

**What the innovation is**

Nature is our guide. The ability of genetic coding to describe the human race parallels the Object Genome Project (OGP). OGP describes the built environment with a compact code directly linked to the logic of design and construction. Created by architects, engineers, and programmers, OGP is a fusion of knowledge and logic.

OGP is a large collection of objects, databases, relational rules, and 3D assemblies that describe thousands of construction and design related components. Each of these components is parametric and therefore has thousands or other possible variations. One example is a single object that describes over 1,200,000 possible variations of the same system. The object code is scripted and very compact. Typical sizes are 20-50K, with larger ones being 500K.

**Why is it innovative**

Buildings are complex by nature and OGP takes a methodical approach of analyzing, documenting, and creating tools to master this complexity. Although rules based systems may seem limiting to architects, they are part of our architectural history. Classical Greek architecture has a set of orders that describe the rules of putting together classical space. These rules gave rise to great buildings and form the basis of Western architecture. Rules based objects of OGP enable us to catalog an enormous amount of data that is then available at our fingertips to be used for projects OGP also creates a legacy of valuable data and information to pass on to future generations.

For example, rules and codes are embedded in objects for an aircraft hangar truss to adhere to the design depth while adhering to structural codes. When determining proper doorway proportions for a traditional Japanese house, embedded information in the object provides a junior drafts-person with tools to accurately place that object on plan without researching this information because of the embedded genetic code associated with the object. These objects are architectural and design oriented. Rules can also be relational, triggering new requirements between two different sets of objects. They can show a list of appropriate floor material for high traffic areas or provide a hardware menu for glass front kitchen cabinet doors. This same object can carry minimal or an enormous amount of information. Need to know the structural strength of a cable, the load it can support, parking requirements for a 50 story building in central Tokyo, or blast resistance of a wall next to a 2,000 lbs of TNT bomb? All of this information can be embedded as information in the tools that a junior drafts-person would not necessarily have to know, but could easily place on the plans as valuable design data.

**What is changed or replaced**

This is not a push button solution. It is an intelligent system that is another part of our tool set. The reality is that it is a major mindset shift to move from document production describing buildings to the focus on necessary information to put a project together, then tracking it during the entire life cycle. OGP is the process by which we create this mindset shift to use the tools, and the process of using these objects in projects. The system has been successfully used on numerous projects since 1994. It has changed the way we look at working and collaborating. One reason we focused on refining this process is to help in communicating long distance. This has changed our working methods and has allowed us to work on design projects with teams spread throughout the world. The strength of the OGP is the synthesis of knowledge, software, databases and processes into one decision making system.

**Where and when it originated, has been used, or is expected to be used in the future:**

Originated in 1994, OGP has become an integral part on all of our design projects. The object based system is constantly accumulating new rules and logic that are embedded in the system. Over time as more Object Genomes are defined, the depth of information will continue to increase. The potential is limitless and therefore is a never ending process. It is never ending yet, the objects are useful immediately as they are developed and evolve over time. There is no need to "wait" for a completed set of OGP objects to use them.

Additionally, the system is not proprietary. By design it is based on open standards, by necessity it needs to be able to relate to disparate parts of the design process. Building Information Modeling (BIM) is the direction the AEC industry is going and OGP is integral to BIM. The next stage that is being developed now is to insert "intelligent agents" into the system that will look at individual objects and rules based on information that each agent carries or create new scenarios from those objects.

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# The Object Genome Project™ (OGP)

**OBJECT GENOME PROJECT**

Yokota NCO Club - Tokyo, Japan

**DESIGN TYPOLOGIES**

**LOGIC DATA**

Object Genomes are used to describe architectural environments as large as entire city blocks, buildings and sections of buildings.

The intelligent objects evolve over time; new characteristics and files are added as new and complex requirements come up. Our environments and buildings are not static.

Just like The Human Genome can describe mankind, The Object Genome describes our built environment. Buildings are complex by nature and The Object Genome Project takes a methodical approach of analyzing, documenting and creating tools to master this complexity.

DEFINING ARCHITECTURAL TYPOLOGIES  
INFORMATION-BASED PROJECT PROCESS  
CUSTOM OBJECT LIBRARIES TO  
DESCRIBE ARCHITECTURAL ENVIRONMENTS

**3D OBJECTS - CGI INFORMATION**

Karl Stone OMI - LA, CA

Saint Edmund's Episcopal Church - San Mateo, CA

CONSTRUCTION

COMPUTER MODEL

3D SCENE VIEW OF 3D MODEL

The Object Genome System spans small to large objects. Each object is associated with data. The image above illustrates the concept of using data from this system. Each object has a vast amount of data it can output.

**LAUSD School Genome**

NOTE:

The genome is the entire set of genes or DNA that an organism has. In this case, the genome is the entire set of data that describes the building. The genome is the entire set of data that describes the building. The genome is the entire set of data that describes the building.

Object ID	Object Name	Object Type	Object Description
1	LAUSD School Genome	Building	LAUSD School Genome
2	LAUSD School Genome	Building	LAUSD School Genome
3	LAUSD School Genome	Building	LAUSD School Genome
4	LAUSD School Genome	Building	LAUSD School Genome
5	LAUSD School Genome	Building	LAUSD School Genome
6	LAUSD School Genome	Building	LAUSD School Genome
7	LAUSD School Genome	Building	LAUSD School Genome
8	LAUSD School Genome	Building	LAUSD School Genome
9	LAUSD School Genome	Building	LAUSD School Genome
10	LAUSD School Genome	Building	LAUSD School Genome

The same objects can be used on the web. In this example an SQL database shows 700+ variations possible from one object.