

Industry Master; Engineering Work Experience part-time Job

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Abstract

The Systems Engineering Master education in Kongsberg requires from students that they work part-time. This document describes the needs and expectations for the part-time job. The main purpose of the part-time job is that the students build up engineering experience. This experience helps to appreciate Systems Engineering teaching, it facilitates their further personal development in becoming broader engineers.

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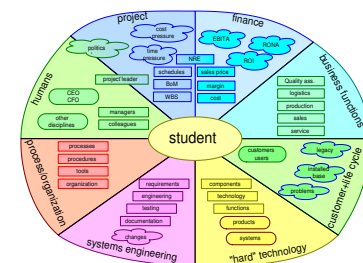
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Objectives of this Presentation

company HR and supervisors

provide inspiration by examples

provide background for part-time job

to benefit the most as company from IM student-employee

to get the most benefit for the competence development of the IM student

student

provide background for part-time job

provide support by examples

to provide the most value to the company

to achieve maximum personal growth

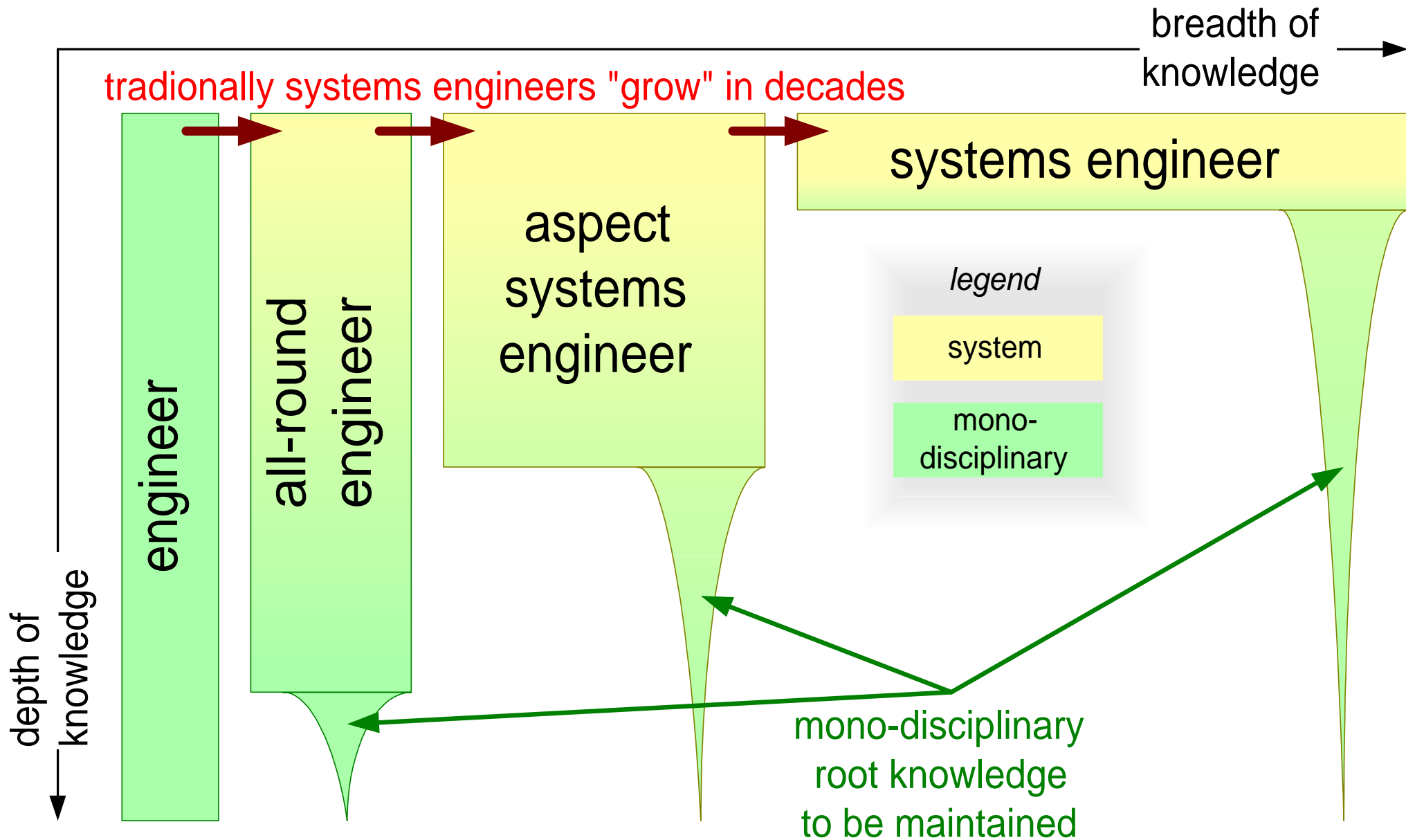
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share how to provide students with experience

