UNIL | Université de Lausanne
Faculté des géosciences
et de l'environnement

Monitoring Education in Ecuador

Education GEOVIEW

https://dmarinoc.github.io/GEOVIEW/Root/

Final Report

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Contents

INTRODUCTION

The portal for monitoring education in Ecuador is named Education GEOVIEW. It's divided in three sections: "main page" that present generalities about Ecuadorian education, a second section called "statistics" incorporates a geographic and statistical framework about the distribution of schools in each province, to evaluate the proportion of students over teacher. The third section is called "view", that presents thematic cartography of education and socio-economic issues, with the option to upload WMS layers, and obtain official statistics from the statistic service "SIISE".

The hypothesis is to realize an inequality in the number of students that should be handled by one teacher, considering that teachers are capable of manage around 19 students at most, according to recent studies of University of Texas[1]. The possibility of having a geographical tool, give us the opportunity of analyze this hypothesis each province and compare the territorial display, and the relation with some institutional variables, as the typology of financial source.

The aim of incorporate the third view with the inclusion of WMS layers is to give extra information about Ecuadorian reality and open the opportunity that people can visualize another layers for a multi-criteria analysis. This page gives the user the possibility of analyzing by their own the official page of statistical indicators of Ecuador- SIISE, also they can compare with external WMS layer of another services.

1. RESEARCH QUESTION

1.1. Context

Since 2000, Ecuadorian government is changing education policies to improve the level of coverage and the quality of education. Indeed, Ecuador in the "Foro Mundial de Educación" in Dakar presented six goals to be accomplish in 2015. The goals were related to increase primary education, accessibility of education, equal access to young people to learning systems, reduce of illiteracy, gender equity, and improve quality of education (Araujo & Branwell, 2015).

Education is considered in Ecuador as a public service, and it has become a fundamental part of national planning programs. "Plan Decenal de Educacion 2006-2015" (Ministry of Education, 2006) and "Plan Nacional del Buen Vivir 2009-2013" (SENPLADES, 2009) included education into their programs and projects in order to solve structural problems. Since 2006, governmental investment in education has been tripled and this sector is a priority in the national strategic agenda.

The coverage of programs for primary education expanded significantly from 2000 to 2013. The Ministry of Education was reformed and it was implemented the program "Nuestro Niños", with the objective of increase the offer of modalities for child development in vulnerable populations.

[1] https://coerll.utexas.edu/methods/modules/classroom/02/howmany.php

In 2006, the coverage of primary education reached 13.2% (196000) of children under 5 years old (SIISE, 2004). The strategy to improve the coverage consisted in the creation of a national fund denominated “Fund Development Children”, which allowed the channeling of private funds to the public sector and for investment of semi-public new centers of education.

In 2011, it was approved the Organic Law of Intercultural Education that permitted the creation of different modalities of education according their ages and school level. Also, the legal framework defined guidelines to standardize the modalities of education and the educational curriculum.

For example, the Institute of Statistic and Census (SIISE, 2014) presented in 2014 that approximately 280.000 preschoolers received infantile stimulation, that represented 20.9% of children under 5 years old. Otherwise, school attendance statistics is over 21.1% for girls and 20.7% for boys, without important changes, the same for urban and rural values with 20.4% and 21.8% respectively. Regarding, the attendance in primary education has improved from 89.2% in 2000 to 96.5 in 2013.

1.2. Justification

The policies and programs were developed with the goal of improving statistical indicators, which showed a general view of Ecuadorian situation in education. National statistics improved but the situation of local communities was different. In 2013, the Institute of Educational Evaluation (INEVAL, 2013) implemented the first standardized test in the students nationwide. The results showed a large gap between educational characteristics of schools in the larger four cities and the rest of Ecuador.

The discovery of this inequality in educational service, highlighted the need to generate new methods for evaluating education. Taking as reference countries with greater success in this area, the geographical issue is an important aspect in planning. Localization of schools is an important factor to identify regions with deficient service.

The monitoring process of country's educational centers towards reaching our goal, the Ecuadorian Ministry requirements. The Dashboard is intended to spur and inform planners and authorities about how to improve educational service.

1.3. General Objective

Implement the technical methods for the visualization of geographical data, to communicate a socio-spatial problem through an interactive geographical visualization page that explain a hypothesis of a selected problem.

1.4. Specific Objectives

- Selection of a socio-spatial problem, data and indicators.
- Design of the interactive dashboard and support pages.
- Creation of databases and geodatabases using PostgreSQL, quantum GIS and ArcGIS.
- Creation of prototypes to test alternatives of development.
- Validation of the final prototype to define the quality of the presentation.
- Publication of final page.

2. CONTRIBUTION AND CUSTOMERS

Ecuador, as most of Latin American countries, has an absence of solid statistical culture. The dismantling of public planning during the eighties and nineties, coupled with financial crises at the end of the nineties, turned the production of public statistics in a loss of priority. From 2007, Ecuador started a process of reconstruction of the Ecuadorian statistical system, with emphasis on demographic information.

In 2010 Census, for the first time in history, the methodology included cartography for the survey collection data. In 2013, National Institute of Educative Evaluation- INEVAL- ended the cadastral record of educational centers that was combined with a census of socio-economics characteristics.

Geographical data has been used in the planning process for the application of standardized test. This data has a great potential for the decisional support in the evaluation of current situation of education.

According to Ecuadorian tendency, the use of geographical data is growing. Interactive visualization using cartography is a new application, which is unknown in Ecuador. Even though, there is a trend in the application of geoportal, around 495000 users in Ecuador (IGM, 2015) that use cartography and exchange data, the use of dashboards has dabbled for business intelligence without geographical application.

The application of a dashboard for presenting cadastral data of educational centers offers to Ecuadorian users, the opportunity of evaluate the data with a new method visually more attractive.

The standard user of this platform in general are project managers who are professionals, planners and authorities responsible in the development and implementation of policies, programs and projects related to education service.

3. STRATEGY OF VALIDATION

The criteria for the validation evaluates the navigation quality because we have a main page of introduction, and two pages that present geographical and statistical information, which should be complementary and support the general analysis.

