

Define Your Research Question

BAE 815

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“Asking the right question is half the answer.”

- *Aristotle*

“90% of a research job is done when you find a good research question.”

- *Anonymous*

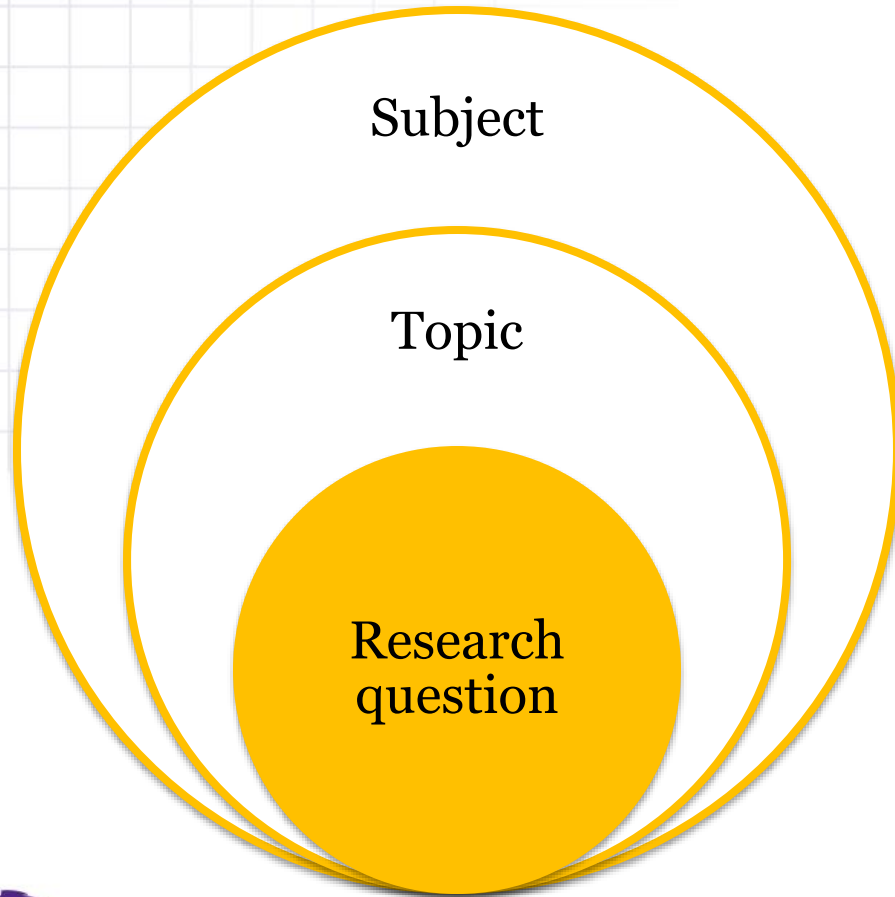
Understand your field

- Know what has been done by others and the current trend
 - Read a few papers every week
 - Follow technology news
 - Monitoring activities of leading research group in your field
 - Think about which organizations would be interested in your topic and look at their websites for their publications.
- Think about the big picture
 - Read outside your area as well

Get advices!

- Talk with advisors, colleagues, experts you meet at conferences, or anyone with practical experience of the topic. Get feedback.
- Consider recent papers that point out directions for future research.

