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Dr Sara Shinton

Taking Control of Research Projects

www.shintonconsulting.com

Objectives for the workshop

- Work through processes for planning and managing projects
- Understand how to relate these to your current or potential research projects
- Consider risk management and evaluation
- Consider the potential of this project to influence in your future career success

About me

- PhD Physical Chemistry
- Postdoc in polymer blends
- Postdoc/project on communication skills
- Careers Adviser specialising in science and research
- Own business since 2000
- Work with universities across UK
- ... and Europe
- Award winning training & facilitation
- Organise a science festival

@sarashinton

About you

- Fantastic opportunity - PhD envy
- Must demonstrate the return in investment
- Intellectual ownership needs to come
- Responsibility for own training and development - how will you spend wisely?
- Vision of project
  - What could it achieve?
  - Who needs to be involved?
  - Which skills need to come?

About today

- Space to explore what it means to be an ESSENCE researcher
- Safe environment
- Platform to discuss issues openly
- Chance to demonstrate what value you can add to the network

Introductions

- Sara
- Why are you here?
- What questions about project management can I answer?
- Also, any wider questions about the next steps of your career?

5 minutes

- Finding a niche in a busy field
- Building capacity or a network/community in a quiet field

As these issues fell outside the discussions, they might be things that you can discuss with your supervisors or wider network

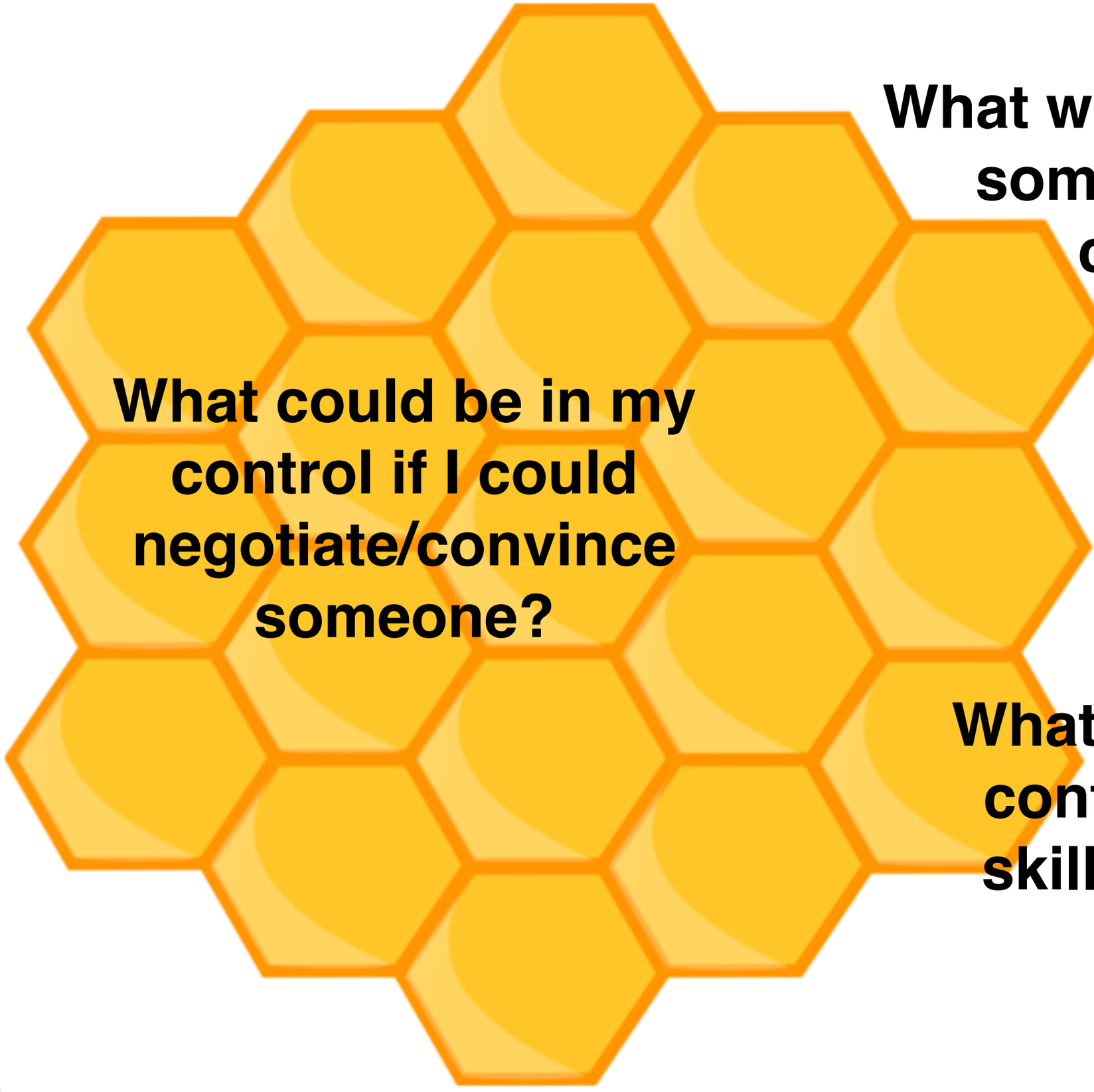
One solution to both problems is to maintain an outward perspective during your research. Network, go to meetings,engage in online fora and discussions. Build your reputation and visibility.

Project planning comes relatively late in the day

Provides a nice visual model for session

Think of project as set of complementary opportunities

Questions to keep returning to...



What will always be in someone else's control?

What could be in my control if I could negotiate/convince someone?

What could be in my control if I had the skills, motivation?

What's in my control?

What characterises success?

- What are the features of successful projects?

- Reflect on successes and failures – what characteristics can we list?

What does a good project ‘look’ like?

- Has a clear and specific objective
- Is ultimately someone’s responsibility
- Is any planned undertaking – that is both finite and bounded
- Effective communication
- Motivated, capable team members

- Time management
- HR Management
- Active participation
- Motivation
- Knowledge
- Strong methodology and steps to outputs

- A well-defined hypothesis
- Documented project
- And interdisciplinary team
- Measurable outputs (and an understanding that these must become outcomes)
- Visibility and reputation
- Networking
- Back up plan / flexibility
- Supervision
- Innovation

So your steps to taking control are...

- **Understand in the project objective**
- **Knowing which elements you have responsibility for**
- **Clarity about the scope of the project**
- **Effective communication**
- **Being motivated and engaging others**

Reflection point: anything here that could:
be a development point?
point you to a training need?
be basis of discussion with supervisors?

