

DESIGNING A RUBRIC TO CATEGORISE PROJECTS OF SIGNIFICANCE TO THE SUNSHINE COAST REGION

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ABSTRACT

Assessment frameworks provide a range of matters to consider when evaluating project options. Project advocates may even use frameworks to self-assess the quantifiable parts of their application. That said, assessment frameworks can be complicated to navigate and set rigid thresholds that do not apply to all projects. A new system is required to accommodate dynamic projects such as those affected by disruptive technologies and those requiring a flexible scope due to the highly uncertain nature of the work required.

Assessment rubrics, such as those adopted in higher education, may more effectively articulate the expectations of a project sponsor. Rubrics have the added benefit of explicitly depicting qualitative and quantitative satisfaction levels. Thus, they can be designed in a way that accommodates greater diversity in initiatives and projects than quantified thresholds.

This research utilises a design science research framework to design a project categorisation rubric for regionally significant or 'priority' projects. Design science is used to diagnosis a problem, build a theory, design an artefact, and undertake an initial evaluation of that artefact. The problem diagnosis extends to a review of previous research and examination of industry reports. Theory building focuses on how to enhance the categorisation of regionally significant projects, and the artefact, or rubric, presents a novel way to assess and categorise projects. As part of the initial evaluation, a series of regional projects on the Sunshine Coast, Australia, have been analysed and categorised.

Keywords: Project management, assessment rubric, design science research, project categorisation.

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INTRODUCTION

Internal project classification systems enable managers to prioritise and organise projects, programs and portfolios. These systems have limited application or relevance outside the management entity, with no common categories or shared classification processes. The project classification systems are not designed to categorise projects of regional, state or national significance in Australia.

The frameworks and criteria prescribed by the Australian and Queensland governments provide a range of matters to consider when conducting an evaluation of project options. Project advocates can use the frameworks to self-assess the quantifiable parts of their application. However, the assessment frameworks are complicated to navigate and they set rigid thresholds that do not apply to all projects. A new project categorisation system is required to accommodate dynamic projects such as those impacted by disruptive technologies and those requiring a flexible scope due to the high-uncertainty work required.

This research utilises an outcome-based research approach to design a new categorisation system for regionally significant projects.

RESEARCH APPROACH

Design-based research and design science, as applied in this research project, is an outcome-based research approach originating in the field of information technology (Hevner, March, Park, & Ram, 2004). Fundamental to this endeavour is the principle that knowledge and understanding of the problem and its solution are acquired in the process of designing and building the artefact. As such, the author carries out the research in the context of an authentic, real-life setting, adopting qualitative approaches to frame the design of the artefact; that is, the categorisation rubric.

In this research, the design science (Hevner et al., 2004) method proposed by Peffers, Tuunanen, Rothenberger and Chatterjee (2008) is complemented with project management theory. Specifically, project management

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theory in this research relates to the project management body of knowledge (PMBOK) (PMI, 2017) and the guidelines and frameworks applied in the initiation and planning of regionally significant projects. The Project Management Institute (PMI) is the leading non-profit professional membership association for the project management profession, and the PMBOK Guide sets the foundational standards for the institute (PMI, 2018). Guidelines and frameworks reviewed in this research have been identified through a review of literature and past research, as well as a systematic engagement program with industry participants as presented in Table 1.

Table 1: Industry engagement

Key stakeholder	Activity	Date
Sunshine Coast Business Council board	Meeting	30 April and ongoing
Development manager from health precinct	Semi structured interview	30 April and 16 August
Senior executive from regional airport	Semi structured interview	2 May
Australian Government Members of Parliament and staff	Meeting	3 May
Australian Government Minister	Meeting	16 June
Sunshine Coast Chamber Alliance	Meeting	13 June
Development manager from master planned community	Semi structured interview	14 June and 16 August
Regional manager of publicly listed property company	Semi structured interview	14 June
Senior executive from public university	Semi structured interview	22 June
Senior executive from local council	Semi structured interview	26 June
Professor of property economics	Semi structured interview	27 June
Regional Development Australia representatives	Meeting	27 June
SCRIPT members and stakeholders	Forum	28 June
Queensland Government executives in treasury, planning and economic development	Presentation and meeting	31 July
Property Council of Australia executive	Presentation and semi structured interview	2 August
Professor of regional engagement	Semi structured interview	13 August
Australian Government Member of Parliament	Meeting	6 September
Queensland Government senior executive from Treasury	Forum	7 September
Councillor and senior executive from local council	Meeting	19 September
Sunshine Coast Airport executives, directors and regional stakeholders	Forum	27 September

REVIEW OF LITERATURE AND RESEARCH

This review has been completed in an iterative manner, with foundational knowledge relating to the PMI standard, PMBOK Guide (PMI, 2017). Knowledge has been extended through consideration of past research findings and how they relate to projects and their classification. Where empirical evidence narrows, published guidelines and frameworks are reviewed to inform the design of the project categorisation tool for regionally significant projects.

Projects

Projects are ‘temporary endeavour[s] undertaken to create a unique product, service or result’ (PMI, 2017, p. 4). The temporary nature of projects means they have a definite start and finish (Kloppenborg, Anantatmula, & Wells, 2019; Pinto, 2016). The term does not imply a short duration, nor does the word ‘temporary’ refer to the period of the project deliverable (Kloppenborg et al., 2019).

Projects are distinct from other organisational processes (Pinto, 2016). According to Pinto (2016), projects take place outside the normal, process-oriented world of a firm. Graham (1992 in Pinto 2016) and Pinto (2016) draw further distinctions, which are depicted in Table 2.

Table 2: Processes and projects

Process	Project
Repeat process or product	New process or product
Several objectives	One objective
Ongoing	One shot-limited life
People are homogenous	More heterogeneous
Well-established systems in place	Systems must be created to integrate efforts
Greater certainty of performance, cost and schedule	Great uncertainty of performance, cost and schedule
Part of line organisation	Outside the organisation
Bastions of established practice	Violates established practice
Supports status quo	Upsets status quo

Source: Graham, 1992 in Pinto, 2016.

In extending the project definition, Pinto (2016) emphasises the need for goal orientation in a project. He proposes that projects are developed to resolve a clear goal or set of goals, asserting ‘there is no such thing as a project team with an ongoing, nonspecific purpose’ (Pinto, 2016, p. 25). PMI (2017, p. 6) orientate projects as drivers of change:

Projects drive change in organisations. From a business perspective, a project is aimed at moving from one state to another state in order to achieve a specific objective. Before the project begins, the organisations commonly referred to as being in the current state. The desired result of the change driven by the project is described as the future state.