Asking questions about your subject will help you decide on a topic



Asking the question right can lead to asking the right question

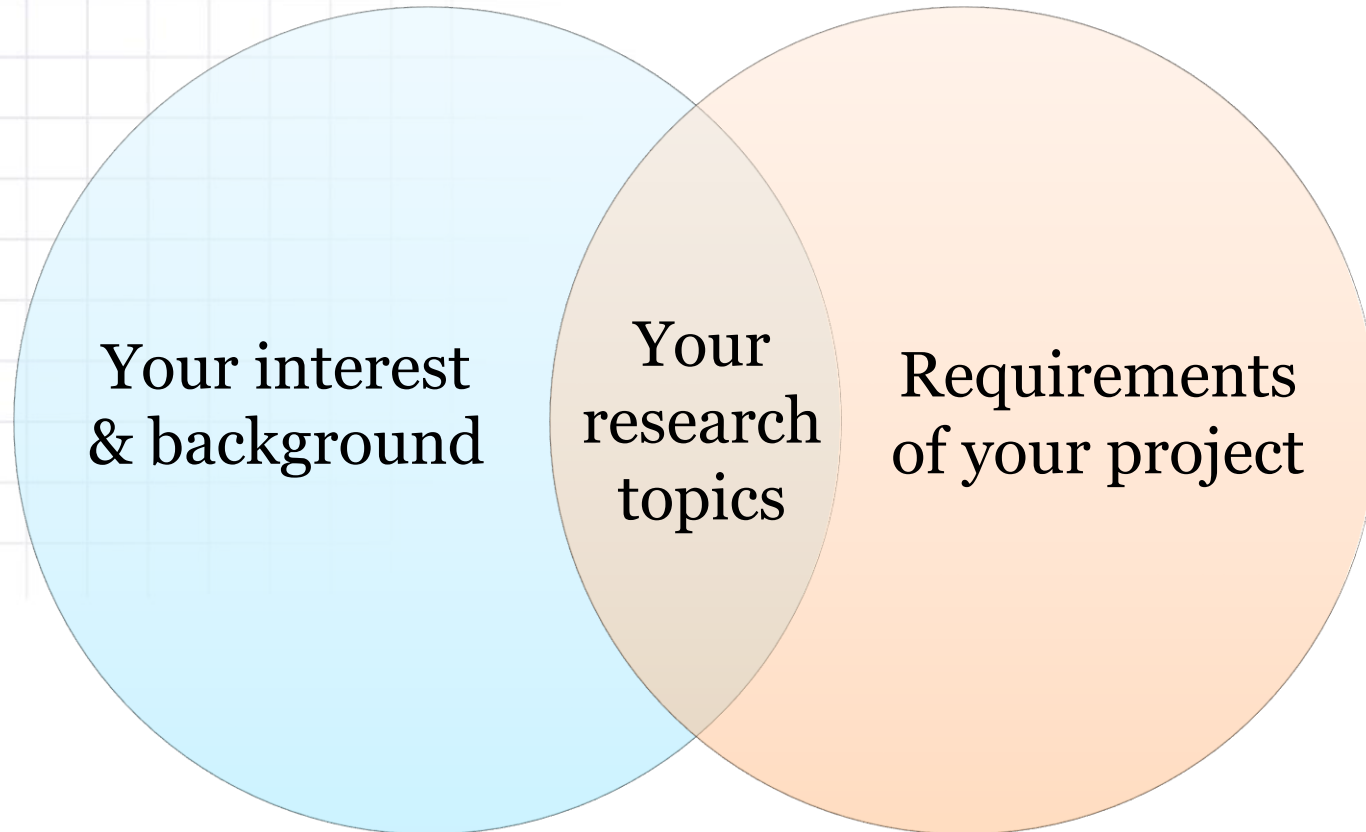
- Who is my audience?
- What do I already know?
- What do I need to know?
- What could my product be?
- What's the benefit of my research?
- Is this a hot area? Will you get a good job in this area after graduation?