Project Constraints

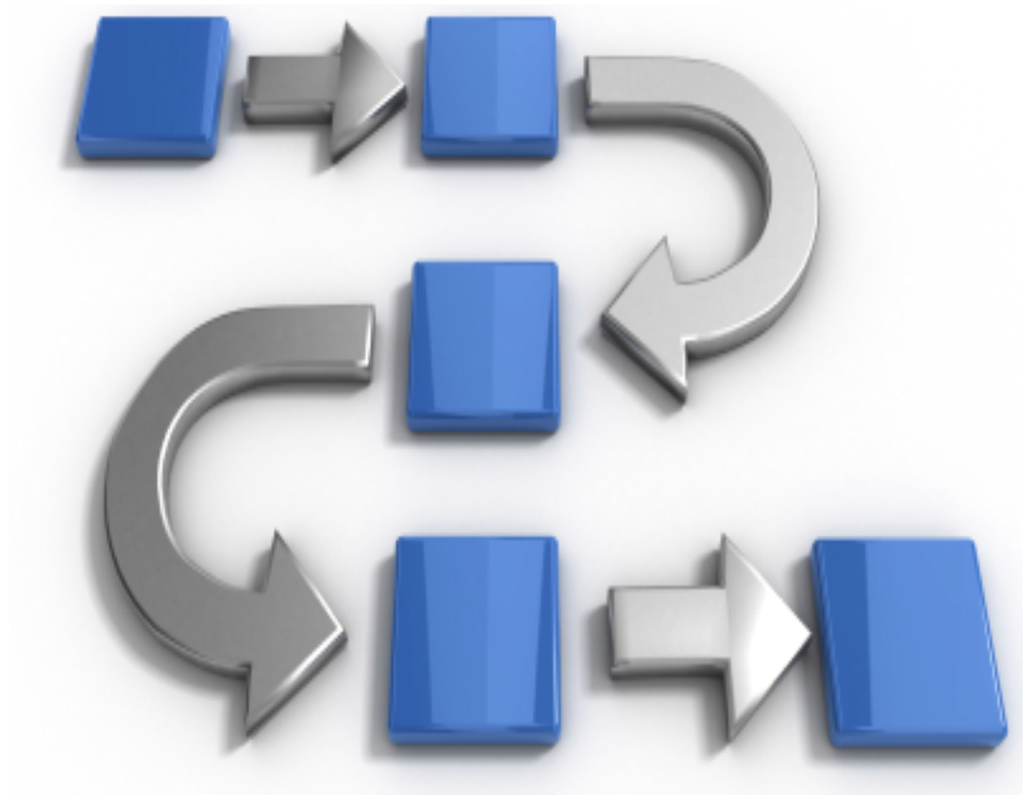
- **Most projects operate under constraints or limitations**
- **What are the constraints that operate on your research projects ?**

Possible constraints

- Time
- Funding
- Access to people / resources
- Clarity of scope
- Questions of validity / originality
- Plus others…
- … so it is important to understand the environment in which you operate

we'll come back to *risks* later

Project leadership



If we characterise project management in a research environment,

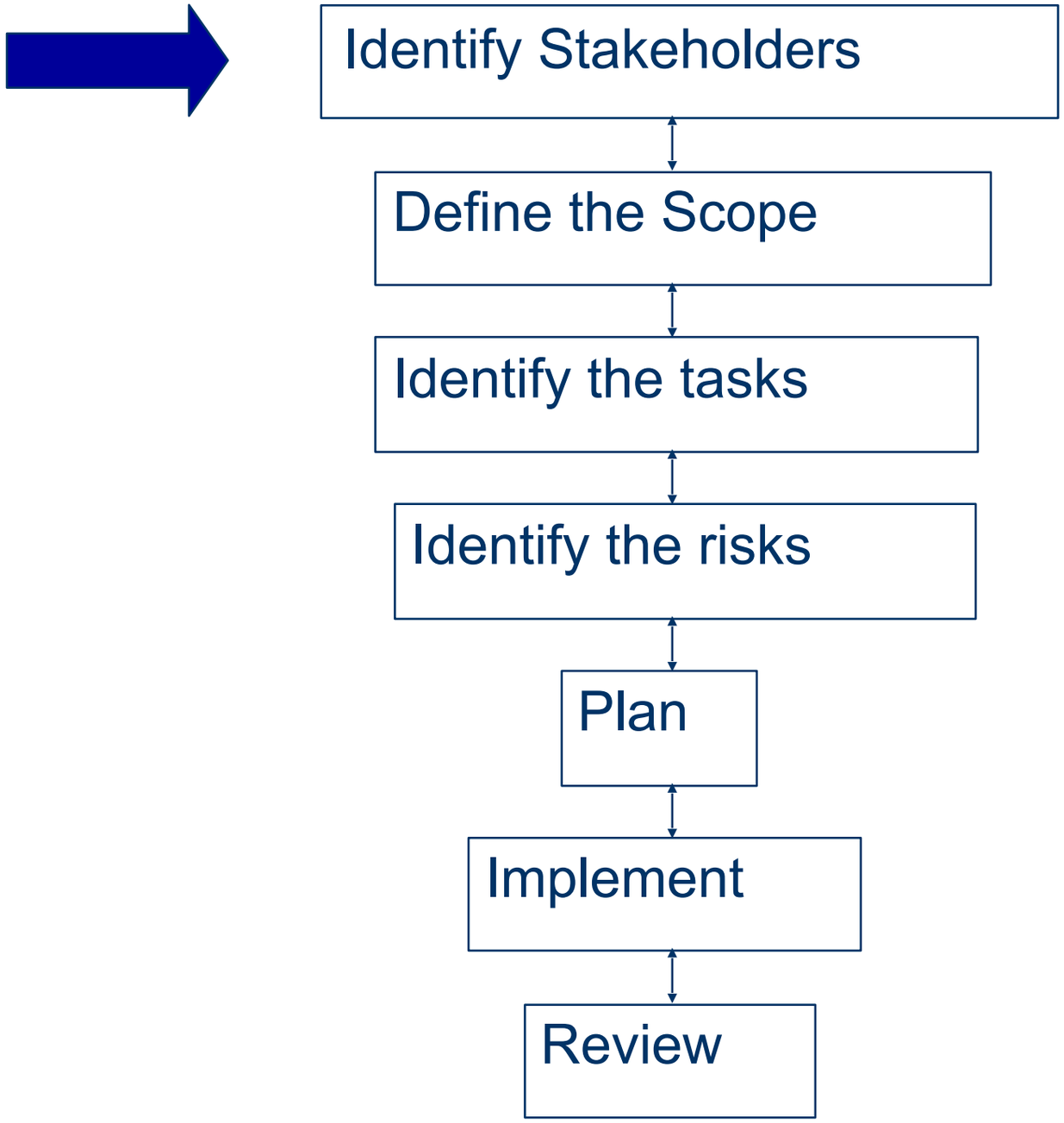
- **what does a good project leader do ?**
- **what skills do you need ?**

In handout… 5 minutes

So the skills that will help you take control include...

