INSTITUTE OF VALUE MANAGEMENT AUSTRALIA
Ensuring better value for money

THE VALUE TIMES

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President's Message

Best Practices to Achieve Best Value for Money

In discussions about 'value for money', I've never met anyone who has said that 'value for money' is not important to them.

Maybe there are some people out there for whom 'value for money' is not an issue, but I've yet to meet such a person.

At IVMA, our primary purpose is to help everyone achieve best 'value for money'. We can help people do this in a number of ways, including promoting best practices.

Some of those best practices are distinctive to Value Management such as following the work plan prescribed in the Australian Standard on Value Management – AS 4183 (2007).

But there are many other 'best practices' that also contribute to achieving best 'value for money' which are not distinctive to Value Management but are certainly embraced as part of an overall approach to achieving best 'value for money'.

One of those best practices is making an intentional effort to ensure that all the 'separate parts' of any system that we work on come together as an 'integrated whole'.

You might ask, "what has that got to do with 'value for money'?", and it is a reasonable question to ask.

My answer is that it's fundamental to achieving best 'value for money' for this reason: if the 'system' that we've just purchased does not work as well as possible, then we have not achieved best 'value for money': rather, we've achieved something less than that.

There is a very important principle coming from systems theory which is pertinent to this discussion. The principle is this: "When each part of a system works as well as possible, the system as a whole, will seldom work as well as possible".

I have taught and practised this principle for many years and noted that it is often perceived as 'counter intuitive' initially, but its veracity is beyond question. The challenge is to get everyone to understand and work toward the best outcome not only for the part of the system that they're working on, but for the system as a whole.

In some circumstances, this is a huge challenge, made worse by the fact that

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there are often perverse incentives to optimise 'parts' rather than 'wholes'.

It is the most natural thing for individuals, teams and, indeed, whole organisations, to stay focussed on the particular 'part' of a system that they've been contracted to plan, design, manufacture or construct.

So far so good, but that's not enough to achieve best 'value for money'. In planning and design of anything, there must be interventions of some kind to ensure that a 'whole system' view is maintained, whilst enabling individual people or organisations to work on the individual parts.

Facilitated workshops as part of an ongoing Value Management approach can be of great benefit here, helping to establish shared knowledge and understanding amongst players and ensure a 'whole system view' is taken resulting in best 'value for money' for the whole.

A challenge in all of this is to determine where the 'system boundary' is actually drawn. To some extent, this is an arbitrary decision, but I find that a useful principle is to draw the boundary as widely as realistically practicable for the job at hand.

If, for example, the entity is a new hospital, then the system boundary must include the broader health care system of which the hospital is part.

An example comes to mind even as I write this article: we were looking at a conceptual design of a new hospital, estimated to cost several hundred million dollars. It was a very complicated plan that involved demolishing an existing hospital (much of which was in pristine condition), selling off the site, buying a new site and building a new hospital.

Value for Money concept in investment evaluation

I am pleased to report that an academic paper that I have co-authored with colleagues at the University of Melbourne has been independently double-peer-reviewed and accepted for publication in the influential international Project Management Journal. My colleagues are Dr Ajibade Aibinu and Jose Romero. Ajibade is Senior Lecturer in Construction Economics and Jose is an Industrial Engineer in the final year of his PhD program.

The paper is about our process for achieving best 'value for money' and has the Value Triangle at its core. Whilst I have been presenting this concept at many conferences and in articles in the Value Times (and others) over several years, I have not, until now, presented it in the international literature.

I first described this concept in my PhD thesis and have practised it ever since. The distinguishing feature between this approach and conventional Value Analysis/ Value Engineering is the clear separation of 'value' and 'money' thus establishing a basis to say that product A delivers better 'value for money' than product B.

I argue that conventional VA/VE confuses 'value' and 'money' by combining them into the single statement 'value' such that value is usually defined in terms of "function over cost (V=F/C)". I have long-challenged that notion.

The paper has gone though all formalities and is in the queue for publication, currently scheduled for February, 2019.

Dr Roy Barton
President

As part of the Value Management exercise, we looked very carefully at the health care system of which the new hospital would be part. In doing that, it became clear that it was definitely possible, and maybe preferable, to make changes to the service-delivery model (area-wide) which could be achieved by making extensions to the existing facility rather than building a new one.

