

Green coding VISIIRI workshop 10.10.

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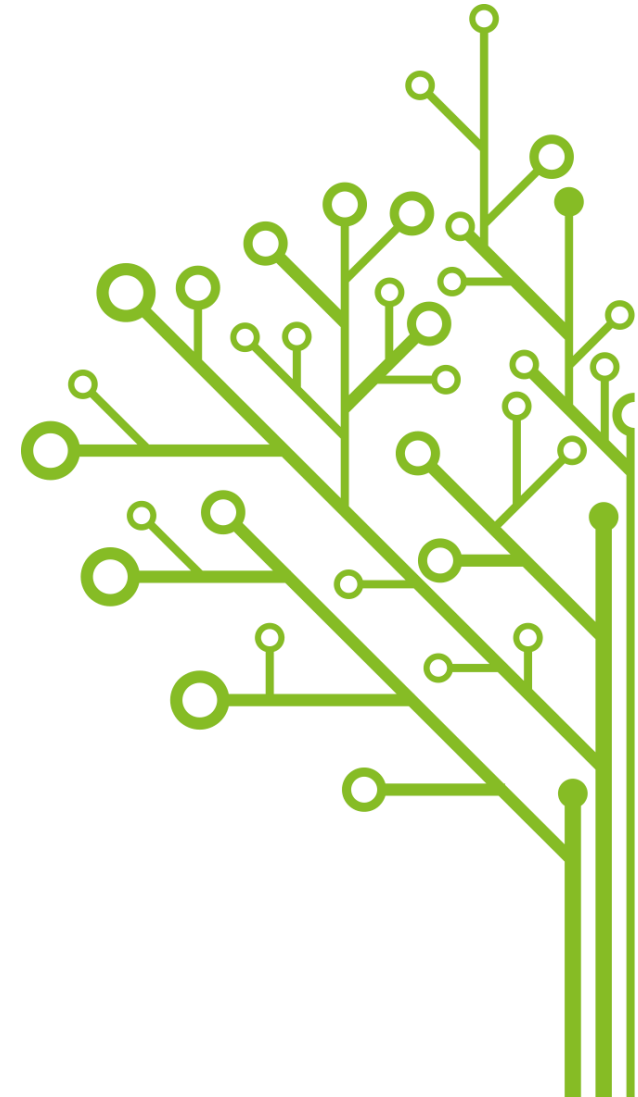
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Workshop schedule

- Presentation of the workshop – 10 mins
- Working in small groups (based on levels) – 40 mins
 - Managerial/business level
 - Questions
 - Working on Miro board
 - Product/Process level
 - Questions
 - Working on Miro board
- Summary of the outcomes (both groups) – 10 mins



Green coding (WP3) – state of the art in companies

VISIIRI.