- Communication
- Priority setting
- Time management
- Career management

An Overview of Project Planning



Stakeholders

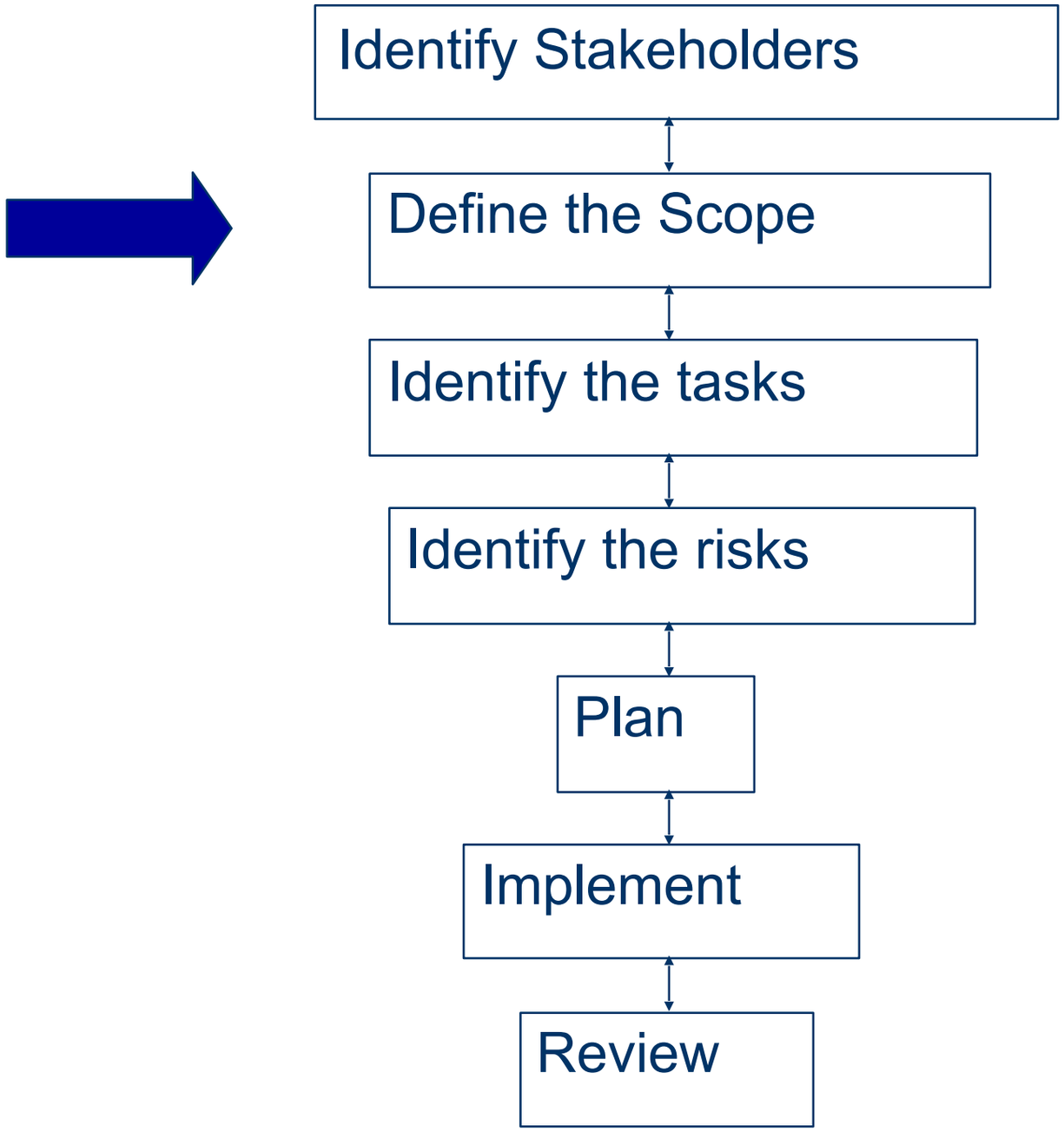
- **Play a role**
- **Have an interest**
- **Are affected by**
- **Can influence**
- **Can support**
- **Affect impact**

The emerging agenda in European funding brings stakeholders into the heart of research

You should have their perspectives in mind as plans and communication are developed

The nature of your funding means that the process as well as the outcomes are of value

An Overview of Project Planning



Defining the Scope

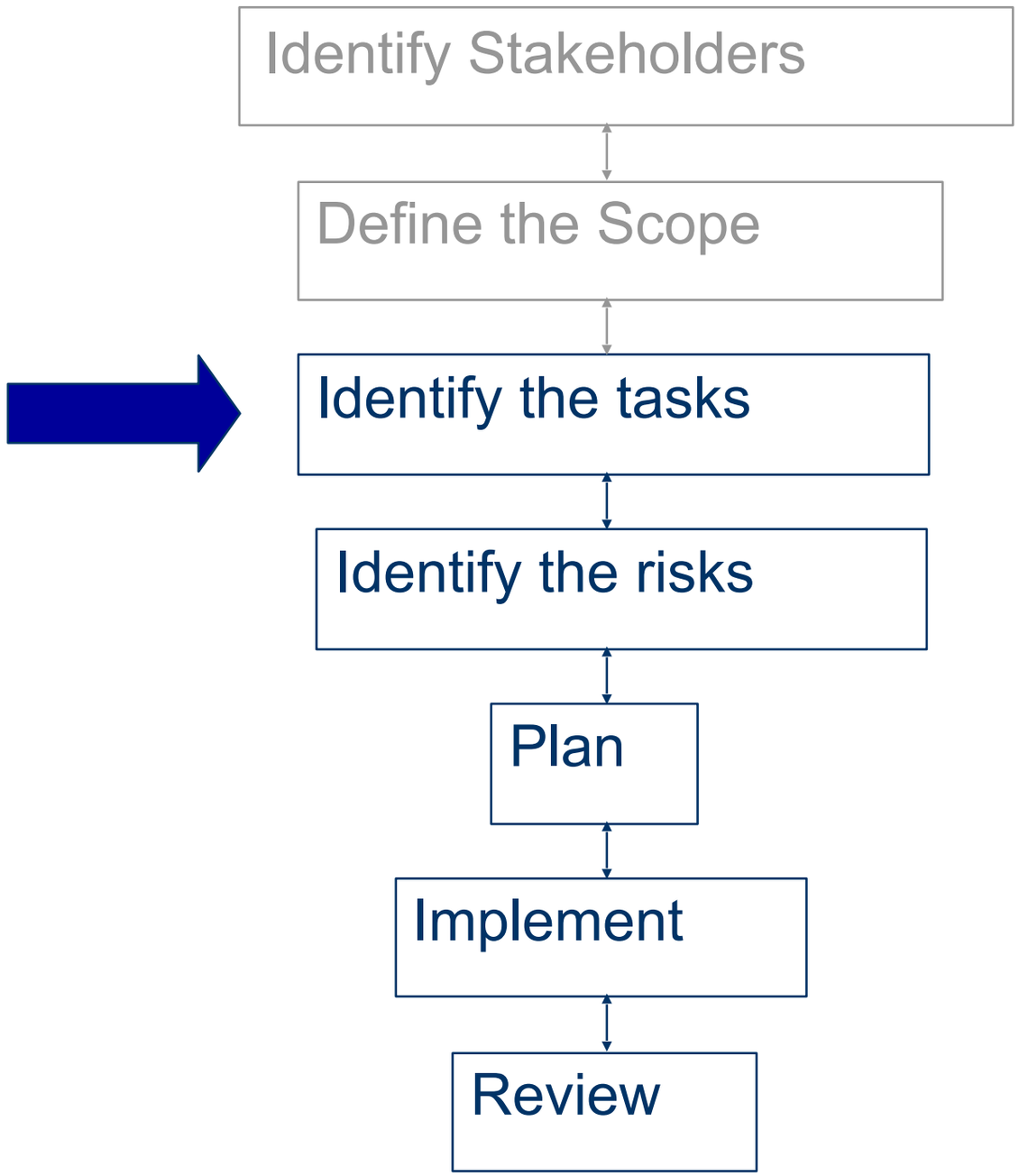
- Moving from your research area (general) to a research question
- Which should be
  - Specific
  - Answerable
  - Coherent
  - Interesting/valuable

Scope of your project

- **What are you trying to achieve in your project?**
- **Find a partner**
- **Explain the central aim of your research project and the motivation for the study**
  - Are you clear on the limits of your investigations?
  - How will you know when the project is complete?

