



## Place and Functions Identity at Piazza Ghiberti in Florence

# School of Architecture Entrance Building

**identity:** noun (<http://www.merriam-webster.com>)

*a: sameness of essential or generic character in different instances*

*b: sameness in all that constitutes the objective reality of a thing: oneness*

*c: the distinguishing character or personality of an individual: individuality*

*d: the relation established by psychological identification*

*e: the condition of being the same with something described or asserted*

*f: an equation that is satisfied for all values of the symbols*



<http://architettura-italiana.com/projects/20828-giovanni-todesca-breschi-studio-di-alberto-breschi-guido-ferrara-eva-parigi-matteo-zetti-nicola-ferrara-nuova-sistemazione-di-piazza-ghiberti>

## THE PLACE: Site Analysis and Environment Assessment



### ASSIGNMENT GUIDE 01



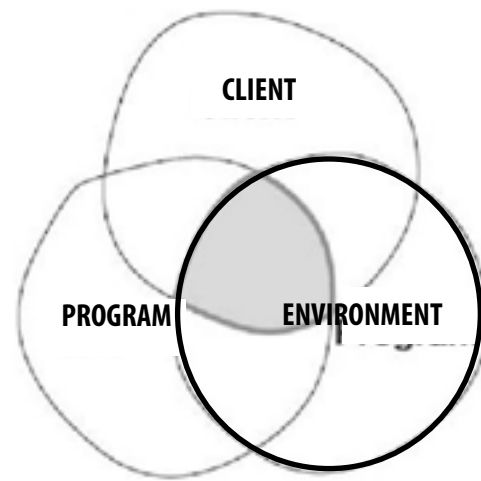
[http://www.bricoleurbanism.org/wp-content/uploads/2008/01/urban-form\\_layout2.jpg](http://www.bricoleurbanism.org/wp-content/uploads/2008/01/urban-form_layout2.jpg)

*The School of Architecture Entrance Building, located in an area resulting from the demolition of the walls separating the old convent from the city will play and active role in the revitalization of the public space Largo Annigoni and the University spaces. It should create an important link between the university life and the neighborhood so that its functions will serve not only students but a broader spectrum of users who are local residents.*

The FIRST ASSIGNMENT is about Site Analysis and Place Assessment involving the production of the following outputs:

- 3D Digital Site Model
- Climate Analysis
- Built Assessment
- Place Assessment





Inside the construction process, programming is the phase where to define project's goals, functional requirements and to focus available resources, constraints, opportunities and risks.

The cognitive framework that results and which inform the design program comes from two areas of inquiry: the customer needs and the environment as a context of intervention.

Within the context of intervention we can distinguish further areas of inquiry: the socio-economic and cultural environment, the regulatory environment and the physical environment or most commonly: the Site.

All these elements contribute to define the Place

For this assignment students are asked to define the meaningful elements related to the Place recognizing aspects of strength, weakness, opportunities, threats and mapping them as attribute data that may influence or be influenced by the new construction.

The goal is to define the suitability of the Place for the programmed building, how its futures can affect the building and how it could enhance the quality and contribute to the site's sense of place



### What to do

This assignment addresses the knowledge of the Place: a physic, climate and culture mix.

To accomplish this goal it's required to prepare a report containing the following outcomes:

- **Digital Site Model**, a 3D Model including the morphological/dimensional aspects of the place: existent buildings, vegetation, infrastructures
- **Climate report**, a synthesis of the main futures coming from weather and geographical location
- **Built Assessment**: a surveying of the built environment concerning materials, textures, colours.
- **Place Assessment**, a systematic inventory and evaluation for a better comprehension of attributes, futures of the environment and of consistent actions to integrate and sustain it.

### How to do

Students must work in order to realize a consistent 3D model embedding useful information and some related thematic sheets as follow:

- Geographical data location
- Parcel boundaries and total buildable surfaces and volumes
- National and City Regulatory collection
- Geological and geotechnical characteristic of the soil
- Weather and climate data collection related to winds, rainfall
- Sun path study and best orientation
- Shades studies
- Viewshed
- Existent buildings characteristics
- Existent materials and technologies
- Texturing and rendering
- Historical and cultural characteristics
- Linear/punctual over and underground elements of Infrastructures
- Past and present use

In addition to traditional surveying techniques, for this task students are encouraged to use different software and other digital tools such as:

- 3D Modeling and/or BIM software
- Google Earth pro and/or GIS software
- Basic functions of energy modeling software

### Deliverables

All the information and results of the above activities must be formalized in the following products:

- **3D model** embedding geometrical, physical and other collected information affecting the project
- **Layering inventory** a stack of overlaying sheets representing, in a syntetic way, thematic aspects and the most relevant information
- **Actions map**, a graphical document showing conclusions, constraints, recommendation and directions for the project.

### Urban Journal: Mapping the City

ARTICLE SLIDESHOW COMMENTS (2)

EDWIN LUTYENS GOOGLE EARTH HERBERT BAKER PANKAJ VIR GUPTA

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By Pankaj Vir Gupta

Prior to commencing any design project, most practicing architects and design professionals commission a site survey. As an empirical act of documentation, the site survey measures and records the physical attributes of a site. Like an artist, defining unique physical characterizations of a human figure in a portrait, a surveyor locates the precise boundaries of a parcel of land, records its topographical features, marks the location and species of any existing trees, indicates adjacent roads, pavements and walls, and finally, demarcates any civic infrastructure—water and sewage lines, electric poles and feeders, and gas lines—that may connect the site to its local municipal precinct.



— Google Earth A view of East Delhi as seen on Google Earth. The black ribbon on the left is the Yamuna river. Architect Pankaj Vir Gupta suggests that better surveying, including embracing satellite technology, would lead to better planning.

This meticulous documentation is often substantiated with a soil test, an evaluation of the properties of the earth beneath the surface of the site—the soil type and its structural load bearing capacity. Thus the first architectural act may be characterized as an identification of the site. Extracting valuable clues about the site anchor our design impulses. The genes of any subsequent design proposal thus originate in a mapping of what already exists.