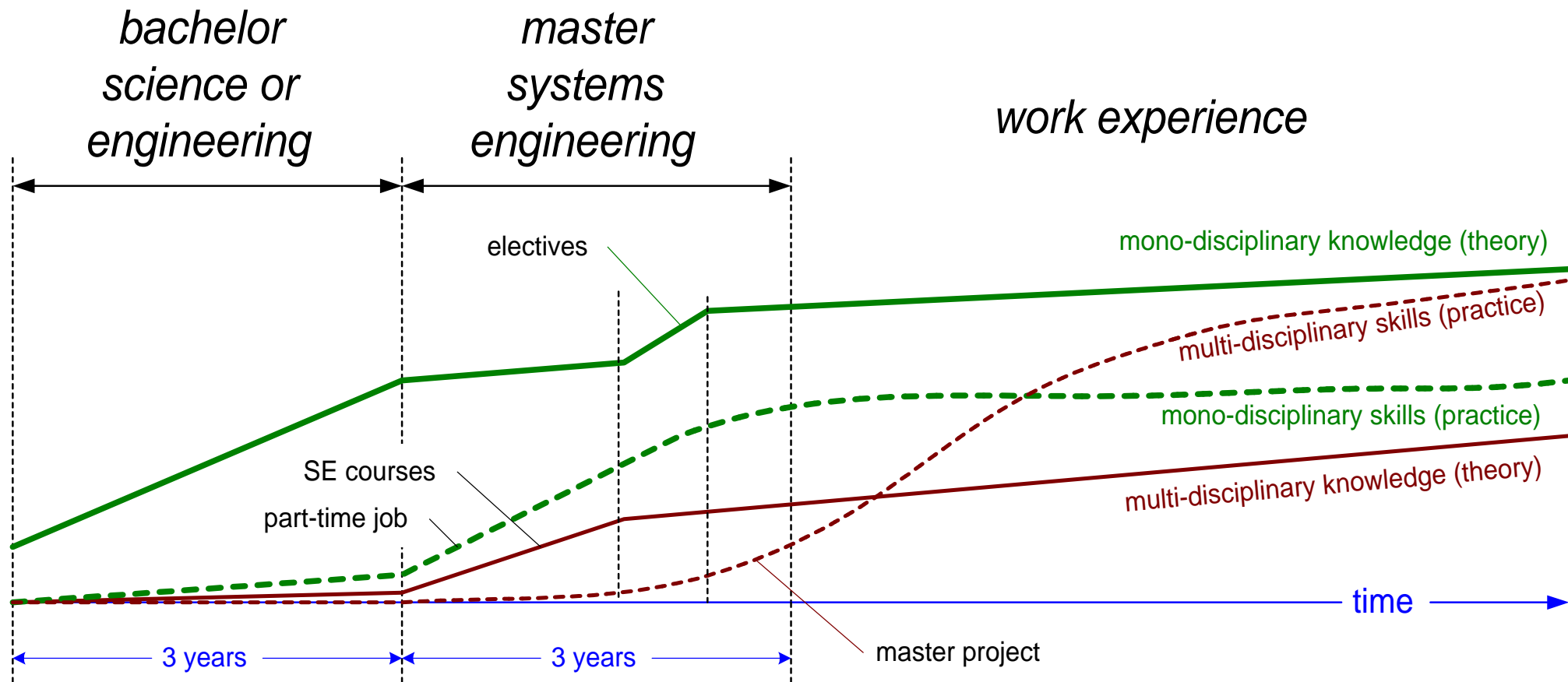
to ensure industry involvement

to ensure industry value

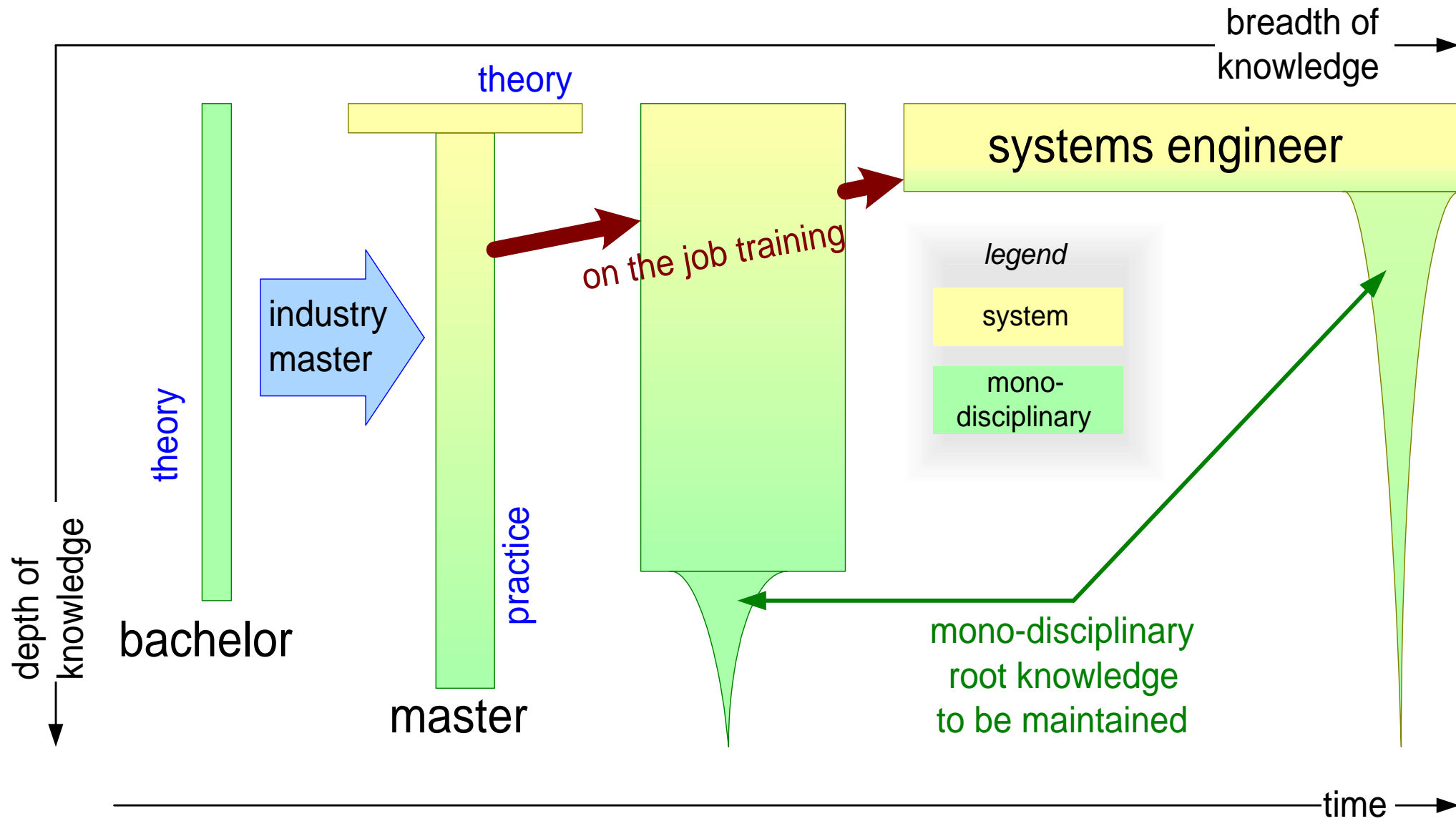
Evolution from Engineer to Systems Engineer



