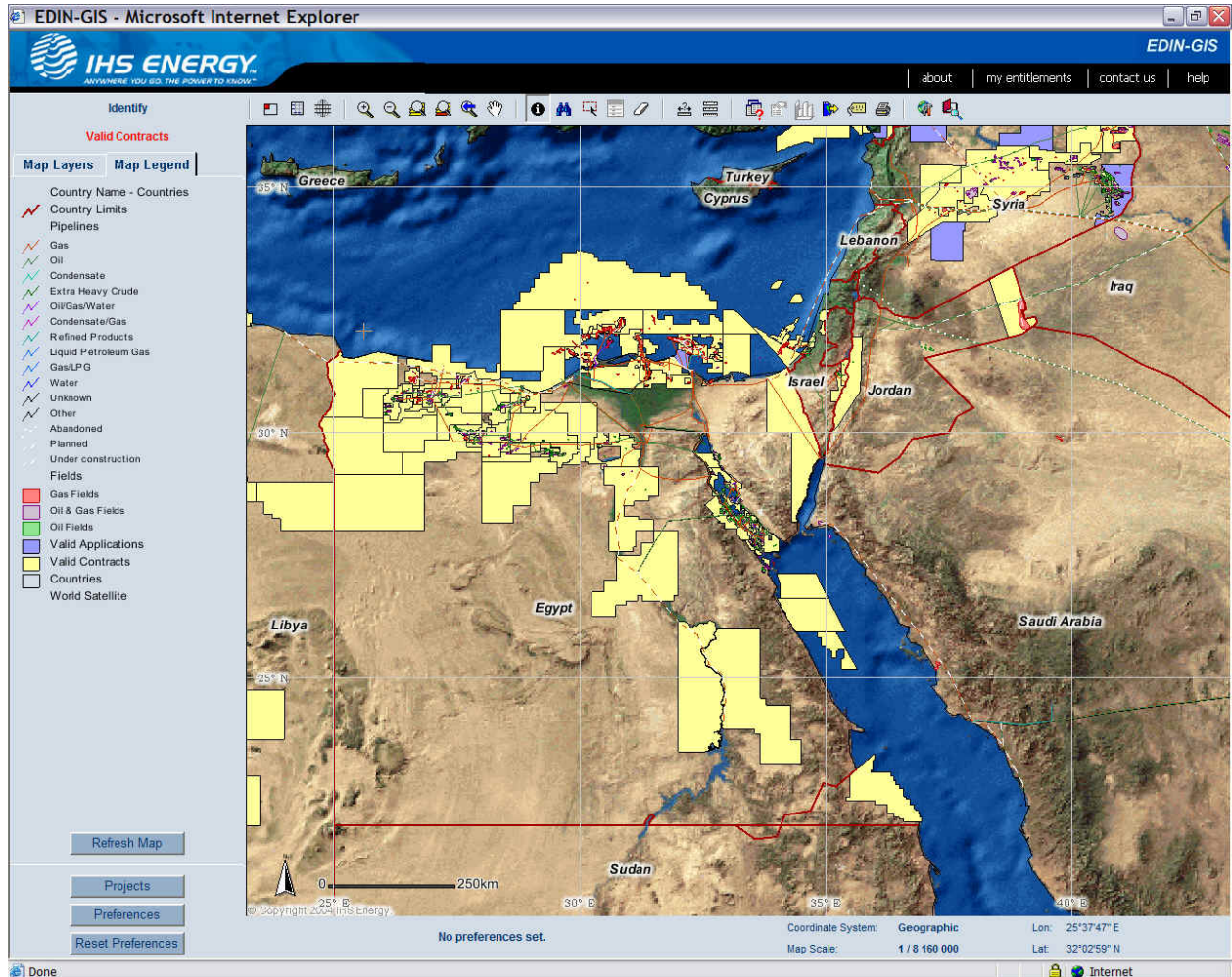


Getting the whole picture



IHS Energy®
Product Management
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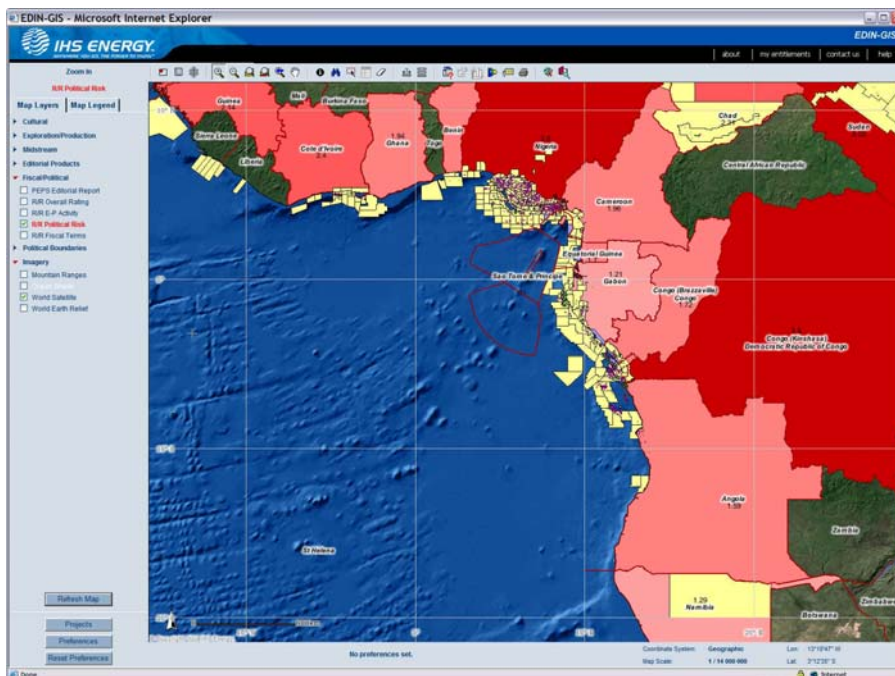
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Executive Summary

IHS Energy provides considerable quantities of information to our clients. This consists of editorial, analytical and raw exploration and production data. Historically these have always been provided as separate, non-integrated data sources.

In 2000 IHS Energy began to look at the possibility of providing our exploration and production data to clients online. There is an associated overhead with keeping data locally. This is not only in cost terms but also the effort of applying database updates. Additionally a number of smaller client companies were entering the marketplace and these companies had no resource or wish to maintain complex databases or products internally.



A review of methods available for offering map-based data online, tied with the skills available in IHS Energy, lead the company to chose ESRI's ArcIMS as the technology to launch a web-based exploration and production map service. IHS Energy had been leveraging ESRI technology since the late 1990s and it made good sense to continue this relationship.

An initial scoping project revealed that the data could

be quickly and easily offered through ArcIMS. It also revealed the possibility of tying spatially to the editorial and analytical services. It was apparent that online integration would have benefits for clients. EDIN-GIS 1 launched in 2003 with data plus editorial integration. In 2004 version 1.5 deployed with further integration to the analytical products plus major enhancements to the usability based on client feedback.

EDIN-GIS now represents a serious tool which is providing value to a number of clients and is encouraging much wider access of their subscriptions to IHS Energy services. The power of spatial integration has provided IHS Energy with a key differentiator and our clients with optimized workflow and enhanced value. A true win-win situation.

The move online

The oil industry is no different to any other high revenue sector. The use of technology is key and the technology deployed keeps evolving. It became apparent by 2000 that there would be a demand for online access to IHS Energy data. The textual editorial service (GEPS) had already moved online with considerable support from clients. Moving data online was a bigger challenge but one which needed to be met for a number of reasons:

