PM101: Lecture 8
Requirements

Delivering the strategy

Vision Where we want to be versus where we are

Mission What are our goals?

Strategy How are we going to achieve them?

OUTCOME

Measure success through achieving BENEFITS

Determine what characteristics the output needs to have to achieve the benefits

Requirements

OUTPUT

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Requirements

- The project output
- What the output will do
- How the project will deliver it.

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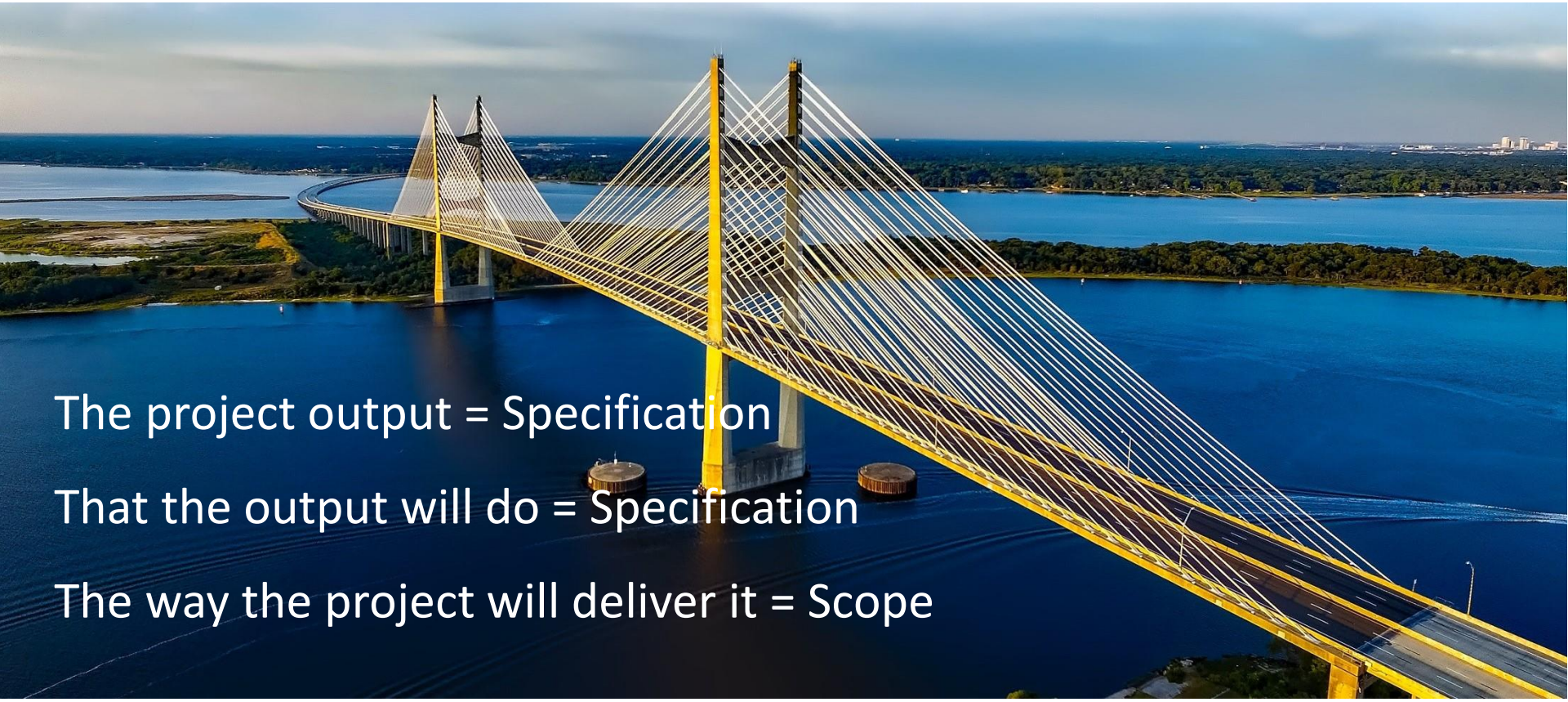
Specification and scope