In the table No. 1, the score present the average score obtained after applying interviews to ten people using ten affirmations. The categorization of score less than 2 is "Not good", 3 to 4 is "Good", 5 "Excellent" and observations presents the most important observations given by users that were included in the modification of Education GEOVIEW final version.

The criteria aspects are supported in a group of affirmations that were used as questions in the interview to users.

***Table 1** : Average results of criteria aspects*

CRITERIA: Navigation	**1**	**2**	**3**	**4**	**5**
1.-The content structure is easy to understand and navigates					
2.- Links labels text provides clear indication of where they lead					
3.-Clickable items stylistically indicate that they are clickable					
4.- It is readable, correct typeface, size, color and contrast					
CRITERIA: Design					
5.- The design of the website has an aesthetically appealing					
6.- The color is harmonious and logically related					
7.- The color choices are visually accessible					
CRITERIA: Content					
8.- Bodies of text are broken into clear information that explain the objective					
9.- The content is understandable and pertinent to the objective					
10.- The information is useful and communicates a message					

4. PROJECT DEVELOPMENT

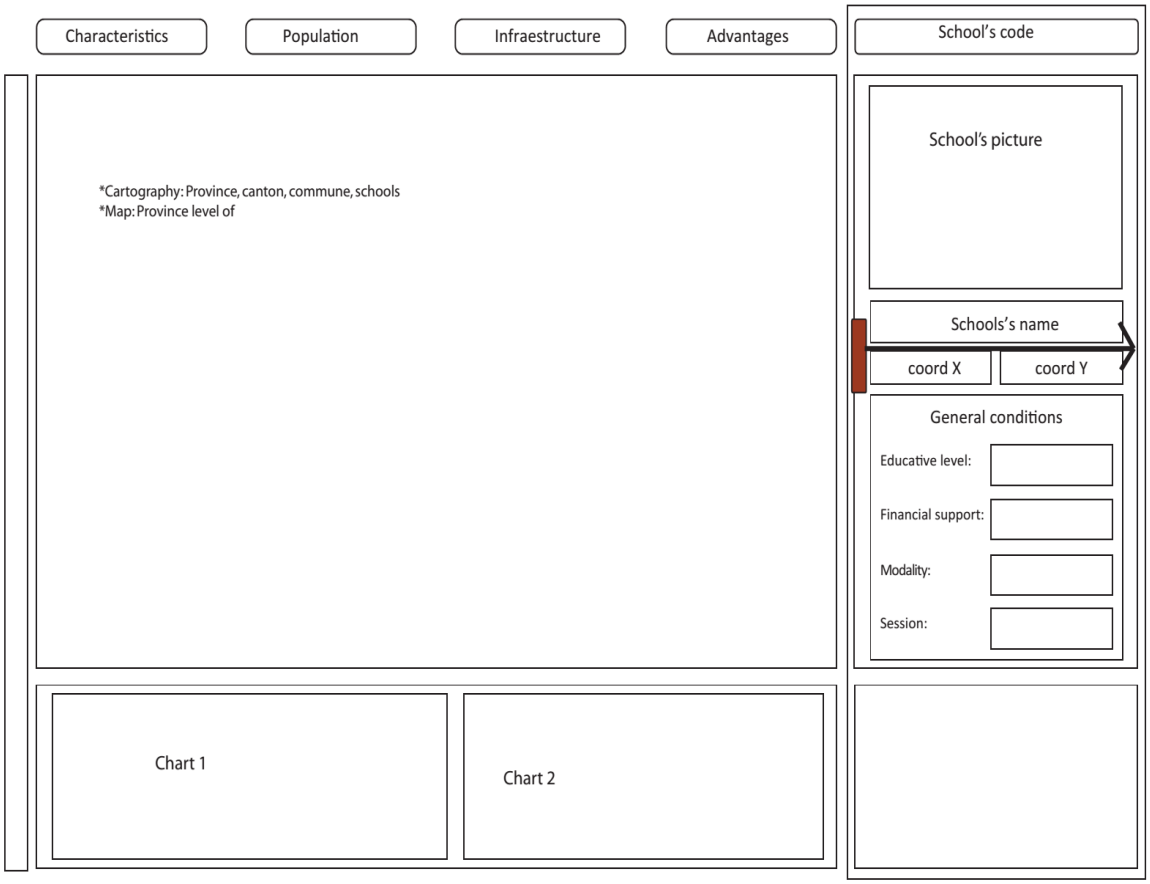
4.1. Conceptual planning

The conceptual development of the dashboard has suffered an evolution across the time. At the beginning, we started with the idea of building a tool to categorize projects, but the localization of the group of projects was not possible to obtain. It was necessary to reformulate the project and search a new topic, in the process to search for geographical data useful for our purpose, we found a group of data related to the new Ecuadorian educative policy that supported the process of standardization the process of evaluation of educative institutions.

Leaving back these limitations the goals were to develop a dashboard, that can be used for the construction of best decisions according to spatial distributions. The objective was to adapt the technology to our objective than can support our expectations, and find a method capable of giving a good visualization and interaction.

The first schema was:

