

President's Message

Maintaining Focus on *Primary Purpose*

Hello Everyone, welcome to the Spring edition of Value Times.

I've had the privilege of being involved with Value Management for a very long time — since the late 1970s, in fact.

Value Management activities have taken me to many parts of the world, working on diverse major projects including new hospitals and new mines. The journey has involved working with wonderful people in different languages and cultures.

The subject of Value Management became my primary focus in my teaching role at university and was also the subject of my PhD.

As I reflect upon all those years of research, teaching and practice, one thing stands out — I've come to the realisation that the single, most important thing that we can do to help any team achieve best 'value for money' is to help the team to produce a concise statement of Primary Purpose and to ensure that everything that is done tracks back to that primary purpose statement.

With or without a formal Value Management process, enormous benefit will be gained by simply asking questions about 'purpose'. This principle holds whether we are talking about the purpose of a meeting or the purpose of a proposed new billion-dollar liquefied natural gas plant.

I encourage people to build the habit of asking the question, "what is the purpose of this?" when discussing virtually anything, but certainly in relation to any new initiatives.

My fellow IVMA Board-member, John Bushell, suggested that I focus this edition's President's message on a subject that is fundamental to Value Management — Function Analysis — and I'm happy to oblige. I hope that the link between John's request and my opening two paragraphs will become clear as you read through the rest of this article.

Those familiar with the concepts of Value Analysis, Value Engineering and Value Management will be very much aware of the historical place that Function Analysis has in those disciplines. For the not-so-familiar, here's a little historical background to provide context for this article.

The founder of the discipline of Value Analysis, Lawrence J. Miles made the

astute observation that when customers go out to purchase something — anything — what they really want is not so much the product itself, but the function that the product performs:

"The customer wants someone, perhaps him or herself, pleased. The customer wants something enclosed, held, moved, separated, cleaned, heated, cooled, or whatever, under certain conditions, and within certain limits; and/or the customer wants a shape, a colour, an aroma, a texture, a sound, a precious material, or whatever to bring pleasure to him or herself or others that he or she wishes to please. That is all the customer wants. That is all the customer cares about. Thus, the language of function is the language of the heart of the problem...." L.J. Miles

Miles made this observation whilst attempting to buy alternative products to those specified by the company for

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IVMA Annual General Meeting

The Institute's Annual General meeting will be held on Wednesday 9 October at 3 pm in the offices of the Australian Centre for Value Management.

By now IVMA members will have received their proxy voting form to be completed and returned to the Secretary.

This form also has contact details for those who wish to participate in the meeting online. The Institute encourages live participation where possible.

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whom he worked (General Electric) during material-supply shortages following the end of World War Two. What he discovered was that he could find products that performed exactly the same functions as those specified (but unavailable due to material shortages), but at a much lower cost.

This discovery forms the basis of Value Management to this day. It was around this discovery that Miles worked up a formal approach to achieving the required functions at the lowest cost. He called the process Value Analysis.

It usually comes as a surprise to traditional practitioners and those familiar with conventional VA/VE/VM techniques when I tell them that I no longer use the term 'function analysis' in teaching or practice. And this, in spite of my reputation for being rather enthusiastic in days-gone-by about the whole notion of 'functions' and the processes of analysing them.

Indeed, I still have vivid recollections of a Value Management course in which, on the final day, all the students suddenly appeared after lunch wearing T-shirts with the words "Function Man" emblazoned on the front. I was then presented with one of these T-shirts and proudly wore it for the remainder of the day.

The trigger for the change in my approach was the realisation that in virtually every Value Management study I conducted, whenever I used the term "basic function", I was asked the seemingly inevitable question, "what do you mean by that?"

I was writing my PhD thesis at the time, and all the lessons learnt from Value Management studies that I conducted were fed into my doctoral research. This was one such lesson — that the term 'basic function' always needed clarification and explanation.



My response to the question was that I meant Primary Purpose. This response was never challenged or questioned further; the term Primary Purpose was self-explanatory.

To this day — having used it literally hundreds of times — I have never been asked to explain what I mean by Primary Purpose.

It's important to see that the change in language from "basic function" to "primary purpose" wasn't only to do with a clearer explanation. It was more than that.

