



# Empirical Software Engineering Research with Industry: Top 10 Challenges

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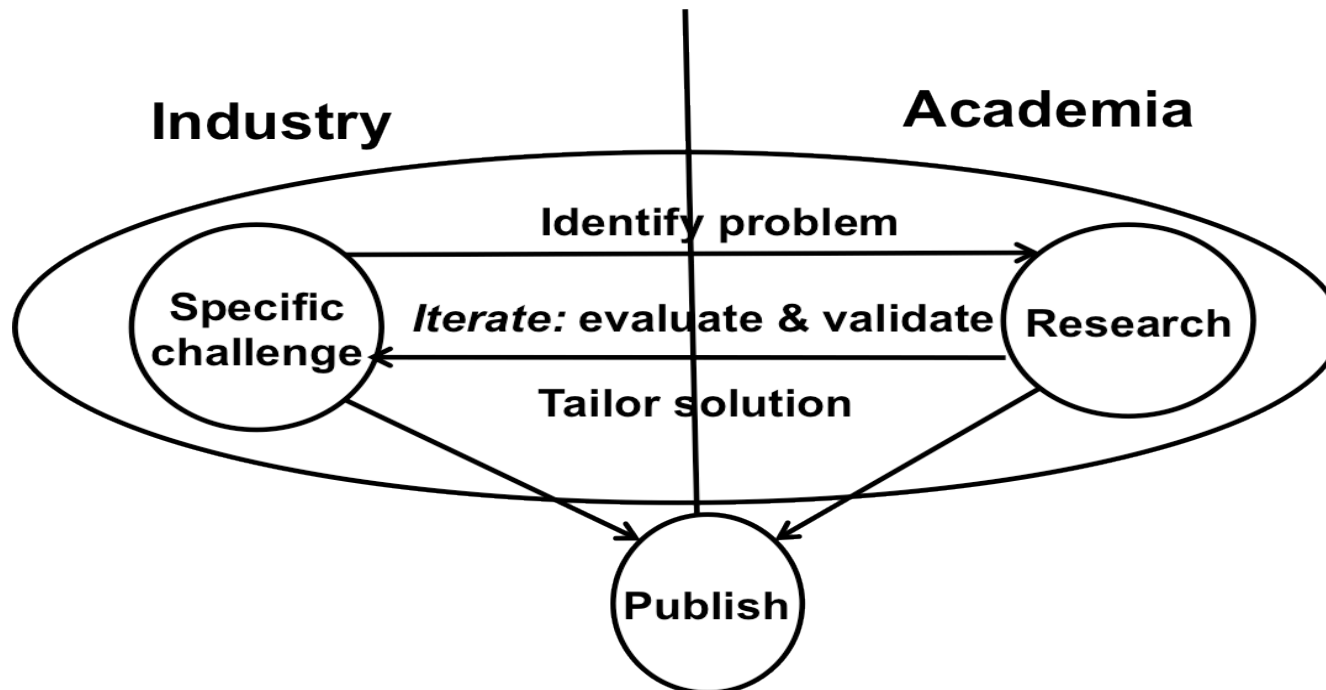
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# Background

Research with industry – a continuous process





# Top 10 Challenges based on 20 Years of Collaborative Work

## Four areas (and 10 non-prioritized challenges):

- **General** – This group relates to challenges to the general relationship between industry and academia.
- **Industry** – Challenges in this group concern specific issues to be addressed at the industry side of the collaboration.
- **Academia** – In a similar way as for industry, there are some specific challenges related to academia.
- **Research** – The actual conduct of the research comes with some challenges too.



# Top 10 – General

- ***Trust and respect*** – Academia has to acknowledge and respect the experiences and expertise of their industry partners in developing industrial software-intensive systems, and industry has to respect the deeper knowledge coming with being a researcher.
- ***Roles and their goals*** – Each individual must try to understand the roles, responsibilities and goals of the other people involved in the collaboration.
- ***Knowledge exchange and not technology transfer*** – It must be understood that knowledge has to be exchanged, not just transferred from academia.



# Top 10 – Industry

- **Management** – If to succeed in a long-term and mutually beneficial collaboration between industry and academia, there must be management commitment (on the right level).
- **Champion** – A champion is always needed, and a person cannot be assigned to be the champion; it must be a commitment.



# Top 10 – Academia

- ***Social skills*** – Physical presence and communication help in building trust and respect, and is almost a prerequisite for a successful collaboration between industry and academia.
- ***Commitment to company needs*** – Companies have expectations. This implies that researchers must be aware of the expectations and be committed to deliver according to them not to disappoint their industry partners.



# Top 10 – Research

- ***Software engineering as a design science*** – The researcher should be able to study and evaluate the problem area to better pinpoint the actual problem, and hence design a solution or improvement.
- ***Integrate into daily work*** – This is a key issue to keep industry interest and commitment, i.e. tie the research into the daily work at any industry partner.
- ***Ability to combine quantitative and qualitative input*** – The researcher must be able to conduct a combined analysis of different types of data.