***Figure 1** : First schema of dashboard*



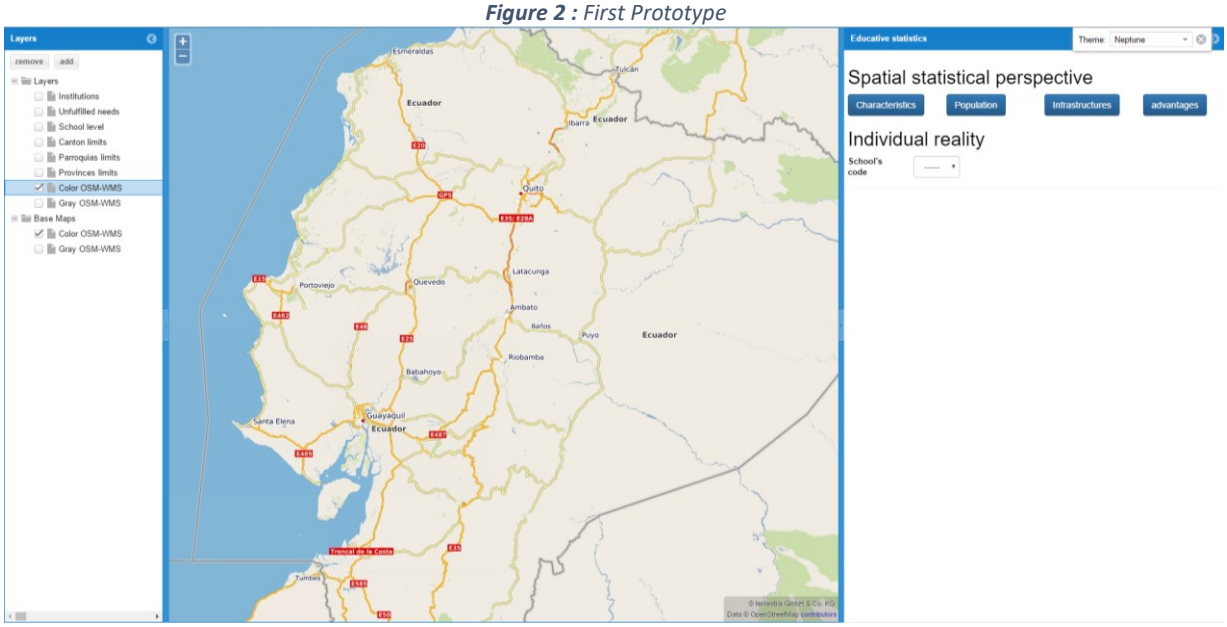
Source: Marino, D. (2016)

The first approach was centered in the construction of a dashboard. A tool with the possibility of being updated in real time, in consequence connected to a database. The process started with the analysis of technology and web pages done. We were clear that a database was necessary in order of having organize the data and have flexibility in the construction of statistics.

The first interesting option for us was the usage of geoserver that allowed us the possibility of working with wms that easily could be created using Quantum GIS. Using this perspective, we create the first prototype (Figure2) using as map display openlayers2 and geoext2 for the interactivity with a local database in PostgreSQL.

At the end of the process we realize the limitation of not having a server PHP, this aspect was a limitation for building the statistical framework, too. At the same time, we tested methodologies and technology to create charts without success.

Figure 2 : *First Prototype*



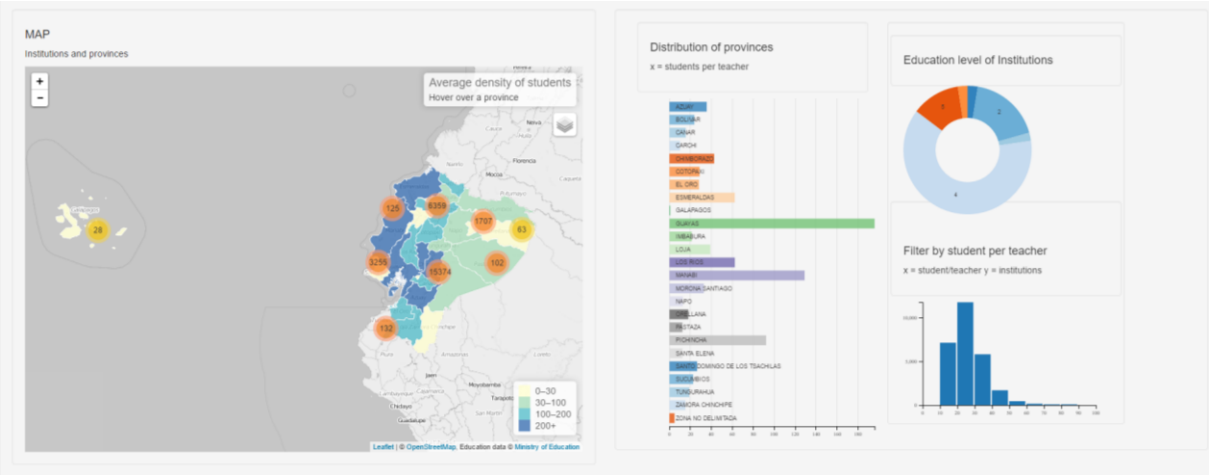
Source: Marino, D and Barik, F. (2016)

The second prototype started with the creation of WFS layers which were not the result that we expected, incompatibility with supporter computer didn't help us in the implementation of php server, that's why we re-took the efforts to obtain charts. This second prototype (Figure 3) started with the creation of a web-map using leaflet and geojson, and separately we test the method for creating charts using d3.json. After, we obtained a chart in the technology selected, appeared a new question: how to connect two charts between them?

A travel around bibliography, books, tutorials gave us many ideas, but even we tried the result was null. Finally, we understood that a graph can be connected to another if both share a common characteristic, in other words scaled information. We needed to have a database related to another in different scales. For this objective, we needed a lot of detail in one of the databases and be clear in the level of aggregation. This criterion gave us the clue to test many options of data aggregation. Fortunately, we had a database working with all data available, that supported automatically many aggregation options.

Now, the challenge was to decide which aggregation option was optimal and interesting to be presented. Some options were centered in only one category, others combinations were not pertinent because most of the data was concentrated in only on category, and others were boring for our customers. Finally, we receive an idea of the professionals of INEVAL, then we plan the strategy and at the end of the day the result was satisfactory.