By definition, the word 'purpose' carries the connotation of *intention*. This is important. We are not simply asking what something does (its function), but what it is *intended* to do (its purpose).

We may see the declaration of Primary Purpose as the very heart of the Value Management process. Everything else flows from this.

In conventional Value Analysis and Value Engineering, the dominant process for analysing functions was a method modelled on precedence diagrams known as FAST — Function Analysis System Technique (developed by Charles W. Bytheway in the mid-1960s).

The key thing about using the FAST system is that the Basic Function (Primary Purpose) emerges from the modelling process.

When using FAST, identifying the basic function is a process of *discovery*. Through my research, I took a counter view to this, coming to the firm opinion that the Primary Purpose needs to be agreed right at the start of the process and that everything else must relate back to that Primary Purpose.

Everything needs to be seen in light of its contribution to the Primary Purpose of the entity. This becomes a critical task in analysing all components and the purposes that they fulfil.

The first step in the VM process is defined, in AS 4183 (2007), as *Building shared knowledge and understanding*. The initial task in that first step is to come to agreement on a statement of Primary Purpose.

This is not a process of discovery. It is a process whereby a group of people (we typically call them stakeholders) work together to *construct or frame* a statement of Primary Purpose.

In some cases, this is quite straightforward and might only take a few minutes to come to an agreement. Other cases are far more complex requiring time and a high level of facilitation skills to work with the group.

An example of the latter case is a Value Management study of a proposal to design and construct a brand-new general hospital in Singapore. My colleague, Mark Neasbey and I conducted the study.

There were about 70 participants in the workshop including Professors of Medicine, doctors, nurses, health planners, senior Health Authority staff as well as architects and engineers.

Amongst that group of people, there were many perceptions of purpose.

Our first task, as Value Management facilitators was to help the group come to agreement about the exact primary purpose of the new hospital.

Given the wide range of perceptions, perspectives and assumptions held by all those participating, it was no small task to help them reach an agreement.

That is the challenge for all Value Management facilitators.

Once we have a clear, agreed, statement of Primary Purpose, then we are able to move forward, ensuring that everything relates back to that

“Amongst that group of people, there were many perceptions of purpose.”

Primary Purpose (including ‘secondary matters’, which are also important).

This statement of Primary Purpose will have at its core a ‘verb-noun’ expression, following Value Analysis convention, but it need not be limited to two words.

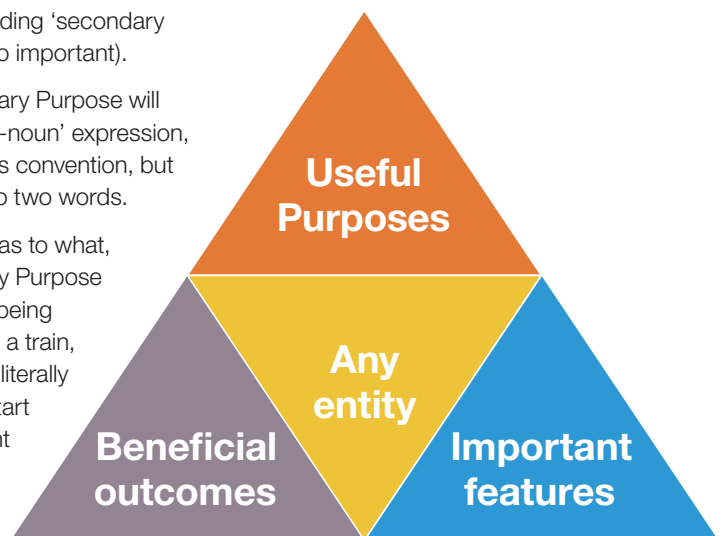
Coming to agreement as to what, precisely, is the Primary Purpose of the particular entity being considered (a hospital, a train, a piece of equipment...literally anything) right at the start of a Value Management study will provide enormous clarity.

It will also provide the group with an opportunity to test the appropriateness or otherwise of anything to do with the entity being considered.

Once we have the Primary Purpose established, we can take that as the apex of our Value Triangle (see previous Value Times articles). We can then proceed to seek agreement on the other two elements of the triangle, namely, the expected benefits (to be realised as a result of fulfilling the Primary Purpose) and features of the entity that are particularly important.