# SITE DIGITAL MODEL

This part requires to produce a file containing the current status of the site morphology. The file must include, in addition to the terrain sloping and perimeters, the mass modeling of the trees and a schematic three-dimensional representation of the existing buildings. Textures are also required. To get started follow a workflow that includes, at least, the use of Google Earth, Sketch Up and a program for solid modeling. More specialized programs or the use of special plug in are appreciated. To get tools and tutorials, please, refer to the link at the end of this guide

## Model checklist (check it when done)

1	Digital Site Model. 3D file allowing to extract the following drawings:
	terrain profiling with two main sections
	existing volumetric buildings and trees
	roads and other circulation elements
	utilities lines and sanitary sewer profile
	drainage lines + highest/lowest points

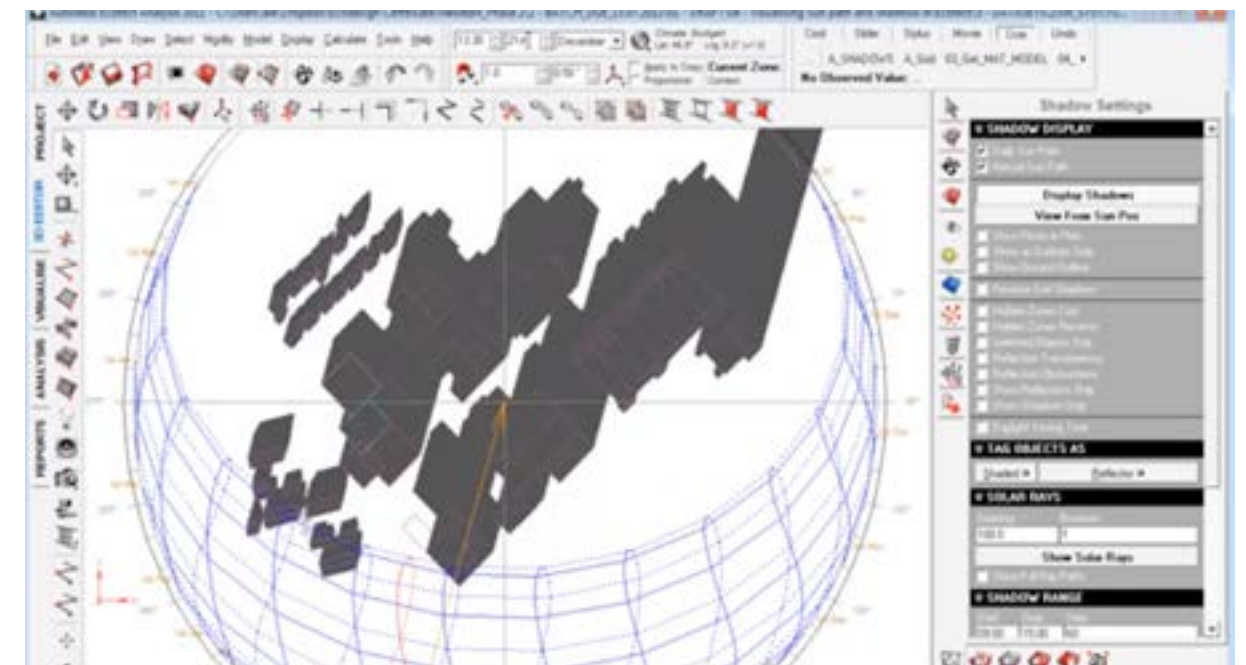
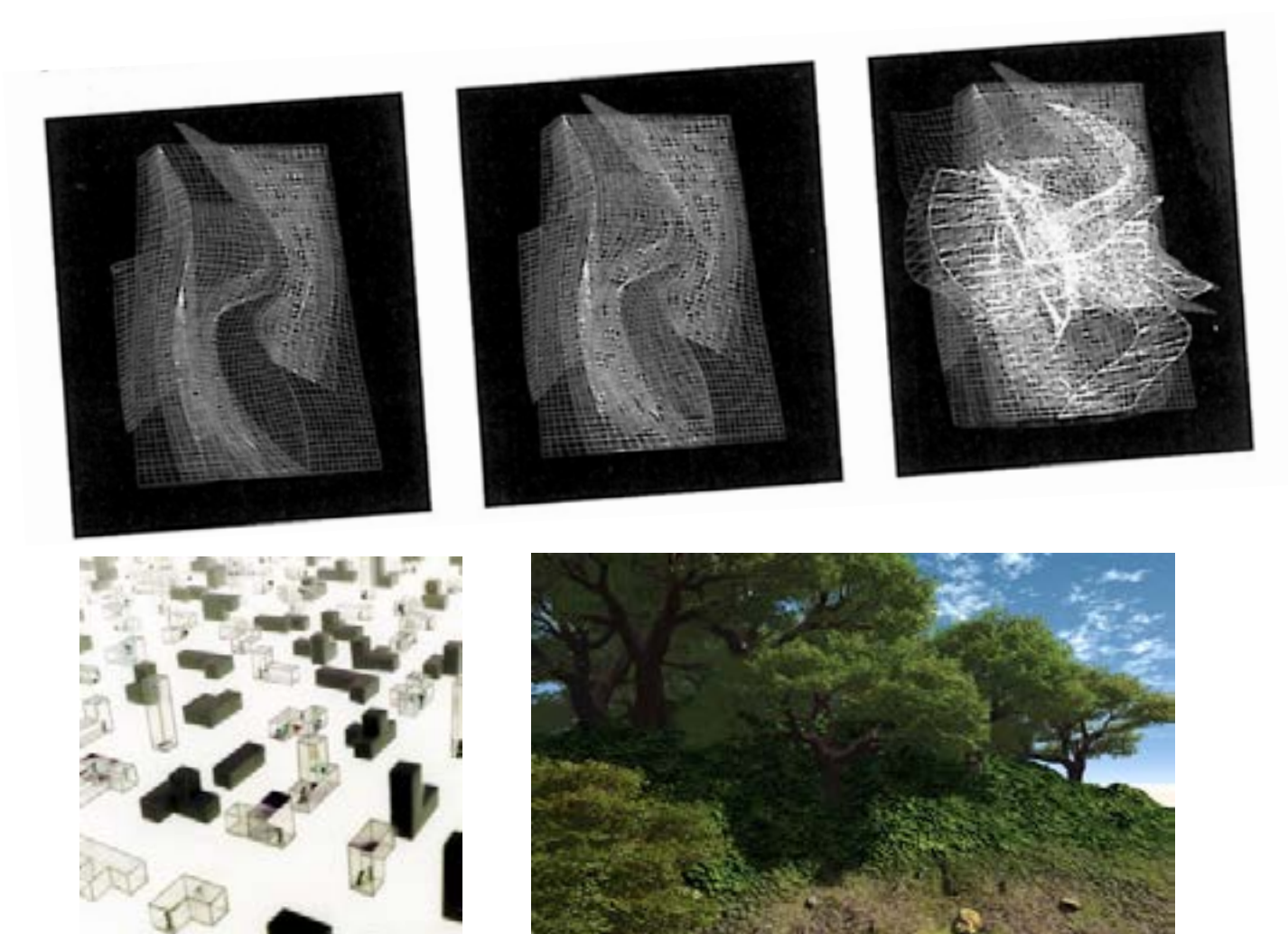
# CLIMATE



