Educational Consulting Firm (ECF) and GIS

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Abstract

Educational Consulting Firm (ECF) is committed to providing services to international agents in effective student placement. ECF will utilize GIS to facilitate a resource specific to global education needs, going well beyond a traditional style of consulting. Currently, agents move from one website/directory to another seeking to identify the most qualified educational institution matching the client's preferences. The product connects all of the various directories and allows the agent to query schools based on location, programs, SEVP approval, and accreditation status. The outcome matches the preferences of the student client, ultimately saving time, staffing, research, and money.

In the world of education-related consulting, a wide range of services are available. Many consultants focus on the needs of the student or parent in search of schooling options including day schools, colleges, specialized programs, etc. Other consultants exist to serve the educational institution offering assistance with development of policies and procedures, curriculum and instruction and services related to school accreditation.   In addition to many of the traditional services referenced above, Educational Consulting Firm (ECF) is committed to providing services to international secondary schools and international agents in the development of enrollment and effective student placement. ECF, focused on serving students and schools in Southeast Asia, will enlist the assistance of Geographic Information Systems (GIS) to facilitate a resource specific to global education needs, going well beyond a traditional style of consulting.

International secondary schools seeking to expand enrollment are well advised to utilize research-based information to make key decisions relating to the best marketing approach. The costs associated with random marketing could be prohibitive with no guarantee of positive results. International agents face the same issue typically relying on word of mouth to grow their business. Agents also depend heavily on networking through the various international education fairs but again, the expense involved with travel and rental space does not always prove to be valuable due to the wide and random approach.   For both entities, the ability to utilize specific criteria to identify potential clients would be a cost effective way to increase enrollment and build revenue.

Providing a resource with map segmentations of Southeast Asia identifying potential clients based on median household income and household size in a similar format available in the United States would offer schools and agents the ability to target potential clients in a much less random manner than just being present at an educational expo. However, melding this type of identifying information with mapping capabilities via ArcGIS is met with the challenge of limited or restricted statistical information. Currently, each country's statistical data is managed separately and provided in non-uniform reports. The U.S. Department of Census offers a listing by website for each country's statistical reporting resource (United States Census Bureau, 2012).   For example, China's statistical reports are available for purchase from the National Bureau of Statistics of China in excel or html format which would lend itself nicely to setting up the attribute data necessary for that area (National Bureau of Statistics of China, 2012). Statistical reports are also available broken down by city as indicated in the Hong Kong Annual Digest of Statistics (Government of the Hong Kong, 2012). Common denominators would need to be established and then information gleaned from each source based on that criterion. Unfortunately, at this time, creating a database with this information would be cost prohibitive for a small business due to the tremendous amount of research and staffing necessary.

Interestingly enough, wide scale mapping at the international level is in development through a program launched by the United Nations called Second Administrative Level Boundaries (SALB) (United Nations, 2012).   Still in infancy stages and under development strictly on a volunteer basis, the goals of this agency are to provide "access for the collection, management, visualization and sharing of sub national data and information in a seamless way from the national to the global level" (United Nations, 2012).   Based on this information, the future collection of census related data from country to country may become more standardized and less expensive to synthesize.

A more viable resource option utilizing GIS, at least with today's technology, is directed specifically to agents representing international students. Locating the best suited secondary school, whether international or in the United States, can be an arduous task.   Operating mainly by word of mouth referrals, an agent's reputation hinges on the successful placement of their student client. On an individual basis, agents move from one school website to another obtaining school profile information. Another critical factor in identifying a qualified educational institution is checking the school's accreditation status. Agents travel to each of the six regional accreditation agency websites to search directories of accredited secondary schools. For international schools, accreditation status can be obtained by accessing one of four directories. Further, for international students desiring to enroll in a secondary school based in the United States, a specialized student VISA is required. To obtain this VISA, the school offering enrollment must be authorized by Homeland Security to issue the I-20 document and as such, approved through the Student Exchange Visitor's Program (SEVP) (United States Department of Homeland Security, 2012). International agents search the SEVP directory by school name to confirm SEVP approval or they can download an alphabetical list hundreds of pages long. Lastly, a final step is needed to visually see the locations of the schools as they relate to the student client's preferences. As it stands now, agents perform this task manually.

