PM101: Lecture 10

Risk planning and management

The probability and likely impact of a risk

- Assess the **probability (P)** of the risk
  - Could be based on statistical records or prediction
  - More likely to be given a subjective score of 1 to 10
    - (1 = low, 10 = high)
- Assess the **impact (I)** of the risk
  - Allocate a subjective impact score of 1 to 10
    - (1 = low impact, 10 = high)
- Risk Rating
  - Probability x Impact **(P times I)**

Have rules to say at what threshold level of Risk Rating or Impact specific action must be taken

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Qualitative risk ratings

Score	Probability	Impact
0	Impossible	None at all
1	Almost certain not to happen	Minor inconvenience to some or all users
2	Very unlikely	Moderate inconvenience to some users
3	Moderately unlikely	Moderate inconvenience to all users
4	Fairly unlikely	Serious inconvenience to some users
5	An even chance of happening	Serious inconvenience to all users
6	Fairly likely	Key parts of output unavailable for some users
7	Moderately likely	Key parts of output unavailable for all users
8	Very likely	Significant gaps in whole output
9	Almost certain to happen	Project failure, significant commercial loss
10	Certain to happen	Corporate failure, fatalities

Impact can be separately assessed on **Cost**, **Schedule**, **Reliability**, **Performance**.

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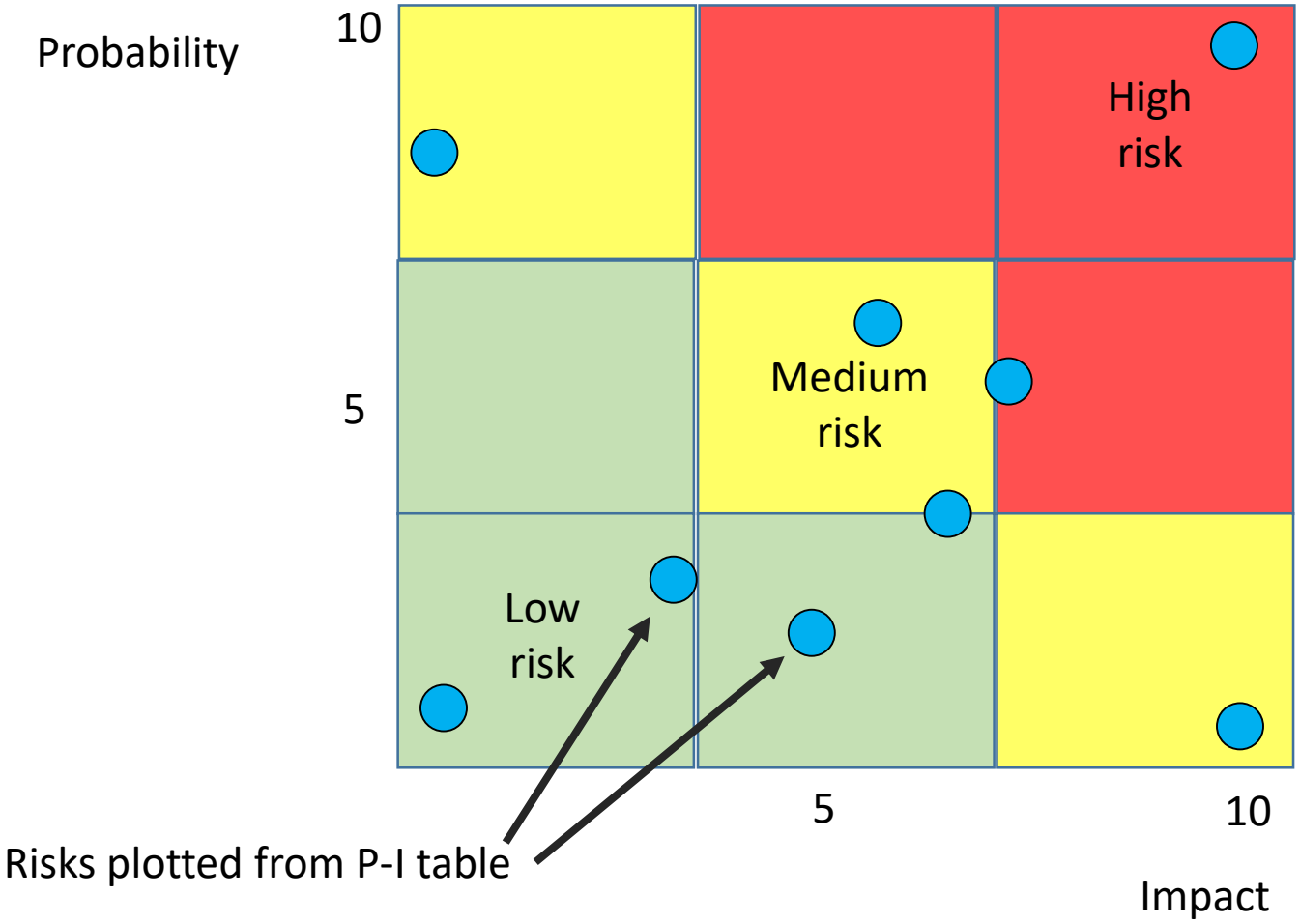
Traditional matrix view of risk ratings



