

# Industry and Academia: Why Practitioners and Researchers are Disconnected.

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## Abstract

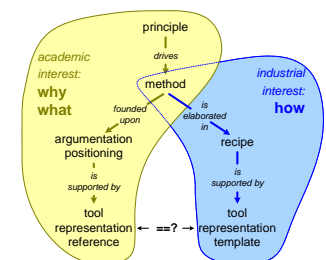
The industrial world and the academic world have grown far apart. The distance between the worlds primarily originates from different goals and different means of support. This is a problem in the areas of systems engineering and multi-disciplinary design. These areas are relatively young, providing lots of opportunity for research. Education in this area is scarce. Publications are tangible examples of the gap between the two worlds.

In this paper we discuss the needs of both communities with respect to publications, education, and research. The mutual understanding of each other's needs may help to bridge the gap between academics and industry.

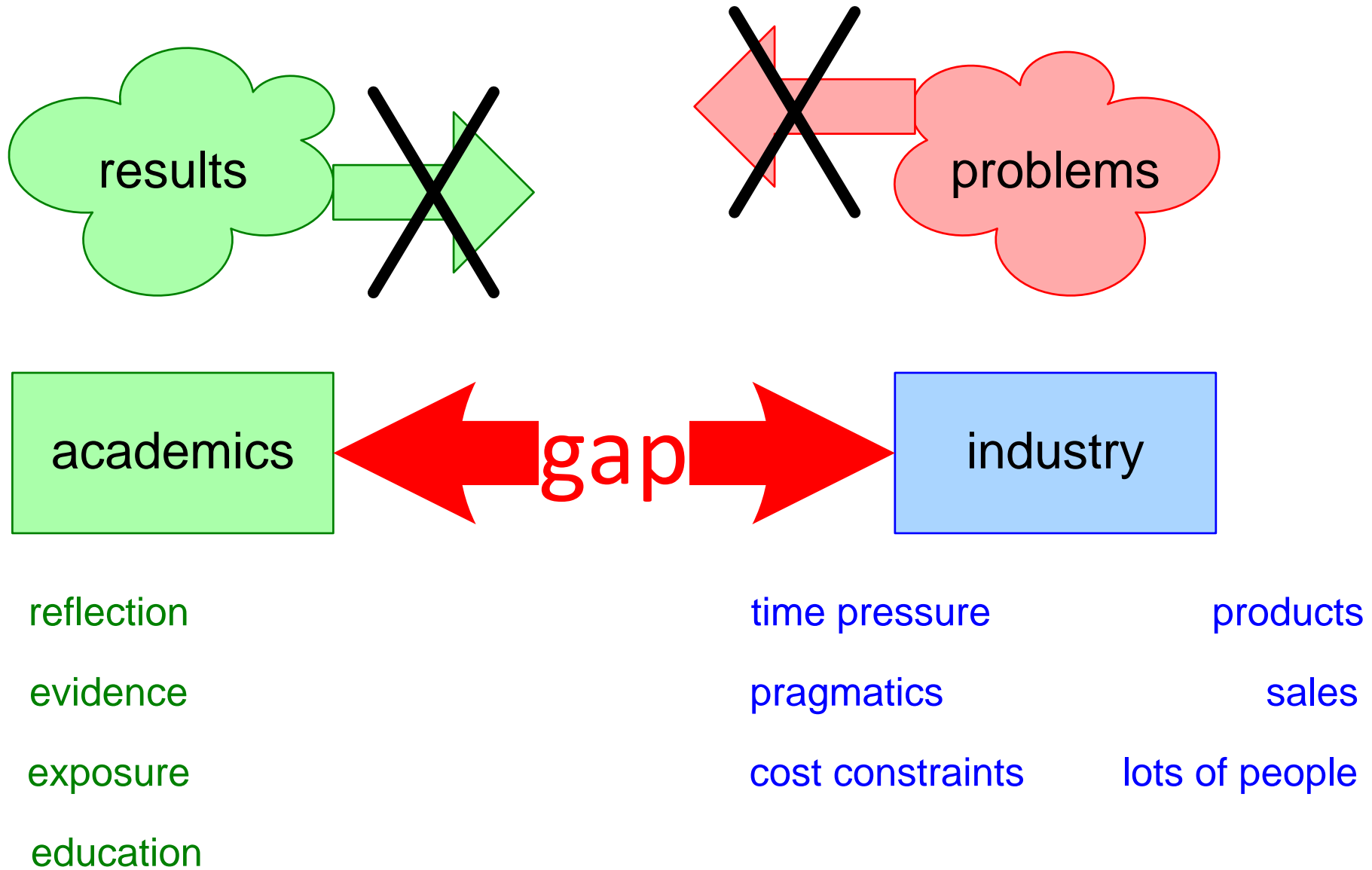
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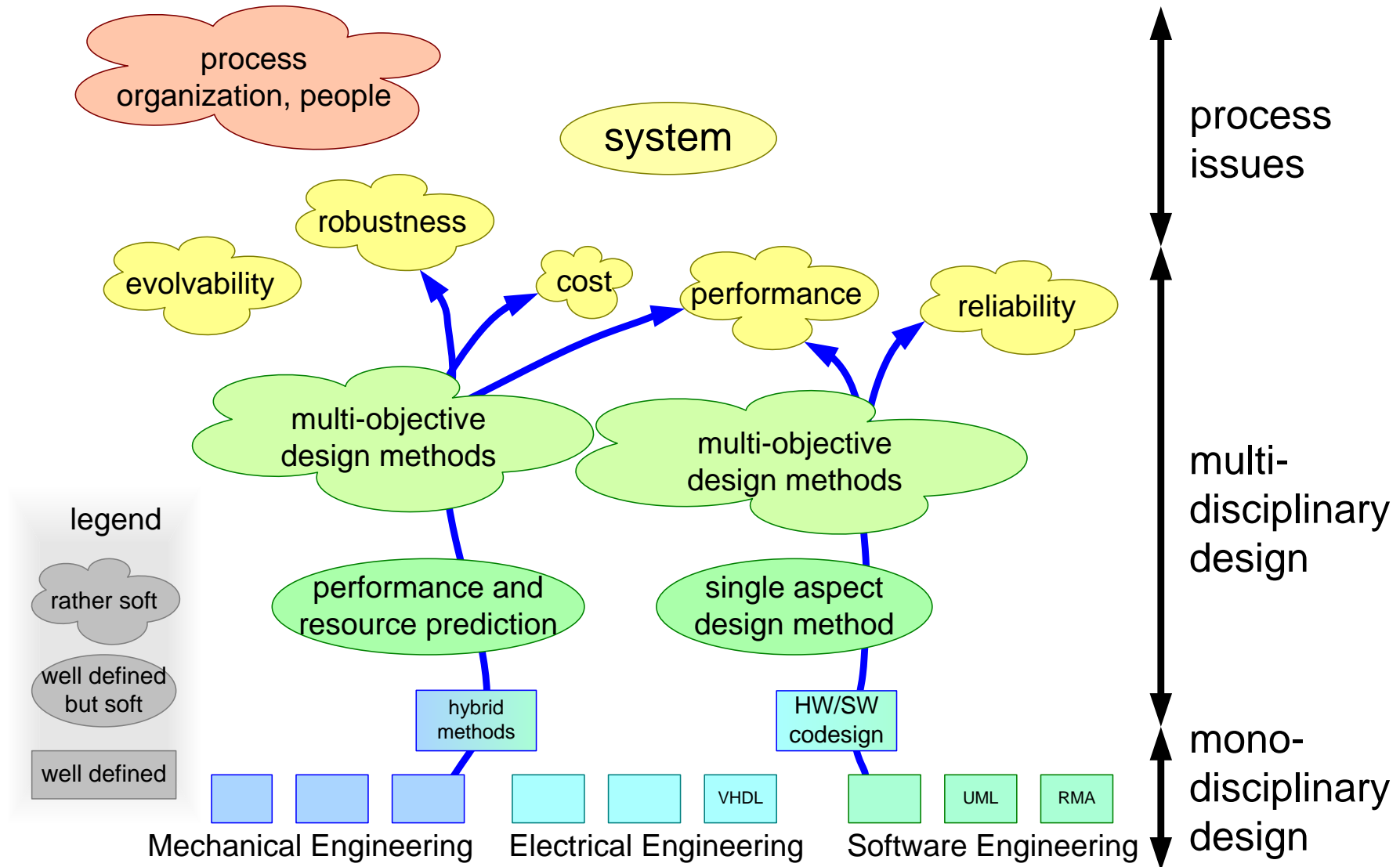
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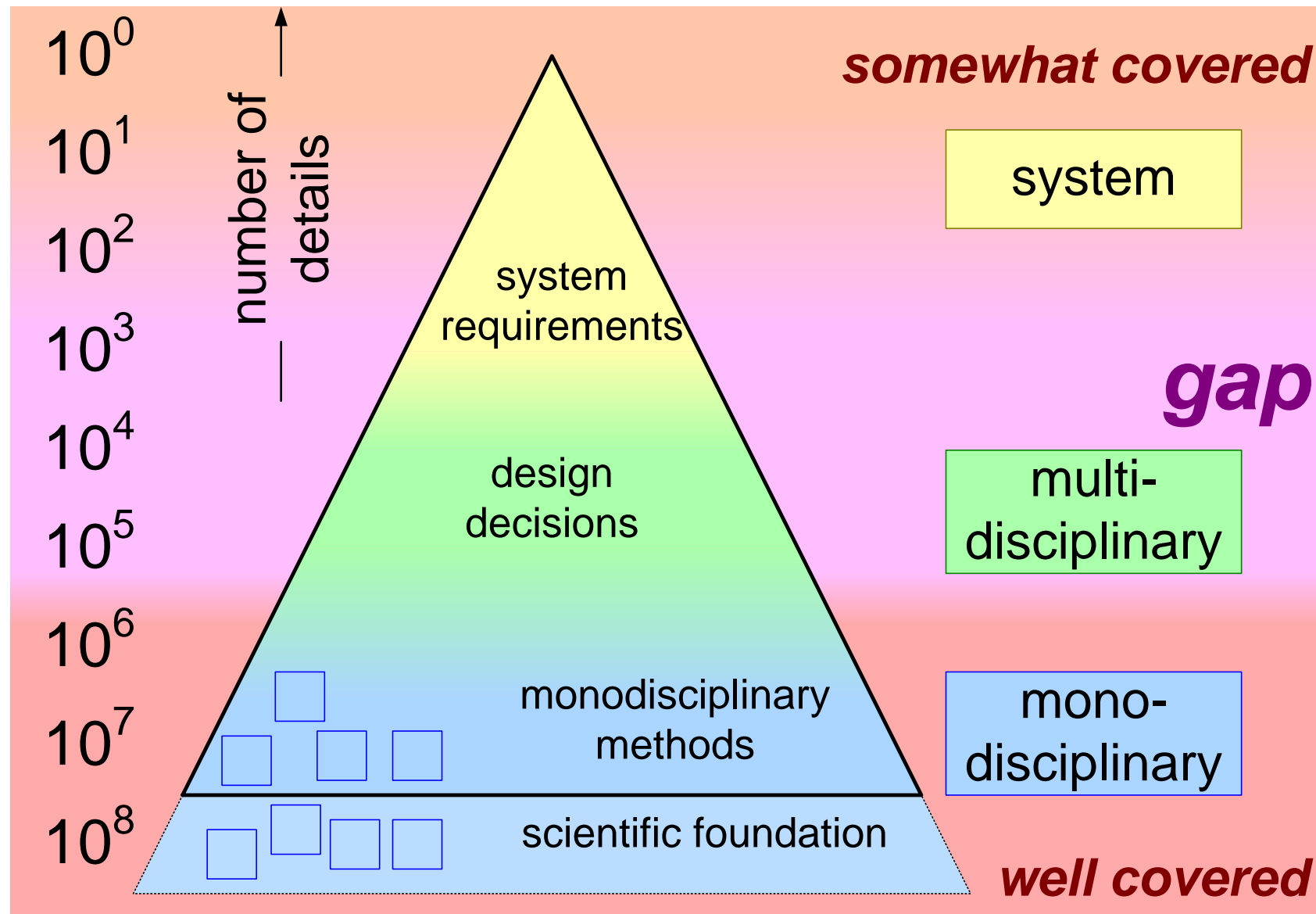
# Practitioners and Researchers are Disconnected