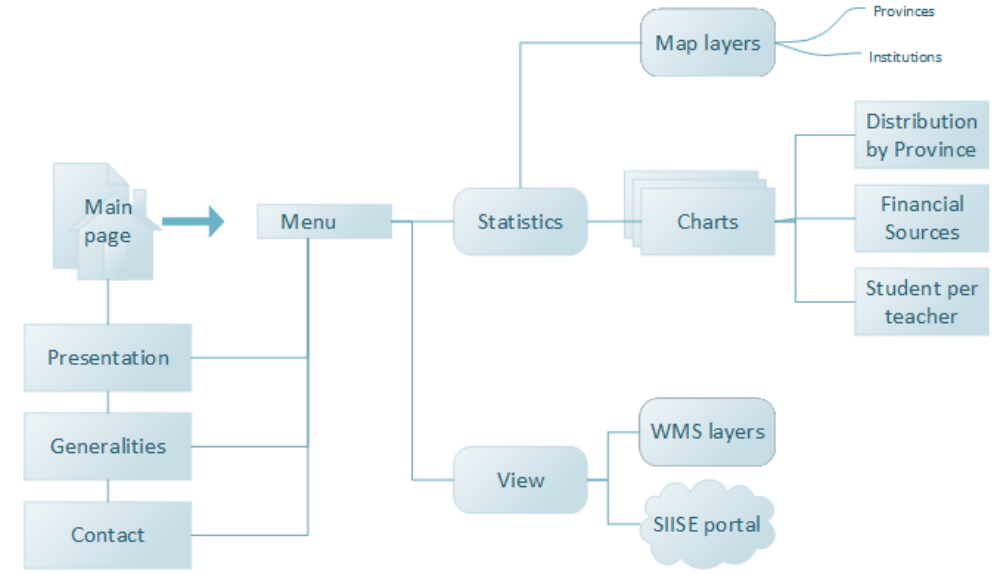
Figure 3 : *Third Prototype*



Source: Marino, D and Barik, F. (2016)

Although, we had the statistical part connected between charts, the new goal was to connected with a map, for this new step we started to test method to interact with the leaflet map that shows institutions and provinces with some characteristics. Later, we realized the importance of having a concept because the dashboard needed an introductory page that support the information and the objective of our project, otherwise the concept was too simple.

Figure 4 : *Website navigation conceptual model*



Source: Marino, D. (2016)

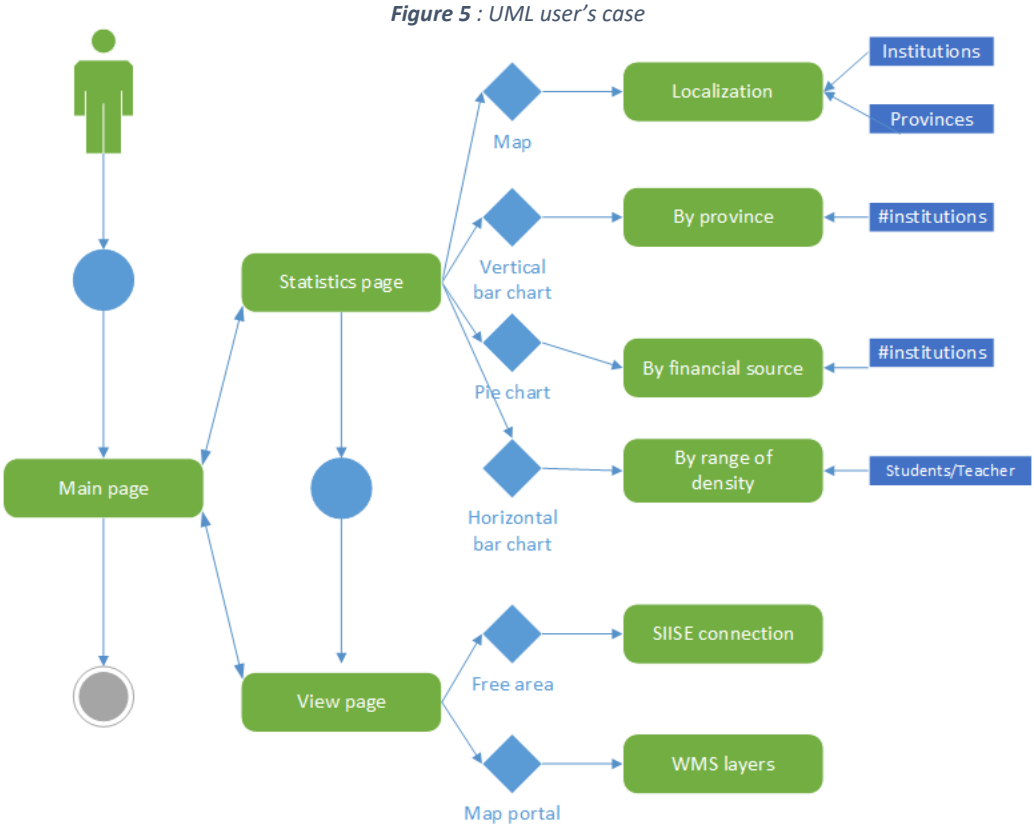
That new concept gave us the introduction to a navigation map (Figure 4) and a complex view of our first idea. In consequence, we created the webpage and the interaction between pages but we didn't want to lose our first prototype, the WMS platform. That's why, we integrated it as another page of

our portal, to the whole concept as a tool. We tested again new possibilities and we use the first prototype as a complement, which integrated with SIISE portal gives a lot of usability according to our customers. The page was created using gray tonalities of colors, with smiley people and simplicity concept, because we wanted to give a clear, elegant and positive feeling, and avoid brilliant and bright colors. It has been used a minimalist and simple style that of security to the professionals, that is perceived by the user like a clean, organized and elegant portal.

4.2. Technique planning

Education GEOVIEW is developed according the next UML user's case:

