The NBN Gateway and LRCs How can they complement each other ?

National Biodiversity Network

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Executive Summary

The development of the National Biodiversity Network (NBN) has been based on an assumption that there would be some degree of internet access to the data held by different data custodians working as part of the network, including Local Record Centres (LRCs). However there has not yet been a clear evaluation of the needs for internet access, whose needs it might service and how the roles of different types of data custodians would link into internet provision of data. Effectively what is lacking is a business case for providing internet access to data that is integrated with the business case for the development of different data custodians – especially LRCs and national schemes and societies.

While it might be seen as a failing of the NBN not to have completed such work at the outset there are valid reasons for letting this evolve alongside other development work. What is possible through the internet has progressed rapidly, even during the short period that work on developing the NBN has been underway. However people's ability to understand and visualise the possibilites have moved at slightly slower pace. Discussion on these issues is usually constrained by our current ways of working not allowing us to perceive a new way of working.

The development of a prototype NBN Gateway and index have helped considerably with this thinking by giving real examples to facilitate discussion.

Considering this issue from the perspective of LRCs, it is important to note much progress has been made over the recent years towards developing both a model for LRCs as service providers to local organisations, and in building local partnerships to develop and run LRCs.

It is widely perceived, by LRCs and their partners at a local level, that the need for the NBN Gateway is being driven by organisations who have a national or UK remit and generally need high level, strategic data, based on an assumption that LRCs would be willing to make their data widely available through the Gateway. It appears that relatively little consideration has been given to benefits that an NBN Gateway might accrue to local users, such as local authority ecologists and planners or local staff in statutory conservation agencies.

A high priority must be to undertake market research into the needs and preferred ways of working within a wide range of potential users of the Gateway. This must then be brought together with the proposed model for LRCs and national schemes, proposals for how large organisations with a national and local remit (such as statutory conservation agencies, environment agencies) might chose to manage and use data in the future to develop a business case which should drive future development of the Gateway. This will determine what type of access is needed and how this should be resourced. If this is successful it should increase the business case for a range of data custodians by supporting their role, both in terms of demand and in terms of resourcing.

Once this work is completed policies and procedures must be developed to ensure that any internet access to the data held by NBN data custodians is properly controlled, and systems for presenting data or information products are developed to meet users' specified needs. An assumption is made here that NBN will have developed access terms, which include definitions of sensitive data and processes for controlling access to these, that are widely supported and adopted.

1   Introduction

1.1   The NBN aims to improve access, where appropriate, to reliable biodiversity information for anyone who wants or needs it. The NBN proposes to achieve this through a series of "data custodians" working within a shared framework of standards that will cooperate to manage and provide access to biodiversity information throughout the UK. Each of these data custodians will have specialist skills in managing biodiversity information and will be an effective and efficient means for many organisations and individuals to manage their biodiversity data. LRCs will act as one type of data custodian.

1.2   The long-term vision of the NBN is that these data custodians will be able to make their data widely available through an NBN Gateway that will provide on-line direct access to their data sources. This long-term vision is some way off and may require a number of stages in its development. As well as developing the necessary software and systems to provide the Gateway, data custodians within the NBN will need to be in a position to contribute their data. To do this they need to have collated relevant data and set in place necessary quality checks. Also a business case is needed, identifying how the provision of remote access to data will be resources and who will have access. It is anticipated that LRCs could be major contributors to the Gateway. Equally they may also be users of the Gateway accessing data and possibly generic products.

1.3   A prototype NBN Gateway has been developed by and NBN project led by JNCC and CEH and is available with a small set of data held centrally on a "data-warehouse"[1]. This prototype gateway demonstrates some of the opportunities offered by internet access to data held by a range of data custodians offers. It has helped people visualise what such a Gateway might look like and as such has prompted much discussion. This Gateway has also helped initiate much needed discussion on how individual data custodians might work with a Gateway, both practically, such as making their data available and ensuring sensitive data is controlled, and financially, such as whether access to detailed data can be limited to those who have contributed to their management. It has also provoked considerable discussion over who the users of the NBN Gateway might be and how it could be designed to meet these needs.

