Software Process Improvement bij NASA

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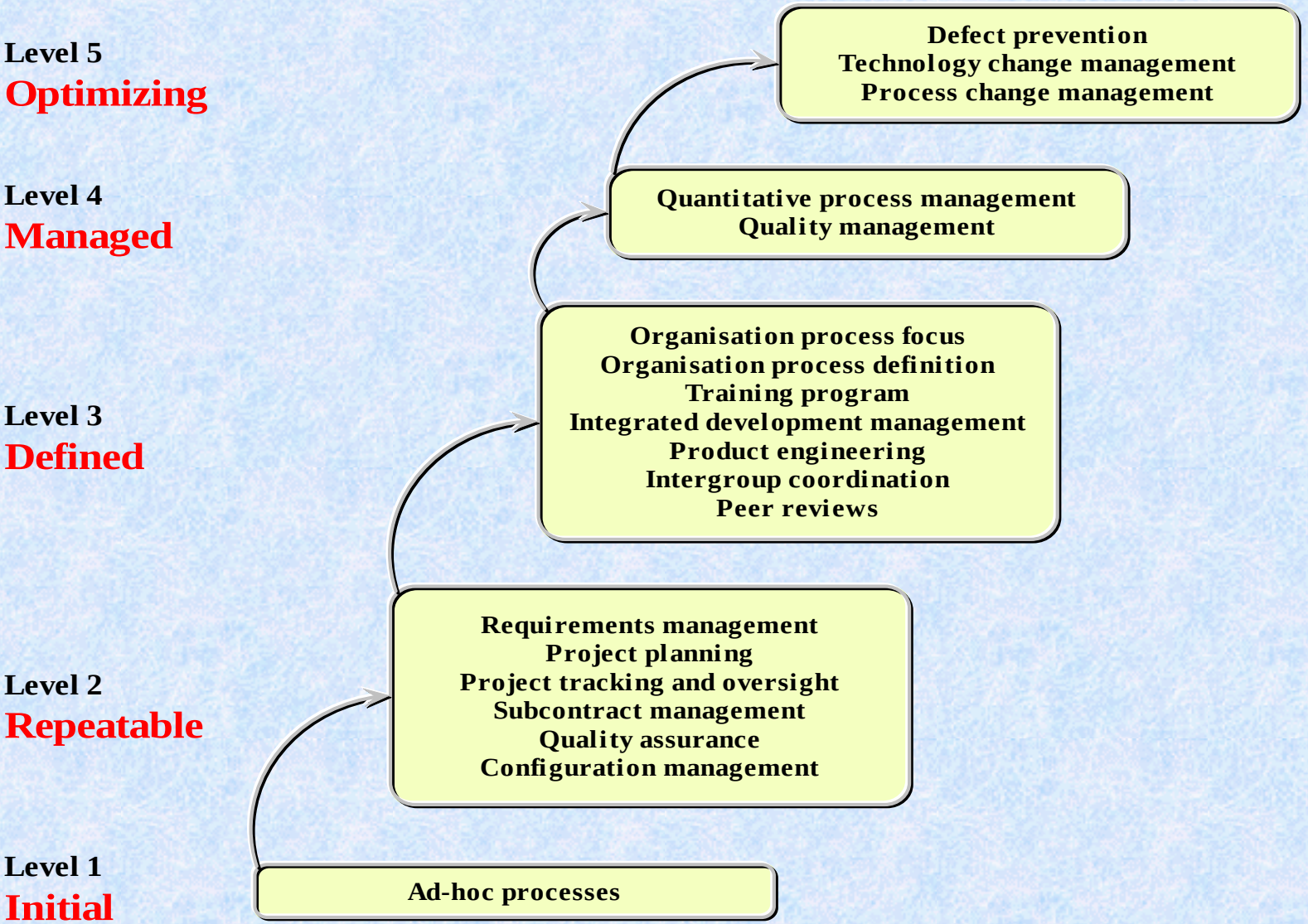
Interessante documenten en "guidebooks" van NASA

http://www.ivv.nasa.gov/SWG/resources/

- **Hierin vind je onder meer links naar**
  - **NASA-GB-A302: Formal inspections guidebook.**
  - **NASA-GB-001-94.pdf: NASA Software Measurement Guidebook**
  - **NASA-GB-001-95.pdf: NASA Process Inprovement Guidebook**
  - **NASA-GB-001-96.pdf: NASA Software Management Guidebook**

