30 November 2017

Simulation Australasia Ltd Submission to the Digital Economy Strategy Consultation

Dear Reader,

Simulation Australasia Ltd is the Not-For-Profit industry peak body in the Modelling and Simulation Australasia sector across Australasia. We represent approximately 80 companies and 200 individuals, with a member base spanning many current industry sectors. Our core membership lies in Defence and Defence Industry, the Health sectors throughout Australia and Higher Education broadly. Our engagement reaches across the Pacific to include the US, China and India.

The consultation paper seeks input on 22 specific questions and invites input on the gaps.

Our response gives our initial input to the questions posed, but we note that the paper may have missed key sectors of the digital economy given the nature of the questions.

The key piece that requires more detail is in the development of the description of "the digital economy" … in essence the products and services and supply chains, both global and international that form the "industry" hierarchy on which this economy is being built today.

While there are analogies to the industrial age systems as identified in the minister's remarks, the nature of the products and services and the preparation (education, training, certification) required for and by a "digital economy workforce" are quite different.

Additionally, Government needs to develop "new industry" labor and product codes to track the workforce and industry investment. … At present in simulation for example, the workforce statistics would broadly cover everything from engineer to ICT to educator, and not properly reflect or target any investment. From our engagement with peer peak bodies, the issues appear to be similar.

Our request is to be included in a future engagement – where we would suggest a focus be on investing in a Digital Economy "industry map" – establishing an As-Is baseline and a Digital Economy "workforce map" – establishing an As-Is baseline and new labor and industry codes to guide the necessary federal and state Government strategies and investment.

Yours sincerely,

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The Digital Economy Strategy Consultation: Simulation Australasia Ltd response

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1. The Digital Economy

We need to be ready, as an economy and a community, to respond to change and to grasp the opportunities of the digital economy.

State of play

Australia does not currently have a sufficiently comprehensive definition of the industry bodies; products and services; domestic and international supply chains; and the inter-relationships of the current digital economy to target government action and investment – some work has been started at state level.

Questions

1. *How are advances in digital technology changing the way you work, your industry, and your community?*

Technology is but one underpinning enabler of the Digital Economy – and enables all sectors of the economy. It is however, integral to the building of modelling and simulation product and the delivery as services. Digital technologies close the divide between distributed rural and concentrated urban workforces, but may create new divides where under investment in infrastructure is present.

Our members observe: The network and interconnectivity fast tracks capacity and capability development, and ability to research, develop and test new ideas and concepts. Technology is increasingly a globalizing industry.

The ability to work remotely and internationally and from distributed sites across the globe has changed forever how work is advanced – it allows a 24 / 7 shift cycle where required by engaging globally.

Digital technology is a broad term, but four key aspects are computing power, emerging technology and communication tools and visualisation.

Computing power allows for more computationally expensive simulations to address detail and creative “looks” and higher levels of realism – this supports visualisation which is the key advance in permitting the sense making and exchange of complex concepts and result between professions – it isn’t all simply maths and engineering.

Emerging technology provides us new ways to engage our audiences, with technology such as Virtual Reality being used to assist in marketing, both before and after a product release.

2. *What is your vision for an Australia that thrives in a digital economy? Where would you like to see Australia in five, 10 and 20 years’ time?*

5 years – Platforms for learning, education and certification of the workforce are reviewed and validated information is easily available to Australian citizens. Concept of simulated (including digital) and engaging methods used to test knowledge in the real and working world. This method of engagement rapidly influences thinking and problem solving. Work places increasingly have a practical and theoretical emphasis.

Government Modelling of the Australian Economy is simulated at a high degree of realism supporting budget testing decision support.

We are more diverse in our approaches to work requirements; the ROWE [results oriented work environment] concept is functioning with reasonably mutual trust between employee/employer.

An “industry” “value chain” is developed linking modelling and simulation through data input and analysis, supporting robotics, advanced manufacturing and systems engineering. This supports an education and training model.

10 years – Digital connectivity enables Australia wide virtual engagement at a level of realism to reduce the need for city centric approaches to working and industry hubs. For the Australian society, this has the potential of enhancing a better work and family life balance through reduced travel requirements and more time in the community. Automation will be rampant and a larger possible issue will be encountered for the communities without digital technology or without the skills and attributes to use the tech.

Diversity and collaboration based on digital technologies reduce the effect of state barriers and industry boundaries, more workers may be anywhere when their work is based on digital technologies - thus individuals have more power over their time and work preferences; conversely large corporations are centred in metropolis environments with broad reach across the whole country.

The Australia that thrives in a digital economy, is one that can keep our expertise domestically, whilst providing the opportunities to work on projects across the globe. Data itself won’t be stored on local storage, but will be stored in the cloud (or reliably synced across sites), so the work location itself will be less relevant, with people being able to work wherever they see fit.