The project output = Specification

That the output will do = Specification

The way the project will deliver it = Scope

Scope = all the work that will be done to create the specified output, which may include training, help-desk, maintenance, repairs, upgrades, disposal and recycling

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Requirements need to be managed so that…

- Everyone has a single definition of requirements with no doubt what they are (it is unambiguous).
- **By writing requirements down it is less likely they will be disputed.**
- The time and cost to produce the requirements can be properly estimated (and whether they exceed the organisation's broad expectations).
- **The project can be designed around logical progress milestones (through completion of elements of the output).**
- The actual time and cost to produce the required output can be properly measured.
- **Changes to requirements can be managed in a controlled way.**

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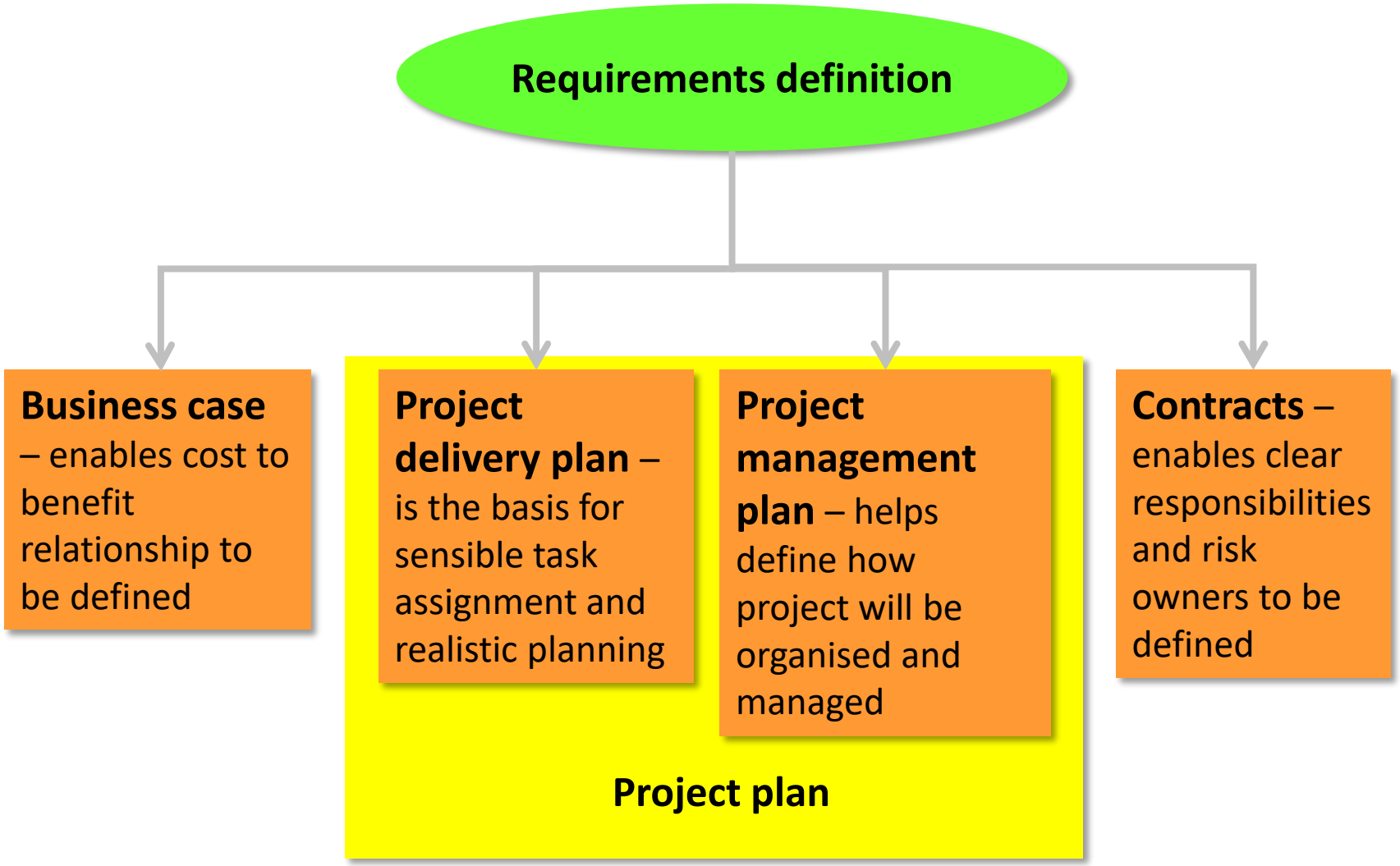
How requirements shape the project