After interviewing Mr. David Han, International Student Director at Arrowhead Christian Academy in Redlands, California, I learned ECF's product, which would pull all of these steps together, has the potential to become a very valuable resource (personal communication, December 2012). Mr. Han communicated that at present, there is no central database to obtain this information (personal communication, December 2012).   The product proposed by ECF would connect all of the various directories and allow the agent to query schools based on location, programs offered, SEVP approval, and accreditation status utilizing their student client preferences. The outcome would provide international agents with a direct listing of schools matching the preferences of their student client which would ultimately save time, staffing, research and cumulatively, a lot of money.

Geographic Information Systems (GIS) require a database of attributes, spatial information and some way to link the two elements (Pick, 2008).   ECF's product would connect these vital elements offering a useful and desired resource. The design for this product would be object-oriented (OODM) and operate within Spatial Web Services architecture. Spatial Web architecture will allow for quick exchanges of information between multiple spatial and non-spatial services. The OODM provides three types of relationships, "aggregation, generalization and particularization" (Bhalla, 1991).   At the same time, data operations within an OODM provide a mechanism for "defining schema, creating database, retrieving objects and expanding objects" (Bhalla, 1991).   The product proposed in this project requires all of these operations and the menu will allow the user to set specific criteria and extract the information desired without any additional work on the part of the database or operator.

Within each accreditation agency's website, a directory of member schools is accessible including name, location, grades served, accreditation status and the school's website address (Figures 1 and 2).

Figure 1
WASC Accrediting Commission for Schools
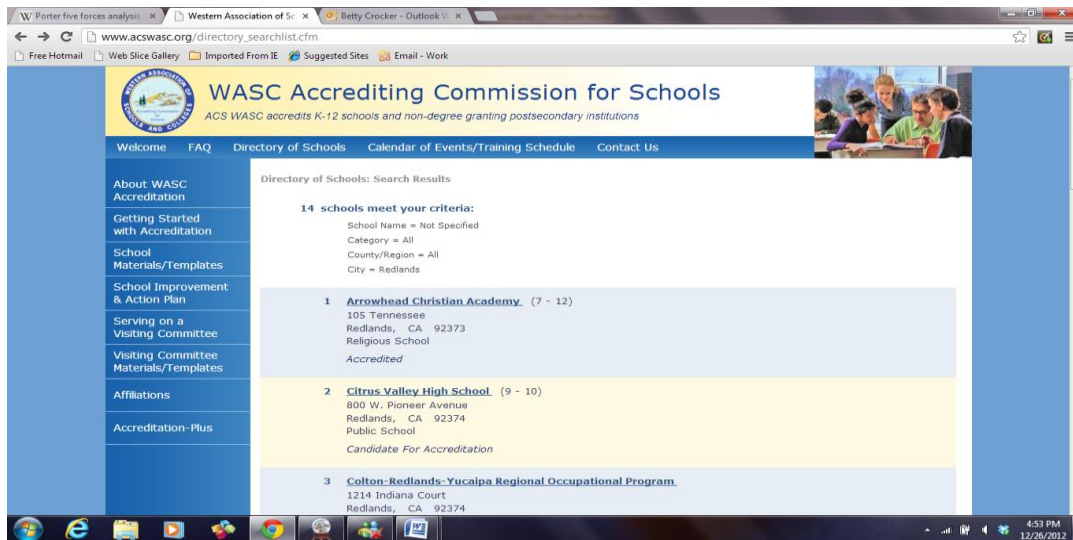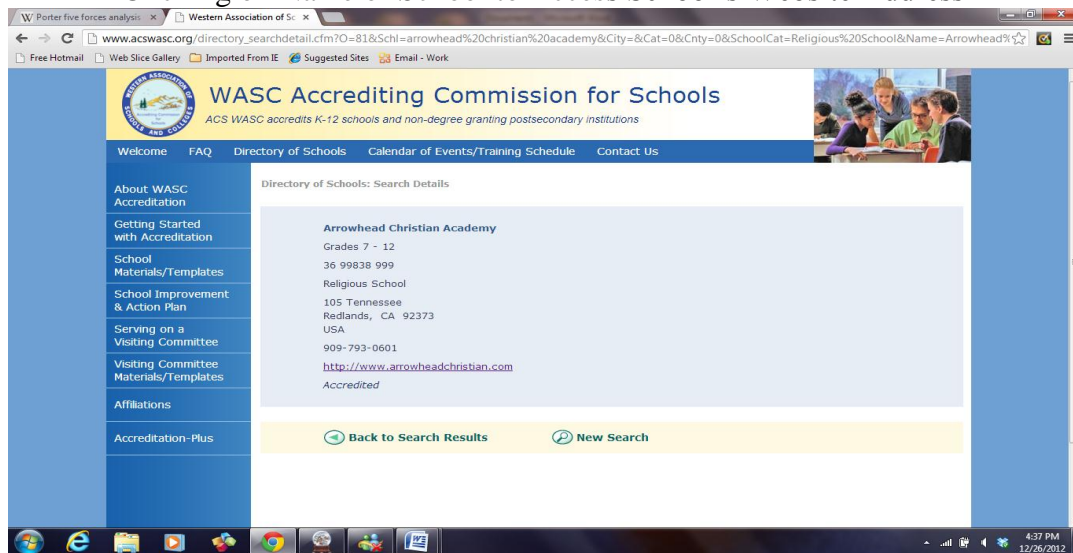Search for Schools in Redlands

