



schools online curriculum content initiative

REVIEW OF THE LE@RNING FEDERATION PHASE ONE MARKET LINKAGES

Convergent

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... when decisions matter

A report by Convergent Consulting

22 September, 2003

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1. Executive Summary

By most measures, TLF has met, or exceeded, in developing the market linkages it set out to achieve during Phase 1. These expectations were based mainly around the two key strategic interventions required to overcome market failure, in the schools sector, and to assist the future development of the industry. These were:

1. Establishing a Market Framework
2. Kick-starting curriculum development through public funding

In particular, TLF has created a solid and robust Market Framework that clearly defines, to both the Supplier and User communities, the expectations for the development of quality online curriculum resources. Key aspects of this Market Framework, include:

- setting technical standards and frameworks (e.g. interoperability, accessibility, meta-tagging, etc.);
- setting instructional design standards and methodologies (e.g. defining learning objects, pedagogy design, etc.)
- specifying developmental and QA procedures (e.g. production management processes, user testing, etc.); and
- establishing a systems environment

A mark of how successful TLF has been in establishing the Market Framework, is that it is now widely considered a global leader in developing these standards and frameworks. As a result, it is worth noting that there would appear to be as much international interest in the intellectual property that TLF has developed in this regard, as there is for the 'content' itself.

The one area of the Market Framework that still needs development, is the management of intellectual property rights (IPR). It is apparent that work still needs to be completed around:

- identifying and defining the key components of IP that have been developed (e.g. content, systems and , processes) and how they should be packaged together;
- identifying the 'natural owner' best positioned to exploit these various IP packages;
- developing agreements on licencing, pricing and payment mechanisms; and
- Developing and implementing strategies to extract value from this IP.

More complex has been TLF's management of the 'kick start' program. On the positive side, all Suppliers feel that TLF's uncompromising stance on adhering to IMS standards, learning objects, educational integrity, useability, accessibility, and QA means that the content produced will be 'world class'. Further, each believes that their exposure to producing multimedia educational product, in accordance with such stringent standards and advanced methodologies, has been a very valuable learning experience which can be, and has been, used to win non-TLF development work, both domestically and overseas.

Another area of major achievement has been the success of the TLF consortium model in aggregating the demand-side needs of the Educational Authorities (EAs). According to one international expert, no other group of separate Educational jurisdictions has been able to overcome the significant political, technical and logistical barriers that TLF has managed to achieve with this project. He believes this co-operation provides TLF a significant scale advantages over most other international projects.

Notwithstanding these very positive outcomes, Suppliers expressed a number of concerns, including:

- their inability to achieve globally competitive 'economies of scale', as a result of development contracts being spread too thinly over too many Suppliers;
- their view that only the proportion of TLF funding directly spent with multimedia Suppliers, on developing content, is too small compared with funding for other tasks such as TLF's internal governance, project management, administration, and consultation processes amongst the EAs
- TLF's procurement and production management processes are inefficient and costly (although, Suppliers now express optimism that these have been improved);

- IP ownership arrangements are unclear and cumbersome; and
- competition between the public and private sectors for TLF contracts, distorts an 'efficient market'.

While we can understand these Supplier concerns, we are encouraged that TLF appears to have consulted with Suppliers and taken corrective action that should address a good proportion of these issues. Having said that, we also recognise that TLF needs to balance the needs and desires of Suppliers with other competing objectives and issues, which potentially means that healthy tensions with Suppliers will continue to persist to some degree.

Overall, while TLF has managed to achieve most of the market linkages objectives, as defined in the Trinitas Market Framework and the public funding kick-start program, we believe that there is significantly more that can be done to support Australian industry development, beyond these original objectives. Such a development could be expected to significantly benefit both industry development and the education sector.

This suggestion should not be taken to mean that TLF has failed in key areas, when in fact, it is quite the contrary case. It is actually because of the relative success of the project in developing quality content under methodologies and standards that appear to be gaining rapid global acceptance, and for the fact that TLF appears to be 'leading the world' in this regard, that there would now appear to be an excellent opportunity for TLF and Suppliers to capitalise on this position, through the development of an expanded set of market linkage objectives. While more detailed analysis and consultation will be required to develop these market linkage strategies and, we acknowledge, many of them would currently, most likely, reside outside of TLF's charter, we believe some areas for consideration are emerging, including how to:

- stimulate greater 'grassroots' interest in online educational content amongst Australian teachers;
- distribute and integrate this content into the school classrooms and workflow processes;
- encourage greater investment and risk-taking by the private sector in the development of content;
- identify and package the intellectual property developed; and
- develop strategic partnerships and organisational structures that will facilitate the best access to international markets.

In particular, we believe some of the international models and feedback, outlined in Section 5.2, provide a useful starting point for exploring these issues.

2. Introduction

2.1 Scope of Report

As defined in the Consulting Tender Brief the successful consultant was required to:

- Develop a framework for review, including benchmarking against best international practice.
- Review, assess and describe the market linkages developed, or under development, by the Initiative.
- Compile a written report

Input data for the report should be based upon:

- Published documentation
- The consultant's expert opinion
- Documented best practice
- Clarifying discussions as required.

It should be noted that this report does not specifically review educational, social and cultural outcomes of the Project. Having said that, we realise that the market linkages that TLF has established are significantly influenced by these and other considerations and, as such, we have endeavoured to consider them within this context.

2.2 Outline of Methodology

The methodology used in this consultancy largely follows the sequence of this report. That is we have endeavoured to:

- evaluate the importance TLF's market linkages;
- describe TLF's market linkages; and
- assess these market linkages based on three set of diverse inputs:
 - I. Feedback from Suppliers;
 - II. Benchmarked against international projects and trends; and
 - III. Benchmarked against other public-private digital content projects within Australia;

3. The importance of TLF's market linkages

The importance of fostering a vibrant digital content industry in Australia, for the benefit of the education sector, as well as industry, was outlined in the Trinitas Report:

“Unless Australia develops its own digital curriculum content, others will fill the void. We will face the prospect of becoming consumers of other people’s material rather than providers of our own. The risk is that content developed elsewhere will lack relevance to Australian students and the curriculums set by the Australian States and Territories, and leave us hostage to values and standards that are not our own. On the other hand, by developing our own content we stand to create a new and ground-breaking industry in this country, as well servicing our distinctive educational needs.”

In terms of urgency, we would even go further than Trinitas, and point out that there is a limited window of opportunity (of a perhaps 2-5 years) available for Australian industry to establish itself, both in the domestic and global markets. Failure to exploit this window of opportunity may well result in the rather gloomy scenario depicted by Trinitas.

We emphasise that this limited window of opportunity exists because, compared with, say, the production of text books, and other forms of offline media, it is a well documented fact that there are significant ‘first mover’ advantages to those companies that can successfully penetrate the online/digital markets. This ‘first mover’ advantage is mainly attributed to the much lower incremental costs of distribution for digital content and applications. Further, this first mover advantage in the online world tends to operate on a global basis. One need look no further than the likes of Amazon.com, Yahoo! and eBay, in the e-commerce internet market, to see how important being a successful first mover is (none of these companies existed prior to 1995 and each now dominates its respective global market). With these ‘new economy’ market dynamics, even though the educational online content industry is still in its infancy, it could well be that the clear global leaders will emerge, within the next five years.

The major advantages to the education sector of a strong local industry are significant and can often be under-estimated, or overlooked. These advantages include:

- **Improved influence in important ‘market shaping’ decisions.** By possessing a strong local industry, and in being active with its own research and development base, Australia can exert greater influence over important global industry decisions. For example, as global e-learning standards develop and new technologies come up for consideration, it will be important for the Australian education sector to ensure its needs and preferences are fully considered, and factored into these decision-making processes.
- **Greater negotiating power.** Inevitably, the Australian education sector may wish to ‘import’ developed content from overseas markets. By possessing alternative sources of supply (i.e. local developers) the sector will possess greater negotiating power with these international Suppliers. Also, by possessing a repository of Australian developed content, the education sector will be in a much better position to swap and trade content with other countries.
- **Lower R&D costs.** By possessing a strong local industry, the Australian education sector is better positioned to share research and development costs with other countries. This would mean that, instead of funding virtually all the research and development work (which is now currently the situation with TLF), the private sector can be used as an effective ‘aggregation’ channel for R&D funds. A good example of this process in action is the content management system (called MAVIS) used by the Australian National Screen and Sound Archive (ScreenSound). After being originally developed for ScreenSound’s internal use, MAVIS was then sold to a number of other international users, by its local Australian private-sector developer Wizard Information Services. As a result of this international success, over 70% of MAVIS’s R&D funding is now sourced from international clients, while ScreenSound enjoys the full benefits of the product’s improvements.
- **Greater levels of innovation.** Australian Suppliers working in overseas markets will inevitably acquire new ideas and fresh skills that will be transferable back into the Australian schools sector.