This solution would save millions of dollars and completely eliminate all of the inherent risks in the proposed demolition, sale of land and purchase of new land. The result was to abandon the proposal to build the new hospital in favour of service-delivery changes together with a proposal to extend the existing hospital.

A further example of placing a 'system boundary' around the scope of a Value Management study can be seen in a case that I cited in a precious Value Times article about a study which was to look at a new bridge and approach road.

For the purposes of the study, we considered the 'system boundary' as including the surrounding road network, the river which the proposed bridge would cross and adjoining facilities.

The study came up with an innovative solution (accepted and implemented) that eliminated the need for a new bridge and approach road completely by modifying the existing bridge and optimising other parts of the network. This saved millions of dollars and delivered much better 'value for money' to the taxpayer.

In both of the cases I've just described, it was the 'whole system view' that shifted the existing paradigm. Had we just considered the 'part of the system' in isolation (i.e. the hospital building or the bridge) then we might well have come up with solutions to improve them, perhaps even achieving best 'value for money', but that would have been for one part of the system, but the system 'as a whole' would certainly not have been optimised.

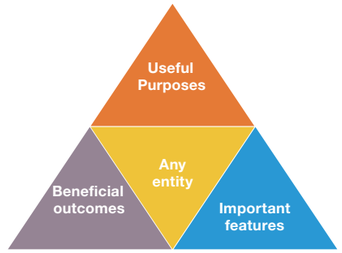
In the case of the hospital, I still remember receiving a phone call after the Value Management study from a very angry architect. Understandably, he was angry that his project had been abandoned. But the problem was that his design was simply optimising one part of the Area Health system in isolation from the whole system.

In both cases, the design teams had done the job they had been given, but the job had been given to them in isolation from the system of which their designated components (a new hospital building and a new bridge) were a part. Once we looked at the broader system, much better solutions became apparent.

How do we get to define the appropriate system boundary for the purpose of a Value Management study? There is no single answer to this question and the decision will require judgement and experience, recognising that as soon as we begin to explore systemic relationships to map out a broader system, we can, in just a few steps, be looking at the 'whole universe' because of systemic connections.

So, we need a practical decision for the purposes of the exercise at hand and even to build in some flexibility so that the boundary that we set can move inwards or outwards depending on the issues that arise.

The place to start, however, is with the Value Triangle with which regular readers of Value Times are very familiar. In the Value Triangle, we have our three core components of 'value' as defined in the Australian standard. These are "Useful purpose", "Beneficial outcomes" and, "Important features". This is shown in the following diagram.



The Value Triangle

I always start the exercise by constructing, amongst a group of stakeholders and project players, a statement of 'primary purpose'. *This is the key to the whole exercise.*

Once we have everyone on the same page and focussed on the same 'primary purpose' we set the stage for meaningful questions, answers, ideas and proposals. We also enable a relevant system boundary to be drawn.

We then, together, consider each of the agreed 'primary purposes' (there are often more than one). I ask the question "Why do you want to do that?", and the answer will take us, automatically, into a wider system.

Asking the same question of the wider system will take us wider still. Rarely will you need to go beyond two 'why' questions from the agreed 'primary purpose' statement.

Asking the question "why do you want to do that" of the proposed new hospital will certainly lead to the wider health care system, and asking the same question about a new bridge will certainly lead to the wider road network and traffic management system.

Once we have the wider system defined, we can explore how the 'separate parts' of the system come together as an 'integrated whole' ensuring that the whole system works as well as possible.

This is how we arrived at the decision to abandon the new hospital building proposal and the new bridge proposal. In each case, the implemented solution provided best 'value for money' from the system 'as a whole'.

Value Management Studies provide a great context and approach to identify and test primary purposes, check out the broader system implications and to seek ways to provide best 'value for money' not just for individual components, but for the whole system of which the component is just one part.

Dr Roy Barton,
President, Institute of Value Management Australia (IVMA)

2018 Call For Nominations As Member Directors

IVMA may have up to 8 Member Directors and so, this year, we are looking for up to 4 members to nominate as a Member Director and to lead and manage the Institute.