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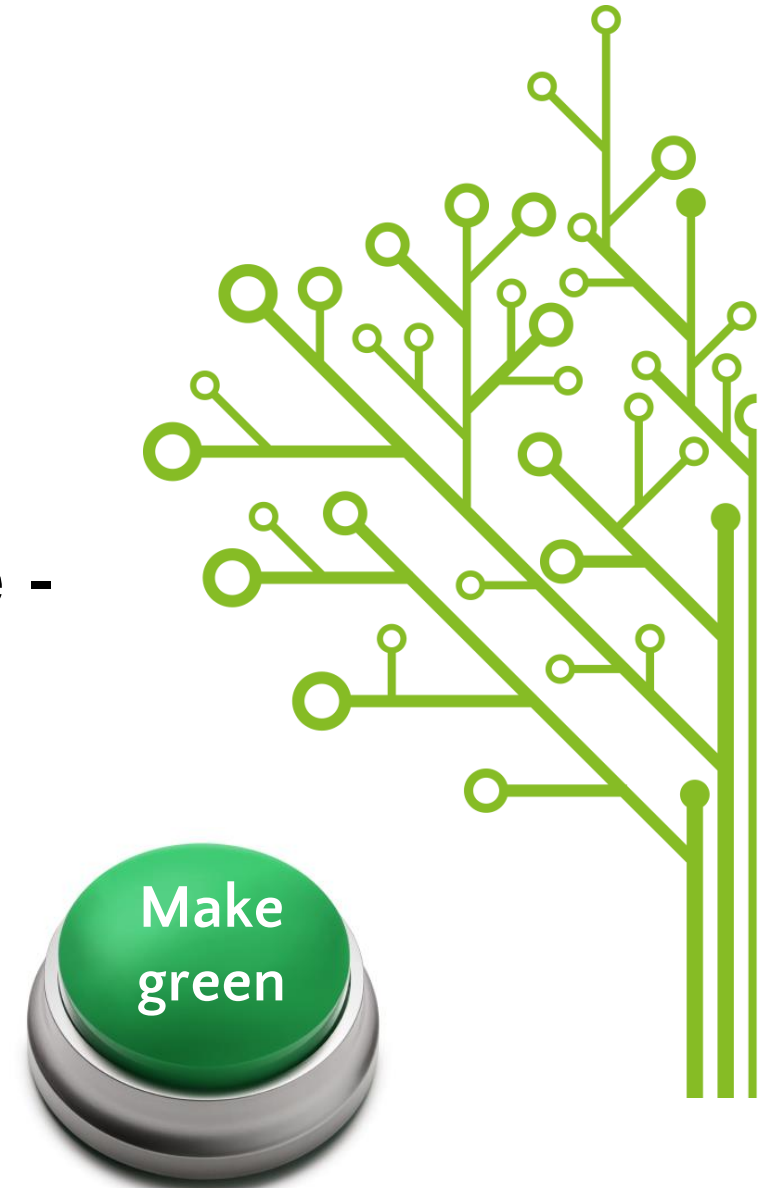


In search of a magic button



Complexity of (green) coding

- Software itself does not use energy, hardware does
- When software is run on hardware, it requires hardware “resources” and thus uses energy
- Two important parts of running a software - processing and communication
 - If you want to minimize energy usage, you need to minimize these two operations



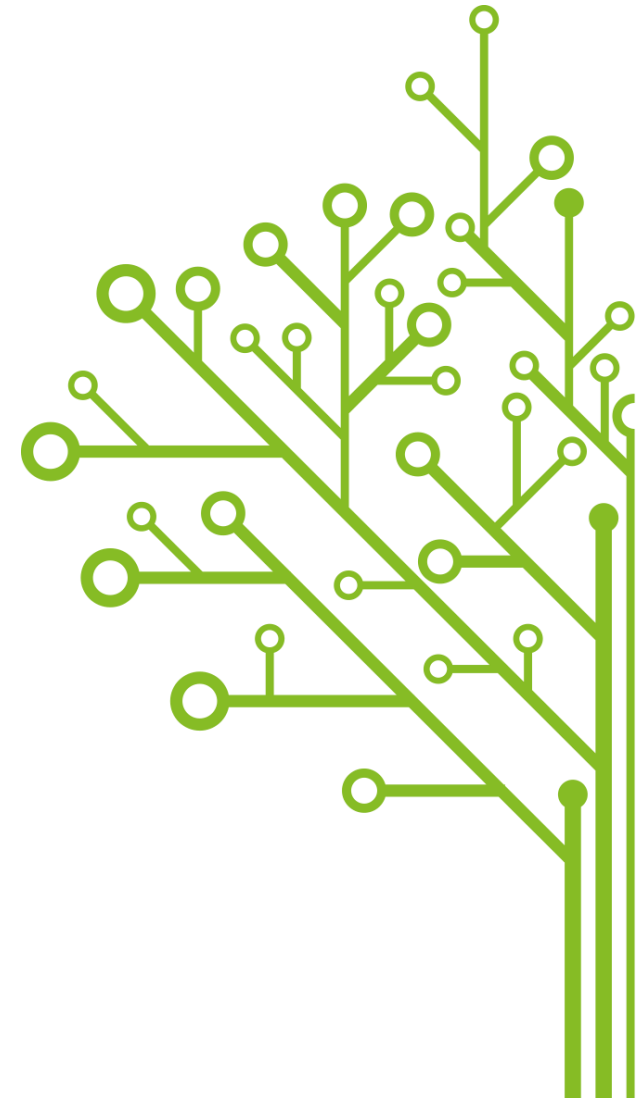
Green coding defined (elicit)

Green coding is an **approach to software development that aims to minimize energy consumption and environmental impact** of information and communication technologies (ICT) (Junger et al., 2024; Junger et al., 2023).

