**Software Development Plan**

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1. **SDP Plan Introduction:**This Software Development Plan provides the details of the planned development for the MySampleSize webapp.  
   MySampleSize is a website designed to assist preclinical researchers in designing their experiments accurately. It has multiple statistical tools that aim to alleviate the difficulty of correctly determining the required sample size of an experiment. This includes sections of the app such as the design guide, and a step-by-step guide asking for details of the experiment ending with a PDF report of the statistical calculations run to arrive at the required sample size. The webapp is a necessity due to how 50% of the annual US preclinical research spend is wasted on non-reproducible experiments ($28.2 Billion). The current goals for the development of MySampleSize are the following: Remove rpy2 and rely on numpy, statsmodels, scipy, etc. Find a new pdf generation dependency, that can installed through pip and does need an external library. Upgrade python version of project gradually.

## Project Deliverables

|  |  |
| --- | --- |
| Deliverable | Date |
| Project Proposal | Week 2 |
| Requirements Specification Document | Week 5 & Update Week 13 |
| Software Development Plan | Week 7 & Update Week 12 |
| Procedure Document | Week 12 |
| Python Upgrade (3.9)  Want to have python 3.10 or 3.11 by end, currently upgrade to 3.9 is done. New PDF dependency will have to be chosen before 3.10 or 3.11 can be achieved. | Week 5 & Update Week 11 |
| Rpy2 Removal  Currently rpy2 is only being used to generate power plots, so the removal process means finding another way to generate those same plots, and understanding the code well enough to replace rpy2 without breaking something else. | Week 9 |
| PDF Dependency  Currently MySampleSize uses weasyprint, however weasyprint needs GTK which has a complicated install process and can’t be easily obtained through pip like all the other dependencies. The goal is to replace it with another dependency which is easier to get on the project. | Week 14 |

# **Project Resources**

## Hardware Resources

Website is hosted on Amazon Web Services (AWS), but development is done on locally hosted server on MacOS.

## Software Resources

Coding software used is Visual Studio Code, and MacOS is the operating on which development is done. The software dependencies for the project are the following (Python 3.9):

|  |  |
| --- | --- |
| Dependency | Version |
| asn1crypto | 0.24.0 |
| Authlib | 0.11 |
| blinker | 1.4 |
| cairocffi | 0.9.0 |
| CairoSVG | 2.3.0 |
| certifi | 2019.3.9 |
| cffi | 1.16.0 |
| chardet | 3.0.4 |
| Click | 7.0 |
| cryptography | 2.6.1 |
| cssmin | 0.2.0 |
| cssselect2 | 0.2.1 |
| defusedxml | 0.5.0 |
| Flask | 1.1.1 |
| Flask-Assets | 0.12 |
| Flask-Mail | 0.9.1 |
| Flask-WeasyPrint | 0.6 |
| html5lib | 1.0.1 |
| idna | 2.8 |
| itsdangerous | 1.1.0 |
| Jinja2 | 2.10.1 |
| jsmin | 3.0.1 |
| libsass | 0.23.0 |
| MarkupSafe | 1.1.1 |
| numpy | 1.26.3 |
| ordered-set | 3.1.1 |
| pandas | 1.3.5 |
| patsy | 0.5.2 |
| pillow | 10.2.0 |
| pycparser | 2.19 |
| PyLaTeX | 1.3.0 |
| Pyphen | 0.9.5 |
| python-dateutil | 2.8.0 |
| pytz | 2019.1 |
| requests | 2.22.0 |
| rpy2 | 3.1.0 |
| scipy | 1.12.0 |
| six | 1.12.0 |
| statsmodels | 0.12.2 |
| stripe | 2.27.0 |
| tinycss2 | 1.0.2 |
| urllib3 | 1.24.1 |
| virtualenv | 16.4.3 |
| WeasyPrint | 47 |
| webassets | 0.12.1 |
| webencodings | 0.5.1 |
| Werkzeug | 1.0.1 |

# **Project Organization**

Backend development: Coding the statistical functions, website routing, and data shared across files that make up the project.   
Frontend development: Coding the visual aspects of the website, the html and scss files to represent information.  
Dependency management: Tweaking dependency versions and finding suitable replacements for old dependencies that are no longer supported for recent versions of python.

# **Schedule**

This section provides schedule information for the MySampleSize project.

## Gantt Chart

Added as excel file

## Task/ Resource Table

|  |  |
| --- | --- |
| Task | Resource(s) |
| Python Upgrade to 3.9 | Hardware – Macbook  Software – VSCode, pip on command line |
| Rpy2 Removal | Hardware – Macbook  Software – VSCode, statsmodels, matplotlibs |
| Python Upgrade to 3.10 or 3.11 | Hardware – Macbook  Software – VSCode, pip on command line |
| PDF Dependency Replacement | Hardware – Macbook  Software – VSCode, pip on command line, reportlab |

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