# Digital Solutions 2019 v1.2

## IA3 assessment instrument

### Project - folio (25%)

#### Assessment objectives

This assessment instrument is used to determine student achievement in the following objectives:

1. recognise and describe key elements of an application, components of data exchange systems, and data security processes

2. symbolise and explain data interface, structures and specifications; data flow relationships within and between systems; and digital methods of exchanging data

3. analyse a data exchange problem and information related to data security

4. determine data exchange system requirements, a security strategy for data, and prescribed and self-determined criteria

5. synthesise information and ideas to determine selected data, algorithms and coded components of data exchange solutions

6. generate components of the data exchange solution

7. evaluate impacts, coded components and a data exchange solution against prescribed and self-determined criteria to make refinements and justified recommendations

8. make decisions about and use mode-appropriate features, written language and conventions for a technical audience.

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| **Subject** | Digital Solutions | **Instrument no.** | IA3 |
| **Technique** | Project – folio  |
| **Unit** | Unit 4: Digital impacts |
| **Topics** | Topic 1: Digital methods for exchanging dataTopic 2: Complex digital data exchange problems and solution requirementsTopic 3: Prototype digital data exchanges |
| **Conditions** |
| **Duration** | Up to 6 weeks |
| **Mode** | Multimodal | **Length** | Length:* 6-8 A3 pages
* 1-2 A4 pages of code with annotations
* 1-2 minute demonstration of the functionality of the data exchange solution by video recording
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| **Individual / group** | Individual | **Other** | * The reference list and appendixes are not included in the page count.
* Schools implement authentication strategies that reflect QCAA guidelines.
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| **Resources available** | * Computers
* Internet
* Stimulus (technical specifications)
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| **Context** |
| Smart Traveller (<https://smartraveller.gov.au/>) is the Australian Government's foreign travel advice service. Their online services currently include a website and syndicated (RSS) feeds. They would like to expand their online services to offer an API. |
| **Task** |
| Read the technical specifications (stimulus material) and then present a proof of concept for developing a new API for Smart Traveller advice.The new API must:* Organise relevant travel information into a logical data structure or store, that can be easily accessed or manipulated
* Return resource requests in the required format (E.g.: JSON or XML)

Additionally, you must create a web application that simulates public and private data exchanges with the API.The web application will:* Request data from the API
* Appropriately format data from API responses and deliver the resulting mark-up to the client’s browser

The technical specifications provide further details about requirements for the solution. You must document the use of the Digital Solutions problem-solving process in responding to the problem and generate the components of the entire data exchange solution. |
| **To complete this task, you must:** |
| **Part 1 – Research and investigation*** recognise and describe key elements of
	+ a data exchange application
	+ components of data exchange systems
	+ data security processes
* symbolise using mind maps and one or more of constructed sketches, annotated diagrams, images or screenshots
* explain
	+ data interface, data structures and data specifications
	+ digital methods of exchanging data
* analyse the data exchange problem to identify
	+ the data structures, including data input and output requirements
	+ data exchange methods
* determine data exchange system requirements
* evaluate against prescribed and self-determined criteria the most suitable process for exporting and importing data between the digital systems.

**Part 2 – Data exchange solution*** symbolise using mind maps and one or more of constructed sketches, annotated diagrams, images or screenshots
* explain
	+ data flow relationships within and between systems
	+ programming features and ideas using annotated code segments
	+ algorithms communicated in pseudocode
* determine prescribed and self-determined criteria
* synthesise data, algorithm and coded component ideas to generate a data exchange solution that stimulates the exchange of data between digital systems; the solution will receive data in one format and programmatically transform it into another format for sharing/displaying
* evaluate the
	+ accuracy of code after testing and identify errors and actions to make improvements
	+ digital data exchange solution against prescribed and self-determined criteria
	+ functionality, useability and efficiency of the components of the digital solution
* make refinements and justified recommendations for current and future improvements.

**Part 3 – Impacts*** recognise and describe key elements of
	+ risks associated with storing and accessing data
	+ digital security strategies, including authentication and encryption strategies
* analyse a data security problem to identify risks to
	+ the system
	+ data security and privacy
* determine a security strategy for data
* evaluate against prescribed and self-determined criteria the impact of data transmission on personal, social and economic needs
* recommend an appropriate strategy to increase data security.
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| **Stimulus** |
| See Technical specifications |
| **Checkpoints** |
| □ Term X Week X: Submit data requirements, identification of algorithms and some code and user interface |
| □ Term X Week X: Complete draft submission |
| □ Term X Week X: Final submission |

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| **Criterion** | **Marks allocated** | **Result** |
| **Retrieving and comprehending**Assessment objectives 1, 2 | 6 |  |
| **Analysing**Assessment objectives 3, 4 | 7 |  |
| **Synthesising and evaluating**Assessment objectives 5, 6, 7 | 8 |  |
| **Communicating**Assessment objective 8 | 4 |  |
| **Total** | 25 |  |
| **Authentication strategies** |
| * Students will provide documentation of their progress at indicated checkpoints.
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| * Students must acknowledge all sources.
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| * Students must submit a declaration of authenticity.
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| * The teacher will collect copies of the student response and monitor at key junctures.
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| * The teacher will conduct interviews or consultations with each student as they develop the response.
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| **Scaffolding** |
| Your response must include:* headings that organise and communicate the iterative phases of the Digital Solutions problem-solving process
* source referencing, using the school’s in-text referencing style
* four A3 pages presenting research and investigations, including sample code on one A4 page (Part 1 — Research and investigation)
* three A3 pages presenting the web application, including sample code on one A4 page (Part 2 — Data exchange solution)
* one A3 page on impacts (Part 3 — Impacts).
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| **Submission Requirements** |
| * multimodal response
	+ PDF
	+ 5 MB limit
* video demonstration of functionality
	+ MP4, MOV or AVI
	+ 500 MB limit
* student script or speaker’s notes
	+ PDF
	+ 5 MB limit
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