Figure 2
WASC Accrediting Commission for Schools
Clicking on Name of School to Access School's Website Address

Another resource for agents to locate and identify international schools comes by way of online directories offering lists of international schools by regions. Similar to the accreditation agencies, searches within these directories result in location information and access to the school's website (Figure 3).

Figure 3
Council of International Schools Directory
Search of International Schools in South Korea.
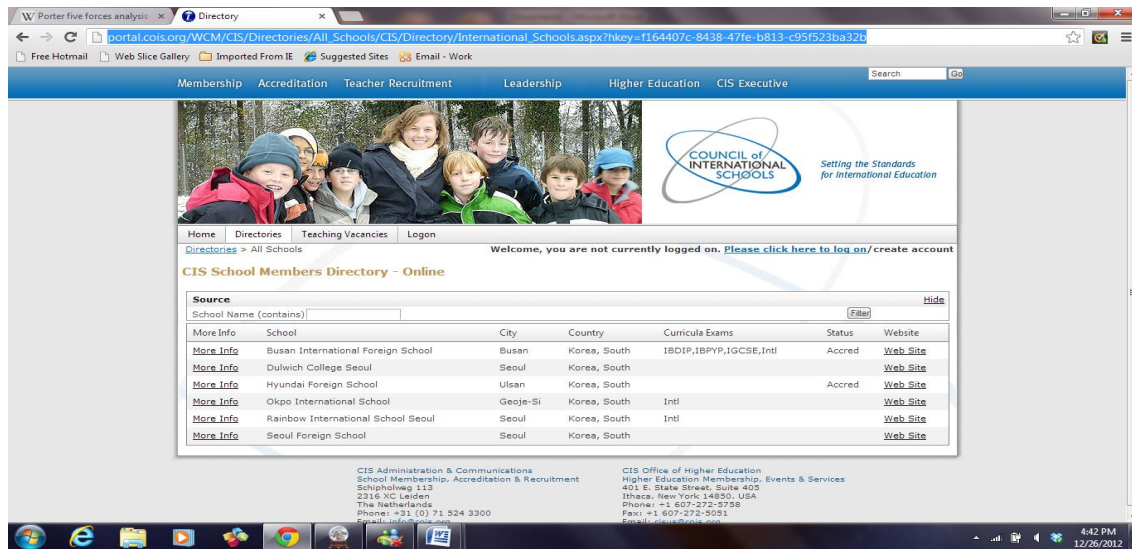
An additional element of information is necessary to identify U.S. schools accepting international students. The accepting school must be approved by the U.S. Department of Homeland Security to issue the I-20 authorizing the student to seek an F-1 VISA. SEVP approved schools are listed within the searchable directory on the Department of Homeland Security website, accessible to the public and updated on a weekly basis (Figure 4).