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Types of requirements

Functional requirements — How the output will work

The physical characteristics and performance of the output — **System** (technical) **requirements**

User requirements — Performance, ease of use, maintenance needs

Requirements which derive from other requirements — **Derived requirements**

External requirements — Limitations imposed on the project

Limitations on how the project can be done — **Delivery requirements**

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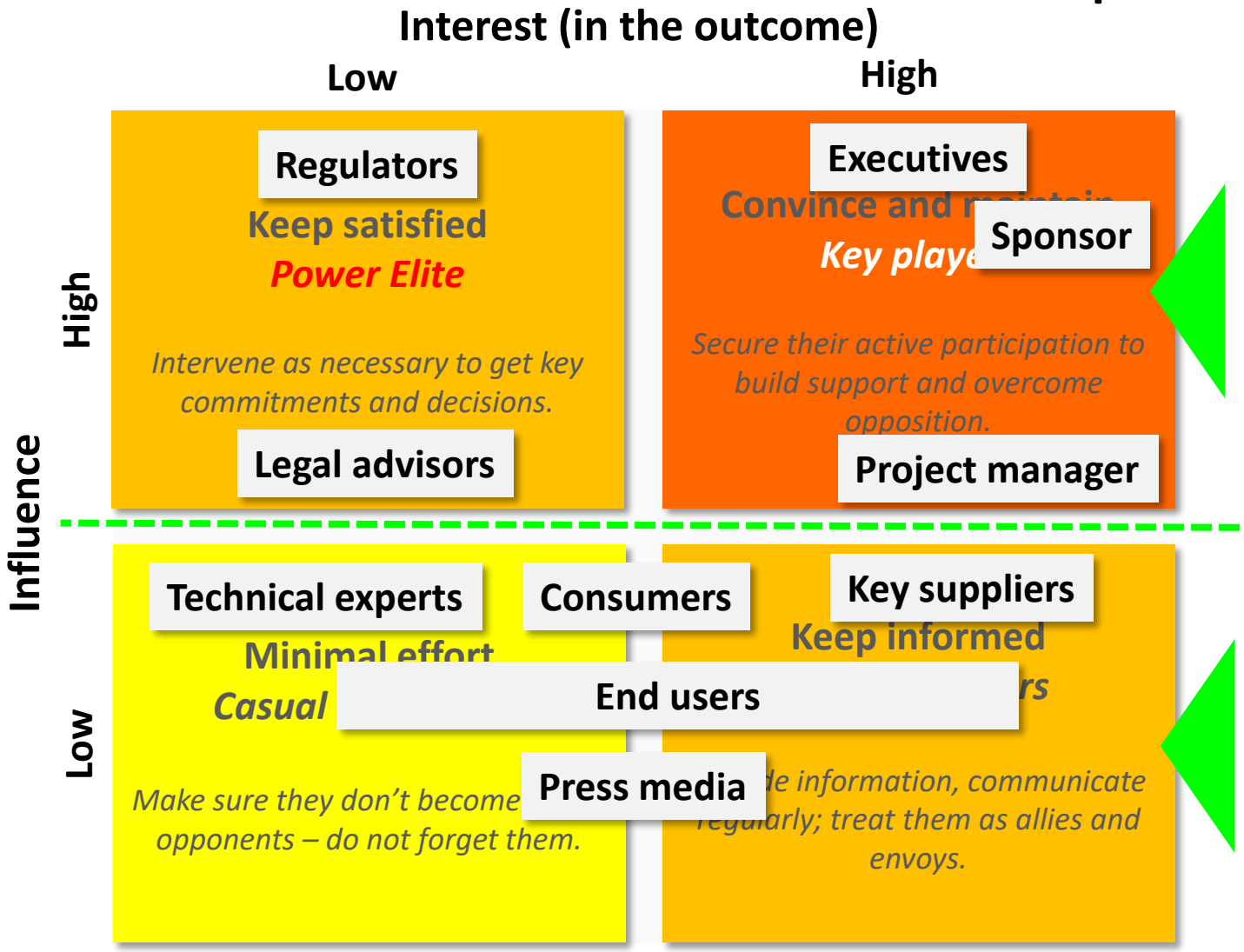
How stakeholders determine requirements