As inherently unique ventures, the classification or grouping of projects is a difficult and somewhat problematic exercise.

Project classification

The challenge of classifying projects has been met by practitioners and researchers in diverse ways (Crawford, Hobbs, & Turner, 2002, 2004). Crawford et al. (2002) investigate the potential of classification systems for projects. They found an absence of any generally agreed system or systems for the classification of projects. Specifically, 97% of the people interviewed said their organisation develops their categorisation systems internally (Crawford et al., 2004).

Common ways of categorising projects led to three broad groupings:

1. projects by size, risk or complexity
2. projects by strategic importance, stage of the life cycle or sector
3. projects by contract form, payment terms or risk ownership (Crawford et al., 2002).

Similarly, Kloppenborg et al. (2019) propose four ways to classify projects: by industry, size, timing of scope clarity, and application or purpose. These classifications or categorisations are discussed in the following subsections.

Industry

Besner and Hobbs (2010) consider industry the primary mechanism for project grouping when identifying trends in management toolset adoption. For Crawford et al. (2004), the most popular attribute for project classification is the application ‘area’, identified by 67 (56%) respondents, followed by sector, identified by 18 (15%) respondents. The application area relates to the product delivered by the project (Crawford et al 2014), which in turn relates to a broader industry classification.

Size

There are numerous scale measures to assist project categorisation by size, including team number and project duration (Kloppenborg et al., 2019). In Crawford et al.’s (2004) study, size and cost were popular mean of classification for 48 (40%) and 43 (36%) respondents respectively. In an Australian context, investment is a measure of project significance. For example, Queensland Treasury (QT) use estimated capital cost as a threshold for the application of a Project Assessment Framework (PAF). The PAF is applied to Queensland Government related projects with capital costs in excess of A\$100 million (QT, 2018).

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A project with an investment exceeding A\$50 million may gain national Major Project Status if it makes a significant contribution to economic growth, exports, employment and/or infrastructure development (Department of Industry, Innovation and Science [DIIS], 2018). If a project has significant net economic benefit for regional Australia, taking account of the region’s investment needs, and meets the investment threshold it may also be awarded Major Project Status (DIIS, 2018). The DIIS (2018) currently have 14 major projects (see Table 3), including one telecommunications project in Western Australia. There is one major project located in Queensland, a beef processing plant in the states north.

Table 3: Major projects

Project name	Location	Brief description
Central Eyre Iron Project (renewed November 2016)	South of Wudinna on South Australia’s Eyre Peninsula. Cape Hardy in South Australia’s Spencer Gulf, approximately 7km south of Port Neill.	Development of a new magnetite iron ore mine with onsite ore processing facilities. The project will also develop an infrastructure corridor including a standard gauge rail line, a new power transmission line and a new deep-water port.
Chandler Facility (granted April 2017)	Approximately 120km south of Alice Springs, Northern Territory.	The Chandler Facility will extract salt from an underground mine. The resulting underground voids will be utilised for storing equipment, archives, and the storage, recovery and permanent isolation of difficult to manage waste materials.
Fibre Expressway Subsea Cable Project (granted March 2017)	Western Australia via Indonesia, Singapore and Malaysia.	The Fibre Expressway project will provide global telecommunications connectivity to Western Australia via Indonesia, Singapore and Malaysia.
Hawsons Iron Project	Broken Hill, NSW.	Hawsons Iron Project is a new A\$1.7 billion magnetite mine being developed.
Hughenden Beef Processing Plant (granted October 2017)	Flinders Shire, North Queensland.	Development of a beef processing plant and integrated feedlot.
Ichthys Gas & Condensate Field Development (renewed November 2015)	Browse Basin off the Kimberley Coast and plant in Darwin.	Development of gas and condensate fields and construction of a Liquefied Natural Gas plant.
Nolans Rare Earth Project (granted September 2016)	135km north of Alice Springs in the Northern Territory.	Rare earths mine and processing operation.
Prelude FLNG Project (renewed October 2015)	Browse Basin off the Kimberley Coast.	Floating liquefied natural gas facility.
Project Sea Dragon (granted July 2015)	Legune Station in the Northern Territory.	To develop 10,000 hectares of land-based aquaculture.
Renison Tailings Retreatment Project (Rentails) (granted November 2017)	Near Zeehan, north-west Tasmania.	A processing plant to re-process existing tailings held in tailing dams.
Sandy Ridge Project (granted April 2017)	Approximately 240km northwest of Kalgoorlie by road, Western Australia.	Extract Kaolin clay mainly for use in ceramics. The resulting voids will be utilised for the long-term storage, recovery or permanent isolation of difficult to manage waste materials.
Small Scale FLNG Project (granted March 2018)		The project will develop a small scale floating liquefied natural gas vessel.
West Pilbara Iron Ore Project (renewed March 2017)	Western Australia's Pilbara region.	The development of a 30 million tonne per annum iron ore project and associated rail and port infrastructure.
West Seahorse Project (renewed June 2017)	Commonwealth waters off the Gippsland coast in Victoria.	The West Seahorse Project will develop an offshore oil field.

Source: DIIS, 2018.

The term ‘major project’ may have a specific meaning in the DIIS, but the term or categorisation is not consistently applied in other levels of government. For example, the Sunshine Coast Regional Council (SCRC) identify 14 of their own major projects with no clear benchmarks or thresholds publicly defined (SCRC, 2018b).

Infrastructure Australia (IA, 2018b) has four main categories for their priority listing, organised in two broad groups: projects and initiatives. An initiative is said to become a project when a full business case is positively assessed by the IA board (IA, 2018d). A high priority project or initiative is one that seeks to ‘address a major problem or opportunity of national significance’, while a priority project addresses ‘a nationally-significant problem or opportunity’ (IA, 2018d). The distinction between a priority project and high priority project is unclear, and IA (2018a) does not set explicit investment thresholds in their assessment framework. However, in defining whether a problem is nationally significant, the framework states:

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While there are no natural definitions or thresholds for what constitutes a ‘material improvement’, it is reasonable to categorise problems as either high priority, priority or not a priority on the basis of the monetised costs of the problem or value of the opportunity (IA, 2018a, p.23).