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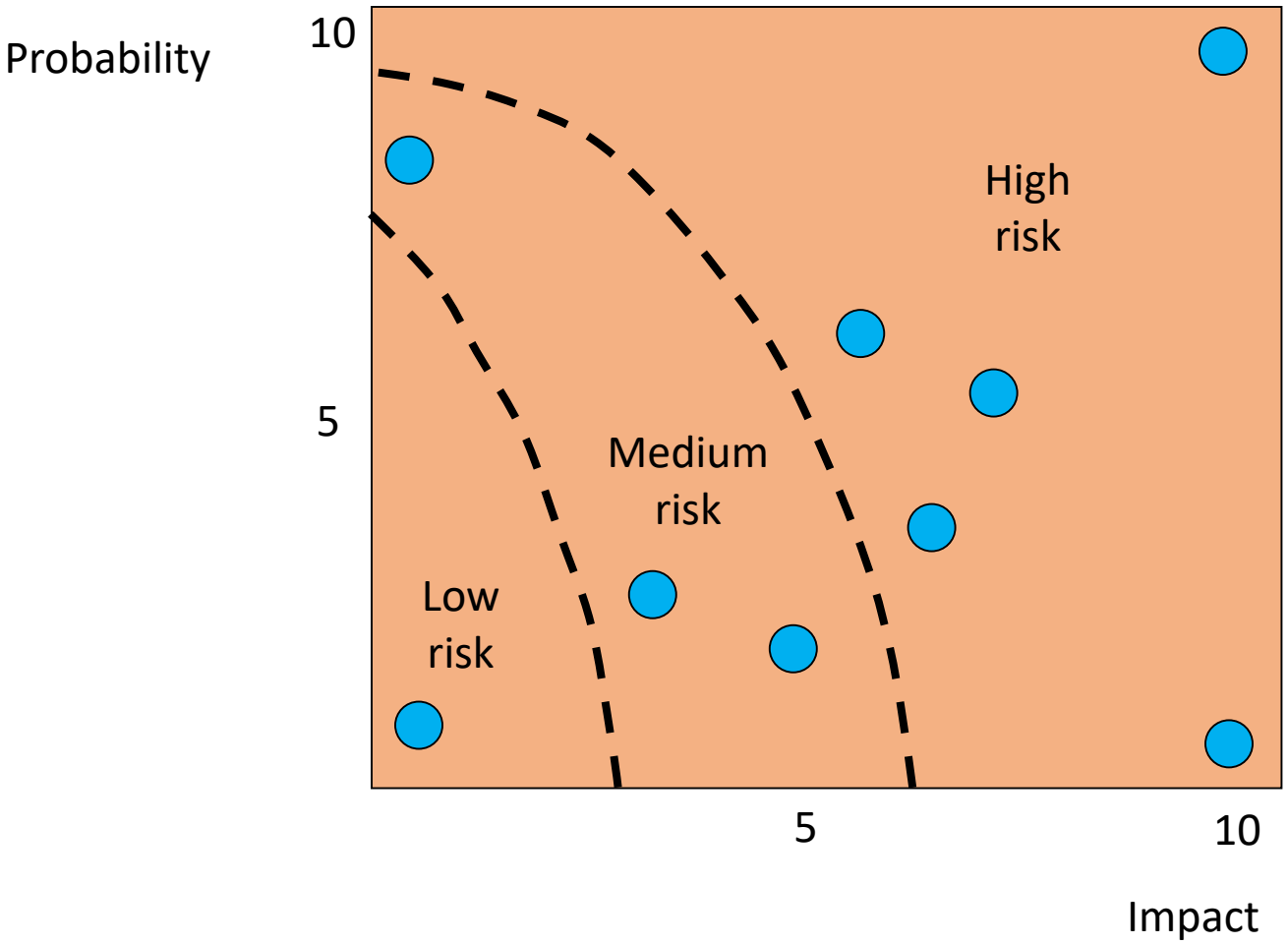
A better way map risk ratings?



