

Title

Managing Enterprise ESRI Software Licenses - An ArcObjects Solution

Authors

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Abstract

The Royal Borough of Kensington and Chelsea, London, is a local government user of ESRI software. In the United Kingdom, prices of ArcView software are about 75 percent higher than in the United States. The costs are one reason why we have developed an innovative ArcObjects application that manages our floating corporate licenses. At its simplest level, it allows us to fairly apportion maintenance costs to 120+ users of ArcView and its extensions.

Other advantages mean we can manage all licenses on one server, yet still reserve licenses for particular groups or individuals. Reports let us monitor software usage and manage growth.

Overall, the solution helps our organization get the maximum usage from ESRI's powerful software while reducing the need for departments to purchase additional licenses in an uncoordinated way.

Introduction

The Royal Borough of Kensington and Chelsea (RBKC) is a central London local government authority and one of 33 London Boroughs covering the greater London area. The Royal Borough covers five square miles and is an area of enormous historic and architectural interest, renowned for its handsome residential streets and green spaces. The Borough is also home to numerous embassies and many London landmarks such as Kensington Palace and The Natural History Museum.

RBKC has been using GIS for over a decade and like many UK Local Authorities GIS initially grew within the Planning department. However, with pockets of GIS growing within individual business groups it was soon recognised that a corporate approach was need. The Property and Land Applications team (PLAT) was created in 2000 to maintain and develop the Corporate Land and Property Gazetteer (CLPG) and also take on the role of a Corporate GIS Unit. A GIS User Group was established in January 2001 that included membership from each of the Borough's five business groups and GI audit was carried out to help identify key issues for a GIS Strategy.

Six years on and PLAT are physically located within the IT department,

reflecting the fact that GIS and the CLPG are fundamental aspects of the Borough's IT strategy. The team is now responsible for desktop and web based GIS support and development, maintenance and delivery of many corporate datasets including the CLPG and the dissemination of all GI datasets within the council.

Context

Historically there has been a variety of GIS software (ESRI, MapInfo and GGP) in use at RBKC. However this situation became unsustainable due to the requirements to maintain data in three different formats. The corporate approach adopted is the use of ESRI software. The process of migration of users from other systems to ESRI is an ongoing process and is being undertaken by PLAT through promotion, in-house training, support, provision of application development and map production services.

Currently, a suite of enterprise software products (ArcGIS v9.1, ArcSDE v9.0, ArcIMS v9.0) is used to satisfy the data, analysis and mapping demands of a growing user community. At present there are 97 ArcGIS desktop users within 5 business groups around the council.

Department	Users
Corporate Services	11
Family & Children's Services	7
Housing, Health & Adult Social Care	10
Planning & Conservation	11
Transport, Environment & Leisure Services	58

Table 1. Distribution of ArcGIS Users at RBKC

The continued increase in demand for ArcGIS desktop usage has resulted in the requirement for more licences to be made available to meet the needs of the user community. The current trend of ArcGIS licence acquisition by PLAT is towards consolidation of concurrent licences into the corporate pool rather than the procurement of single use licences.

Product	Licences
ArclInfo	0
ArcEditor	6
ArcView	28

Table 1. Corporate Pool of Concurrent ArcGIS Licences

Product	Licences
3d Analyst	1
Network Analyst	1
Spatial Analyst	2

Table 2. Corporate Pool of Concurrent ArcGIS Extension Licences

Licence Charging

The annual maintenance cost of software licences for the supported GIS applications has steadily grown to approximately £20,000. This cost had previously been borne by PLAT's general budget. The increasing financial burden had limited our options to spend elsewhere on GIS infrastructure. In February 2005, the IT User Group (ITUG) approved the introduction of new charges for the use of GIS software licences.

The charge and method of sharing a pool of licences has been introduced in such a way to reduce the overall cost to the organisation and to individual departments if they were to buy and maintain GIS licences separately. Corporate licences are available to everyone although single users or groups of users can take ownership of corporate licences by payment of the cost of annual maintenance. Such licences are then reserved for their sole use even though the licence remains in the corporate pool. Other users have access to corporate licences for which they are charged for in a pay-as-you-go scheme.

