The Systems Thinking Tool Box

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".. bump, bump, bump, on the back of his head. It is, as far as he knows the only way of coming downstairs, but sometimes he feels that there really is another way, if only he could stop bumping for a moment and think of it."

Winnie the Pooh - A. A. Milne

Quad of Aims (QoA)

What is it and what does it do?

A Quad of Aims is a simple Systems Thinking tool that can greatly help in clarifying and defining the aims (or objectives[1]) of a system or activity. It is a particularly useful tool because it encourages the determination of "SMART" aims.

Why do it?

Determining and writing clear and concise aims is a difficult task. Yet the exercise is often considered trivial and even not important resulting in poorly written aims that are not clear, concise or relevant.   Poor aims, however, are often cited as the major reason for project or system failure and is neatly summed up is the proverb:

"if you don't know where you are going, don't be surprised if you end up somewhere else".

This proverb is actually quite useful in helping defining what constitutes a good aim:

1. Tells you clearly where you are going.
2. Provides a way of knowing when you are there.
3. Informs you that you are on the right track.

These ingredients of a good aim are often encapsulated as the mnemonic SMART where:

Specific and Succinct
Measurable some that progress and achievement can be confirmed
Achievable and realistic within given constraints
Relevant to any bigger task
Time bound

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[1] The Quad of Aims can be used to help define goals, aims or objectives. In the following, just aims are used to be concise. Aims and goals are often defined as being broad general statements of intent, whereas objectives are more specific.

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Ideally, all aims should be SMART. For example, consider J.F. Kennedy's famous statement:

> "before this decade is out, of landing a man on the Moon and returning him safely to Earth".

This aim is SMART. It is very high-level, one would even classify it as a goal rather than an aim, but it has all the attributes of a SMART aim.

The Quad of Aims can help us to generate SMART aims (and objective and goals) by getting us to look at what is to be achieved from four directions – hence the "quad".

Where and when to use it?

A Quad of Aims is a powerful tool because it can be used in many situations. To name but a few:

- In setting the objectives of a meeting (particularly useful if this has not been done already).
- Defining the aims of training or educational course.
- In defining a project:
  - A process improvement project
  - A research project
  - A product design project
  - A marketing project
  - Etc.
- In defining the purpose of a system.

The Quad of Aims is particularly useful when used with a group of people or a team to ensure clarity of purpose and to define tangible outputs and outcomes.

Who does it?

A Quad of Aims can be constructed by an individual or by a team. Indeed, on a personal note, I always use a Quad of Aims when writing proposals to help me be clear what I am going to offer and to make it clear to the reader what I am proposing. However, a Quad of Aims is often at its most powerful when used by a team, where each member can bring different ideas to the table.

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How to do it?

The Quad of Aims uses a simple template shown in Figure 1.

Title: a statement of the title of the activity or system	
Purpose: a clear and concise statement of WHAT the activity or system is aiming to achieve.	**Stakeholders – Benefits:** A list of stakeholders WHO will benefit if the purpose is achieved and statement of HOW they will benefit.
Deliverables/End Results: a list of WHAT will be delivered at the end of the activity or a list of the outputs of the system.	**Measures of Success:** a list of the criteria or outcomes that can be used to determine if the end results have been achieved and the benefits realised and WHEN will the end results be delivered?

Figure 1: the Quad of Aims Template

To construct a Quad of Aims the template in Figure 1 is completed quadrant by quadrant in the order given in Figure 2.
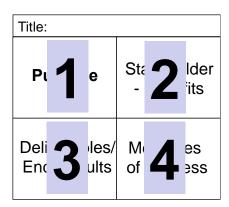

Figure 2: Quad of Aims order of construction

Note that in Figure 2, the "Title" is not sequenced. It can either be completed before or after the quadrants have been completed. The title is important since it provides a simple way of scoping the activity or system. Initially you may have difficulty in defining a title since it is likely that the boundary activity or system is not clear. In such cases, complete the quadrants and return to the title.

Quadrant 1 – The Purpose

Quadrant 1 contains a concise and clear statement of what the system /activity is aiming to achieve. In writing the purpose it must contain a verb and associated object that defines something that has got to happen.

Table 1 below shows some example purpose statements for a variety of situations.