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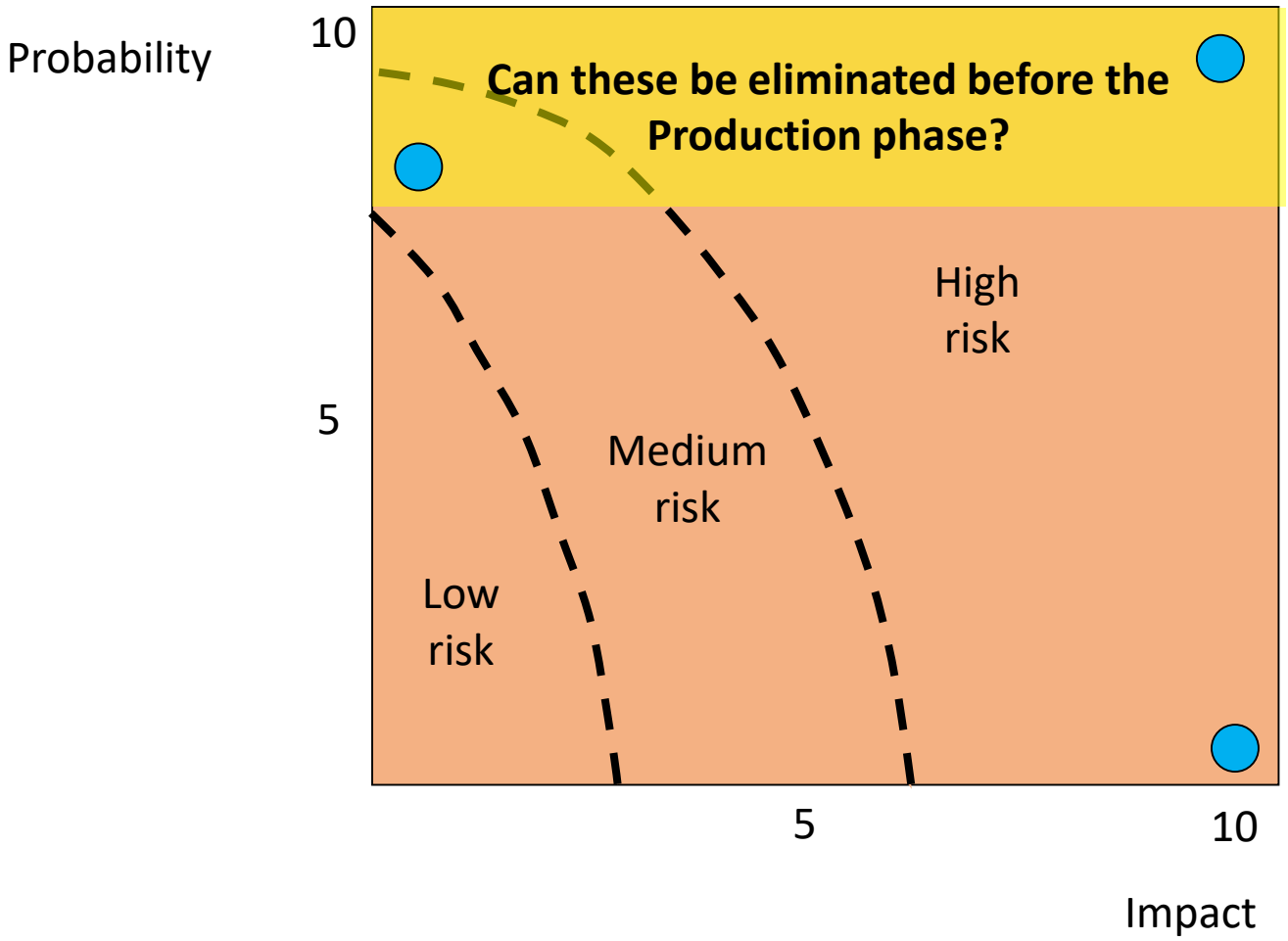
Matrix view of risk ratings



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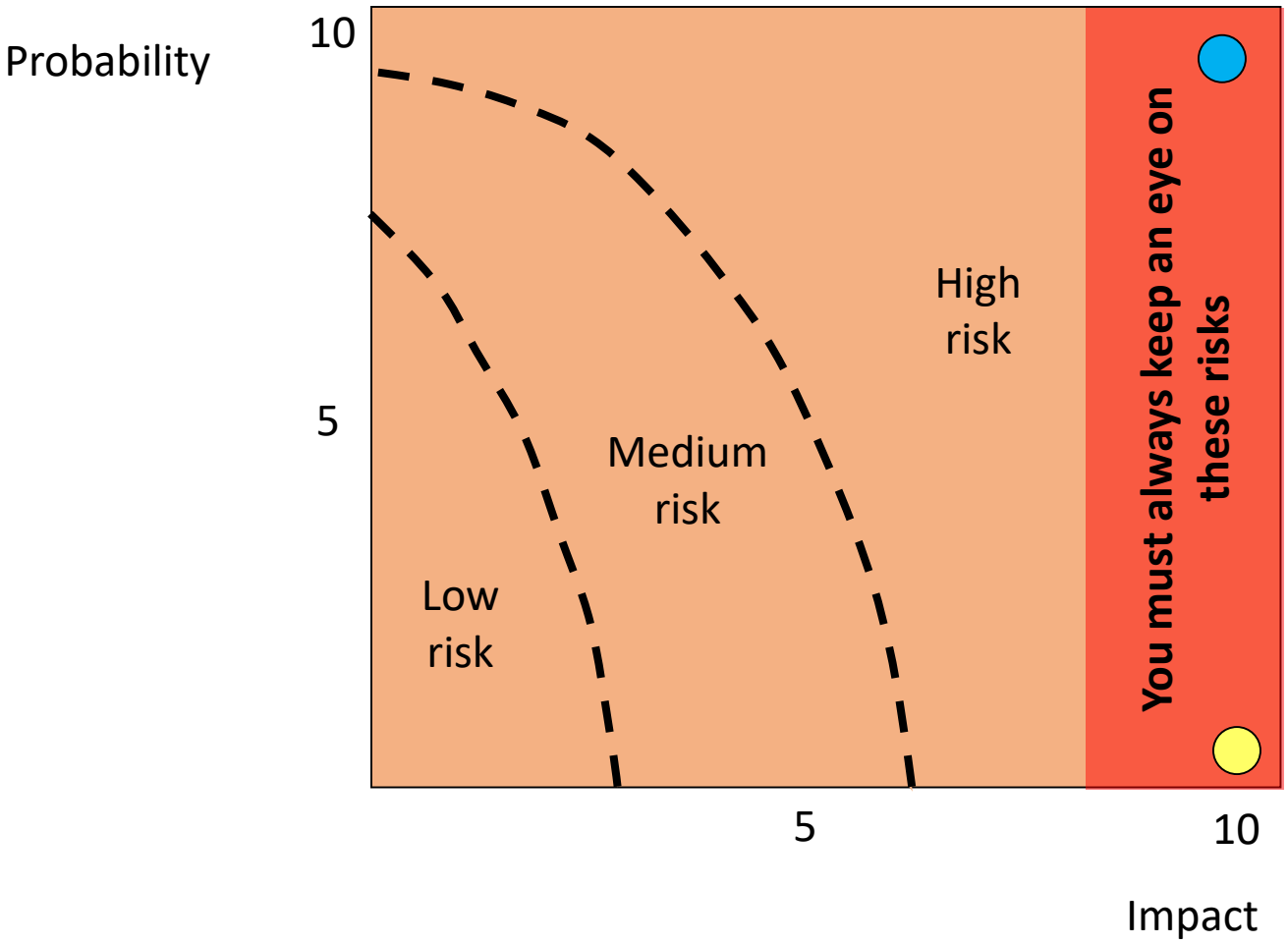
Nightmare risks



