

# Streamline the collaboration

## - From Whitepaper targets (TFL) to Sharable Scripts

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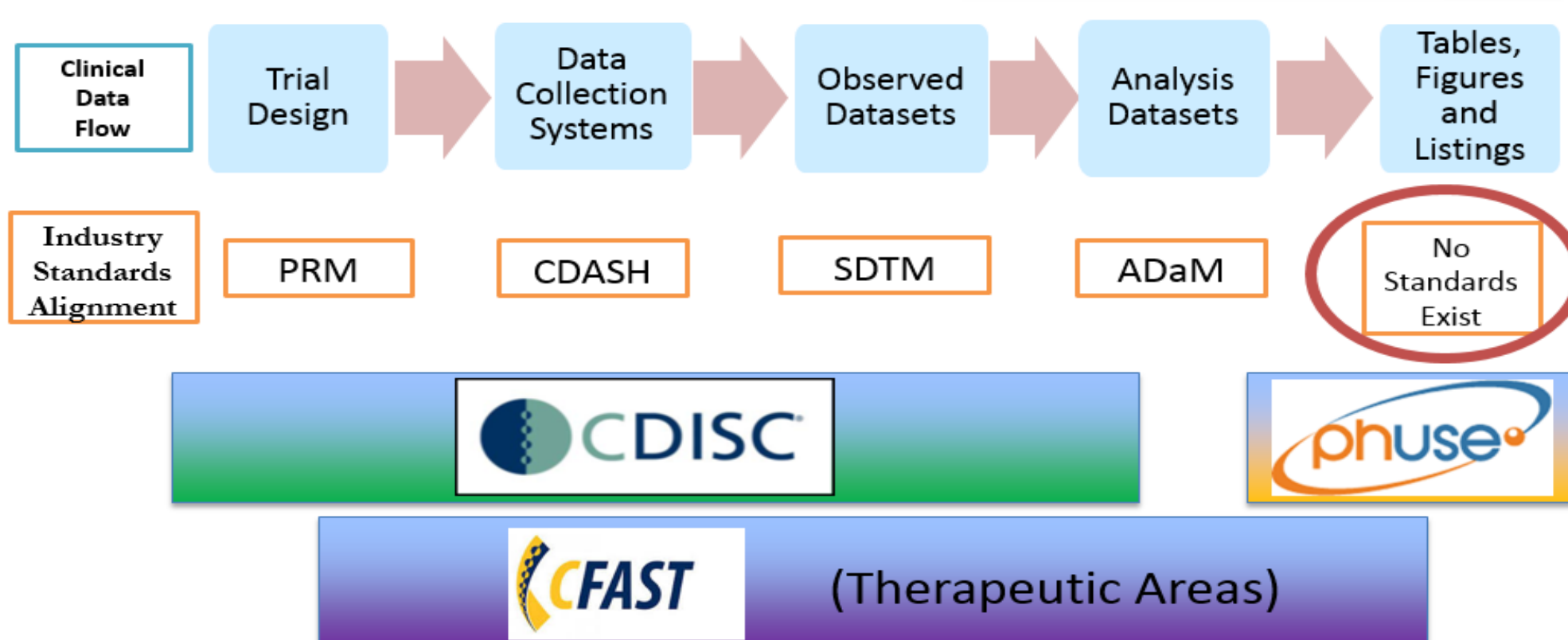
### ABSTRACT

The Standard Analyses and Code Sharing working group relies on the distributed volunteers to review, develop, test and qualify standard scripts for general use. Volunteers should be able to easily find ways to contribute, either by improving our processes or working directly on the development and qualification of standard scripts for the tables, figures, and listings (TFL) defined in the white papers. There are six project teams formed in the working group to collaborate and achieve the goals. Particularly, there are SAS and R language sub-teams currently in the Repository Content and Delivery (RCD) project and Script Metadata for Sharing sub-team in Repository Governance and Infrastructure (RGI) project. This poster will show the structure of the repository in the GitHub environment, look at the targets (TFL) defined in the whitepaper, the scripts developed for the targets, the guidelines for qualifying scripts, the steps for contributing scripts and a new way of accessing, sharing and executing scripts with script metadata using R phuse package.

