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Networking Multimedia Content for Education

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The popular view of the use of Information and Communications Technology for Education is summed up for me by a Nineteenth Century French cartoon I once saw entitled "En l'an 2,000: a l'ecole". This dystopic vision of a networked future shows serried ranks of pupils, each linked to a wiring system by a pair of head-mounted electrodes. The schoolmaster meanwhile is busily feeding textbooks into a sort of grinder-cum-generator. The implication is that somehow, technology will enable factual information to be forced into the skulls of even the most stupid student! Of course, the reality is not like that. Learning is not a passive process and successful networked content must be interactive in its nature. There is more to learning than text, and it is rightly recognized that the rich range of multimedia that might be expected of a modern learning network will require access to resources held not just in libraries but in a range of cultural institutions.

Thus the success of Learning Networks is likely to depend on the existence of organizations able to bring together resources from different cultural domains to create educational content, and to deliver such content reliably to the citizen at a public access terminal. One possible model of such an organization is called SCRAN.

SCRAN, the Scottish Cultural Resources Access Network, is a Millennium project, funded by the UK National Lottery to build a networked multimedia digital library for the teaching and celebration of human history and material culture in Scotland.

The project's funding of £15 million till 2001 will allow it to create a digital library consisting of textual metadata for one million cultural objects in the real world, and multimedia surrogates for 120,000 of these. SCRAN is also commissioning the development of 100 interactive educational programmes, or "Multimedia Essays" based on this content.

SCRAN has been set up as an independent charitable company, owned by the cultural institutions, (such as the National Museums of Scotland and the Royal Commission on the Ancient and Historical Monuments of Scotland) that founded it. But these "provider" organisations are balanced on the company's Board by representatives of SCRAN's educational user base: the Scottish Consultative Council on the Curriculum, the Council of Scottish Higher Education Principals, and the British Computer Society. Although based on the museums, archives, libraries and built heritage of Scotland, SCRAN's prime concern is not with conservation, nor with documentation, but with educational access.

SCRAN is an electronic rights management project, grant-aiding the digitisation of assets in exchange for a non-exclusive licence for their educational utilisation. Contributing institutions gain a new digital asset which they are free to exploit commercially if they wish, while librarians, teachers and students at institutions in membership of SCRAN can download images, movies and sound clips, copyright cleared for unlimited educational use.

All resources are digitised at a very high resolution (for example, a 35mm slide will result in a file of 18 million bytes of information). From this archival resource, a network surrogate is created at a lower resolution, (or for sound and movie assets, of a shorter duration), to minimise download time (for example, a digitised 35mm slide displays as about the size of a current technology display screen). This networked resource may only be downloaded by members of a bona fide educational institution (public library, school, college etc) licensed by SCRAN. It is protected by an invisible watermark (to identify the original IPR holder) and fingerprint (to identify who downloaded it).

But any member of the public, anywhere in the world, has access to a thumbnail image of the asset, plus full textual documentation. This documentation contains descriptive and access information, extracted from conventional library catalogues and museum collection management systems to be compatible with the "Dublin Core set of metadata elements [1]. This is supplemented by explanatory caption material specifically written to a set of educational guidelines, worded to be understandable by the intelligent lay reader, and to build into a vast online encyclopaedia.

In this respect SCRAN is also a resource disclosure and delivery project: SCRAN provides easy access to hundreds of thousands of digitised assets in its own resource base and descriptions of millions of objects in the real world, as well as acting as a gateway to other electronic collections. SCRAN is also a target, using Z39.50 protocols [2] for other cultural and educational gateways, such as Aquarelle, the European Commission funded Information Network on the Cultural Heritage [3]

The SCRAN resource base at http://www.scran.ac.uk/ presents a number of different access routes, depending on the needs of the end-user. "Quick Search" presents a single letterbox into which the user can insert a simple keyword or a sophisticated search expression, while "Assisted Search" answers questions of the "Who?", "What?", "Where?", "When?" variety. Both searches are good for retrieving everything SCRAN has on a particular topic, with no focus on any particular learning outcome.

"Curriculum Navigator" on the other hand, represents the National Curriculum as a tree structure, allows teachers to find the current position of their class within it, and then suggests a "virtual resource pack", pre-selected by educationalists, containing materials useful in the teaching of that topic. Further, more graphical, interfaces involving timelines and maps, are under development.

The SCRAN project was launched November 1996, and already SCRAN has built a resource base giving WWW access to hundreds of thousands of cultural records from Shetland to Galloway and from Fair Isle to Dunbar. Thousands of these records include multimedia: images, sound and film clips and virtual reality, ready formatted and copyright cleared for classroom use.

As well as being a major resource for investigative learning, the SCRAN digital library constitutes a sort of quarry of multimedia assets which can be built up into courseware with defined educational objectives, which are known in SCRAN terms as Multimedia Essays. SCRAN has developed a number of templates, which allow the teacher or student, with no more skill than is necessary to use a wordprocessor, to download SCRAN assets and then to re-present them in one of a range of pre-defined styles (timeline, panorama, quiz etc). These templates are ideal for the rapid assembly of teaching materials for one-off use, but SCRAN is also commissioning the development of more permanent Multimedia Essays with high production values, for wide distribution. The first of these are already in service, and one of them, the CD-ROM The Scottish People, 1840-1940, has been distributed to every school in Scotland.

The United Kingdom Government reports Towards the Learning Society: the National Grid for Learning [4] and New Library: the People's Network [5], envisage a future where Information and Communication Technology will be increasingly harnessed in the support of schooling, training, lifelong learning and education in its widest sense. SCRAN is becoming seen by many as a prototype of the Educational Content Generators that will be needed on the National Grid.

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