5 minutes

Overview of Project Planning



This is where what looks like project planning starts...

note time

Planning and Management Tools

- **Mind Map**
- **Work Breakdown Structure**
- **Risk Analysis**
- **Gantt Charts**

Mind Map

- Useful at the earliest stage of a project
- Sets out all possibilities and issues
- Explore options
- Makes linkages more evident
- Useful to GENERATE ideas
- Is not judgemental or critical
- A place to be honest about uncertainty
- From this, a structure can emerge

Constructing Mind Maps

- Use single words or simple phrases for information
- Use colour to separate different ideas
- Use symbols and images
- Using cross-linkages

Mind Map

For your research topic:

- **Set out a mind map which includes the key information surrounding your project**
- **Include any questions or areas of uncertainty**
- **Try to suspend criticism or judgement at this stage…**

This is a chance to *devise* a potential project

Who else is working in this field?

project

for me

Why am I doing research ?

the future

Why is this project happening ?

risks

How is it happening ? (methodology)

What will change if the research is successful?

impact

Who will benefit ?

Challenges

Who else is affected by this work?

for me

project

Mind Map

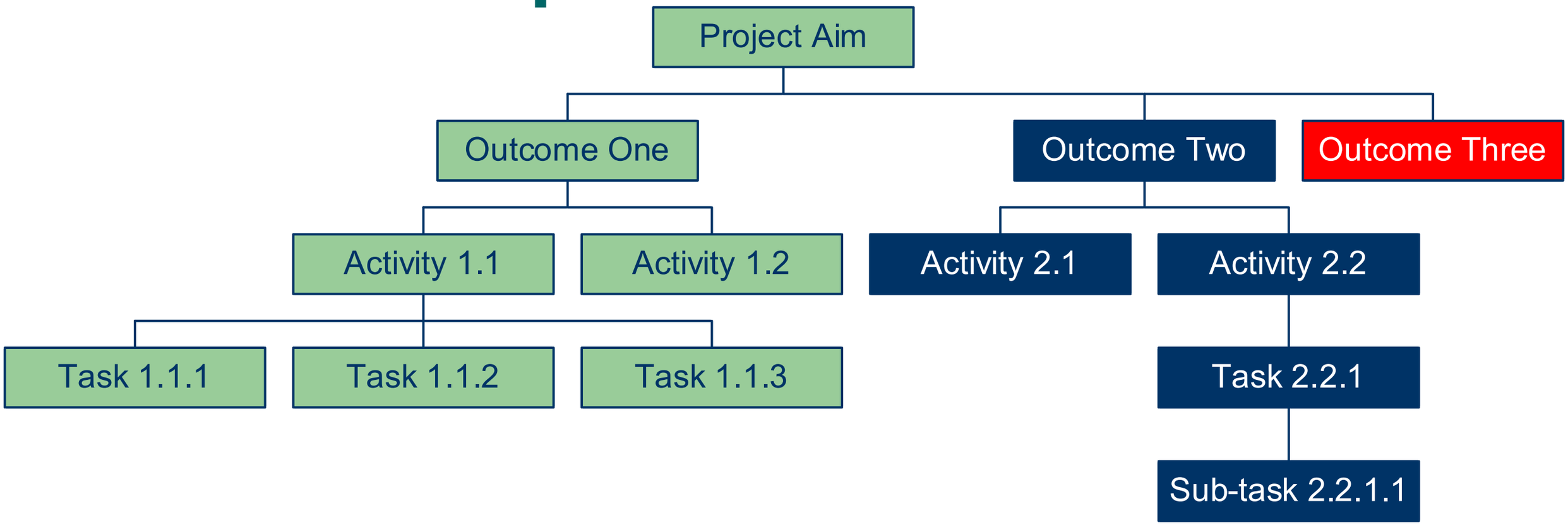
- Basis for decision making and identifying priorities
- Identified unknowns that need to be explored
- Helps you to see the project in more holistic terms
- Reduces "modularisation" and missed opportunities in project
- Difficult to take control without this strategic view of project

This is a great tool to use when *devising* a potential project

Work Breakdown Structure

- A technique to identify all tasks associated with a project
- Start on the top (or side) with the project objective
- Add detail using the defined scope
- Identify obvious tasks
- Break these down into elements which can be managed
  - Asking “How will I achieve that?” will help you arrive at the level of discrete tasks
- List questions or points to clarify

WBS Sample



- At the bottom level, you can start to estimate time needed
- Understand that you will always underestimate, but by estimating and comparing to reality, you can make a better plan next time.

Adding layers

- Costing and budget can start to emerge as the detail emerges

- Responsibilities and staffing should also be considered early

- Tasks that require an element of skills development or support from your network should also become more evident

100% Rule

- A WBS includes 100% of the work defined by the project scope and captures ALL deliverables
  - Includes any project management required !
- The sum of the work at each ‘child’ level must equal 100% of the work represented by the ‘parent’
- WBS should not include any work that falls outside the scope of the project, so it can be a useful tool to ensure that you are working on tasks which will contribute to the success of the project (if they don't easily relate to an objective or the overarching aim, you need to question why you are doing them)
- For your wider career development needs it may be useful to "overlay" the WBS with tasks which could relate to your secondment, be supported by others in the network, relate to meetings etc

Your own WBS

- Complete your own WBS as far as you can, for the current or next steps in your project
- Your aim is to build a foundation for the next stage of the project planning process
  - The length of time for each task can be estimated
  - You can organise your chart by deliverables or phases of the project

During proposal development the WBS, or its equivalent, is a useful tool for developing the project budget

- Direct Costs
- Staff costs
- Travel and Subsistence
- Equipment – check the rules for quotes
- Other costs – e.g. Consumables, publication costs, maintenance etc

- Directly allocated costs
- Investigator costs
- Estate costs

Indirect costs

Exceptions

- Large items of Equipment
- Studentships

But what is missing so far ?

What really happens in research ?

