Quality-growth and communication

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Micro-CV Ton

- *Physics VU A'dam '79 - '85, solid state, IT*
- *Natlab: CAD for VLSI Design ('85-'95+PhD)*
- *Philips' ADC/ASA '95 - '99*
  SetTopBoxes: G+4, e-4TV Chief SW architect
- *2000 - 2002: System architect for Analogue / Hybrid TV, and coaching architects, and teaching.*
- Techn focus: HW-SW co-design, performance.
- Human focus: Relation emotions, body, mind.
  - Release of hurting / restricting thoughts and opinions.

Projects and SW Skills: why coaching helps

Ton Kostelijk,

initiated by

AJ vd Burgh and J Vughts

Contents

1. Introduction: goals, SPI and skills
2. Project progress, process maturity and skills
3. What are software skills?
4. What is coaching?
5. [Skill dimensions and levels]
6. Conclusion

1. Intro Goal of PDSL-E: Development of advanced systems

- Principal (= Customer) attraction
  - innovative CE products & prototypes
  - reliable: predictable (time), specs, quality
  - effective: competent, competitive, flexible
- Employee attraction
  - interesting technology and career options
  - pleasant & stimulating colleagues + Mngmnt
  - suitable workplace, tools & infra

Approach: Process Orientation

Sw Process Improvement helps

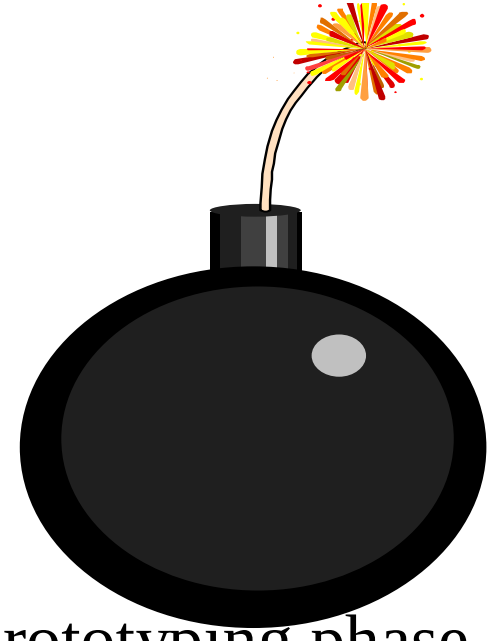
- Explicit development process, based on **facts**: explicit requirements, milestones, docs, review procedures
- Monitoring (gathering facts)
- Use of standard templates, roles, etc.
- Raise level of maturity: CMM 1,2,3, ...

SPI

Advantages

- Global project clarity
  - Agreed goal
  - Status monitoring
- New project support
- Shared organisation and terminology
- Commercial promotion