***Figure 5** : UML user's case*

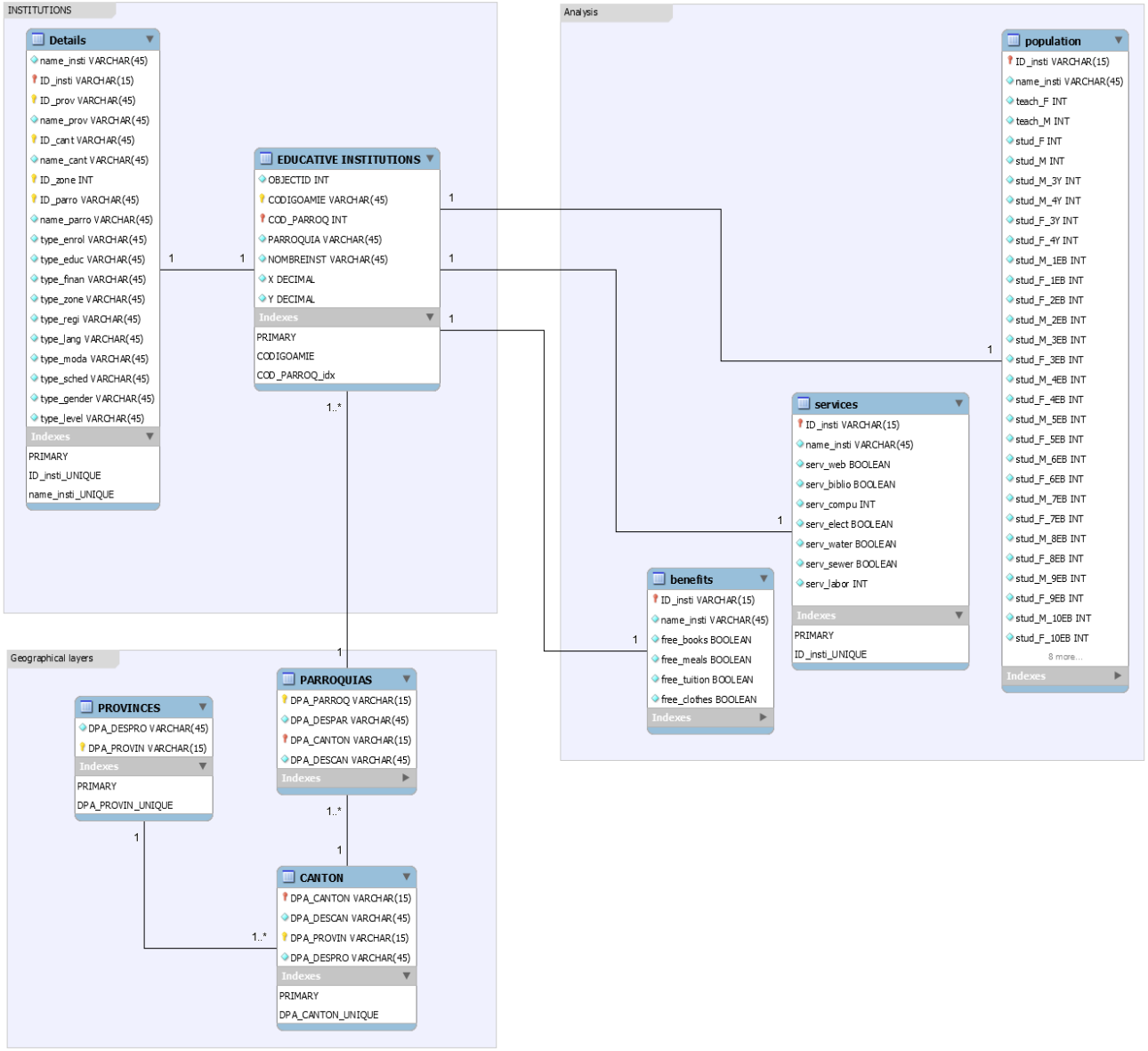


Source: Marino, D. (2016)

The diagram user case shows us that the main page is divided in two principal services, the first is the statistics page that contains a group of charts and a map container, that represents methods of data aggregation and the units of measure. Also, the view page that contains more general information. Both are connected with the main page were all the process can return to finish the user's experience.

Data was collected from the last Ecuadorian educative census (2015). The database contains information of each institution localization, characteristics of the institution, teachers and student's information of each educative level, basic services and benefits which supports the infrastructure of each institution. The database was structured according the next diagram of classes:

Figure 6 : *Diagram of classes*



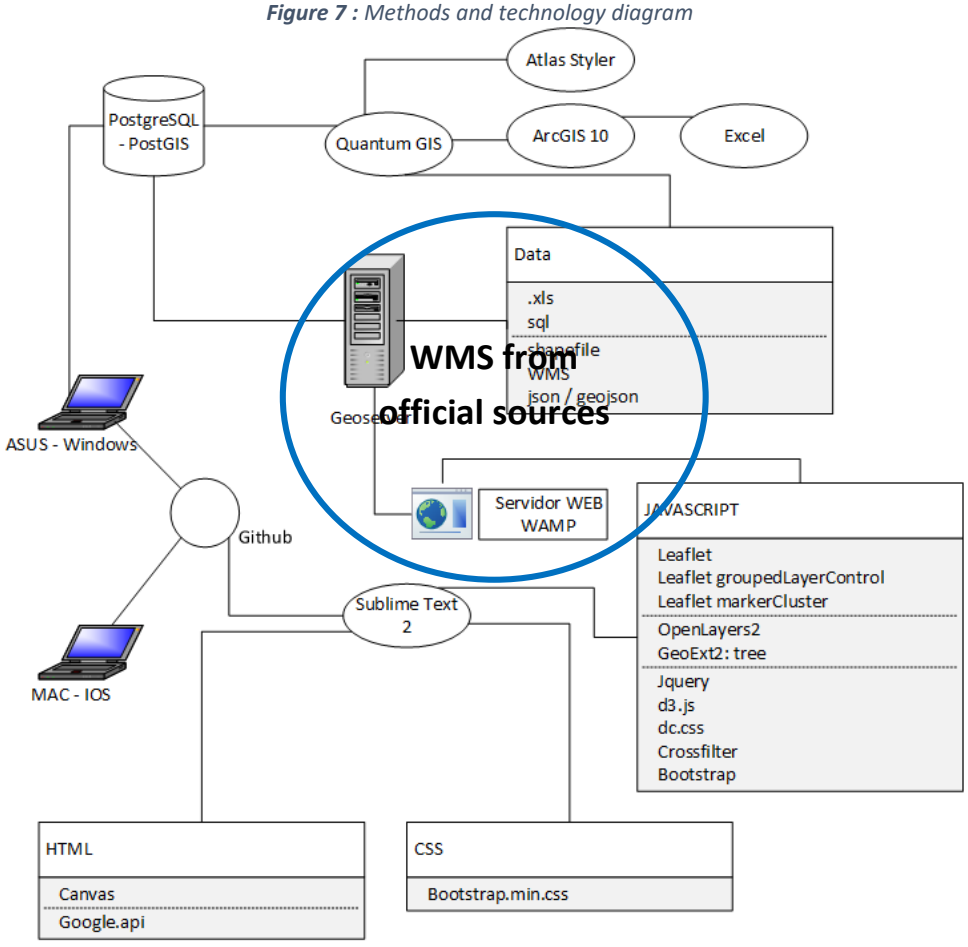
Source: Marino, D. (2016)

The webpage was built using open source software, in the majority of the steps. Each page was developed using different methods, languages and software.