As noted in **Annual General Meeting** (above) 4 directors will step down and this provides the opportunity for 4 new directors to nominate for these positions.

The Board, in accordance with the provisions of rule 35. D) of the constitution, now calls for nominations from eligible members of IVMA for the vacant positions of member director.

To assist Members, key details for consideration include:

1. Copy of the IVMA Constitution is available on the IVMA website: ivma.org.au > who we are > governance > *click the link* to the Constitution
2. Member's eligibility as potential Directors is as defined in Rule 32(a) and Rule 11(a)2(i)
3. An eligible Member who wishes to stand for election as a Director must be financial at the time of nomination and be nominated by 2 Members eligible to stand for election – see Rule 35 (b);
4. Each of the present Member Directors who have advised they will stand down at the 2018 AGM is eligible to nominate for one of the four (4) vacant positions – see Rules 32 and 35;
5. The nomination shall be in writing, contain the consent of the Member to be a Director of IVMA and be signed by that nominated Member and the nominating Members – see Rule 35 (c);
6. A nominated Member may submit with their nomination letter, a supporting resume of not more than 150 words – see Rule 35 f).
   Such resume:
   a. may only include details in relation to:
      I. the candidate's qualifications and relevant experience;
      II. the candidate's contribution to IVMA; and
      III. key issues the candidate sees as facing IVMA;
   b. must not endorse, disparage or otherwise refer to any other candidate or any other Director;
   c. must not contain anything that is defamatory; and
   d. must comply with any applicable by-laws or regulations set by the Board.
7. Valid no minations for the position of Member Director shall be lodged with the Secretary no earlier than 3 August 2018 and no later than CoB 5 September 2018 – see Contact addresses on the website.

The details of Nominees for the vacant Member Director positions, together with any supporting resume they supply, will be issued to all Members together with the formal notice of AGM.

This is your Institute, so please seriously consider nomination. Thank you.

Alan Butler,
Secretary, IVMA

IVMA 2018 Annual General Meeting

Under our Constitution there are critical time bars for essential activities in the management of IVMA that relate to the date for the AGM. This year's planning has been around an AGM being held in October 2018 and has seen:

- 29 June 2018: Call for Nominations for Member Directors issued by email and placed on the IVMA website
- At the earliest, 3 August 2018 and at the latest 5 September, 2018 Nominations for Member Directors must be lodged with the Secretary IVMA
- mid-September 2018: a formal Notice of AGM, Proxy voting forms, Nominations received and instruction details for returns will be issued

Four of our current Member Directors will be standing down and may consider re-nomination. They are: **Alan Butler, Malcolm Hall, Michael Ord and John Bushell.**

Other members might also like to consider nominating and they should consult the details issued in the **Call for Nominations** (see main article on this page) to see if they are eligible and then lodge a nomination.

Participation in the AGM is easy. If you cannot attend in person at ACVM's offices, 55 Albion Street Surry Hills, you may send a Proxy form with your instructions or join in by video conference using Zoom; this is a free application. Details of the Zoom access code will be advised. All members will be welcomed.

Alan Butler
Secretary, IVMA

The Business Case Says What?! So why not VM it?

A strategy was put forward to say that a stadium, that was not even 20 years old, would deliver better 'value for money' by being demolished and a new one built in its place.

A stadium that was configured to seat 110,000 for the Sydney 2000 Olympics and just 3 years afterwards it was reconfigured to seat only 83,500. A proposition was made to the NSW Government that it should be knocked down and a 75,000 seat stadium erected in its place.

Stadiums seem to generally have much longer life-cycles that just 18 years or so.

No, I'm just not convinced there's demonstrable 'value for money' in such a strategy – neither for the owners nor the paying public and users; although clearly the construction industry is going to be very happy. I suspect the ticket prices might be significantly higher than they were at the 'old' stadium as well.

So here's my initial query: Where's the real 'value' in this strategy?

Because a claimed NPV figure is not the value. It's just a figure that is derived from a heap of (usually all too optimistic) assumptions that can be manipulated and which often do not fully capture and assess the negatives and externalities (such as in this instance – necessary investments for the displaced sporting events). An NPV alone is not the basis on which an investment decision such as this is usually made.

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Where's the real 'value' in this strategy?