- Things go wrong
- The direction has to respond to results
- New ideas may emerge in your field

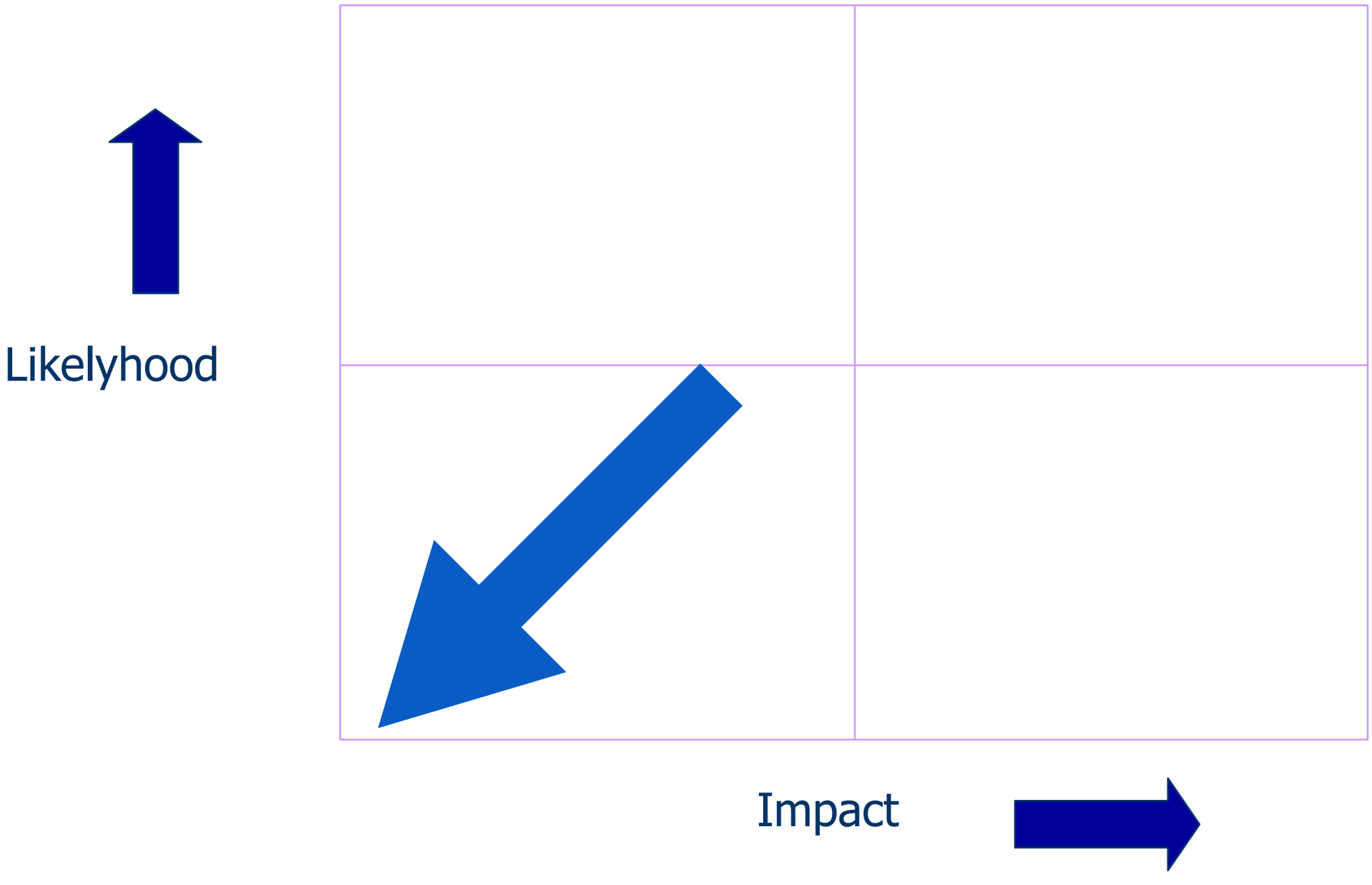
- Your project planning must either anticipate or cope with risks…

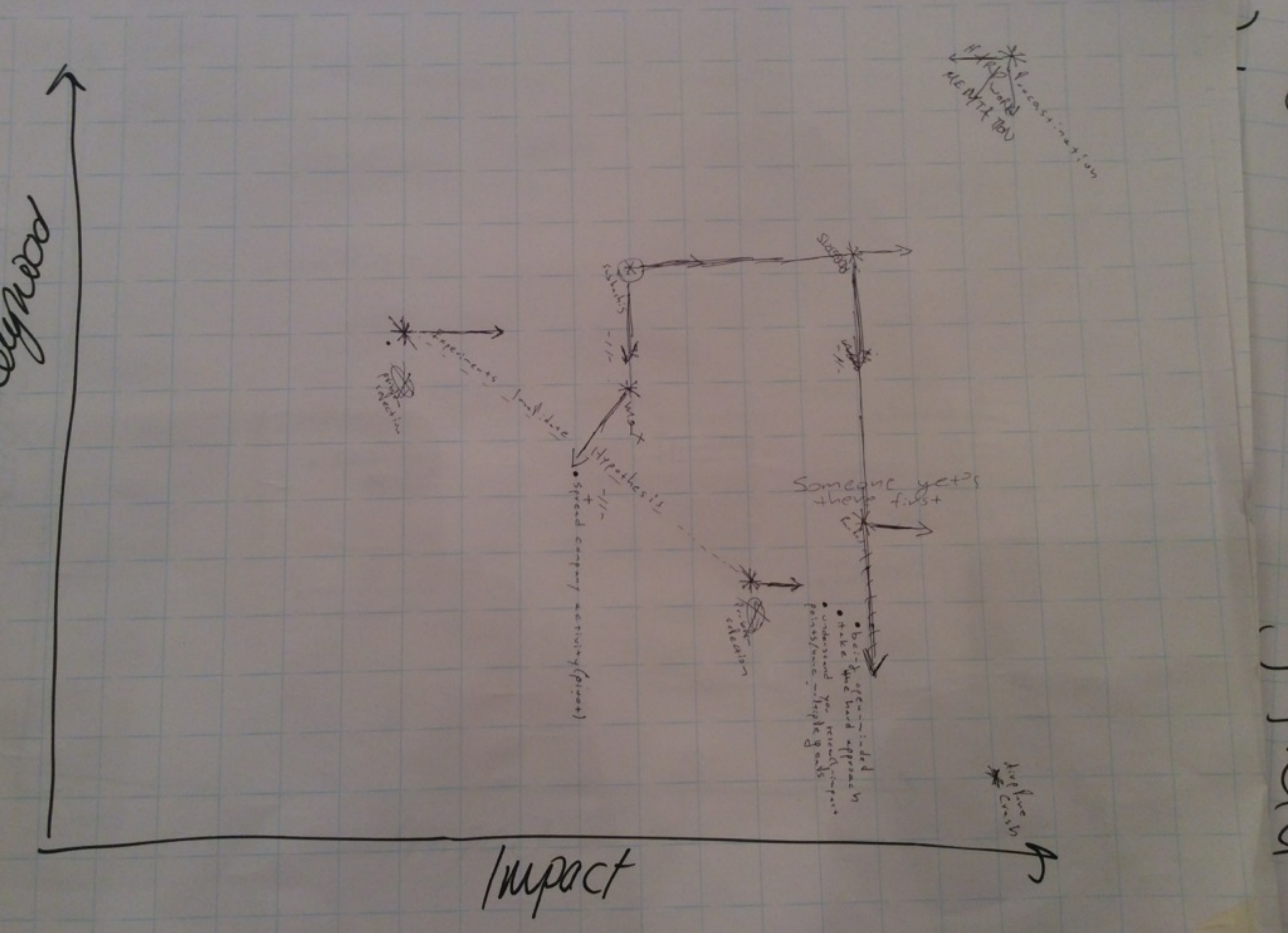
Risk Analysis

- Identify potential risks
- Assess likelyhood of risk
- Assess magnitude of risk
- Develop response
  - minimise, eliminate or develop contingency plans

Risk Management

Photographs of your risk grids follow




Impact
Someone gets there first
• being open-minded
• take the hard approach
• understand your research impact points/have multiple goals
airplane crash
procrastination
experiments
hypothesis
spread company activity (pivot)
wait