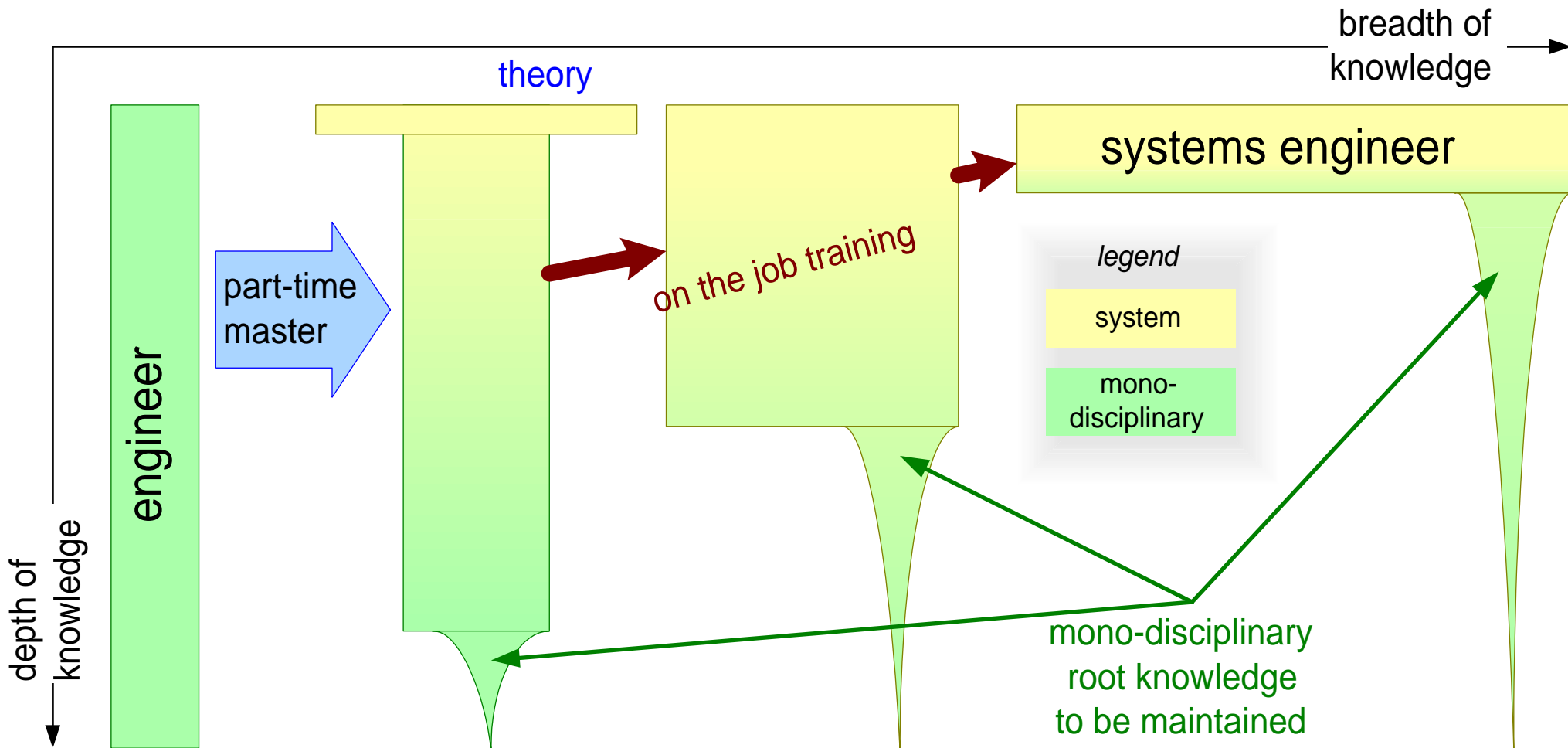
Industry Master time line