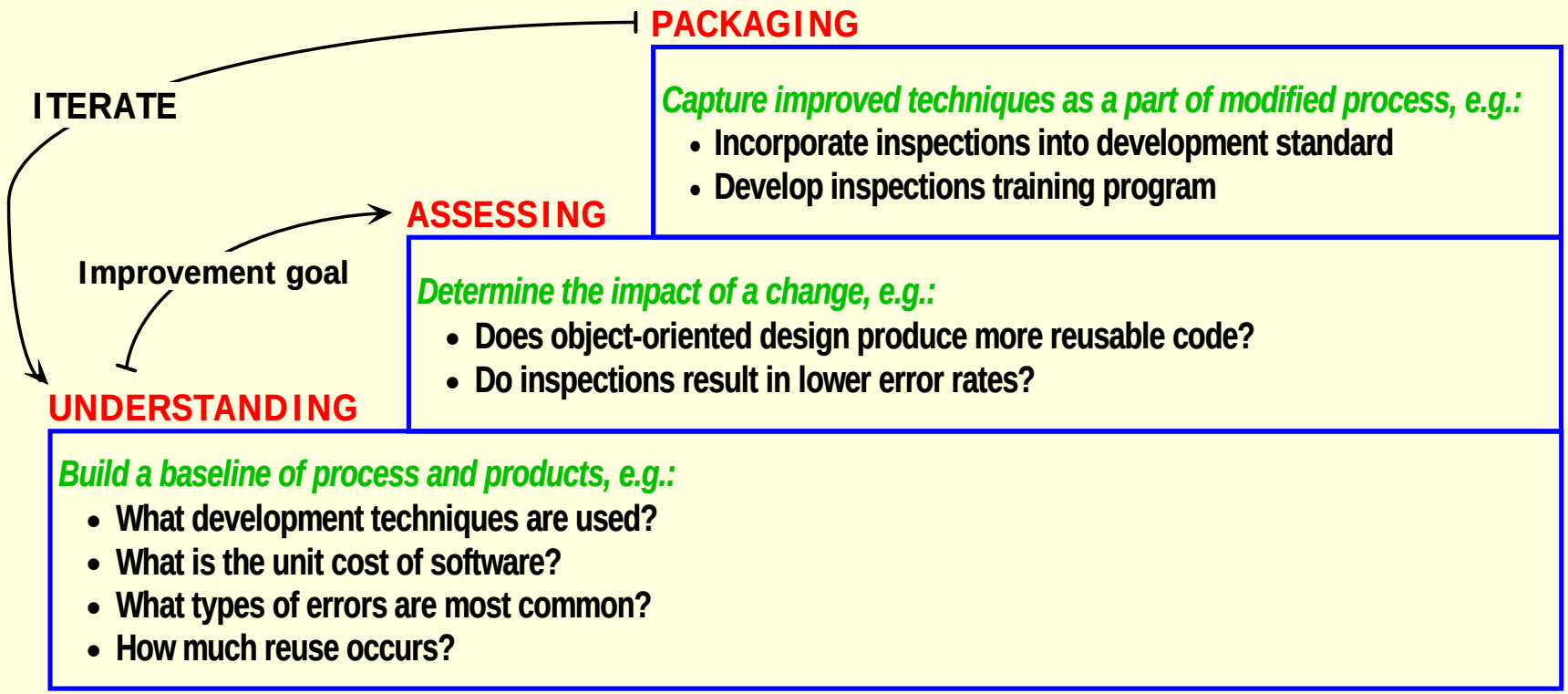
Goals

- **CMM:**
  - **Domain independent and generalized**
  - **Focus on improving the software process**
- **NASA:**
  - **Domain dependent**
  - **Focus on improving the software product**



The Capability Maturity Model (CMM) Key Process Areas (KPAs)

NASA Three-Phase Approach to Software Process Improvement



Understanding phase

- **Capture characteristics of ongoing processes and products**
- **Measure:**
  - **Product: Cost, Size, Errors**
  - **Process: Effort distribution, Resources usage**
- **Identify high-level goals for improvement**
  - **Cut costs, Improve reliability, ...**

Sample process relationships

Effort (in staff months)	=	$1.48 * (\text{kLOC})^{0.98}$
Duration (in months)	=	$4.6 * (\text{kLOC})^{0.26}$
Pages of documentation	=	$34.7 * (\text{kLOC})^{0.93}$
Annual maintenance cost	=	0.12 * (Development cost)
Average staff size	=	$0.24 * (\text{kLOC})^{0.73}$

