



# LEGO

THE GAME FOR SOFTWARE DEVELOPER

Marcel Mathis

# What makes a good programmer?

“ Professionals are people that see their work place as a huge kindergarten. And when they are not professionals yet, they will be soon.

—

Markus Bucher (2020 coworker of me)

# Differences

Lego builds physical structures from basic blocks while programming creates digital ones

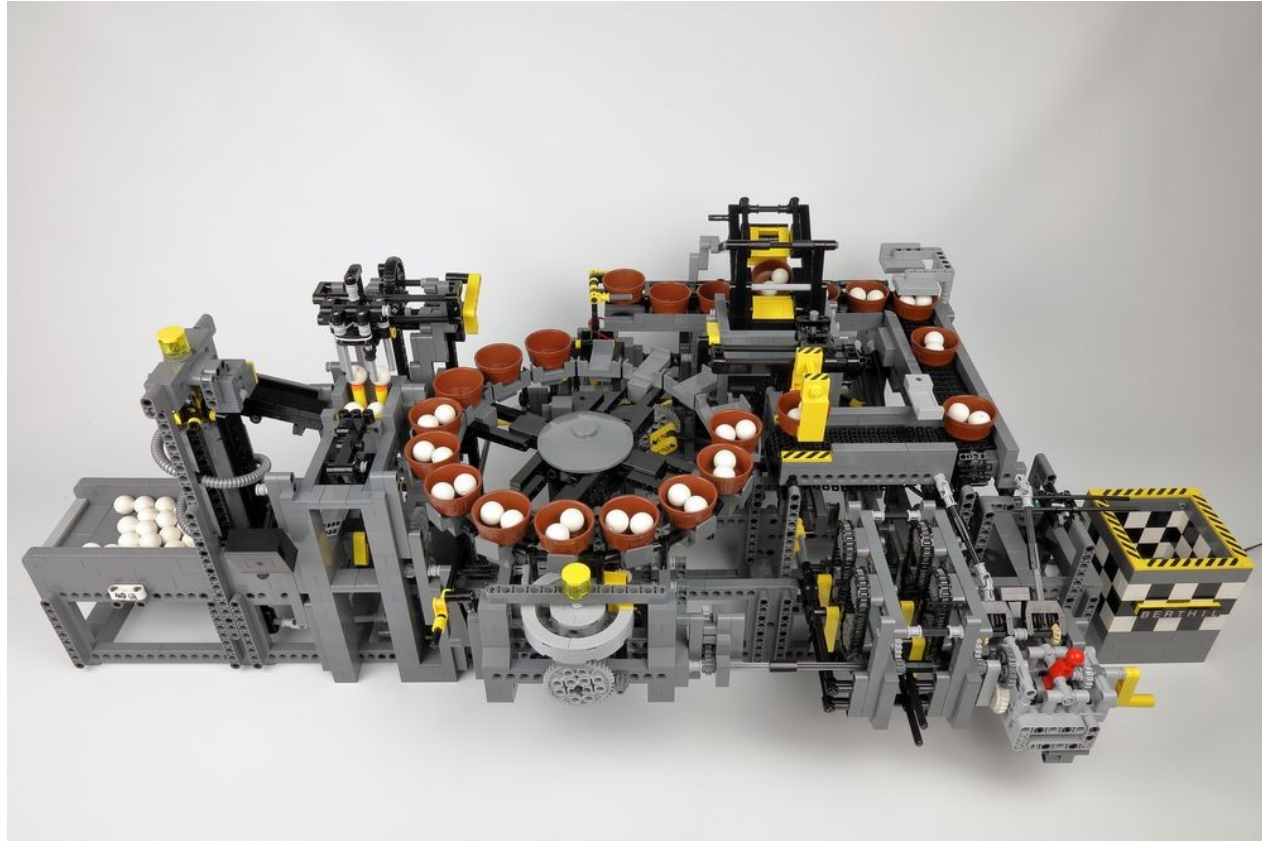
# Planning



Careful planning to create a cohesive whole

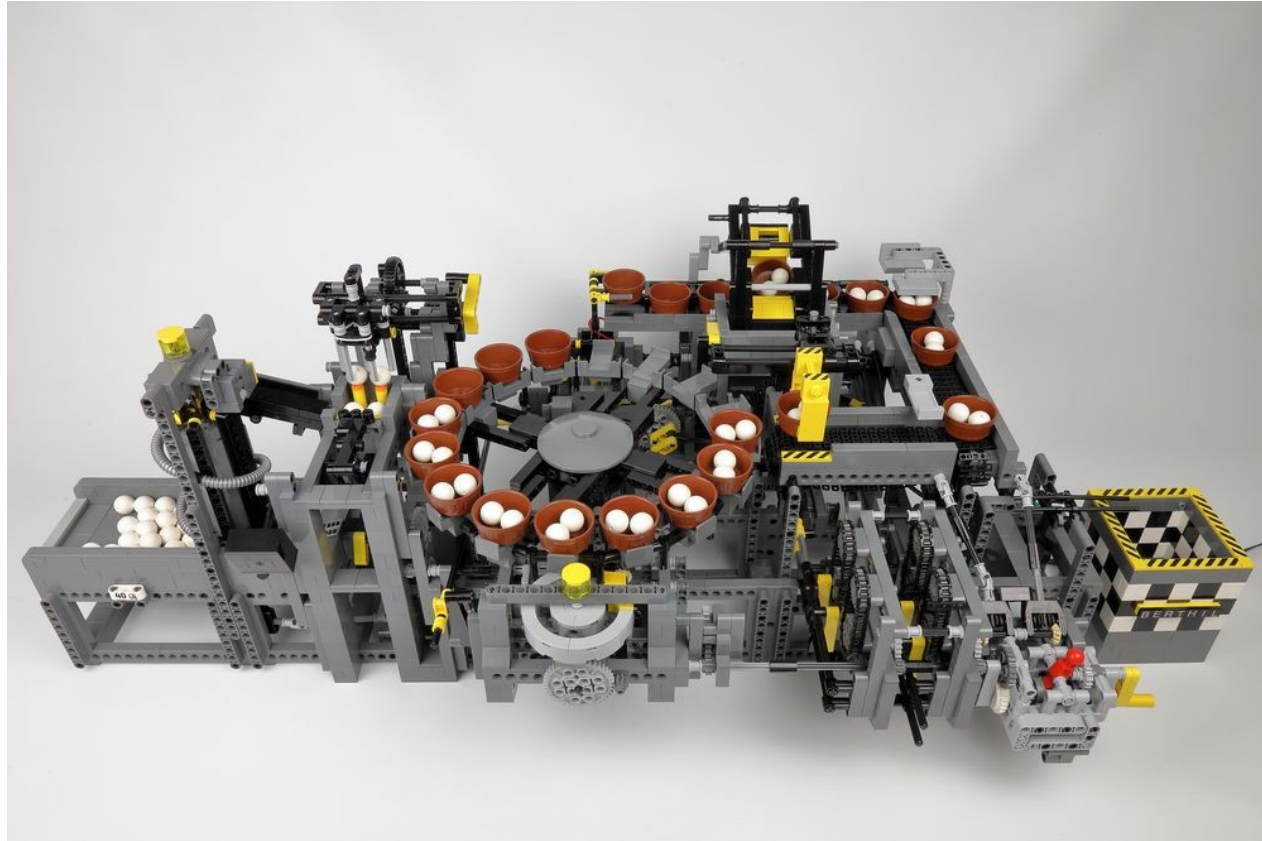
# Complexity

<https://youtu.be/2kb4L5Y2CX4>



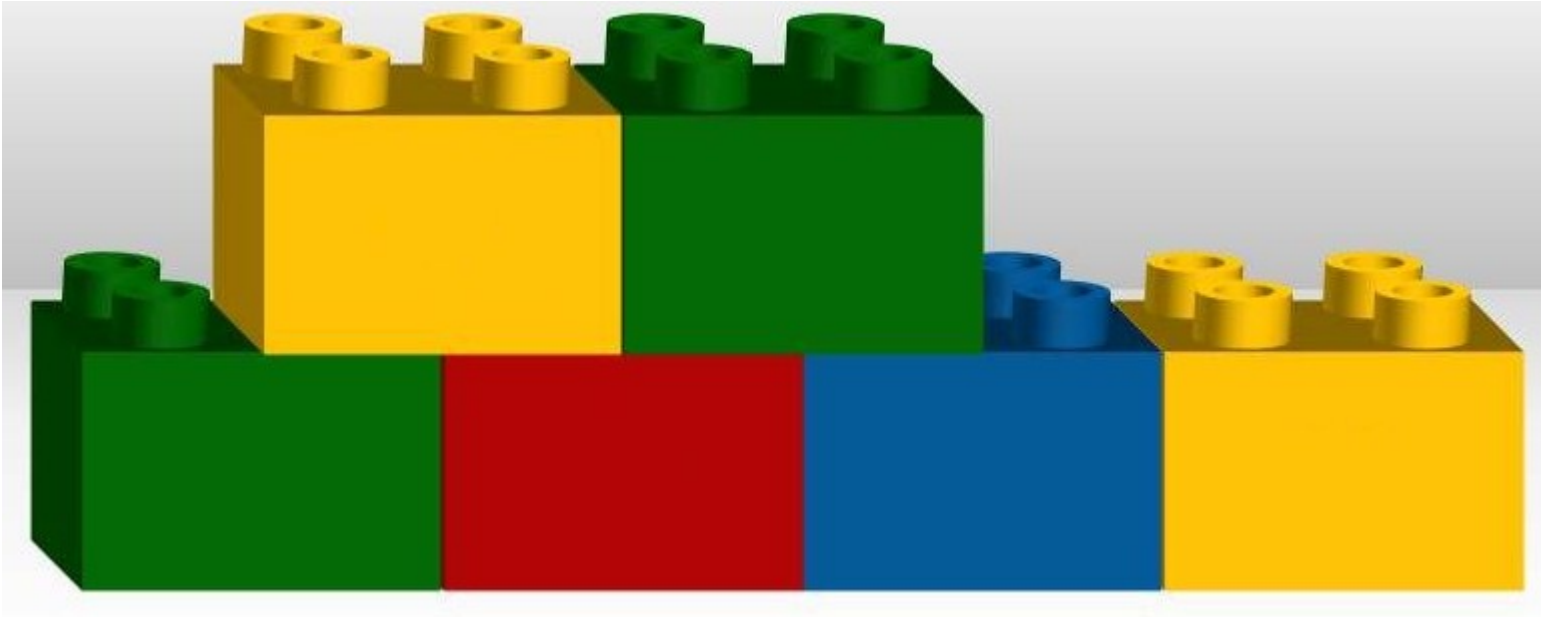
Complex systems that can be broken down into smaller ones