Once we have that, then we can see where the value of the entity really lies.

We can then proceed to explore various ways of achieving it and then compare those options to find out which ones offer the best ‘value for money’.



Value Triangle

In some circumstances, depending upon the type of the entity being considered, further analysis and decomposition of the Primary Purpose into its sub-elements will be needed.

In these circumstances, I advocate the use of what I call ‘purpose hierarchy’ models. These models provide great insight and always commence with the Primary Purpose statement. I prefer to use large “Post-it” notes to produce these models.

We start by writing out the Primary Purpose on a Post-it and sticking it up on a wall.

Then, we consider the second level of the hierarchy. Typically, there will be five or six

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statements at the second level. We arrive at the statements by asking the following question: what, precisely, does the entity do in order to fulfil its Primary Purpose?

We also write each of these up on Post-its, sticking as closely as possible to a 'verb-noun' format. It is rare to find more than six statements for any entity at the second level of the hierarchy.

Once we have the primary purpose and the second level of the hierarchy, then we can analyse each 'second-level' statement in turn, asking, as before, "what, precisely does the entity do in order to fulfil this 'second level' statement?"

Typically, there will be two or three responses to each question, which we also write up on Post its and place immediately below the 'second level' so as to create a third level.

And so, the hierarchy forms. It will take about half an hour to do it. I find that three or four levels are usually sufficient for the purpose of analysis.

Having produced the hierarchy, then each Post-it can be evaluated in terms of its requirements, alternative means of provision and costs.

So there we have it. We can help achieve best 'value for money' (which is the primary purpose of the IVMA) by helping individuals, groups of stakeholders and project teams focus on the Primary Purpose of the entity being considered.

The ensuing Primary Purpose statement may be used as a beacon and reference-point in planning, design, operations and maintenance.

Dr Roy Barton
President, IVMA

It's Groundhog Day –

In 2014 the Productivity Commission issued its report on Australia's Public Infrastructure investment process. The IVMA made a submission to this inquiry which made a number of conclusions and recommendations.

Key conclusions by the Productivity Commission were:

- *"There is an urgent need to comprehensively overhaul processes for assessing and developing public infrastructure projects.*
- *There are numerous examples of poor value for money arising from inadequate project selection, potentially costing Australia billions of dollars.*
- *Additional spending under the status quo will simply increase the cost to users, taxpayers, the community generally, and lead to more wasteful infrastructure.*
- *Reliance on the notion of an infrastructure deficit, too, could encourage poor investment choices.*
- *It is essential to reform governance and institutional arrangements for public infrastructure to promote better decision making in project selection, funding, financing and the delivery of services from new and existing infrastructure."*

So, five years later how are we progressing?

In June 2019 Infrastructure Australia provided a timely update of the state of the nation in its Australian Infrastructure (AI) Audit 2019.

The key findings of the report were that:

- Population growth has become a major point of contention for infrastructure provision, particularly in our largest cities where ageing assets have been put under

growing strain resulting in rising road congestion, crowding on public transport and growing demands on social infrastructure, such as health, education and green space.

- A steep rise in network costs has driven energy bills 35% higher over the past decade, and up by 56% per unit of electricity consumed in real terms.
- In the 4.8 million households with National Broadband Network services have not met the expectations of many users raising questions as to the functional viability of the whole of the present project.
- Water supply in cities has generally improved but many regional areas are suffering from growing water security fears as large parts of the country are in drought — raising fears about the adequacy and quality of water supply for normal consumption and particularly in times of fire.

IA makes the point that *"infrastructure is only as good as the user outcomes it delivers"*. However, there is generally a lack of user-focussed infrastructure performance information so it is difficult to demonstrate that the long-term interests of users have been met.

From a household perspective, average infrastructure costs have risen in real terms.

In particular, IA notes that infrastructure costs are regressive and hit lowest income households hardest. July 2019 ABS data has demonstrated these households that have lost household wealth, down from an average of \$37,900 in 2015-16 to \$35,200 in 2017-18.

– Again!

In summary, the bottom 20% of households have 0.7% of the total national household wealth.

Delivering best ‘value for money’ infrastructure is therefore particularly important for the most vulnerable in our society.