The process between geoserver and WAMP was dedicated only for the page denominated “View”, both servers were tested in order to create our own layers. This method worked fine and it was a good infrastructure to load layers with complex information, using extensions as WMS for services, KML and json for vectors, but the time of creating the layers was too high. Otherwise, we found WMS

services of Ecuadorian Government in good condition and the information was related to our topic. These services allowed to avoid a lot of time, because our proposal was very similar and the sources are reliable. The next diagram presents the process of development according to technology and methods:

Figure 7 : *Methods and technology diagram*



Source: Marino, D. (2016)

In the next table there is a summary of the technology used in each part of the platform, because each part of the navigation process has different products, which are created using different methods, languages and software:

Table 2 : *Summary of technology framework*

Technology	Home	Statistics	View
Languages	HTML, CSS, Bootstrap	HTML, CSS, Bootstrap, canvas Javascript librairies (D3.js, crossfilter.js, dc.js, leaflet, grouped layers), SQL, Json	HTML, CSS, Bootstrap, Javascript, Wax.js, geoext2.

Technology	Home	Statistics	View
Software	Sublime Text	Sublime Text, QGIS, ArcGis, PostgreSQL, MSExcel	Sublime Text, GeoExt2, GeoServer, OpenLayers, PostgreSql- PostGis, QGis, ArcGis, AtlasStyler.
Hardware	Asus, MacBook Pro	Asus, MacBook Pro	Asus, MacBook Pro

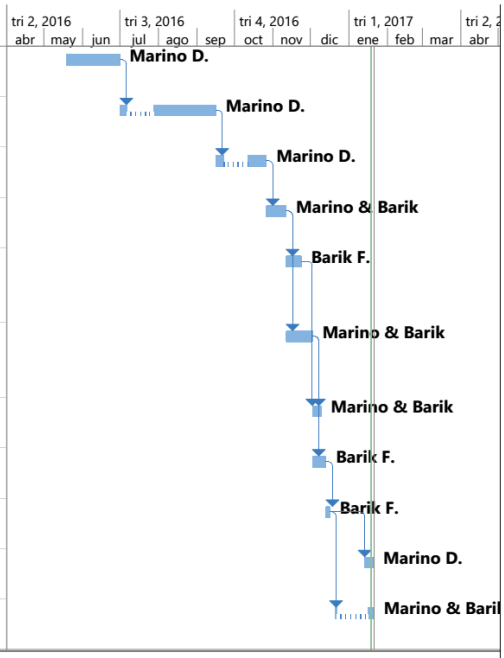
Source: Marino & Barik. (2016)

4.3. Implementation

The implementation process started with the creation of a strategy for the management of time. We structured a plan of activities (Table 3) that ensures the development of activities in a schedule, and important task that should be performed in a period of time.

***Table 3** : Plan of activities and responsibility assignment*

Id	Nombre de tarea	Duración	Comienzo	Fin	Nombres de los recursos
1	Project conceptualization planning	30 días	jue 19.05.16	jue 30.06.16	Marino D.
2	Database design and implementation	40 días	vie 01.07.16	jue 15.09.16	Marino D.
3	Creation of layers (shp) and elevation in geoserver	15 días	vie 16.09.16	mié 26.10.16	Marino D.
4	First webpage creation using WMS layers	12 días	mié 26.10.16	vie 11.11.16	Marino & Barik
5	Testing (learning process) of methods for statistics analysis	8 días	vie 11.11.16	mié 23.11.16	Barik F.
6	Selection of the method and creation of a prototype of a chart	15 días	vie 11.11.16	vie 02.12.16	Marino & Barik
7	Creation of a prototype for three charts connected	5 días	vie 02.12.16	vie 09.12.16	Marino & Barik
8	Creation of a main webpage	7 días	vie 02.12.16	mar 13.12.16	Barik F.
9	Integration of pages and link between themselves	3 días	mar 13.12.16	vie 16.12.16	Barik F.
10	Testing and elevating to a web server	5 días	vie 13.01.17	vie 20.01.17	Marino D.
11	Writing the report	7 días	mar 20.12.16	vie 20.01.17	Marino & Barik



Proyecto: Schedule
Fecha: jue 19.01.17

Tarea		Resumen inactivo		Tareas externas	
División		Tarea manual		Hito externo	
Hito		solo duración		Fecha límite	
Resumen		Informe de resumen manual		Progreso	
Resumen del proyecto		Resumen manual		Progreso manual	
Tarea inactiva		solo el comienzo			
Hito inactivo		solo fin			

Página 1

Source: Marino, D. (2016)

According, to the schedule the project was delayed, the problems of getting the coordinates for the first proposal meant a delay of two months. There was a high risk in time and the project needed to be reformulated, it was obvious the importance of having another person that support the development process, the inclusion of another integrant was imperative and then both can work twice faster.

At this point, the database, the first schema and the conceptual project was done, and the next steps were divided between the two members, according to the responsibility matrix (Table 3). This was a method to organize activities and obtain a good integration between activities, with the objective to avoid loose of time.

By far the biggest challenge encountered was time constraints. Implementation takes an extraordinary amount of time and a large amount of coordination. Scheduling project meetings were developed each weekend, dedicating most of the weekend to this project. The activities and dealing with projects of another's assignments were complicated, but fortunately both members collaborate and the group work was satisfactory.

Another issue that cropped up was knowledge of javascript programming language and integration with 3d methodology. Even though, the high number of examples and videos support the learning process and it was fundamental for the development of the final product, but the high number of libraries turned a problem because we got very confused around the real objective of our project and it was difficult to built a methodology to follow, because the majority of projects contained statistics but the cartography part was very simple.