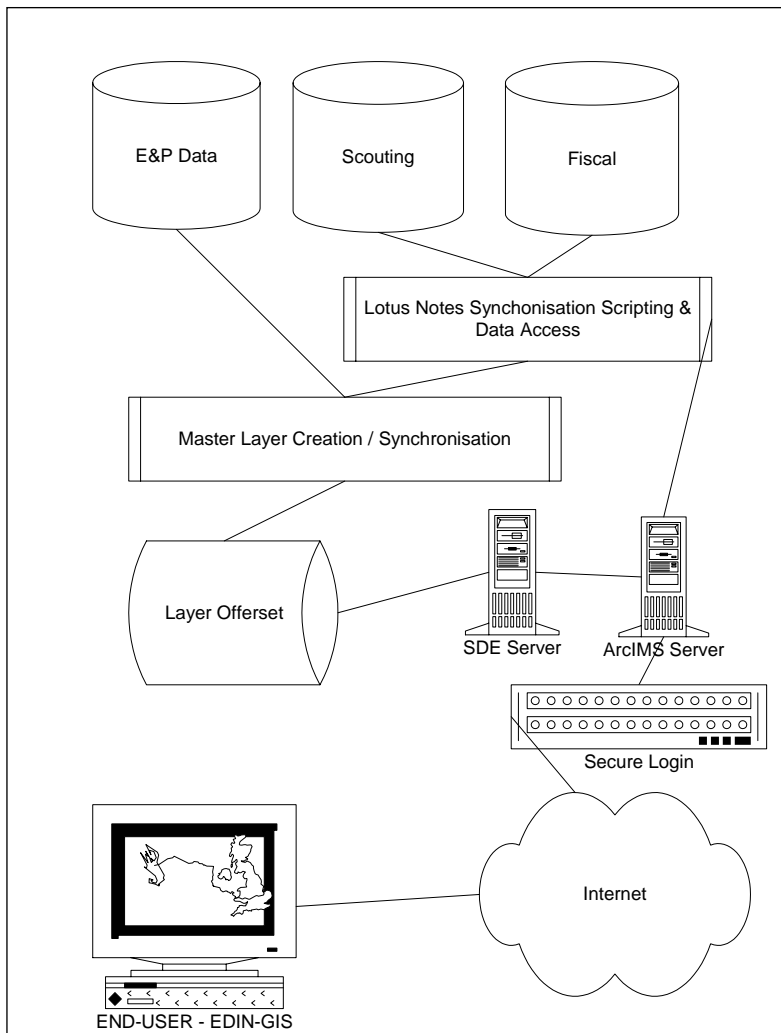
- Some technological front-runners were already asking about IHS Energy's plans for online data provision.
- Clients wanted increased data update frequencies without the pain of applying these to local databases.
- An increase in the number of smaller companies without big IT resources needed a cost-effective solution.
- IHS Energy were interested in the concept of content integration - data, editorial and analytical products in one place.
- IHS Energy aims to stay at the front of technological evolution where it enables us to provide valuable tools to clients and increase market share.

Looking at the drivers from a purely technical perspective IHS Energy could see that the web was evolving to a point where online map services would work in most parts of the globe. This was important as many clients have widespread operations. We also knew that for many clients their established intranets did not have the bandwidth to handle map applications but frequently the local offices did have higher internet bandwidth. This made an attractive play of helping clients deploy access to IHS Energy products and services globally whilst driving usage improvements. Clients, even large ones, also struggled to apply the data updates to their locally hosted IHS Energy databases and there were frequent end-user complaints about out-of-date information which were beyond our control to solve. An online solution enables IHS Energy to update the sources frequently and provides clients with the very latest content at no extra effort.

The market place was also changing. Some clients were outsourcing IT and at the same time trying to reduce the complexity of outsourcing in order to keep costs down. Therefore the offer of IHS Energy providing content subscriptions online offered them a path to outsourcing whilst keeping vendor expertise. IHS Energy benefited through control over update frequency. A further benefit was the ability to communicate with end-users through the logon page. This enables information on data and service updates to be handled quickly, easily and directly to the right audience.

Whilst early research had shown that the transition of the basic exploration and production data into an online environment would be straightforward it was apparent that the integration of this with the editorial and fiscal/legal content would need some effort and careful thinking to ensure that the user received an optimized workflow - a key driver to gaining early credibility and acceptance of the new product offering. IHS Energy had been seeking for some time to leverage the possible connections between the editorial

products and the exploration and production data. This meant that there was a ready pool of possible options. These were specified and passed to development to see what concepts they could engineer. The exploration and production data had been enabled



spatially for some time through a spatial data model and the means of updating this from IHS Energy's Oracle-based production environment had been established for some years. However no attempt had been made to synchronize this with the other content which was stored within a dynamic Lotus Notes environment. The information within the GEPS system changed on averaged every 8 hours and this created unique challenges since the aim was to keep the GIS system in-step with the online textual access of GEPS.

