

Aerospace Systems 2019 v1.1

IA3: Sample assessment instrument

Project — folio (25%)

This sample has been compiled by the QCAA to assist and support teachers in planning and developing assessment instruments for individual school settings.

Student name

Student number

Teacher

Issued

Due date

Marking summary

Criterion	Marks allocated	Provisional marks
Retrieving and comprehending	5	
Analysing	7	
Synthesising and evaluating	9	
Communicating	4	
Overall	25	

Conditions

Technique	Project — folio
Unit	Unit 4: Aircraft performance systems and human factors
Topic/s	Topic 1: Aircraft performance Topic 2: Aircraft navigation Topic 3: Advanced navigation and radio communication technologies Topic 4: Human performance and limitations
Duration	5–7 weeks
Mode/length	Part A — Documents the development of an aircraft performance systems and/or human factors problem solution <ul style="list-style-type: none">• Multimodal: 7–9 single-sided A3 pages or equivalent digital media Part B — Summary report <ul style="list-style-type: none">• Multimodal: 2–3 single-sided A4 pages or equivalent digital media
Individual/group	Individual
Other	The table of contents and reference list are not included in the page count.

Context

An Australian media company has been commissioned to film a documentary on unique Australian landmarks for the Asian market. The documentary must include landmarks from Queensland (Great Barrier Reef), Northern Territory (Kakadu National Park) and Western Australia (Bungle Bungle Range).

The media company has allocated two members of its media team to film the documentary, and they will use between 60 kg and 70 kg of various media equipment during filming, including lighting, cameras and sound equipment. The company has allocated ten days maximum to complete the operation and will require at least two days at each location. The company has requested that the operation be conducted as economically and efficiently as possible given their requirements. The operation is to originate and conclude at Brisbane's Archerfield Airport during the month of July.

Task

Your task is to use the problem-solving process in Aerospace Systems to:

- develop a solution to the documentary operation problem that cost-effectively and safely transports the media team and their equipment to meet the media company's requirements
- document the problem-solving process used to propose the solution in a folio
- provide the media company with a summary report of the preferred documentary operation solution.

To complete this task, you must:

Part A

- recognise and describe the characteristics of the documentary operation problem in relation to related aerospace systems, subsystems and system components
- symbolise and explain the incorporated aerospace systems, the development of ideas and the solution with visual frameworks, causal and feedback loops, flow charts, diagrams, sketches and/or pictures
- analyse aerospace systems, technology and research information, contributing factors and areas of weakness to identify the elements, components and features, and their relationship to the structure of the documentary operation problem
- determine solution success criteria considering the identified elements, components and features, and their relationship to the structure of the documentary operation problem
- synthesise aerospace systems, technology and research information, and ideas to propose a possible solution to the documentary operation problem
- generate the proposed solution to the documentary operation problem and test, simulate or hypothesise to provide data (e.g. pictures, tables, surveys, interview recordings, audio-visual recording) for evaluation including (if applicable) annotated photographs or screen captures of the solution prior to and after testing, simulating or hypothesising
- evaluate and refine ideas and a solution to the documentary operation problem in relation to solution success criteria
- recommend and justify future modifications or enhancements to ideas and the solution to the documentary operation problem

- communicate the development of ideas and the solution to the documentary operation problem using written and visual features, e.g. PMI (plus–minus–interesting) charts, tables, pictures, bubble diagrams, feedback loops
- communicate data using diagrams, tables and/or spreadsheets.

Part B

- develop a summary report for the media company drawn from Part A documentation. The summary report includes key visual frameworks, feedback loops, flow charts, diagrams, sketches or pictures that provide a concise account of the preferred solution to the documentary operation problem, including key features and any recommendations made to inform future solution development.

Checkpoints

- Students will submit a draft during week 3 of the allocated assessment time. This will include an exploration of the documentary operation problem, a record of the development of ideas and an indication of a proposed solution.