The challenge is that changing and growing demand, and a mounting maintenance backlog, mean a new wave of reform and investment is necessary to ensure quality of life and economic productivity are enhanced over the next 15 years.

By 2034, Australia’s population is projected to grow by 23.7% to reach 31.4 million, adding to infrastructure demand, while existing infrastructure struggles under maintenance backlogs and the condition of many assets is unknown.

IA opines that users are often not at the centre of infrastructure planning and decision-making for Australia’s future, however, communities are increasingly demanding greater transparency and service choice.

Engagement with communities is critical, with 80% of Australians indicating it is important that government considers the views of the community when planning or investing in major infrastructure.

Future infrastructure provision needs to be seen in the context of a steadily slowing economy with growth being 1.9% in FY 2018-19 despite the cash rate falling to the ‘bargain basement’ level of 1% per annum.



Tantangara Dam

With a slowing economy and very low interest rates, infrastructure investment has taken centre stage as the governor of the Reserve Bank of Australia has urged the federal government to increase this investment as a matter of urgency because a further lowering of the cash rate is unlikely to boost the Australian economy.

The choice of where this investment will be made will be critical not only to Australia’s economic survival but also to its rapidly warming environment and the environmental survival risk that this presents.

Presently Australia’s annual greenhouse gas emissions per person (at 21 tonnes carbon dioxide equivalent) are twice the OECD average and these emissions are increasing — not decreasing as required under the 2015 Paris Accord.

Renewable energy is presently the least-cost electricity generation method for Australia which also meets our need to achieve zero emissions by 2050 as

identified in the International Panel on Climate Change’s February 2109 “1.5 degrees Report”.

Currently the federal government’s 2020 target for renewable energy installation of 20% of electricity generation will be met by existing and committed projects in that year.

There is no further government commitment to increase renewable energy generation in Australia; just a general commitment to reduce Australia’s greenhouse gas emissions in accordance with the Paris Accord — by 26-28% by 2030 (based on 2005 emissions).

The agreed Paris Accord greenhouse gas reduction targets are widely regarded by climate scientists as very weak and likely to lead to an unacceptable average global near surface temperature of 3.5 degrees Celsius: 25% above the pre-industrial average.

Bearing in mind the increasing energy costs to consumers referred to above, and the necessity to rapidly reduce our greenhouse gas emissions, it is necessary to examine a proposed project that permits more renewable energy to be added to Australia’s generation capacity; the Snowy 2.0 scheme to add pumped hydro electricity generation to the existing Snowy Mountains hydro-electric power scheme.

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“With a slowing economy and very low interest rates, infrastructure investment has taken centre stage”

It's Groundhog Day – Again!

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Snowy 2.0 is expected to cost an estimated \$3.8 to \$4.5 billion plus \$2 billion for upgrades to the electricity transmission grid and completion is expected in FY 2026-27.

The project will increase generation capacity by 2,000 Megawatts, enough to power up to 500,000 homes at peak demand.

The 2017 Feasibility Study found that by 2060 the mean maximum and minimum surface temperatures in the region of the scheme are expected to be 2 degrees Celsius warmer than the 1986 – 2005 average.

It also found that at the same time, just 40 years away, mean annual rainfall is expected to 6 percent lower and runoff 13 percent lower. In 2088 – 2099 annual rainfall is expected to vary by + 6% to – 27% from the 1986 – 2005 average.

Therefore, future inflows to the dams can be expected to be lower than they are currently. But much of the water will be re-circulated in the proposed pump-back hydro storage scheme so does this matter? Yes it does because evaporation from the open reservoirs can be expected to increase as surface temperatures increase as a consequence of climate change.

It is therefore little wonder that the Feasibility Study recommended that: *“A climate change risk assessment should be developed during Project design to identify high risk areas. Conservative design approaches are recommended in areas of risk to ensure infrastructure is resilient to potentially significant but uncertain changes in future climate.”*

There is therefore a critical disjuncture between the government's proposed enabling infrastructure to achieve a low emissions economy and its lack of a supportive climate policy to ensure

“There is a very strong case for increased transparency on the options for energy storage”

the long-term operational and economic viability of that very infrastructure.

This does not bode well either for Snowy 2.0 or for Australia and its near neighbours.