Given this strong case for developing a digital content industry in Australia, to support the needs of the local education sector, the next logical question to ask is, “Can this industry be made economically sustainable and globally competitive?”

While it is impossible to provide a definitive answer to this question, for what is no doubt a very competitive and dynamic industry, there are many factors that suggest significant potential exists for Australian Suppliers.

1. There is rapidly growing and large global market opportunity available

- e-education is a large and rapidly growing market. IDC estimate that the global e-education is growing at over 30% p.a. and is expected to reach US\$20 billion in revenues by 2004;
- The total e-education market consists of many client segments (e.g. school, after school, tertiary and corporate), however, within the USA K12 market alone, Brandon Hall estimate that spending will on grow from US\$1.8 billion in 2002 to US\$18billion by 2011; and
- The 'barriers to entry' that exist for offline content (e.g. access to USA based text book publishers) are expected to be a much smaller imposition for firms wishing to directly target the online content market, where distribution costs are lower and there is less reliance on established publishers.

2. Australia's supporting infrastructure, and TLF, can assist in positioning Australian firms

- As acknowledged and analysed in the Trinitas report, Australia has a excellent global reputation, a solid skills base and good supporting institutional infrastructure to support an e-learning industry;
- the Australian schools curriculum is a small component of overall global e-education market, however, the skills and knowledge gained from TLF (e.g. learning objects, technical and educational design standards) are considered to be highly valuable and transferable outside the Australian schools sector ; and
- TLF is emerging as a recognised and respected international leader in the development of online schools curriculum. It is therefore positioned, by brand association, and other means, to significantly assist the promotion of Australian firms into other markets. Note, a good parallel to this phenomenon, is the role that the ABC's brand and reputation plays in assisting its children's television program providers accessing international export markets.

4. Description of TLF's Market Linkages

In this section we describe TLF's market linkages and some of the success measures that can be used to evaluate these linkages.

4.1 Original Market Linkage Objectives for the Project

As described in the Trinitas Report, there were two key strategic interventions prescribed to overcome market failure and to assist with the future development of the industry. These were:

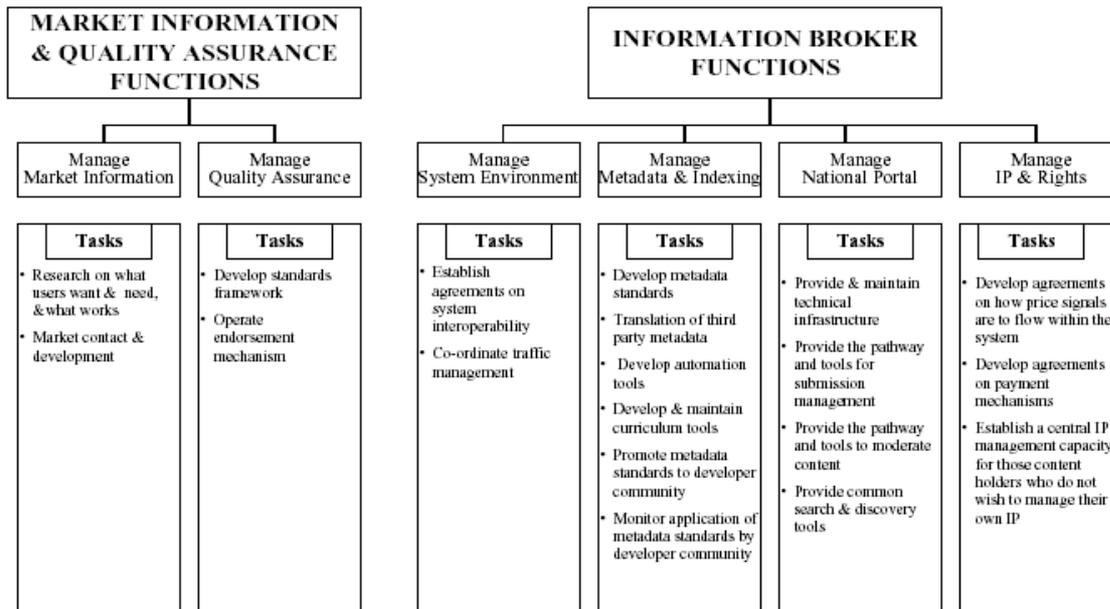
1. Establishing a market framework; and
2. Kick-starting curriculum development through public funding.

We believe these two interventions still provide a useful starting point for describing the linkages and evaluating their impacts.

Description of the Market Framework

The Trinitas Report prescribed the establishment of a Market Framework, as broadly outlined in Figure 4.1. This framework required the establishment by TLF of 'Market Information and Broker Functions' and 'Information Broker Functions'.

Figure 4.1 Trinitas Market Framework



In Trinitas' view, by establishing this Market Framework, TLF would be able overcome the market's failure by:

- delimiting a sufficiently stable market space to inform investment decisions;
- improving the sources and flow of market information;
- providing for quality assurance and safety;

- establishing and managing a system environment;
- improving access, and providing appropriate price and other signals to users; and
- allowing a flexible but robust rights management regime.

The Report also advocated the establishment of a publicly funded kick-start program that would provide for the:

- aggregation and specification of needs from the demand-side perspective (i.e. EAs);
- setting priorities for investment (i.e. subject areas);
- establishment of a procurement framework and management structure; and
- setting of standards for a systems environment (i.e. modularity, reusability, interoperability, custodianship and teacher control).

In establishing this kick-start TLF would be able to:

- accelerate the pace of development of digital curriculum resources;
- provide credibility with parents, teachers and in overseas markets;
- respond to demand from the private sector for clearer delineation of
 - priorities
 - expectations about quality and system environment
 - consensus on what constitutes good practice
 - an endorsement mechanism;
- encourage innovative and non-traditional investment including from potential participants who would be reluctant to take part without a public sector mandate;
- maximise structural adjustment gains from the public sector kick-starting the market; and
- support the emergence of an export market.

4.2. Project Description

The project consists of both the Exchange and Content Development as described in Figure 4.2.1. The Exchange is the infrastructure component responsible for storing and distributing the online content to the education systems. It is composed of modular, scalable architecture, comprising a 'core server' and front-end desktop applications.

The online content system is being developed in a modular and incremental fashion to allow for the customisation and selective distribution of individual 'modules' as required by the teacher and/or educational institution. Once the content is accepted, it is planned that it should be broken down into stand-alone 'learning objects' which are assigned intellectual property rights and stored in a centralised repository. The State Government Educational Authorities are then responsible for reassembling and repurposing content to meet the specific needs of individual classrooms/schools/systems.