SPI

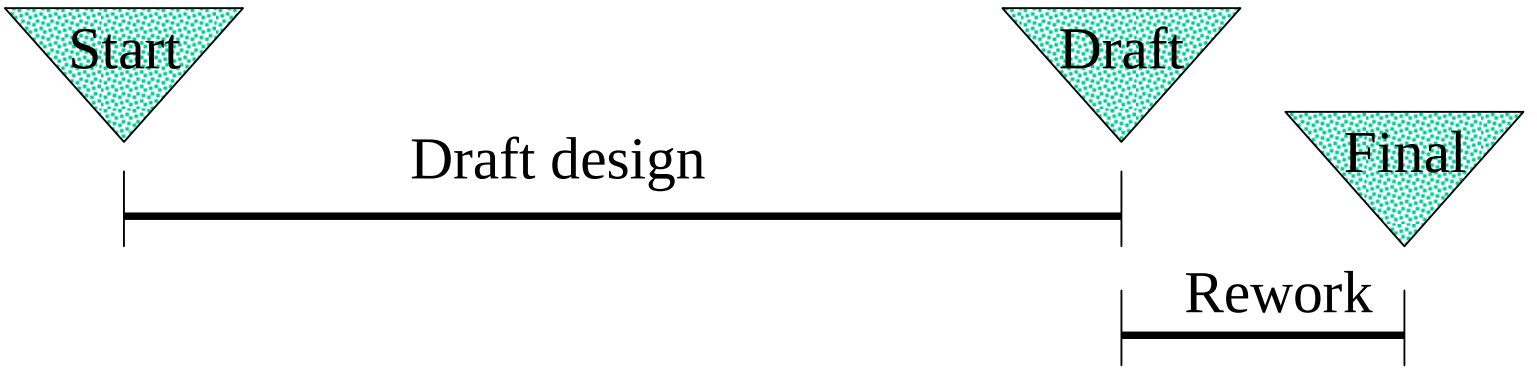


Risks

- Pro forma & mechanical
- Think & discuss = waste
- Does not fit well in feasibility / prototyping phase
- Milestones / docs: *existence vs quality*
- Simplistic people-to-function mapping: *anyone should fit*
- No focus on improving effectiveness of people
  - Attractiveness
  - Skills & Competences