The IA (2018a) framework is applied to consider submissions against three assessment criteria: strategic fit; economic, social and environmental value; and deliverability. While the IA (2018b) priority list does not report project details, it does identify projects, briefly describe the problem they address and categorise that problem; for example, the Beerburum to Nambour rail upgrade relates to rail congestion and is categorised under ‘national connectivity’ (see Table 4). There are 14 projects on the IA list, with the Beerburum to Nambour rail upgrade the only Sunshine Coast region project identified.

Table 4: Priority projects

Proposed project	Location	Problem description	Proposed delivery timescale	Problem category
M80 Ring Road upgrade (High Priority)	Victoria	Melbourne M80 Western Ring Road congestion.	Near term 0–5 years	Urban Congestion
M4 Motorway upgrade (Parramatta to Lapstone) (High Priority)	New South Wales	Connectivity in outer western Sydney.	Near term 0–5 years	Urban Congestion
WestConnex (High Priority)	New South Wales	Sydney inner west road congestion.	Near term 0–5 years	Urban Congestion
Brisbane Metro (High Priority)	Queensland	Brisbane inner city public transport network capacity.	Near term 0–5 years	Urban Congestion
Monash Freeway Upgrade Stage 2 (High Priority)	Victoria	Melbourne south-east and outer south-east congestion New South Wales.	Near term 0–5 years	Urban Congestion
Sydney Metro: City and Southwest (High Priority)	New South Wales	Sydney rail network capacity.	Medium term 5–10 years	Urban Congestion
Western Sydney Airport (Priority)	New South Wales	Sydney aviation capacity.	Medium term 5–10 years	Urban Congestion
Adelaide’s North-South Corridor: Regency Road to Pym Street (Priority)	South Australia	Adelaide north-south urban road network capacity.	Near term 0–5 years	Urban Congestion
Beerburum to Nambour Rail Upgrade (Priority)	Queensland	Queensland North Coast rail congestion.	Near term 0–5 years	National Connectivity
The Northern Road upgrade (Priority)	New South Wales	Access to south-west Sydney growth area and construction access to Western Sydney Airport.	Near term 0–5 years	National Connectivity
Inland Rail (Melbourne to Brisbane via inland NSW) (Priority)	National	Freight connectivity Melbourne–Brisbane.	Long-term 10–15 years	National Connectivity
Eyre Infrastructure Project (Iron Road) (Priority)	South Australia	Eyre Peninsula freight capacity.	Near term 0–5 years	Opportunity for Growth
Hobart Science and Technology Precinct (Priority)	Tasmania	Opportunity to stimulate economic growth and productivity in Tasmania.	Near term 0–5 years	Opportunity for Growth
Myalup-Wellington Water Project (Priority)	Western Australia	Opportunity to develop industry and agriculture in south-west Western Australia.	Near term 0–5 years	Opportunity for Growth

Source: IA, 2018b.

As noted above, IA (2018d) has prescribed an internal definition of what constitutes a project. They define a project as a ‘potential infrastructure [solution] for which a full business case has been completed by the proponent and positively assessed by the Infrastructure Australia Board’ (IA, 2018d). This divergence from the PMI definition may explain why upgrades and other programs and activities are included on the priority list. And while the threshold at which a priority project becomes a high priority project is not clearly inferred from the IA list, all high priority projects have a problem categorisation of ‘urban congestion’.

Queensland’s Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) refer to declared projects of significance, particularly economic and social significance, as prescribed projects (DSDMIP, 2018). If a prescribed project is economically, socially or environmentally ‘critical or essential’ to Queensland, the Minister can declare it a critical infrastructure project. Table 5 outlines the DSDMIP list of prescribed and critical infrastructure projects.

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Table 5: Prescribed and critical infrastructure projects

Project name	Location	Brief description
Abbot Point Port and Wetland project (Prescribed Project designated November 2014)	Abbot Point	Dredging and construction of a second trestle at the Port of Abbot Point.
Byerwen Coal (Prescribed Project designated September 2014)	20 kilometres west of Glenden in Queensland's Bowen Basin	The mine will produce hard coking coal.
Gold Coast International Marine Precinct (Prescribed Project designated April 2014)	Gold Coast marine precinct, Coomera	Integrated marine industry facility.
Shute Harbour Marina (Prescribed Project designated March 2014)	Shute Harbour	Marina, resort and retail facility.
Amrun Project (formerly South of the Embley project) (Prescribed Project designated November 2013)	Embley River, between Weipa and Aurukun	Construction of infrastructure to support mining including a processing plant and port, a dam, tailings storage facility, roads and a ferry terminal.
Great Keppel Island Resort (Prescribed Project designated October 2013)	Great Keppel Island	Resort and villa development.
Baralaba Expansion (Prescribed Project designated July 2013)	Bowen Basin, Queensland, Australia	Coal mine.
Isaac Plains Mining Complex (Prescribed Project designated April 2016)	Moranbah	Coal mine.
Ravenswood Expansion Project (Prescribed Project designated December 2016)	65km east of Charters Towers in north-east Queensland	Gold mine.
Capricorn Copper Mine Refurbishment and Restart Project (Prescribed Project designated April 2017)	125km by road northwest of Mt Isa in north-west Queensland	Copper mine.
Daydream Island Repair and Refurbishment Project (Prescribed Project designated September 2017)	Daydream Island	Island resort and spa development.
Hayman Island Project (Prescribed Project designated September 2017)	Hayman Island	Resort development.
Hummock Hill Island Development (Prescribed Project designated September 2017)	Rodds Bay, 30 km south of Gladstone	Residential and tourism development.
Adani Combined Project (Critical Infrastructure Project designated October 2016)	North Galilee Basin approximately 160km north-west of Clermont in Central Queensland	The Carmichael coal, railway and port project includes building Australia's largest thermal coal mine linked by a new rail line to a new terminal at Abbot Point.
Kidston project (Critical Infrastructure Project designated June 2018)	North Queensland	A renewable energy hub integrating large-scale solar with pumped storage hydro.

Source: DSDMIP, 2018.

The list of prescribed and critical projects presented in Table 5 is diverse, with few threads or similarities. The natural resources projects may reach a sufficient scale for investment and job creation, but that threshold is not reported. The declaration of resort and villa developments may be harder to define in a quantitative manner. In many cases, the hospitality assets are redevelopments initiated after natural disasters, and as such, they may not meet the PMI definition of a project 'creat[ing] a unique product, service or result' (PMI, 2017, p. 4).