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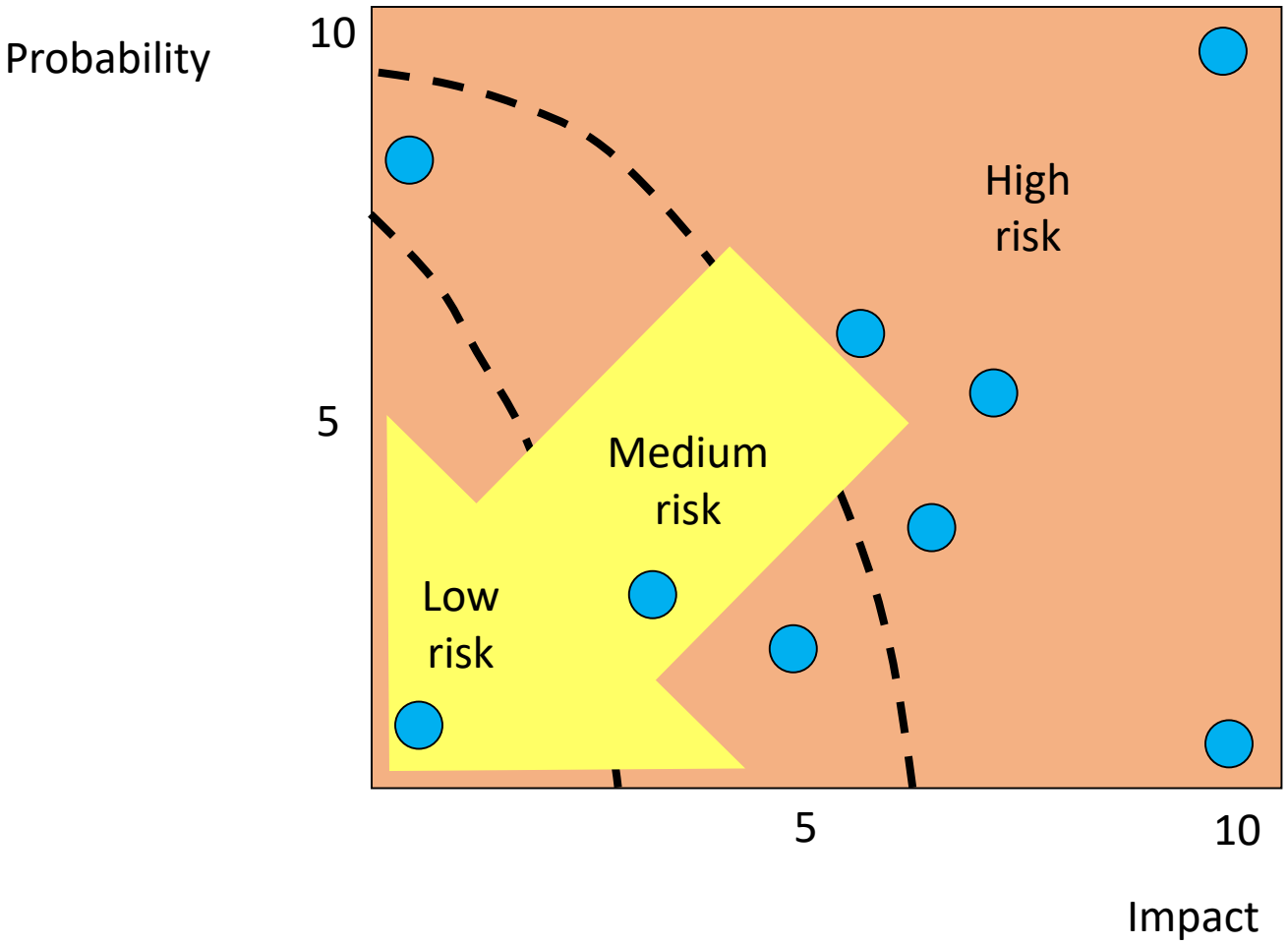
The aim is to drive risks down and out