The aim was to present the user with graphical access to GEPS and PEPS. This required layers which had a reasonable view of the available content. The high-level methodology chosen was to spatially integrate at country level. All content has at least the country in common. The

layers created were designed to shade the countries according to whether or not they had available content and then by how recent this content was. Clicking on the 'i' function and selecting a country would then product a browse listing showing available articles in either GEPS or PEPS. From there the user could select an article and go straight to the content they wanted. Another tool was also provided through which a list of countries within the map-view was passed to GEPS or PEPS and the user could control searches within the main GEPS/PEPS environments but with a GIS starting point. With these two main avenues into the content IHS Energy were confident they could greatly enhance the end-user's experience. For the first time it would be possible for users of all capabilities to reach across the subscriptions that their company paid for without having to learn separate paths into the data. A secure one-stop global 24-7 shop was born.

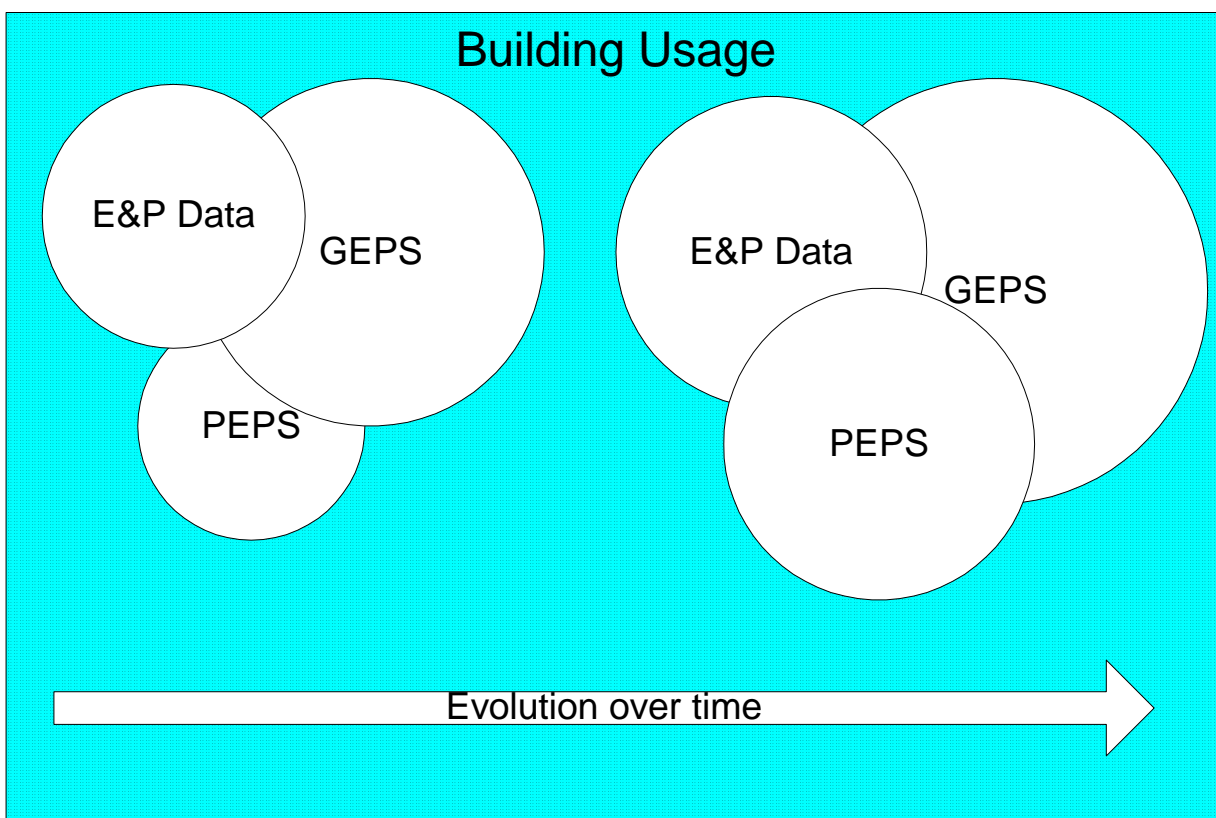
Easy-to-use, fast results

There is no point in developing technology just for the point of it. In the previous section we explored how IHS Energy was able to leverage GIS to link content. This provided a new product and also completed some research and development key for the company's continued technical evolution. However the main focus of any solution has to be the end user and this section shows how they benefit.

