A Friendly Introduction to Software Documentation
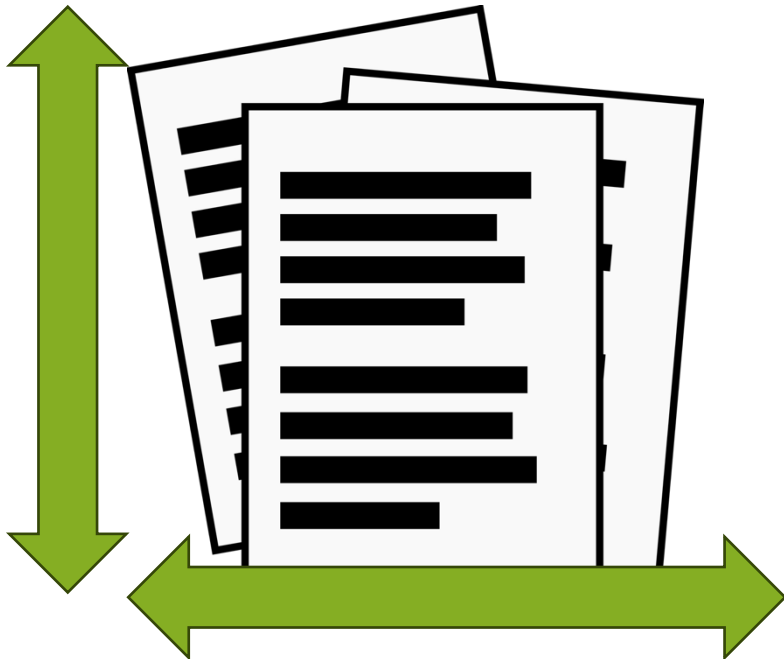
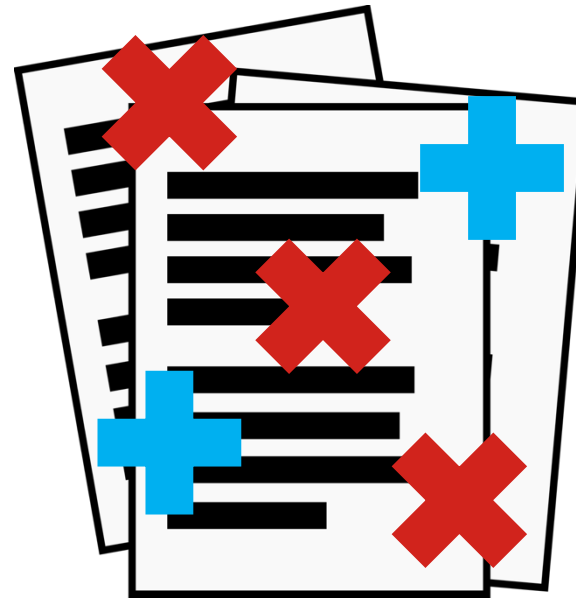**Approaches to "Good Documentation"**

By Arist Bravo

Defining "Good Documentation"

- There are different approaches or theories which define "good documentation"