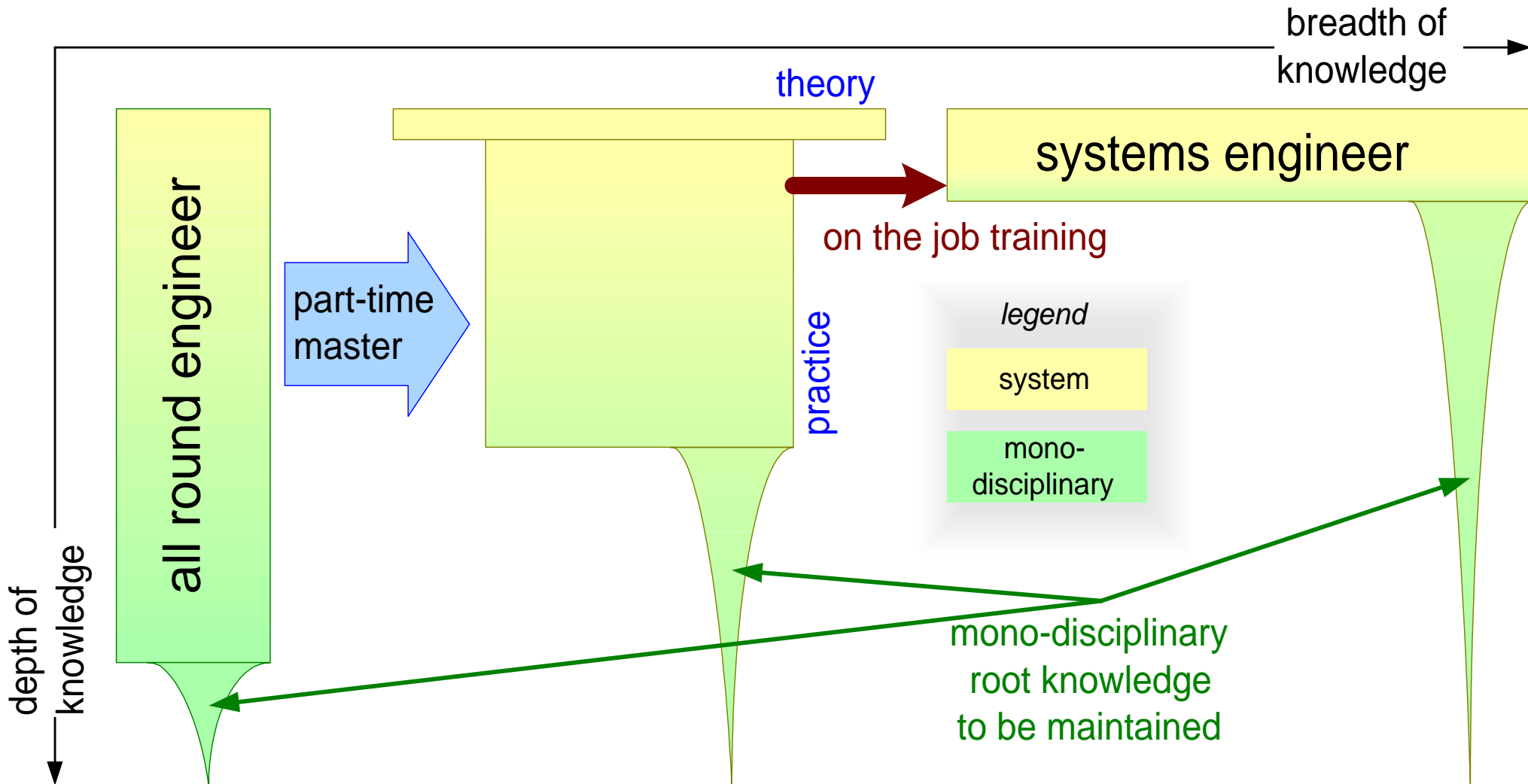
Intended growth of Industry Master students