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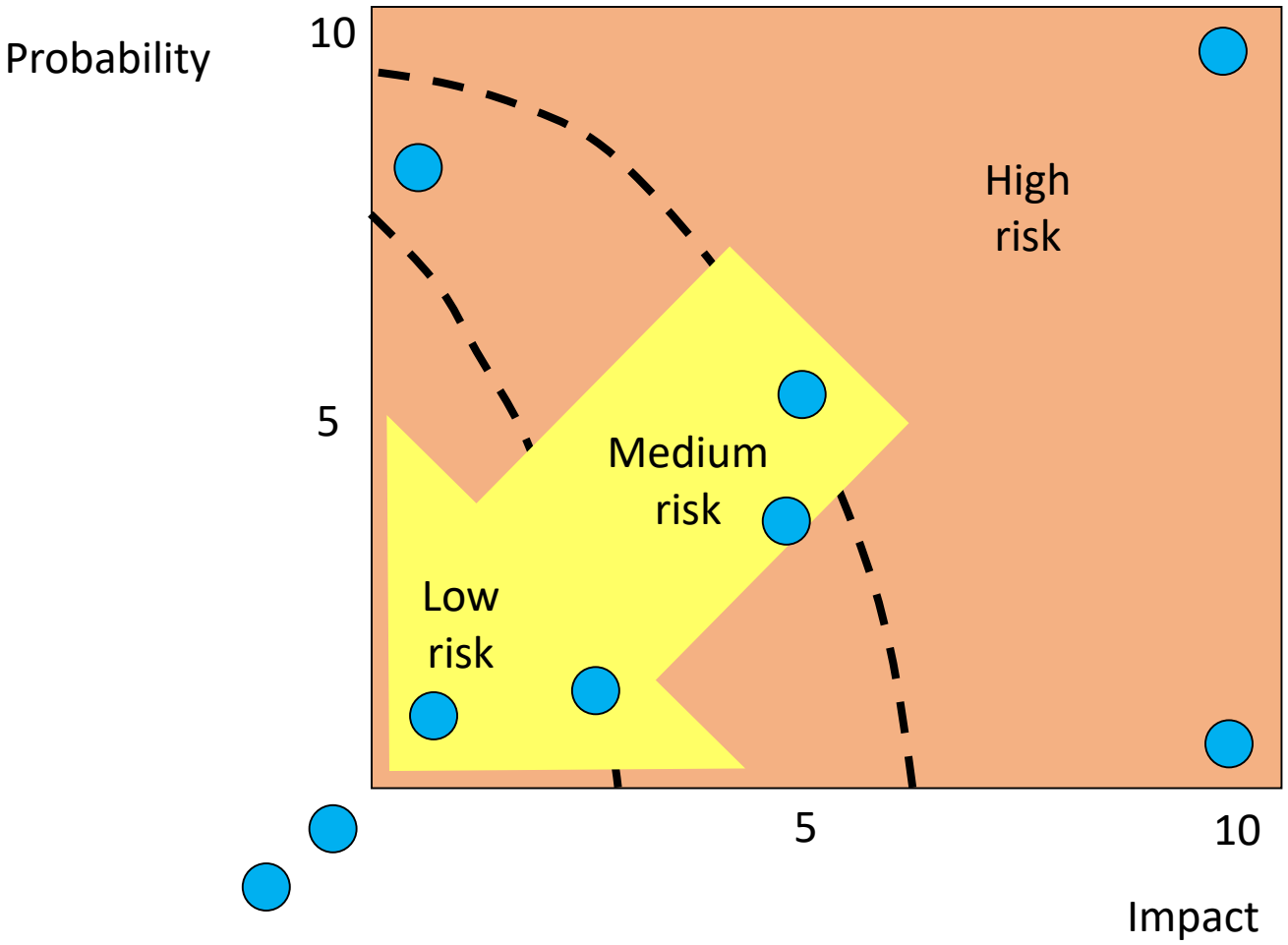