The DSDMIP (2018) defines projects in another manner through their Catalyst Infrastructure Program. The program presents catalyst infrastructure as 'the construction of physical networks, or "hard" infrastructure, which is necessary to unlock development, generate construction and create long-term employment' (DSDMIP, 2018). According to the DSDMIP, Maroochydore City Centre and Caloundra South are classified as catalyst infrastructure projects with the Queensland Government entity, Economic Development Queensland, acknowledged as the development approval authority. The Sunshine Coast's Bright City and Aura projects meet the criteria that extends to projects generating, facilitating or accelerating economic benefit and job creation.

A catalyst, or more accurately 'catalytic project' is terminology adopted by Regional Development Australia Sunshine Coast (RDASC). RDASC (2018) does not specify how a project gains catalytic status, although eight of the 15 nominated projects are either priority transportation infrastructure projects, or digital infrastructure and projects that support smart communities.

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Some of the Sunshine Coast region catalytic projects, noted in Table 6, may be more accurately considered a systematic series of activities directed towards improving a product, service or result. For example, the Bruce Highway upgrades may be considered an operation or process in terms of Graham’s (1992, in Pinto, 2016) findings, as detailed in Table 2. The budget for the highway works may be substantial with benefits to the local economy worth consideration in an economic analysis; however, the works are aimed at improvement and efficiency (Department of Transport and Main Roads [DTMR], 2018) rather than creating ‘a unique product, service or result’ (PMI, 2017). Further, the Bruce Highway upgrade program fails to satisfy the requirement for a project to be a temporary endeavour. The program has timeframes relating to funding of 10–15 years, with provision for rolling action plans. The rolling action plans and potential for other upgrades after the program horizon further supports the notion that the program is better considered an operation, process or management program of the state and national governments than a project, as defined by PMI (2017).

Table 6: Catalytic projects

Name	Brief description
Peregrin Digital Hub	Noosa Shire Council is developing a modern, flexible, shared workspace called the Peregrin Digital Hub to assist the local economy to grow. A shared workspace for a range of complementary activities, including commercial businesses, public sector and community organisations. It offers high-speed and cutting-edge technical facilities and services, as well as meeting rooms, event and training spaces, with a focus on bringing people together. The cost of the project is over A\$3 million.
Sunshine Coast Solar Farm	>A\$10 million economic benefit.
Sunshine Coast Airport Expansion	New infrastructure and facilities enabling enhanced domestic and international flight access to the region. This will also facilitate new freight capabilities and more direct access to global markets. Expansion A\$347 million.
Sunshine Plaza Expansion	A\$400 million shopping centre expansion.
Maroochydore Bright City (SunCentral)	Maroochydore’s New Central Business District is a greenfield site being transformed into a new smart city in the geographic centre of the Sunshine Coast. The Maroochydore city centre will have a strong focus on innovation and technology, and excellence in urban design. The 53-hectare site includes prime commercial office space, retail, residential and cultural precincts, an entertainment, convention and exhibition centre, all surrounded by extensive parks and waterways. This project will create a new central business district for the Sunshine Coast and an estimated 5,000 new jobs by 2020, and 15,000 new jobs by 2025. This project will provide an A\$4.4 billion boost to the Sunshine Coast economy.
Mooloolah River Interchange (MRI)	To provide the transport capacity needed to support the Sunshine Coast University Hospital precinct. This is a new two-lane motorway connecting Caloundra, the Hospital precinct, and Mooloolaba to Sunshine Coast motorway. A\$440 million.
Sunshine Coast University Hospital, Health Hub, and Skills and Academic Research Centre	Public hospital A\$1.8 billion, private hospital A\$150 million, and research centre A\$60.8 million.
International Submarine Broadband Cable	A\$700 million economic benefit regional economy (Proposed).
Oceanside	Australia’s healthiest city by the beach (A\$13.3 billion contribution to economy 2013).
North Coast Rail Duplication	Duplication of the track, extension of existing passing loops and improvements to stations between Beerburrum and Nambour stations to facilitate greater flexibility and passing opportunities, improving the efficiency of both passenger and freight services. A\$540 million.
Harmony (Palmview)	Residential development (A\$3 billion construction).
Bruce Highway upgrades	Highway upgrades that will reduce travel times and traffic congestion, improve safety, increase efficiencies in long distance road freight, and support the needs of local communities including tourism traffic. (A\$1.3 billion).
Aura—City of Colour	Caloundra South Priority Development Area (A\$7 billion + investment).
Sunshine Park	A\$90 million project (Proposed).
CAMCOS—Caboolture to Maroochydore Corridor Study	Passenger rail service branching off the North Coast railway line at Beerwah and extending through Caloundra to Maroochydore. The proposed rail line will provide a public transport spine for the Sunshine Coast and link the coastal urban area to Brisbane (over A\$1 billion for entire corridor—first stage A\$480 million).

Source: RDASC, 2017.

The SCRC provides a further classification of some projects defined by RDASC. The three main terms or categorisations discussed in council publications are major projects, region-building ventures and game changers. As noted earlier, the SCRC use major projects—a terminology shared by the federal government (DIIS, 2018)—to classify 14 projects. Yet, none are acknowledged by the DIIS as having Major Project Status.

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Region building ventures and regional game changers appear to have similar meanings with most identified projects covered in both categories. The terminology ‘game changers’ may relate to an earlier regional economic strategy where, in a discussion on the new economy, it was predicted that game changer projects would have ‘transformational effects on business, employment and investment growth—and the economy overall’ (SCRC, 2013, p. 14). While there are no clear definitions or thresholds for designating a game changer project, reference is made to the projects as ‘transforming the Sunshine Coast economy and its employment base, and generating an array of associated investment opportunities’ (SCRC, 2018a, p. 19). The Sunshine Coast regional ‘game changers’ are outline in Table 7.