The Business Case Says What?! So why not VM it?

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My next query: How did the 'asset planners' get it so wrong in so short a period?

I say this on the basis that the original stadium was designed, engineered and built with at least a 40-year 'building life' in mind – even though there was an upfront strategy and recognised cost to reduce its seating capacity post Olympics. That change had been factored into the original design and asset strategy. To make that change I suspect an NPV amount was calculated – but that seems to have only had a short shelf-life; if its underlying assumptions appear to have proven to be way off the mark!

Why haven't they thought to use VM?

We know from direct experience of the preparations for the 2000 Sydney Olympic Games that all of the different sporting facilities were subject to (amongst other analyses) Value Management Studies at concept and preliminary or schematic design. These studies often resulted in dramatic adjustments – affecting form, function, capital and life-cycle costs.

For example, the Velodrome had to move off the Sydney Olympic Park campus because the VM realised major footprint issues that could not be fully accommodated at the park (in conjunction with all of the other parallel Olympic activities) – even though the masterplan showed it would be there from the outset of the games bid.

These VMs gave opportunity to clarify and challenge requirements for the facilities in Olympics mode and for post-Olympics uses. These were not assessed as isolated elements. They were all considered within the holistic of the Games and ongoing community facilities including alternative venues, current and future sporting activities, asset performance and life-cycle costs and how they would be operationally funded into the future. There were multiple stakeholders involved in the VMs, not just the project development team.

So if there is now a perceived need for something very different for the future, then how is the value of that best defined?

We know, as well as feel, that the best way to do that is to apply VM: an opportunity for the key stakeholders to define the purpose of the stadium into the future, to be clear about the intended benefits and to also be clear about its important features. Long before anyone starts drawing lines to 'design' the new facility.

That shared knowledge and understanding (the first step in a VM) is a key foundation for generating a best 'value for money' solution.

A VM also allows for clarification of information such as:

- givens,
- constraints and planning assumptions,
- explanation and challenging of functions and how they can be delivered,
- generation and evaluation of options that enables robust consolidation of viable options, and
- business case analysis – not just financial but addressing all of the other aspects that the stakeholders (which includes the government and the community) consider to be of value.

It also allows risks and potential future changes to be taken into consideration.

So if there is now a perceived need for something very different in the future, then how is the value of that best defined?

Status

Recently the government decided to put this proposal 'aside', but if the proponents still see a case to be made (and recent media suggests this is so) then their best starting point should be a Value Management Study.

What do you readers think? We will have on opportunity to discuss this matter via a webinar – see page 10.

Mark Neasbey
Chair, Education Committee, IVMA

Now this looks like good value for money!

Amidst the ongoing short-term thinking and 'argy bargy' of Australia's climate and energy policy, a recent comprehensive study by Stamford University provides essential, science-based, analysis of global energy supply options to 2050.

The results have significant impact on Australia's energy policy with an even greater impact on the nation's future climate.

The results of the study indicate that best 'value for money' is delivered by a 100%, low 'greenhouse gas' emissions energy sector and that the benefits are not necessarily lower energy prices but massive savings in avoided social and climate impact costs when compared with continuing "business as usual" energy trajectory.

The study considered three renewable energy technology mix generation options predominantly wind energy, solar photovoltaic (PV), solar thermal energy and hydroelectric power – no fossil fuel generated energy.

These three cases were compared to a fossil fuel generation option that formed the 'base case' for comparison.

Energy storage options included batteries, thermal energy storage and pumped hydropower.

Once these storages were full, hydrogen was produced and stored with the surplus electricity.

The study found that the costs per energy unit in 2050 would be similar to those of today at about 10.7 cents US / kWh for renewable energy and 9.8 cents US / kWh for fossil fuel energy (figures are in 2013 dollars, including distribution of electricity).

However, two particular efficiencies significantly reduce the amount of energy used in a renewable energy scenario:

- renewable energy requires 42% less energy in a base case because it eliminates the inherent thermal inefficiencies in conventional power generation.
- renewable energy requires 58% less energy when heat pumps (eg reverse cycle air-conditioning and heat pumps for water heating) are used extensively for air and fluid heating and cooling.