1.4   The Linking LRCs project has consulted LRCs about the implications of the development of the NBN Gateway on their work. This consultation has been both informal, through discussion at workshops, meetings and one-to one discussion, and formal, through a consultation paper. The formal consultation paper focussed on:

➤   How the development of the NBN gateway might affect the business model for LRCs – will users envisage that they can go direct to the gateway and not work with their LRC?

➤   What is the role of standard analyses provided through the NBN gateway (for example distribution maps) and what issues arise from generating these?

➤   To what extent can a Gateway be developed to enable direct access to "raw data" (derived from LRCs, National Schemes and Societies and others) and how can issues of copyright, confidentiality and acknowledgement of sources be handled?

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[1] The prototype NBN Gateway is available on-line at www.SearchNBN.net

> ➤ What products might an LRC wish to use from the NBN gateway? Will an LRC prefer to access raw data to analyse or use standard products to provide contextual information?

1.5 This paper summarises the views expressed during these consultation processes and proposes a number of options as to how this might be taken forward. It considers the development of the NBN Gateway from the perspective of LRCs, along with some views expressed by their users and suppliers, it raises many issues that will apply more widely. The role of the NBN Index as a separate entity is not considered as the role of this tool is more clearly defined.

1.6 It is clearly recognised that resolution of these issues cannot be addressed by LRCs alone but must be progressed alongside the views and issues raised by other data custodians and their users. The paper presents the types of views that have been expressed and, where appropriate, proposes the type of solutions that might address the issue and suggests first steps to finding a way forward.

2   The purpose of the NBN Gateway, how LRCs fit in and their business model.

Background

2.1   Consideration needs to be given to how the development of an NBN Gateway will affect the business case for LRCs. Rumours have already spread that local authorities will be able to get all the data they need direct from the NBN gateway and therefore will have no need for LRCs in the future. Obviously the value of the NBN Gateway will primarily depend on the quality and coverage of the data made available, therefore without effective data custodians it use will be limited. Equally many local users will not have the expertise to analyse the data themselves or they might not want to do this themselves, finding it more efficient to ask others (eg LRCs) to do this for them. Most local users have not yet even identified their needs for biodiversity data, let alone define how they would wish these needs to be met.

2.2   Clearly there is a need to maintain LRCs as a mechanism for bringing data into the NBN, promoting data collection and ensuring the quality of data. Many users will want to continue to use the LRC to produce information products to suit their specific requirements in a format that they can use. Many users will not have the expertise to manipulate the data into the required format. However some current users of LRCs may wish to move to accessing raw data direct from the NBN, if not all the time, for at least some of their needs. The availability of data on-line will change the way LRCs work with their users. They might become more remote from users and as such find it more difficult to assess users needs. If access to data from LRCs is made available in any level of detail, new approaches to charging for access to this data will have to be developed.

Issues

2.3   The business case for LRCs has largely been developed in the absence of any detailed thought as to how an NBN Gateway might operate and how it would affect LRCs. There is no long term strategy for the development for the NBN Gateway and whose needs it might meet. Most local users of biodiversity data are still in the relatively early stages of defining their information needs and developing relationships with LRCs to explore how the LRC might meet these needs and establishing funding partnerships.

2.4   LRCs are developed on the basis of financing their activity through contributions from users. The model proposed is that local partnerships of users would provide the majority of resources, often through service level agreements with the LRC, whereby they provide secure funding in return for a known level of service from the LRC. Other users, such as consultants, are charged directly for the actual use they make of the LRC. Some users may be subsidised by local partners, for example a local authority paying the LRC to provide a public information service. The charges made should cover both the cost in providing data to users, normally involving a degree of analysis, and also the costs incurred by the LRC in generating the databases used, including managing the data (for example validation, computerisation), sourcing data and providing support for recorders.

2.5   LRCs often find that one or more potential local partners choose not to participate in the record centre. The development of the NBN is already having an impact on

this issue as some national partnerships make a commitment to working with LRCs (for example the statutory conservation agencies). However the problem is greatest with local authorities who only have an outline commitment to take biodiversity information into account in their work. Many local authorities will only take into account information that is readily made available to them and do not resource the information management at the local level. There are no standards for the quality or 'level' of data they must use.

