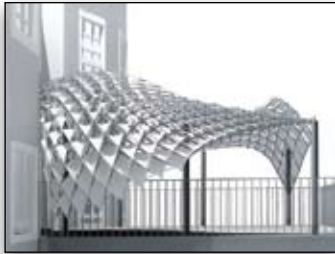


Image courtesy of TVS, The Lagoons

# GENERATIVECOMPONENTS®

ADVANCED DESIGN SOFTWARE FOR ARCHITECTS AND ENGINEERS



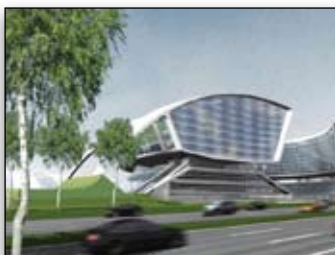
Component Membrane  
- AA Emergent Technologies and Design AA



Quad Meshes in Architecture  
- Benjamin Schneider-TU-Wein



Dostyk Project, Almaty  
- NBBJ with E/YE Design



Setun Hills Business Park, Moscow  
- Bothe Richter Teherani

GenerativeComponents enables designers to explore more possibilities, in less time, create better designs and efficiently create and manage complex geometric relationships.

GenerativeComponents enables architects and engineers to pursue designs and achieve results that were virtually unthinkable before.

GenerativeComponents is an associative and parametric modeling system used by architects and engineers to automate the design processes and accelerate design iterations. It gives designers and engineers new ways to efficiently explore alternative building forms without manually building the detail design model for each scenario. It also increases their efficiency in managing conventional design and documentation.

*“Generative Components brings the design, manufacture and construction processes together in an integrated way, a way that will change how AEC can be achieved with significant benefits in time saving, communication and freedom to design and create.”*  
-by Vector One

Empowered by computational methods, designers can direct their creativity to deliver inspired sustainable buildings that are freer in form and use innovative materials and assemblies. GenerativeComponents facilitates this by allowing the quick exploration of a broad range of “what-if” alternatives for even the most complex buildings.

GenerativeComponents captures and graphically presents both design components and abstract

relationships between them. This capability lets GenerativeComponents go beyond making geometry explicit; it makes design intent explicit as well. Although designers are working graphically, based on intuition and experience in architectural design, their work is captured in logical form.

This unique generative design software captures and exploits the critical relationships between design intent and geometry. Designs can be refined by either dynamically modeling and directly manipulating geometry, by applying rules and capturing relationships among building elements, or by defining complex building forms and systems through concisely expressed algorithms.

To inform decisions, GenerativeComponents is integrated with building information modeling, analysis, and simulation software, providing feedback on building materials, assemblies, systems performance, and environmental conditions. This integration also ensures that intent becomes reality by enabling designs to accurately and efficiently flow through to detailed production and fabrication.

GenerativeComponents is being used by many of today’s leading design firms to embrace change. It is the design tool of choice for creative architects and engineers who appreciate that design is best when it emerges from a combination of intuition and logic.

GenerativeComponents is already enabling leading architects and engineers around the world to deliver inspired sustainable buildings. Among them are Arup, Buro Happold, Foster + Partners, Grimshaw Architects, HOK, Kohn Pedersen Fox, Morphosis, and SHoP Architects.

## SYSTEM REQUIREMENTS

### Processor:

Intel or AMD processor  
3.0 GHz or greater

### Operating System:

Windows Vista, XP, and 2000

### RAM:

256MB minimum,  
512MB recommended

### Hard Disk:

900MB free disk space (includes the 400MB install footprint for a complete installation)

### Display:

Graphics Card supported  
by DirectX 9.0

## ABOUT BENTLEY

Bentley Systems, Incorporated is the global leader dedicated to providing comprehensive software solutions for sustaining infrastructure. Architects, engineers, constructors, and owner-operators are indispensable in improving our world and our quality of life; the company's mission is to improve the performance of their projects and of the assets they design, build, and operate. Bentley sustains the infrastructure professions by helping to leverage information technology, learning, best practices, and global collaboration – and by promoting careers devoted to this crucial work.

For more information, visit  
[www.bentley.com](http://www.bentley.com)

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## GENERATIVE COMPONENTS AT-A-GLANCE

### Unique Capabilities

- Built on a solid CAD platform, and integrated with discipline-specific tools and technologies
- Save time by using a system that is interoperable with many applications and formats
- Generated Feature Types (aka Components): Provides an extensible toolkit to enable iterative design

### Transactions

- Design the construction sequence of the model and use it to manage and explain the setup of a design
- Communicate effectively with customers and colleagues. Reduce costs by designing the construction sequence
- Flexible transaction management
- Use one model for different variations. You can reorder or re-sequence the transactions

### Associative modeling

- Create active designs that react to changes within the model
- Saves time by supplying: relationships, "network", "nodes", symbolic diagram, data round-trip
- Relationships between objects propagate changes through the model
- Encapsulation of design rules and intent within parametric forms
- You can make changes easily without having to manually edit the model
- Object References: Create a complex network of relationships
- Graph changes: Allows direct interaction with the design logic and exploration of changes in the design rationale

- Dynamics: Dynamic interaction with the values and algorithms defining the form

### Parametric modeling

- Complete control of parametric object attributes and the associative network of relationships between objects
- Saves time by propagating changes through the model
- Intelligent parametric features allow easy exploration of more complex designs
- Design Options: Many efficient iterations of design options at all phases
- Open system allows different approaches to add content to the system: Changes to any parameter value or relationship out of sequence at any time
- Expressions: Using expressions allows you to take advantage of mathematics and conditional relationships

### Symbolic Diagram

- Shows the relationship in the model, how the pieces relate and see non-geometric objects like variables or data inputs
- Saves time by displaying the relationship of objects in the model through a symbolic representation as opposed to just a geometric representation

### GCScript

- Full featured, object oriented scripting language with Integrated Development Environment (IDE) and debugger. Ubiquitously available within GenerativeComponents interface

- Choose values using IntelliSense for efficient and intuitive scripting
- Saves time by supplying: formulas, rules, algorithms, recipes
- Design approach options: Hybrid approach/environment of hands-on manipulation and scripting/programmatic

### Automatic Replication

- Objects can flexibly represent either the single or multiple case for highly efficient design representation. For example, a single column object can represent a whole column grid including its unique conditions.
- Save time by preventing duplicating work

### BIM Integration

- Allow integration with Bentley® Architecture
- Time saving by avoiding redundant work and makes more sophisticated designs practical
- Cost Estimating: The iterative design process allows near-realtime creation of documentation including drawings, schedules and bill of materials

### Analysis Integration

- An open system that can connect to other technical systems/tools such as energy and structural analysis
- Better designs by making critical decisions early in the process. Cost savings through avoiding duplicate models in different software packages



Lansdowne Road Stadium, Dublin  
- HOK and Buro Happold



The Lagoons  
- Thompson Ventulett Stainback and Associates