A set of projected benefits was defined:

- ▶ Maximize the exposure of as many users as possible to the content they subscribe to.
- ▶ Provide links between the content to optimize workflow and deliver more value.
- ▶ Make it as easy as possible to use, thus enabling casual users to benefit.
- ▶ Provide the most current data possible to anywhere with a reasonable internet connection.

Product management had been involved with many clients in aiming to increase the exposure of as many users as possible to the content they subscribed to. Each client has a finite pool of available users for the products - whether combined or separate. However not many users actually crossed the borders to include all three products despite IHS Energy and the clients knowing that there was value in being able to work with all three main datasets.



The diagram above shows the effective aim of the application. This was agreed with clients and was effectively two separate aims:

1. Increase the exposure and therefore usage of all 3 content sets by individual users.
2. Build overall usage - especially by adding casual users.

The casual user scenario is very important here. For some time both IHS Energy and the clients had known that there was a strong inertia amongst casual users. The benefits of accessing the content could be delivered and accepted but the fact remained that the content was accessed through three portals. Simple access was important. This was highlighted by the fact that the straightforward GEPS textual access over the web had high usage and importantly high user retention. Applications accessing the data had neither. Complex interfaces meant that usage had become focused in power user sets. This had the effect of stopping potential users from exploring the information available to them. It was a microcosm of the overall integration effort that most oil companies were beginning to see as the way forward.

There was no doubt that spatial integration of content was the key. Most users could quite easily deal with a map. The map could be quickly filled with relevant information and the interface kept simple so that casual users could be comfortable in learning and using the tool - even if their use was intermittent.

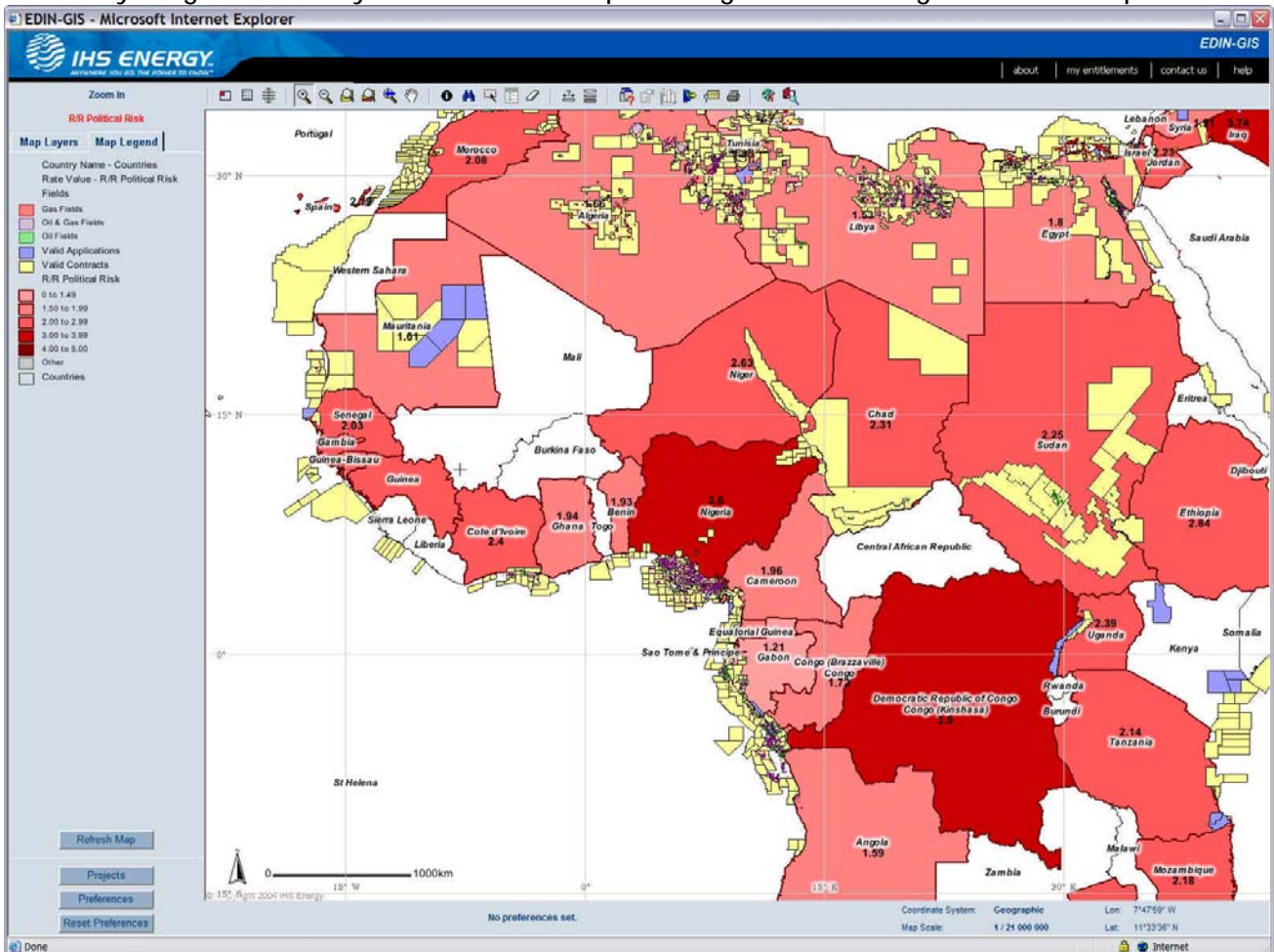
ArcIMS and spatial integration provided a quick-win. It was a solution clients wanted IHS Energy to adopt and it was a path IHS Energy wanted to take.