2.6   Much of the data held by LRCs has been generated by individuals, recording schemes or voluntary bodies. These data are usually generated for their own purposes and they have no requirements to make it more widely available, although in most instances they would wish to, but are often unable to because of the cost.

2.7   Consideration needs to be given to who needs access to raw data through the NBN Gateway. Most LRC users do not want raw data. The envisaged role of an LRC within the NBN is to provide users with data they need in a format that is of immediate use. Only occasionally will this be raw data. Many organisations do not have the expertise to analyse the data, nor would it be efficient for them to acquire it. The LRC is able to provide an effective service doing this work on their behalf.

2.8   The LRC business case has been developed in the absence of any clear proposal for the development of the NBN Gateway. Clearly there is the potential for the Gateway to complement the work of LRCs, enabling access to their data and enabling access to data held by others. However the NBN Gateway cannot be developed in isolation from any consideration of who might use it and how. Consideration must also be given to how the Gateway should be funded and how the data custodians who contribute data to it should be resourced. If partners can gain access to the data they require through the NBN Gateway then they will not need to work directly through their LRC.

The way forward

2.9   If the NBN Gateway is to provide access to either raw data or products with any degree of locality information then the NBN Gateway must be developed to help sustain the data custodians on which it will rely for its data. Those who use data must contribute to the cost of its management and supply, unless a third party is willing to do this on their behalf. Public bodies may wish to make their data widely available, or may be required to through legislation, although they may wish to recoup some of the costs of making them available.

2.10 The principle of users contributing to the costs of managing data should not vary according to how they access data. Obviously the costs incurred in supplying data will vary according to how this is done. The NBN Gateway needs to be developed in such a way that its users do contribute to the costs incurred by the data custodians. There may also need to be mechanisms to ensure that the users of the Gateway contribute to the maintenance and running of the Gateway itself.

2.11 This could be done in many ways. Access to the NBN Gateway could be limited to users who are 'registered' with one or more data custodian. For example this could include those who have some form of minimum service level agreement with LRCs. There may need to be some restriction on the availability of data according to the level of commitment made.

2.12 Charges could be made at the point of use with the NBN Gateway only providing a 'free' view of summary data with users being charged for more detailed views or access to 'raw' data, either through an account systems, pre-pay system or perhaps

by credit card. To achieve the latter there would need to be some consensus amongst data suppliers about both the principles behind charging and distribution of these funds but also the level of charges to be made.

2.13   These options are complex and will be difficult to administer. However they would sustain the role of data custodians who supply the data to an NBN Gateway. The development and maintenance of data custodians must be seen as the highest priority for the NBN - without them any tools will be worthless as they can not provide access to any data.

2.14   There are two alternatives to this approach. Firstly the NBN Gateway could only provide access to accredited data custodians within the NBN. There would be no need for charging and this would be a benefit of being accredited by the NBN. Obviously this would affect the development of an accreditation scheme. Alternatively a single organisation could meet the costs of resourcing a range of data custodians to enable them to manage and provide access to a specified range of data. These data could then be made available through the NBN Gateway without charge to all public bodies, the public, and not-for-profit bodies. No organisation is currently willing to take on this role and this is only likely to happen if led by Government.

2.15   If this issue is not addressed then LRCs are unlikely to be able to make the data they hold available through the NBN.

3   LRCs as users of the Gateway

Background

3.1   LRCs need access to data outside their own data holdings. This might be so that they can handle queries covering a wider area (for example road development or pipelines that cross their area) or to provide context for their own information (for example the national distribution of a species). LRCs also need access to data relating to their own area that may be managed by other data custodians, although most organisations have yet to establish how their data-sets should be managed. The NBN Gateway could provide a mechanism for accessing these data.

Issues

3.2   Until the role of data custodians and issues concerning access are more fully developed it is very difficult to identify what requirements an LRC will have for data held by others. For example little work has been done so far to establish the relationship between LRCs and most national recording schemes. Some national recording schemes might want to establish themselves as data custodians, while others will want to use LRCs to manage their data. The same is true of other data suppliers such as the statutory conservation agencies. Until the role these different bodies will want to play with regard to data management is clear, the level of demand that LRCs will have on accessing data in addition to their own holdings cannot easily be evaluated.