- Broadly 2 types of theories:
  - How to *design* docs
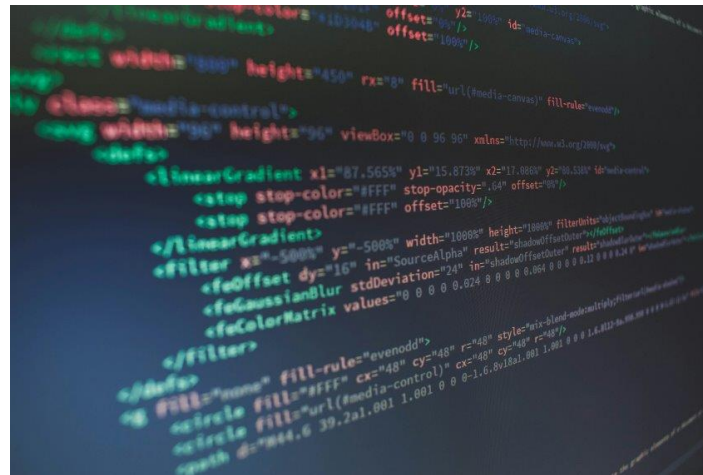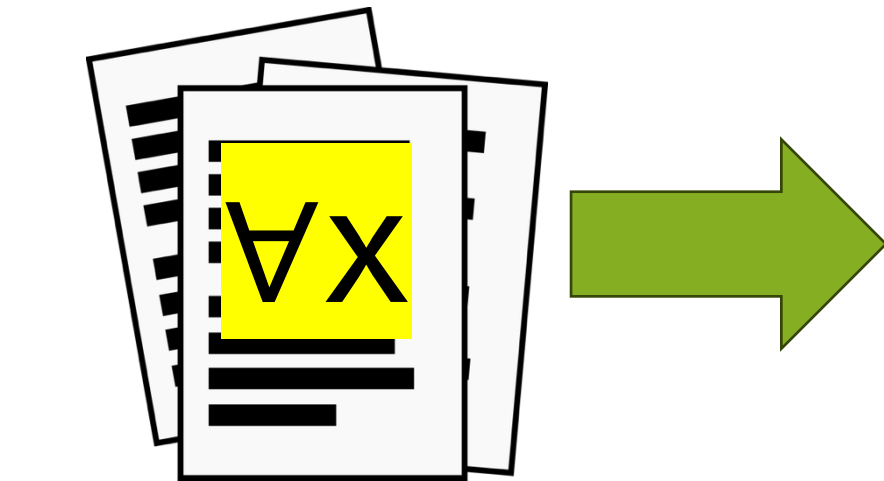 - How to *assess* docs

VS

Design: A View-Based Approach

- Separate stakeholders into groups; each group gets their own "view" or software documents which are tailored to their concerns

- (+) Docs are modular and centered on audience concerns

- (-) Lengthy process to form groups and make docs for each group


Reference(s): Bayer and Muthig

Design: A Formal Approach

- The accuracy, clarity, ease-of-access, and completeness of documentation can be confirmed if we turn docs into a set of math expressions/specifications

- Software fits documentation if the documentation's specifications are satisfied

- (+) Mathematical precision and clarity

- (-) Hard to use, unintuitive

Reference(s): Parnas

Design: An Appraisal Approach

- Instead of the previous design strategies (which are unwieldy and hard), why not check out ways to define "good documentation" - the *quality* of documentation?

- Then, simply design documentation to fit the definition!
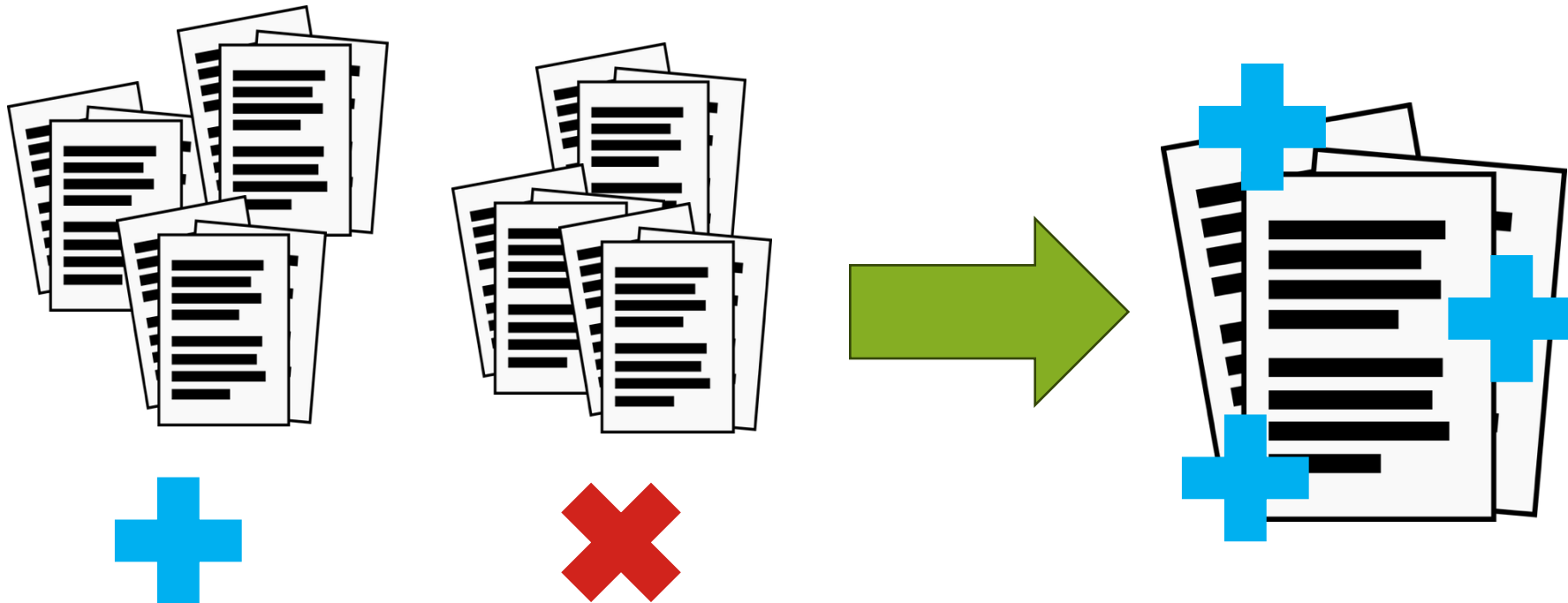
Quality: via DQI