Source: Mendelow, A. (1991). Proceedings of 2nd International Conference on Information Systems, Cambridge, Mass.

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Prioritisation

Delighted customer

Satisfied customer

Served customer

DESIRED

- Personal ‘wish-list’
- Bells and whistles

WANTED

- Potentially valuable additional features
- Marginal to business case

NEEDED

- Essential to achieving the desired outcome
- Business case will not be met without it

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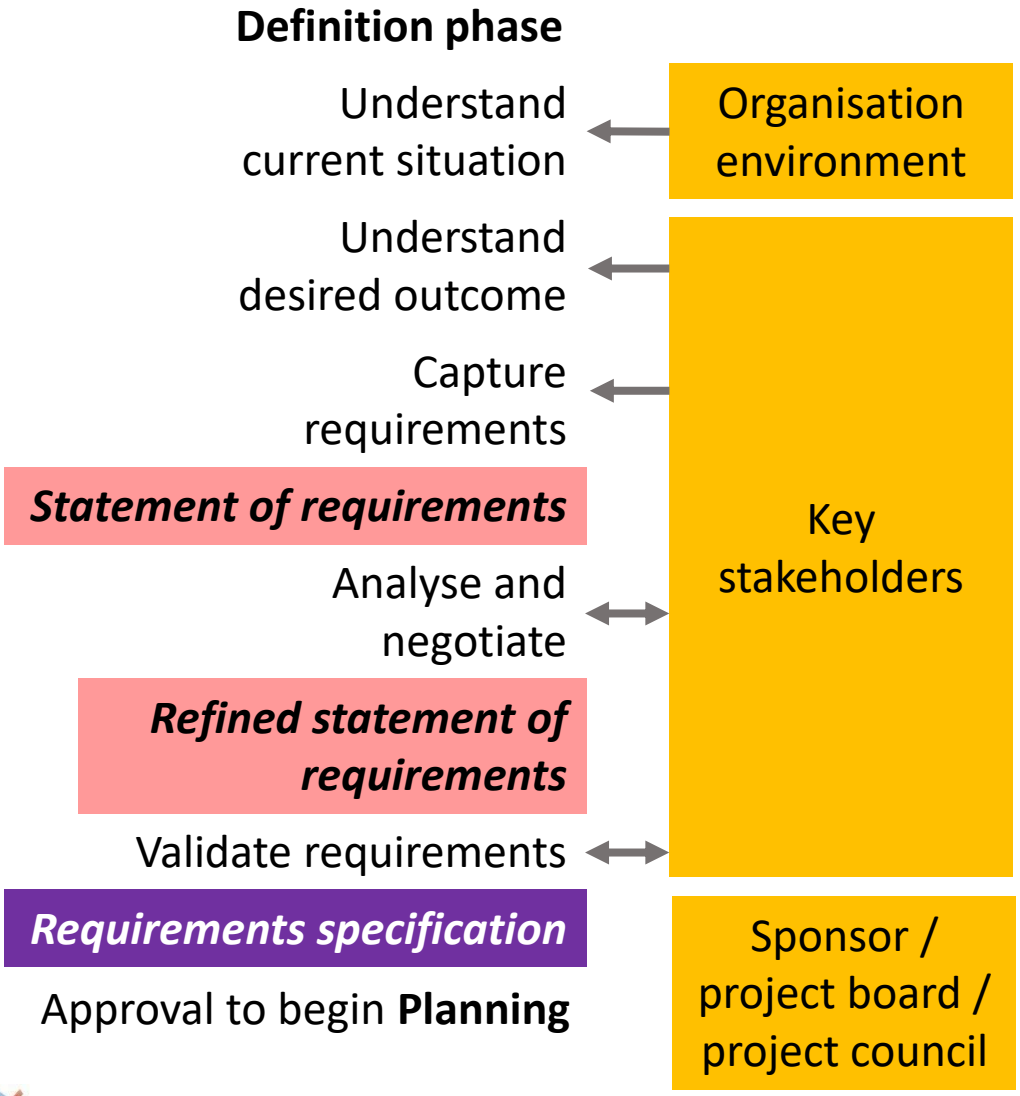
The requirements process