3.3   If, as is anticipated, a significant number of key data-sets (eg SSSI boundaries, breeding bird data) are not managed by the LRC then the LRC will need to have easy access to these data to provide a comprehensive service to its users. The NBN Gateway could provide a mechanism to enable the LRC to access these data and integrate them with their own data holdings, providing issues relating to access and charging are resolved.

3.4   An LRC needs to provide much more than raw data to meet the needs of its users. In most of its work it will need to provide supporting and contextual information to enable the data to be interpreted. As well as information relating to the status of species and habitats the LRC will need a wide range of contextual information. An LRC must be able to put the data relating to its own area in the context of the regional, national and UK distribution and trends for both species and habitats. In some instances it is important that this information is current, for example recent trends in populations across the region will inform the interpretation of data within the LRCs area.

3.5   An NBN Gateway which provides a range of products that give local users the context for their work would be a valuable tool for many users of the NBN. By providing a single source for this information and ensuring it is regularly updated, considerable work on the part of many users would be saved and the quality of the information, on which decisions are based, would improve. The deciding factor as to whether this would be a success would be the availability of current information, this would depend on data custodians managing the data and making them available within required timescales.

The way forward

3.6   Data flows within the NBN will evolve gradually as more and more organisations adopt the principles behind the NBN and clarify how they will manage their own data-sets.   There is a potential role for the NBN Trust and NBN partners to help each other to understand these issues and develop their own strategies.

3.7   The need for contextual information by LRCs, and other users, should be explored further.   A range of priority products could be identified and potential sources of information to update these should be explored as an early stage in development of the NBN Gateway.   Issues related to this are also covered in section5 *Standard products available through the Gateway for wider use.*

4   Managing access to data through the Gateway

Background

4.1   The long-term vision for an effective NBN is to enable direct online access to data held by NBN nodes. As well as presenting a range of technical issues, there are a number of principles that need resolving before this can be implemented.

4.2   Data provided through the NBN could be supplied with terms and conditions which state how users should acknowledge the source of the data and retain the copyright of the original record.

4.3   Standard products that only provide information to a low level of detail need not take account of confidentiality (for example distribution maps by 10km squares, summaries of recent records by county). Where data are supplied at a greater level of detail or raw data is supplied then confidentiality terms will need to be applied. These will need to relate both to the sensitivity of the data and to the proposed user. However this means that all those who supply data to the NBN Gateway will need to use standard NBN definitions of confidentiality. How these are implemented will need to be built into the terms of providing data to the NBN Gateway.

Issues

4.4   LRCs are particularly concerned with how access to raw data provided directly through the NBN Gateway will affect the business model they are promoting. These issues are covered in section 2 *The purpose of the NBN Gateway, how LRCs fit in and their business model.* Other than this the prime concern for LRCs is how sensitive records will be handled

4.5   Trust is a major issue. LRCs spend considerable time building trust with recorders. Much of this is founded on how the systems the LRC uses to ensure that access to data that are sensitive and should be kept confidential are implemented. Recorders need to be assured that access to data is only provided to those who need detailed data and who have been "vetted" to ensure that release of data cannot result in damage to the wildlife concerned. There is doubt within the LRC community that systems can be put in place to allow access to sensitive data through the NBN Gateway. How can the Gateway handle the complex process of assessing individuals and their needs across the UK? This process often needs a detailed knowledge and understanding of the individuals concerned. Although secure systems might be possible for users within some organisations, a system would still need to be in place where local knowledge will be essential. Even if the systems are in place, trust may need to be built with recorders to allow their data to be handled in this way. The only way for this trust to be built will be in proof that the systems work and through word of mouth within the recording community. This will take years to build.

4.6   For there to be any potential of allowing access to sensitive data through the Gateway there will need to be standard definitions agreed by all data custodians. This in itself could be a long protracted process. Who should such standards definitions be agreed with? While it is obvious that all data custodians would need to use these, more important is getting buy-in from the thousands of recorders whose data would be affected. Even once such definitions were agreed LRCs would need to review their own policies to take these into account. This might

mean re-approaching large numbers of recorders to revise the terms under which the LRC manages their data and provides access to these on the recorder's behalf.

