

students. There will be fewer “Kent” written tutorials and more reliance on, and direction to, the help and support pages made available by the database providers and colleagues in other institutions. Those with time totally devoted to writing tutorials are going to be able to do a better job than we can with our limited resources.

Conclusions

This has been, and continues to be, a challenging project. I am grateful for the support and encouragement of my new colleagues.

Biography

Diane Raper is Academic Liaison Librarian for Law, Templeman Library, University of Kent at Canterbury. She has recently returned to law librarianship after a period working for the NHS. Prior to this she was Head of Information at DJ Freeman and has held a variety of senior positions in the legal information field.

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The Development of Social Care Online

Abstract: Diane Gwynne-Smith writes about the project, which she managed, to create the most comprehensive and freely available online database of materials on social care. It can be found at: www.scie-socialcareonline.org.uk

Keywords: social care; online services; project management; library management systems

Introduction

The Social Care Institute for Excellence identifies and provides knowledge, information, guidance and best practice materials to the complete range of people involved in providing or using social care services. The audience for our work product is variously academics, health professionals, social care workers, charity workers, the families and carers who look after those in need of social care, and those cared for. The range of material that we provide is correspondingly wide, with key areas being the provision of an index to journal articles, book reviews, guidance and best practice manuals, and reviews of research into trends and techniques in the social care arena.

Our core function, at our inception six years ago, was to provide an online gateway to information by means of abstracting and indexing the huge number of materials published each year that are relevant to the sector. No carer, care professional or even academic could hope to

keep up with the flood of literature, let alone events and conferences and their outcomes, without some form of summarising service, and that is what SCIE provides.

Development up to 2003

From this starting point the simple fact of providing the gateway to information generated both additional needs and opportunities. Online indexes are available to everyone and the initial academic basis of the users rapidly expanded to social care professionals, carers and the cared for - a trend which was welcomed and encouraged from the very start. The expansion of the user base, both in terms of the type of audience and the numbers, in turn established the need to provide additional services. These user-driven requirements were met by establishing small, to-the-purpose services, to ensure that the requirements were met and the results were used for each development. This

approach allowed a low-budget development of additional services, backed by empirical testing of the useability and take-up of each new service.

By January 2003, the development of to-the-purpose services resulted in a number of databases with different look and feel, no integration between the data, and different ways of finding and retrieving the information. New types of information, including reviews and best practice guides, often referred to the information in other databases without any means of managing linking and cross-referencing, other than error-prone and expensive manual work. The lack of a taxonomy meant that it was almost impossible to use all the information sources to build up a dossier of materials on any particular topic, even though the information on a huge range of specific topics was in the database collection.

Above all, we felt that our online services were unfriendly and outdated. Academics, in carrying out extensive literature searches, were used to complex search interfaces and user-hostile retrieval systems, managed, with some effort, to use the databases satisfactorily. But the new, and growing, IT literate groups of non-academic users found it hard and tiresome to dig out the information they needed.

Why we went to Tikit from the start

We recognized that we had specific business weaknesses:-

- We did not have a strong specification for a software platform to move our services forward, but needed to develop one;
- We did not have a clear vision of the relationship, if any, between us and our current users, and related organisations within the public sector, charities, and commercial businesses;
- We knew much of our work product was effectively metadata, but we lacked the technical data modelling and taxonomy skills required to deploy the metadata to the best effect;
- If a unified metadata/taxonomy based approach was to be adopted, the existing data in the various databases would need to be converted, and the methodology for doing this would probably require resources which we did not have, except in people already fully committed to existing work.

Tikit were thus initially asked to provide consultancy in these areas, with the understanding that such consultancy might also include the provision of proof-of-concept illustrations, but there was no implied obligation on us to proceed to buy or even evaluate any Tikit products.

Preliminary Work

Content Analysis

The various databases and other SCIE work product were analysed as the content of any unified new approach. The nine principal existing content types were then summarised in a table with these headings:

Content type	Full-text available?	Full-text internal mark-up of references?	Profile	Updating required	Current status

To these were added three new spin-off services or enhancements to existing services, which emerged from discussions as the most probable developments. These included “What’s new?” and targeted alerting services, and creating facilitated access to third-party websites which had good related content but hard-to-use interfaces. These additions were complemented by some other alternative ideas which were possible new developments, rather than planned new developments.