Therefore when a user wants to access GIS we record the length of time they use the software and will use this to calculate a fair share of the total cost of maintenance. Users are charged relative to the proportion of the total software usage time that was attributed to them. The total annual licence maintenance cost is then divided up according to these proportions to give each user a fair cost. However we are not aiming to make a profit out of our users, thus the maximum charge a user can incur is capped at the cost of maintaining an individual licence. For low users (<20 hours usage) we charge a flat rate of £1 per hour.

ArcObjects Solution

In order to manage this arrangement the PLAT team has developed an in-house software solution. The 'ArcGIS Licence Manager' software is a VB6 ActiveX DLL that is packaged into Microsoft Windows Installer (MSI) file and is deployed as an ArcGIS v9.x extension to target PCs around the council using WinINSTALL. Its purpose is to log ArcGIS usage.

The system is based on a backend SQL Server 2000 database. This database contains information relating to users, PCs, licences, licence groups (i.e. licences can be reserved for use by specific users or groups of users) as well as logs in which a variety of data is collected including information on the application (ArcMap, ArcCatalog, ArcScene), the startup time, the shutdown time and the elapsed time. Permissions are also controlled through this database and thus ArcGIS cannot be used unless the user information is in the database and the relevant licence permissions are set.

The 'ArcGIS Licence Manager' tracks both licence usage (sessions) and application usage (processes). Both sessions and processes are logged via IExtension::StartUp and IExtension::ShutDown methods. During ArcGIS

application startup the licence management software checks to see whether any other ArcGIS applications are running on the PC with IAppROT::Count. If this returns none the software records that a licence for the appropriate product (ArcView, ArcEditor, ArcINFO) is now in use in the database. A new session and process are logged, and associated information, including the licence identifier is also recorded in a custom interface ISessionInfo that is implemented by IExtension.

If there are other ArcGIS applications running on the PC the software retrieves the identifier for the licence in use via the ISessionInfo::LicenceID method from IAppROT::Item. In this case only a new process and associated information is logged in the database. Again the licence identifier and associated information is also recorded with this application in the custom ISessionInfo interface.

During ArcGIS application shutdown again the licence management software checks whether there are any other ArcGIS applications running on the PC with IAppROT::Count. If there are none the licence (identified by ISessionInfo::LicenceID) is released in the database and thus becomes available for another user. The relevant session and process are also closed. If there are other ArcGIS applications running neither the licence is released nor the session is closed. Only the process is logged as finished.

Occasionally the 'ArcGIS Licence Manager' database and the licence server get out of sync due to a user experiencing a crash. In this situation a licence gets locked as the IExtension::Shutdown method does not get executed, thus the shutdown and elapsed times do not get logged. This problem is caused by the custom application being run as an in-process DLL, therefore when ArcGIS crashes the licence management software also crashes. This is a problem we are currently trying to solve through redeveloping the application as an out-of-process ActiveX EXE that is run as a service.

Benefits

The 'ArcGIS Licence Manager' system has been up and running for approximately 6 months. During this time we have been able to monitor ArcGIS usage around the council. The data that we receive can be drilled into to identify trends in licence, departmental and user usage, etc (Figures 1, 2, 3, 4, & 5). Therefore providing us with a tool to target training and support to users, and promotional activities to departments. We can also supply quarterly reports on the estimated annual charge based on the pattern of usage by your staff compared to all users (Figure 6).

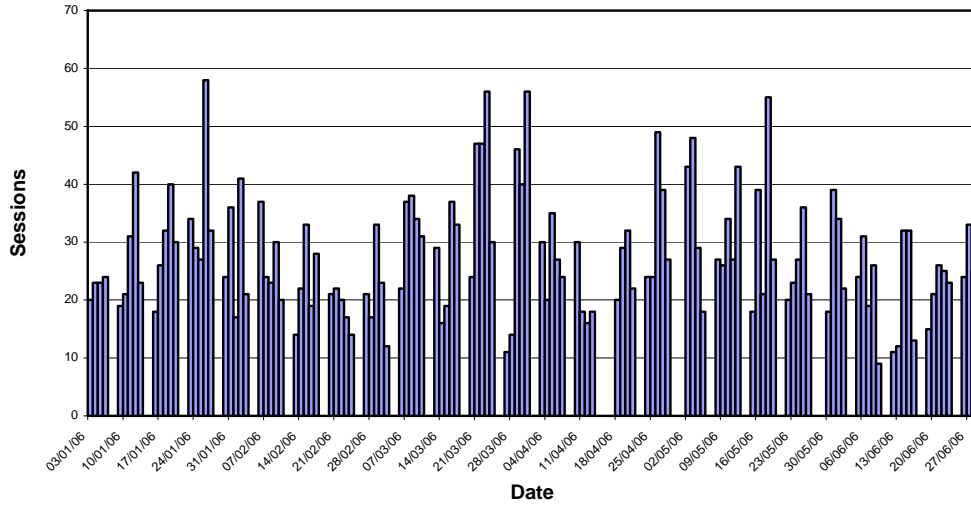


Figure 1. ArcGIS Usage, Total Sessions / Day (Jan 2006 - Jun 2006)

