Teaching Materials for GIS engineers

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Abstract: Although the environmental education, that GIS to be used for the education, GIS came to be carried out, but there is not the material for the GIS engineer education in an enterprise and be a present condition to have been carried out with the internal data of each enterprise. It applies for 2 years in, the 7th technology division (the GIS application of the spatial data) of the incorporated foundation Japanese precise surveying technology organization and have done the GIS material preparation for the engineer of the enterprise. Mentioning about the direction nature of the tidying and also future material preparation of the problem in the preparation process with the announcement of the result this time, I want as the data of GIS engineer training.

Keywords: GIS, GIS, Teaching Materials

1. Introduction

It began with the private enterprise leadership style in the latter half of 1980's, that substantial GIS (Geography Information System) was introduced to our country. It is insufficient for us a few engineer and text book to be a big problem, although enter in the 90's and saw rapid diffusion with the market development of PC, after that. Taking on the new entrance training of employees of the participation from the private sector every year it was a problem that there are few even the APA Foundation (Japanese Foundation, Association of Precise Survey & Applied Technology) engineers who become to it over an instructor, to there is not the material that uses it and do education the aero triangulation survey, GPS measurement, Remote sensing etc. and, although make GIS the theme in a parallel fashion and have done education.

Beside I report the experience that applies 2 years here, and made the material for the GIS engineer education in the enterprise raising problem etc. that became clear with the process I want to try to mention about direction nature of future GIS education.

2. Purpose

There are 2 kinds of the backbone engineer education in fall and the new entrance training of employees in spring every year that I do with the APA Foundation (Japanese Foundation, Association of Precise Survey & Applied Technology) . The new entrance training of employees are an indispensable subject that enters into the private sector from this and become the professional engineer of GIS or, or the new entrance training of employees is whether put the family register to the private sector and receive education as general knowledge although there are few opportunities that become the engineers of other division and touch the thing called GIS directly. Backbone engineer education may be and may be said that it makes new entrance training of employees and purpose different largely, in the face that says that the professional engineer of GIS

who enters into the private sector and acquired the experience of some extent comes to following education looking forward to the jump to the next stepping.

Because the introduction of GIS, is recent in the private sector of in addition to that being not joining the foundation talking about the role of the education in such the foundation, as the private sector with new technology

Doing upon study for necessary or may there is a common thing in the point that must be going to advance engineer education for the future development that is while it turned routine work to some degree. It is where it puts the standard of the range and material to become a problem most in making the material from the intended difference of such education. There be not something like “The Ministry of Education, Culture, Sports, Science and Technology guideline for teaching" like high school education and there is material of the GIS education in an university[1)] even if the interior and exterior is observed the material of the engineer education in the private sector it is equal to none.[2)]

Thereupon, I would make the education manual of the constitution that divided it into the following second part.

(1) first class engineer for university at all GIS of education received has not person, concept target to GIS masters material
(2) backbone engineer for private sector into enters some extent of GIS of experience have, from now on become professional engineer

In principle marketing software of function to touch not, hardware regarding GIS of constitution element as hardware about outlines although, product specification to touch not etc. restriction item made.

As for when it says from the experience of the author, etc. such as "the city planning map", "the road management map", "the cadastral map for asset evaluation" of large reduced scale 1/500~1/5,000 are GIS that I am doing on business basis with many private sector the map of a base and the earth environment of the GIS education where it is carried out at the university such a material that carry out the area evaluation of the country unit or 1/50,000~1/200,000 small reduced scale as the subject is making the character different largely.

So that it touches a little acquisition method of digital data the activity of the international standardization activity of geographic information departure from the introduction of the various kinds of the existing drawing and the drawing in some areas for the first class person for that it did. It is the form that put the emphasis to the geographic information standard explanation of the interior in the middle of the international standardization of geographic information from transformation, spatial analysis from the explanation of the projection system/coordinate systems that used the data that already digitalized it in the second part.

3. The contents of the education manual

Contents of the GIS education manual be following as,

Table-1 Constitution of the part 1

- Introduction (21)
- Spatial data (19)
- The constitution and function of GIS(16)
- The example of GIS(15)
- The GIS introduction effect (5)
- GIS of in the future (4)
- The relation organization of GIS(15)
- Conclusion (2)

Table-2Constitution of the part 2

- Introduction (3)
- The spatial reference (3)
- The geodetic coordinate system and the earth coordinate system (6)
- The projection system and coordinate system (17)
- Projection transformation and coordinate transformation (5)
- The data model (3)
- The vector model (8)
- The digital elevation model (9)
- The spatial analysis (18)
- Database (9)
- The standardization of geographic information(14)
- The Japanese Geography information standard (19)
- The present condition of the latest GIS(7)
- Conclusion (3)

() Number of inside be the number of sheets of the slide

While the part 1is the basic description centering around the explanation and output map of the concept of GIS as it aforementioned it the second part increases theoretical description and be it and even the middle is tilting specific gravity to the explanation with regard to the quality evaluation, Meta data of the data exchange, data, while summarizing with practical subject solution style explanation the geographic information in the international standardization activity, especially the interior of the geography information that are a recent subject standard. It is the one that this gave the such direction nature that learns the subject of the latest topics for the GIS professional engineer of the private sector and tackle with the business base early.