Likelyhood

/Impact

- Minors SV conflicts
- Have to change the subject
- Same researches already done
- Decommitment
- Disorganisation
- No publications
- Long Illness
- Majors SV conflicts
- Commission Stop the project
- not spend everything you make
- Networking

COMPETING SET-UPS SVB COMPONENTS

TIME CONSTRAINT TO FINISH THE WORK

NOT FINDING QUERIES

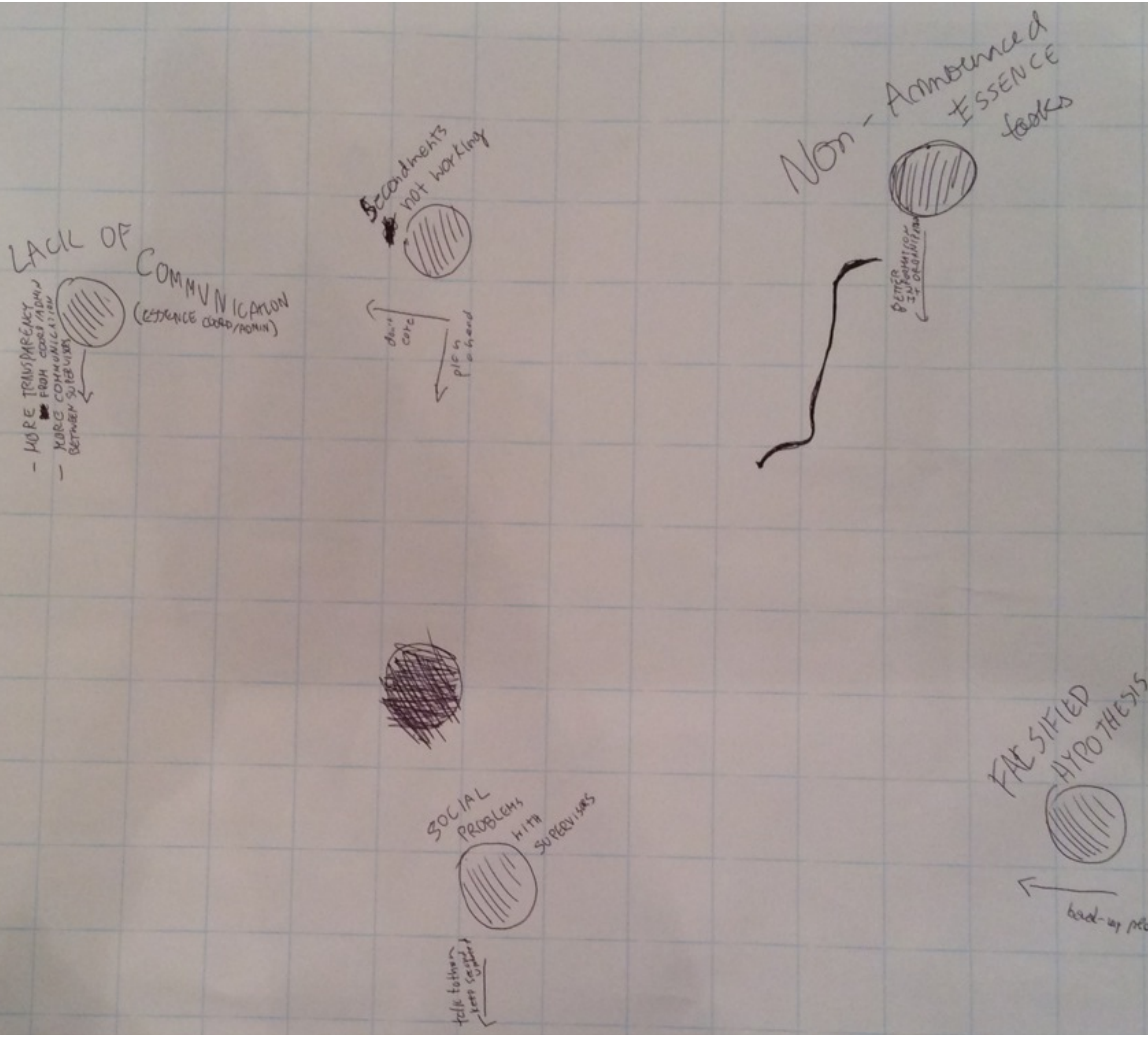
CHALLENGE NOT COMPLEX ENOUGH

ARCH. IS NOT EXPRESSIVE ENOUGH TO ESSENCE

LACK OF DATA

Impact

- Clear understanding of the subprojects expected outcome
- Supervisors to push and support BSRs towards the integration.



LACK OF COMMUNICATION
(ESSENCE COORD/ADMIN)
- MORE TRANSPARENCY FROM COORD/ADMIN
- MORE COMMUNICATION BETWEEN SUPERVISORS
Secondments not working
don't care
plan ahead
Non-Announced ESSENCE tasks
BETTER INFORMATION
SOCIAL PROBLEMS with SUPERVISORS
talk to them
FALSIFIED HYPOTHESIS
back-up plan

Sources of Risk in research

- In small groups list the risks associated with academic research

- Focus initially on general risks, then move onto specifics for individual projects