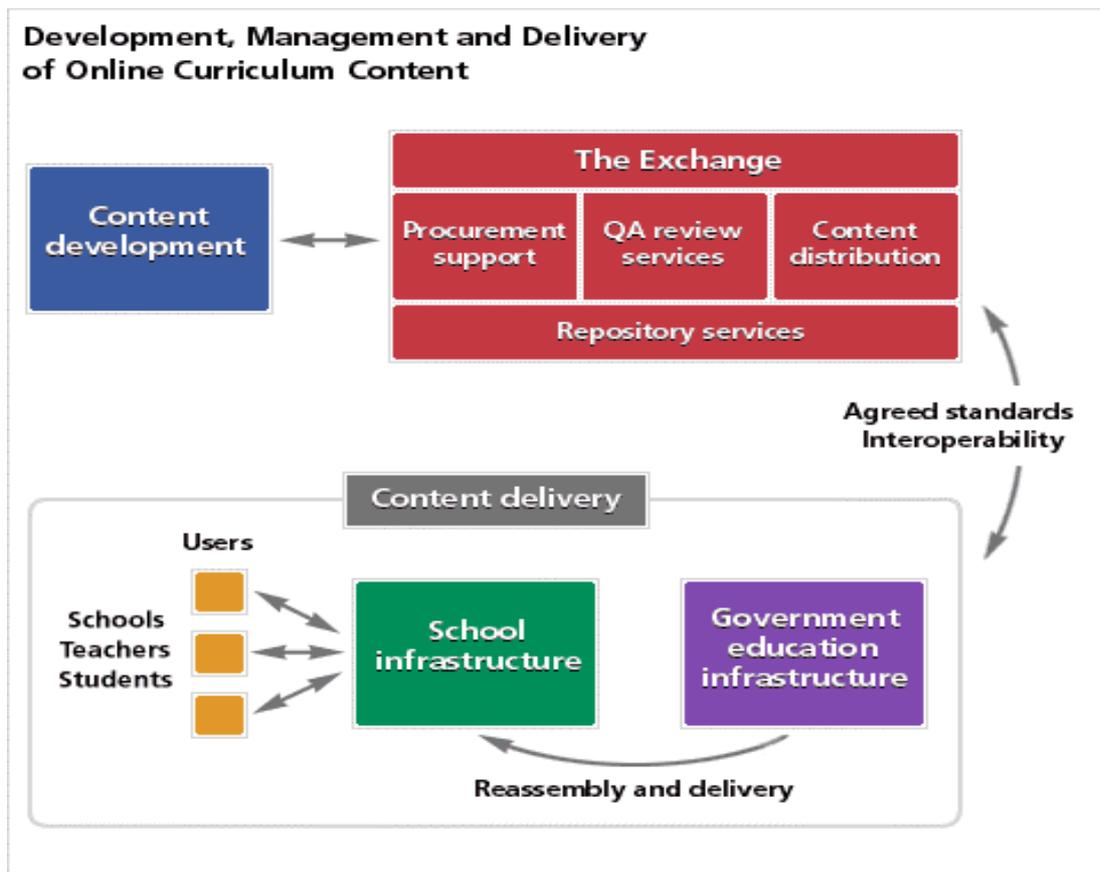
A distinguishing feature of TLF is that there is a Content Development and Quality Assurance Framework which oversees the entire chain of content development activities. This framework consists of reference groups, guidelines, and standards to ensure that all products and deliverables, commissioned for the initiative, are consistent in the quality design, development and delivery of online content. Consideration is given to areas such as content re-use and IPR's, to ensure international compatibility and future useability of products.

The framework employs a 'user-centred' methodology in which the needs and priorities of all stakeholders are identified, and the employment of iterative design and development allows for feedback from end-users at all stages of development.

As can be seen in Figure 4.2.2, the multimedia content developer must deal and liaise with many TLF appointed groups/stakeholders during the development process, as well as adhere to strict technical, procedural and QA standards. In essence, the TLF content development process tends to be a 'moving feast', as content specialists, curriculum specialists, user groups, and the multimedia developer's work collaboratively towards an output shaped by their collective requirements and aspirations.

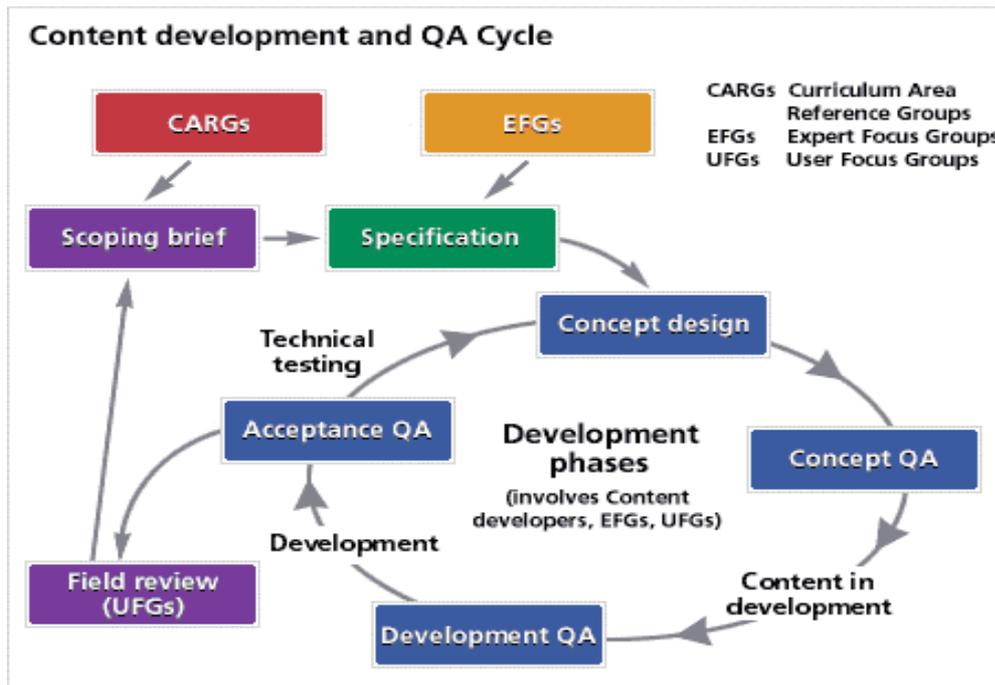
An instrumental player in this collaboration process is the TLF 'producer', who provides the project leadership and management. According to a number of multimedia developers, this person is a key figure in the process and plays a significant role in keeping all players accountable for the efficiency and effectiveness of the collaboration process.

Figure 4.2.1: TLF's Development, Management and Delivery Process



Source: The Learning Federation

Figure 4.2.2: TLF's Content Development and QA Cycle



Source: The Learning Federation

4.3 Suppliers

TLF have distributed multimedia development work across a broad range of Australian and NZ Suppliers in order to minimise its exposure to any one developer, to encourage diversity in learning design and technological innovation, and to minimise the political risk of disenfranchising any States or Territories.

In the initial stages of the project, many Suppliers were selected to work on the content development of various modules, or key aspects of modules, of the project. As can be seen in Table 4.3, these Suppliers were indeed derived from a number of States. Tenderers were selected on the basis of "their capacity to meet key objectives of the project," including:

- Value for money over the operational life of the system;
- Methodology and approach;
- Acceptable risk; and
- Previous experience of the tenderer.

Table 4.3: TLF Suppliers

Content Development Area	Selected Developers	State	Ownership
Science 1	Qantm Crank Media Acumen Multimedia Pty Ltd Learning Curve Pty Ltd.	QLD TAS VIC ACT	Public Private Private Private
Math & Numeracy 1	CWA New Media CADRE Design Nine Lanterns Pty Ltd Murdoch University	NZ NSW VIC	Public University/Private Private University
Literacy for Students at Risk 1	Deakin University Qantm	VIC QLD	University Public
Studies of Australia 1	National Museum of Australia Roar Film P/L (Roar Education Multimedia)	ACT TAS	Public Private
Innovation Enterprise and Creativity 1	CWA New Media	NZ	Public
Science 2	Crank Media The CLT Consortium CSIRO Publishing	TAS WA VIC	Private Public Public
LOTE1a	CADRE Design	NSW	Uni/Private
LOTE1b	Qantm Global Vision Productions	QLD VIC	Private
The Exchange	Dytech Solutions	TAS	Private
BELTS	Jacus Softwareworks	VIC	Private

According to TLF (based on their own Phase 1 research), some developers have expressed concern that:

- the relatively small size of the contracts (\$200,000 to \$400,000) does not warrant the research and development required to meet project requirements;
- small contracts do not allow for the capacity to develop strong relationships between consortium members and to develop an internationally competitive enterprise;
- responses to each tender draw on resources that are not sustainable throughout the life of the Initiative; and
- larger tenders will result in developers having a more reasonable amount of innovative product that they can on-sell into the international market.

This situation partly came about as TLF originally considered it risky to commit significant resources to one developer team that, ultimately, may not achieve the intended objectives of innovation and the creation of a high quality educational product. Additionally, TLF was also wary of stirring up political discontent by awarding a large contract to a single company located in one State. However, since Phase 1, TLF has re-addressed this issue and has instituted a new procurement process that will see greater Supplier consolidation (through a clustering process of releasing tenders), as well as making a Supplier's geographic location irrelevant, in the tender selection criteria (although, this latter issue is subject to an annual review).

Out of 145 responses to the content development proposals, 19 were eventually selected. Of these successful respondents, four have been selected for analysis in this report and are discussed in Section 5.1: Acumentum, Crank Media, CADRE Design, and Dytech Solutions.

5. Assessment of TLF's Market Linkages

Our assessment uses three sources of information and reference, as outlined in Figure 5.1. We believe this three-pronged approach provides for three quite distinct inputs - each adding its own unique value and perspectives.

