ACARA
AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY

DRAFT AUSTRALIAN CURRICULUM: TECHNOLOGIES FOUNDATION TO YEAR 10
WRITTEN FEEDBACK COVER SHEET

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1. NAME
(Individual/Organisation):__Open Source Industry Australia Ltd (OSIA)_____

2. Please indicate your state or territory:

a.	Australian Capital Territory	☐	f.	Tasmania	☐
b.	New South Wales	☐	g.	Victoria	☒
c.	Northern Territory	☐	h.	Western Australia	☐
d.	Queensland	☐	i.	International	☐
e.	South Australia	☐			

3. If you are submitting as an individual, please indicate your perspective

a.	Primary teacher (generalist)	☐	e.	School leader	☐
b.	Primary teacher (technologies specialist)	☐	f.	Academic	☐
c.	Secondary teacher: Design and Technologies (indicate technologies specialisation) _____	☐	g.	Industry or business member	☒
			h.	Parent	☐
			i.	Student	☐
d.	Secondary teacher: Digital Technologies	☐	j.	Other, please specify_____	☐

4. If you are submitting a group response, which CATEGORY OF RESPONDENT best describes your perspective?

a.	School (eg Richmond High School)	☐	e.	Industry	☒
b.	Professional Association	☐	f.	Other, please specify	☐
c.	University (institution or faculty)	☐		_____	
d.	Education Authority	☐			

5. If group response, how many people have contributed to this response? _____2_____

THANK YOU FOR YOUR FEEDBACK.

Submission on the ACARA Draft Australian Curriculum: Technologies document.

Open Source Industry Australia Ltd

10 May 2013

About OSIA:

OSIA is the national body representing the open source software industry in Australia. It exists to further the cause of both Free and Open Source Software (FOSS) in Australia and to support its members in improving their business success in this growing sector of the global Information and Communication Technology (ICT) market. It also provides authoritative and consistent information about Open Source Software.

For further information, see the OSIA website at http://osia.com.au.

Contacts:

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Introduction

OSIA is pleased with the opportunity to comment on the draft Australian Curriculum Technologies document, released in February 2013 by the Australian Curriculum, Assessment and Reporting Authority (ACARA). This follows our earlier submission in July 2012 on the draft senior secondary Australian Curriculum (for Mathematics and Science).

OSIA recognises the significant value of the proposed curriculum to the Australian education system, and the ensuing long term benefit to the Australian community as a whole. We wish to comment specifically on a few aspects of the draft curriculum.

Given OSIA's role as an industry representative body, engaged in the local Software Industry and Information Technology sector, our comments inevitably bear more relevance to the Digital Technologies subject, but we however note the explicit connection made between the Design and Technologies subject and Digital Technologies subject in the drafting of the curriculum document.

Positive aspects

There are a number of aspects of the draft curriculum which we take much comfort with, all of which address weaknesses which have existed in the past.

1. We are firstly very pleased with the treatment given to Digital Technologies as a separate subject in its own right, rather than being lumped in with other content within a broader Technology subject. This is an important development which is consistent with an acknowledgement that digital technology can be an important overarching enabling technology in educational activities, in a similar fashion that the study of mathematics brings fundamental skills applicable to all learning areas.

2. We note the recognition of the value of the Australian Curriculum: Technologies in relation to the other curricula (on page 12). Where we see this importance is in the impact that this ought to have on a greater emphasis on the provision of relevant training and development programs, and adequate resources to all Educators, to enable them to better integrate digital technology within their professional practice.

3. We feel very satisfied with the foci under the Digital Technologies processes and production skills strand of the Digital Technologies component of the draft curriculum, and in particular in relation to the underpinning key concepts of *abstraction, data collection and representation, specification, algorithms and implementation* (page 63). As rightly noted, these indeed form fundamental ideas of computer science and information technology, and an understanding of these concepts provides a solid background for further studies in Computer Science and Computing related subjects.

We mention those three aspects above as those that best resonate with our own thoughts, but these are by no means the only ones we regard as positive.