Having established the content, the analysis considered appropriate data structures for deploying it to the best advantage. The key conclusions were:-

- The need to define the interface and access methodologies for all types of user as a preliminary to defining the editorial processes and systems, rather than the other way around.
- The need to deploy a relational data model in order to facilitate automated linking and cross-reference as well as standardised metadata management;
- The need to match appropriate taxonomy/ authority file segments to the defined information nodes in the content, in order to produce a user-friendly means of retrieving relevant information.

The taxonomy and authority file segments obviously could not be defined in isolation; at the same time, some working ideas were needed in order to test data models, “work” draft interfaces, and short-circuit the very long development times that have bogged down some taxonomy projects, elsewhere, in unnecessary theoretical and detailed work. Initial working ideas, and time estimates for the developments of the hierarchies and authority files, are illustrated at Figure 1:-

Title	Type	Methodology	Time estimate
Topic/subject	Hierarchical taxonomy	Create from existing terms, existing Carers thesaurus, other classifications	5–10 days of a skilled person’s time
Content type	Hierarchical taxonomy	Create from internal SCIE lists and knowledge	1 hour workshop
Plans, projects and work areas	Hierarchical taxonomy	Cumulative as plans and projects are formulated; initial work area taxonomy from internal SCIE knowledge	Plans and projects – ongoing, 1 hour per week? work areas: 2 days including 2 hour workshop
Organisations	Hierarchical taxonomy	Cumulative; initial taxonomy built from existing SCIE data records	1 day
Regions	Hierarchical taxonomy	Use existing free taxonomy and alter as needed in the light of experience	very little
Treatment and target users	Authority file	Create from internal SCIE knowledge and policies	2 hour workshop
Accessibility	Authority file	Create from internal SCIE knowledge and policies	1 hour workshop
Regulatory and policy frameworks	Authority file	Cumulative; initial file built from existing SCIE data records	1 day
Bibliography	Authority file	Cumulative; initial file built from existing SCIE data records	Normalisation and elimination of duplicates imponderable without test; not expected to be major issue but the one where miscalculation is most frequent
Persons	Authority file	Cumulative; initial file built from existing SCIE data records	Normalisation and elimination of duplicates imponderable without test; not expected to be major issue

Fig. 1: Taxonomy and authority files

Use scenarios and profiling our users

We made very constructive use of these tools, which dramatically shortened the analysis and design stages and ensured that all those involved in managing and creating data could share experience and ideas in the most constructive way. Essentially the editorial team defined user roles, and gave examples of the sort of questions the different users could ask the SCIE offerings, in order to:-

- Develop, refine and test the proposed interface;
- Ensure that the content users ought to retrieve from the database would be found by the

metadata applied to it (indexing strategy, correct definition and deployment of taxonomy segments, etc);

- Exercise the data model to ensure that the relationships and structure inherent in the proposed database delivered the required functionality.