Figure 5.1 The Three Sources of Information used to Assess TLF's Market Linkages

<u>Information Source</u>	<u>Description</u>	<u>Assessment Value</u>
TLF Suppliers	Interview feedback from a cross-section of TLF Suppliers involved in Phase 1	Provides feedback on the micro-level procurement and content development strategies employed by TLF
International e-learning projects and trends	Interview feedback from: <ul style="list-style-type: none"> • a cross-section of international e-learning analysts and Suppliers, and • managers of international projects 	Provides a macro-level perspective on TLF's overall project strategy and structure, in the context of other international initiatives and trends
Australian Public-Private content projects	Provides a comparison with other public-private initiatives in Australia, that are also involved in the development of digital content	Provides a benchmark against the experiences, strategies and processes employed by other publicly funded digital content development initiatives.

5.1 Feedback from Suppliers

As part of Convergent Consulting's previous work for DCITA¹, we interviewed the CEOs from three of TLF's content developers (CADRE Design, Acumentum and Crank Media) and its major technology vendor (Dytech Solutions).

As a cautionary note, while we believe this feedback provides for very useful and important perspectives in assessing TLF's market linkages, it also needs to be understood that, from a Suppliers perspective, its own commercial aspirations and objectives are, generally, at the forefront of its thinking. Indeed, we believe a much wider range of contextual issues should form part of a fully considered assessment which, in a large part, are addressed by the other two perspectives in Sections 5.2 and 5.3.

With that caveat in mind, the key findings and feedback have been broken down into 'areas of achievement' and 'areas of concern', from the Suppliers' perspective.

5.1.1 Identified areas of Achievement

All of the Suppliers interviewed feel that TLF's uncompromising stance on adhering to open IMS standards, learning objects, educational integrity, useability, accessibility, and QA means that the content produced will be 'world class' and highly adaptable to the needs of students and teachers. Further, each believes that their exposure to producing multimedia educational product, in accordance with such stringent standards and methodologies, has been a very valuable learning experience which can be, and has been, used to win non-TLF development work, both domestically and overseas.

In this regard, we believe the comments of CADRE Design CEO, David Hegarty provide a useful illustration. CADRE Design specialises in the development of interactive media, computer simulation, websites, and CD-ROMs for the educational sector. The great majority of CADRE's client-base are large USA-based educational publishers, looking to develop companion multi-media for educational textbooks. Given this background, we believe David is well positioned to make some interesting comparisons between his experience with these clients and TLF. In Hegarty's view:

- When it comes to cost, TLF is the only training organisation that doesn't compromise on standards and accessibility. Such an approach proves more costly (in management overhead, development costs, QA, etc), but makes for more effective output, and has a better chance of being useful over the longer term.
- The TLF experience has enormously expanded their intellectual property base, particularly in its strict adherence to IMS² standards and developmental procedures. For example, they find the 'learning object' model useful in that it works well with computer-based training models and learning management systems, the concepts of which CADRE hope to use to expand into the American scholastic market or, possibly, into the corporate training market.
- TLF's world-leading commitment to a learning objects based IMS model should 'pay off', as the overall global industry seems to be heading this way. The TLF experience should put CADRE ahead of competitors and has already influenced its ability to 'please' and 'excite' overseas clients.

Another area to gain a favorable response from multimedia Suppliers, was the decision by TLF to take the curriculum and content expertise functions 'in-house'. Suppliers felt that the need to identify and partner with these groups prior to tendering was an overly onerous and risky task – as they often felt that procurement selection was based more on the identity of curriculum and content experts as part of their team, rather than on the merits of the multimedia Supplier themselves. Beyond the procurement process, the Suppliers also felt that once content production was underway, it was far more efficient and effective for the curriculum and content experts to reside within the TLF project management structure, as this provided for a clearer direction and understanding of the EA's needs.

¹ The Role of Government Agencies as Marketplace Participants in the Digital Content Market Report (DCITA, June, 2003)

² IMS Global Learning Consortium Inc. is developing and promoting open specifications for facilitating online distributed learning activities.

In sum, from the Suppliers perspective much of the Market Information and Quality Assurance functions stipulated in the Trinitas Market Development Framework have been successfully achieved. That is, TLF has successfully communicated to Suppliers what its needs are, and what constitutes good practice and quality output. Further, TLF appears to have developed into one of the most rigorous and sophisticated content commissioning agents in the world market, providing Suppliers a clear advantage in competing in overseas markets.

5.1.2 Areas of Concern

Size and allocation of contractual work

A pressing issue with most Suppliers was the nature and structure of the kick-start program. In general they believe that the distribution of modestly-sized development contracts across a wide range of Suppliers does not allow them to gain the necessary 'economies of scale' to be competitive on a global basis. As one, Supplier put it, "Spreading the funding over too many projects and Suppliers means that no clear leaders will emerge, nor excellence in any one product and so, ultimately, the money spent will be ineffective in making a strong impact on the global educational software industry." This supplier believes that scale is important for the development of Australian multimedia companies, as it provides for:

- better returns on R&D;
- better processes and pyramid economies;
- greater brand leverage; and
- international opportunities for innovative employees

Further, in pursuing its deliberate strategy of distributing multimedia development work across a geographic spread of many Suppliers, TLF has provided the perception to many Suppliers that its procurement process is not exclusively merit-based and that there are considerable background politics and jurisdictional issues that also come into play. (Although, as explained in Section 4.3, this situation has recently been addressed). Nevertheless, this history, has led a number of Suppliers to conclude that, at best, they will only ever win a small part of the available development funding.

Nature of commercial engagement

The issue of Australian Suppliers not gaining the necessary economies of scale is further exacerbated by the fact that their services are engaged by TLF on, what is substantially, a micro-managed daily-rate 'fee-for-service' basis. This procurement model, by its nature, tends not to reward Suppliers for the quality and creativity of their output, or for their productivity improvements. As one experienced Supplier, put it, "there is no opportunity for high margin work in TLF, which operates according to a 'high touch' model that is very transparent with regard to our activities and costs."

Such a situation assures that the benefits of improved Supplier output and productivity substantially flow to TLF. While this situation has its obvious short term benefits for TLF, over the longer term, because Suppliers are not directly rewarded, financially, for performance, there is, arguably, little incentive for any innovation and risk taking investments.

Overheads and efficiency of dealing with TLF

Most interviewed Suppliers also believe that the amount of documentation and management time required to support TLF's development framework and QA processes is overbearing and costly. All Suppliers interviewed remarked that while this situation has substantially improved, there is still further room for refinement that would lead to even greater content output per dollar spent.

A Supplier also commented that, within the process-driven culture of a TLF job, it can be challenging to keep innovation and creativity alive, largely because of the need for the compilation of extensive documentation. However, again, he did note that TLF's awareness of this has led to significant, and effective, revisions in the documentation process, allowing them, in turn, to improve their creative processes and productivity levels.

Intellectual Property Rights (IPR)

Nearly all Suppliers interviewed mention that collective EA ownership of the Intellectual Property Rights (IPR) is limiting their ability to maximise export opportunities. They also believe that simple changes to this regime (that would still protect the Crown's and Educational Authorities unfettered usage in Australia) would be beneficial to their growth prospects and innovation potential. (On this matter, we do note recent, and promising, progress on negotiations with the nine EAs to assign copyright to the JV.)

Public Sector Suppliers competing against Private Sector Suppliers

A private sector supplier noted that there is an 'economic efficiency' problem with the private sector competing with government and semi-government bodies. He believes these bodies often cross-subsidise or tender below cost, as for them it is purely a source of incremental revenue, that they get, in addition to their other government funding (which covers their base costs). Whereas, competitive neutrality seems to be spoken about, in practice, there is an unfair advantage provided to government-owned facilities even if it is just that they are not expected to make a commercial return for their shareholders.

Proportion of spending on direct content development

Another issue raised is the amount of TLF funding that is directly spent with multimedia Suppliers, in developing content, versus other tasks such as TLF's internal governance, administration, standards setting, project management and so on. During Phase 1, approximately one third of TLF's budget was spent directly with Suppliers, with the remaining being spent internally within TLF or with EAs, for providing curriculum, content expertise and consultation amongst the EAs. One Supplier strongly felt that this balance was not conducive for maximising the output of content per dollar spent.