Risk example

Planning: 8 weken design

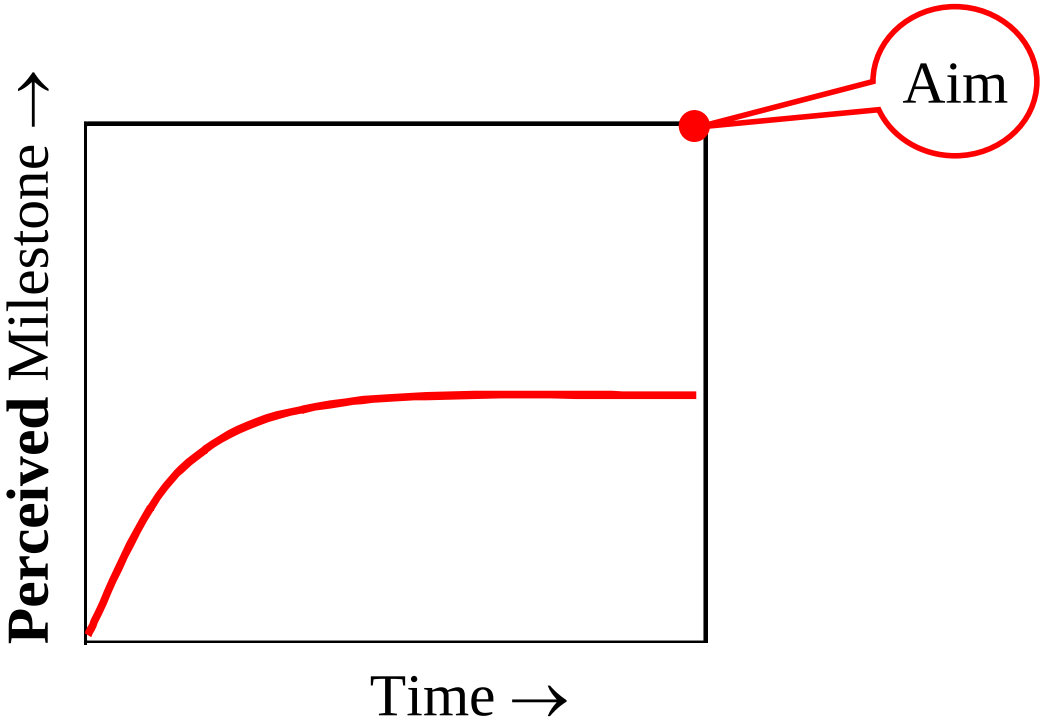


Local risk example

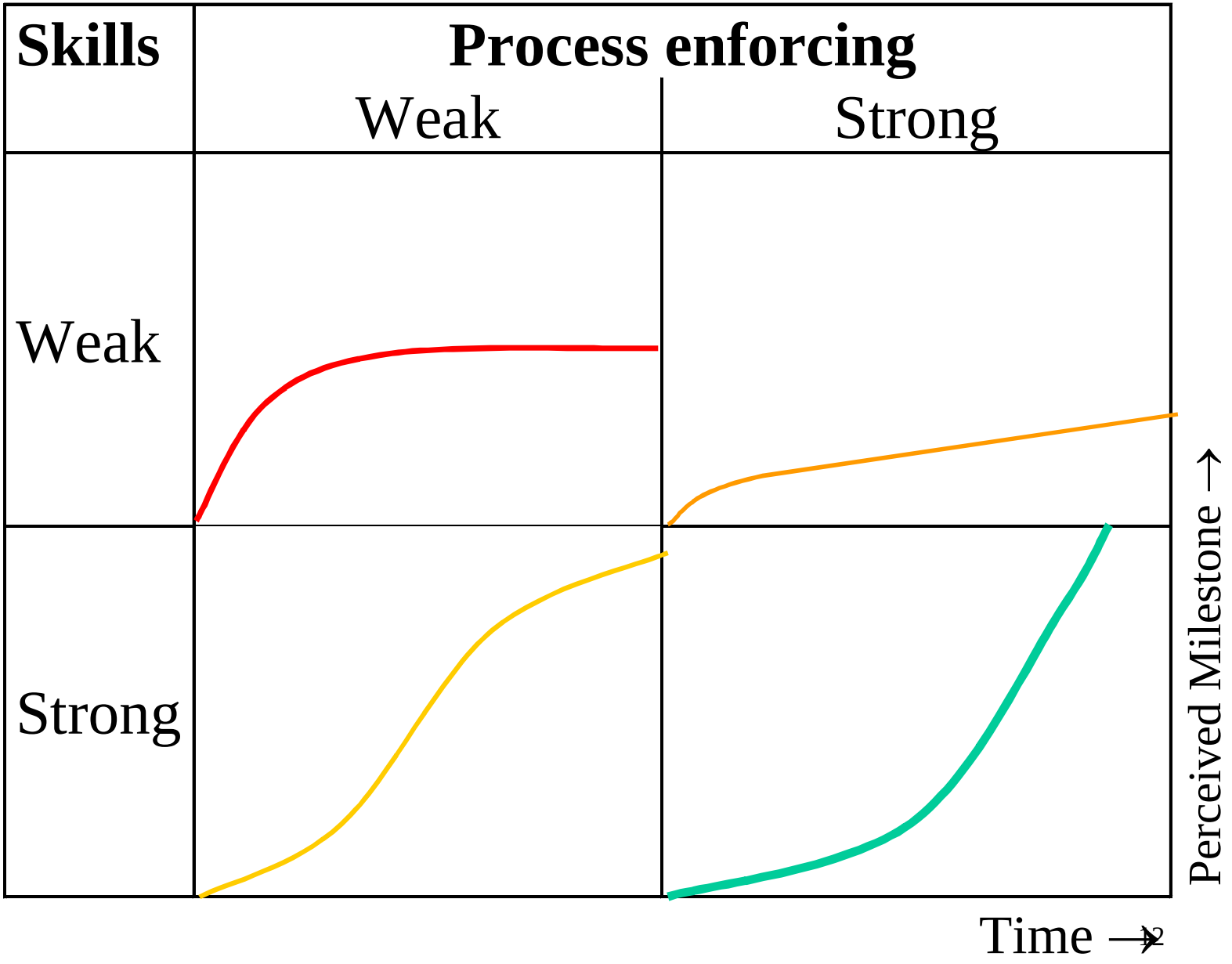
New person, feeling rather uncertain

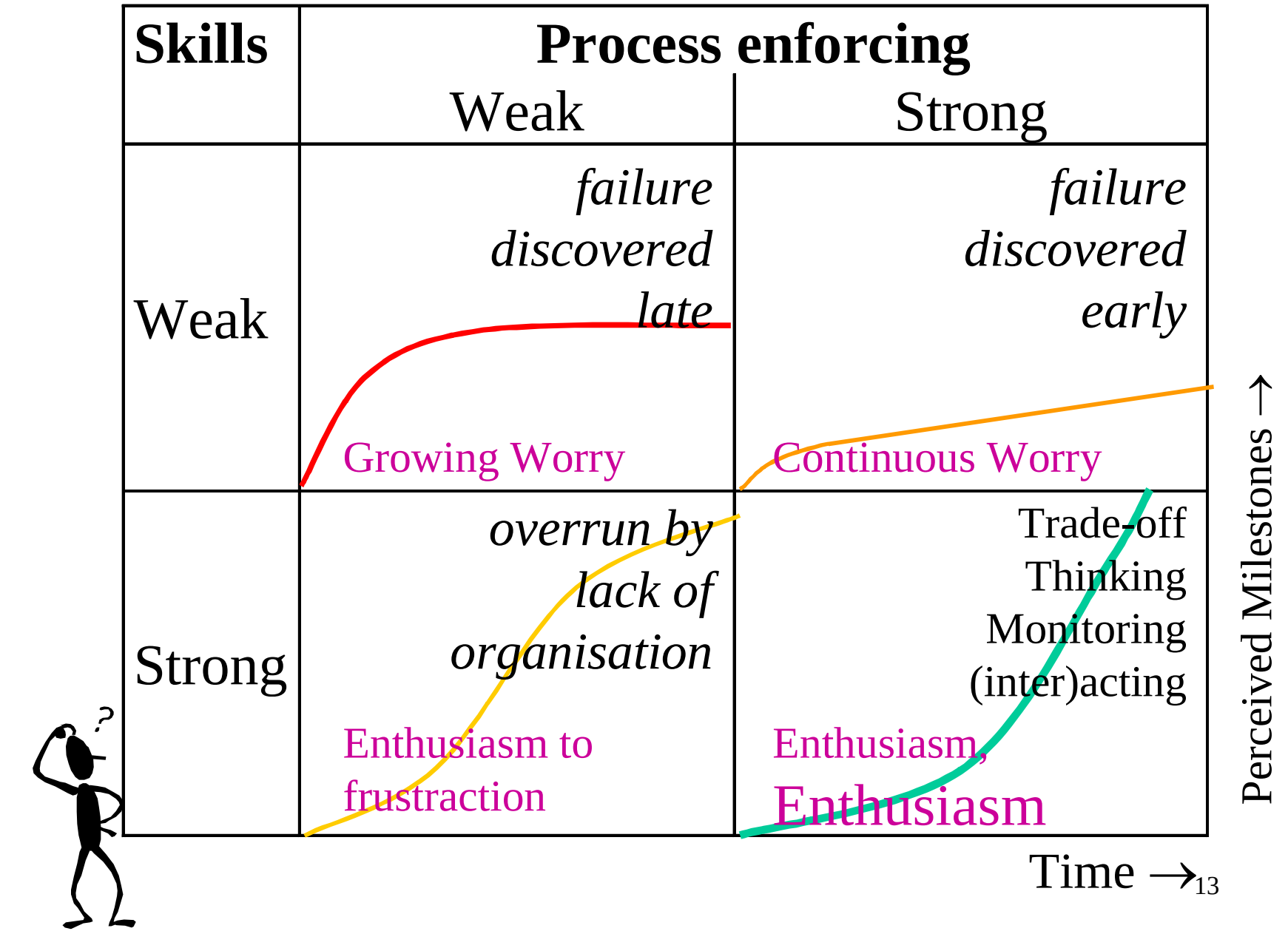
- Works for 8 weeks on a design document
- After 6 weeks, the draft is reviewed
- Contents turns out to be completely wrong
- A quick update is done in 2 weeks, to fix some things, but the deadline is more important
- Expensive repairs are done during coding, or testing, when unlucky.

2. Process and skills: when both weak



Perceived Progress in Milestone


Skills
Process enforcing
Weak
Strong
Weak
Strong
Perceived Milestone →
Time →


Skills
Process enforcing
Weak
Strong
Weak
Strong
failure discovered late
failure discovered early
Growing Worry
Continuous Worry
overrun by lack of organisation
Trade-off
Thinking
Monitoring
(inter)acting
Enthusiasm to frustraction
Enthusiasm,
Enthusiasm
Perceived Milestones →
Time →
?

3. What are main SW Skills

- Ability to Master Complexity
  - Abstraction, Simplification, Modelling
  - Separation of concern; major vs minor
  - Bring structure in chaos: guts to fail and redo
- Judge conflicting issues, handle uncertainty
- Experience
- Communication communication communication ...
- Domain knowledge: less important, since easy to build up compared to the above.

4. What is coaching

- Personal guidance to support skill development and output improvement.
- Coaching takes time (and saves time and $).
- Stimulating bi-directional communication.
- Technical: master-apprentice (m-a)
- At each level: one is m-a at the same time