- Position them on your team grid…

No need to develop response yet…

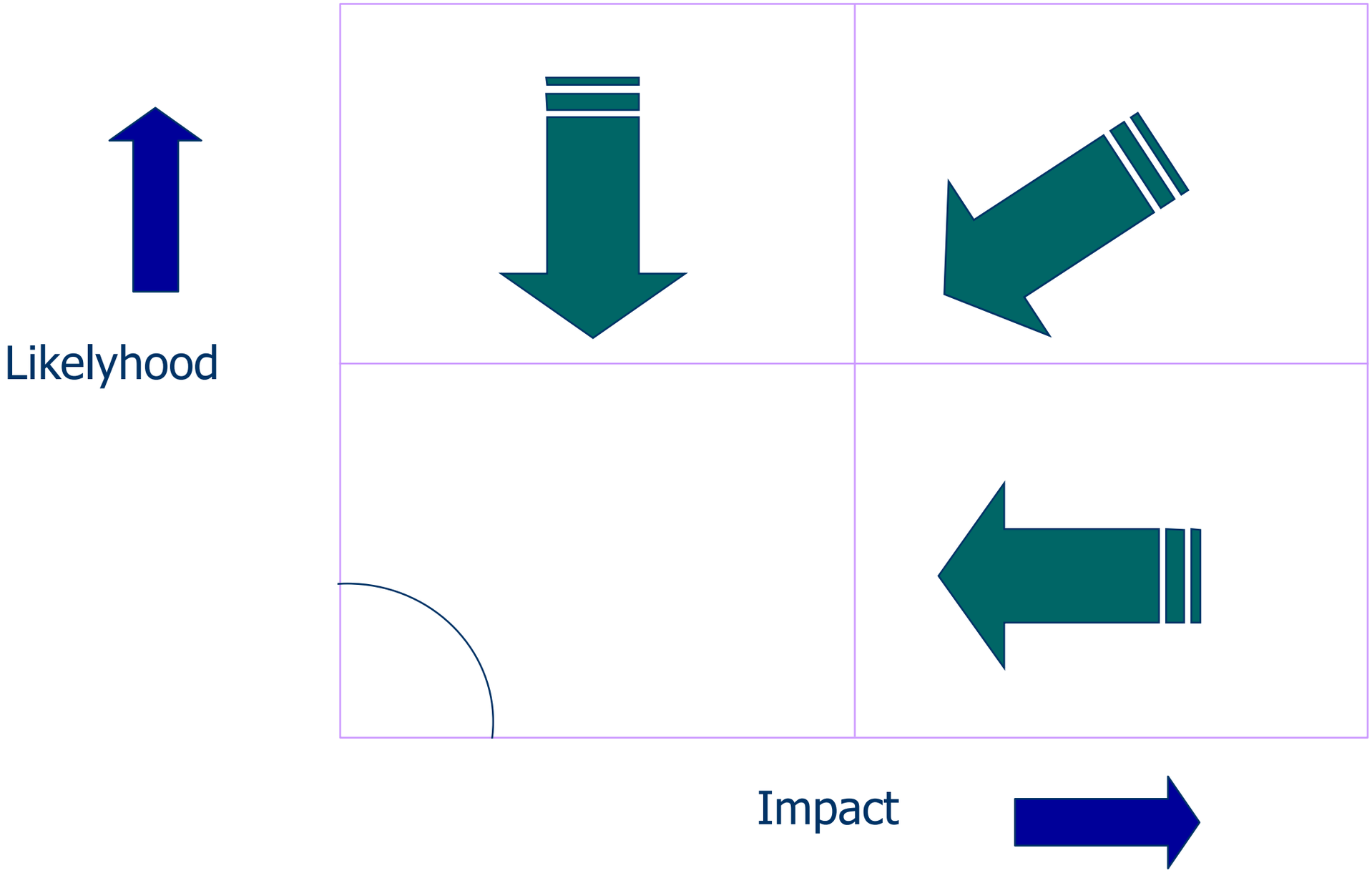
Risks – from other researchers

- It doesn't work
- Runs over-time
- Loss of motivation
- Insufficient funding
- Delays from suppliers
- Health and safety
- Recruiting participants (subjects of research)
- Poor collaboration
- Data quality poor
- Inaccurate data
- Staff absence
- Other groups publish the work before us
- Politics - treading on the toes of others

Risks – from previous sessions

No need to develop response yet…

Risk Management



Strategies to manage risks

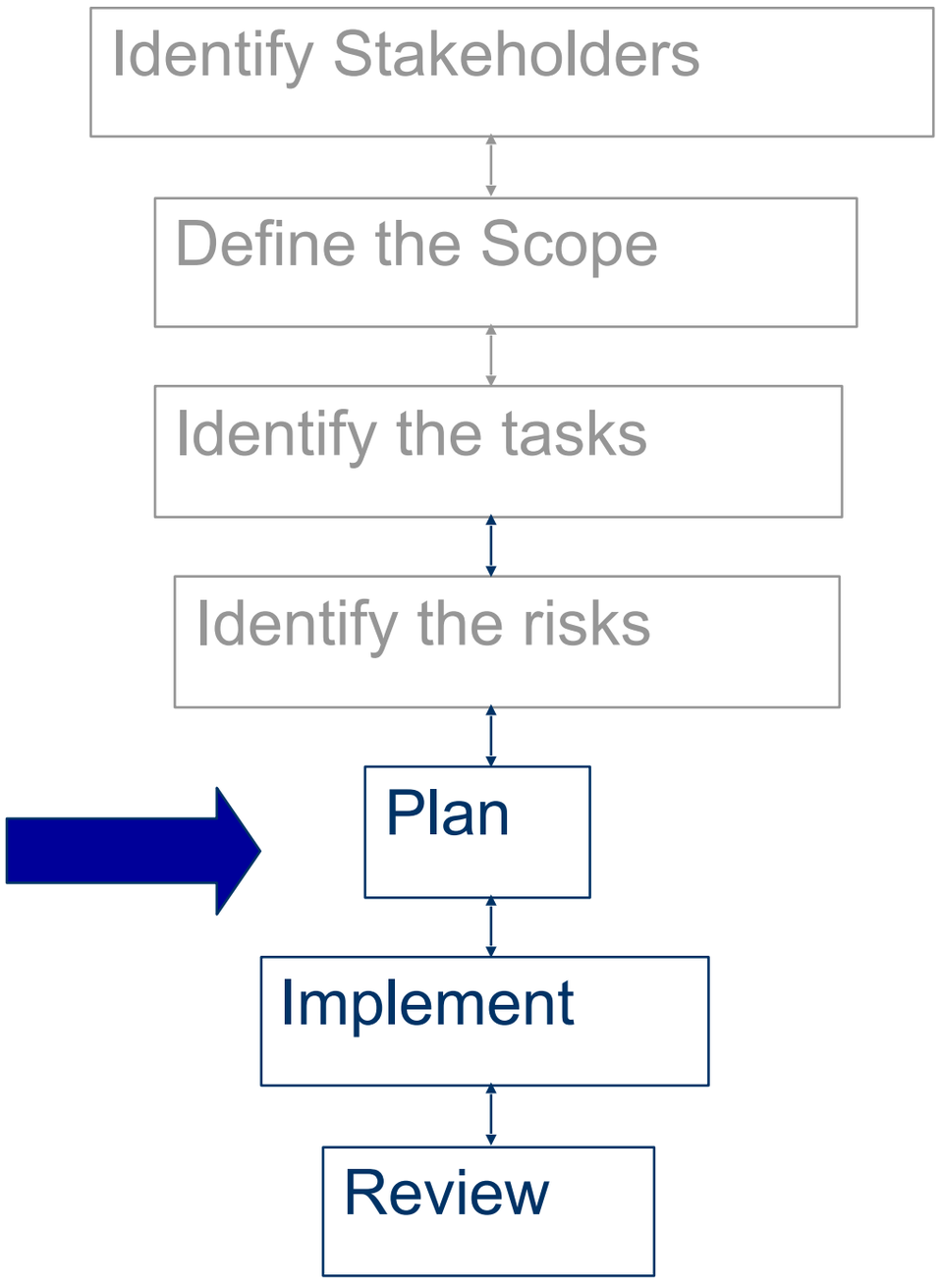
- Select 4 of the worst risks we have identified

- As a small group discuss ways to
  - monitor a project for signs of the risk emerging
  - minimise the likelyhood of the risk occurring
  - minimise the potential impact of the risk if it cannot be eliminated

Risk Register

Description	Probability	Impact	Owner	Response	Status
Staff Leave the project before completion	3	4	PI	Build in 3 month notice period to all staff. Implement a project documentation process	Current
Data loss due to IT failure	2	5	Researcher	Implement daily backup internally Source external backup and backup weekly	Current

Overview of Project Planning



note time

Gantt Charts

- Lay out the tasks that need to be completed
- Show when these tasks should be carried out
- Assist the allocation of resources

- Estimate time for each task
  - include: project management, detailed planning, liaison with experts, meetings, information gathering

