clicks and the time used to get data significantly.

It will make user interface more intuitive and easier to use.

1.3 ADDRESSING THE PROBLEM

The problem will be address by using the right technology and the software engineering approach such as the software methodology[2] Agile and the five framework activities:

- Communication
- Planning
- Modeling
- Construction
- Deployment

1 ISO 9241

2 A software methodology is a set of related activities that leads to the production of software

2 RELATED LITERATURE

The Finish Documentation

2.1 PX PACKAGE

Explanation of the delivered px Package from the swedish statbank

2.1.1 *PxWeb*

what is PxWeb? the theoretical approach

2.1.2 *PxWeb API*

what is PxWeb API theoretical approach

3 RELATED WORK

Take a look at others statbank

3.1 FAORESE STATBANK

3.2 FINISH STATBANK

3.3 DANISH STATBANK

3.4 GREENLAND STATBANK

3.5 SWEDEN STATBANK

4 METHODS AND TECHNIQUES

4.1 SOFTWARE ENGINEERING

4.2 AGILE

4.3 COMMUNICATION

use case

4.4 PLANNING

risk analysis - object Diagram

4.5 MODELING

sequence diagram

4.6 CONSTRUCTION

Architecture diagram - Component diagram - tests

4.7 DEPLOYMENT

Deployment diagram - figma

Part II

ARCHITECTURE

It is not the beauty of a building you should look at; its the construction of the foundation that will stand the test of time

David Allan Coe

5

SYSTEM DESIGN

Design of the application and its components (code examples)

6 USER INTERFACE DESIGN

Designing the user interface, why this way and how

7 PROTOTYPE FUNCTIONALITY

functionality presentation

Part III

ANALYSIS

To me, error analysis is the sweet spot for improvement.

Donald Norman

8 PRESENTATION

presentation

9 ANALYSIS OF PROTOTYPE

Analysis of speed user experience etc

10

INTERPRETATION

Link the present findings with the previous literature or previous work

11 BENEFITS OF THE NEW APPLICATION

usually, adequate graphs help to show the benefits of your approach

Part IV

SUMMARY

Enough research will tend to
support your conclusions.

Arthur Block

12 FINDINGS

describes the problem, research design and findings (answer to the questions raised), paragraph forms

13

CONCLUSIONS

Con....

14

RECOMMENDATIONS

They should be based on the findings and conclusion of the study.

Recommendations may be specific or general or both. They may include suggestions for further studies. They should be in non-technical language.

They should be feasible, workable, flexible, doable, adaptable.

Part V

APPENDIX

A

APPENDIX TEST

Aliquam lectus. Vivamus leo. Quisque ornare tellus ullamcorper nulla. Mauris porttitor pharetra tortor. Sed fringilla justo sed mauris. Mauris tellus. Sed non leo. Nullam elementum, magna in cursus sodales, augue est scelerisque sapien, venenatis congue nulla arcu et pede. Ut suscipit enim vel sapien. Donec congue. Maecenas urna mi, suscipit in, placerat ut, vestibulum ut, massa. Fusce ultrices nulla et nisl.

Etiam ac leo a risus tristique nonummy. Donec dignissim tincidunt nulla. Vestibulum rhoncus molestie odio. Sed lobortis, justo et pretium lobortis, mauris turpis condimentum augue, nec ultricies nibh arcu pretium enim. Nunc purus neque, placerat id, imperdiet sed, pellentesque nec, nisl. Vestibulum imperdiet neque non sem accumsan laoreet. In hac habitasse platea dictumst. Etiam condimentum facilisis libero. Suspendisse in elit quis nisl aliquam dapibus. Pellentesque auctor sapien. Sed egestas sapien nec lectus. Pellentesque vel dui vel neque bibendum viverra. Aliquam porttitor nisl nec pede. Proin mattis libero vel turpis. Donec rutrum mauris et libero. Proin euismod porta felis. Nam lobortis, metus quis elementum commodo, nunc lectus elementum mauris, eget vulputate ligula tellus eu neque. Vivamus eu dolor.

A.1 APPENDIX SECTION TEST

Nulla in ipsum. Praesent eros nulla, congue vitae, euismod ut, commodo a, wisi. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Aenean nonummy magna non leo. Sed felis erat, ullamcorper in, dictum non, ultricies ut, lectus. Proin vel arcu a odio lobortis euismod. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Proin ut est. Aliquam odio. Pellentesque massa turpis, cursus eu, euismod nec, tempor congue, nulla. Duis viverra gravida mauris. Cras tincidunt. Curabitur eros ligula, varius ut, pulvinar in, cursus faucibus, augue.

More dummy text

Nulla mattis luctus nulla. Duis commodo velit at leo. Aliquam vulputate magna et leo. Nam vestibulum ullamcorper leo. Vestibulum condimentum rutrum mauris. Donec id mauris. Morbi molestie justo et pede. Vivamus eget turpis sed nisl cursus tempor. Curabitur mollis sapien condimentum nunc. In wisi nisl, malesuada at, dignissim sit amet, lobortis in, odio. Aenean consequat arcu a ante. Pellentesque porta elit sit amet orci. Etiam at turpis nec elit ultricies imperdiet. Nulla facilisi. In hac habitasse platea dictumst. Suspendisse

LABITUR BONORUM PRI NO	QUE VISTA	HUMAN
fastidii ea ius	germano	demonstratea
suscipit instructior	titulo	personas
quaestio philosophia	facto	demonstrated

Table 1: Autem usu id.

viverra aliquam risus. Nullam pede justo, molestie nonummy, scelerisque eu, facilisis vel, arcu.

A.2 ANOTHER APPENDIX SECTION TEST

Curabitur tellus magna, porttitor a, commodo a, commodo in, tortor. Donec interdum. Praesent scelerisque. Maecenas posuere sodales odio. Vivamus metus lacus, varius quis, imperdiet quis, rhoncus a, turpis. Etiam ligula arcu, elementum a, venenatis quis, sollicitudin sed, metus. Donec nunc pede, tincidunt in, venenatis vitae, faucibus vel, nibh. Pellentesque wisi. Nullam malesuada. Morbi ut tellus ut pede tincidunt porta. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam congue neque id dolor.

Donec et nisl at wisi luctus bibendum. Nam interdum tellus ac libero. Sed sem justo, laoreet vitae, fringilla at, adipiscing ut, nibh. Maecenas non sem quis tortor eleifend fermentum. Etiam id tortor ac mauris porta vulputate. Integer porta neque vitae massa. Maecenas tempus libero a libero posuere dictum. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Aenean quis mauris sed elit commodo placerat. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Vivamus rhoncus tincidunt libero. Etiam elementum pretium justo. Vivamus est. Morbi a tellus eget pede tristique commodo. Nulla nisl. Vestibulum sed nisl eu sapien cursus rutrum.

There is also a useless Pascal listing below: Listing 1.

Listing 1: A floating example (`listings` manual)

```
1 for i:=maxint downto 0 do
  begin
  { do nothing }
  end;
```

DECLARATION

Put your declaration here.

Saarbrücken, September 2015

André Miede

COLOPHON

This document was typeset using the typographical look-and-feel `classicthesis` developed by André Miede. The style was inspired by Robert Bringhurst's seminal book on typography "*The Elements of Typographic Style*". `classicthesis` is available for both LaTeX and LyX:

https://bitbucket.org/amiede/classicthesis/

Happy users of `classicthesis` usually send a real postcard to the author, a collection of postcards received so far is featured here:

http://postcards.miede.de/

Final Version as of September 9, 2019 (`classicthesis` version 4.2).