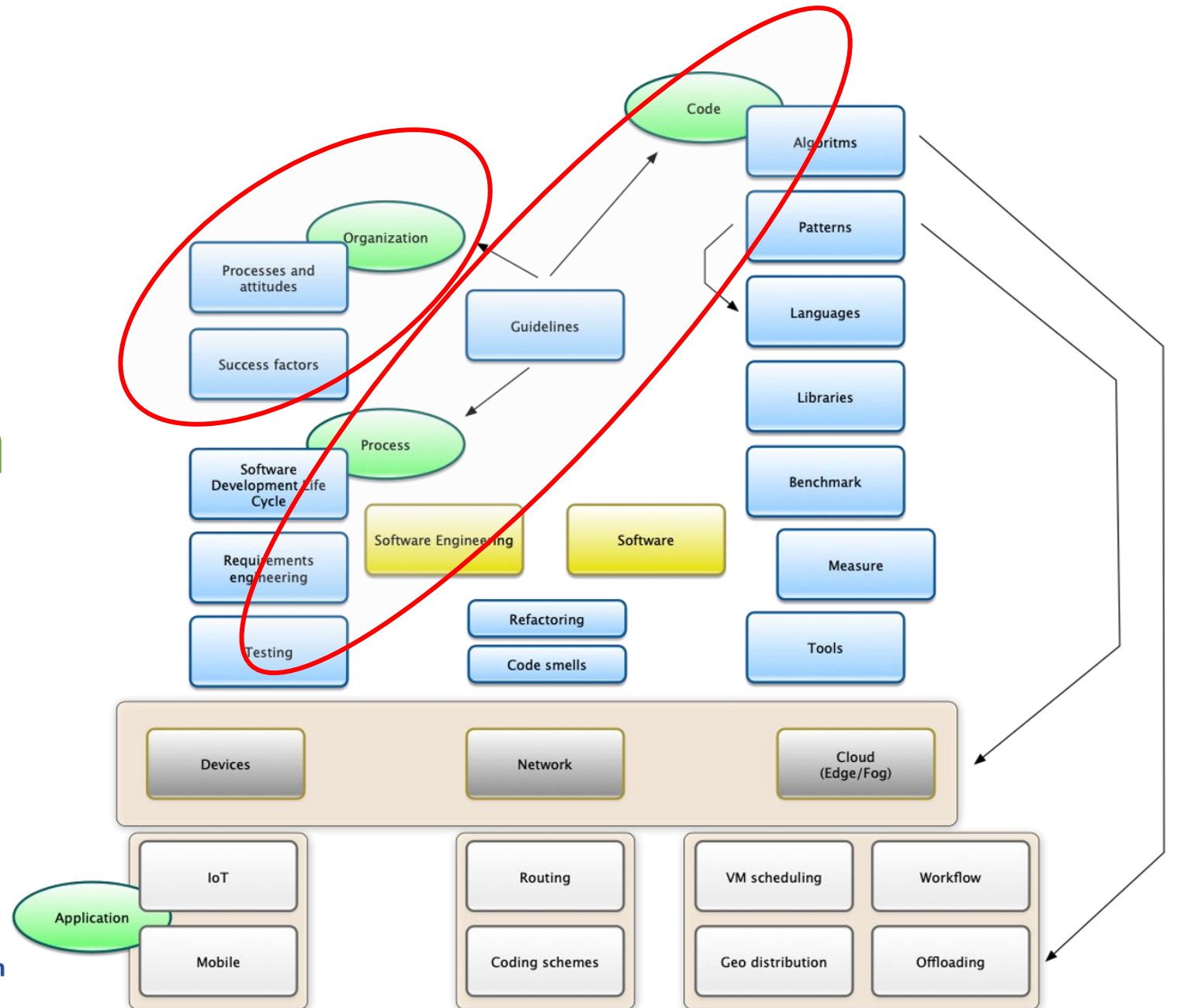
It encompasses **various strategies**, including energy-efficient **algorithms** (Palacios et al., 2014), optimized **source code** (Corral-García et al., 2015), and principled **approximation techniques** (Baek & Chilimbi, 2009). The concept of "green codes" also **extends to communication systems**, where energy efficiency is considered in **both transmission and processing** (Grover & Sahai, 2008).