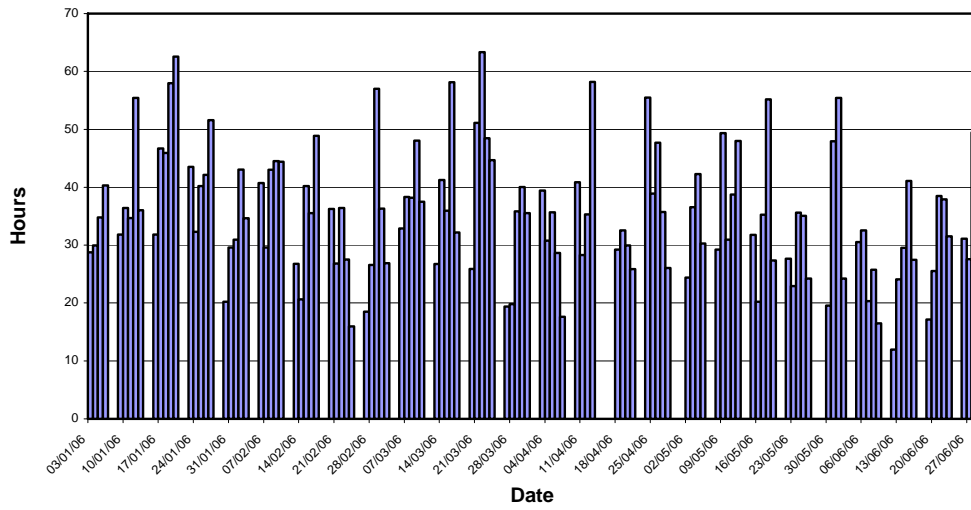


Figure 2. ArcGIS Usage, Total Hours / Day (Jan 2006 - Jun 2006)

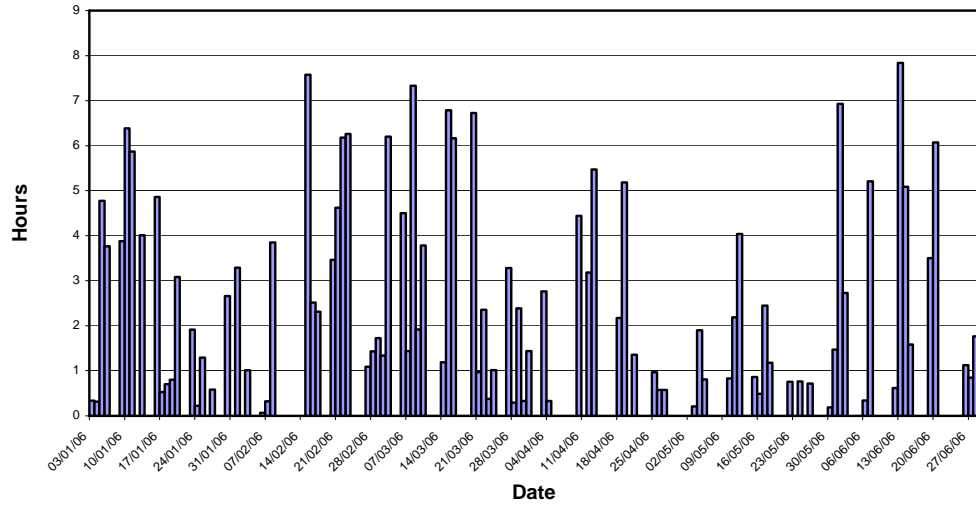


Figure 3. ArcGIS Usage, Dept Hours / Day (Jan 2006 - Jun 2006)