This part is required a basic analysis of the weather and climate characteristics of the site. The results must be evaluated and returned in info-graphs indicating favorable or unfavorable climatic elements to support the design decision-making. These information must be synthesized into layers to be superimposed onto the site map.

## Climate checklist (check it when done)

2	CLIMATE
	Map of the soil solar exposure
	Ventilation Map (breeze and cold wind)
	Best Solar orientation
	Shade Maps (more appropriate at mid morning -10 am, noon, midafternoon -2 pm, late afternoon -4 pm; in midsummer, midwinter, equinox)
	Rain fall

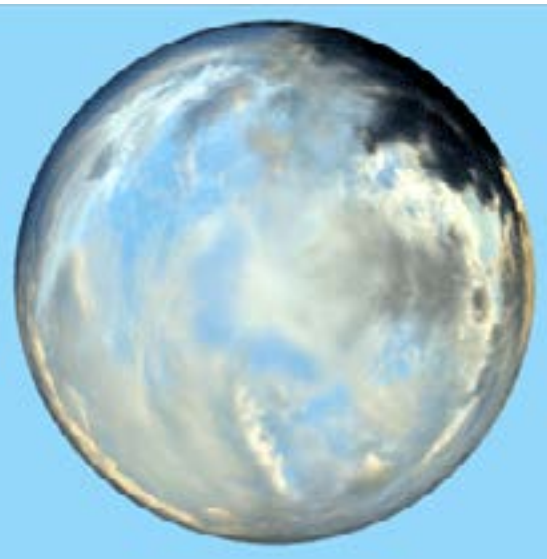


Fixed shade and/or interactive shade renderings showing the evolution of the shades during the day and the year can be an useful tool to assess potentiality of site. An alternative analysis is "what sun sees": an useful information on natural lightning level and to evaluate the different potentiality of the site concerning energy harvesting.



TOOLS FOR DIRECT SOLAR RADIATION ANALYSIS AND SITE VISIBILITY

The calculation of the solar energy that can be received by a certain point of the site throughout the year is an analysis that is currently used for the correct installation of photovoltaic panels. In addition to the use of software it is possible to carry out this analysis directly on-site with the use of appropriate equipments more or less sophisticated. These tools can also be used to check the view shed of a given point in the area.



A simple



Solar Pathfinder - The Solar Pathfinder has been the standard in the solar industry for solar site analysis for decades. Its panoramic reflection of the site instantly provides a full year of accurate solar/shade data, making it the instrument of choice.



SunEye™ - The Solmetric SunEye™ is a hand held electronic device that allows users to instantly assess total potential solar energy given the shading of a particular site. Identifying the shading pattern early in the process reduces the expense of system and home design and improves the efficiency of the final system or house.



Solmetric iPV - is an iPhone® based site evaluation tool, providing full solar site analysis in an affordable hand held package.



