POMA

Statistical analysis tool for targeted metabolomic data

Pol Castellano-Escuder

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Outline

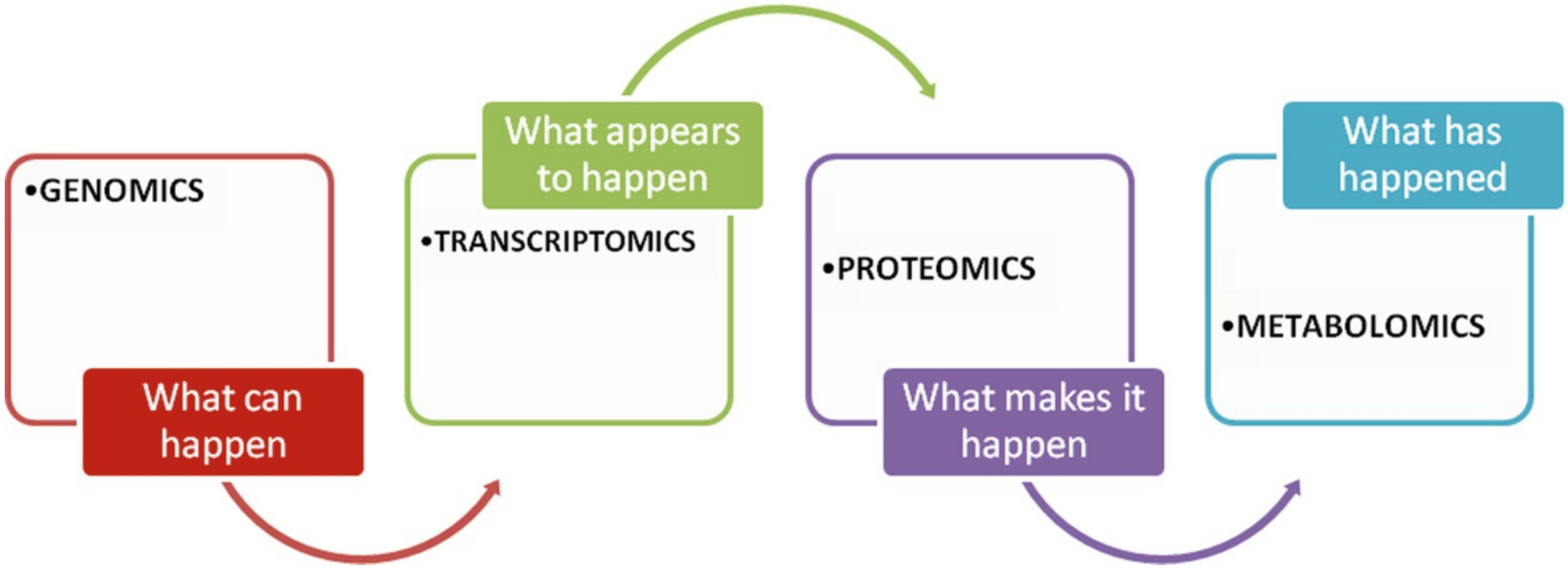
1. Context
2. Motivation & Aims
3. Results
4. Conclusions

CONTEXT

What’s Metabolomics?

"Metabolomics is the identification and quantification of the small molecule metabolic products (the metabolome) of a biological system. Mass spectrometry and NMR spectroscopy are the techniques most often used for metabolome profiling"[1]

"The Omics Cascade"



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[1] https://www.nature.com/subjects/metabolomics

[2] Narad P., Kirthanashri S.V. (2018) Introduction to Omics. In: Arivaradarajan P., Misra G. (eds) Omics Approaches, Technologies And Applications. Springer, Singapore