The first release of the product EDIN-GIS contained exploration & production data and GEPS integration. Performance in most clients was more than acceptable. A start-up time of less than 45 seconds seemed to be key and then response times of around 5-15 seconds for refreshes was acceptable. IHS Energy designed training courses but rapidly found that most users, even casual ones, required just an hour or so of orientation training. This could be done locally or even over the web through the use of PowerPoint tutorials. This was another win for clients as they found the application could be deployed globally with minimum effort.

Success was measured by usage and it was immediately obvious that there were new users of both the data and GEPS. Feedback showed that users enjoyed the ability to switch between the content types quickly and that they also enjoyed the contextual drill-down which the tool provided. Further research showed that there was strong support for adding the PEPS content and also providing a further level of spatial integration.

The first release had focused on country-level integration. This remains the primary point of integration for the three content types. It is the easiest spatial component to focus on and also the primary component in a global-screening workflow which is one of the key workflows supported by EDIN-GIS.

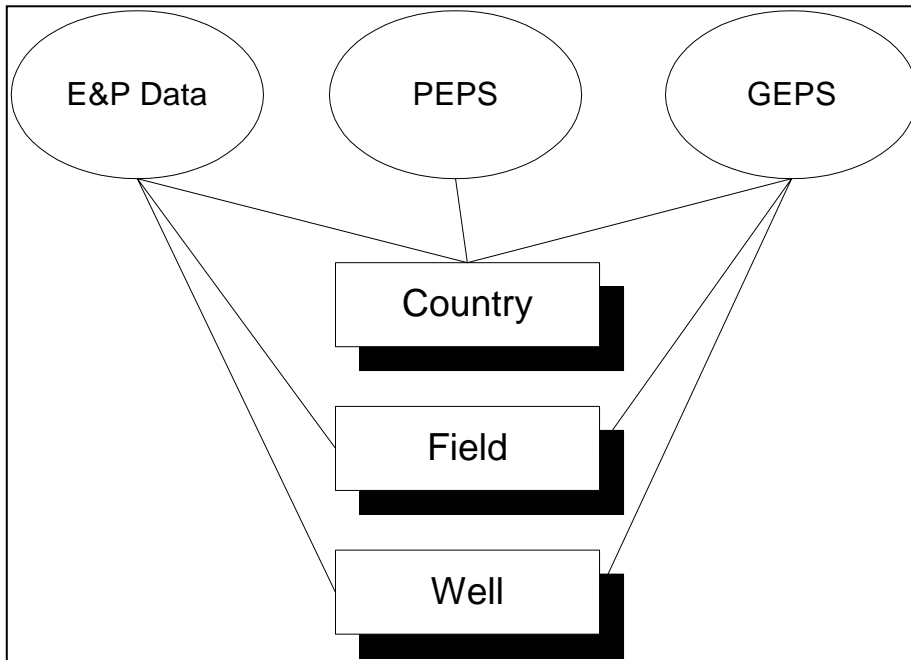
The second major release of EDIN-GIS (version 1.5 - the current version) added PEPS data with spatial integration at country level. Very importantly it also added a visual dimension not previously available. PEPS is primarily a textual service but it produces a number of statistics such as political stability and exploration activity. All of these ratings are calculated on a per country basis. It became obvious that these attributes were key targets for a layer. Rather than providing lists of ratings it would be possible to