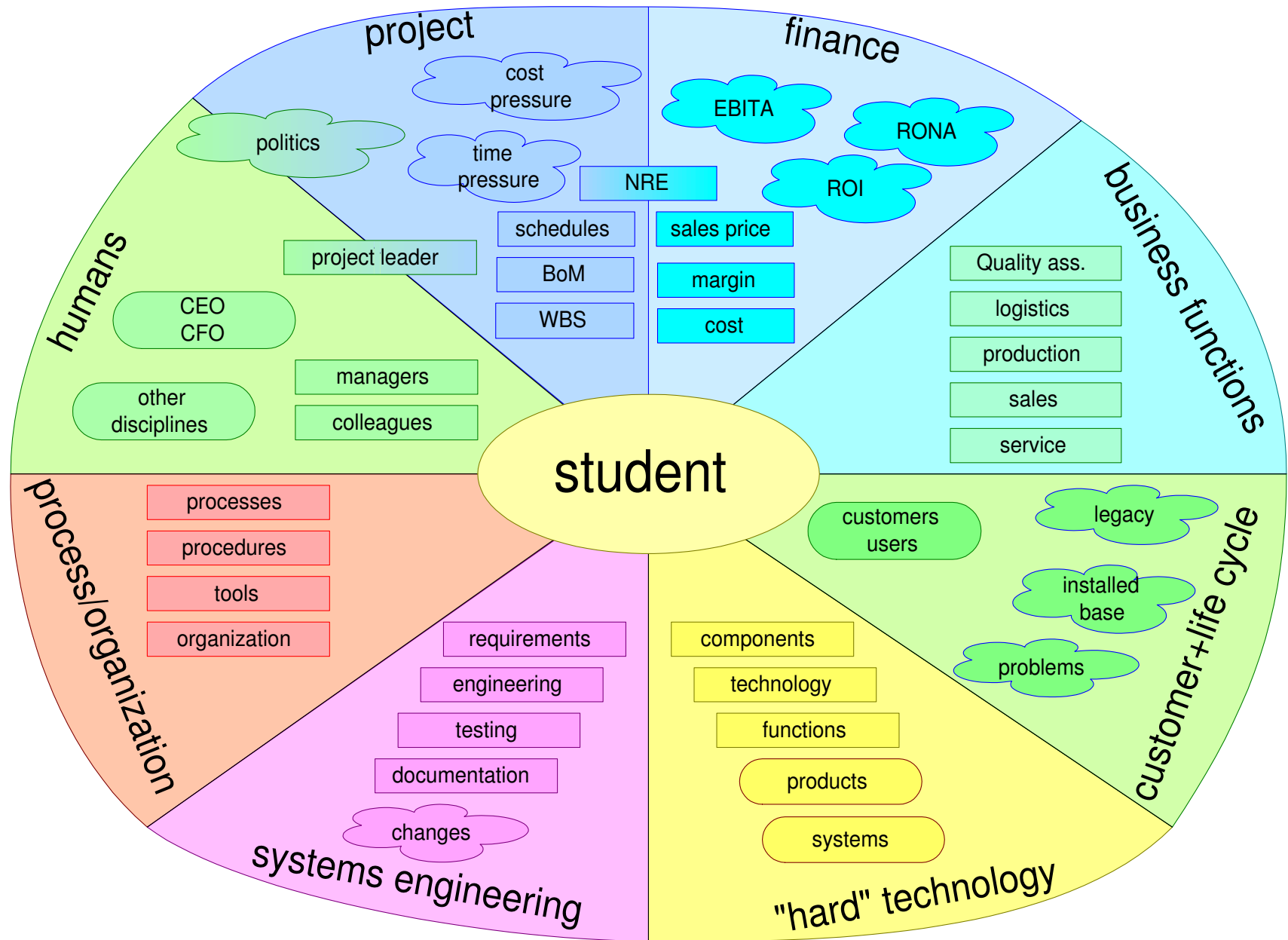
Intended growth of Part-time student (1)



Intended growth of Part-time student (2)



Overload of Impressions for Fresh Bachelors



What is the employer expected to do?

- + Treat industry master as "normal" engineer.
- ! Taking part-time into account.
- + Provide limited scope engineering tasks.
- + Allocate capacity and responsibility for work and study related coaching
- + Provide regular feedback to the student
- + Appraise according HR system
- + involve students in meetings and business processes

What does the employer get in return?

- + normal engineering tasks are being done
- + inquisitive employee
- + broader and productive engineers tailored to own needs and domain
- + long term more systems engineers