### THE SIMPLE VISION

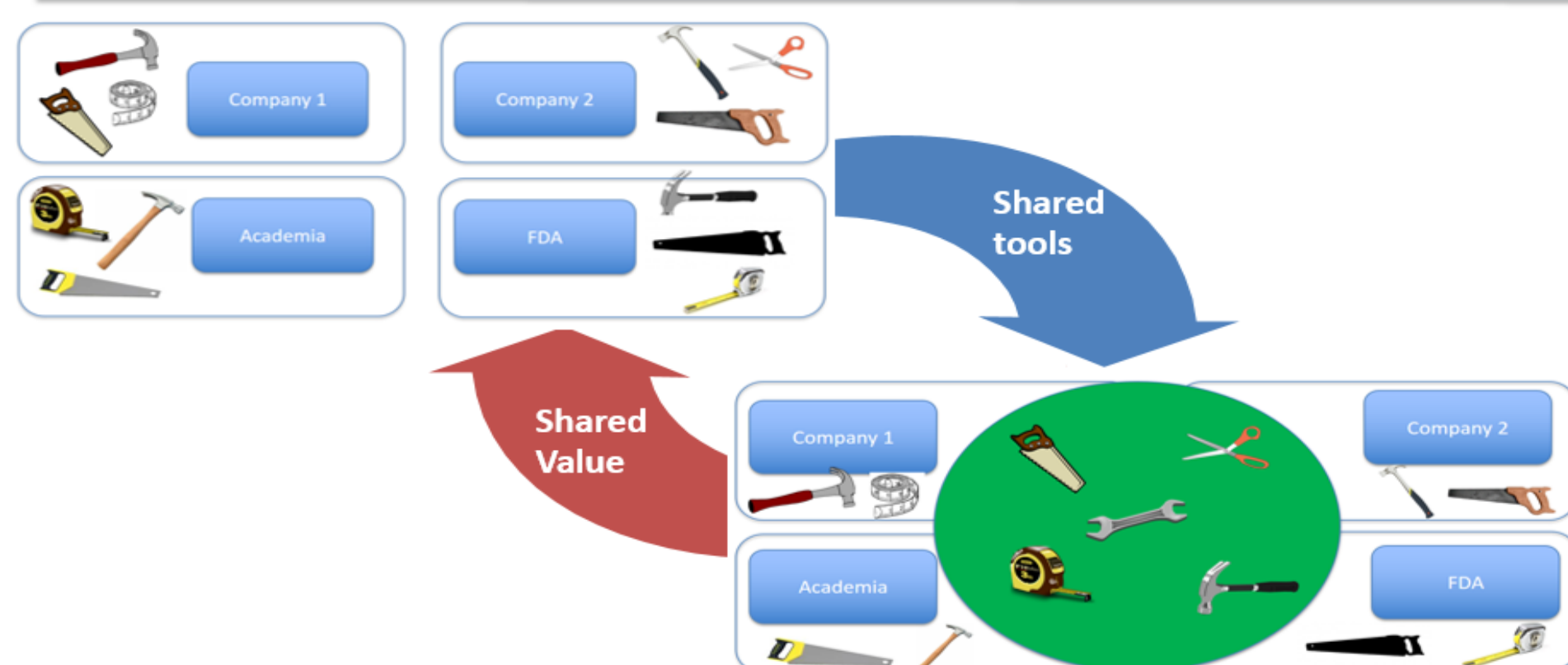
#### Background: Standard Gap

Vision: Fill the Gap on Analysis and Display Standards



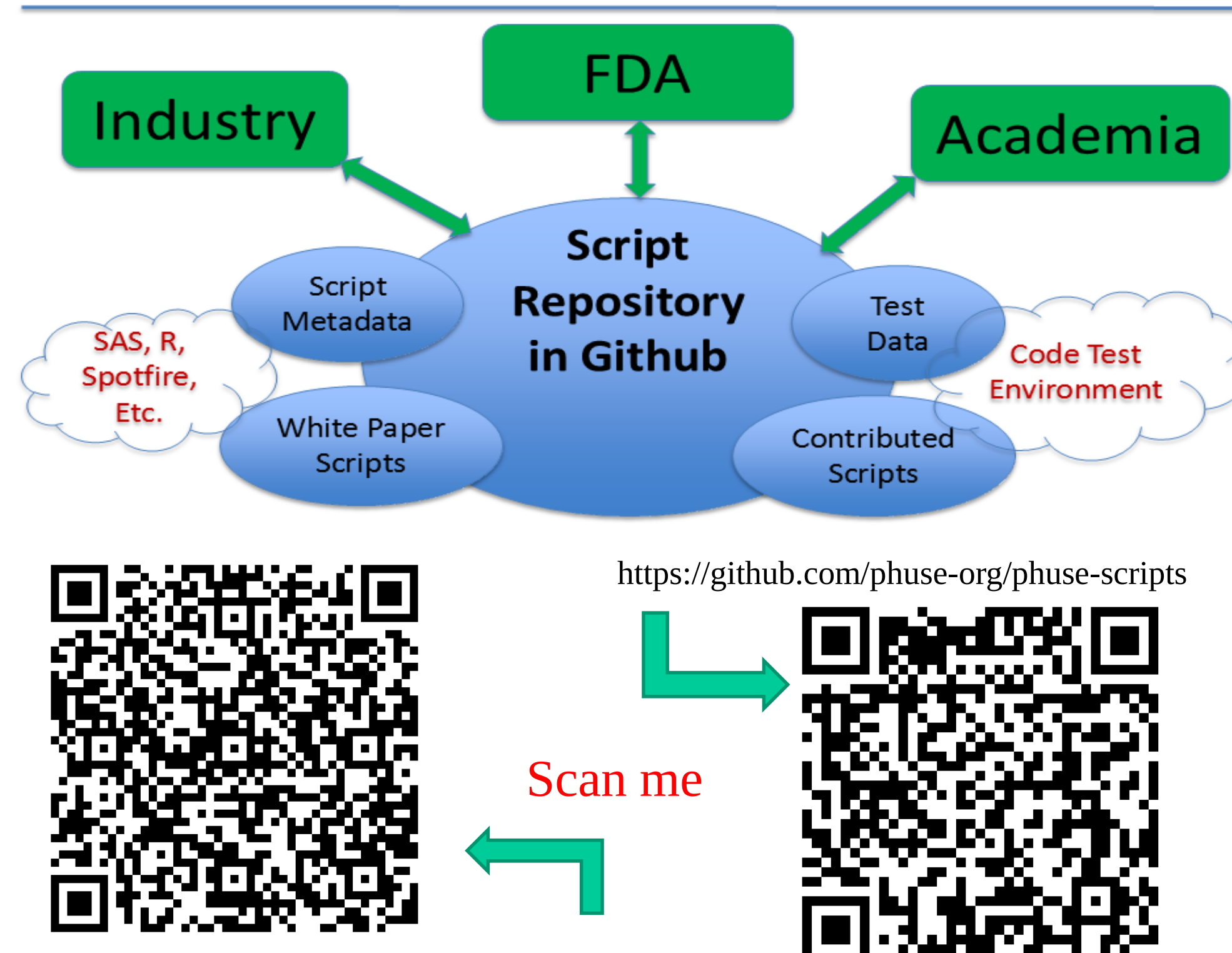
#### Background: Common Toolbox

Vision: From Everyone Building Their Own Tools to Shared Tools



#### Overview: Script Repository

Vision: Collaboration platform and Shared Reusable Code Library



[http://www.phusewiki.org/wiki/index.php?title=Standard\\_Scripts](http://www.phusewiki.org/wiki/index.php?title=Standard_Scripts)

Computational Science Symposium, 2018 Annual Conference, March 4th – 6th, 2018, Silver Spring, Maryland, USA