This situation will prove critical in future because Australia is the developed nation estimated to be most negatively impacted by climate change. However, there are 125 less developed nations that are expected to experience a worse impact from climate change than Australia — and many of them are our neighbours in southeast Asia and in the Pacific Ocean.

An important factor in any project feasibility study is the assessment of possible alternatives to the proposal capable of performing the same functions — none of which is apparent in the Snowy 2.0 Feasibility Study.

Such options might include:

- The Australian National University identified 5,000 potential pumped hydro energy storage sites in South Australia, Queensland, Tasmania and the ACT. Each site has an energy storage potential of at least 900 Megawatt hours (MWh), and some have storage potential above 100,000 MWh. For comparison, the proposed Snowy 2.0 has storage potential of 360,000 MWh. In aggregate, the sites have the potential to supply 15,000,000 Megawatt hours of electricity, which is more than sufficient to accommodate a 100% renewable target for Australia.
- Electric vehicles have the capacity to store significant amounts of electricity and Infrastructure Australia estimates

that by 2040 Australia will have a sufficient number of electric vehicles to store the equivalent amount of electricity to that which can be stored by Snowy 2.0.

- Grid scale battery storage is being installed progressively in Australia and costs are reducing owing to economies-of-scale and competition in the market.
- Floating solar panels on Snowy reservoirs have the potential to reduce evaporation and to generate electricity without running down the water level in the reservoir.

It would appear that there is a very strong case for increased transparency on the options for energy storage in eastern Australia.

An independent study is urgently needed using the Value Management methodology and involving a multi-disciplinary team to better understand the risks and possible alternative strategies and solutions to Snowy 2.0.

This would appear to be the only way to ensure that the numerous stakeholders (millions of people on the east coast of Australia) really do receive best 'value for money' for energy storage in their region.

By the way, how is the Murray Darling Basin Plan performing? Isn't it time for an independent, post-completion evaluation as recommended by the Productivity Commission in 2014?

John Bushell
Chair, Publication and Events
Committee, IVMA

The Value News

IVMA Website Re-launch August 2019

The Institute's website was totally redesigned in 2014 when we fully restructured the institute's corporate standing, re-thought the messages being presented and even re-imagined the logo and livery.

After 5 years and the advances in both technology and cyber-infiltration, the IVMA Board chose to conduct a full update of the website, explore a safer software basis and a new host.

With the advances in technology and user-friendliness, the IVMA aimed to be able to manage the changes and updates to the site as well as monitor the diagnostics of use, interest, etc.

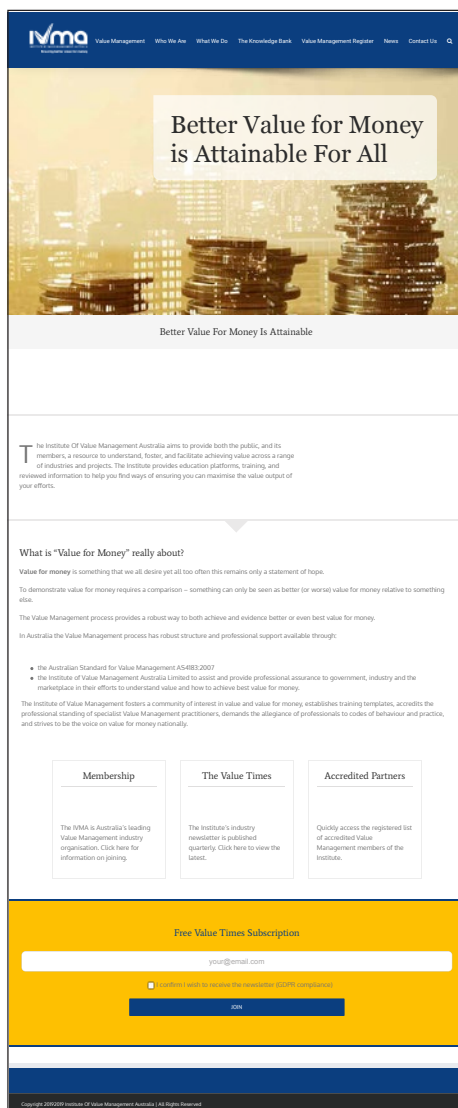
We chose a GoDaddy managed Wordpress hosting.