- DQI = "document quality indicator"
- A 3-tuple of the following format: (abstract quality, factor of the quality, metric for the factor)
- EX (examples):
  - (completeness, coverage of problem domain, % coverage)
  - (usability, readability, Gunning fog index/readability score)
- (+) Goes from vague qualities to precise metrics
- (-) A lot of DQIs (37)

Reference(s): Arthur and Stevens, Wingkvist et al.
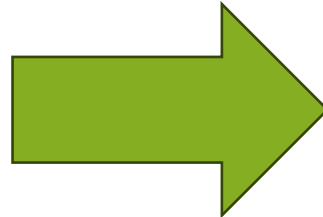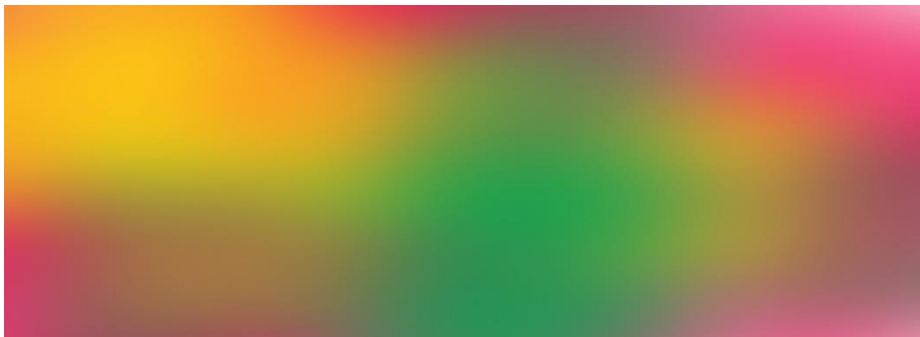
Quality: via DPMM

- DPMM = "Documentation Process Maturity Model"

- A list of 11 best practices for documentation

- A project is assessed based on how well each practice is done

- (+) Focuses on upholding practices over time

- (-) Some "best practices" take a lot of time (EX: analyzing docs)

Reference(s): Visconti and Cook
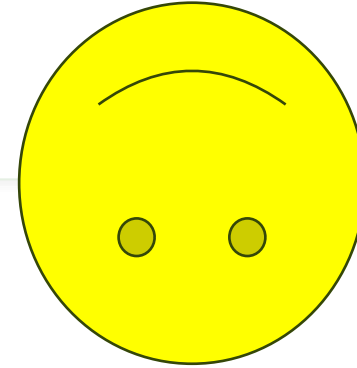
Quality: via Dimensions

- "Dimensions" are qualities which documentation should have

- Ask: does documentation exemplify the qualities?