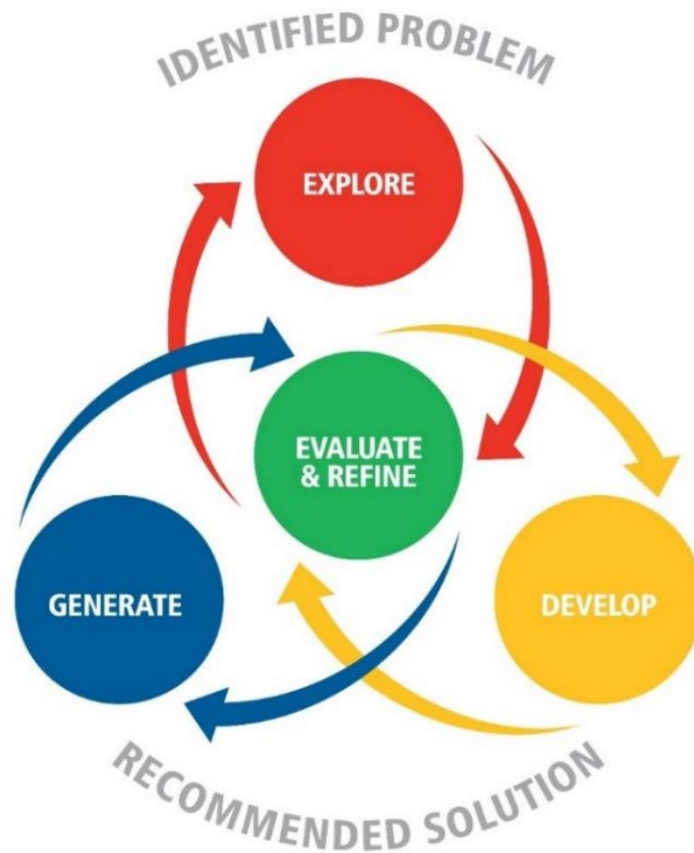
Authentication strategies

- The teacher will provide class time for task completion.
- Students will produce sections of the final response under supervised conditions.
- Students will each produce a unique response with the teacher monitoring how they identify the problem and problem solve.
- Students will provide documentation of their progress at indicated checkpoints.
- The teacher will conduct interviews or consultations with each student as they develop the response.
- Students must acknowledge all sources.
- Students must submit a declaration of authenticity.
- The teacher will ensure class cross-marking occurs.

Scaffolding

In Aerospace Systems, students are required to document in a folio how they apply a problem-solving process in response to an identified real-world aerospace problem.

The problem-solving process in Aerospace Systems



The response will include the following folio and referencing conventions:

- headings that organise and communicate the student's thinking through the iterative phases of the problem-solving process in Aerospace Systems
- a table of contents page
- a reference list and a recognised system of in-text referencing.

Instrument-specific marking guide (IA3): Project — folio (25%)

Criterion: Retrieving and comprehending

Assessment objectives

1. recognise and describe the aircraft performance systems and/or human factors problem, aerospace technology knowledge, concepts and principles, and systems thinking habits and systems thinking strategies in relation to aircraft performance systems and/or human factors
2. symbolise and explain ideas, a solution and relationships in relation to aircraft performance systems and/or human factors

The student work has the following characteristics:	Marks
<ul style="list-style-type: none"> • accurate and discriminating recognition and discerning description of the aircraft performance systems and/or human factors problem, aerospace technology knowledge, concepts and principles, and systems thinking habits and systems thinking strategies in relation to aircraft performance systems and/or human factors • adept symbolisation and discerning explanation of ideas, a solution and relationships in relation to aircraft performance systems and/or human factors with visual frameworks, causal and feedback loops, flow charts, diagrams, sketches and/or pictures. 	4–5
<ul style="list-style-type: none"> • accurate recognition and appropriate description of the aircraft performance systems and/or human factors problem, aerospace technology knowledge, concepts and principles, and some systems thinking habits and systems thinking strategies in relation to aircraft performance systems and/or human factors • competent symbolisation and appropriate explanation of some ideas, a solution and relationships in relation to aircraft performance systems and/or human factors with visual frameworks, causal and feedback loops, flow charts, diagrams, sketches and/or pictures. 	2–3
<ul style="list-style-type: none"> • variable recognition and superficial description of aspects of the aircraft performance systems and/or human factors problem, concepts or principles in relation to aircraft performance systems and/or human factors • variable symbolisation or superficial explanation of aspects of ideas, a solution, or relationships in relation to aircraft performance systems and/or human factors. 	1
<ul style="list-style-type: none"> • does not satisfy any of the descriptors above. 	0

Criterion: Analysing

Assessment objectives

- analyse the aircraft performance systems and/or human factors problem and information in relation to aircraft performance systems and/or human factors
- determine solution success criteria for the aircraft performance systems and/or human factors problem