One of tools we found very useful was the creation of a technical memory (Index 1) . It has really been the only tool that has allowed us to continue making progress of research of methods useful for our purpose. The technical memory get very important in the coordination process between both members, and it was the point were many ideas and most of decisions were supported.

4.4. Testing

The page was tested by ten people of professional, five of them are related to educational area and the others are civil servants. All of them are familiarized with Ecuadorian laws and they know educational system.

The results shown that 7of 10 navigates easily through the page and all of the reviewers think that labels provide clear information about their meaning. The style of the clickable items weren't satisfactory for 3 reviewers because they believe that was not very obvious.

Also, the readability was not satisfactory for the majority, 7 users, because the size of the numbers in charts was small, even they believe that was readable but not very clear.

CRITERIA: Navigation	1	2	3	4	5
1.-The content structure is easy to understand and navigates			1	2	7
2.- Links labels text provides clear indication of where they lead					10
3.-Clickable items stylistically indicate that they are clickable			1	3	7
4.- It is readable, correct typeface, size, color and contrast			5	2	3

*Refers to the number of reviewers of that category.

The evaluation of the design showed that all of the reviewer were satisfy with the esthetical view of our webpage, they feel that color are and believe they represent elegance and simplicity, related to our conceptual design.

CRITERIA: Design	1	2	3	4	5
5.- The design of the website has an aesthetically appealing					10
6.- The color is harmonious and logically related					10
7.- The color choices are visually accessible					10

*Refers to the number of reviewers of that category.

According to the content, users ask for more information on the main page, they believe that even the text was properly presented it was necessary to explain more the problem. All of them, find relevant, useful and clear the message of the webpage, but they found complex the content of the statistical page, they consider the importance of having a document that support the statistical analysis and provide clues of reading this data.

CRITERIA: Content	1	2	3	4	5
8.- Bodies of text are broken into clear information that explain the objective			1	8	1
9.- The content is understandable and pertinent to the objective		2	5	3	
10.- The information is useful and communicates a message					10

*Refers to the number of reviewers of that category.

Table 4 present the final results of validation and testing process. Navigation was qualify between good and excellent so this part can be improved. Similarly the content was good, it was complex the reading the statistical part, the concept was not obvious and the relation between how many students by professor was a difficult variable of related with the other charts in different levels of aggregation.

Table 4 : Results of quality measure by topic

Criteria	Score	Categorization
Navigation	4.6	Good-Excellent
Design	5	Excellent
Content	3.9	Good

5. CONCLUSION

The process for the development of this project has been difficult and it has represented a big challenge, but the result has been very satisfying not only related to the final product, also because we have learnt a lot and now we have a higher level of comprehension about different methods, languages and technology.

The project showed us the importance of having a good plan guide since the beginning, the distribution of roles and responsibilities to each member is fundamental and the work meetings were the best way to tackle the most difficult tasks. The first schema was the start up of the project but we made many changes and we adjusted the idea in order to accomplish a good result, considering our limitations in knowledge and time.

However, the initial concept has changed the final result is more complex and there is a higher sense of integrality, that's why the flexibility without leaving the main objective in mind has been our axiom. Our proposal had no limits it was very ambitious and it didn't take account the limitations of technology and our limitations as programmers. This aspect was positive and negative for us, because we had a clear idea of our goal, but after analyzing the technology and the limitations of each method, we perceived the importance of adjusting our project over the base of the capabilities of the most reliable method.

The application of OpenLayers2 with the extension GEOExt2 gave us a very beautiful presentation but the technology is limited. This method works with the implementation of Geoserver or another web server as WAMP for the publication of maps, even it can provide some functionality for interactivity, working with vectors is demanding in speed for a normal computer. Also documentation is limited and there are a few number of free projects with open code were a non-expert person can follow. This method is a faster way of obtaining a solution but it is not open to further modifications, it's a good solution for companies and greater producers of information, where there is a high level of

publication, because the connection with the database supports the management of high level of information in real time and each day modification can be done without many effort.

By another hand, the method used for the page "Statistics" is based on Leaflet and D3, though, the programming is harder and it took more time, the higher flexibility and the possibility of having the database in local with extension geojson or json, gave us the possibility of play with the variables and create different combinations specially for the statistical application. This method is the best way to present a study when a topic needs to be analyzed. The technology is adjustable, that means the programmer can code more functions with the objective of increase the interactivity. However, it's hard to make it work in real time but not impossible, and this kind of product can be consider as portable and it's capable of being share without using connection of a network.

We consider that our project can be improved and the future work is projected towards improve the interactivity between the map and the charts of the page "Statistics", hence the user can obtain a high level of comprehension because the data can be filtered in the map. The reviewers asked for the inclusion of a table with some information with data of the institutions, as well as the creation of a panel that can be displayed with de explanation of the most relevant conclusions about the topic.

6. REFERENCES

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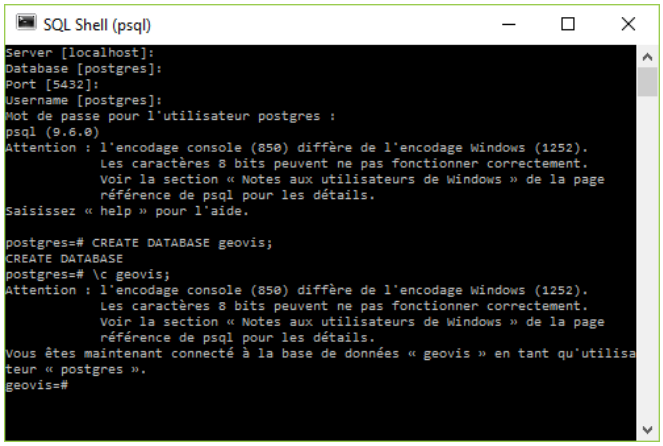
*Index1 contains all the references that we use in the technology aspect.