# Learning



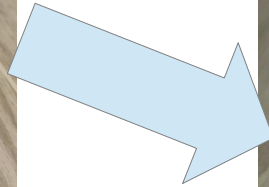
Willing to learn new tools and techniques

# Iterative process





# Interfaces





# Design Issues



Careful attention to the detail and an ability to recognize potential issues in the design

# Lego smell

Unstable construction



# Lego smell



Wrong interface usage

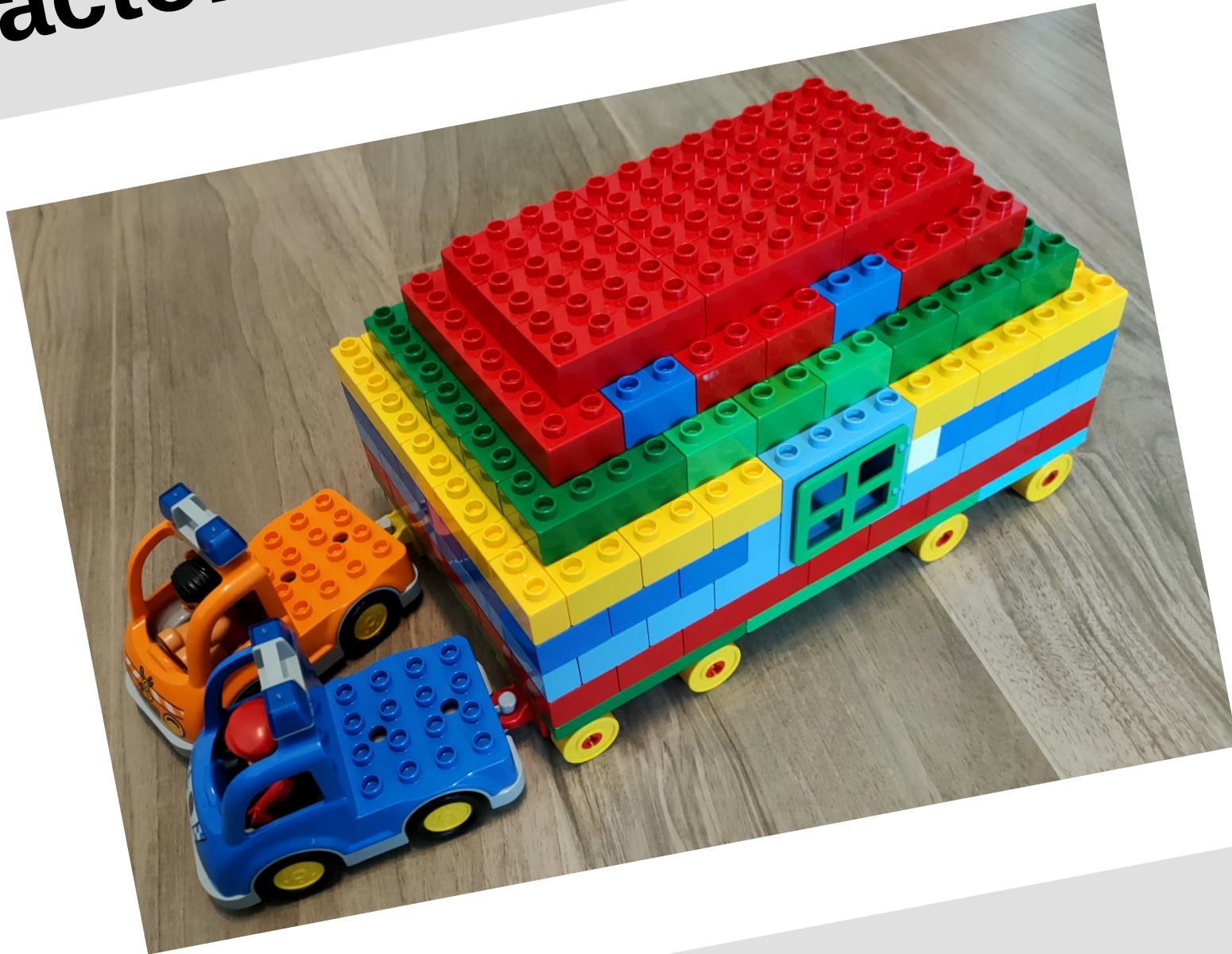
Violates to single responsibility pattern