Assessing

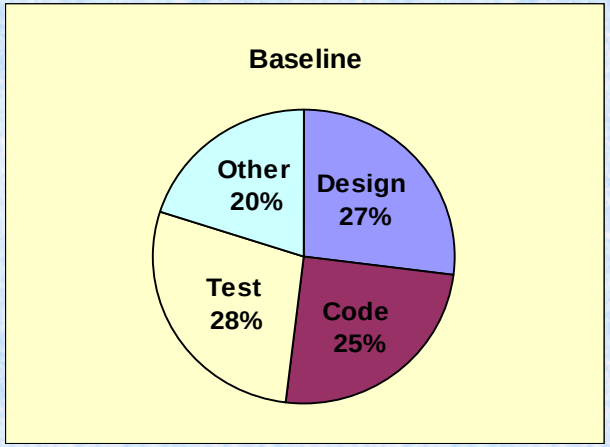
evaluation of the effect of introducing a change

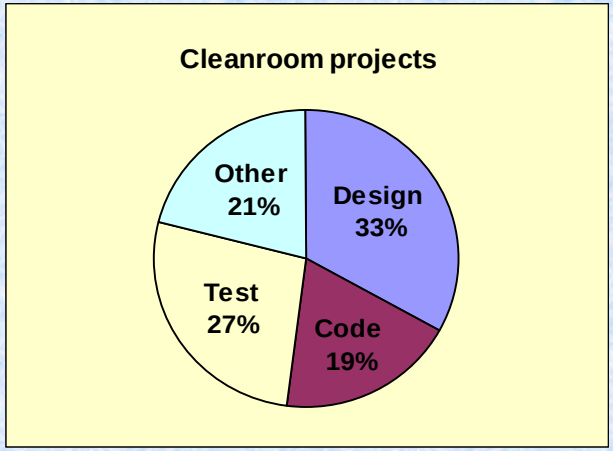
- **Set specific objectives for improvement**
- **Introduce changes in the current process**
- **Analyse impact on product and process**

Experiment

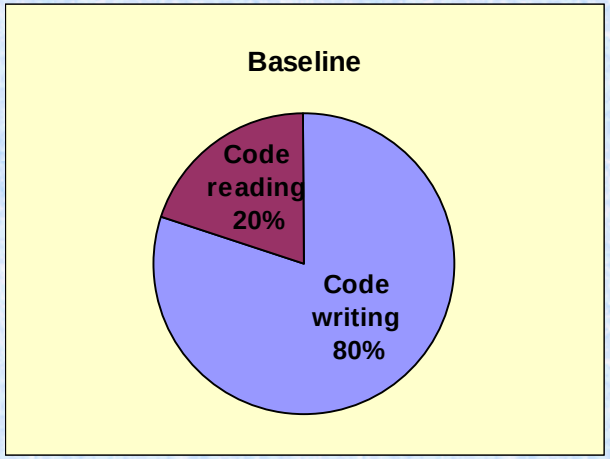
Assessing impact of Cleanroom on Process

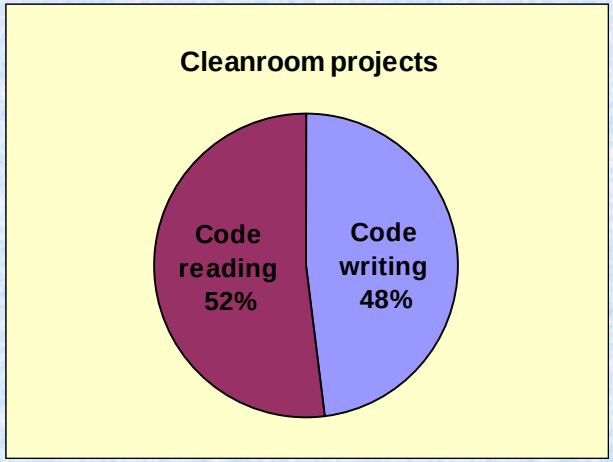
All activities: Slight impact on design and code