Renewable energy therefore has considerable potential to further reduce capital and recurrent costs of providing the goods and services that humans require on a daily basis.

However renewable energy delivers significantly reduced social costs and thus serious realisable 'value for money'' when compared with 'business as usual'.

These economic 'external costs' include the elimination of current premature deaths of between 4 to 7 million people per annum globally caused by fine particulate matter generated by the combustion of fossil fuels and the eventual reduction in the weather-generated damage to the natural and agricultural environment and to infrastructure caused by a warming planet.

When these external costs were taken into account then the renewable energy options cost between 9.74 and 9.93 cents US / kWh whereas the fossil fuel 'base case' costs 38.3 cents US / kWh.

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Now this looks like good value for money!

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Thus when climate and social costs are included in the analysis costs of energy production in 2050' the cost of 100% renewable energy is one quarter the cost of 100% fossil fuel generation.

Of course these 'external costs' do not appear on your electricity bill but will occur in health-care, infrastructure and insurance bills if we do not act to reduce global warming and secure a long-term energy future for the planet.

Importantly the negative impacts of global warming are not only avoidable but at a lower cost than continuing as we are currently.

The renewable energy systems that delivered the most sustainable benefits were solar, wind and hydro energy. Bio energy with carbon capture and storage was found to consume too much land area and to present too high a long-term gas-escape risk respectively. Both bio energy and fossil fuel use retain significant air pollution and consequent health-care risks into the future and were rejected as possible solutions.

Nuclear power was considered but with the continually reducing cost of solar and wind power it was found to be not cost competitive anywhere in the world either now or in the future.

To provide reliability in the face of the variability of supply in the case of wind and solar power the report found that batteries, hydro-electric storage and thermal storage of heat developed using heat pumps (eg stored hot water) were the most practical and cost-effective solutions.

There is no need to 'mine' or transport the 'fuel' used in renewable energy, as the primary energy sources are ubiquitous. Most of the world's population lives at low latitudes (less than 35°), where sunlight is abundant and varies little between seasons. Wind energy is also widely available, particularly at higher latitudes.

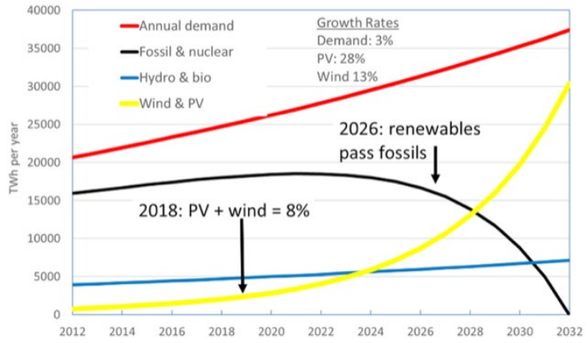
There will be a need to transport the electricity produced depending on the balance of energy supply and demand – but this occurs in the fossil fuel 'base case' also.

So where are we today with energy generation globally? Together, solar photovoltaic and wind currently produce about 7% of the world's electricity. Worldwide over the past five years, solar photovoltaic capacity has grown by 28% per year, and wind by 13% per year.

Work by professors of Engineering and Computer Science at the Australian National University indicate that because of the slow or nonexistent growth rates of coal and gas, current trends put the world on track to reach 100% renewable electricity by 2032 as demonstrated by the following graph.

The renewable energy systems that delivered the most sustainable benefits were solar, wind and hydro

Forecast Global Energy Supply to 2032



So if we are to rely on solar and wind power' is there enough available energy to power mankind's increasing population and energy demands and is there sufficient land area for the equipment?

Earlier research by Stamford University found that solar energy could provide 7,500 times and wind energy could provide 200 times mankind's current primary energy demands. Powering the entire planet with solar and wind as primary energy sources would use less than 1% of the planet's land area.

In Australia, photovoltaic solar power and wind comprise most new generation capacity. About 4.5 gigaWatts (GW) of photovoltaic solar power and wind will be installed in 2018 compared with peak demand of 35 GW in the National Electricity Market. At this rate, Australia would reach 23.5% renewable energy by 2020 and 70% renewable electricity by 2030 i.e. the Coalition's target of 33,000 GW, or 23.5% renewable power by 2030, would actually be met in 2020.