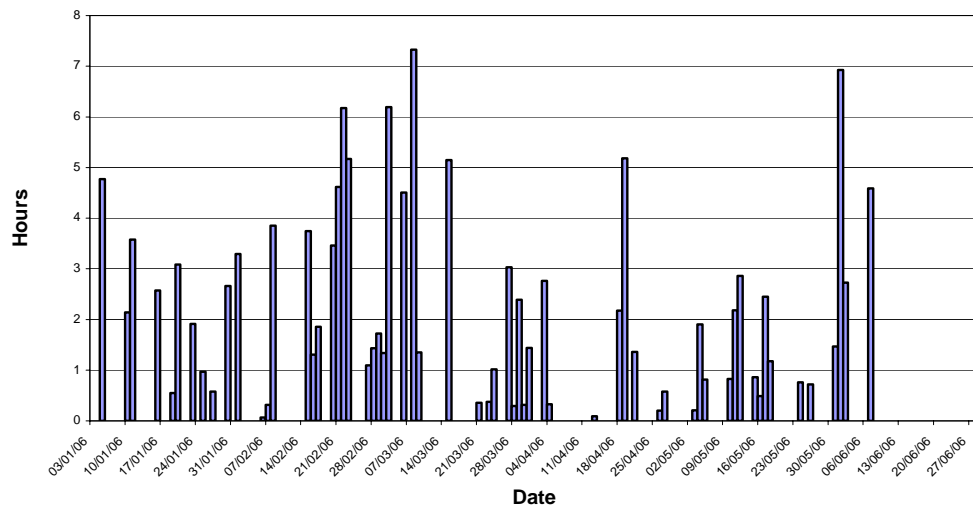


Figure 4. ArcGIS Usage, User Hours / Day (Jan 2006 - Jun 2006)

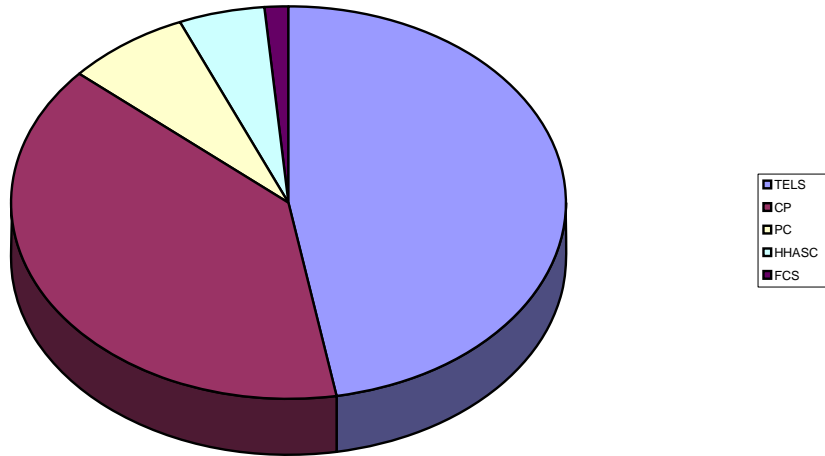


Figure 5. ArcGIS Usage, Total Hours / Dept (Jan 2006 - Jun 2006)

Sample ArcView GIS Licence Billing (please refer to attached note)										
Total Hours		1181.8								
Total Cost of Licences		4233 (As agreed this is total cost £16,700 apportioned to Dec - Mar)								
Department	Manager	CostCode	User	Hours	% share	share of total charge	actual charge	saving		
SC3VHIGHWAYS SUP	Tony Pugh	Y7210	John Shage	107.5	9.1	502	401	198		
SC3VHIGHWAYS SUP	Tony Pugh	Y7210	Tony Pegrum	11.6	1.0	63	12	51		
SC3VHIGHWAYS SUP	Tony Pugh	Y7210	Thomas Powell	8.0	0.8	22	4	18		
SC3VHIGHWAYS SUP	Tony Pugh	Y7210	Simon Money	1.1	0.1	6	1	5		
SC3VHIGHWAYS SUP	Tony Pugh	Y7210	Sebastian Krosch	0.9	0.1	5	1	4		
SC3VHIGHWAYS SUP	Tony Pugh	Y7210	Stephen Baker	0.2	0.0	1	0	1		
Corporate user - as agreed, charge capped at cost of individual licence							Filtered Total	419	265	
Corporate user - pays share of total charge										
Low user - less than 20 hours, charged £1 per hour introduction										

Figure 6. Sample Billing Spreadsheet

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