The limitation won’t be the computing power that we use today, as these can be increased on demand, but will instead be the creativity and flow of ideas that each of us bring to the table.

With this opportunity Australia as a nation can retain much of its skill and expertise, and we can do interesting work locally, without having to move overseas to find more interesting work and greater career growth with parent companies overseas.

Australia has a place in advanced manufacturing – exporting skilled workforce and skilling in addition to products and services.

20 years – Boom or bust, depending on government actions. If Australians develop and can retain advanced technology to sell to the world, we will see boom. On the other hand, if we lag or give away our IP, we will see bust or a general lowering of standards.

3. What is the role of government in achieving that vision?

Government must act to “create” and support the necessary “industry” frameworks – an approach not dissimilar to the establishment of the automotive industry post World War II as a strategic asset.

There is a broad list of strategic and tactical actions in support that are needed – some of which are covered in these questions. The first of which is a baseline of the Digital Economy Industry, and Workforce. … This might be best achieved by funding the various peak bodies to conduct a guided baseline survey.

The government recognises the need to build a supporting infrastructure, but this is insufficient to support a full digital economy.

In the modelling and simulation sector, the government might usefully inform itself through study tours with Simulation Australasia Board members. Study Tours to the global simulation hub –

Orlando Florida have been discussed with Jason Falinski MP – Member for MacKellar in support of other submissions.

4. *What are the key disruptive technologies or business models that you are seeing? What do you predict is on the horizon in five, 10, 20 years' time?*

Quantum computing is a clear disrupter for the digital economy. This will impact speed of compute and will allow the volume of data produced to comfortably outpace the volume of delivery.

Quantum computing will necessitate a change to our approaches to data encryption and security.

This will drive a number of advances in compression technology and "big data analytics" Most other technologies associated with the internet of things act to enhance the digital economy. Blockchain transactional technologies already challenge the banking sectors.

In terms of business models – ICT products and services architecture approaches that have been at once adopted and dropped by DoFD as a government standard – will be overtaken by a blended approach. The key for government is how to properly value services in the economy as the proportion of "products" in the overall economy dwindles in comparison to the services economy.

As the economy continues to globalise at the service level, it will be important for government to define and protect "sovereign capabilities" as it has done with other strategic industries.

Simulation Australasia would self-identify as a national strategic asset – as has been recognised in other parts of the world … notably, the US House of Representatives has recognised modelling and simulation as a nationally strategic industry.

2. Enabling and supporting the digital economy

Digital infrastructure

The demand for digital infrastructure is important, but like roadways support to transportation – it is a necessary, but not sufficient element.

State of play

The investment in fixed infrastructure – like the NBN – is uniquely useful in mega urban areas and uniquely expensive to enhance as urbanisation continues. Broadband technologies and cheaper satellite access are required to properly realise the integration of Australia's distributed population and economic base with a digital economy.

Questions

5. *What communication services, and underlying data, platforms and protocols, does Australia need to maximise the opportunities of the digital economy?*

The types services, protocols etc are being driven by global forces beyond the abilities of government. … What is needed is definition of minimum interface standards that are stuffiest to guard investment against fast product cycle redundancy. … This will be key as "The Internet" becomes obsolete over the next decade.

That said – for a digital economy to be successful, government must support investment in technologies beyond the NBN … Road, Rail and Sea transport. … and in data security technologies – acknowledging that Australian sovereign data is not currently transported or held on systems under Australian Government Sovereign Control

6. *What opportunities do we have to accelerate the development of technologies that will underpin Australia's digital economy?*

As before – a focus on "technologies" suggests a product … A better focus is on services … the way forward is to survey the digital economy through the peak bodies and others to define the economy, it's trajectory and areas of strength and weakness – creating an investment map.

At this point Simulation can assist in modelling what we will actually need to achieve this, and also to see whether our plans may actually be feasible. And can also be used to help visualise and market this new future in the coming years ahead.

Standards and regulation

We agree that Standards and regulation generally are key to a successful economy. However, the standards and regulatory approach needs to step above standardisation of "things" to standardisation and professionalisation of the workforce … Government and Industry need to "hire" a qualified workforce … Simulation Australasia is making initial steps in this regard, but a larger workforce definition issue looms.

State of play

Standards

It is common humour through the digital economy that "standards are necessary – everyone has one". Simulation Australasia is engaged with a subgroup of Standards Australia, but we recognise that this is insufficient, but lack the means to address the breadth of standards and qualification work required.

A series of focused grants to develop a framework across the digital economy is suggested.

Questions

7. *What opportunities do we have in standards development and regulation to:*
   - *enable digital entrepreneurship, innovation and trade?*

     Here – simulation offers the maximum benefit in modelling advances in trade and the impact of actual or imagined innovation
   - *mitigate the risks associated with digital disruption?*

     The most impactful standards will likely be in digital security. If highly sensitive data cannot be considered safe on these platforms, then even if it available, it's unlikely that this may be used.