4. Practice of the material

Many of the enterprises that participate in APA are many even the private sector that is making aerial survey business a main business and even the experience of the introduction case of GIS piled up. The system that the trend of the introduction case constructs map database overwhelmingly and output the map of an intended object area as the CRT screen or paper map is most. However, the overlay, bufferring etc. of thematic map data that puts comparatively heavy to the spatial analysis from the viewpoint called GIS with compatibility for, the thought of the material in this time and differ overlays it and specific gravity of the explanation with regard to a necessary coordinate system/projection systems is high to do.

The screen, figure-1 explain the purpose of the manual of the part 1 and figure-2 that explains the geography information standards in the second part are the screen example. I have put in the explanation sentence that makes in the whole volume power point file and insert the figure of a clear illustration by the visual expression of the color and made for the part of the notebook of the power point file with the word.

5. Conclusion

When it says from the experiences for 2 years besides the engineer who is used to 2001 years, 2002 years and 2 times, backbone engineer education in the new entrance training of employees of APA sponsorship as the material of the GIS school of the GIS school, corporate juridical person Japanese Society of Photogrammetry and Remote sensing Kansai branches of the corporate juridical person measurement devices industry meeting in 2001 and participated in material preparation does the lecture as the instructor and have obtained popularity comparatively.

The Location referencing technology (the mobile mapping) that is represented to WebGIS (Internet GIS), Location Based Services that are in the front of the GIS application of C/S, private of multiple user environment by calling with the material that put heavy to the spatial analysis for the future subject, it will be raised that there was not the temporal margin that touches ASP (Application Software Provider), CRM (Customer Relation Management) such as the latest activity.

References:

1) Y. Ohashi, Viewpoint of the material preparation that utilized the map, GISA proceedings, 2001,10, pp241-246

2) Chris Wayne(2002) GIS Education for the Working Professional, http://www.geosptial-online.com/geosptialsolutions/article/

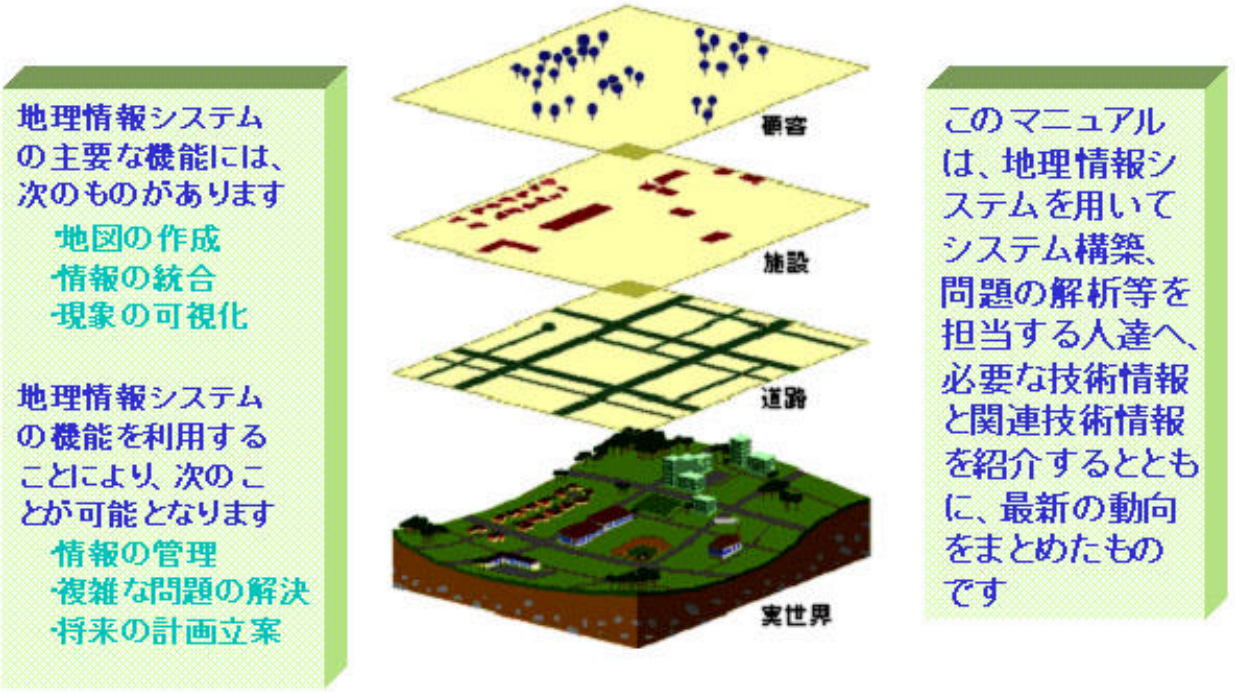

Fig.1 Screen explains the objects of manual

Fig.The slide explains the Japanese Geographic Information Standard