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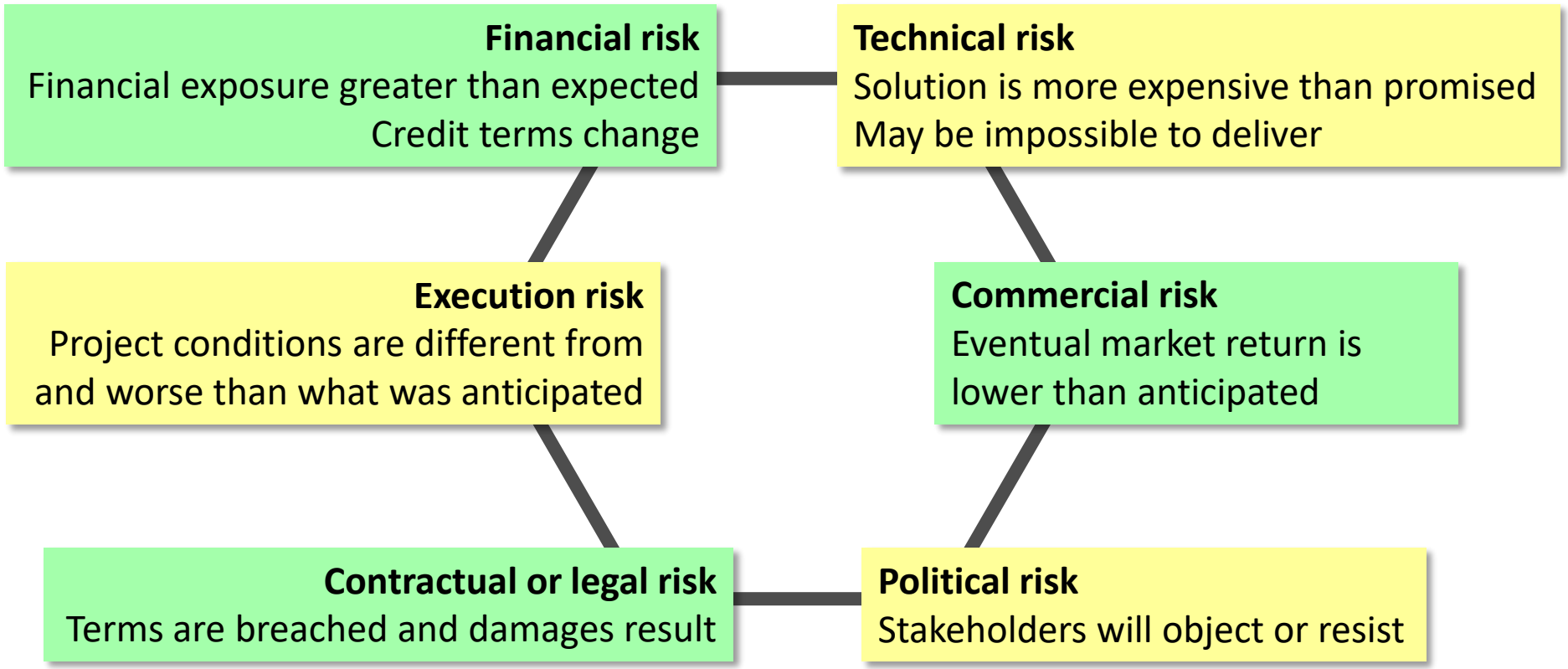
Classifying risks



Based on Pinto, J. (2007), *Project management – achieving competitive advantage*. Upper Saddle River, NJ, US: Prentice Hall, p223

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Probability-Impact table

Risk in category

Person accountable for managing this risk

Responsibility cannot be shared

Job of an individual, not a group

Chance of risk happening

Likelihood

Impact if it does happen

Severity

Risk rating

P times I

Steps to address risk

Elimination, reduction, avoidance, transfer

Response if it happens - contingency plans

This table can form the Risk Register

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Risk management is the art and science of identifying, analysing and responding to risk factors throughout the life of a project. *Pinto (2010)*

Identify risks
Identify and categorise risks

Analyse probability and impact
Consider how likely risk is to occur
Consider what the impact would be if it does

Devise risk mitigation strategies
Take action to reduce chance of risk occurring
Find ways to reduce impact if it does

Apply control and documentation
Have an owner for each risk
Have mechanisms to monitor and deal with risks

Risk assessment

Risk planning

Risk administration

See Pinto, J. (2010), *Project management, achieving competitive advantage*. Upper Saddle River, NJ, US: Prentice Hall, p221. Teale, D. (2001). *Successful project risk assessment* London: Hodder & Stoughton, p5

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How to deal with a risk

Eliminate it – drive the risk out of the project entirely

Risk: *Decision makers will not approve the project.*

Approach: *Use presentations and lobbying to convince them it is the best proposal.*

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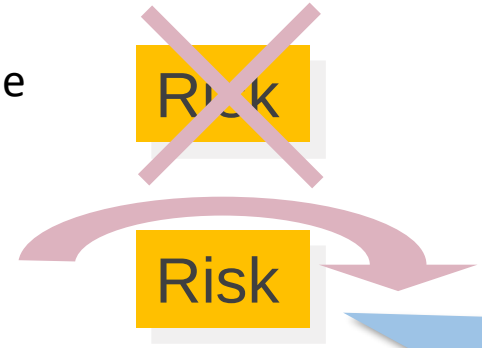
How to deal with a risk

Eliminate it – drive the risk out of the project entirely

Avoid it – find a way round it completely



Risk: *User of device may be electrocuted if live wires touch metal case.*

Approach: *Replace metal case with a plastic one.*

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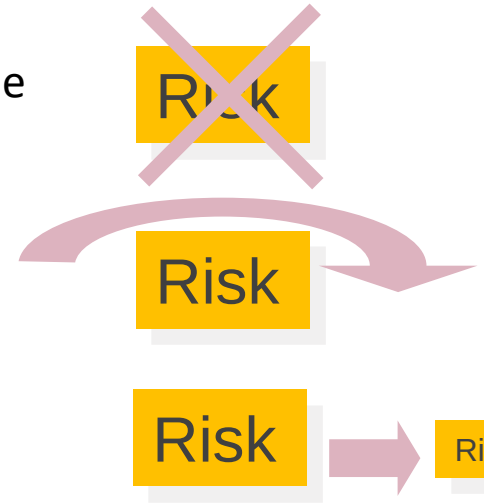
How to deal with a risk

Eliminate it – drive the risk out of the project entirely

Avoid it – find a way round it completely

Reduce it – find ways to reduce the impact – e.g. through staff training



Risk: *Worker may be killed or injured by falling from a height.*

Approach: *Provide proper equipment and safety clothing; train workers in safe practice.*