Table 7: Sunshine Coast regional ‘game changers’

Project name	Brief description
Australia’s only greenfield CBD at Maroochydore (underway).	A new 21st century city centre with commercial, retail and residential investment opportunities, including a premium international hotel, is being developed on a 53-hectare site owned by the Sunshine Coast Council.
Expansion of the Sunshine Coast Airport (underway).	This will provide the region with a new international gateway and will be completed by 2020. The project includes construction of a new 2,450 metre runway and increased apron facilities, and is forecast to contribute A\$4.1 billion to the economy through to 2040.
Bruce Highway upgrade (underway).	The project involves upgrading and widening the Bruce Highway to six lanes to provide vital community infrastructure, and is designed to meet the strategic transport needs of the Sunshine Coast region in this area well into the future. Construction of Phase 1 is expected to be completed in late 2020.
Tertiary teaching hospital campus (completed).	The new Sunshine Coast University Hospital, incorporating the A\$60.8 million Sunshine Coast Health Institute, was officially opened in April 2017. The hospital opened with close to 450 beds and 3,000 staff, and the capacity to grow to approximately 738 beds and 4,600 staff by 2021.
International broadband connection (planned).	A new submarine cable to be brought ashore on the Sunshine Coast will deliver faster, more reliable and affordable broadband connectivity for Queensland, providing greater bandwidth for new business and research institutes. The project is forecast to generate an additional A\$453 million to the Sunshine Coast economy every year and A\$927 million annually to the state’s economy.

Source: SCRC, 2018a

As previously discussed, the upgrading and widening of the Bruce Highway may not meet the definition of a project (PMI, 2017); however, the other projects appear to fit the PMI project definition having envisaged start and end dates, and are said to create a unique product or service. For example, while the airport may be considered an extension, the purpose is to provide a new international gateway (SCRC, 2018a). Similarly, the city centre description refers to it being the *only* greenfield CBD, and the hospital incorporates a *new* health institute.

The themes in the project narratives assist in understanding what the council considers a game changing project. There are single point references to project scale in terms of industries or uses, land area, runway length, lanes, and investment; staffing and bed capacity are raised twice in the hospital discussion; and multiple references are made in terms of financial contributions to the economy.

Timing of scope clarity

IA (2018d) categorise infrastructure as a project or initiative based on a prescribed approval stage. When a full business case is positively assessed, the initiative becomes an infrastructure project. Through the assessment framework, an initiative may be refined, and IA board approval is regarded as a quasi-scope acceptance stage. However, the projects are inherently unique (PMI, 2017) and the timing of scope clarity may be subject to the nature of the project rather than the process prescribed by an authority, sponsor or proponent.

With respect to timing of scope, Kloppenborg et al. (2019) contrast scope clarity in the development of a parking lot and the development of a new pharmaceutical. The parking lot is said to have a clear and certain scope, requiring an estimation of concrete to pour and the associated work required. At the opposite end of the spectrum, a new pharmaceutical requires experimentation and analysis before determining costs or schedules with any certainty (Kloppenborg et al. 2019). Planning for the pharmaceutical becomes iterative and is better suited to an agile project management method (Kloppenborg et al. 2019).

Agile techniques and approaches are designed to effectively manage disruptive technologies and high-uncertainty work (PMI, 2017). High-uncertainty projects have high rates of change, complexity and risk; thus, they present problems for more traditional predictive approaches that aim to determine the bulk of requirements upfront and control changes through change request processes (PMI, 2017).

The planned international broadband connection (SCRC, 2018a) is an example of a project that may benefit from an agile approach to project management. GQI Consulting (2017) and SCRC (2018A) clearly identify the benefits of the proposed project as a foundation for economic growth and enabler for reliable and affordable broadband connectivity; however, there a multitude of delivery options being considered with the submarine options requiring protection zones prior to market testing and requests for proposals.

Application or purpose

The purpose or application of a project is another way to categorise or classify a project. Kloppenborg et al. (2019) refer to projects as being applied to deal with organisational change, quality and productivity improvement, research and development, information systems, and construction. The projects presented in the discussion on size each have set aims and objectives related to the business case and project charters, as detailed in PMI (2017). Yet, these projects are generally of a scale warranting classification of facilitation from the various levels of government.

As noted earlier, a project may gain national Major Project Status through the DIIS (2018) if it is expected to satisfy an investment hurdle and makes a significant contribution to economic growth, exports, employment and/or infrastructure development; or if the project will have a significant net economic benefit for regional Australia, taking account of a region's investment needs.

Strategic fit is one of the three criteria for assessing projects through IA's (2018a) framework, which is defined as when the initiative 'address[es] problems or opportunities of national significance that constrain the achievement of stated goals' (IA, 2018a, p. 15). With the Beerburrum to Nambour rail upgrade, the strategic context narrative refers to population growth alignment with the South East Queensland Regional Plan (IA, 2018c). The strategic context then refers to the Sunshine Coasts' regional economic activity centres moving eastwards, and proposes that the project enables the 'development of new public transport options for improving connectivity within the Sunshine Coast' (IA, 2018c, p. 3). The Beerburrum to Nambour rail upgrade evaluation summary does not define the new transport solutions the project is said to facilitate; although, the strategic intent presents the upgrade as an initiative that may be part of a greater project or portfolio that enables new transport solutions to link the eastern activity centres (IA, 2018c).

In Queensland, the DSDMIP (2018) prescribe projects based on significance, particularly economic and social significance, and similarly define catalyst infrastructure in terms of its potential to unlock development, generate construction and create long-term employment.

As a local government, the SCRC (2018a, p. 19) considers 'game changer' projects as potentially 'transforming the Sunshine Coast economy and its employment base, and generating an array of associated investment opportunities'. The four projects in the council's suite of 'game changers' may or may not be specifically designed to meet the authority classifications. There is some evidence of Keynesian interventions, where economic impact of the project is discussed; yet, there is no evidence of project investment being quantified and timed as an interventionist's policy. While being able to confirm the original intent may assist with classification, projects evolve as scope is refined (PMI, 2017). Therefore, it may be more prudent to consider application and potential impact than the project originator's intent.

FRAMEWORK DESIGN

Categorising Projects

The review of research findings and publications from the three levels of government identify the absence of any generally agreed system or systems for the classification of projects. While Kloppenborg et al. (2019) propose four ways to classify projects that may assist project managers establish an internal classification system, the system does not suit the quantification or categorisation of projects with regional, state or national significance in Australia. The frameworks and criteria prescribed by the Australian and Queensland governments assist with measuring project scale, but the thresholds and terminology are not universally adopted. Further, there is evidence of confusion over what is a project and what is an operation.