Fish eye Camera

from: <http://www.pvresources.com/SiteAnalysis.aspx>

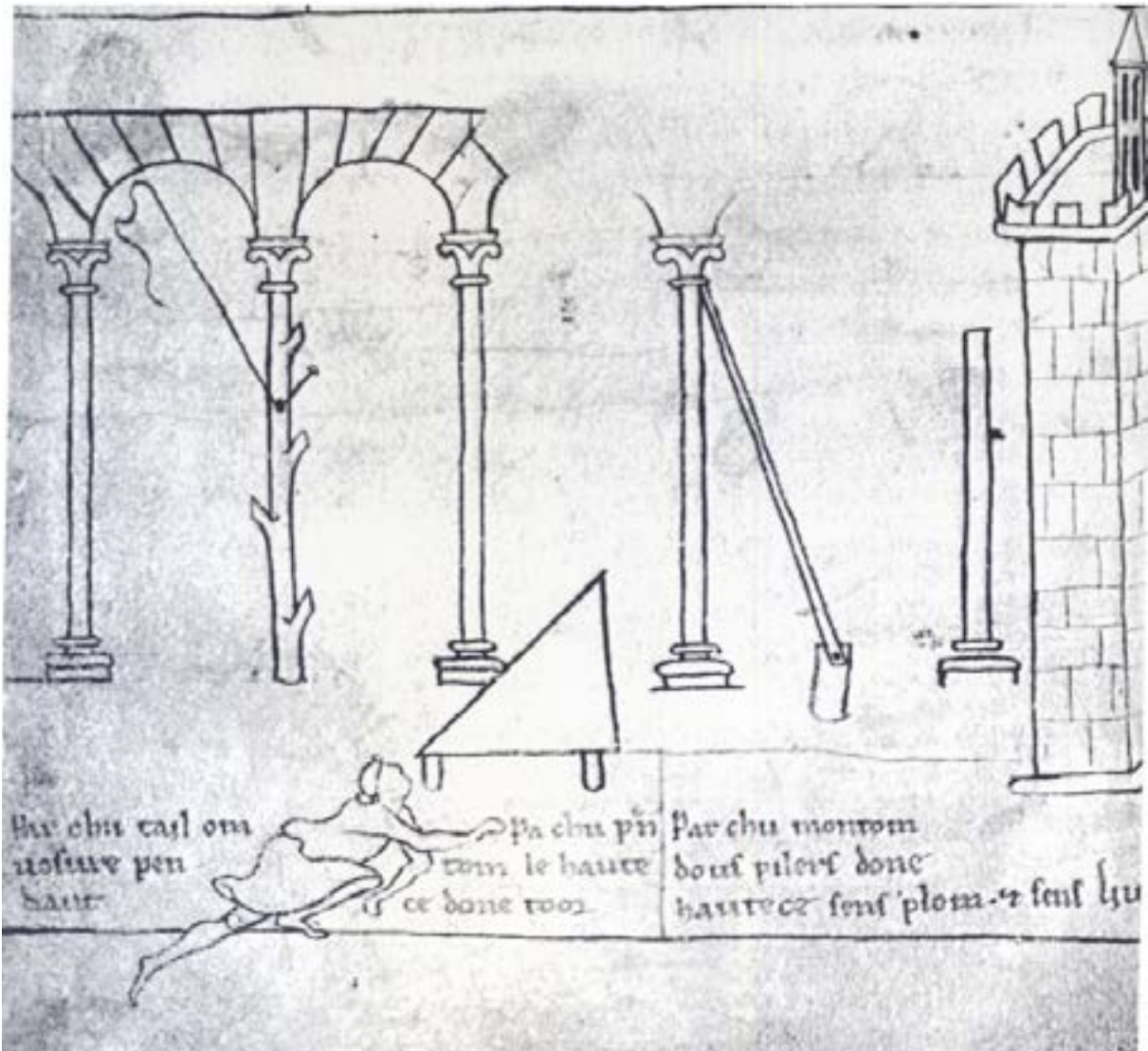
# BUILT ASSESSMENT

In technological discipline architectural buildings are studied and designed as a complex system of different interrelated entities: physicals, functionals and operational. In this part students are asked to analyze the physical entities: the morphological and geometrical attributes of the built environment with particular reference to material, typological aspects and general functional layout related to accessibility and functional relationships.

For this goal, students are required to produce a draft report using existing documentation, observations made during the site surveying, research on materials, building elements and component. The final result will be embedded on the 3D site model.

Built Assessment checklist (check it when done)

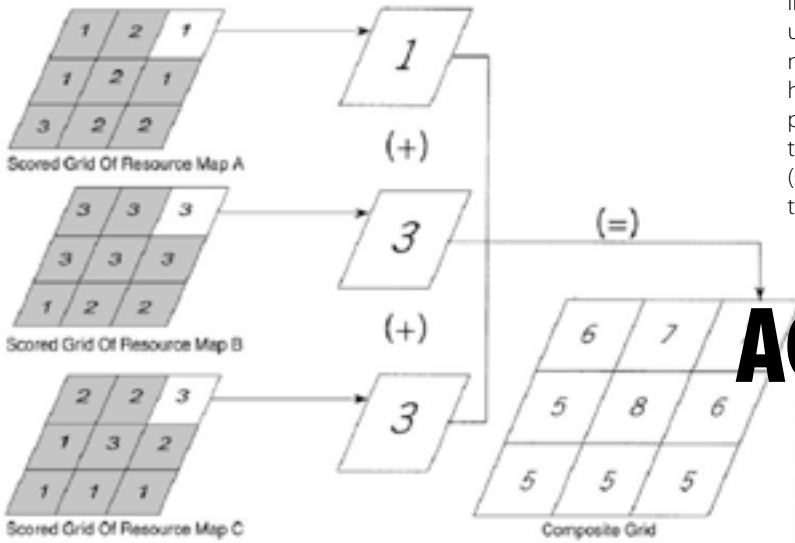
3	<b>BUILT ASSESSMENT</b> <i>information to be embedded into the 3D site model concerns:</i>
	Volumetric and mass representation
	General sections and hight
	Details organized using consistent call outs and specifying materials and their textures





# PLACE

## LAYERING INVENTORY



Place Assessment involves the inventory of elements and the analysis of factors addressing the design phase.

The outputs of Place Assessment must be realized in different thematic layers (*Layering Inventory*) and through a final map (*Actions Map*).

With the 3D Model, these two outputs represent the main outputs and deliverables of the Briefing phase of the Project

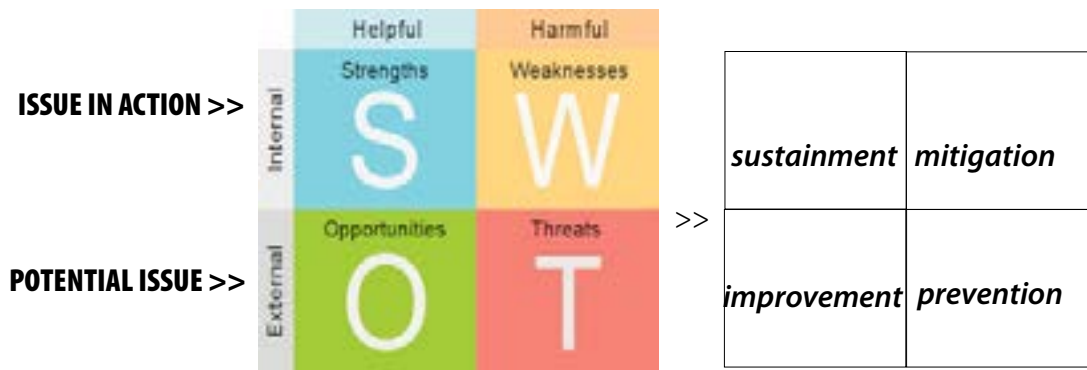
**Layering Inventory** is a stack of coordinated sheets (using the same reference map) where students are asked to synthesize, in a graphical way, the most influential elements of the Place.

Therefore each of these sheets should group and synthesize thematic aspects and informations collected during the investigation.

**Actions Map** is the final document where students are asked to produce a synthesis of all the influent element of the Place. To realize this document can usefully employed the SWOT technique. In addition the site map can be divided in homogeneous areas and assigning to each ones potential types of employment (service area, entrances, parking, ...) and recommended actions (sustainment, mitigation, improvement, prevention).

