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## PhysioFit: Quantifying cell growth parameters and uptake and production fluxes

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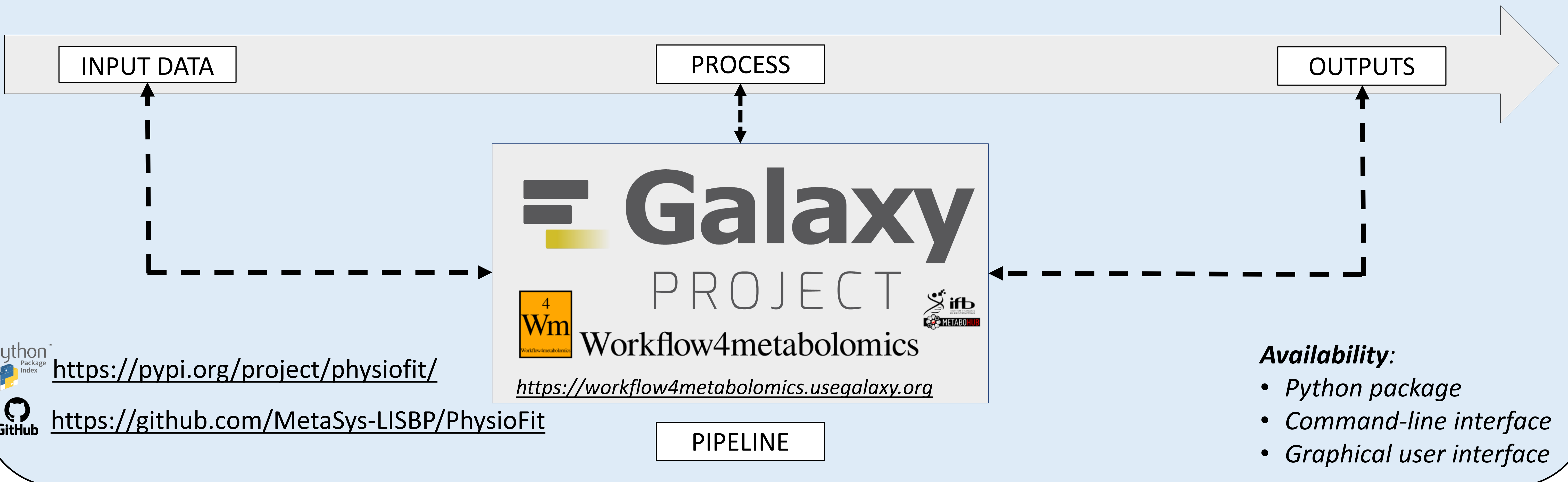
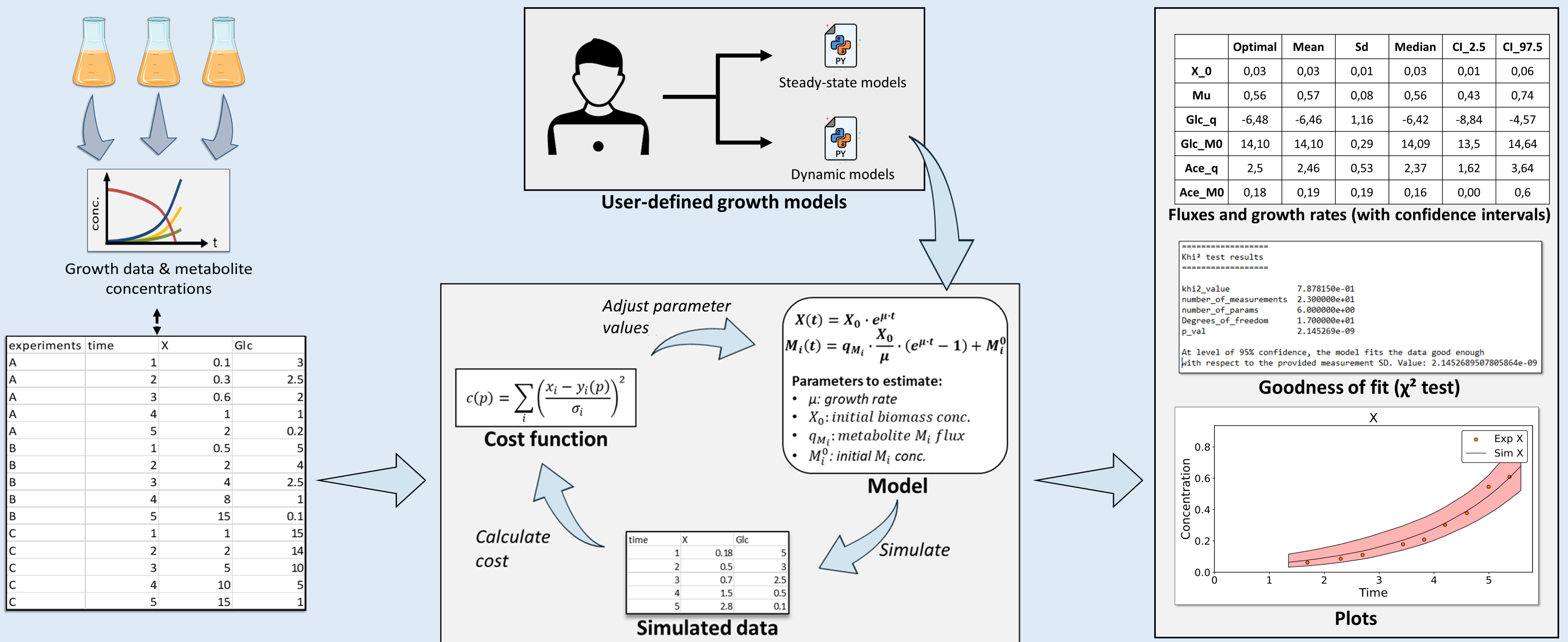
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## Introduction

Quantification of growth parameters and extracellular uptake and production fluxes is central in systems and synthetic biology. Fluxes can be estimated using various mathematical models by fitting time-course measurements of the concentration of cells and extracellular substrates and products. A few tools are available to calculate extracellular fluxes, but they are hardly **interoperable** and include **specific, hard-coded** growth models. We present an updated version of our open-source flux calculation software, PhysioFit, which can be used with any growth model and is interoperable by design.

## Implementation



## Conclusion

PhysioFit is a **flexible** tool allows calculating fluxes using **any model of growth**. A **user-friendly graphical interface** is included for biologists, while a **command line interface and Python package** enhances integration of extracellular flux calculation into metabolomics and fluxomics workflows. As proof of concept, the tool is available on the Workflow4Metabolomics galaxy instance. PhysioFit's **modularity** makes it an ideal tool for quantitative studies of microbial metabolism.

## References

- Peiro, C. *et al.* (2019) Chemical and Metabolic Controls on Dihydroxyacetone Metabolism Lead to Suboptimal Growth of *Escherichia coli*. *Appl. Environ. Microbiol.*
- Giacomoni, F. *et al.* (2015) Workflow4Metabolomics: a collaborative research infrastructure for computational metabolomics. *Bioinformatics*

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