### FROM THE TARGETS IN WHITE PAPERS

#### Example: Mean Changes– Boxplots

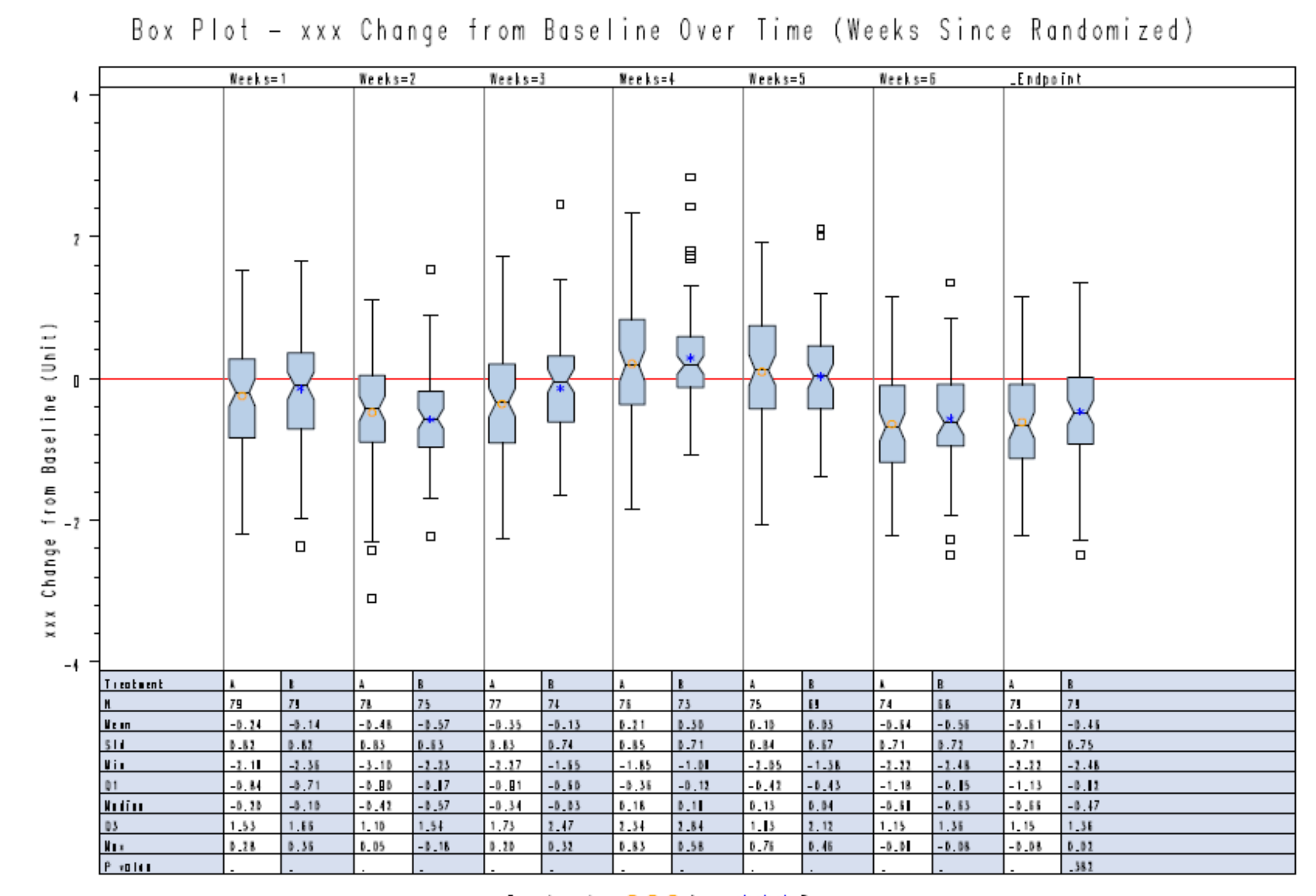
- Visualize changes over time, and changes from baseline
- Assess the impact of outliers
- Easy to see treatment differences
- Summary table complements box plot

White Papers Project:

[http://www.phusewiki.org/wiki/index.php?title=WG5\\_Project\\_08](http://www.phusewiki.org/wiki/index.php?title=WG5_Project_08)