Green coding practices can be **integrated into existing industrial processes** and education curricula to **promote sustainable software development** (Junger et al., 2024).

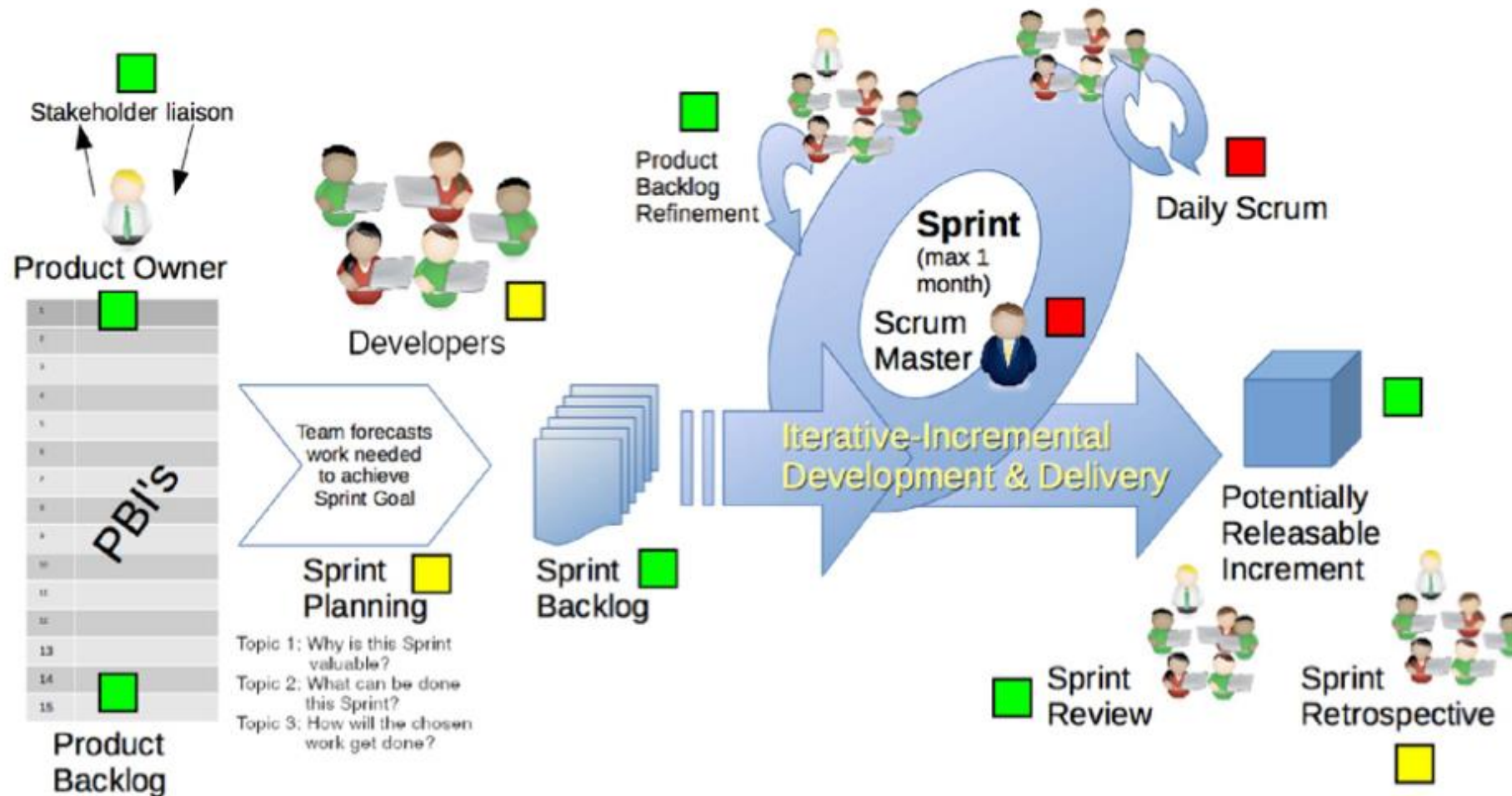
Tools like Android Lint can be extended to enforce green coding rules in mobile app development (Le Goaër, 2020).