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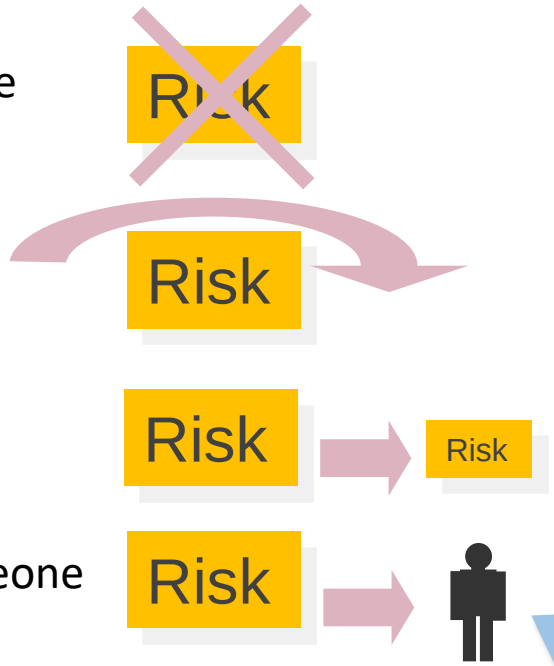
How to deal with a risk

Eliminate it – drive the risk out of the project entirely

Avoid it – find a way round it completely

Reduce it – find ways to reduce the impact – e.g. through staff training

Transfer it – transfer the risk to someone else – e.g. through insurance



Risk: *A seized bearing will cause expensive damage to the wind turbine.*

Approach: *Make the bearing supplier responsible for any costs due to bearing failure.*

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How to deal with a risk

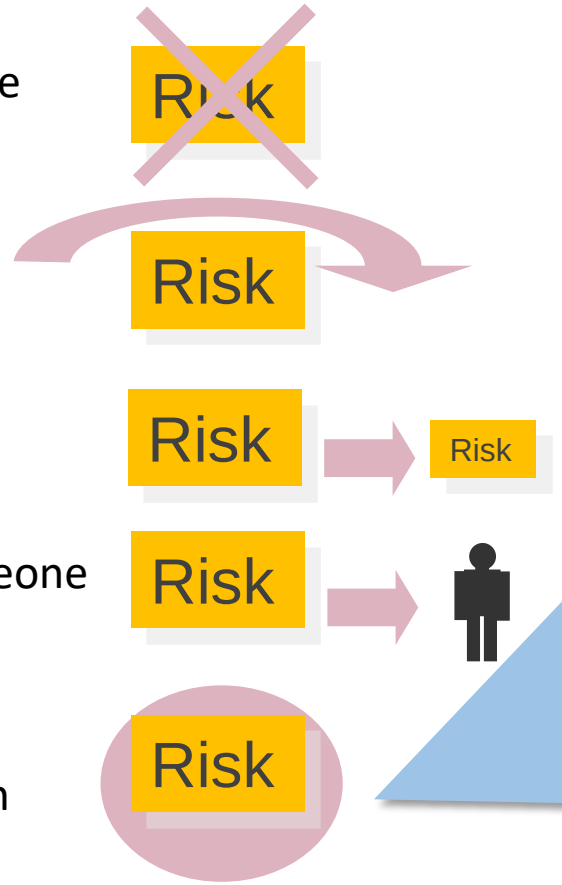
Eliminate it – drive the risk out of the project entirely

Avoid it – find a way round it completely

Reduce it – find ways to reduce the impact – e.g. through staff training

Transfer it – transfer the risk to someone else – e.g. through insurance

Accept it – understand the potential consequences, and take the risk with your eyes open



Risk: *The organisation shrinks the project or cancels it because of a downturn in business.*

Approach: *No immediate plan can be made without knowing the exact nature of the risk. But keep aware of the environment around the project.*

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Mitigation and contingency

- Get up to date plans of the building
- Rehearse how to break into the office
- Rehearse how to use the special camera
- Check the forged passes are accurate
- Wear a convincing disguise
- Speak the language fluently

Mission: Copy the secret plans located in this building

Risk: Getting caught

- Have a reason for being inside the office
- Be able to destroy the images
- Have a pre-planned escape route
- Have a way to signal your spymaster
- Practise being interrogated