Situation	Purpose
Systems Thinking training course	To provide delegates with an understanding, overview and specific knowledge of Systems Thinking concepts, principles and practice.
Requirements Gathering workshop	To elicit and capture the requirements of the users for the proposed Equipment Health Monitoring system.
Sales Meeting	To review the monthly sales data and recommend actions for the coming month.

Table 1: Examples of Purpose statements

Note that each purpose statement:

- Starts with "To" which is followed by a verb.

- Is between 10 and 20 words in length.
  - Below 10 words will not have enough detail to be specific
  - Above 20 words and the statement is no longer concise

- Is meaningless without the context provided by the "situation" hence the need for every Quad of Aims to have a title.

Quadrant 2 Stakeholder – Benefits

Quadrant 2 should list the names of the STAKEHOLDERS of the system/activity and how they will BENEFIT if the Purpose is met. For example, Table 2 shows a typical quadrant 2 for the Systems Thinking Training course given in Table 1 above.

Title: Systems Thinking Training Course	
Purpose: To provide delegates with an understanding, overview and specific knowledge of Systems Thinking concepts, principles and practice.	**Stakeholders – Benefits** Delegates • Greater understanding of Systems Thinking. • Ability to apply the concepts and principles to their work. The Employer • Greater in-house capability and understanding to apply Systems Thinking to understanding complex systems and problem solving.

Table 2: Example of Stakeholders and Benefits

Note that the benefits are specific to a stakeholder. Should two stakeholders realise the same benefit it should be repeated.

Quadrant 3 – Deliverables/End Results

The Deliverables or End Results should specify WHAT will be delivered at the end of the activity or list the outputs of the system. Table 3 provides some examples that relate to the situations used in Table 1.

Situation	Deliverables/ End Results
Systems Thinking training course	At the end of the course delegates will have: • A greater understanding of Systems Thinking. • Understanding of how Systems Thinking can impact upon their work. • Improve knowledge and skills in using Systems Thinking tools.
Requirements Gathering workshop	A set of raw requirements with target • Organised into groups • With rationale
Sales Meeting	At the end of the meeting we will have: • A statistical review of the last month's sales by product in terms of value and volume against targets and control limits. • Identified and recorded short term (next month) and long term (6 months) actions and completion date.

Table 3: Example Deliverables/ End Results

It is important to note that the Deliverables/End Results are the immediate outputs of the activity or system. The longer terms consequences or outcomes of the Deliverables/ End Results are captured in the 4th quadrant.

Quadrant 4 Measures of Success

The last quadrant contains a list of the criteria or outcomes that can be used to determine if the end results have been achieved and the benefits realised. Since these are often longer term we may also specify when the end results be delivered. Table 4 shows the Measures of Success for the "Systems Thinking training course"

Situation	Measures of Success
Systems Thinking training course	Delegates recognise the need for, and adopt Systems Thinking by applying the concepts and principles and tools to their work. After 3 months, delegates will be able to provide evidence of applying system thinking within their works area.
Requirements Gathering workshop	An agreed User Requirements Document and associated validation criteria

Table 4: Examples of Measures of Success

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What Goes Wrong: The limitations of a Quad of Aims

Constructing a Quad of Aims is a very simple but a powerful tool for generating, capturing and organizing clear and concise statements of aims for activities or systems. It does however, have limitations and can be awkward to use. Some of the issues with its use are given below with advice on avoiding, and recovering from, the problem:

- Individuals dominating the team. If the group is hierarchical, consider using a facilitator or limit the number people involved in the team. Alternatively, allow the team members to generate their own personal Quad of Aims for the situation. These can be shared and used to build a team Quad of Aims.

- People often have difficulty distinguishing between the "Deliverables/End Results" and the "Measures of Success". In simple terms, the deliverables are the immediate output while the measures of success capture the longer-term view or outcomes of the outputs.

Success Criteria

The following list represents a set of criteria that have been found to be useful when constructing a Quad of Aims.

- If team-based, consider splitting the team if greater than seven with each preparing their own Quad and combining the results.

- If team-based, consider using an experienced independent facilitator.

- Start with the purpose statement aiming for 15 – 20 words. Ensure there is a clear imperative verb present that succinctly captures the purpose.

- Ensure the constraints attached to the purpose are relevant, realistic and clearly defined.

- If the Quad of Aims involves creating or changing a system, remember the system itself will have a quad of aims as will the task. You may have to generate two.

- The End Results/Deliverables are the outputs if the purpose is achieved, The Measures of Success are a longer term view defining the outcomes.

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