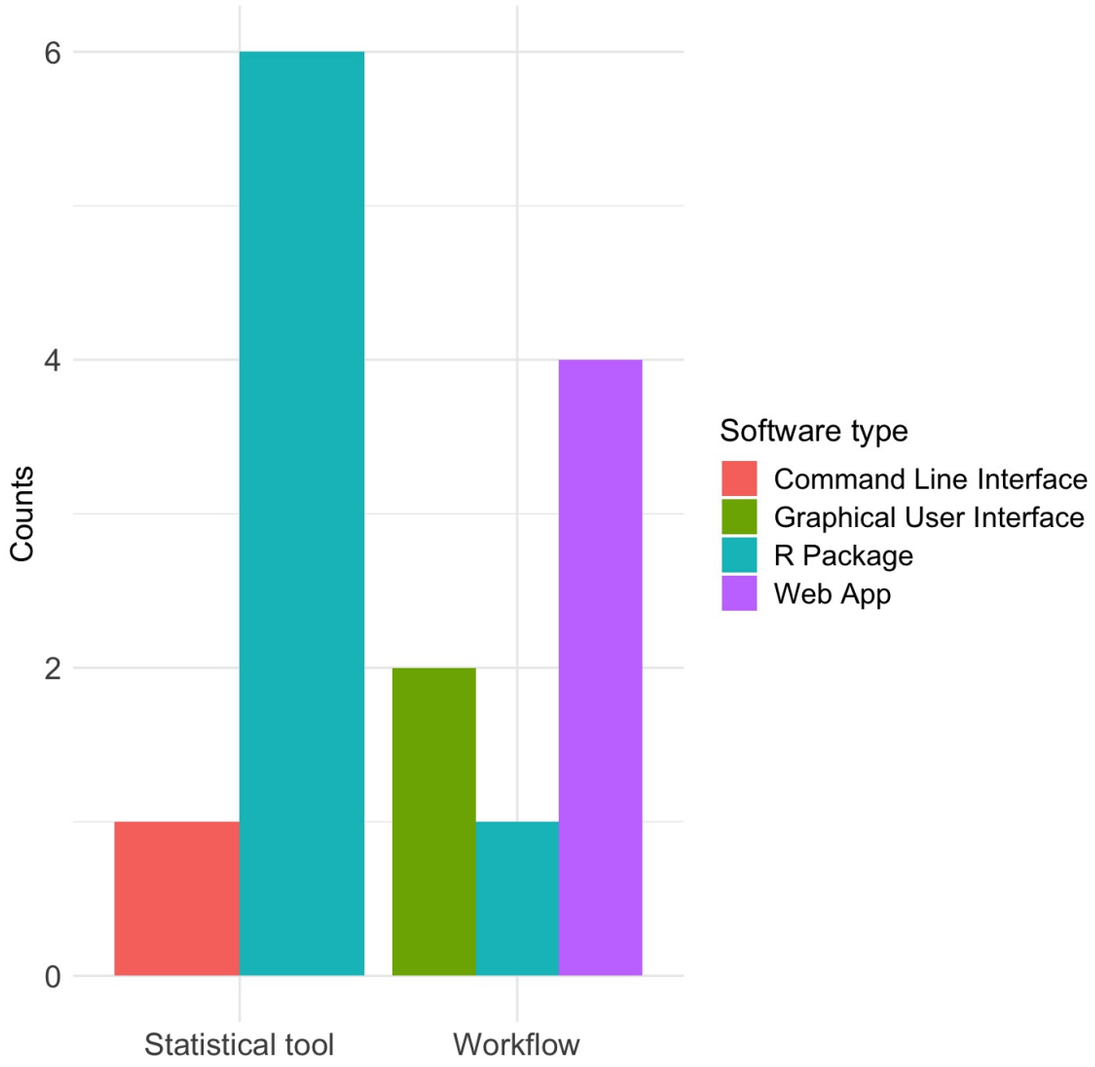
The data

Standard (Omics) matrix: Samples in rows and Metabolites (variables) in columns

Targeted metabolomics: focuses on several metabolites you are interested in, which means you already know them.

Untargeted metabolomics: all metabolites will be acquired, which means you know some metabolites are different in two or more sample groups, but do not know what exactly they are. It is used to generate your hypothesis.

Freely Available Existing Tools



Web Apps that allows users to perform a statistical analysis[3]

- Workflow4metabolomics
- Galaxy-M
- XCMS Online
- MetaboAnalyst 3.0

[3] Spicer, R., Salek, R. M., Moreno, P., Cañueto, D., & Steinbeck, C. (2017). Navigating freely-available software tools for metabolomics analysis. Metabolomics, 13(9), 106.