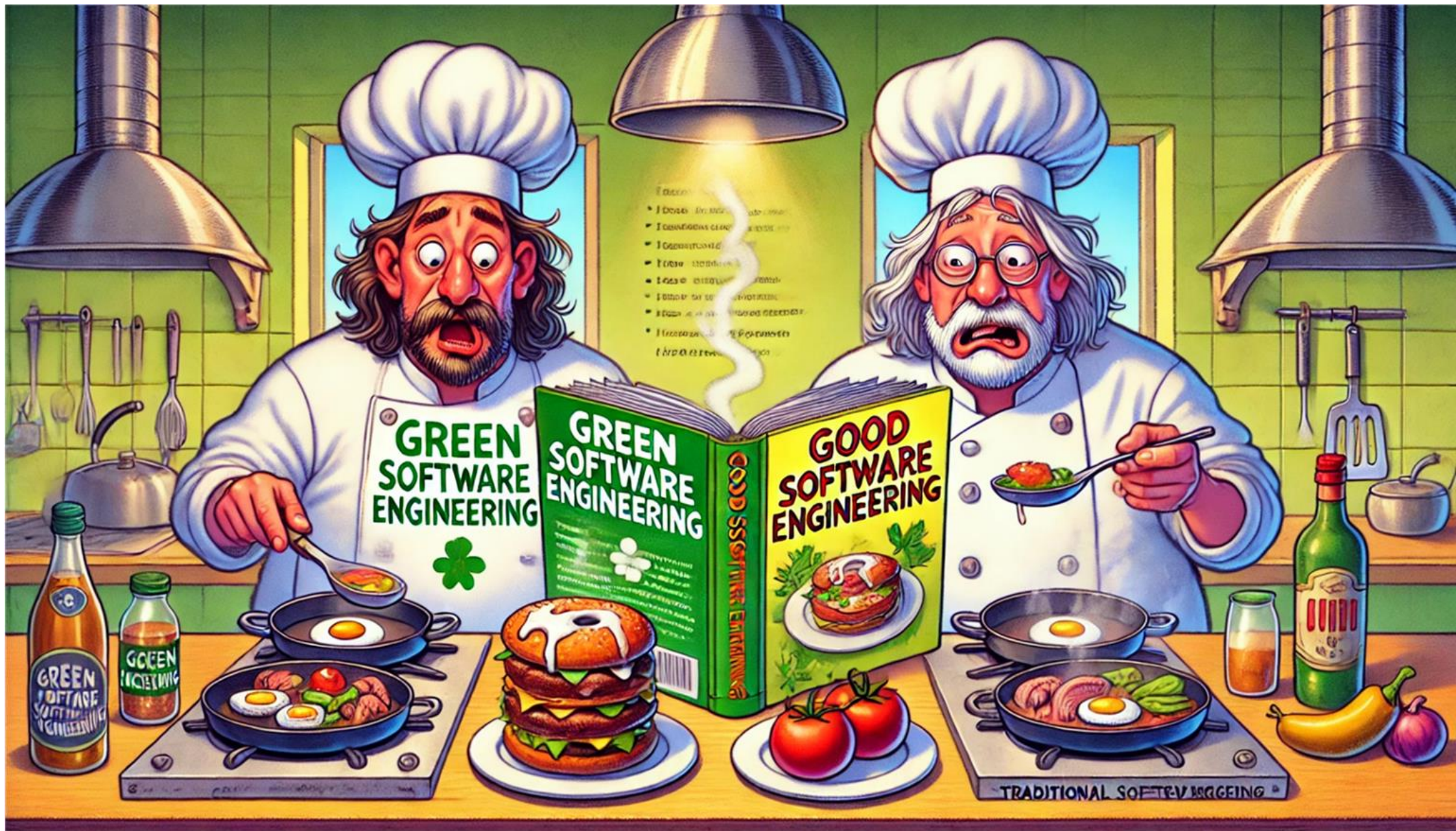


Elements affecting energy efficiency of a code



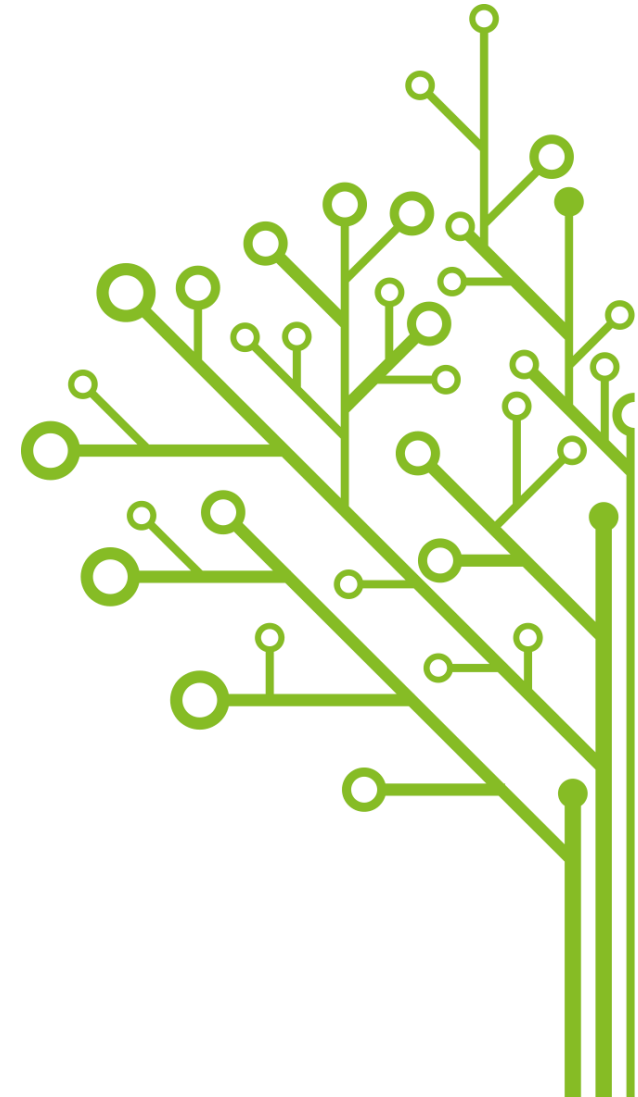
Taking sustainability into account





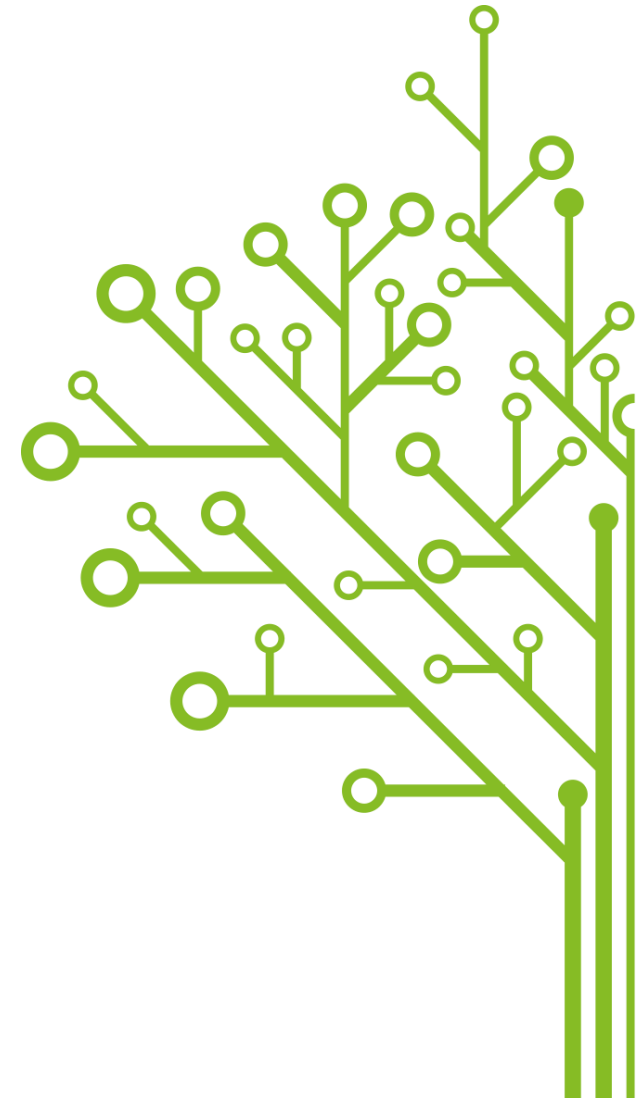
Small group working

- Working on two levels
 - Managerial/business level
 - This level sets the company vision and strategy as well as the sustainability goals
 - *“How are the requirements communicated to the software development level?”*
 - Product/process level
 - The actual development of the software products or services - processes and actual coding