5.2 Benchmarked Against International Projects

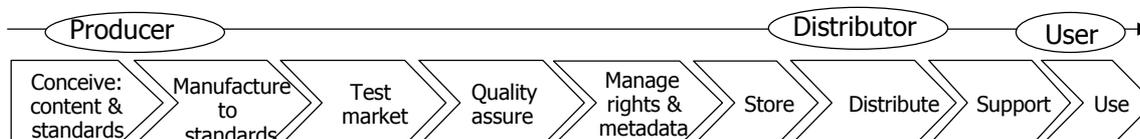
We interviewed a number of independent global industry analysts, as well as the senior managers associated with the international projects. Those interviewed included:

- Eilif Trondsen – Director of the Learning-on-Demand (LoD) program at Stanford Research Institute Consulting Business Intelligence (SRIC-BI);
- Mohammed Asif - Programme Delivery Manager, Curriculum Online (UK);
- Anne Wright – Consultant at the Department of Education and Employment (UK);
- Mark Pearce – Managing Director of The Workshop (UK), a multimedia Supplier to NLN and the UK Education market;
- Janusz Wojo – Young Digital Poland, an educational multimedia Supplier to Europe and Asia; and
- Bill Muirhead – Former Head of Alberta Online and LearnAlberta.ca and now Associate Provost, Learning Technologies, University of Ontario, Institute of Technology.

In completing this international analysis, we also reviewed market literature from a number of organisations, including SCRI-BI, Cisco Systems, IBM, Department of Education and Employment (UK), the European Union, KnowledgeQuest Ventures, and IDC.

Another reference source utilised was a paper, produced by TLF, which reviewed comparative international projects to TLF. This paper is provided in Appendix A of this document and we would recommend it as a very useful background introduction to this Section.

Figure 5.2.1 Value Chain in Content Production and Distribution



Source: TLF

With reference to Figure 5.2.1, according to the feedback received, a clear strength of the TLF project lays in the first two steps of the production value chain (i.e. 'Conceive Content' and 'Standards and Manufacture to Standards'). TLF is perceived, by its international peers, as having been very successful in aggregating demand amongst the EAs, agreeing on curriculum priority areas, and in setting the complex technical, educational and procedural standards that are required to produce high quality educational content.

As an example, according to Bill Muirhead, the TLF consortium model, consisting of the States, Territories and NZ, is unique in the world. No other group of separate Educational jurisdictions has been able to overcome the significant political, technical and logistical barriers that TLF has managed to achieve with this project. He believes this co-operation provides TLF a significant scale advantages over most other international projects. He also feels that the aggregation of content, all developed to the same technical and educational standards, will allow TLF to more easily export content, as opposed to having developed the content to varying standards and in small piecemeal chunks – as is the case with some other projects.

Both Bill and Eilif Trondsen also believe that TLF leads the global schools market, by a considerable margin, in the development of content, based on IMS standards and the learning objects model. This model is gaining wide prominence and acceptance by the e-education industry, and they both believe that, should the industry continue to move in this direction, it should position TLF and Suppliers favourably. As a note of caution, however, Eilif points out that TLF might actually be a little too far ahead

of the global market in developing content to these standards. He points out that there is still a degree of scepticism about whether the learning objects approach is 'good in theory', but 'in reality' is too cumbersome and expensive to put to practical use. Both Bill and Eilif suggest that TLF can, and should, take a more proactive approach in promoting the advantages and integrity of its content production methodologies, in particular, in demonstrating the success of the user-experience and in proving that learning objects are readily usable by teachers. By doing this, TLF and its Suppliers will be more firmly positioned as global 'thought leaders', and will ultimately possess greater negotiating power with potential international partners/buyers.

We believe this feedback provides some interesting insights, as it indicates that TLF possesses considerable scale advantages and is considered to be well ahead of the international market in developing content based on the learning objects and open standards. It also suggests that if Australia is to take a leadership position, it still has a 'case to prove' and it must actively promote its achievements.

Paradoxically, if TLF's major strength is considered to be the success it has achieved in developing a centralised and standardised approach to developing content, its weakness is considered to be the flip-side of this approach. That is, having centralised most of the decision making and agreeing to formalised and rigorous procedures on the development of content, there is, by nature, less room for empowering and encouraging 'grass roots' innovations from Suppliers and end-users (i.e. teachers) alike. At an extreme, TLF could be perceived as resembling a 1950s industrial production cycle that attempts to predict the market's needs, wants and capability for change, through a centralised bureaucracy. This issue was raised by many of those interviewed. Their concern was that, in theory, TLF may have produced a good and sound array of high quality content but, in putting this content 'into the field' a number of practical questions remain. For example:

- Can TLF win the 'hearts and minds' of teachers through this centralised top-down approach to developing content?
- Can these learning objects be easily converted into practical lessons and programs across the schools sector?
- Will teachers be inclined to develop the competencies required to search, gather and manipulate the content?
- Will the cost and difficulty of integrating this content into learning/content management systems be considered too great for some EAs and schools?
- How can valuable content, not produced to TLF's standards, be procured and made available through the centralised distribution system?

It should be stressed that many of these issues lay outside of the current ambit of TLF's charter and objectives. However, it does highlight that the dualistic approach taken by Australian and NZ (i.e. centralise content development and de-centralise its distribution and integration into the classroom) does have its limitations.

Although very different to TLF in its role and aspirations, the Curriculum Online portal initiative in the UK provides some interesting learnings in addressing this issue (please refer to Appendix A for a background on this initiative). The e-credit system (which allows schools the ability to choose where and how they spend their e-learning money), would seem to have quite a deal of success in empowering schools to take a 'grassroots interest' in how interactive online learning could be sourced and integrated into the classroom. As evidence of this, we note a recent BECTA survey, found that there was a high level of awareness of Curriculum Online among school respondents (87 per cent of primary school, and 88 per cent of secondary school respondents, were aware). Considering the very early stage of this initiative, this would appear to be an excellent result, at least in terms of beginning to win the 'mind-space' of teachers. This approach contrasts with the centralised 'free issue' of pre-ordained content, as currently contemplated by Australia and NZ EAs. Our concern is that this approach (unless supplemented with an additional marketing and delivery strategy) may not end up capturing the same level of teacher awareness and ownership.

It could also be argued that the e-credit system encourages Suppliers to take greater investment risks in the production of content than we may experience in Australia with our approach. As discussed previously, the content developers engaged by TLF are currently contracted on a 'fee for service' basis for developing content to TLF's standards and guidelines. Under the e-credit model, however, schools have a choice to either commission the production of content (on a fee for service basis), or to purchase the content that has already been developed at the expense, and risk, of the private sector. According to Mark Pearce and Mohammed Asif, to date, virtually all content has been developed at the risk of the private sector (although, it is too early to judge if this has resulted in any 'new' content being developed, that wasn't already in the market before the e-credit scheme started).

The issue of how to exploit existing intellectual property in overseas markets was raised in most of our interviews. The multimedia Suppliers, such as YDP and The Workshop, felt that accessing overseas markets was difficult without the aid of a local partner, who had developed good relationships with local educational authorities. They both commented that the education sector, compared with say the corporate sector, is far more likely to claim that linguistic, cultural and pedagogical differences between countries requires that customised local development approaches are needed. This situation puts local Suppliers, familiar with these differences, at an advantage.

Other analysts pointed out that virtually all the world's specialist educational content developers were 'too small' in scale and scope (even the largest of them), to provide bespoke solutions serving the schools market complete needs. As a result, content developers should consider forming strategic partnerships with an array of firms, including:

- large technology firms, such as IBM, Sun and HP, who have global reach and will bundle 'content' with their hardware and software products. A good example is the \$100m contract recently awarded to HP for Northern Ireland schools (HP in turn outsourced content supply to a few smaller firms);
- firms that produce Content Management Systems and Learning Management systems, used as a 'front-end' for accessing and utilising content; and
- internationally recognised educational institutions and accreditation agencies, who can accredit courseware content.

In essence, any, or all, of these strategic partners would improve the potential of specialised content developers to provide a more complete and 'value added' solution. Also, given that most of these types of firms are larger in scale and possess global distribution reach, it is also more likely they would be better positioned to access international clients and take-on market development risks.

These analysts also pointed out the important role that TLF could play in assisting these firms into international markets. They pointed out that, at the very least, TLF can play a strong branding and 'reference site' role for promoting the integrity of the content and, the process in which it was developed. A good illustration of this phenomenon is the role that the ABC's brand and reputation (for excellence in children's television programming) plays in assisting its local program providers accessing international markets. For example, Broadcasters in Europe place higher value and trust in the programming product, if it has been developed, and shown, on the ABC in Australia.

In terms of exploiting TLF's IP, it is interesting to look at the National Learning Network (NLN) in the UK. As explained in Appendix A, NLN shares many similarities with TLF, in that there are approximately 20 private sector multimedia Suppliers who have been commissioned to develop content, to centralised technical and educational standards that are quite similar to TLF (e.g. learning objects based, IMS standards, etc). Most of these NLN Suppliers have subsequently formed a consortium, called 'Uklearnonline', that is responsible for jointly marketing the selling of the entire NLN content library into international markets. Note, under this arrangement, the UK Government still formerly owns the IPR to the content, but it has undertaken to provide the consortium the licencing rights for international sales. The key advantages in taking this consortium approach appear to include:

- it is more attractive to potential buyers to have all of NLN's content available at a one-stop-shop;

- branding and positioning is stronger under a unified approach which can also be used to emphasize the fact that the content was developed to the British Educational Communications and Technology Agency (BECTA) guidelines and standards, and that all content is interoperable under the one system; and
- marketing and sales costs can be shared amongst consortium members.