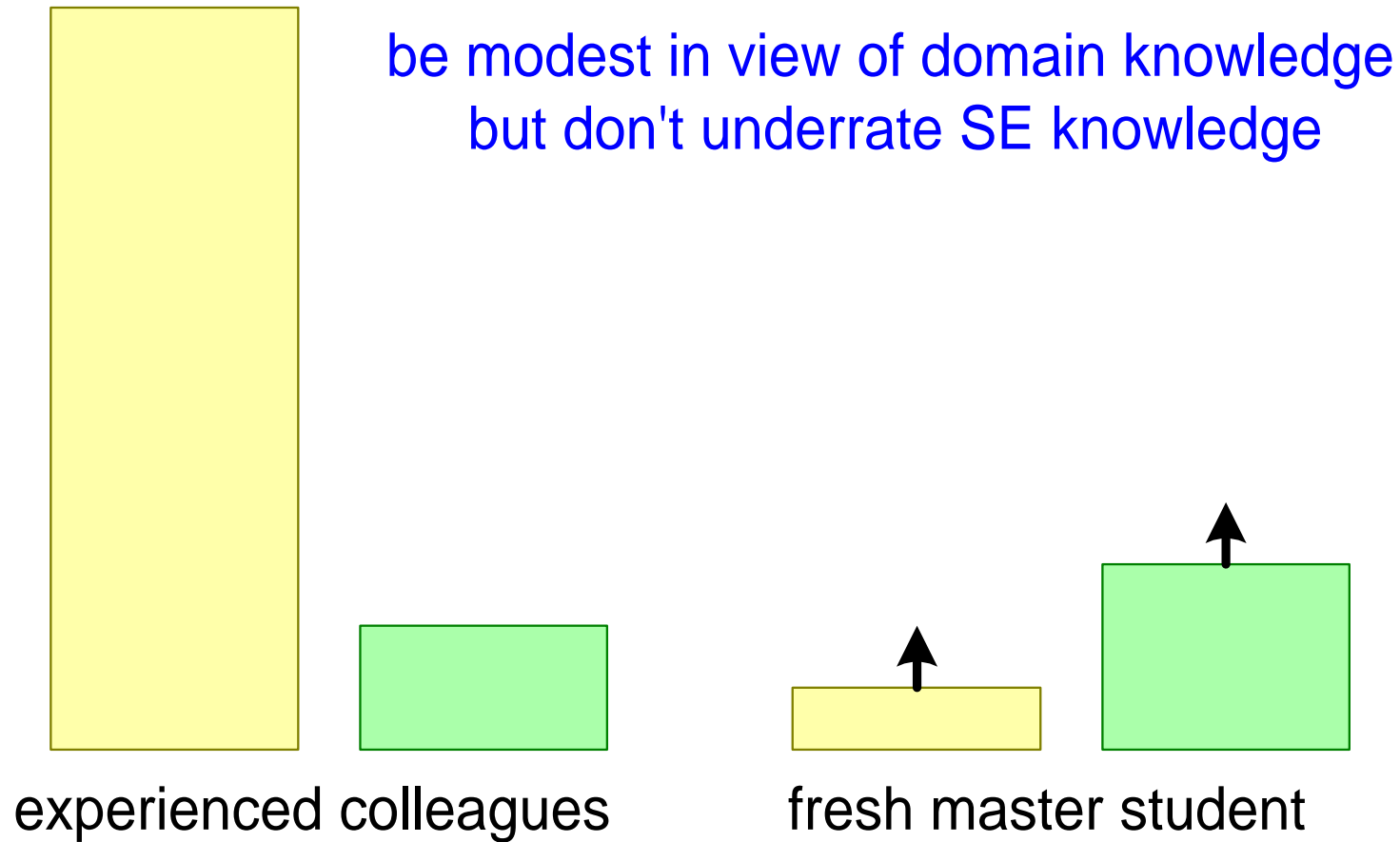
What is the employee expected to do?

- + to perform normal engineering tasks
- + to be inquisitive, curious, wondering
- + to be cooperative
- + to work hard (it is more difficult to deliver part-time)
- + to reflect on theory and practice of Systems Engineering
- + to apply as much exercises and home work on local situation

What does the employee get in return?

- + building up engineering experience
- + appreciation for Systems Engineering methods and techniques
- + a rich frame of reference
- + personal development

IM students and older Colleagues



legend

domain

SE

Roles

company supervisor

keep in contact with BUC

work related

what tasks, duties

when, how much time

how

feedback on results

embedding in organization

study related

support to find right:

means, people, documentation

stimulates reflection

monitors growth

student

work

study

try-out SE techniques and methods in job (low-key)

apply exercises and home work on local situation

reflect

attend education and workshops

keep in contact with supervisors and BUC

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provide education

provide workshops:

monitor growth

monitor SE relevance

keep in contact with HR, supervisor, and students

What is Competence?

Attitude (perseverance, faith, critical, constructive, etc.)

train

Ability (know when to use what skill and knowledge)

apply/use often, experience

Skills (calculate missing angle, calculate hypotenusa)