Research subject hotspot index

➤ $df(t)/dF(t)$

- $f(t)$ =No. of top papers
- $F(t)$ =No. of total papers

Choosing research topics

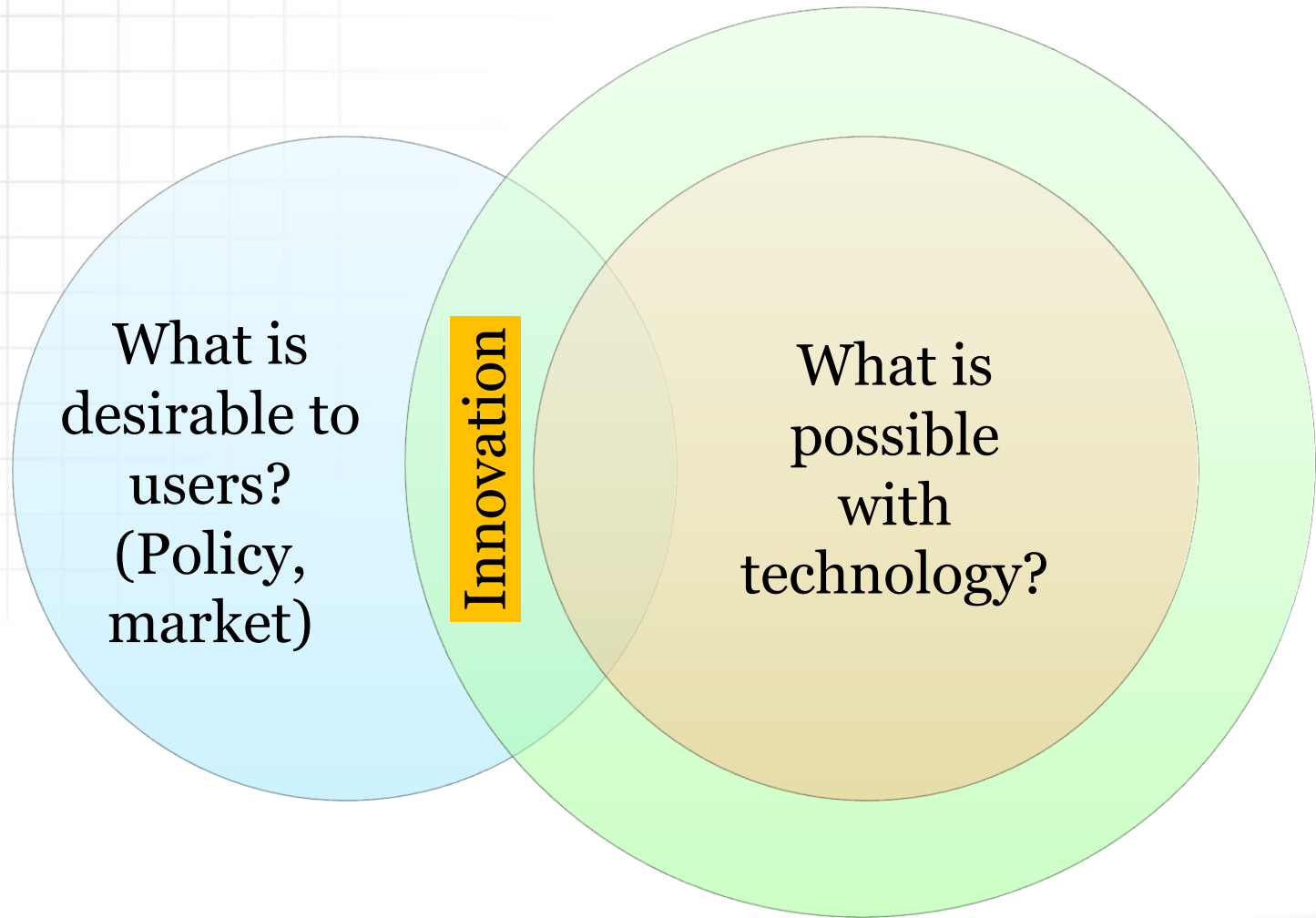


The Topic (Problem)

Is it a significant problem? Is it an old problem or a new problem?

- New problems, or even new areas
- Old problems
 - How have others answered it?
 - How does your study fit in with what others have done?
 - New solution, may from other areas.
 - What's the novelty of your study?

Innovation! Innovation! Innovation!



Think big, but be realistic



- Find a fundamental question which may have a significant impact
- Do not focus on a small hole



- Accept low, satisfied with small gains
- Don't try to do too much in one study

“To do successful research, you don't need to know everything, you just need to know of one thing that isn't known.”

- *Arthur Schawlow*

Best research topics

- After the research, more people will follow you and be doing it
 - you opened the door
- After the research, nobody can improve it
 - you closed the door



From Michael

A viable research question

Address a “critical need”



Have right level of detail or complexity

Pair and share

- What is your potential research topic?
- What do you know about the topic that makes it interesting or significant?
- Examples of research questions on your topic.
- Key terms and concepts in your question.

Examples of researchable questions

- Prediction – What is the likely result of X?
- Historical – How have we got from X to Y?
- Intervention – Is doing X better than doing Y?
- Exploration – What are the possible explanations for X?
- Attitudes – How do people feel about X?
- Causation – What are the likely causes of X?
- Measurement – What is the size of X, how often does it occur, etc.?
- Characterization – How can we understand and specify X?