According to The Workshop's Mark Pierce, though, the 'jury is still out' on this consortium approach, as it has yet to realise any major sales. He also notes that gaining co-ordination and funding for the consortium operations, from its 'underfunded members', has proven difficult.

A number of those interviewed also commented that TLF's marketable IP may well extend beyond the content itself. They thought there could be international interest in areas TLF has researched and developed including:

- content development processes and standards;
- QA systems;
- definitions of 'learning objects';
- integrating learning objects into lessons and content management systems; and
- defining and measuring the learner experience.

In essence, TLF and its Suppliers not only possess potentially valuable content for sale, but also considerable process management and systems understanding. A key question remains as to how this IP should be best packaged and exploited.

5.3 Benchmarked Against other Public-Private Digital Content Projects in Australia

As part of Convergent Consulting’s previous work for DCITA³, we analysed the role that six Government Agencies, including TLF, played as market participants in the digital content and applications industries. We believe this analysis provides some useful insights in comparing TLF’s market linkages against those of other public-private initiatives in Australia, who are also involved in the development of digital content. Specifically, through this DCITA analysis, we aimed to:

- Identify the processes through which Government Agencies participate in digital content and applications markets (e.g. tendering, partnerships and so on);
- Identify weaknesses and inefficiencies as well as strengths in these processes; and
- Develop strategies through which Government Agencies can most effectively leverage current and future involvement in these markets to assist in the development of the digital content industries.

To achieve these aims, we produced six case studies examining how Government Agencies, including TLF, have engaged with industry Suppliers. This report is available at <http://www.cultureandrecreation.gov.au/cics/government.pdf>, however, we have chosen to highlight and draw out the specific issues relating to TLF in this document.

The six agencies that were reviewed and compared are summarised in Table 5.3.1.

Table 5.3.1: Case Study Description

Agency	Case Study Description
ABC/AFC	Reviews the role of the Australian Broadcasting Commission (ABC) and, in particular, its co-production initiatives with the Australian Film Commission (AFC) which have resulted, or will result, in some innovative forms of narrowband and broadband web-based content that will be used for entertainment and educational purposes.
ACMI	Examines the Australian Centre for Moving Image (ACMI) innovative use of digital content and applications technologies to promote the moving image as a ‘language’ within society.
The Learning Federation	Reviews The Learning Federation’s (TLF) \$67m initiative to develop and deploy online curriculum content into Australian and New Zealand schools.
Lgov NSW	Reviews Lgov’s largely successful initiative in bringing over 100 NSW regional councils onto the web within a short timeframe.
SBS New Media	Examines the unique and largely successful strategies of SBS in incubating, innovating and partnering with Suppliers. Specifically, focus is given to the relationship with Sun Microsystems that resulted in an innovative interactive TV product.
ScreenSound	Reviewed ScreenSound’s development of a library cataloguing system (MAVIS) in conjunction with Wizard Information Systems.

In our analysis we found that those Agencies that possessed strategies and processes aimed at two particular outcomes experienced the most success in promoting innovation and industry development. These outcomes were achieved by Agency-Supplier relationships that:

1. promoted a high level of collaboration between the Supplier and the Agency, such that a rapid and open transfer of knowledge and skills between the two bodies could take place; and
2. looked beyond the immediate needs of the Agency, and actively planned for the exploitation of the content and applications with additional buyers/users.

³ The Role of Government Agencies as Marketplace Participants in the Digital Content Market Report (DCITA, June, 2003)

As can be seen in Figure 5.3.2, a strength of TLF is that it has been quite successful in striking up good levels of collaboration with Suppliers. Indeed, on these criteria, TLF has enjoyed the equal highest ranking amongst the six case studies. The key reasons for TLF's high ranking were:

- TLF's QA and Content Development Process, Project Management methodologies, and consultative processes, stood out amongst all the case-studies as being the most rigorous framework for defining the collaborative interface between the Agency and the Supplier;
- TLF had more rigorously defined the roles that each of the parties involved in the content development process (e.g. the User Group, Expert Group, etc.) should play. Further, these roles clearly respected and captured the 'value' each Group can, and should, contribute to the process.
- TLF was relatively more transparent with regards to its documented process expectations and standards that it expected from Suppliers.

Notwithstanding that TLF, and most other Agencies, performed well in this 'Supplier collaboration' dimension, we did observe that certain characteristics ensured exceptional levels of collaboration. More specifically, the capabilities and commitment of senior individuals in the Agency was also critical. It was quite evident, across the case studies, that successful relationships (and outcomes) were as much a function of the key individuals involved in the relationship as anything else (e.g. strategies and processes). Indeed, many Suppliers remarked that key Agency individuals not only provided considerable vision, energy and intellectual input, but also 'made things happen' within the Agency, itself. In this regard, we are pleased to report that senior TLF staff and production managers were well thought of and regarded by its Supplier base.

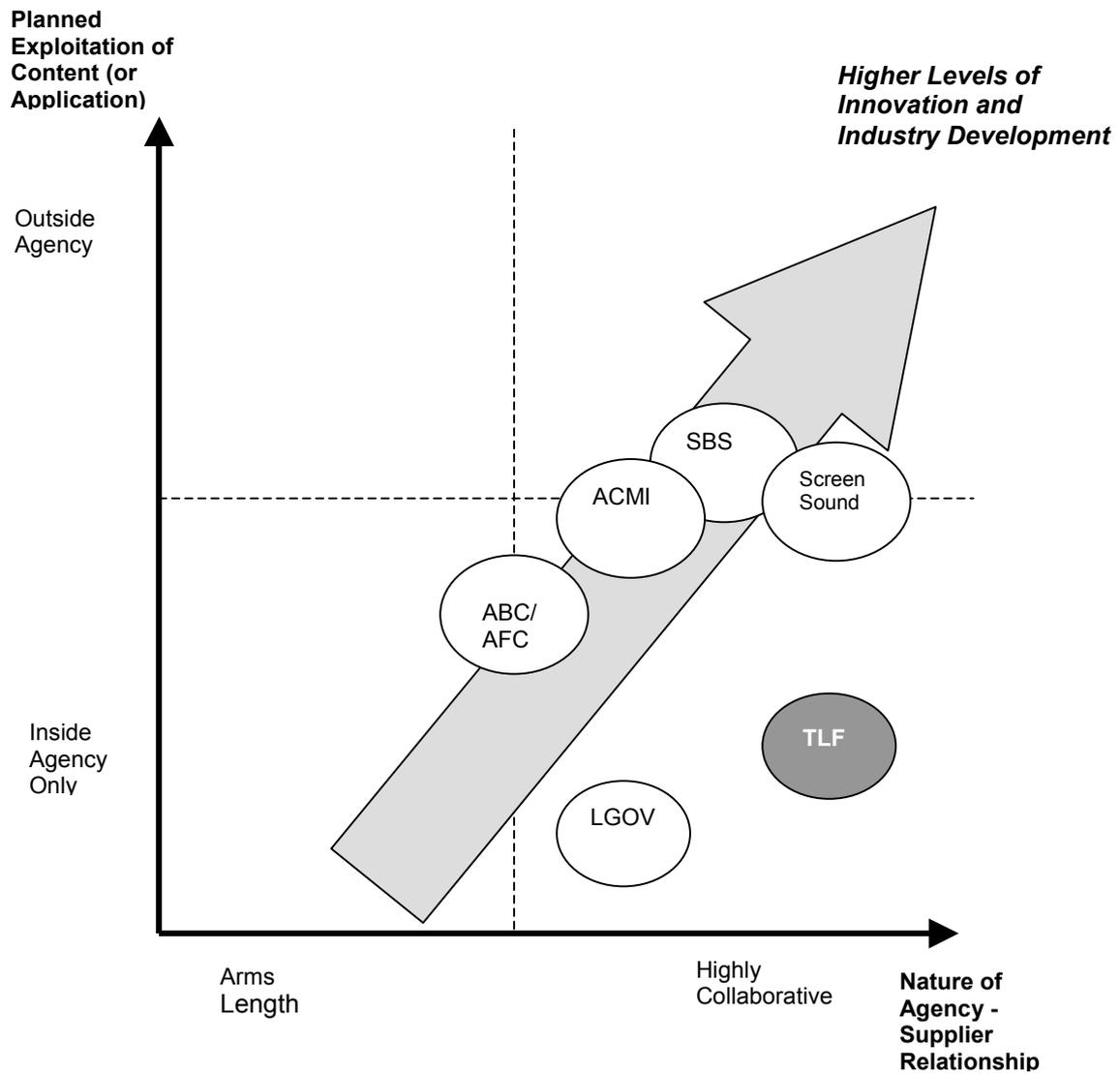
A weakness of TLF's engagement with the digital content market, is that there was not a great deal of planned exploitation of the digital content beyond the internal use of the EAs. In fact, each case-study, including TLF, performed relatively more poorly along this dimension, as each tended not to look beyond the servicing of their own internal needs. Indeed, only SBS, ScreenSound and ACMI actively factored (albeit, as a secondary consideration) the exploitation of external opportunities into the shape of their relationship with Suppliers.