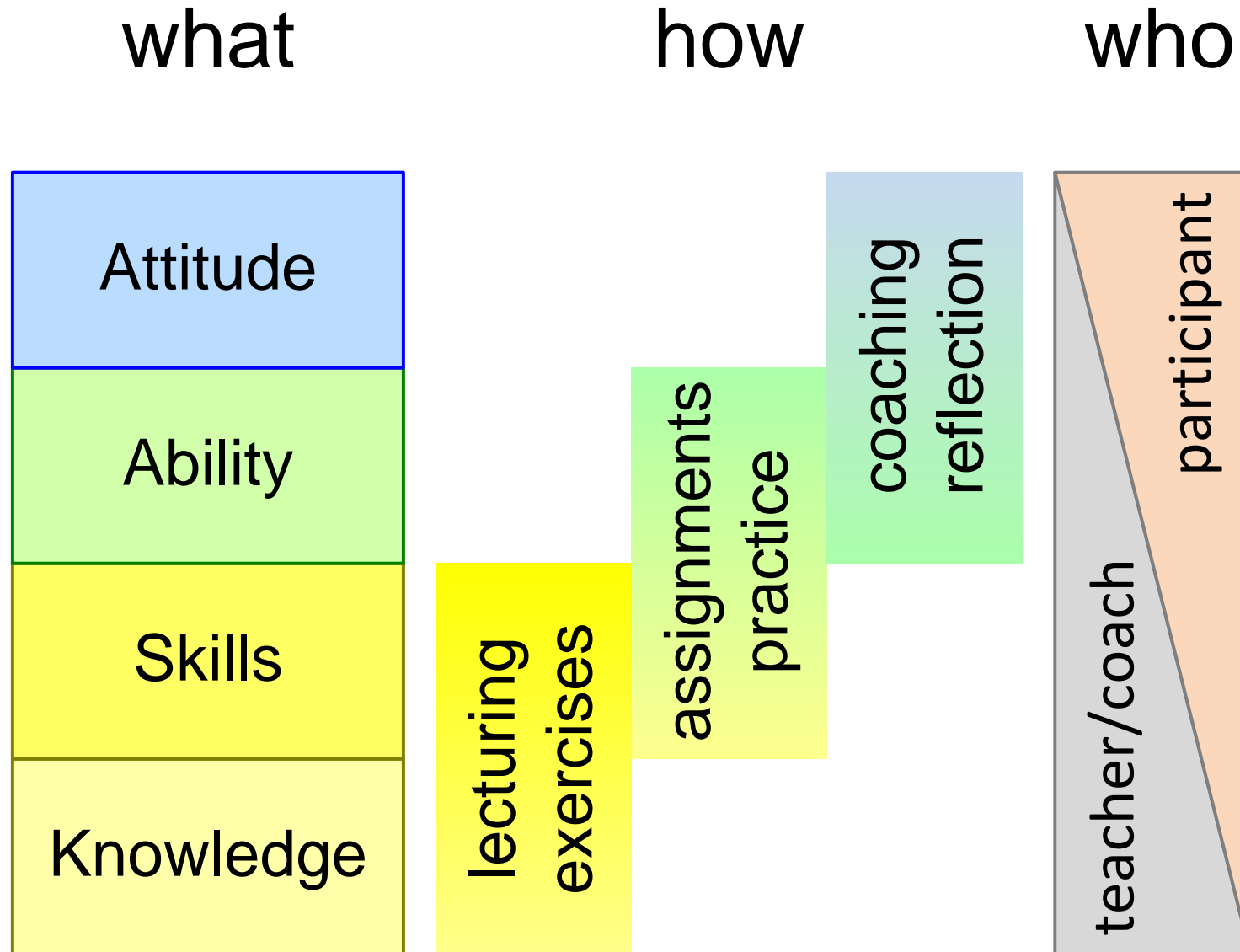
exercise

Knowledge (triangle has 3 corners, sum of angles is 180 degrees, Pythagoras $c^2 = a^2 + b^2$)