However, the review does provide some clear threads that are applicable in the design of a new project classification, or categorisation, system. These include consideration of what constitutes a project and how impact or influence may be categorised, namely:

- Project: Whether the project is a project or an operation with a notionally set funding window. Similarly, there may be initiatives that should be classified as an activity inherent in the ongoing management of a facility or asset.

- Impact: Impact and influence are considered in three main categories. The first includes the prescribed or adopted intent of the project and how it may contribute to transform the region's economy and its employment base, generating an array of associated investment opportunities (SCRC, 2018a). The second is a popular category related to investment in terms of dollars spent or project costs (DIIS, 2018; DRDASC, 2018; QT, 2018). The final category relates to sustained employment (DRDASC, 2018; SCRC, 2018).

Categorisation rubric

Assessment frameworks and quantified thresholds have been identified in the review. Frameworks can be substantial documents detailing a formal pathway through preliminary evaluations, such as the Queensland Governments PAF (QT, 2018). Quantified thresholds are depicted in a range of documents detailing criteria such as those used by the Australian Government in the application for Major Project Status (DIIS, 2018). While they serve an internal purpose and may help an applicant self-assess the quantifiable parts of their application, they are complicated to navigate. They may be too rigid to accommodate dynamic projects such as those impacted by disruptive technologies or those requiring a flexible scope due to high-uncertainty work (PMI, 2017). Conversely, scoring models or matrices and rubrics present in a manner that more easily articulates expectations.

Scoring models are generally applied in project selection rather than project categorisation. As a form of non-monetary valuation, scoring models and multi-criteria analysis can be misleading, 'because the criteria ... involve different scales, the resulting index can only be used as an ordinal ranking' (IA, 2018a, p. 86). In other words, the approach has limited value in assessing viability, with scores not comparable in terms of scale and magnitude of scope and service levels. Notwithstanding the limitations, multi-criteria analysis is considered an acceptable technique for evaluating infrastructure project options (IA, 2018a). However, IA (2018a, p. 87) caution the use of the method as a project comparison tool, noting 'the analysis is questionable due to the subjectivity and lack of transparency around conversion, scores and weights'.

Conversely, rubrics, or narrated scoring matrices, have been applied in a series of industries to articulate expectations and assess performance. Assessment rubrics are utilised in education to articulate expectations for an academic assessment (Andrade, 2000; Arter & Chappuis, 2007, cited in Reddy & Andrade, 2010; Stiggins, 2001), as well as provide more reliable benchmarks for comparison (Biggs & Tang 2009). They have the added benefit of clearly depicting criteria satisfaction levels and, as a result, may be designed to accommodate a greater diversity of projects than quantified thresholds.

Across disciplines, there are various forms of rubrics, including those designed specifically for assessing project management students and designed artefacts (Boyd, 2015). For this research, a rubric has been designed to assist the categorisation of regionally significant projects (see Table 8). The rubric is purpose built rather than adapted from a previous study and is informed by the findings of the review into project categorisations.

In the absence of published research support or comparable investigatory findings, industry and expert knowledge has been applied to populate the body of the regional significance project rubric. As such, the assessment areas that form the framework for the rubric, are supported by published research and previous findings of this research project. Conversely, the wording associated with the gradations are novel and without an empirically defensible level of support. As such, the rubric will require tuning in the subsequent evaluation research project.

By design the rubric has a scoring component with the project (P) and impact (I) treated separately. The project score is a categorical multiplier code. If the initiative is a portfolio or project, it will score a positive one (+1), and a process or 'ongoing operation' will score a negative one (-1). Both management and activities have zero multipliers. Thus, a positive score will reflect projects and portfolios of regional significance. A negative score will imply that the initiative has significance but should not be classified as a project. It could necessitate consideration as a regionally significant process or operation and be referred for alternative consideration in the respective management entities. Management and individual activities have zero scores, implying they are not regionally significant projects or operations; rather, the responsibility of management organisations, such as the facilities management division or department of a local council.

The impact score is assessed in a comparable manner to a scoring matrix with criteria weighting multiplied by the score. The result scores are then summed. For example, if project Alpha is said to have 'potential to improve the region's economy and/or its employment base', it would be attributed a score for I1 of 12.5 (0.25 x 50). If the same project has an 'estimated investment of A\$10 million to A\$50 million' and 'estimated ongoing FTE

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jobs less than 20', it will score 6.25 (0.25 x 25) for I2 and 0.00 (0.00 x 25) for I3. The total score for project Alpha would be 18.75 out of a potential 100.

As previously noted, the rubric will require some refinement through evaluation; although, a hurdle score could be provisionally set to categorise a project or portfolio. The onus here is on the term 'categorise', as the rubric is not a valuation tool and does not assess project financial feasibility. A set categorisation may comprise:

1. high priority regional project or portfolio
2. priority regional project or portfolio
3. not a priority project or portfolio.

The suggested relationship between significance score and project categorisation is presented in Table 9. As previously noted, there is further potential to tune the rubric.

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Table 8: Regional significance project rubric

Project (P)	Criteria	Portfolio [+1]	Project [+1]	Process [-1]	Management [0]	Activity [0]
	Nature of initiative (P)	Projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives	Temporary endeavour[s] undertaken to create a unique product, service or result	Systematic series of activities directed towards improving a product, service or result	Systematic series of activities directed towards maintaining a product, service or result	A distinct, scheduled portion of work performed during a project
Impact (I)	Criteria	High priority [1.00]	Priority (fairly important) [0.75]	Important [0.50]	Slightly important [0.25]	Not at all important [0.00]
	Prescribed or adopted intent to transform the region's economy (I1) [50]	Potential to transform the region's economy and its employment base, generating an array of associated investment opportunities	Potential to materially improve the region's economy and its employment base, generating associated investment opportunities	Potential to improve the region's economy and its employment base, generating associated investment opportunities	Potential to improve the region's economy and/or its employment base	No potential to materially improve the region's economy or its employment base
	Initial capital investment (I2) [25]	Estimated investment exceeds A\$250 million (1.61% of GRP ¹)	Estimated investment of A\$100 million (0.65% of GRP ¹) to A\$250 million	Estimated investment of A\$50 million (0.32% GRP ¹) to A\$100 million	Estimated investment of A\$10 million (0.06% GRP ¹) to A\$50 million	Estimated investment less than A\$10 million
	Sustained new employment (I3) [25]	Estimated ongoing FTE jobs exceeds 2,000 (0.58% of EP ²)	Estimated ongoing FTE jobs of 1,000 (0.29% of EP ²) to 2,000	Estimated ongoing FTE jobs of 200 (0.06% of EP ²) to 1,000	Estimated ongoing FTE jobs of 20 (0.01% of EP ²) to 200	Estimated ongoing FTE jobs less than 20