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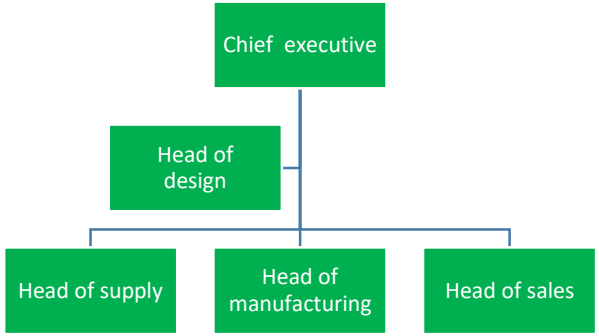
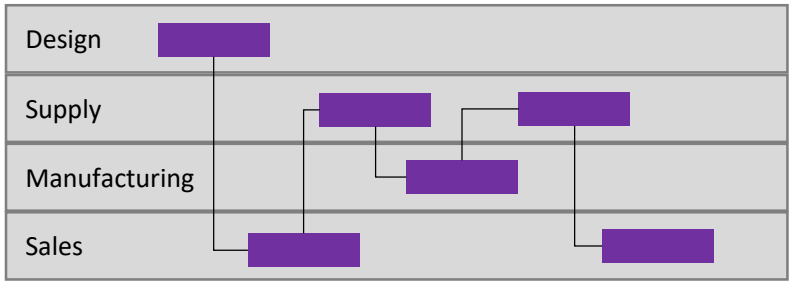
Defining the current situation

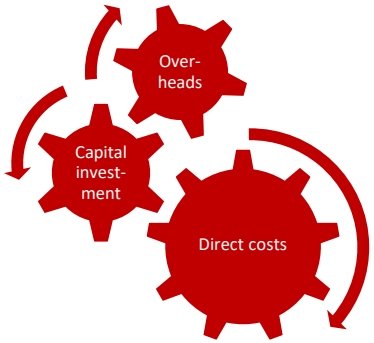
Organisational mapping



Process mapping



Cost analysis



Value build-up

- Bought out material
- Inbound logistics
- Manufacturing
- Stocking
- Outbound logistics
- Marketing support

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Collecting requirements: doing research

Interviews

- Face to face, phone, video
- Licence to ask subject
- Specific goal
- Open or closed questions

Focus group

- Small number – 8 to 10
- Run for about two hours
- Get emotional side of requirements
- Maybe show mock-ups

Questionnaire

- Capable of analysis
- Clarity is vital
- Apply rigorous pre-testing
- Sample size and representative sample
- Not cheap or quick if done properly

Workshop

- Target users directly involved
- Longer than focus group
- Careful planning and facilitation
- Broad cross-section of users

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Collecting requirements: sharing ideas