Figure 4
United States Homeland Security
Directory, SEVP Approved Schools
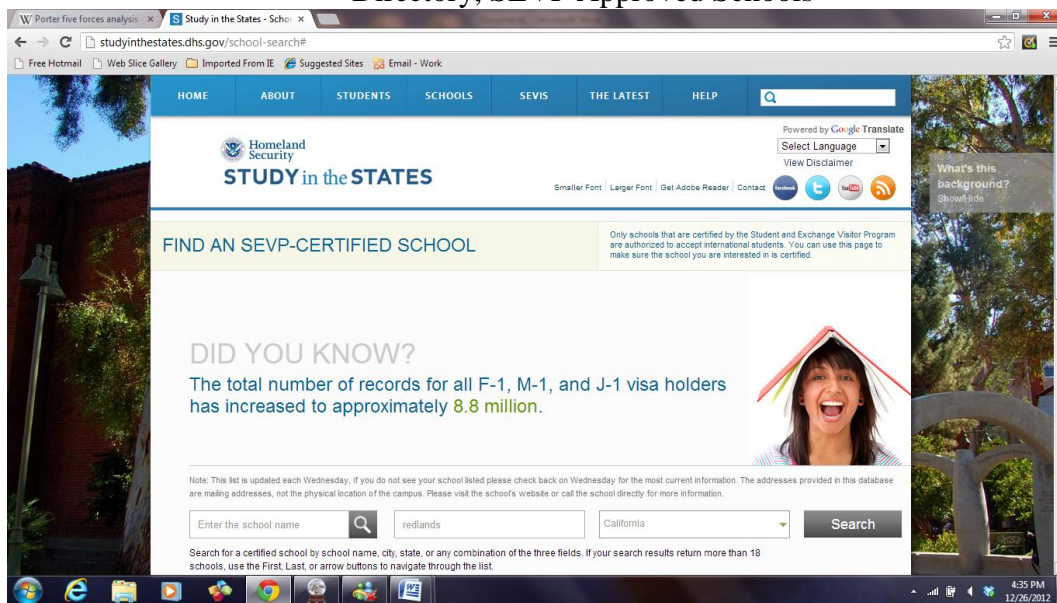
The connections of these directories and others related to the process are not only essential to the product but ultimately become the real cost saving element in the whole structure. By utilizing the searching capabilities of other databases, ECF is not required to store or maintain all of the various data, thereby reducing expenses associated with data storage.   ECF staff would build a model connecting these searchable databases to mapping options within ESRI's ArcGIS or a similar structured program. The outcome would offer specified searchable criteria, connected to school address information which has been geocoded to enable the results to be viewed visually on a map.

There are many advantages that come with the presentation of a map offering a visual display of the results of a search. Not only could the international agent visually verify that the schools listed matched the location preferences, by hovering over each point on the map, the agent would see the school's name as well as the remaining queried preferences.

In the following figures, the attribute data is presented in tabular form and then displayed visually as points on the map representing schools queried in San Bernardino and Riverside counties (Figures 5 and 6).   In this example, the agent would have entered the following criteria:

|	
Preferred Area	Southern California
	San Bernardino/Riverside Counties
Accreditation	WASC
SEVP Approval	F VISA
ESL Classes	Indicate Status (Yes or No)
Sports Programs	Indicate Status (Yes or No)
Music Programs	Indicate Status (Yes or No)

Based on this information, a school list is generated revealing the name of the school, street address, city, state, zip, accreditation status, F VISA approval and whether or not the school offers ESL, sports or music programs.

Figure 5
Attribute Data

School Name	Address	City	State	Zip	Accreditation	SEVP	ESL	Sports	Music
Ontario Christian School	931 West Philadelphia Street	Ontario	CA	91762	WASC	F	No	Yes	Yes
Western Christian School	100 West 9th Street	Upland	CA	91786	WASC	F	Yes	Yes	Yes
Arrowhead Christian Academy	105 Tennessee Street	Redlands	CA	92373	WASC	F	Yes	Yes	Yes
Upland Christian Academy	10900 Civic Center Drive	Rancho Cucamonga	CA	91730	WASC	F	No	Yes	Yes
Linfield Christian School	31950 Pauba Road	Temecula	CA	92592	WASC	F	Yes	Yes	Yes
Woodcrest Christian School	18401 Van Buren Blvd	Riverside	CA	92508	WASC	F	No	Yes	Yes
Loma Linda Academy	10656 Anderson Street	Loma Linda	CA	92354	WASC	F	No	Yes	Yes
The Webb Schools	1175 West Baseline	Claremont	CA	91711	WASC	F	No	Yes	Yes
Packinghouse Christian Academy	21765 San Bernardino Avenue	Redlands	CA	92374	WASC	F	No	Yes	No
Calvary Chapel Christian School	24225 Monroe Avenue	Murrieta	CA	92562	WASC	F	No	Yes	Yes

Next, the information included in the tabular structure (Figure 5) is linked by address identification and shown spatially on the following map (Figure 6).