# Refactoring

1. Improve readability
  - People like to see how you achieved it
2. Reduce complexity
  - Split the system into smaller units
3. Redistributing responsibility
  - Do the work where it belongs to
4. Introduce abstraction
  - Use clear interfaces in between



# Refactoring



# Testing

- Define requirement
  - Stories: e.g. House gets pulled by trucks
  - Invisible requirements:
    - Structural integrity
    - Withstand certain stress or pressure

TEST BEHAVIOUR NOT HOW IT HAS BEEN BUILD



# Testing



# Testing





# Testing

Run tests as frequently as possible on each unit



# Modular design



# Extreme Legoining

Build the simplest (most obvious) solution to match the requirements

# Personal conclusion

- Just like how there are best practices for building with Lego, there are best practices for programming
- Programming has a lot in parallel to daily things
- What we learned in this course probably is something for life on the example of programming



# What else?

“

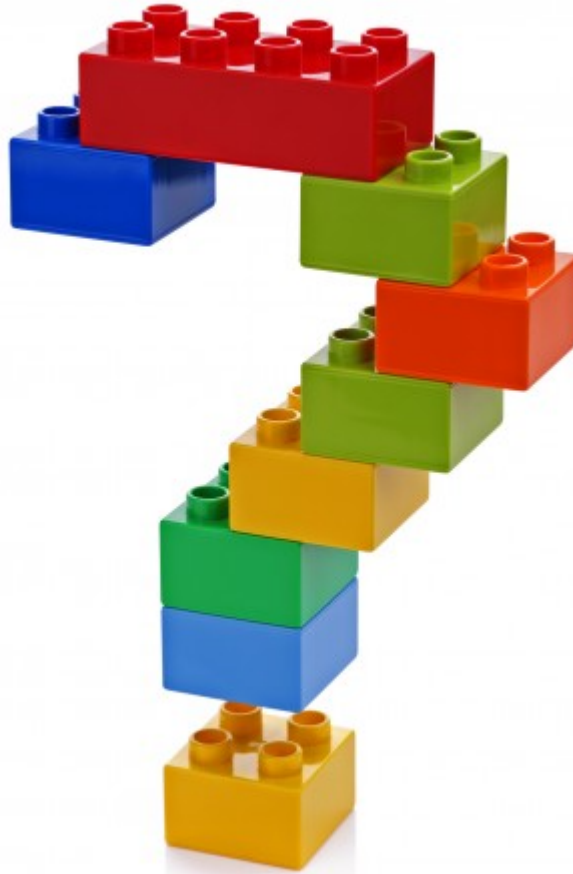
Life is a game, play it.

—

Mother Teresa

”

# Any questions



# Thank you

**Marcel Mathis**



[marcel.mathis@css.ch](mailto:marcel.mathis@css.ch)



[linkedin.com/in/marcel-mathis-83ab64252](https://www.linkedin.com/in/marcel-mathis-83ab64252)

# References

- <https://dailycannon.com/2022/12/igaming-software-development-how-do-casino-games-work/>
- <https://www.pinterest.co.uk/pin/lego-can-this-most-analogue-of-toys-really-be-a-modern-urban-planning-tool--131097039129080272/>
- <https://rebrickable.com/mocs/MOC-24605/Berthil/akiyuki-ball-factory-new-style-v3/#details>
- <https://www.slideteam.net/lego-blocks-flowchart-process-diagram-8-stages-powerpoint-slides-and-ppt-templates-0412.html>
- [https://www.reddit.com/r/funny/comments/3aff6f/a\\_really\\_big\\_collection\\_of\\_construction\\_failures/](https://www.reddit.com/r/funny/comments/3aff6f/a_really_big_collection_of_construction_failures/)
- <http://www.todayifoundout.com/index.php/2016/05/origins-punctuation-marks/>
- <https://chat.openai.com/chat>