The student work has the following characteristics:	Marks
<ul style="list-style-type: none">insightful analysis of the aircraft performance systems and/or human factors problem, and relevant aerospace systems, technology, and research information in relation to aircraft performance systems and/or human factors to identify the relevant elements, components and features, and their relationship to the structure of the problemastute determination of essential solution success criteria for the aircraft performance systems and/or human factors problem.	6–7
<ul style="list-style-type: none">considered analysis of the aircraft performance systems and/or human factors problem, and relevant aerospace systems, technology, and research information in relation to aircraft performance systems and/or human factors to identify the relevant elements, components and features, and their relationship to the structure of the problemlogical determination of effective solution success criteria for the aircraft performance systems and/or human factors problem.	4–5
<ul style="list-style-type: none">appropriate analysis of the aircraft performance systems and/or human factors problem and aerospace systems, technology, and research information in relation to aircraft performance systems and/or human factors to identify some of the elements, components and features of the problemreasonable determination of some solution success criteria for the aircraft performance systems and/or human factors problem.	2–3
<ul style="list-style-type: none">statements about the aircraft performance systems and/or human factors problem, or information in relation to aircraft performance systems and/or human factorsvague determination of some success criteria for the aircraft performance systems and/or human factors problem.	1
<ul style="list-style-type: none">does not satisfy any of the descriptors above.	0

Criterion: Synthesising and evaluating

Assessment objectives

5. synthesise information and ideas to propose a possible aircraft performance systems and/or human factors solution
6. generate an aircraft performance systems and/or human factors solution to provide data to assess the feasibility of the proposal
7. evaluate and refine ideas and a solution to make justified recommendations

The student work has the following characteristics:	Marks
<ul style="list-style-type: none"> • coherent and logical synthesis of relevant aerospace systems, technology and research information, and ideas to propose a possible aircraft performance systems and/or human factors solution • purposeful generation of an aircraft performance systems and/or human factors solution to provide valid data to critically assess the feasibility of a proposal • critical evaluation and discerning refinement of ideas and a solution using success criteria to make astute recommendations justified by data and research evidence. 	8–9
<ul style="list-style-type: none"> • logical synthesis of relevant aerospace systems, technology and research information, and ideas to propose a possible aircraft performance systems and/or human factors solution • effective generation of an aircraft performance systems and/or human factors solution to provide valid data to effectively assess the feasibility of a proposal • reasoned evaluation and effective refinement of ideas and a solution using success criteria to make considered recommendations justified by data and research evidence. 	6–7
<ul style="list-style-type: none"> • simple synthesis of aerospace systems, technology, and research information and ideas to propose a possible aircraft performance systems and/or human factors solution • adequate generation of an aircraft performance systems and/or human factors solution to provide relevant data to assess the feasibility of a proposal • feasible evaluation and adequate refinement of ideas and a solution using some success criteria to make fundamental recommendations justified by data and research evidence. 	4–5
<ul style="list-style-type: none"> • rudimentary synthesis of partial aerospace systems, technology, or research information and/or ideas to propose an aircraft performance systems and/or human factors solution • partial generation of an aircraft performance systems and/or human factors solution to provide elements of data to partially assess the feasibility of a proposal • superficial evaluation of ideas or a solution using some success criteria to make elementary recommendations. 	2–3
<ul style="list-style-type: none"> • unclear combinations of information or ideas • generation of elements of an aircraft performance systems and/or human factors solution • identification of a change about an idea or the solution. 	1
<ul style="list-style-type: none"> • does not satisfy any of the descriptors above. 	0

Criterion: Communicating

Assessment objectives

8. make decisions about and use mode-appropriate features, language and conventions to communicate development of the solution

The student work has the following characteristics:	Marks
<ul style="list-style-type: none">discerning decision-making about, and fluent use of,<ul style="list-style-type: none">written and visual features to communicate about a solutionlanguage for a technical audiencegrammatically accurate language structuresfolio and referencing conventions.	3–4
<ul style="list-style-type: none">variable decision-making about, and inconsistent use of,<ul style="list-style-type: none">written and visual featuressuitable languagegrammar and language structuresfolio or referencing conventions.	1–2
<ul style="list-style-type: none">does not satisfy any of the descriptors above.	0



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