Figure 6
Southern California Map of San Bernardino/Riverside County Schools
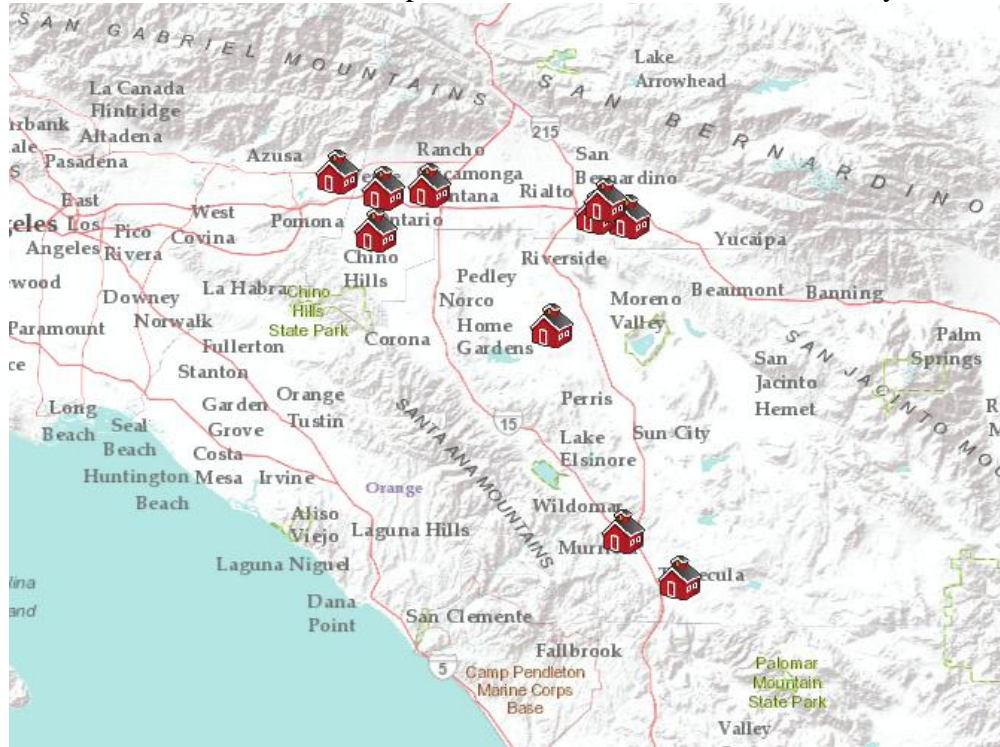
Another advantage of seeing the results identified on a map is the instant recognition of nearby locations. The visual display of their locations allows the agent to quickly glean information regarding surrounding areas and potential highlights which would assist in "selling" a Southern California school location to clients. From the map above (Figure 6), an agent would be able to sell his client on the advantages of choosing a location closer to the beach (Linfield Christian) or one closer to the mountains (Arrowhead Christian Academy).

A factor critical to the international parents sending their children to the United States for educational purposes is related to the quality and appropriateness of a potential host family. The ideal host family has children of their own around the same age as the international student and also possesses a similar view as to the importance of a strong education. To this end, taking spatial analysis a step further, an agent would be prudent to analyze the area surrounding each potential school location. By utilizing tapestry segmentation, offered as an additional benefit by ECF, international agents would be able to assure the parents of their international student clients that the quality of families within each school's surrounding area met their desired criteria.

Based on ESRI's Tapestry Segmentation definitions (2012), two of the segmentation groups most appealing in the selection of potential host families are Segmentation 12, Up and Coming Families, and also Segmentation 19, Milk and Cookies. Both are part of the larger Family Portrait LifeMode Group and represent younger, more affluent families living in a suburban

environment and having a focus on family (ESRI, 2012). Families within the Family Portrait LifeMode Group have the broadest income scale and therefore, would most likely offer a wider diversity of living situations and family structures as a result.