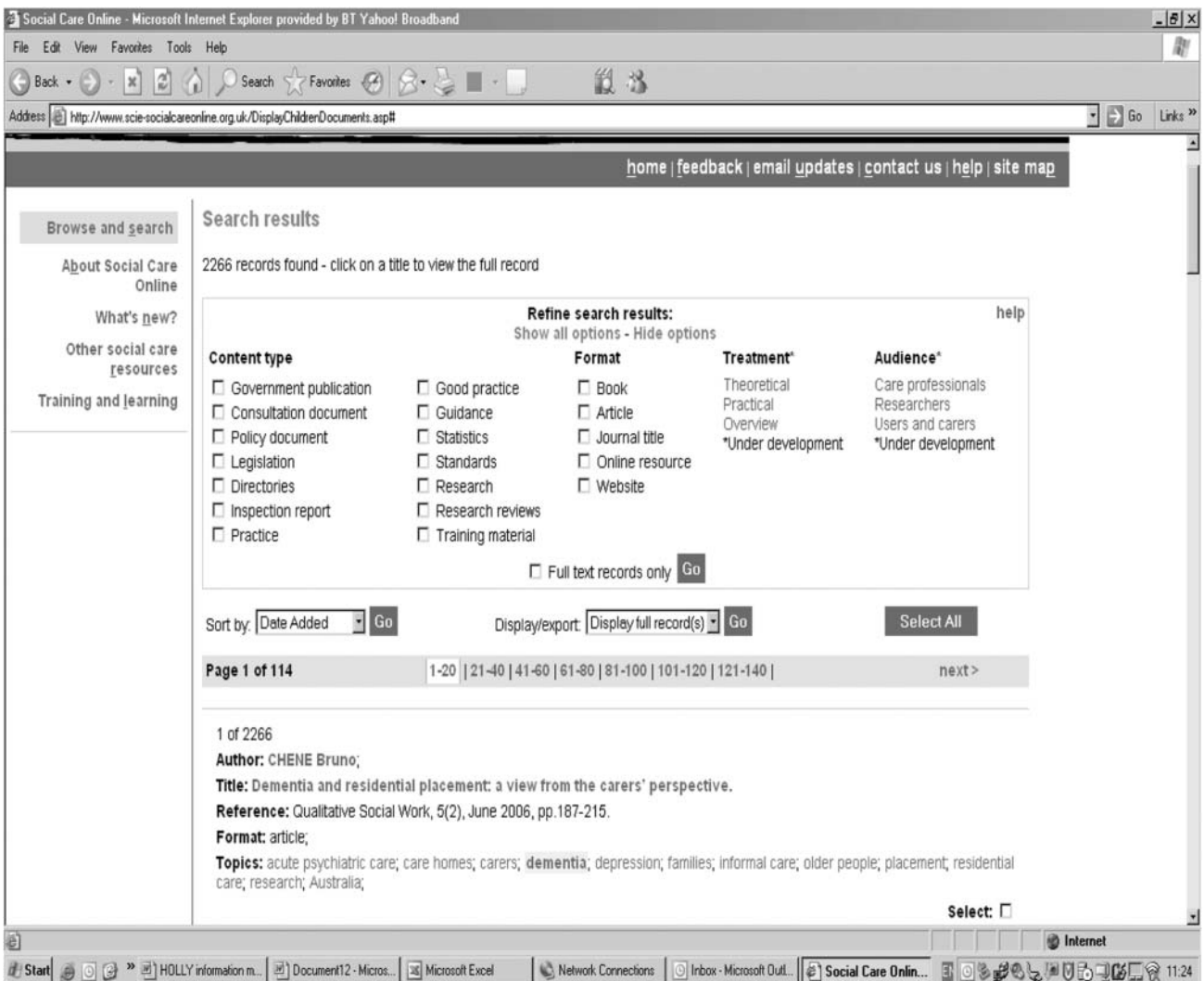
A series of half-day and one-day exercises allowed very rapid and confident development of the design for the new database. This is illustrated by comparing an early “working model” of part of the interface to the final realisation:-

Original draft:-

You can tick as many categories as you need for your current purposes
 If you leave any column blank, then you will get all the material, not none of it

<p>Please choose your user role(s)</p> <p><input checked="" type="checkbox"/> academic</p> <p><input type="checkbox"/> professional</p> <p><input type="checkbox"/> researcher</p> <p><input type="checkbox"/> manager</p> <p><input type="checkbox"/> practitioner</p> <p><input type="checkbox"/> carer</p> <p><input type="checkbox"/> student</p> <p><input type="checkbox"/> cared for person or family</p>	<p>Please choose the sort(s) of material you want to find</p> <p>knowledge reviews <input checked="" type="checkbox"/></p> <p>position papers <input type="checkbox"/></p> <p>practice guides <input type="checkbox"/></p> <p>resource guides <input type="checkbox"/></p> <p>consultation papers <input type="checkbox"/></p> <p>articles <input type="checkbox"/></p>	<p>theoretical <input checked="" type="checkbox"/></p> <p>mostly practical <input type="checkbox"/></p> <p>thoroughly practical <input type="checkbox"/></p> <p>elementary <input type="checkbox"/></p> <p>advanced <input type="checkbox"/></p> <p>deep <input type="checkbox"/></p> <p>shallow <input type="checkbox"/></p>
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As built:-