shade different countries according to their individual ratings. This would provide an easy-to-understand graphical representation of the data and provide the user with a relevant point from which to go into further PEPS content or even just cut and paste a high impact image into a PowerPoint presentation. Within a month of release this workflow is already proving popular with existing clients and is attracting new ones. It is a workflow only made possible through spatial enablement and content integration. The user can suddenly get a complete over-view from one application.

At the same time as adding the PEPS content IHS Energy chose to take the GEPS and data contents to a new level of integration. They had previously only been joined at country level but the use of unique identifiers made is possible to link map-based entities such as fields and wells with their textual equivalents in the Lotus Notes environment of GEPS. This makes the user's workflow greatly simplified as they can go straight to locally relevant content where it exists.

The release of this level of integration is another example of a workflow-win for the clients and a technology test for IHS Energy. In creating this capability we are able to assess the real importance of this level of spatial integration to our clients and determine



the next steps. A number of possibilities present themselves. Most focus on the use of the map to deliver more information - perhaps the shading of fields and wells according to whether or not they have recent editorial content associated with them. One thing is certain - the ceiling for use of this technology is not yet reached. It will be important however to stick with the original

aims - ease-of-use and relevance-of-data. If the integration is achieved incorrectly then the user will face an information overload and the application will lose those benefits which enable quick-wins.

To prevent data overload the user is provided with a series of tools which interact with the layers and content. Preferences are a recent addition to the users' tools. These allow the user to set certain criteria and those criteria are then applied to relevant layers. The data is filtered and the user sees exactly what they have asked for. By removing the non-relevant data the user can more quickly execute their workflow. A full suite of graph, report and export utilities complete the line-up. The user can interact with the map and then use other tools to complete their visualisation of a given situation. To help create high impact maps there are comprehensive projection-shifting, labeling and printing tools. All the tools linked to the map are easy to use. This is achieved by offering a subset of the most commonly used features and remembering that EDIN-GIS is about delivering integrated content in a spatially enabled context rather than providing a suite of cartographic or analytical tools.

A project management tool is also provided. This stores the map co-ordinates (spatial bookmarking), the visible layers, the active layer and preferences. It is important to remember that a key value of using ArcIMS is that the latest content can be provided online. The project manager stores the attributes which define the map, but not the data. This means that the map can always be reproduced within 3 clicks of starting the product and with the latest content. This is a workflow which was previously very intensive and has been greatly streamlined through the release of EDIN-GIS.

IHS Energy is now working on the future. This includes lessons learned from EDIN-GIS. The new product suite will build heavily on ESRI's latest architecture both for locally installed solutions and for internet delivery of data. The ability for clients to plug their own local ArcIMS customisations into IHS Energy's online databases is being considered as web services are created and enhanced. Newer technology enables more simple yet powerful integration and client feedback tells us that their thirst for more comprehensive integration will not be satisfied for some time to come.

Summary

In this paper we have seen how customer and market demands for online data, data integration and simplified but thorough data accessibility were brought together to create EDIN-GIS. This product utilises a strong spatial element built around ArcIMS to greatly facilitate a number of key workflows. Through a web-browser requiring no installation clients can now view large portions of their content subscriptions from one point of access and with considerable ease-of-use.

Usage information and feedback shows that this strategy is paying dividends. It has taken the content to end-users and started to erode the dependency on local power users. It has also enabled users to work when traveling without having to rely on static local datasets. The clients are benefiting from greater value from their subscriptions to IHS Energy content. IHS Energy is benefiting from increased usage, penetration into new user groups and greater contact with end-users. Both client and vendor can appreciate the power of delivering integrated content through online map services.

EDIN-GIS represents the first steps for IHS Energy's international division in the provision of such online services. The next steps look as challenging and interesting as the first ones and the boundaries for using these services are still created through our imagination rather than technical limitations.