INDEX 1

IN WINDOWS USING SQL SHELL

1. Create and enter to the new database called "geovis"



Password: unil

IN WINDOWS USING GEOSERVER
32717 EPSG projection
GeoExt2→Mappanel
→Action

Json:
http://localhost:8080/geoserver/geovis/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=geovis:canton&maxFeatures=50&outputFormat=application%2Fjson

```
new OpenLayers.Layer.Vector("GeoJSON", {
    strategies: [new OpenLayers.Strategy.Fixed()],
    protocol: new OpenLayers.Protocol.HTTP({
        url: "ml/canton.json",
        format: new OpenLayers.Format.GeoJSON()
    })
});
```

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https://www.tutorialspoint.com/postgresql/postgresql_select_database.htm
http://monde-geospatial.com/

https://www.youtube.com/watch?v=08LS7XZWzPE
https://www.youtube.com/watch?v=SCAqyPfwzcU

http://boomphisto.blogspot.ch/2011/07/nodejs-express-leaflet-postgis-awesome.html
http://duspviz.mit.edu/web-map-workshop/databases-leaflet-cartodb/

http://stackoverflow.com/questions/25187937/loading-geojson-layers-from-geoserver-to-leaflet-map-based-on-the-current-boundi

For publishing we need base maps already done:
http://openlayers.org/two/

The process to create PostgreSQL database, the management of that database with geoserver and finally publish them with geoExt2:
https://www.youtube.com/watch?v=l5Vez5itais
https://www.youtube.com/watch?v=EVQuNhX6xL8
https://www.youtube.com/watch?v=86q5sSvkEPg

IMPORTANT:
This is another process to create the infrastructure that we have done in the last part, but here we can see the process to charge Apache Tomcat, to elevate geoserver (our computer is the server) to a webserver and then localhost is visible by everybody:
https://www.youtube.com/watch?v=08LS7XZWzPE
This video also allows us to see the introduction to LEAFLET as a tool for manage interactivity.
Management with leaflet and this part of the group of videos, allows us to select an specific feature of the layers:
https://www.youtube.com/watch?v=VKeMh9aTdik
Now with the same leaflet method we can do markers and popup:
https://www.youtube.com/watch?v=KLNl3xHIt6o

WMS give us *.png data, so we need entities to get the selection, here some options:
http://gis.stackexchange.com/questions/61384/apply-styles-to-wms-layer
https://gist.github.com/rclark/6908938

GEOEXT2: GeoExt 2 — JavaScript Toolkit for Rich Web Mapping Applications
https://geoext.github.io/geoext2/
https://geoext.github.io/geoext2/examples/tree/tree.html
https://geoext.github.io/geoext2/docs/#!/api/GeoExt.tree.View

LEAFLEAT
http://jsfiddle.net/expedio/8r1ncv6a/
GEOSJON FOR GEOSERVER
http://gis.stackexchange.com/questions/30796/how-to-use-geojson-from-geoserver

GEOSERVER
http://geoserver.geo-solutions.it/edu/en/pretty_maps/charting.html#
http://geoserver.geo-solutions.it/edu/en/pretty_maps/roads.html
http://blog.geoserver.org/2009/06/01/geoserver-chart-extension/
POSTGIS-GEOSERVER-LEAFLET
This links shows the process to publish data from geoserver as an image *.png
https://gis.stackexchange.com/questions/148368/how-to-bring-my-postgis-map-from-geoserver-to-leaflet-based-web-application?rq=1
A possibility to publish graph but these are not related to the map publication, these are only graphs related to database that is publish, using SQL Maestro the option PHP generator:
https://gis.stackexchange.com/questions/148368/how-to-bring-my-postgis-map-from-geoserver-to-leaflet-based-web-application?rq=1
Option of interactivity with webmapping:
http://thematicmapping.org/playground/openlayers_choropleth_geojson.php
But we want to publish data from geoserver as entities that are able to be selected on web with a click that modifies automatically the statistical chart (displayed on the webpage).
Apparently this is the solution:
http://jsfiddle.net/expedio/8r1ncv6a/

CSV to Json

https://shancarter.github.io/mr-data-converter/

Bootstrap
http://www.w3schools.com/bootstrap/tryit.asp?filename=trybs_theme_band_complete&stacked=h

D3
http://dc-js.github.io/dc.js/examples/filtering.html
http://dc-js.github.io/dc.js/examples/complex-reduce.html
http://dc-js.github.io/dc.js/examples/download-table.html
http://dc-js.github.io/dc.js/examples/bar-single-select.html
http://dc-js.github.io/dc.js/examples/right-axis.html
http://dc-js.github.io/dc.js/examples/series.html
http://dc-js.github.io/dc.js/examples/time-intervals.html
http://dc-js.github.io/dc.js/examples/stacked-bar.html

http://bl.ocks.org/diethardsteiner/3287802
http://bl.ocks.org/mbostock/1283663
http://www.capitolmarkets.com/gsa-leased-investment-opportunity/

http://code.minnpost.com/simple-map-d3/
http://quartz.github.io/Chartbuilder/
https://github.com/exlee/d3-dash-gen

http://duspviz.mit.edu/d3-workshop/transitions-animation/
http://opendata.yurukov.net/demo/dcjs_leaflet/
http://www.reactd3.org/get_start/

COLORS
http://colorbrewer2.org/#type=sequential&scheme=YlGnBu&n=4
http://encycolorpedia.com/d9d1ba
http://www.colourlovers.com/palettes/most-loved/all-time/meta?page=2

EXAMPLES OF INTERACTIVITY
http://dc-js.github.io/dc.js/crime/index.html
http://dc-js.github.io/dc.js/vc/index.html

Great examples
http://www.comeetie.fr/galerie/stifviz/
https://github.com/MrMufflon/Leaflet.Elevation
http://bl.ocks.org/wboykinm/c77e7c891bfc52157843
http://chriswhong.com/data-visualization/an-experimental-twist-on-the-d3-bubble-chart/
http://zevross.com/blog/2014/09/30/use-the-amazing-d3-library-to-animate-a-path-on-a-leaflet-map/
http://cobr.io/2015/03/how-to-build-a-chloropleth-map-with-leaflet-js-and-a-dash-of-d3-js/