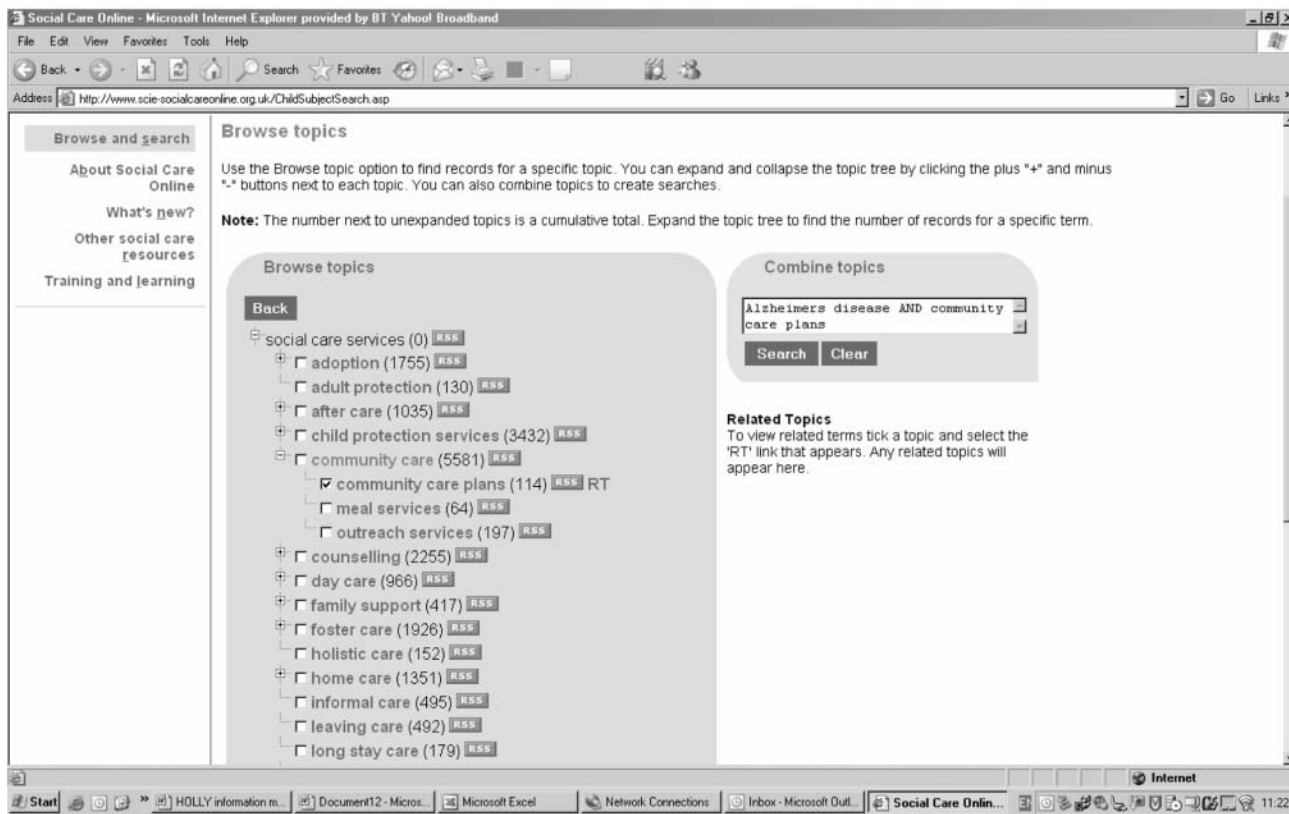


Similar results from these workshops for defining how users would see results are illustrated by the following two figures:-

Original testable ideas for displaying results:-

practice manuals (72) .. disability training manuals (12) .. motivation and approach manuals (14) .. specific injury manuals (45) .. support in the family manuals (13) back injuries (3) spine injuries (4)	practice guides (149)
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As built:-



The point of the use case and role-playing exercises was the dramatic reduction in design and analysis time which these tools permitted. All who took part were able to gain insights into their colleagues' expertise and knowledge and the sharing of this expertise in group exercises brought out what was necessary and desirable for all kinds of functionality in a quick and, it might be added, enjoyable way.