     Data interoperability standards will also be important, as the more work that is done cross country and cross industry, the more likely that data compatibility will become important and standards are key to ensuring that data can be passed and consumed across multiple systems.

     Standards Australia as a body is present to work with international bodies, and is a resource that consist in facilitating the meetings with experts to make sure that we can contribute to worldwide standards. But importantly, the Government also needs to step in to make sure that these standards are adopted by the projects that they oversee.
8. What digital standards do we need to enable Australian businesses to participate in global *supply chains and maximise the opportunities of the digital economy?*

See 7 above

Trust, confidence and security

Questions

9. What opportunities do we have to build trust and community confidence through resilience to cyber threats, online safety and privacy?

10. What roles should government, business and individuals play in protecting the community in a digital economy?

The roles for government and private actors are no different in the digital economy. … The threats are no longer limited to the physical domain and thus require an advance in legislation beyond the protection of property.

It is noteworthy that the internet has enabled online commerce, which Australians have enthusiastically embraced, but that there is no training either from the banking industry or in schools about how to safely conduct transactions.

11. What integrity and privacy measures do we need to ensure consumers can protect their data?

No particular comment

12. What are barriers for business, particularly small business, in adopting cyber security and privacy practices?

Standards, infrastructure and adoption will be key, as mentioned above. Privacy laws may also play a key role, as if these are too strict this may restrict countries from wanting to conduct work with Australia in the future digital environment.

13. What integrity measures do the Australian Government and the private sector need to take to ensure business-consumer transactions are secure?

No particular comment

3. Building on our areas of competitive strength

As with other areas of strategy, areas of competitive weakness are just as important – either to identify areas for alliance or to identify areas for strategic investment in sovereign capability.

State of play

Australia has a small, but respected modelling and simulation (including serious games) sector that competes internationally, but is not recognised as a “industry” or sector. The Senate has had inquiries into the gaming industry.

Questions

14. What is holding Australian businesses back in terms of benefiting from digital technologies?

In terms of modelling and simulation – Australian business and governments do not comprehend the value of testing decisions through a model or simulation. Secondly, the delays in digital infrastructure to premises (home, workplace and school), have limited the uptake until now. This can be expected to accelerate and infrastructure rollout will be a rate limiting step.

15. What would help Australian businesses to embrace digital technologies?

See 14 - Strong simulation based learning environments that bring home the message of ‘it also means me’ will be an effective way of increasing awareness and adoption.

16. What efforts are you or your organisation making to respond to digital transformation? Why?

Simulation Australasia is a though leader in this area … as part of our Company Objects as a member based NFP.

17. *What opportunities do we have to use digital technologies to improve linkages into export markets and global supply chains?*

We would advise a focus on the next step – defining and analysing the digital economy supply chain.

18. *What opportunities do small and medium-sized businesses have to embrace digital innovation to drive customer value, improve their services and unlock their potential?*

No particular comment in the absence of an industry map

19. *What are the key new growth industries that Australia should be tapping into? In what technologies and sectors should Australian businesses take the lead, and where should we be a 'fast follower' of international trends*?

Limited comment in the absence of an industry map, noting however, that: Spatial industries and simulation based learning, design, research and business environments will provide the kinds of spaces that enable neighbourhoods, businesses and individuals to gain insight into, and adopt, the kinds of skills and knowledges that identify which paths to take in this regard. If we can adopt a learning-oriented approach to answering such questions we will thereby be taking the lead in establishing new growth options and identifying where to be fast-followers.

4. Empowering all Australians through digital skills and inclusion

State of play

Australia has a low level of skill or literacy in modelling and simulation and few university courses

Government concentration on STEM an Innovation are notable … but seriously lack a useful public model (simulation can help and the capacity lives in Australia) on the impact of STEM in the society … We would advocate "Turning STEM into STEAM", to embrace the arts and particularly visualisation and architectures.

Questions

20. What opportunities do we have to equip Australians with the skills they need for the digital economy, today's jobs, and jobs of the future?

The vehicles for education, training, professionalisation and certification exist, but the workforce definition needs to occur first.

21. What opportunities do we have to bridge the 'digital divide' and make the most of the benefits that digital technologies present for social inclusion?

In a similar manner to other welfare, as the digital economy progresses - Family assistance may be offered where relevant to ensure that families have access to both the technology and skills needed to operate them, so they can join in the digital economy. Internet access should also be easily accessible and affordable to ensure that the full benefits of these initiatives can be achieved.

22. What opportunities do we have to ensure digital technology has a positive impact on the cultural practices and social relationships of Australians?

Government is probably late to this task. We need to test new systems with our youth. Social structures have changed dramatically with youth engaging internationally already. Acknowledgement of what is already here and reviewing increasing safe practices via education and examples.