learn

Competence = Knowledge + Skills + Ability + Attitude

Competence Program Partitioning

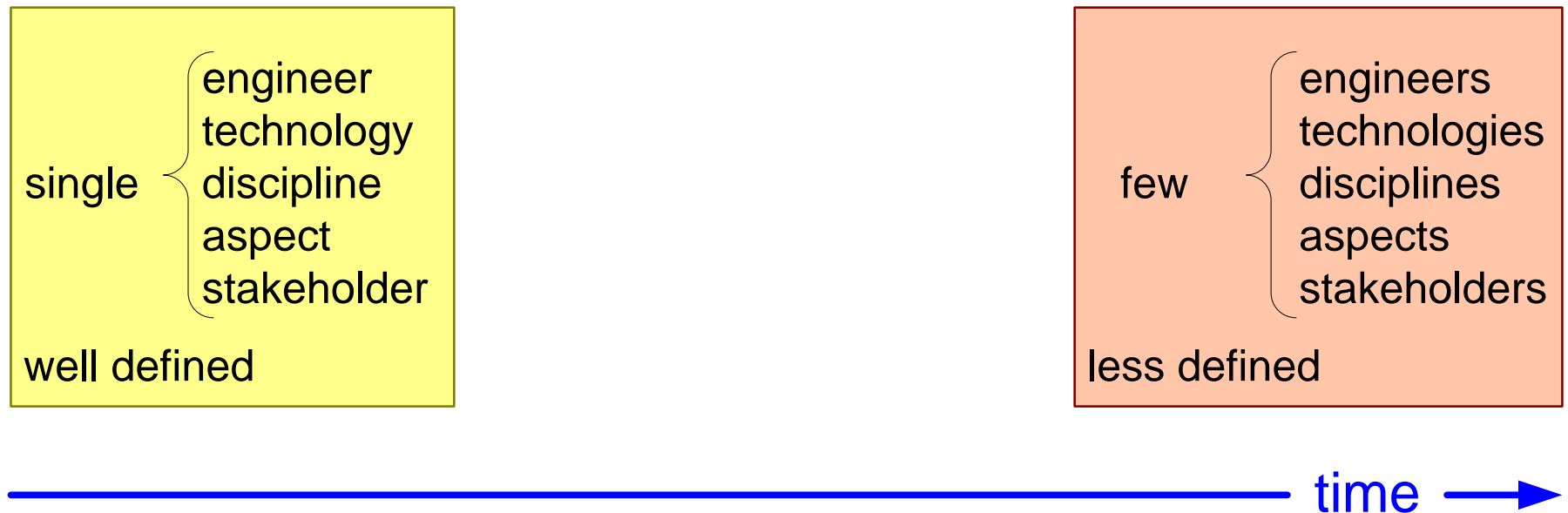


typical engineering tasks

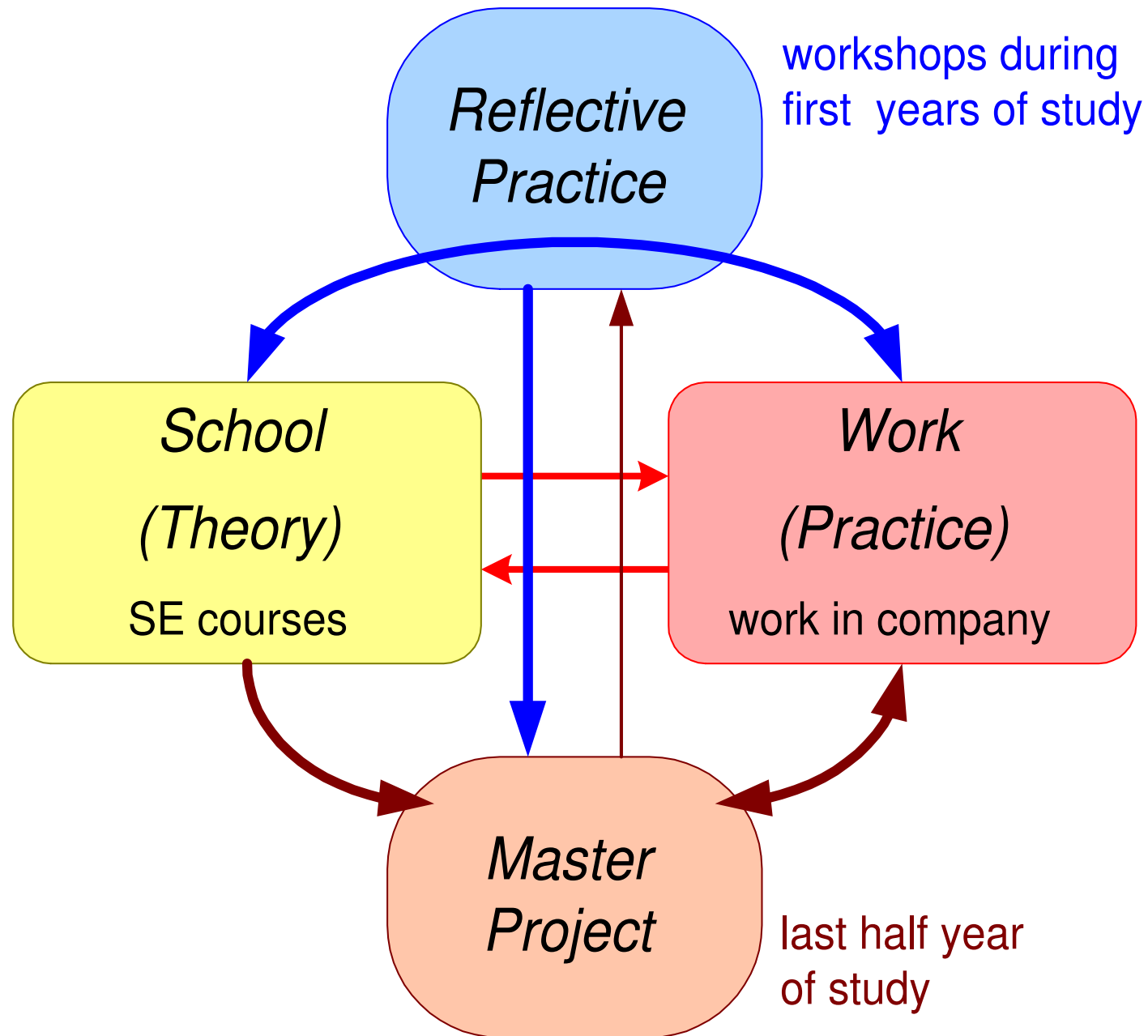
1. make minor change(s) to component or function
2. make sizable change(s) to component or function
3. add feature(s) or function(s) to component
4. execute tests at subsystem level
5. participate in requirement review at component level

Task Evolution

tasks evolve, similar to other new engineers



RP: Stimulate Students to Relate Theory and Practice



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Exception is information that was already known to the supervisor or is already public

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Why

Who

What

When

How

Where

Example questions for Mentors

What change/feature/... is asked for?

What are the requirements for this change/feature/...?

Who is asking for it?

Why is that stakeholder asking for it?

What are the needs and concerns of this stakeholder?

When is the deadline for this task?

How will the task be realized?

What tools, methods, techniques have to be applied?

What company processes apply?