Concepts
- Public display of potential new product
- Test emotional reactions
- Based on research and creative work
- Discloses ideas to competitors

3-D visualisation
- Computer-based modelling
- Aspects like play of light, people flows
- Options of arrangement of elements
- Modifications can be done in real time

Rapid prototyping
- Scale models, working prototypes
- Demonstrates how it could work
- Does not have to be perfectly made
- Allows elements to be fine-tuned

Simulation
- Next best thing to reality
- Create an immersive virtual world
- Experience using the output
- Computer-Aided Virtual Environment

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Collecting requirements: watching users

Social media

- Track user and public dialogue
- Look at comments and complaints
- Most vocal people may not be typical
- Ethical concerns

Data mining

- Massive data being accumulated
- Internet sales, GPS, CCTV
- Interpret patterns of behaviour
- Ethical concerns

Trend watching

- Put staff in ‘cool’ locations
- Away from the corporate culture
- Observe what trend-setters are doing

Studying the competition

- Experience rivals’ products
- Visit trade shows, talk to industry watchers
- Study secondary data

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Not collecting requirements: just knowing

“If I had asked people what they wanted they would have said faster horses.”

Henry Ford

“It's really hard to design products by focus groups. A lot of times, people don't know what they want until you show it to them."

Steve Jobs

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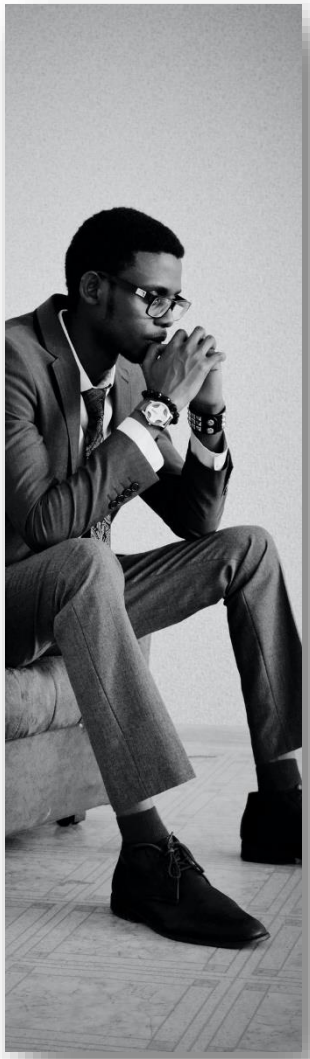
Requirements may change



The client changes their mind

New technology makes the original requirements obsolete

External factors may change

Doing the work may reveal a better way

Ideas make not work, prototypes may fail, previews may show users are unhappy.

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The big danger: Scope creep

The specification and/or the scope change (and generally expand) without any proper control, leading to a sub-optimal output and massive time and cost over-runs.

Bradley Fighting Vehicle

Eventual programme cost $14 billion.

US Army spec.	1960	1980
Capacity	12 troops	6 troops
Weight	25-27 tons	30 tons
Armour	Heavy duty	Lightweight
Versatility	Amphibious	Land only
Armament	20mm cannon, machine gun	Machine gun, 25mm cannon, anti-tank missiles

Why?

- Indecision by Army chiefs
- Political interference
- Changing warfare pattern
- Weak project governance
- Cost plus contracts
- No penalties for failure
- Lack of impetus to finish
- In too deep to walk away