The following map shows the queried school locations with an overlay of the tapestry segmentation for Up and Coming Families (Figure 7).
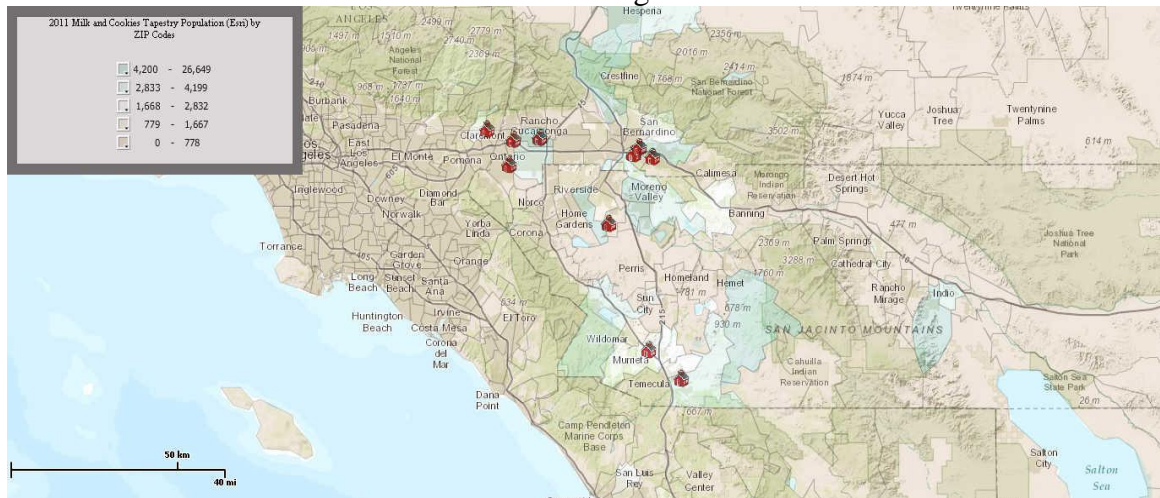
Figure 7
Up and Coming Families – Segmentation 12
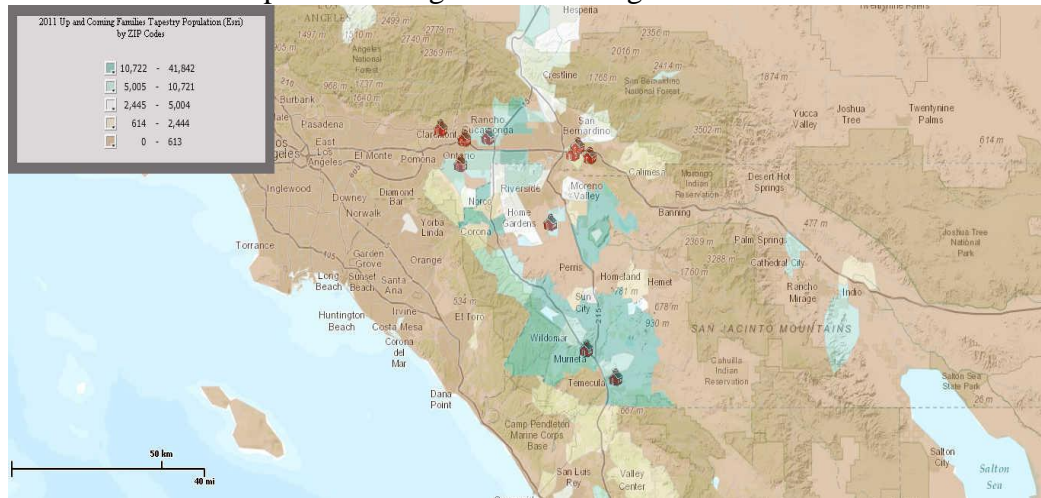
Based on this information, the areas of Murrieta, Temecula and Rancho Cucamonga have a larger concentration of the Up and Coming Families.

The following map shows the queried school locations with an overlay of the tapestry segmentation for Milk and Cookies (Figure 8).

Figure 8
Milk and Cookies – Segmentation 19

The map showing the Milk and Cookies segmentation reveals pockets of families matching this criterion within the surrounding area of each potential school location. After reviewing the results of both of these maps, international student agents would get a better sense of the neighborhoods around each potential school location. Ultimately, their recommendations would be based on more than just looking at a school's website or viewing the location on a map.