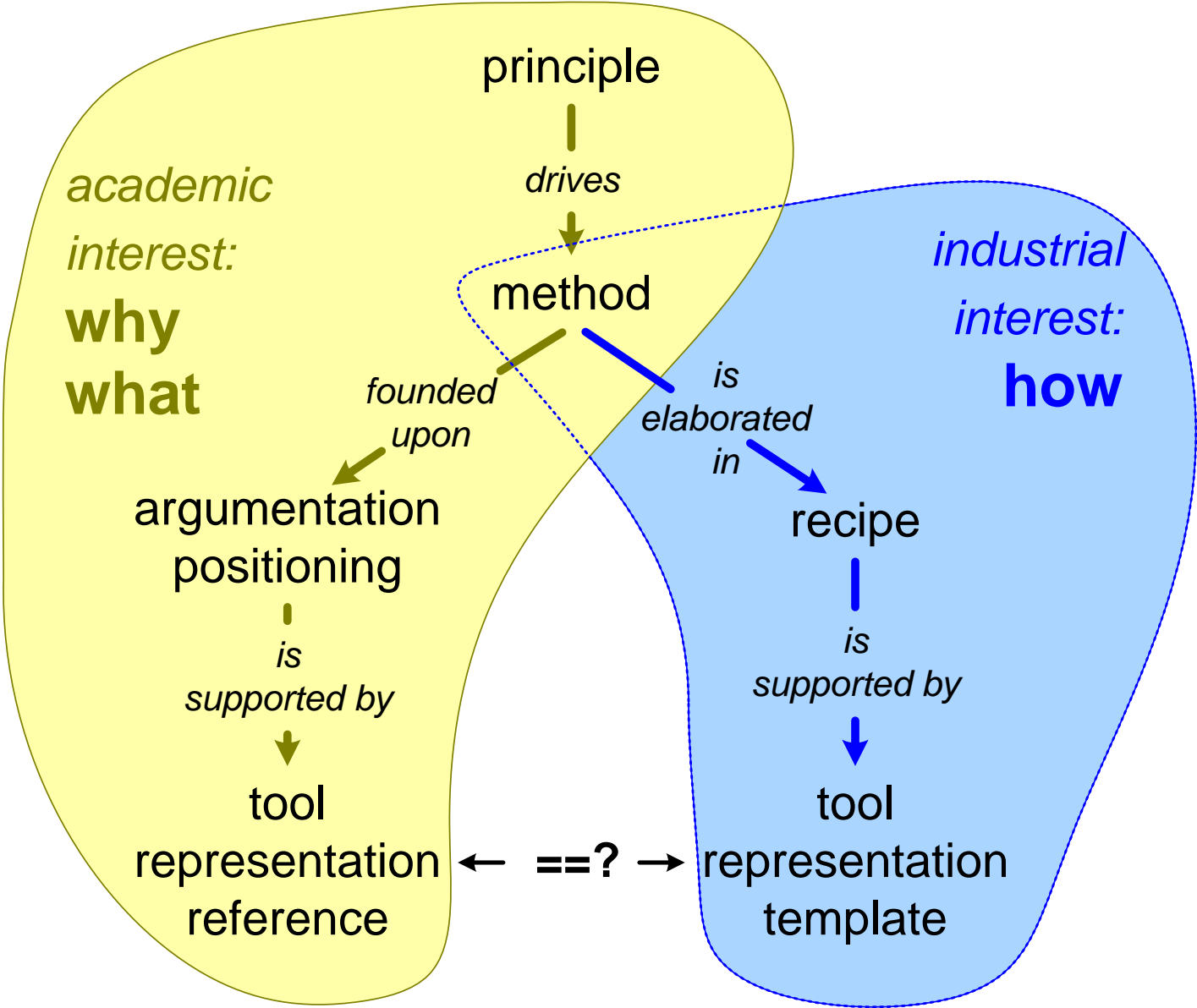
# From Mono-Disciplinary to System



# The Gap-Size is Multiple Orders of Magnitude



# Method Interest is Shared



# Industrial Criteria for Articles

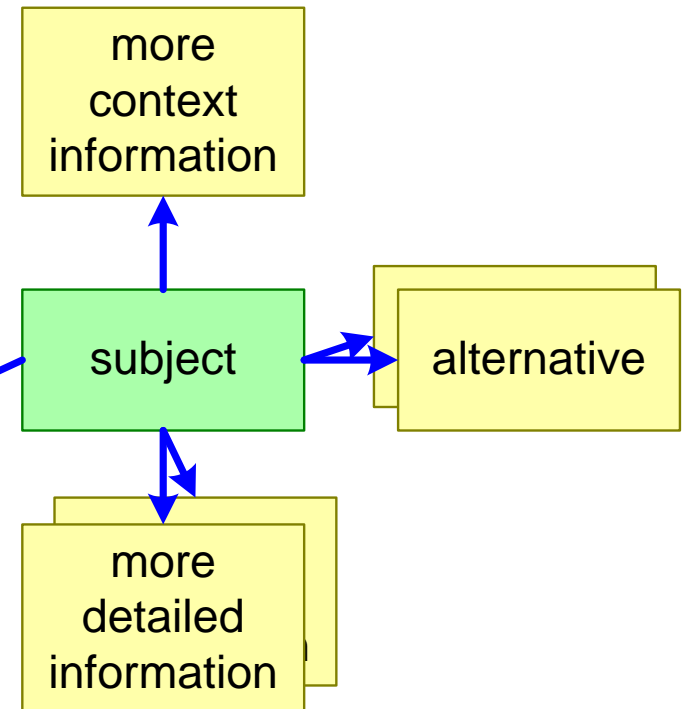
subject  
industrial relevance of subject  
goal, solution oriented  
how to  
single author  
pointers to related relevant information  
clear description  
juicy description  
understandable  
lots of signal, very low noise level

valuable  
useful

broad  
integral

practical

other contributors are reviewers  
clear responsibility



# Academic Criteria for Articles

subject new original

scientific relevance of subject

knowledge oriented deep

why, what

including reviewers

all contributors are authors

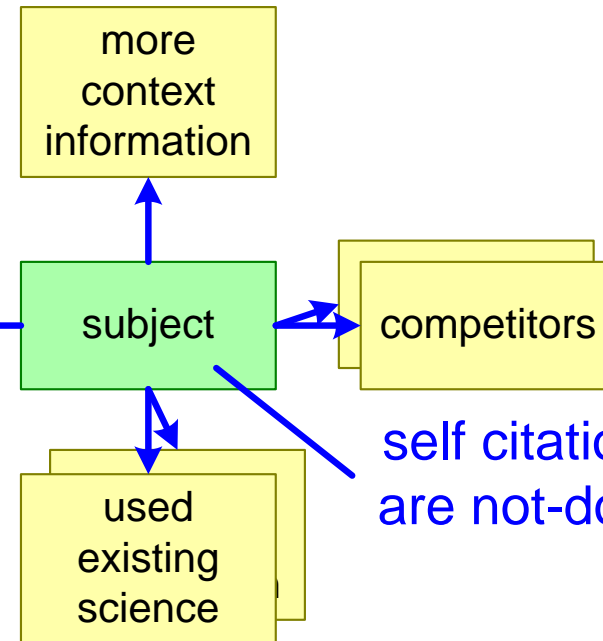
pointers to related scientific work

clear argumentation

every statement is supported by  
reference, verifiable facts

correct language

clear positioning, well linked in  
with existing scientific work



self citations are not-done

blocks broadly interested scientists in development

strong cultural filter in scientific magazines and conferences

# Economic Viewpoint on Publications

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## Industry:

- + writing and reading publications is a cost
- + publications are useful for PR

tension with Intellectual Property Rights (IPR), confidentiality

## Academics:

- + number of publications and citations determines standing and funding

limits change of research area, because you have to rebuild a reputation and to bootstrap background know how



# Comparing the Industrial and Academic Viewpoints

	<i>industrial</i>	<i>academic</i>
relevance	useful, valuable	new, original
orientation	goal, solution	knowledge
content	practical, how to	theoretical, why, what
style	clear, understandable juicy, low noise	clear argumentation, no loose statements
references	service to the reader	positioning in existing science
author	single author	all contributors as author
economic driver	writing and reading = cost public relation vs IPR and confidentiality	funding based on number of publications and citations

writing facilitates overview and understanding

writing milestones help to focus on results

stops endless wandering

# Consequences

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Different publications needed for industry and academics  
some re-use via copy/paste

But how to share information between the worlds?

And how to cross fertilize, how to get inspiration from the other world?

Industry: how to outsource education to academic community?

Academics: how to enter the unknown area?

# Solution?

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The Embedded Systems Institute (ESI) solution:

collaborative research;

seeding for long term (10-15 years) renewed respect