Implementing the new software

Database Design and Integration with Library Management System

At an early stage of the content analysis, we decided that it was expedient to separate the online databases for users,

from the recording of accessions and holdings for the physical library of journals, books and other materials. After consideration of the available systems, we decided to implement the Bailey Solutions Library Management System. It was clearly essential to ensure that the database design for the online databases could integrate with this system and that bibliographical data, for example, would be input only once, in order to be available to both systems.

Fortunately the Bailey system deploys a hierarchical subject taxonomy for indexing purposes, and one immediate result was that we were able to use the same topic taxonomy segment for the online database and for the library management system. The consistency of classification this enforced was part of the commitment we had made to unifying indexing and metadata practice across all aspects of our work product.

With some modifications, the database design developed for the Tikit Know-How System proved well-suited to the requirements of both the outcomes from the use-case studies and the library management integration. The modified database was therefore proposed as the basis on which to make a detailed migration plan. This plan, going forward, covered:-

- Creating a test data set and testing the draft taxonomy segments for suitability against the test data;
- Interface design and testing, again using the test data set for verification of the functionality;
- Editorial system design and testing, for all kinds of data input and modification;
- Normalisation and conversion of existing data, including testing of the validity of all automated procedures and the manual correction of any existing data which proved to be held inaccurately;
- Detailed preparation for a “go-live” day, with the minimum of final catch-up operations.

Data conversion

A series of iterative processes were developed whereby the final conversion of the existing multiple databases into the single new database was to be accomplished. Mapping of “fields” in existing databases to the new table structures was developed and tested by complete dummy runs. One of the biggest tasks was writing routines which converted existing keywords to the most appropriate equivalent in the new taxonomy. This was, like the data conversion dummy runs, effectively an iterative process. As terms were encountered, decisions had to be made on whether an existing term existed for which a particular term should be entered as a synonym, or whether new concepts needed to be introduced to the taxonomy. A programmer at Tikit developed routines which allowed most of the human work to be concentrated on intellectual work, rather than drudgery, and the final real-life conversions were accomplished without last-minute panics.

Moving beyond the standard product

As development progressed, it became more and more evident that our requirements were moving significantly beyond the standard product, and that our suppliers were being asked to develop brand new features and functionality. This was very difficult to gauge at the beginning of the project.

User feedback

The national launch and promotion of the new database and the initial interface almost immediately produced

feedback from both test users, internal SCIE staff, and later on from the normal SCIE user audience. Our external users particularly asked for:-

- RSS feeds on topics selected by the user
- email updates on topics selected by the user

Internal staff not only responded to points raised by external users, but also suggested ways in which their workload could be made more productive.

We were fortunate in that we received both support and development direction from Sir Muir Gray, Director of Clinical Knowledge, Process and Safety for NHS Connecting for Health, and the founder of the National Electronic Library for Health. Few people know more about the information needs of health professionals and patients, and his input clarified many issues as well as guiding us forward.

Software supplier response

As the result of planning meetings and development plans based on user feedback, Tikit carried out two major programmes of work in the Winter of 2004–5 and in the Autumn of 2005. This work was designed to create an information environment for our users that exploited the databases in the light of the enthusiastic reception of the original concept. In the process, enhancements to the back-office data input and editorial systems were also installed. SCIE staff had already established a close working relationship with the Tikit developers and while there were sometimes time overruns on delivering specific features, we found the developers to be responsive and understanding of what we were seeking to accomplish.

From our point of view, however, the critical point is that we have ended up with solid, reliable code. This is vital to us, as our databases are accessed at all hours of the day and night, and downtime would seriously affect the usefulness of our data. We also update the resource daily and in real time so any downtime affects the updating flow.

Review of achievements against aims

Did we solve the original problems?

To the extent that we have integrated our various databases into a coherent whole, and provided an enormously improved user interface and taxonomy-based editorial system, the answer must be yes. To the extent that we have been able to move all our archive data into the standard of metadata that we have been applying since 2004, the answer is regrettably no.

The volume of data and the amount of work required could not be justified against the costs we would have had to incur to accomplish this. On the other hand, there is no doubt that our users value the more recent information more highly than the old, and in a couple more years' time much of the archive will be of limited value. It would be nice to weed out ephemeral archive content, and enhance archive items which have real value, but we do not have the resource to make much progress in this direction.