Code activities only: Substantial process impact





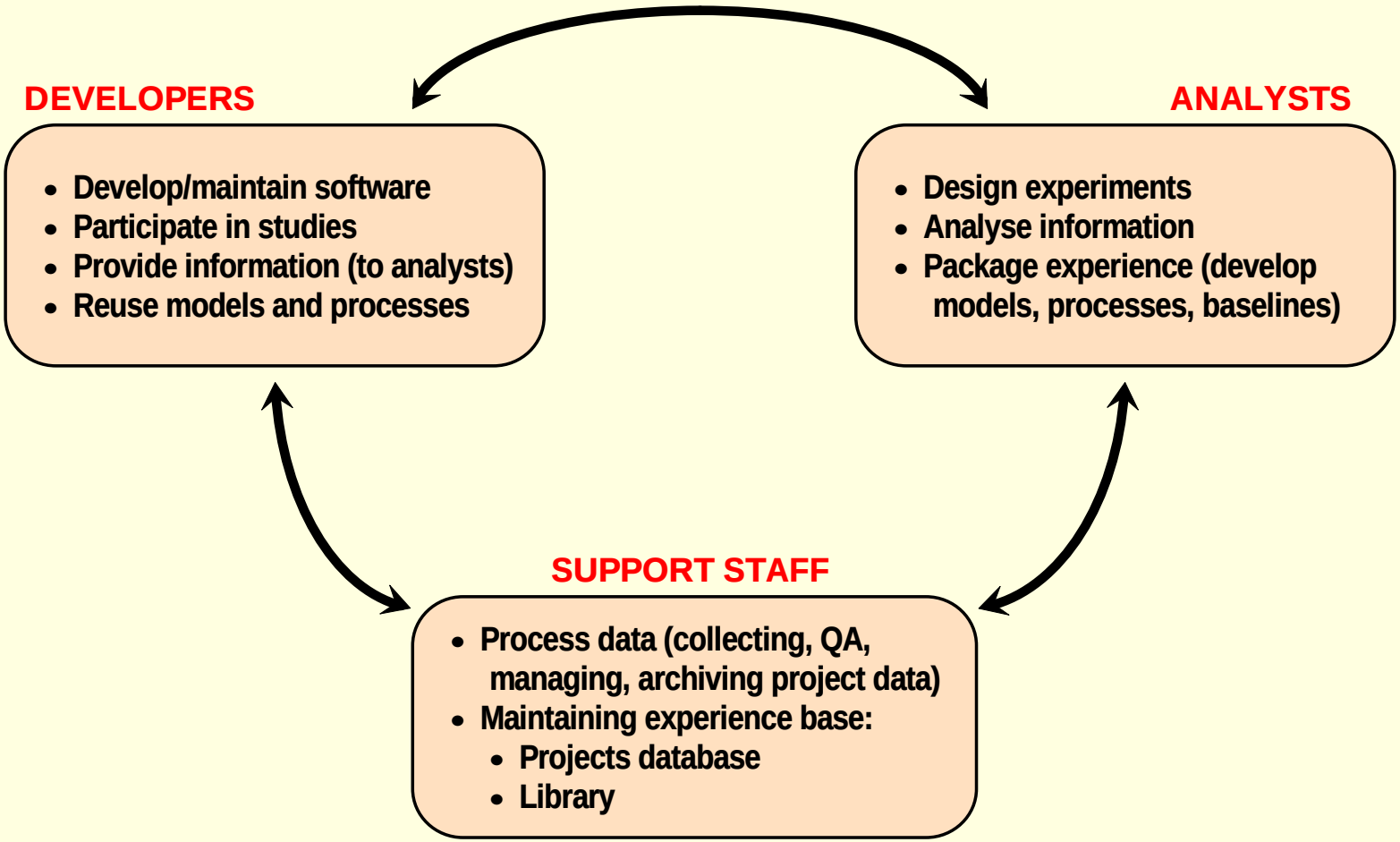
Packaging

- Satisfactory changes (measurable improvement) incorporated in organisation
- New models, standards, training materials developed based on what has been learned put in experience base
- Packaging:
  - Standards, policies, guidebooks, training, tools, ...

Software process improvement

- **Understanding**
  - **What are we doing?**
  - **How are we doing it?**
- **Assessing**
  - **Analysing the impact of change**
- **Packaging**
  - **Experience base**
  - **Dissemination**

Activities of the Software Process Improvement Organisation (NASA)



NASA Metrics Experience

- Measurement is a means, not an end in itself
- Understand the goals
- Make sure the measurements apply to the goals
- Start small
- Avoid over-reporting
- Do not expect to:
  - Measure error correction effort precisely
  - Find generalised, well-defined process measures
  - Find a database of process measurements
  - Automate data-collection
- Use lines of code (pages of doc) to represent size

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