As can be seen from Figure 5.3.2 TLF ranked 5th out of 6th on this criteria. The key reasons for TLF's relatively low ranking were:

- Procurement and partnering selection criteria did not actively factor in the ability of the Supplier to exploit opportunities for potential clients outside the Australian and NZ schools market;
- TLF (and its stakeholders) have not developed a co-ordinated plan for exploiting its IP outside Australia and NZ schools market; and
- Important IPR ownership and management issues remain unresolved.

If these issues can be resolved TLF would significantly strengthen its ability to foster greater levels of innovation and industry development outcomes.

Figure 5.3.2: Key factors Affecting Levels of Innovation and Industry Development

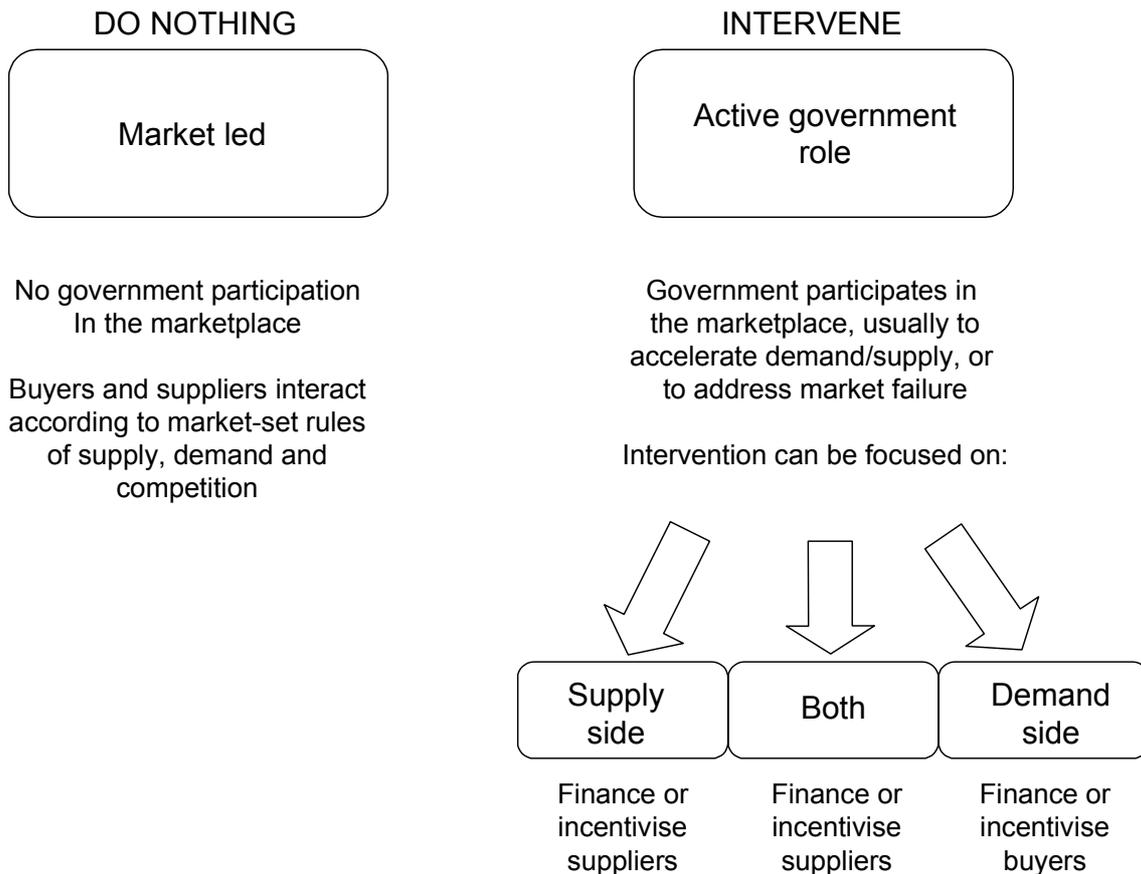


Appendix A – TLF Comparative Model Review

Comparative models

The examination of other comparative models is predicated on market knowledge and information derived from desktop research. It commences with an assumption that there are two generic options for introducing online curriculum materials to the education sector – do nothing and let the market take its course (“market led”), or intervene in the market (“active government role”). These are illustrated in the exhibit below.

Figure 1: Generic options for online curriculum materials development



Irrespective of whether “do nothing” or “intervene” are chosen, there are three generic means through which online curriculum materials are typically made accessible to users. Understanding access options gives us a good way of seeing how other similar online curriculum materials initiatives compare with The Le@rning Federation in terms of their general approach. The access options are:

1. **Create an online catalogue** – provide a means for the user⁴ to search a catalogue of resources, often by year and subject level, and receive a list of resources that meet search criteria
2. **Create a point of access** – provide a means for the user to search a catalogue, receive a list, and access those resources
3. **Create a granular point of access** – provide a means for the user to search a catalogue at a granular level and obtain access to the resources sought

⁴ The term “user” refers to either an end user (e.g. teacher or student), or an intermediate user (e.g. jurisdiction) who would then redistribute the content within a granular access service

There is a further, non-access related option that should also be considered. This is:

4. **Finance only** – provide finance for e-learning materials production or consumption.

Using this intervention/access framework we are able to better understand the alternative models for the initiative, and use this analysis to determine how the alternatives compare in terms of delivery on objectives and overall financial cost.

The next exhibit shows how the alternative models are categorised according to the intervention/access framework. The encircled alternatives are those that we have focused on. They are described in more detail in the following section.

Figure 2: Map of alternative models for national online curriculum materials initiatives

	MARKET LED	ACTIVE GOVERNMENT ROLE		
		Demand side only	Supply side only	Both
\$		Curriculum Online elearning credits to schools (UK)		
Online catalogue (year, subject, resources available, click for details on how to get them)	Publisher's online Catalogues eg. Pearson Education			Curriculum Online portal (UK)
Point of access (year, subject, resources available, click on each to get)	Publishers' online subscription services "Preloaded" learning content management systems			MERLOT
Granular point of access (year, subject, resources available, detailed options, click on each to get)	Online community developed open source repositories Foundation funded repositories eg. http://web3.ibo.org Publishers' subscription services eg XSIQ		BBC Digital Curriculum (UK)	National Learning Network (UK) post-secondary The Le@rning Federation (ANZ) CELEBRATE (EU)

Source: TLF analysis of publicly available information, 2003

XSIQ

XSIQ is a private company with multinational operations. In Australia, it provides a suite of digital curriculum resources, developed for school-aged students and designed to meet the guidelines and frameworks that are specific to the Australian schools sector. In some cases the content is aligned to a single state's curriculum. The content itself incorporates all multimedia elements – including text, video, streaming media, audio and still images – and has been developed with involvement from experienced teachers. The content is authored in XML and covers the following subject areas:

- English
- Mathematics
- Biology

- Physics
- Chemistry
- Business
- Health and physical education
- Geography
- Information technology
- Psychology

XSIQ licenses online content to schools on an annual “per school” basis. An annual school licence for a large school (with between 800-2500 students) costs A\$2,744.50. A small school licence (100-399 students) costs A\$1,644.50. XSIQ charges extra for access to the content from the home and via laptop computers, but for ease of calculation these additional charges have not been incorporated into the average per school licence fee used later in the paper.

In addition to a licence fee for the content, XSIQ charges:

- A\$275 per school for a licence which enables teachers to customise the content
- A\$715 per day for teacher training (up to 10 teachers per).

