DRASIL

A Knowledge-Based Approach to Scientific Software Development

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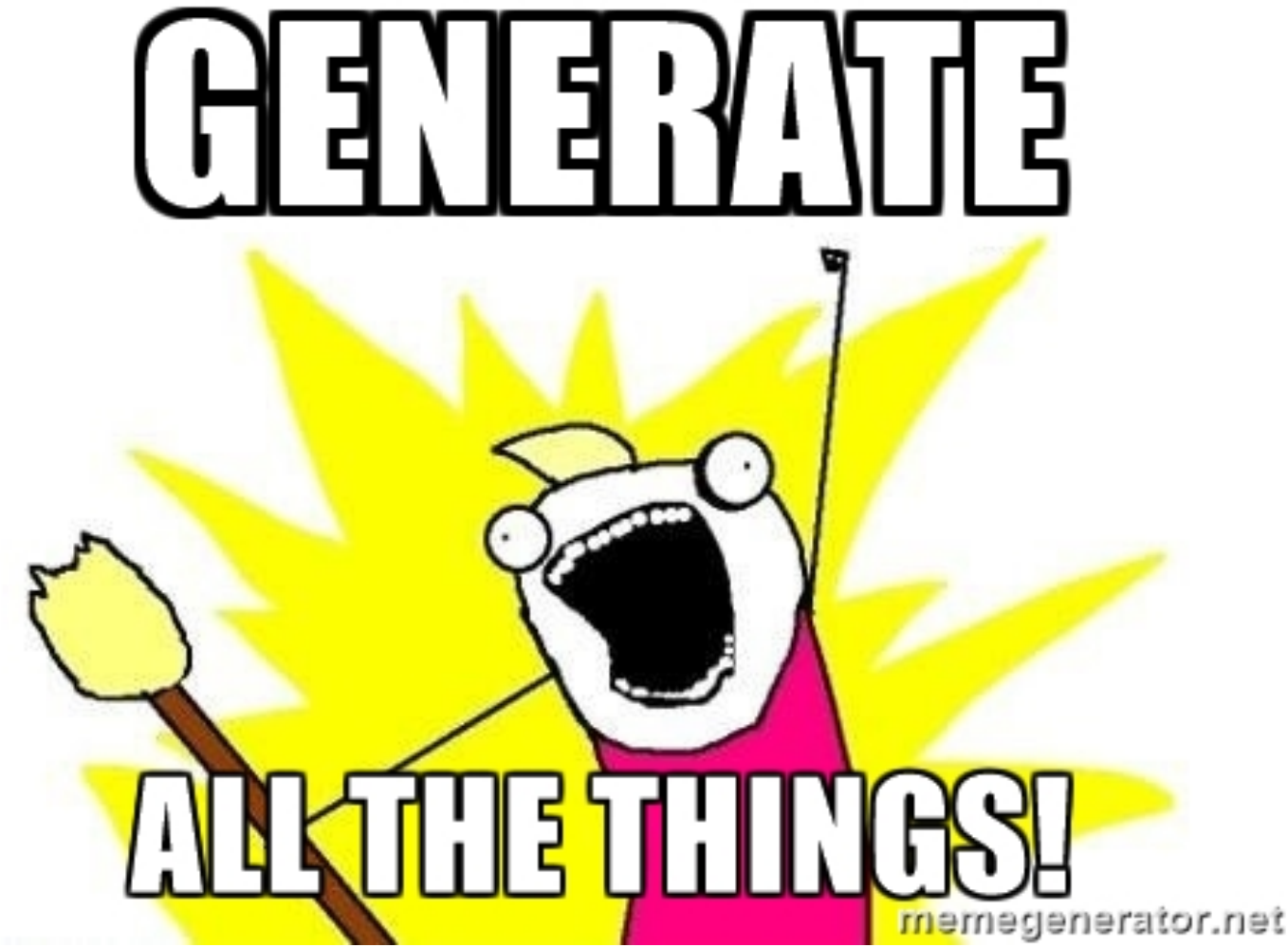
Background Context

- $\exists$ problems $\in$ D where
- $D = \{$ scientific computing, engineering computing $\}$
- Problems = [
  - Inconsistent Software Requirement Specifications (SRS) across D
  - Inconsistency between code and documentation
  - Documentation is annoying to make and maintain
  - Hard to reuse code for different applications

]

The Goal



Purpose of Drasil

- Solve the four problems
- Promote
  - Reusability
    - Examples have fully documented code
    - Data base to build new examples
  - Maintainability
    - Make changes in one place, gets updated everywhere

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- Language and Rendering (Language.Drasil)
  - Code Generation: transition from Drasil to working code
  - Documentation Generation: transition from Drasil to human readable documentation
- Case Studies (Example.Drasil)
  - This part is where you would input equations, requirements, and output code and documentation

Introduction

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- Drasil is intended to simplify the generation of documentation and code for scientific software
- Facilitate desirable software qualities such as traceability, verifiability, and reproducibility
- Case studies from which structural patterns and implicit relationships can be extracted, data can be captured, and core systems can be tested and implemented

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  - Documentation (Module Guide, Software Requirements Specification)

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  - Once it's fixed, it is also fixed everywhere else

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- GamePhysics
  - Most ambiguous example
  - SRS for a game physics library

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- Git combined with haskell, allows us to make large changes while easily maintaining a working version of Drasil
- Git (when used properly) prevents catastrophic lose of work

End

For more information about Drasil and LLS visit our github page:
https://github.com/JacquesCarette/literate-scientific-software
You can even build a working version yourself!