The task of rewording, editing, transferring and presenting materials in a revised theme and design took a little longer than expected and the transfer was managed as an off-line exercise while the "old website" remained in operation.

We launched the new site and it went "Live" on 19 August 2019.

Training of some Board members to access, update and adjust the website is being scheduled, but in the meantime we like the outcome and look forward to any feedback.

Please visit us at: www.ivma.org.au



IVMA / University of Melbourne Webinar

On **Wednesday 16 October at 10.00am Australian Eastern Daylight Time**

IVMA and the University of Melbourne will jointly host a webinar with the theme of:

Achieving best Value for Money from Projects

The webinar will be based on recent research collaboration between IVMA and the University of Melbourne.

The presenters will refer to several major projects around the world in terms of achieving best 'value for money'. There will be an initial presentation on the subject of 'value for money' which will be followed by a panel-discussion.

Participants in the webinar may send in their questions at any time and, time-permitting, each question will be responded to by one of the panelists.

The webinar presenters will be:

- Dr Roy Barton, President IVMA
- Dr Ajibade Aibinu, Senior Lecturer, Melbourne University
- Jose Oliveros Romeo, PhD Candidate, Melbourne University
- Mark Neasbey, Director, ACVM

You are invited to join this webinar.

To register please copy and paste this link to your browser:

https://zoom.us/webinar/register/WN_nLPBn665T2KAunAfieQjw

Melbourne's Airport Link – Best Value for Money?

Quick, cheap solutions are not always the best ones, particularly when they are driven by political power plays, undue expediency or vested interests. That tenet should be kept in mind when considering the proposals about how to connect Melbourne Airport via a rail link to the central business district.

For anyone using the airport, the need for a public transport link is patently apparent. There are about 120,000 vehicle movements a day around the airport area, clogging the Tullamarine Freeway from the Western Ring Road all the way to the airport terminals.

Annually more than 3.6 million people use the SkyBus express service from the airport to the city and taxis initiate trips and drop off passengers at the airport more than 6500 times a day.

Considering the concept of an airport-to-city rail link has been on the drawing boards for more than six decades, it is long past time to get it done.

The options are many, and they include:

- a fast, dedicated rail link from the airport to an expanded rail hub at Sunshine, then express via a new 6.5 kilometre tunnel from Tottenham to the city
- a fast link from the airport to Sunshine, then by existing but upgraded, above-ground commuter tracks to Melbourne.

The eventual decision, though, should not be selected just because it is cheapest. It needs to respect forecasts that greater Melbourne's population will rise to 8.5 million or more by 2050.



Melbourne Airport

It must also take into account the likelihood that residential, commercial and activity centres may be reshaped and relocated over the intervening years.

The ultimate configuration must be flexible enough to ensure it is well-utilised, and it must allow fast options for travellers whose destination is other than the central business district.

Melbourne Airport, which reaps more than \$200 million a year from the 24,000 car parks at the airport, is part of a private consortium that has offered \$5 billion towards construction of the Sunshine-to-city rail tunnel proposal.

The tunnel, in concept, is a great idea. But it must be guaranteed to integrate with, and be scalable for, future fast rail links to Geelong or other western and north-western routes. It also must be fully accessible at no extra cost to publicly-owned rail.

The federal and state government have been of like-minds for more than a year on the prospect of getting an airport

rail link built, and they have committed \$10 billion jointly to getting it done.

In recent days, the Morrison government has called for a dedicated 'quick link', presumably an express, from the airport in line with the private consortium's plans. The Andrews government has left open the prospect of upgrading and using the existing above-ground rail tracks from Sunshine to the city: a proposal presumably driven by the volume of railway infrastructure development work already under way or due to start.

A tunnel sounds like the ideal way forward, but it is possible to upgrade the existing Sunshine tracks while other rail projects are built, construct an airport branch line, and then commence the airport rail tunnel.

This project, though, should not be hijacked and later controlled by monopolists whose aim is profit. It has to be a whole-of-community project that benefits the future growth of Melbourne and Victorians more broadly, not just those who use the airport.

This article first appeared in 'The Age' September 6, 2019