Final White Papers: <https://www.phuse.eu/css-deliverables>



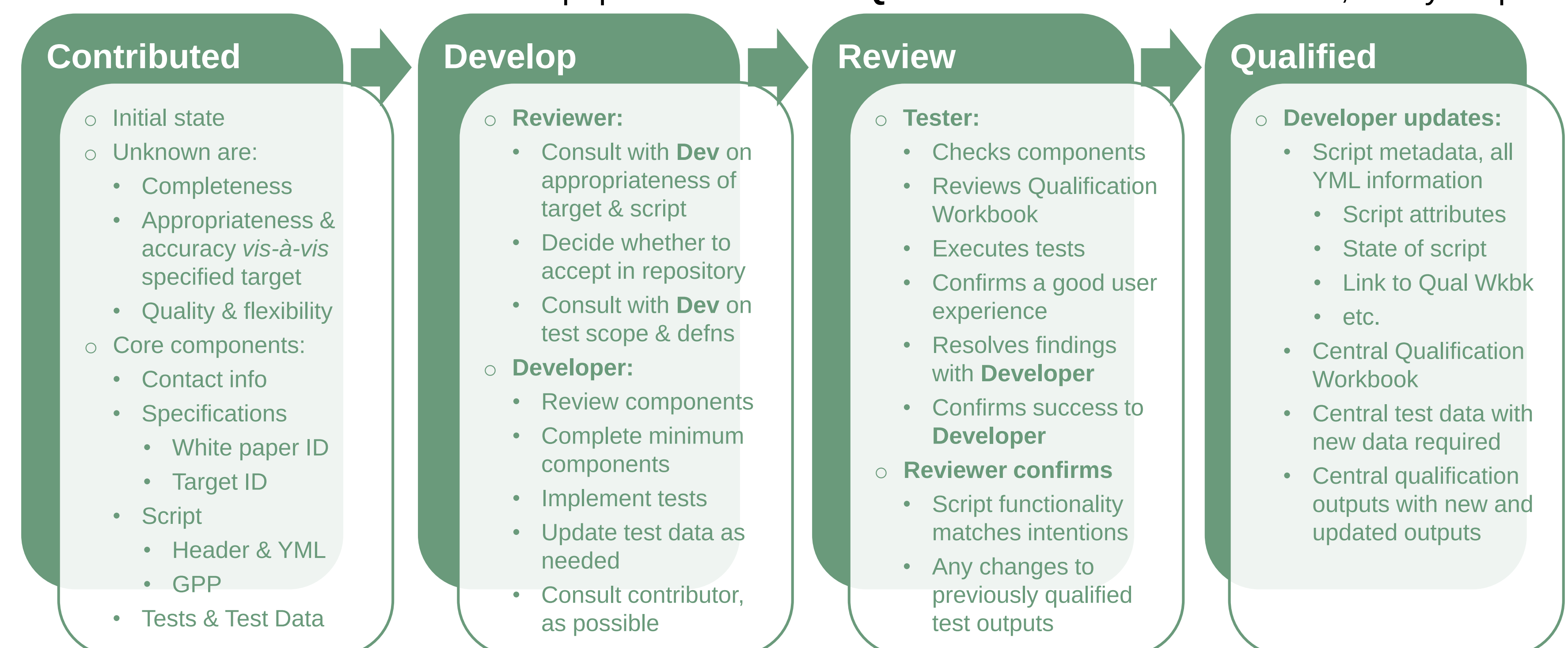
### THROUGH QUALIFICATION PROCESS

#### Roles

- Contributor:** Anyone with skill & interest
- Developer:** A volunteer familiar with our objectives
- Tester:** A volunteer familiar with our objectives
- Reviewer:** Contributors to our white papers

#### States

- Contributed:** Script received from any source
- Developed:** A volunteer is progressing the script
- Reviewed:** A volunteer is reviewing the script
- Qualified:** Successful review, ready for public use



### TO SCRIPTS IN THE REPOSITORY

#### R shiny and phuse package

The phuse package sets a web application framework

- Shiny is an R package for building interactive web apps straight from R.
- The *phuse* package helps finding, downloading and executing scripts.

| How to get R <i>phuse</i> Package                                                       | How to run R <i>phuse</i> Package                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>install.packages("devtools") library(devtools) install_github("TuCai/phuse")</pre> | <pre>library(phuse) start_phuse()</pre>                                                                                                                                                                                                                                                                                                                                                                                       |
| Or directly install once the package accepted by CRAN                                   |                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <pre>install.packages("phuse")</pre>                                                    | <ul style="list-style-type: none"> <li>Clone the phuse-scripts repository to your local computer if you are the first time to start the interface or the local repository is old</li> <li>Grep all the YML files from the local repository</li> <li>Build a data frame to hold the information for all YML files</li> <li>Write the data frame to a local file</li> <li>Populate the "Select Script" dropdown list</li> </ul> |

#### The phuse R Package

**Phuse Script Web Application Framework**

[ PHUSE | Wiki | Scripts Repo | Standard Scripts Index | Reviewed Scripts ]

Select Script: AE Scripts.zip.yml

File Source: Local

Script File ID: 1

phuse functions:

```
build_script_df
read_yaml
extract_fns
download_fns
cvt_list2df
merge_lists
run_examples
```

Script: YML, Info, Metadata, Verify, Download, Merge, Execute

File: /Users/htu/myRepo/phuse-scripts/contributed/AE/AE\_Scripts.zip could not be displayed.

- Script:** displays the script if it is readable.
- YML:** displays the content of YML
- Info:** displays the information about the YML
- Metadata:** shows the metadata of the script in table format
- Verify:** verifies the existence of the files defined in YML
- Download:** downloads the script to local computer
- Merge:** merges online and local metadata files
- Execute:** executes the script if it is executable.

- PhUSE Repository: <http://code.phuse.com>, or <https://code.google.com/p/phuse-scripts/>

### CONCLUSIONS

- Industry standards have evolved over time for collected (CDASH), observed (SDTM), and analysis data (ADaM).
- Shared learning of improved methodologies can lead to earlier safety signal detection and better safety profiles.
- Our working group volunteers are delivering standard data displays based on industry input and review.
- We have established an open-source repository for sharing SAS and R scripts across the industry.
- We now aim to deliver standard scripts that can be used across the industry to deliver standard displays & analyses.
- Script metadata provides the information about the script's purpose, version, execution environment, inputs, outputs, review history, ratings, etc. It makes it easy to share, access and execute scripts in the repository.
- The phuse R package provides a web application framework for further building a platform for sharing and accessing the scripts in the repository. R, RStudio and R shiny are the important tools for the statistical computing environment.
- Building R packages with metadata is the first step to make script repository into CRAN alike (Comprehensive R Archive Network) for the shared scripts.