- EX: clarity, readability, conciseness

- (+) Gives flexible rules-of-thumb

- (-) Can be vague, hard to measure quantitatively

Reference(s): Treude et al.
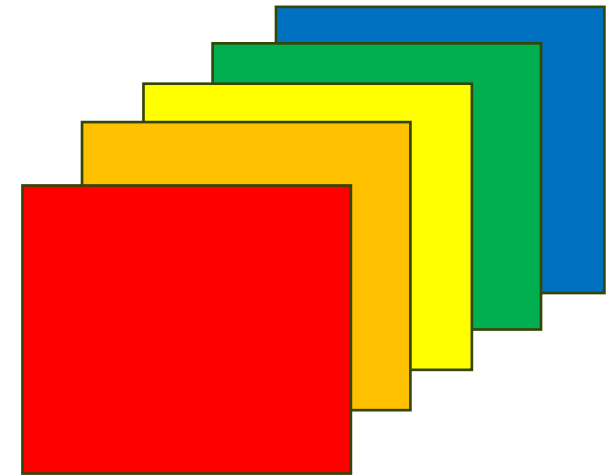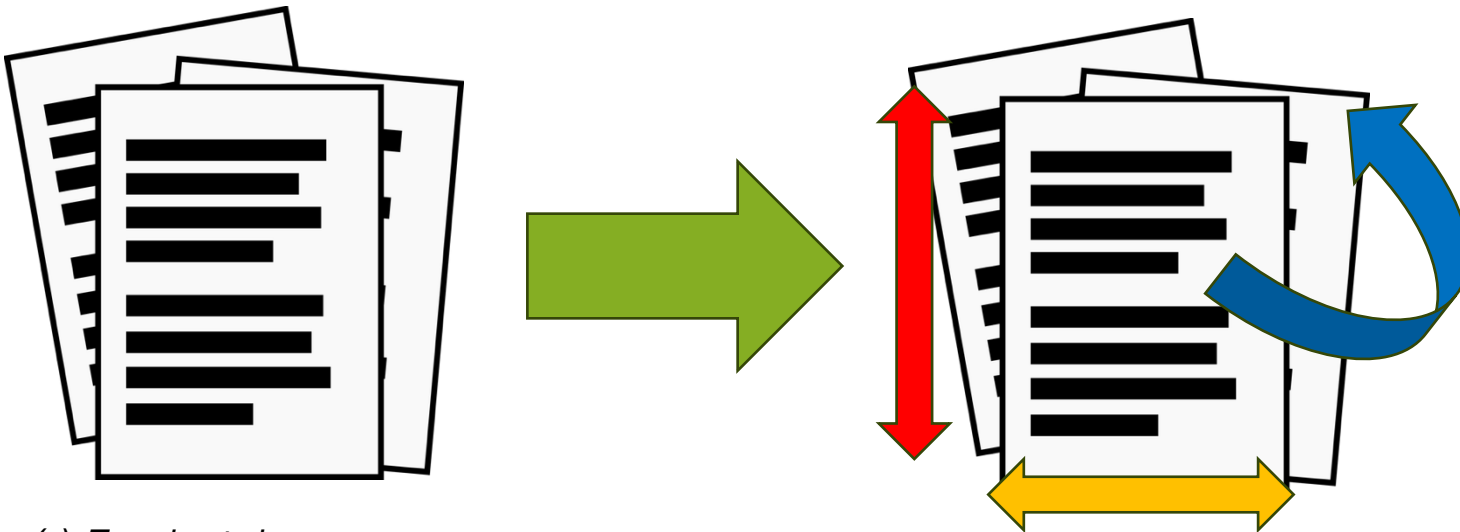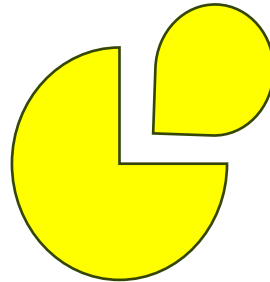
Our Dimension-Based Framework, ACCEU

- We choose the dimension-based framework since it is commonly used (see references) and provides rules-of-thumb for "good documentation"

- After all: most documentation is written without standards!

- We study five (unordered) qualities/dimensions based on common use:

Accuracy   **Clarity**   **Completeness**   **Ease-of-use**   **Up-to-dateness**

Reference(s): Forward and Lethbridge, Garousi et al., Parnas, Treude et al., Zhi et al.