1 The Sunshine Coast and Noosa region GRP of approximately AU\$15.5 billion per annum (NIEIR 2016 in RDASC 2017, p.5).

2 The Sunshine Coast and Noosa region estimated population 347,012 (OGSO 2017 in RDASC 2017, p.11).

Table 9: Project categorisation

Score	Categorisation
>80	High priority regional project or portfolio
65-80	Priority regional project or portfolio
<15-64	Not a priority project or portfolio

EVALUATING THE RUBRIC

The categorisation rubric has been applied to a selection of regional projects considered either catalytic or game changer. The list includes the Sunshine Coast light rail project, an initiative of the SCRC (2012). The Sunshine Coast health precinct, or campus, has advanced further than the others with the completion of two operating hospitals. The submarine cable and two rail projects are at initial stages of their respective project lifecycles.

Sunshine Coast health precinct

The Sunshine Coast health precinct, or campus, is said to underpin the growth and investment of the Sunshine Coasts health and wellbeing industry (SCRC, 2014b). The investment is to ‘provide a major stimulant for growth and development of the Health and Wellbeing industry on the Sunshine Coast over the course of the next 20 years’ (SCRC, 2104a, p. 3). The purpose is seen to align with the categorisation rubric’s second highest priority rank of ‘[potentially] materially [improving] the region’s economy and its employment base, generating associated investment opportunities’ (see Table 12).

The precinct incorporates the A\$1.8 billion Sunshine Coast University Hospital, A\$60.8 million Sunshine Coast Health Institute and a A\$150 million private hospital (SCRC, 2018a). The Sunshine Coast University Hospital is the first new tertiary hospital development in Australia in more than 25 years (SCRC, 2018a). Accordingly, the health precinct is regarded as a project that fits the PMI (2017a) definition. The investment, said to be more than A\$2 billion, would see the project meet the rubric’s highest criteria for initial capital investment.

As the health precinct was developing, the SCRC projected a series of aspirational targets for the region’s health and wellbeing industry. The targets include an employment progression from 18,981 in 2014 to 24,387 in 2018. While the employment target relates to the health sector rather than the precinct or campus, it meets the highest criteria for the regional priority categorisation in the rubric. The full suite of aspirational targets is detailed in Table 10.

Table 10: SCRC aspirational targets for the health and wellbeing industry

Goals for the health and wellbeing industry	Position in 2014	Plan for 2018
Gross Value-Add	A\$2,038 million	A\$2,636.5 million
Employment	18,981 employees	24,387 employees
Exports	A\$484.7 million	A\$622.0 million
Change in Exports	NA	+28.3%
Average Annual Income	A\$53,187	A\$60,561
Change in Registered Businesses	NA	+21.5%

Source: SCRC, 2014.

The SCRC’s 2018 investment prospectus reports the health sector as the region’s largest employer, providing an estimated 20,170 jobs (NIEIR, 2017, in SCRC, 2018a). They further identify that there are almost 2,000 healthcare related businesses registered on the Sunshine Coast (ABS, 2018, in SCRC, 2018a). The council’s jobs estimate is some 4,217 (17%) under their prescribed aspirational target; although, the industry might have been progressed from 2017 to 2018. Continuing the trend to 2018 would present an estimated employment of 20,600 or 1,619 new jobs.

As demonstrated in Table 11, the regional priority categorisation rubric would provide the Sunshine Coast health precinct with a project status. The criteria would lead to allocations of 0.75, 1.00 and 1.00 for intent, investment and employment respectively. As applied in Table 12, the project would present a rubric score of 87.5, which would lead to the categorisation of high priority regional project.

The ‘high’ project status may be at threat if the economic intent was to soften and the projected employment was revised down.

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Table 11: Regional priority categorisation rubric

Project	Health precinct	Airport expansion project	Aura master planned community	Maroochydore City Centre/The Bright City	International broadband submarine cable	Light rail	North Coast Connect
Nature of initiative	First new tertiary hospital development in Australia in more than 25 years PROJECT +1	Develop a new, fully compliant runway PROJECT +1	Australia’s largest single ownership master planned community PROJECT +1	Greenfield Central Business District PROJECT +1	Landing a new International Broadband Submarine Cable PROJECT +1	New rapid transit system PROJECT +1	Providing a new passenger rail service between Beerwah and Maroochydore. PROJECT +1
Prescribed or adopted intent to transform the region’s economy	The investment is said to provide a major stimulant for growth and development of the Health and Wellbeing industry on the Sunshine Coast over the course of the next 20 years. 0.75	Stimulation of diversification in employment opportunities. And to provide a platform to attract new airlines and new services. 0.75	Australia’s most prosperous and connected master planned community 0.5	New city centre has been designed for the 21st Century. To have a transformative impact on the region’s economy 0.75	To be a ‘catalyst for technology businesses’ stimulating the economy making companies more likely to relocate, grow and/or invest in a region. 0.75	To be ‘catalytic and capable of creating economic growth’. 0.75	To have a ‘transformative effect’ relating to reducing travel time to under 45 minutes for Sunshine Coast passengers, shaving nearly an hour off their journey. 0.75
Initial capital investment	A\$2 billion 1.00	A\$347 million (2020) 1.00	A\$11 billion 1.00	A\$20.7 million to date (at 2016/17) 1.00	A\$276 million (NPV) 1.00	A\$2.0–2.6 billion 1.00	A\$4.24 billion (2025–2030) 1.00
Sustained new employment	5,406 (Regional health sector) 1.00	1,538 (FTE direct 2040) 0.75	20,000 direct 1.00	Not available.	864 (FTEs p.a., for Sunshine Coast) 0.50	210 0.50	Not available. Business case being undertaken.
Information source	SCRC, 2014 SCRC, 2018a	SCRC, 2014	URBIS, 2017	SunCentral, 2017 SunCentral, 2018	GQI Consulting, 2017 SCRC, 2018a	SCRC, 2012	Stockland, SMEC, Urbis & KPMG, 2017