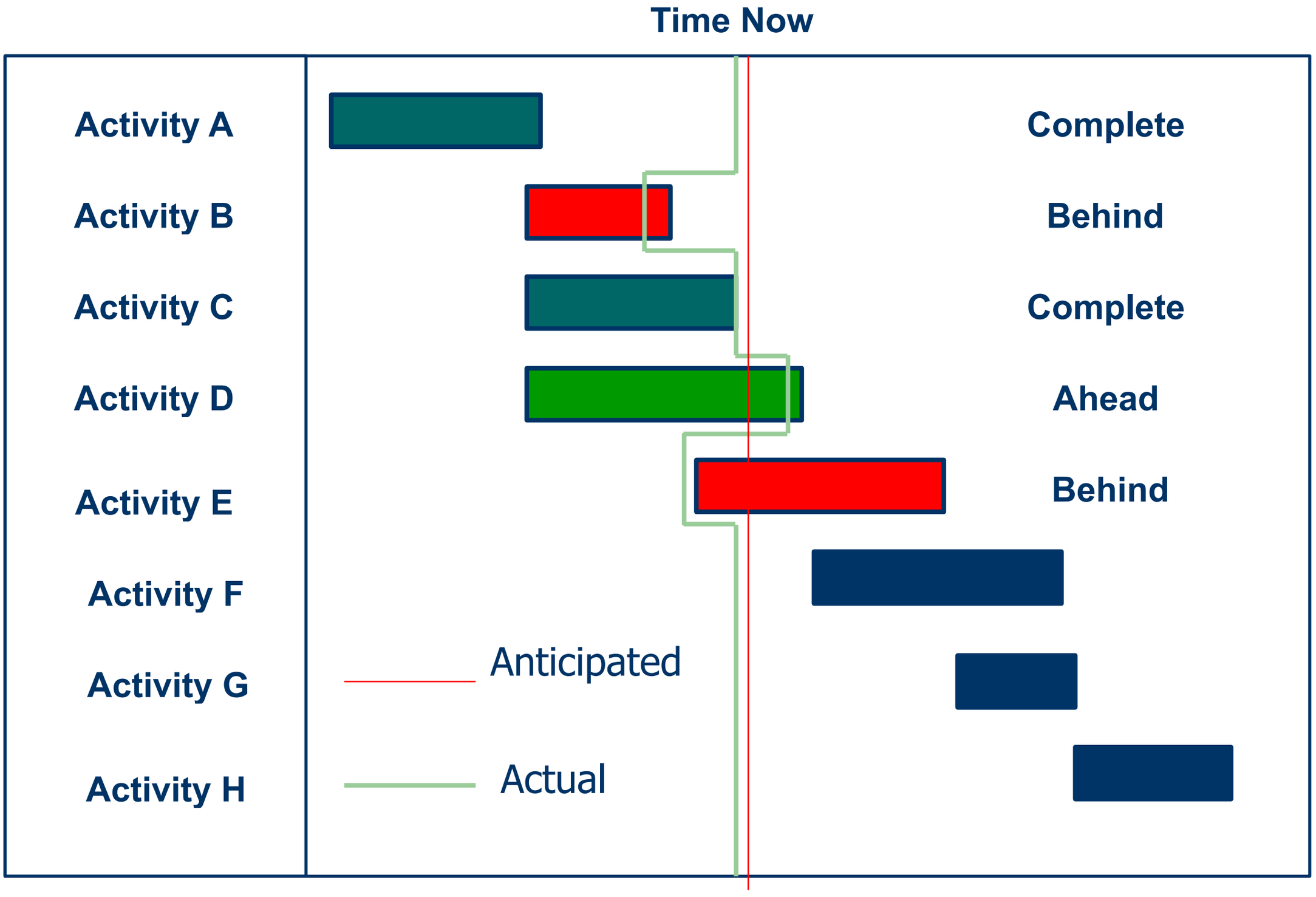
Activity	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13
Register													
Literature review													
Deadline for literature review													
Prepare and rehearse presentation													
Presentation to School/Department													
Documented meeting with supervisors													
Plan first research unit													
Present outline of first research unit													
First research unit													
Review and analyse research results													
Survey of literature													
Courses/conferences													
Learning about equipment & techniques													
Holiday													
Second research unit planning													
Second research unit													
Drafting transfer report													
Finalise transfer report													
Deadline for transfer report													
Transfer viva													
Visit from leading professor													

Your Gantt Chart

- **Use your WBS and the risk analysis to map your project tasks against a timeline**
- **Include in your chart any deadlines, milestones or deliverables**

If ahead of time, and more required (PERT) jump to 65, then back here to 40

Monitoring Progress



Reporting on Progress

- Progress against plan
- Identify activities which are slipping
- Identify areas where additional resource might help
- Identify unexpected conflicts on resource
- Keep critical activities on track
- Update project plans when things change, and always work with latest version of the plan

- BE HONEST

Keeping on track and being in control

Have a system for

- Monitoring progress against milestones
- Managing and motivating team
- Monitoring budget
- Being flexible as project develops
- Dealing with problems

Behind Schedule ?

- Report the implications of delays
- Discuss changes in plans
- Direct resources
- Avoid persecution
- Respond early
- Be flexible
- Involve the whole project team

Early problems with planning

- **Difficulty planning the project may indicate**
  - **insufficient depth of understanding of project objectives**
  - **not convinced of project objectives**
  - **unsure of responsibility or not enough experience**

Other factors

- **Allow time for ‘Warm-up’ at start of new project**

- **Ideas come out at the planning stage…**
- **… so if you have an idea, make a plan**
- **Understand your role**
- **Review - achievement of task and process**

Review – at the end of a project…

- It is vital to invest some time in reflecting back

  - was the plan overly optimistic?
  - were the stakeholders convinced of its success?
  - what will you do differently next time?

Review – let's practice

- Consider your project
  - What do you wish you'd known at the start?
  - If you were in charge what would you do differently?
  - What needs to be different from this point?

  - Frame your thinking in terms of personal leadership and next steps

Some of your thoughts on the **training needs** that you have to enhance your effectiveness as researchers

- Poster design
- Communication skills - with focus on how to take control of next steps in project (negotiation?) (working with supervisor, framing communication effectively for different audiences)
- Experimental design
- -- identifying the correct case studies
- -- research methodologies
- -- evaluation methods
- Clear understanding of sub-project roles in integration
- Use of common repository (for code etc) given that we have one

I will discuss these with Michael, but you should continue to consider your training needs and feed these into the planning for the next summer school as early as possible. Another option is to use the Virtual Lab environment as a training platform using video conferencing to run webinars on some topics. Your feedback on this idea would be most welcome

Some of your thoughts on what you **wished you had known** at the start of your PhD

- -- clear explanation about the financial expenses
- -- why EU is so interested in the project
- -- what are the bounds of our research
- -- what is the role of the secondment in the project

If these things still aren't clear, look at the resources available to you (any project documentation, information on the ESSENCE website or Virtual Lab) to seek information. Then ask to discuss with your supervisor any continuing areas of uncertainty

Three take home points on planning

- **Planning is essential for project and career development**

- **The strategic overview it gives you should facilitate control and leadership**

- **Project planning should not inhibit creativity**
  - **it is a useful set of tools, not a straitjacket !**

The Project Life Cycle

- **How it should be!**
  - Preparing for the project
  - Agreeing / sharing objectives
  - Project Planning
  - Organisation
  - Implement - Control - Adjust
  - Reflect and Evaluate

- **Enjoy your research !**