## ACTIONS MAP

Figure 8-5 Overlay analysis using a linear combination approach. Source: Chrisman, copyright © 1997, p. 132, Figure 5-11. Reprinted by permission of John Wiley & Sons, Inc.



What is SWOT analysis?

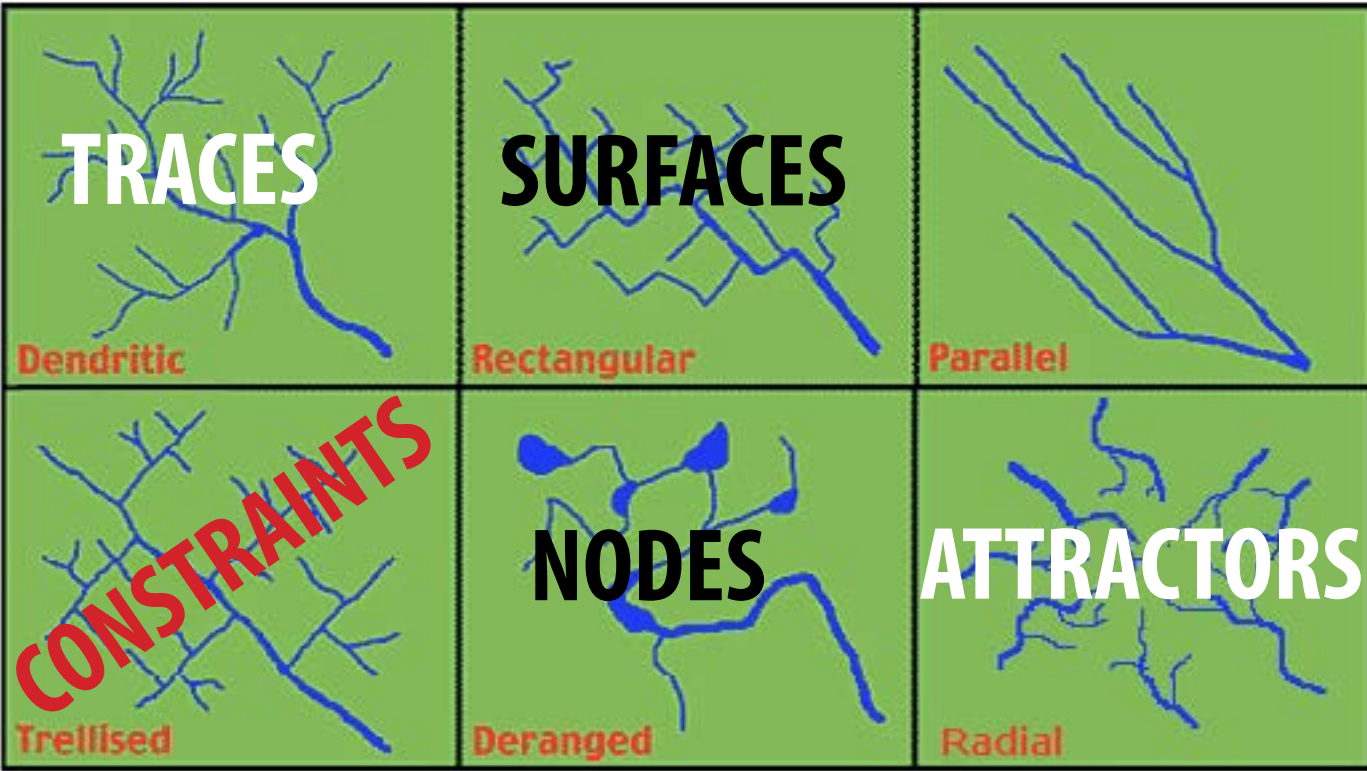
The primary goal of a SWOT analysis is to identify and assign all significant factors that could positively or negatively impact success to one of the four categories, providing an objective and in-depth look at your business. Highly useful for developing and confirming your organizational goals, each of the four categories provides specific insights that can be used to cultivate a successful project, including:

**Strengths** – Positive attributes internal to the project and within your control. Strengths often encompass resources, competitive advantages, positive aspects that are “in action” and need to be sustained.

**Weaknesses** – Factors that are within the project yet detract from the ability to obtain or maintain a competitive edge . Weaknesses encapsulate the negative internal aspects to the project. Again these attributes can also be seen as determinants “in action” that require to be mitigated to save the overall value of the project.

**Opportunities** – Summary of the external factors or potential resources that can be improved to increase the project's value.

**Threats** – External factors beyond the control of the project or potential risks that the project can meet and that require specific prevention actions.



Suggested themes and items to be included in the Place Assessment (check it when done)