Table 12: Regional priority categorisation workings

Project	Health Precinct	Airport	Aura	City Centre	Int. BB Submarine Cable	Light Rail	North Coast Connect
P	+1	+1	+1	+1	+1	+1	+1
I1	(0.75 x 50)	(0.75 x 50)	(0.5 x 50)	(0.75 x 50)	(0.75 x 50)	(0.75 x 50)	(0.75 x 50)
I2	(1.00 x 25)	(1.00 x 25)	(1.00 x 25)	(1.00 x 25)	(1.00 x 25)	(1.00 x 25)	(1.00 x 25)
I3	(1.00 x 25)	(0.75 x 25)	(1.00 x 25)	NA	(0.50 x 25)	(0.50 x 25)	NA
Total	87.5	81.25	75	NA	75	75	NA
	High priority	High priority	Priority	NA	Priority	Priority	NA

Priority projects

By following the same process, the Sunshine Coast Airport expansion would be allocated high priority status; although, a reduction in employment could see the project allocated a lower priority categorisation.

Due to the projected initial capital investment and sustained new employment, Aura would be categorised as a priority project. The international broadband submarine cable would share the status of a priority project due to the prescribed or adopted intent to transform the region's economy. The status of the submarine cable project would require re-evaluation when the scope is refined.

The light rail project reaches priority status in the rubric. This may be attributed to the adopted intent or influence the project is proposed to have on land use and planning. While the associated documentation discusses creating economic growth, it is unclear how the proposed system will provide economic efficiencies or encourage passengers to shift transport modes. With the proposed pathway principally following the existing road network, there may be few beyond those achieved in a redesigned bus network, even with priority traffic signalling. However, the introduction of light rail and supporting integrated transport network are justification for a more compact and sustainable settlement pattern, and the increasing land use intensity is expected to lead to a property value uplift (Arup, 2013). There are social and environmental benefits outside the scope of this research that could justify pursuing a project of this nature regardless of the economically focused criteria in the categorisation rubric.

The Maroochydore City Centre and North Coast Connect Rail were missing information regarding employment numbers; however, there are ways to overcome missing projections in the categorisation rubric. Through a scenario or 'work back', it may be determined that the Maroochydore City Centre and North Coast Connect Rail projects would need to sustain 1,000 or more new ongoing FTE positions to gain high priority status.

Categorisation rubric summary

The regional priority categorisation rubric enables categorisation of a suite of regional projects. The exercise was relatively direct and easy to apply; however, there were limitations. The assessment of 'prescribed or adopted intent to transform the region's economy' retains a level of subjectivity, even with narrated criteria. The other categories may appear easy to apply, although sourcing consistent project information remains a problem. There are very few consistent approaches to reporting initial capital investment or sustained new employment.

CONCLUSIONS

This research endeavoured to demonstrate how to design a categorisation system to better assess proposed game changing projects on the Sunshine Coast, Australia. Fundamental to this endeavour is the principle that knowledge and understanding of the problem and its solution are acquired in the process of designing and building an artefact. As such, this research comprises the design and development of a categorisation rubric. The project utilised principles and activities of design science—a novel, but accepted approach in the property discipline. Design science is soundly based on traditional experimental and design approaches to education, and an established method in the field of information technology (Hevner et al., 2004). The design science method is supported by theories and practices from the project management and education disciplines.

The salient expression of design science activities and how they were applied in this research project is depicted in Table 13. Problem identification and research motivation were progressively refined throughout the duration of the research. The objectives for the solution were established. As the problem evolved and solutions were

considered, the research extended to the design and development of a categorisation rubric. The rubric was subsequently applied to a suite of projects.

Table 13: Design science research methodology (DSRM) activities

DSRM activity	As applied in the design of the regional priority categorisation rubric
Problem identification and [research] motivation	There is no shared definition for what constitutes a 'game changing' or priority regional project.
Define the objectives for a solution	Primary objective: To enhance the categorisation of regionally significant projects on the Sunshine Coast, Queensland, Australia.
Design and development	Design and develop a purpose built rubric to enable the categorisation of projects significant to the Sunshine Coast.
Demonstration	The rubric has been applied to categorise a suite of regional projects as high priority, priority and not a priority.
Evaluation	Preliminary evaluation of the categorisation rubric has been undertaken. Further evaluation of the full framework may be undertaken as a subsequent research endeavour.
Communication	This research publication, industry presentations and conference presentation provide the primary communication mechanisms, being explicitly structured to align with design science guidelines and activities.

The findings of this research support the notion that a rubric may enhance the categorisation of proposed game changing or priority projects impacting the Sunshine Coast region, Australia. From here further research may refine and enhance the categorisation rubric, and in turn provide additional support for imbedding the model within the decision-making process.

Further research

The potential to enhance project decision-making through designing a project categorisation rubric has emerged in this research. However, numerous opportunities for future research to empirically confirm or refute the claim and design new frameworks and artefacts for analysis remain. As this research emerges, the limitations associated with this study will become less relevant. Yet, it is important to note that early-stage and quasi-industry projects such as this research endeavour are inherently subject to numerous limitations.

A defining and controversial aspect in qualitative research of this nature relates to the active role of the researcher and their potential to influence the results of the study. With the intention of mitigating the influence of bias and misrepresentation, a soundly based research approach, design science, is incorporated. Even so, the application of design science is not uniform, with the objectives-based approach of Peffers et al. (2008), as applied in this research, not universally accepted as design science methodology. Similarly, the parameters for evaluation in a design science method are not clearly defined.

The evaluation rubric is a novel addition by the author. While the rubric has been structured by considering published research findings and investigating project management, the matrix lacks the empirical support and calibration associated with utilising an existing, tested model. Further research in this field is necessary to provide more conclusive justification for the relevance of the design artefact.

While the prototype testing sufficiently informs the design activity and demonstrates the highly interdependent outcomes of a complex social and cognitive intervention, the small population limits the explanatory significance of the author's observations. As such, empirical testing of the evaluation framework is recommended as a standalone research project.

Finalisation

This research has addressed an emerging issue, and opportunity, in project management. The study demonstrates the application of a body of knowledge to research, investigates and develops new knowledge, and advances that knowledge into the specific field of regional project decision-making. This cross-disciplinary research presents the artefact and journey for subsequent empirical testing.

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