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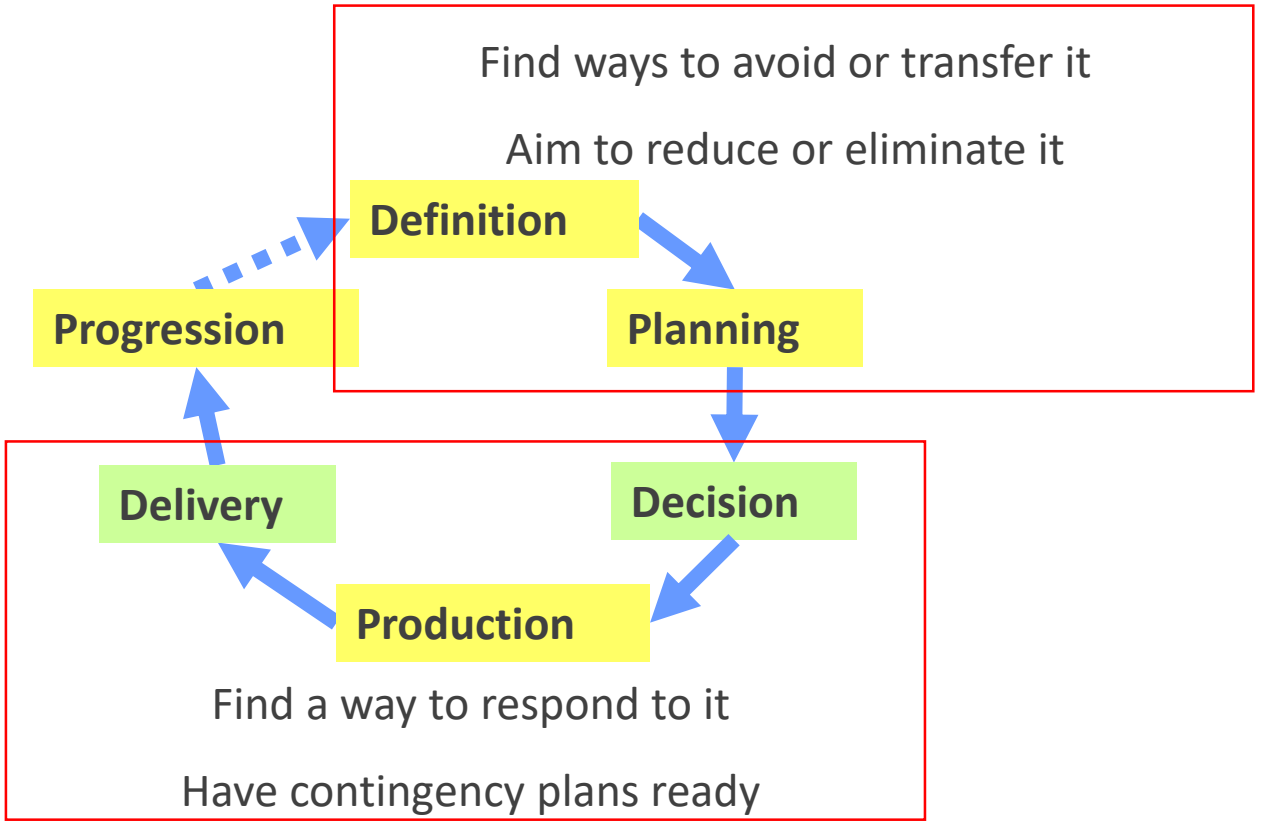
Mitigating risks



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- **Second time college team has entered**
- Car back axle broke after 17 hours last time
- **No means to fix it**
- College expects a better result this time
- **This year's race takes place in 120 days time**

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Pedal car race risks (Day 1)

Risk event	Owner	Probability (Likelihood)	Impact (Severity)	RPN	Rank	Migitation
College does not approve race entry	Project sponsor	8	10	80	1	Produce business case for entering, lobbying senior managers
Race accommodation is unavailable	Project manager	6	8	48	2 +	Book accommodation early and pay for it
Car is disqualified for rules infraction	Car designer	6	8	48	2 +	Have a group to review rules, raise queries with organisers
Car breaks down during race	Workshop team leader	4	10	40	4	Identify areas for additional endurance testing
Team member falls ill	Team manager	6	6	36	5	Train squad with two extra people
Team fails to meet training targets	Team manager	4	8	32	6	Increase training until team meet targets, have goals

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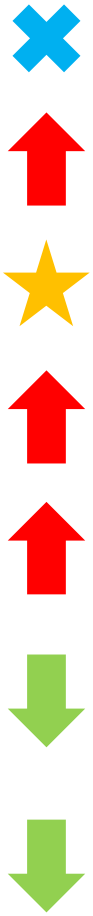
Pedal car race risks (Day 50)



Risk event	Owner	Probability (Likelihood)	Impact (Severity)	RPN	Rank *(was)*	Migitation
College does not approve race entry	Project sponsor				*(1)*	
Race accommodation is unavailable	Project manager	8	8	64	1 *(2)*	Book accommodation NOW and pay for it
College cancels entry to cut costs	Project sponsor	6	8		2 *(-)*	Lobby finance manager
Car breaks down during race	Workshop team leader	4	10		3 *(4)*	Identify areas for additional endurance testing
Team fails to meet training targets	Team manager	2	8		4 *(6)*	Team to follow a high endurance regime
Car is disqualified for rules infraction	Car designer	2	8		4 *(2)*	Rules confirmed with organisers, prepare for checking at the race
Team member falls ill	Team manager	2	4		6 *(5)*	Have team of seven in training, have weekly health checks

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Some classic ways to reduce risks

- **Get the best project manager you can**
- Give them a sensible level of authority
- **Plan thoroughly – use a proper work breakdown structure**
- Make sure estimates are realistic
- **Have frequent project monitoring and reporting**
- Emphasize support for the team
- **Have first class problem handling**
- Have frequent, open communications
- **Keep a close eye on discretionary spending**

Risk is one of the first things to consider – don't sign the contract until you understand the risks!

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Risk planning and management: core ideas

Each risk is judged in terms of the probability of it occurring and the impact on the project if it does.

Risks with very high impact need constant vigilance, especially those with a very low probability.

The aim of risk management is to press down the probability and impact of each risk it is driven out of the project.

Ways to deal with a risk include eliminating it, avoiding it, reducing it, transferring it, or – in the last case – accepting it.

Mitigation is about cutting down the probability or impact of a risk; contingency is having a plan to respond if it occurs.

The probability-impact table is a practical way to track and monitor risks over time.

Each risk needs an individual owner to monitor its status.

See Zavanak page *Risk in projects*.

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