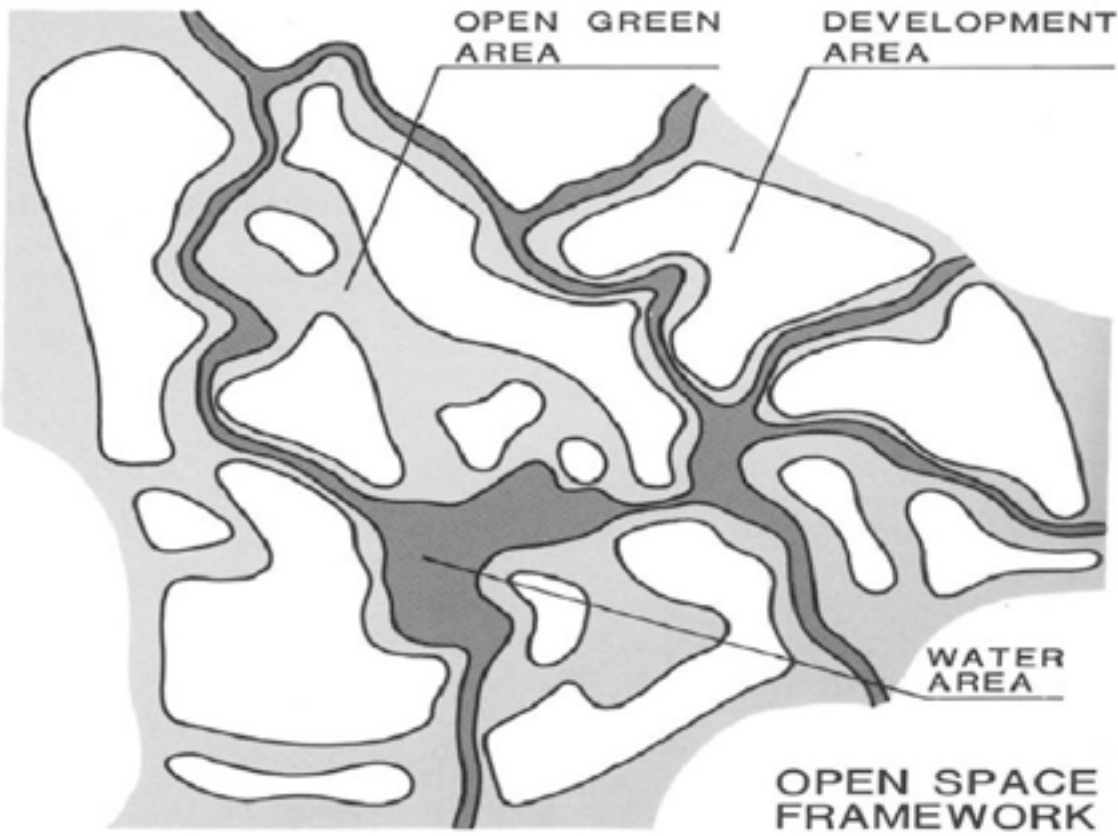
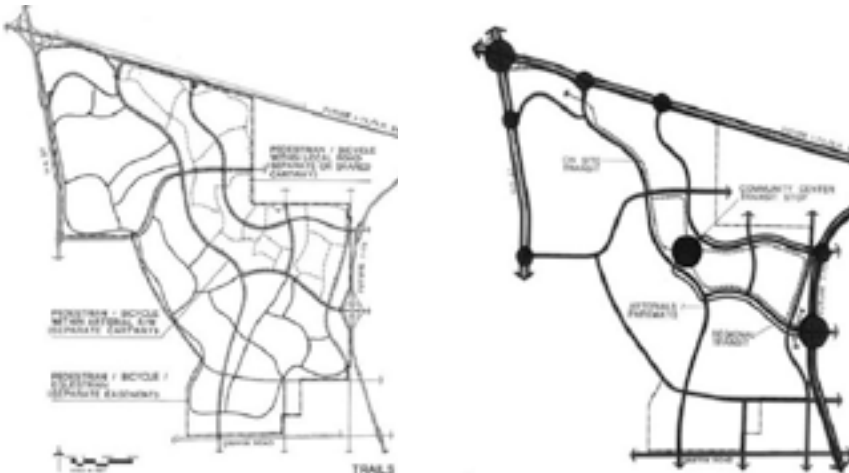
4a	TRACES	4b	SURFACES	4c	POLARITIES & ATTRACTORS	4d	CONSTRAINTS
	Geology and Soils		Solids and void patterning (to reveals texture lines and density and compatible footprint of the building)		Visibility (seasonal visibility)		Traffic impact
	Sloping grade and Drainage conditions		Development phases		Valuable buildings		Clashes between different types of circulations
	Bounderies and Line property		Sloping grade		Visibility (or view shed) as a form of advertisement and qualitication of the site (seasonally). To determine the grade of Zone of Visual Influence (ZVI) it's possible to calculate form how many accessible points a site is visible.		Green health condition
	Ground level views		Hydrology		Spot elevations for high points and low		Aerial pollution
	Existing and planned infrastructures such as roads utilities lines		Ground level views		Natural and cultural amenities		Acustical pressure
	Communication and transportation		Flooding area		Wild life attractions		Physical obstacles
	Circulation and desire lines		Seasonal colours -aerial views		Historic or cultural aspect		Regulations
	Historical traces		Use of the land / materials		Trees (location, size, species, health condition)		Potential natural hazards
	Use of the land / materials		Surface Pearmeability		Accessibility		
	Flooding level				Drop-off zone		
	View barriers				North		
	Wind barriers						