Our concerns

We feel however compelled to comment on what we perceive is a weakness in the curriculum as it stands. These concerns are not related so much towards the content but towards the stated aims, as we elaborate below.

1. We note under Content Structure, in relation to the Design and Technologies subject, Design and Technologies processes and production skills strand specific reference to:

> *'critiquing, exploring and investigating needs or opportunities', 'generating, developing and evaluating design ideas … ', and 'planning, producing and evaluating ... solutions'.*
> (page 25)

The above being skills, the development of which are aimed for, in the Design and Technologies subject.

2. We however note that in relation to the Digital Technologies subject, Digital Technologies processes and production, the skills referred to are:

> *'collecting, managing, and interpreting data … ', 'using a range of digital systems …', 'defining problems … ' and 'creating and communicating information …'* (page 61)

There other statements in the draft with similar implication.

While we unreservedly recognise the importance of developing the skills as mentioned above in relation to both subjects respectively, we however fear that there is an over emphasis on *usage* and *application* skills in relation to Digital Technologies subject, and this at the detriment of '*design, development and critical analysis'* skills which appear to be only referred to or to have greater emphasis in relation the Design and Technologies subject.

We however acknowledge the statement in the draft curriculum document that the two subjects need to be seen together, ie: the '*design and development … '* skills which we consider are highly desirable in relation to Digital Technologies, could be imparted from the Design and Technologies subject.

Nevertheless we feel that a more emphatic and explicit statement that such skills will be developed in the specific context of Digital Technologies is highly appropriate. We also make the point that there is a difference between design principles in creative domains and those in engineering domains.

Our rationale for the appropriateness of developing adequate '*critical analysis, design and development*' skills comes from a fear that we may end up with a generation of individuals who are very effective in <u>only</u> using and applying digital technology, rightly so, but passively and acceptingly. We may end up with what may be described as good '*push button*' consumer individuals. What would be more desirable is that the next generation is also well capable of becoming active and leading participants in the innovation and development of yet to be realised digital technologies of the future.

Digital technology has a unique characteristic in that it is a 'self-generative' technology. We consider that this further strengthen the importance of developing appropriate '*design and development ...*' skills in relation to and as intrinsic component of the subject.   What we mean here

is that fundamental development and innovation in digital technology often comes from digital technology itself. This in contrast to other technologies, for example food technology, where fundamental development is more likely to come from another domain, such as chemistry, chemical engineering or bio-chemistry in this instance.

To further illustrate this point, we pick on an example mentioned under the Year 9 and 10, Digital Technologies knowledge and understanding, section 10.3 (page 93).

> *"Investigating actions devices and events that are potential risks to information system, for example losing portable storage devices ..."*.

While we unquestioningly see it as appropriate that the capability to deal with such a situation be imparted through the curriculum, would it not be more exciting if we were also to provide the capability to think beyond and for example be able to engineer systems and procedures that would show resilience and self adaptability in the face of these risks?

Our motivation

Being directly engaged in the software and information technology, OSIA and its members, feel unreserved in their belief that the future of the software industry, is intricately linked to the skills and capabilities of future generation to be forward looking, innovative and challenging.

Furthermore from an Australian industry and a national economy point of view, it is important that we are able to initiate and participate in the design of our own digital technology future and not only be proficient consumers and end users of technologies made available to us from others and from elsewhere.

Conclusion

To reiterate, we take great comfort in the direction provided in the Draft Australian Curriculum: Technologies as released. Much is to be commended in its broadness and completeness to tackle technology education from foundation year to year 10, in its recognition of Digital Technologies as a standalone subject in its own merit, and in its attempt to impart proficiency and confidence to generations to come in their usage of digital technologies.

However in regard to the Digital Technologies subject specifically, we do not feel entirely confident, that the curriculum provides a strong enough basis for *innovation and progress of the technology itself* to take place, through critical thinking and strong design, development and innovation capabilities being imparted as *an integral part of studies of Digital Technologies*.

We therefore urge for a strengthening of the Draft Curriculum as it stands with more emphatic and explicit statements towards ensuring that the weakness we identify above is remedied.