Electrifying the whole energy sector of Australia's economy, including transport and agriculture, means that electricity production needs to increase massively – roughly tripling over the next 20 years.

If we now examine the relative costs of alternative electricity production over time, information from Bloomberg New Energy Finance shown on the following graphs indicate that new renewable energy is significantly cheaper than new fossil fuel investment both now and into the future.

These figures are for generation only and do not include for storage and grid stabilisation required in conjunction with renewable energy which will increase the

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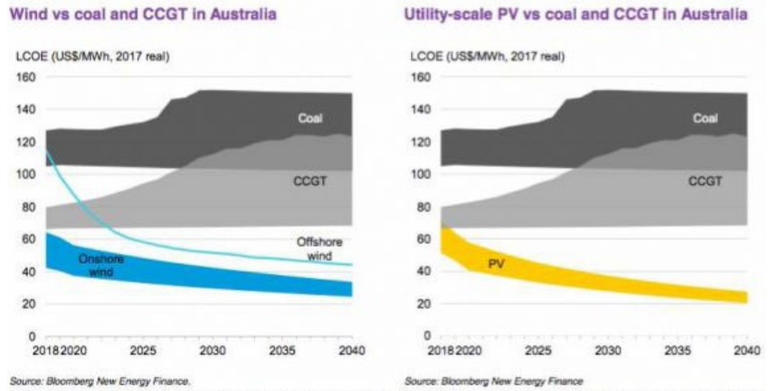
In Australia, photovoltaic solar power and wind comprise most new generation capacity

Renewables are already the cheapest forms of bulk generation…



[LCOE = Levelised Cost of Energy which measures the lifetime costs divided by energy production and calculates the present value of the total cost of building and operating a power plant over an assumed lifetime. PV = Photovoltaic Solar Panels.
CCGT = Combined Cycle Gas Turbine]

Now this looks like good value for money!

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cost of this energy as it becomes a higher percentage of total energy production.

Lazard finance advises that the latest cost of lithium-ion battery storage and stabilisation is around the same point as gas peaking plants. Battery storage costs continue to fall and batteries do not have an ongoing fuel cost or carbon pricing risk of gas.

However total electricity supply costs for Australia in 2050 would be expected to be similar to the figures given above – slightly above fossil fuel generation costs for electricity only but a quarter the cost when 'externalities' are accounted for.

In Australia these 'externalities' are critical as Australia is forecast to be the developed nation most impacted by continuing global warming – to a large extent driven by the extreme climate swings we experience today.

Forecast cost of fossil fuel and renewable electricity generation in Australia to 2040

Note that it is the value side of the energy equation rather than the money side that delivers the benefits to the human community and to the planet generally. Removing a very significant negative phenomena, pollution and its subsequent, negative health impacts and avoiding massive weather-related damage to our environment produce a far greater benefit than the primary business of providing energy to all who need it. That is, achieving value and functionality ahead of money or 'cost-saving' actually delivers far greater value for money as well as non-financial benefits when compared with a purely financial approach.

John Bushell
Chair, Publications and Events Committee, IVMA

Webinar Discussion in August

The IVMA Board has been conducting its meetings for some time now via a web-based conferencing program.

We now want to conduct a trial of a member webinar using the same conferencing program as a means by which the Institute can meet the needs for professional interaction of a geographically diverse member base.

The webinar will be held on **Tuesday 7th August at 12.00 AEST.**

You will need to download the '**zoom.us**' app on your computer or mobile device.

Open Zoom, click on 'Join' and type in this access code: 660 404 191.

Or you can join the webinar directly from a PC, Mac, Linux, iOS or Android: https://zoom.us/j/660404191

Mark's email is mark.neasbey@acvm.com.au

The topic of the webinar will be a structured discussion around topics based on Mark Neasbey's article in this edition of Value Times (above).

The format will be:

- background and overview by Mark
- member discussion around the following questions
  - What demonstrated need is there to demolish and rebuild two stadia at around half their useful lives?
  - What was the original value proposition?
  - Has the value proposition changed?
  - How can or should we measure value in the long-term?
  - Is there a need for value managers to measure and report on value over time?
- concluding remarks
- general discussion on whether the webinar was useful, and whether a program along similar lines should be implemented.