**TABLE 1-4** Examples of physical, biological, and cultural attributes that may be mapped at the site scale.

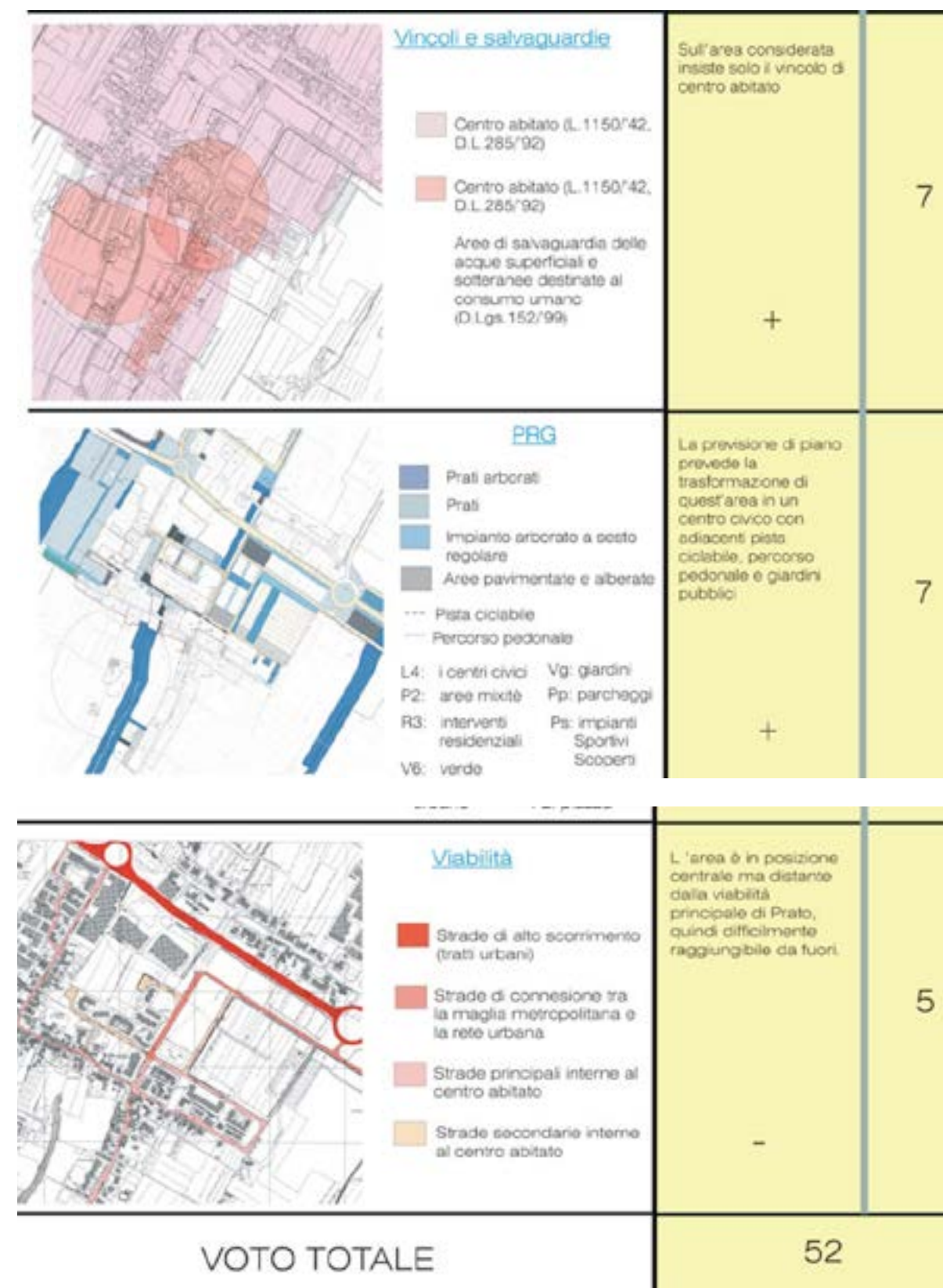
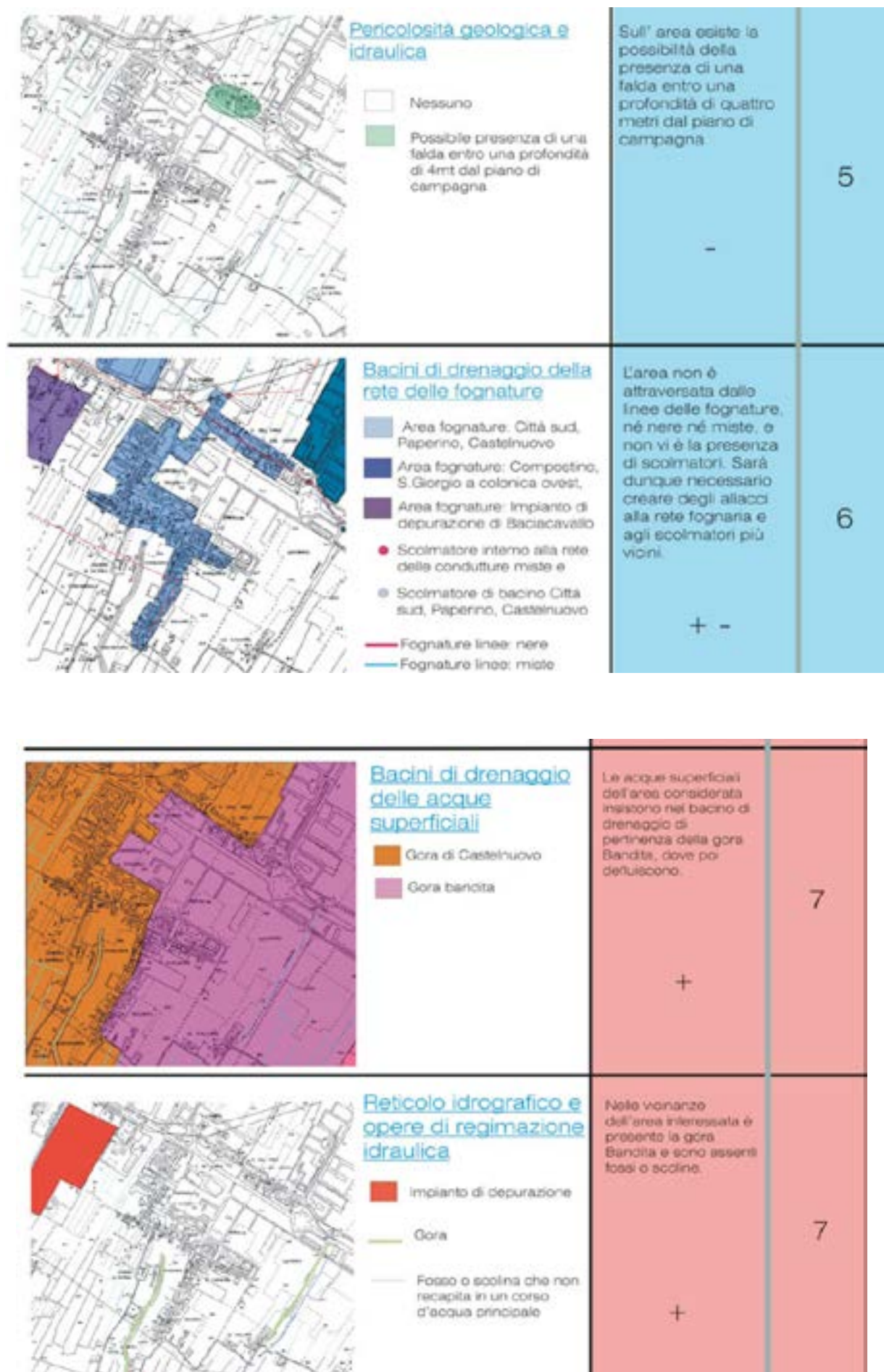
Categories	Subcategories	Attributes
Physical	Soils	Bearing capacity
		Porosity
		Stability
		Erodibility
		Fertility
	Topography	Acidity (pH)
		Elevation
		Slope
	Hydrology	Aspect
		Surface drainage
Biological	Geology	Water chemistry (e.g., salinity nitrates or phosphates)
		Depth to seasonal water table
		Aquifer recharge areas
		Seeps and springs
		Landforms
	Climate	Seismic hazards
		Depth to bedrock
	Vegetation	Solar access
		Winds (i.e., prevailing or winter)
		Fog pockets
Cultural	Wildlife	Plant communities
		Specimen trees
	Land use	Exotic invasive species
		Habitats for endangered or threatened species
	Legal	Prior land use
		Land use on adjoining properties
		Political boundaries
	Utilities	Land ownership
		Land use regulations
		Easements and deed restrictions
	Circulation	Sanitary sewer
		Storm sewer
		Electric
		Gas
		Water
	Historic	Telecommunications
		Street function (e.g., arterial or collector)
	Sensory	Traffic volume
		Buildings and landmarks
		Archaeological sites