Once the site licences are paid, XSIQ sends the school a pack of CDs onto which the content has been preloaded. Schools then load the content onto their own directory or school server. The content is usually accessed via the LAN, and is viewable in a standard web browser. Content is cross-browser and cross-platform compatible, although certain plug-ins will be required in order to view and use the content.

Curriculum Online e-learning credits (UK)

The Curriculum Online e-learning credit scheme was devised to support all UK schools to purchase digital curriculum materials (content). Total budget for the scheme is the equivalent of A\$825,000,000⁵ over 5 years. The scheme provides an initial injection of A\$2,500 per school, and A\$24.63 per student per annum thereafter. The scheme supports a devolution of choice to the school level about what and how many materials are purchased with the public sector education budget. Schools can purchase independently, or aggregate together to derive cost reductions as a result of bulk purchasing. Schools can use the Curriculum Online portal to identify materials that meet their needs.

Curriculum Online portal (UK)

The Curriculum Online portal is a web-based catalogue of materials that are suitable to the national curriculum in the UK. The portal supports the e-learning credits scheme described above. While the online catalogue was developed by a division of the Department of Education and Skills, the information it contains about educational content is uploaded by the producers or retailers of that content according to a standard format. The information is checked for authenticity by the Department. Providers can be private or public sector entities, or even individuals. They are required to register with the Department and warrant that the materials they describe are suitable to the curriculum, contain mandatory (limited) metadata, and are accompanied by a statement of the technical requirements for use. Beyond this information, the Department does not check or quality assure the content, or require that it meet particular technical or pedagogical standards.

The catalogue allows users to search by subject area, keyword and year level. At the end of a search the user will see a short description of content that meets their search criteria, and will be able to access an independent review of the materials where one has been created (usually by teachers who have previously used the content). The user cannot, however, directly access the material online. It can send an email to the content provider, but ordering and fulfilment are matters between the provider and the buyer and occur through other (online and/or offline) channels.

Only 80% of the materials in the catalogue are digital – the rest are printed, audio or video materials that relate to a digital product (e.g. to lesson planning, teacher training, assessment etc.).

⁵ at 2001 exchange rates

Based on a review of the catalogue, the joint venture estimates that of the digital portion, less than 25% is online content. CD-ROM, DVD or proprietary system software materials dominate the catalogue.

The catalogue contains 22,000 products, contributed by around 300 different providers. Approximately 25% are free for use.

BBC Digital Curriculum (UK)

BBC Digital Curriculum (BBCDC) is a digital curriculum materials initiative that will produce broadband interactive content for delivery through the internet and digital television. Finance for BBCDC is the equivalent of A\$337,500,000 over 5 years, half of which will be spent internally by the BBC, the other half in the private sector on out-sourced production services. Content produced by BBCDC will be free for use. The initiative has not commenced production and therefore details of the composition of the materials (courses? Learning objects?), and how the materials will be catalogued, accessed, distributed and managed, are unknown.

National Learning Network (UK)

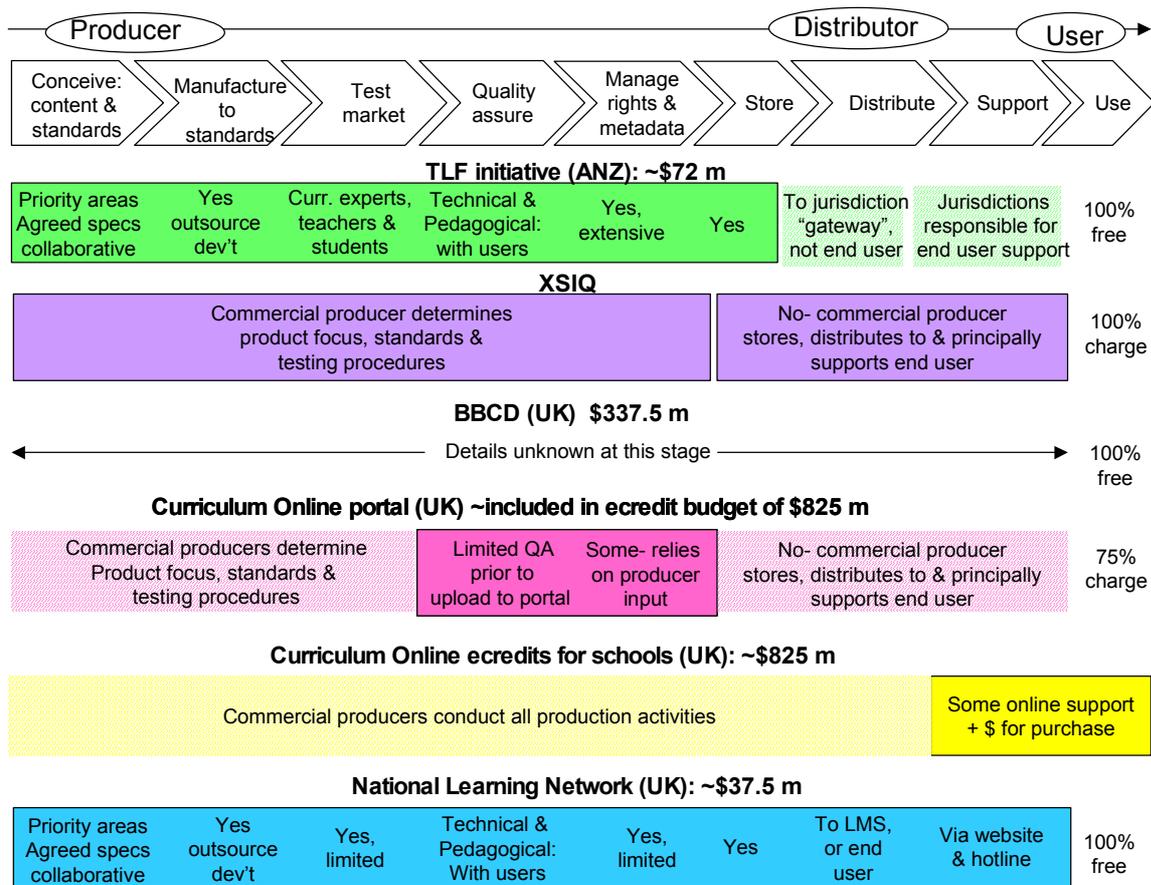
The National Learning Network (NLN) is a government-funded program designed to increase the uptake of Information and Learning Technology (ILT) across post-16 education in England. For content development, NLN has a budget equivalent to A\$37,500,000 over 3 years. NLN has contracted 19 private sector developers to create online content in specific subject areas. These contractors have created approximately 500 hours⁶ of content, in half-hour lots. While not necessarily in learning object form, the content is produced in small “chunks” that relate to specific subject areas. Content is metadata tagged, tested with real users, and quality assured as part of the development process. Content is provided free to users, and is accessed by direct download from the NLN website after a registration process. In all respects other than the target market and the download method, NLN is the closest similar initiative to The Le@rning Federation.

Would alternative models deliver on the objectives of The Le@rning Federation initiative?

The exhibit below illustrates encapsulates the detail of the descriptions above, and shows how each of the alternatives compares with The Le@rning Federation initiative in terms of its activities across the value chain. Densely shaded areas indicate a main focus of activity. Hatched areas indicate secondary activities or activities in which the initiative may be involved, but does not have a primary responsibility.

⁶ here, an hour refers to the amount of time

Figure 3: How does The Le@rning Federation compare with other alternatives?



By reference to this exhibit, we can see that The Le@rning Federation initiative provides for or ensures:

- A collaborative approach
- A focus on desired subject areas
- A focus on desired content format (learning object)
- Control over specifications and standards upon which the content and systems are produced
- A focus on user-centred design and development (ie. on what the customer wants)
- Quality-assured and tested materials are developed
- The leveraging of private sector benefits from public sector funds
- Control over the software systems and repository in which the content is stored and accessed by jurisdictions
- Free use of content by end⁷ and intermediate⁸ users.

These features will ensure that The Le@rning Federation meets its stated objectives.

Of the alternatives, only the NLN compares favourably with The Le@rning Federation, and it may indeed go one step further by enabling the end user to download content directly from the internet. The other four options result in one or several of the following outcomes:

- Content being developed in non-priority areas
- Non-interoperable content and systems being developed
- Content of variable quality and appropriateness being developed

⁷ teachers and students in schools

⁸ jurisdictions

- The institution of usage charges
- Limited market effects.

Any one of these outcomes would result in a reduced capacity to meet the five stated objectives of The Le@rning Federation initiative. Thus we conclude that on the basis of this analysis, the initiative compares favourably with alternative models.