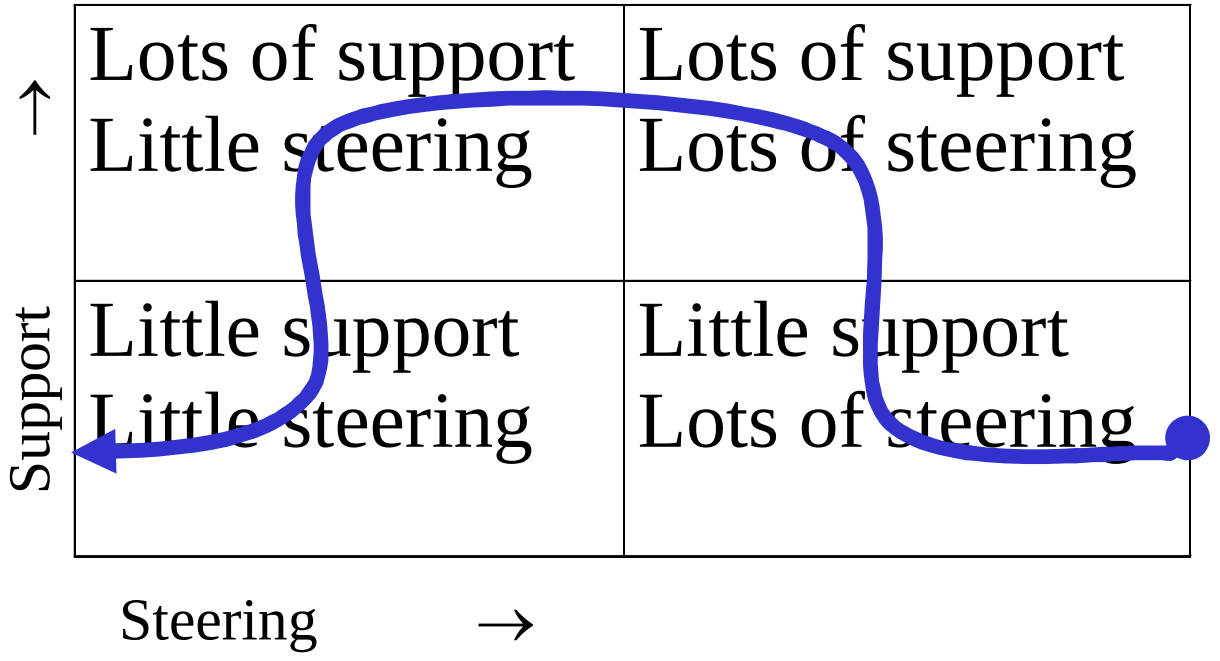
What is coaching

Dimensions:

- Technical
- Organisational
- Personal (inter- and intra-)

What is coaching

- Situational guidance: for technical part



Improvement by coaching

- Efficiency of people by ***early feedback*** and actively increasing the skill level
- Job satisfaction: no over / underestimation; coaching support; less uncertainty
- Better match between function & people

Who is the coach?

- E.g., Architect, PL and / or GL
  - arrange assignment and time in project
  - coaching also requires skills
- Recursion (see also skill levels)

- Courses & career planning remains group leader responsibility.

5. Skill dimensions

(Kees Gehrels & TK'99)

3 dimensions:

- 'issue / area' size
- Required amount of guidance
- 'Shaping' capability (modify circumstances)

Behind the scene: Communication ...

Elaborated for common design, test, quality and management functions …

Condensed description of the levels (1-4)

1. Contributes to one issue (= e.g. design and implement one module), Fully instructed.
2. Capable of handling one issue. Needs input and control.
3. Handling one issue, Self-controlling, needs some guidance.
4. Handling one issue, Fully self-controlling, coach a junior.

Condensed description of the levels (5-8)

5. Handling multiple issues in area, Fully self-controlling, coach juniors in coached leadership.
6. Full leadership, Capable of shaping all issues in one area (e.g. overall design in one project).
7. Capable of shaping issues in a very complex, or multiple, areas.
8. **Initiates shaping** multi-area (multi-project, multi-domain) issues, full leadership: **shape externals**

Skill level and functions

	Design	Management	Test	Quality
1				
2	SW Designer		Test Engineer	CM Engineer
3				
4	sr. SW Designer		sr. Test Engineer	
5		Team Leader		Quality Officer
6	System Designer	Project Leader		
7				
8	Architect	sr. Project Leader		
9				

Conclusion

- The employee as a stakeholder has been poorly served by SPI so far.
- Explicit personal coaching in projects improves employee and customer satisfaction.
- Coaching helps judging and improving the skill level. Matching function and persons better also contributes to the above.
- An indication of skill dimensions was shown.

Discussion

- Do you feel skills are a problem in your project?
- What is the ratio experienced / junior in your project?
- How much attention is given to skills when assigning project activities?
- Do you have coaches explicitly assigned, and is time reserved for this work?