The implementation of this product would be accomplished through a variety of methods. In much the same way individual agents would use the product, ECF would use the system for direct marketing.   First, by accessing the international and U.S. school data, targeted marketing to these schools would get the word out as to the benefit of agents finding their school and matching it to their student clients. This step would secure potential advertisers for the website as they seek to grow enrollment by gaining the attention of agents using the resource. Connecting with international agents would be a bit more difficult but certainly not impossible. The main avenue for winning over the international student agents would be to market to the associations to which these agents belong.   For example, ICEF connects educators and education agents to associated networks worldwide (ICEF, 2012).   Gaining the confidence of associations, ECF will attract international agents to this valuable resource.

After initial implementation, the benefit of this product will far outweigh the start-up costs. Initially, the tangible costs would be extensive including increased staffing for product development, data collection, mapping software and associated hardware designed to manage the data, and other related expenses. However, tangible benefits of this GIS related product would be immeasurable to those in this field.   For international agents, productivity and performance would be significantly improved resulting in more successful student placements and ultimately more clients.

Maintenance of the product would involve the careful planning and monitoring by way of beta testing. ECF would implore a handful of agents to participate in the product's beta testing utilizing their feedback to drive adjustments and also to develop a roadmap for future updates and upgrades.

Looking at ECF as a whole, this resource, provided for use by international student agents, would create a continuous stream of revenue by charging agents an access fee and/or by selling advertising space on the company's website. Both options have their advantages and disadvantages. However, each time an agent is encouraged to access the product, their attention is being pulled to ECF's website and there would be strong potential for additional business opportunities within the context of educational consulting.

To get a better idea of the viability of ECF's product as a business investment, Porter's Five Forces Model (Figure 9) provides a categorized view of the potential (Mind Tools, Ltd, 2012). Although much of the information necessary for this GIS product is gleaned from other sources, the power of the suppliers is insignificant as their directories are already publically accessible. Further, the only alternative the buyer or international agent has outside of this product is to rely on conducting their business as they have done for years. As such, the threat of substitution is also minimized as they would have to return to the arduous process of searching individual databases and compiling their own lists expending enormous resources on time and

staffing. In light of this alternative and also the fact that there is the potential for a larger number of buyers or agents as customers, the power of the buyer is also quite insignificant.

Figure 9
Porter's Five Forces Model
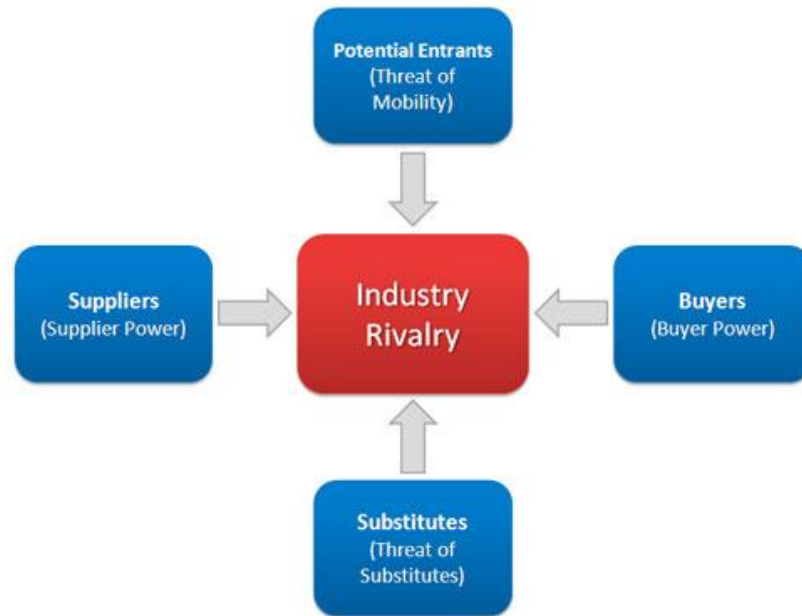
Although there is always a threat of new entry, the start up costs associated with ArcGIS and other expenses would offer a strong barrier. As well, there is a specific knowledge needed to discern where to find the desired information and how to make all of the connections. Reviewing the four elements above, one could conclude that competitive rivalry might be a consideration for the future. However, there is a strong unlikelihood of another consulting firm having the ability and knowledge to provide this resource. Should the resource be offered free of charge with a contractual advertising obligation, the competitive rivalry lessens even more.

After examining this product using Porter's Five Forces Model (Mind Tools, Ltd, 2012), investing in Educational Consulting Firm's GIS product would garner strong potential with tremendous opportunities for financial gain. The development and implementation of this product has the potential for extending a powerful resource to this industry with very little risk.

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