MOTIVATION & AIMS

Motivation & Aims

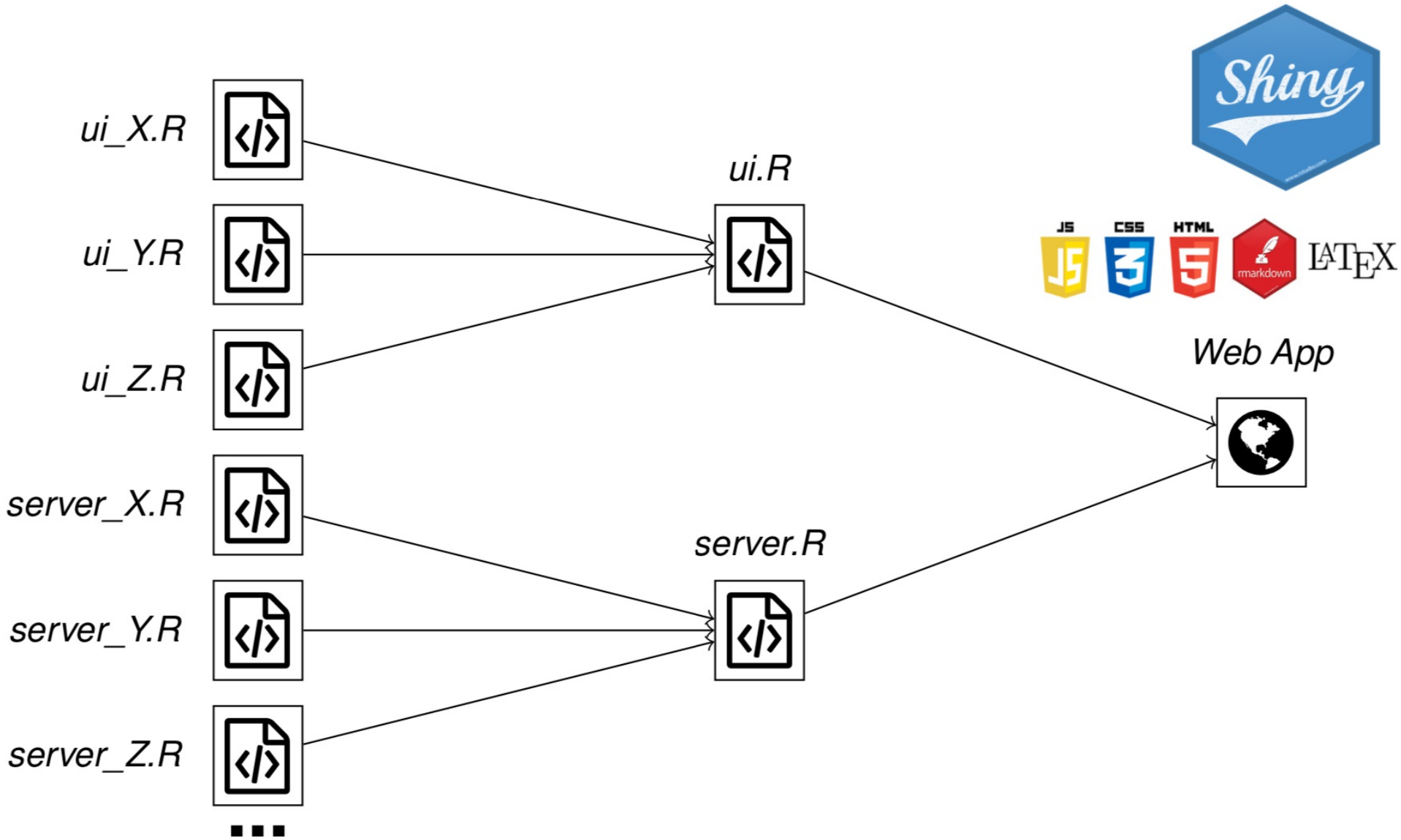
Motivation

- Biological interpretation of the results is one of the hard points and high knowledge of statistical analysis and computational programming is usually required
- Sometimes, the existing tools don’t accept "complicated" databases

Aims

- Provide users of an **EASY USE** tool that don’t require programming skills
- Allow users to analyze all types of data (simple and complex)
- Lead the user for a good statistical analysis (Documentation & automatic reports)
- Make a completely **REPLICABLE** analysis

Architecture



Future Work

package

Thank you all!

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Slides created via the R package xaringan

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polcaes@gmail.com
pcastellanoescuder.github.io/
@polcastellano_
@pcastellanoescuder
University of Barcelona