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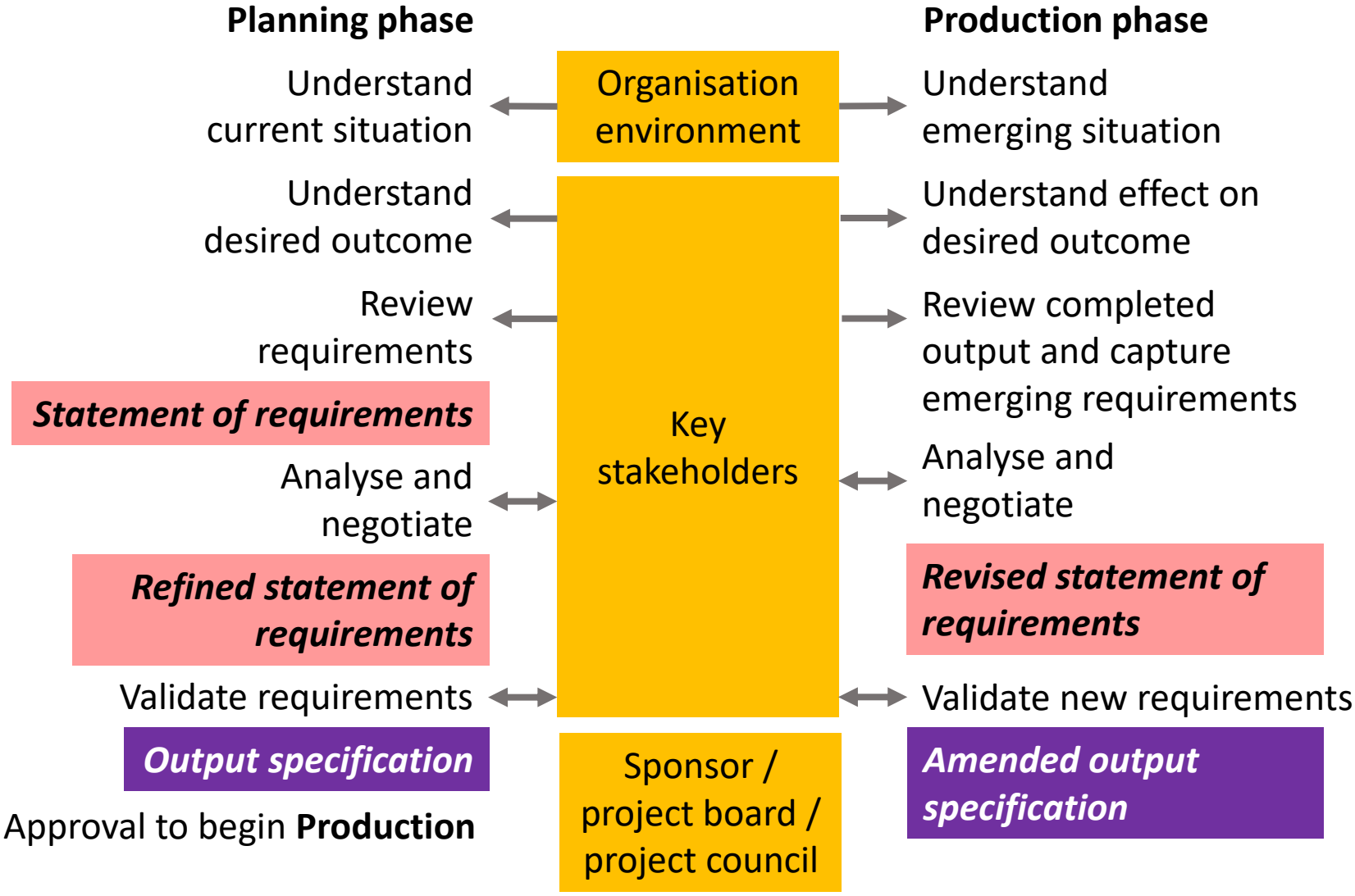
The on-going requirements process



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Requirements: core ideas

Requirements need to define the output specification and the scope of the work needed to carry out the project.

Requirements management is an important part of keeping the project under control because requirements can change for legitimate reasons after the project begins.

They are strongly influenced by key stakeholders.

Requirements can be discovered by various means, such as watching or interviewing potential users and getting reactions to new concepts and ideas.

Occasionally, a far-sighted individual will produce a revolutionary product or service that people only recognise their need for when they see it, yet it changes the world profoundly..

Scope creep is where the project leaders fail to prevent the output specification and the scope of work expanding out of control.

See Zavanak page *Requirements*.

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