Did we exploit the perceived opportunities?

The answer to this must be a resounding yes. Clear evidence comes from the fact that colleagues in the public sector with their own databases are now asking us to assist them with developing user access in the light of our achievements at SCIE. We have progressed all new SCIE data into the ordered world of taxonomies and metadata, which gives the users so much more value from the databases. Above all, we have allocated budget to ensuring that user feedback was translated into actual actions.

Did costs compare to expectation and if not, why not?

Initial system and support costs followed quotations and we had no surprises there. We had not initially budgeted for the substantial development costs after launch, in the light of user feedback. In line with SCIE thinking on development, our approach was to see if there was a real need, and to deal with needs as they arose. In the event, over the first three years of the project from initiation, almost exactly 50% of our costs were as-budgeted system, support and maintenance costs; but 50% of costs come from user-driven, post-launch development.

We view this as a measure of the success of the system for two reasons:-

- We did not make the mistake of initially over-specifying a system, and hence paying for features which we did not use or need;
- The development work reflected the success of the relaunch of the databases and the much wider use made from all parts of our intended audience, compared to the initial academic bias of the old systems.

Organisational issues

Moving database systems, in terms of structure, interfaces and editorial processes, inevitably creates more

work for the staff. They still have to do their "day jobs" but, in addition, they have to find time and energy to manage the transition and make all the detail work properly.

Fortunately we have a very high level of commitment to the aims of the SCIE organisation among our staff. Because they focus on what we are trying to accomplish for our users, we have had wide acceptance of the need to move forward, and ungrudging and immensely valuable input into the methodologies that would help us to do so. The resulting increase in both the usage and the breadth of audience for our databases has proved rewarding because it reflects staff commitment. It is now over a year since Social Care Online was launched and we are now achieving over 31,000 hits a month, and rising, which is a measure of some success!

Where now?

Progress made

The database enhancements have generally been welcomed by the users and the user base has indeed grown significantly as the ease of use has opened doors to new groups of users. The advances internally have been significant, particularly in:-

- Bringing together different strands of knowledge and expertise in the organisation;
- Editors thinking as users, rather than academically;
- Applying feedback from outside – for example, in developing automatic RSS data feeds and updates to frequent users;
- Applying feedback from inside – for example, in developing facilities for emailing results of searches.
- A first review of the subject taxonomy has taken place after collecting feedback. The development of the taxonomy was a major element of the project and was not without its own difficulties and challenges – a separate article!

Looking ahead

We aim to build on the progress made inside the organisation, as well as on the very good response from users. Key areas for continuing development are:-

- Quality assurance: as more and more users make decisions based, at least in part, on SCIE-provided data and knowledge, SCIE in turn needs to develop quality rankings for the data it provides. A ranked "kite-marking" system based on the internal editor's experience and ability to compare materials on the same topic would be a highly

valued enhancement. The system allows the simple comparison of the materials, because the taxonomy makes it easy to review content on a like-for-like basis.

- Improving the filters available for refining searches: clearly the original data did not have the metadata which allowed for the use of the filters (illustrated in the screenshots above). As new content is added, the users will benefit from using the filtering processes which the system already allows.
- Continuing the trend to “think as users”: people and process issues are being seen as more important than technology, and this is to be encouraged. The organisation is becoming increasingly outward facing, as it was always intended to be.
- Providing a shop-window for brilliant but obscure databases and publications: ideally bringing the work product of some sister organisations into the SCIE

system will allow valuable materials to be much more widely accessed, without major expense for the organisations concerned.

- Developing more sophisticated automated link management, which the database and data model already allow subject to the limitations of the editorial time required to set up the processes.
- Focusing on expanding the content – we are now including non print media
- Developing additional databases within the Social Care Online infrastructure e.g. we have just launched the National Research Register for Social Care where local authorities can upload remotely their own commissioned research.

Please have a look at Social Care Online and its features and functionality at www.scie-socialcareonline@scie.org.uk

Biography

Diane Gwynne-Smith previously worked for many years in West End and City law firms including Nabarro Nathanson and Baker & McKenzie. She would like to acknowledge the help she received from Derek Sturdy of Tikit in the writing of this article.

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