 - *“How are the environmental (sustainability) requirements realized in the software products or services?”*
- Both groups will work on few questions focusing on important things from their perspective



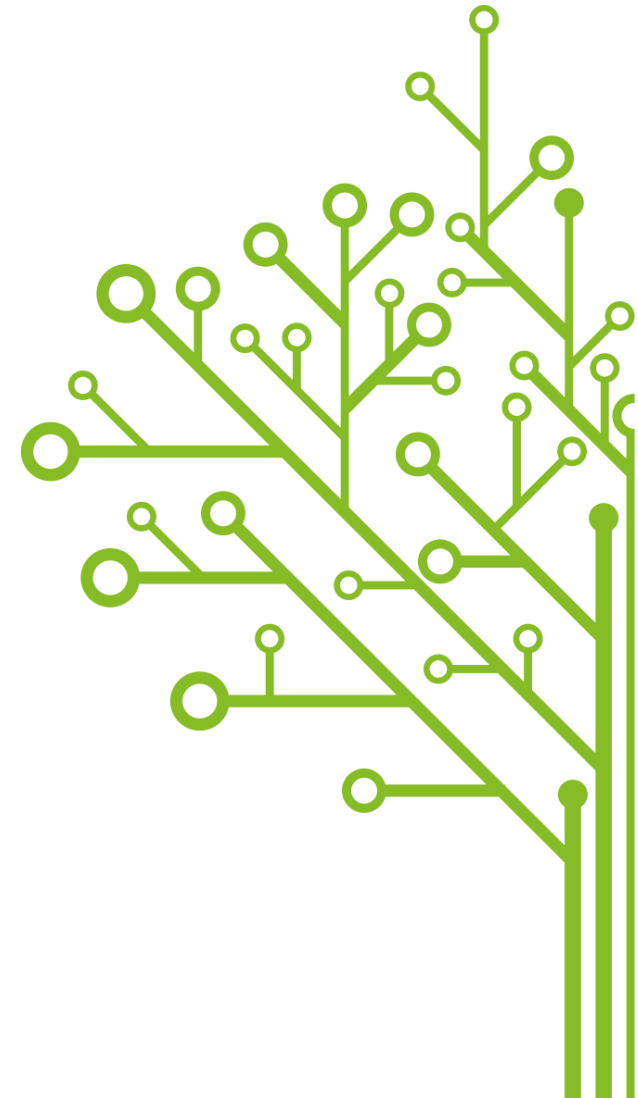
Questions for the business level

- Do you have clear sustainability goals in your company?
 - Especially environmental sustainability
- How (environmental) sustainability is managed in your company?
 - Who is responsible?
- What environmental (sustainability) requirements is provided for the software development level (from business level)?
- What kind of data is used e.g. for the CSRD-reporting from the product/process level? What would be needed?
 - Assessment / calculation / measurement



Questions for product level

- What energy efficiency (sustainability) requirements are provided to you from the business level/customers?
- How do you take these requirements into account a) in processes or b) actual coding
 - Are there any guidelines?
- Who is responsible of the realization of the requirements?
 - How do the requirements impact the work of people in the development process?
- What is reported back to the business level/customers regarding the given requirements?



Thank you.

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