4.7   If sensitive data are excluded from the data available through the Gateway the value of data searches through the Gateway will be limited. Many of the users who it is hoped would have direct access to data will want to include data on, for example, protected species and would want to have detailed locality information, for example to support site assessments. This links back to the overall business case for the NBN Gateway, who it is intended for and how they will use it in relation to the work of the individual data custodians.

The way forward

4.8   Access to confidential data through the NBN Gateway is a long way off. Although it may be desirable in the long-term (although this has yet to be thoroughly explored in the development of a business case for how the NBN Gateway might operate) it will not be possible for some time. In the meantime development of the NBN Gateway should, in the short to medium term, provide temporary solutions to these problems. This should include systems to:

➢   allow data custodians contributing data to the Gateway to flag up that sensitive data is available related to either a specific site or other broad geographic location. The Gateway should highlight this to enquirers and encourage them to contact the relevant data custodian.

➢   Provide very restricted, secure access to data-set through the NBN Gateway that are only available to specified individuals, nominated by the LRC (or other data custodian). This would allow for testing access to authorised users without passing over responsibility for vetting users to a third party.

4.9   The NBN Gateway will need to introduce high levels of security to limit access to users who have been cleared for full access. Professional advice needs to be taken as to the level of risk from 'hackers' or other unauthorised users. This needs to be presented clearly to recorders in an unbiased way so that they are able to evaluate the risk themselves.

4.10   If sensitive data are to be made available through the NBN Gateway then work on developing a standard set of definitions must be a high priority. As well as involving LRCs, other data custodians and NBN Trust members, it is essential that representatives of the recording community are involved at the earliest stages. A priority should be those who are most likely to generate data that might be labelled sensitive. Obvious candidates for consultation would include the National Federation of Badger Groups, Bat Conservation Trust and British Trust for Ornithology.

5   Standard products available through the Gateway for wider use

Background

5.1   Standard products could be automatically generated by the NBN Gateway based on the data available. This might include distribution maps, summaries of, say, most recent records of a particular species. They would only be as good as the data available through the Gateway, but the big advantage would be that products would be updated as new data became available. Obviously these products would need to be standardised – although it might be possible for example to use slightly different analyses for different taxonomic groups. Most importantly when considering standard products is the target user group for each product. Products targeted for use by the public would need to be very different to those for use by researchers etc.

5.2   Standards products would not be able to acknowledge individual sources – they will be drawn together from all sources available through the NBN Gateway. Products generated through the NBN Web site could be copyrighted to the NBN Trust, even though they are derived from data from a wide range of sources.

Issues

5.3   Until it is clarified who the users of the NBN Gateway will be and how they will use the data it is difficult to address this issue. The first consideration in developing tools to analyse data must be to identify these target audiences. If it is envisaged that many end users will want to access the NBN Gateway it would be preferable to identify a number of widely needed products – for example up to date national summaries and distribution maps for habitats and species that would provide context for local decision and support national strategy work.

5.4   Experience by LRCs shows that most users require very specific products and are unlikely to be satisfied by generic products. There may be a role for many "front-ends" to the Gateway with organisations developing their own "front-ends" that provide tools to generate suitable analyses, although cooperation between those working on this could help share ideas and reduce costs. The cost of developing tools for generating public products will need to be met by someone. This might be developed on the back of other projects to make data-sets available, but in the long-term the costs of providing this service will have to be underwritten by one or more organisations, or by Government.

The way forward

5.5   A priority must be to carry out an evaluation of potential user's needs, priorities and preferred ways of working, focussing on different sectors. This should be done in parallel with work looking at users of particular data custodians. It might be possible for NBN partners to carry this out in a standard way.

5.6   The NBN Trust needs to identify its focus for the NBN Gateway. The Gateway needs to developed as a mechanism for bringing data-sets together that enables others to provide a range of analyses. Standard products should be seen as an addition to this work. Based on the market-research described above, the NBN Trust then needs to identify if it should be developing standards products to meet the needs of any particular audience, or if there are a number of products that meet such a diverse range of needs it would be cost-effective for these to be developed by the NBN Trust.

5.7   If a number of organisations require specialist products or analyses developing (either individually or in groups) then it would be effective to enable them to develop these co-operatively. The NBN Trust could facilitate this joint working.