Inventory is a collection of determinant data, to use in evaluation and assessment phase. There are many kind of data to collect: in side and about the site (in-site determinant); around the place, in adjacency, or relatively far but equally influencing the place (out-side determinants)

Traces are utilities lines, roads, historical signs coming from the past, previous and current use of the Place. Can be virtual such as lines of views. In between these traces are surfaces, specific zones defined by boundaries. At the intersection of these lines lie nodes. Special nodes are the points or specific areas that can exert attractive or repulsive actions.











<http://issuu.com/dharapatel1/docs/ebookfinal2>

View Shed Analysis is a GIS technique used to check the visibility of a some specific point from the surrounding area. For the place assessment can be also used to define the portion of the site from where is possible to look at some point of interest (monuments, amenities,...). To define this portion of the site it's required to run multiple view shed analysis using multiple points of interest. Overlapping the multiple analysis is possible to define the most valuable portion of the site having the best view.

Google Earth Pro and VectorWorks can automate this kind of analysis determining portion of the site visible for a given point.

A tutorial on viewshed technique is available at: [www.](http://www.)



SEASONAL PALETTE

Seasonal aerial views can be produced on the model using appropriate textures with the aim of restoring colors and masses of the place. More effective and useful results can be obtained in conjunction with the study of shading

## main references

Students are asked to look at:

**BIM-in small-scale sustainable design** [capt1; 2; 3; 4; 5 of BIM]

<https://drive.google.com/open?id=0B9buc3ySHfibQTY0ZExlRmhoa2s>

### Site Analysis

<http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab089275.pdf>

<http://www.firstinarchitecture.co.uk/how-to-carry-out-the-best-site-analysis-in-the-class/>

... here some examples

<https://it.pinterest.com/1starchitecture/site-analysis-examples/>

...and watch:

«**Landform Building**», Stan ALLEN's Lecture at Evening Lecture

<http://www.aaschool.ac.uk/VIDEO/lecture.php?ID=1626>

## Useful Links

Digital Terrain Modeling  
and Site Surveying tools  
and tutorials

### ATTENTION.

If you experience problems  
with the link, please, cut and  
paste the link on the browser

### Place Assesment

> BIM in small-scale sustainable design

<https://drive.google.com/open?id=0B9buc3ySHfibQTY0ZExlRmhoa2s>

Google Earth Pro for site analysis tutorial

<https://vimeo.com/122990587>

Previous students' works on a site assessment and bulding programming

<https://drive.google.com/open?id=0B9buc3ySHfibQjllZmdtT0cxX2s&authuser=0>

### Digital Terrain Model

> How to extract a full resolution map from Google Earth

[https://www.youtube.com/](https://www.youtube.com/watch%3Fv%3DbEhtSh0gUfg)

[watch%3Fv%3DbEhtSh0gUfg](https://www.youtube.com/watch%3Fv%3DbEhtSh0gUfg)

> Visit Easurvey to extract terrain elevations from Google Earth. . A free SAAS (Free Online Application)

<http://www.esurveyearth.com>

> Integrating Google Earth on Archi-cad and creating real contour lines

[https://www.youtube.com/](https://www.youtube.com/watch?v=wcVtRPnv0QI)

[watch?v=wcVtRPnv0QI](https://www.youtube.com/watch?v=wcVtRPnv0QI)

> Creating toposurface with Revit

[https://www.youtube.com/](https://www.youtube.com/watch?v=jF7wRvz8s3A)

[watch?v=jF7wRvz8s3A](https://www.youtube.com/watch?v=jF7wRvz8s3A)

> Use SketchUp to learn about contours lines from 3d terrain.

<https://www.youtube.com/watch?v=Bx6GtXooEk>

> CADtoEARTH for Revit

[https://www.youtube.com/](https://www.youtube.com/watch?v=l6nitzE5rEg)

[watch?v=l6nitzE5rEg](https://www.youtube.com/watch?v=l6nitzE5rEg)

### Weather Analysis

(in revit and archicad put a mass boxy building in place, run the analysis, and use the weather report)

> Weather Analysis with Green Building Studio in Revit

[https://www.youtube.com/](https://www.youtube.com/watch?v=zJsqx1r1fH0)

[watch?v=zJsqx1r1fH0](https://www.youtube.com/watch?v=zJsqx1r1fH0)

> Weather Analysis with Ecodesigner in Archicad

[https://www.youtube.com/](https://www.youtube.com/watch?v=M2R8D1ffEK4)

[watch?v=M2R8D1ffEK4](https://www.youtube.com/watch?v=M2R8D1ffEK4)

> Advanced technique with LadyBug in Grasshopper

[https://www.youtube.com/](https://www.youtube.com/playlist?list=PLruLh1AdY-Sj_XGz3kzHUoWmp-WDXNep1O)

[playlist?list=PLruLh1AdY-Sj\\_XGz3kzHUoWmp-](https://www.youtube.com/playlist?list=PLruLh1AdY-Sj_XGz3kzHUoWmp-WDXNep1O)

[WDXNep1O](https://www.youtube.com/playlist?list=PLruLh1AdY-Sj_XGz3kzHUoWmp-WDXNep1O)

For more advanced tools related to geographic analysis:

GRASS GIS

<http://grass.osgeo.org>

ARCGIS

<http://www.arcgis.com>