

# 7group SYNTHTEGRATIVE THINKING

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## Integrative Design Introduced into LEED® v4

### Background

In November 2005, a core committee of national building industry practitioners gathered in Chicago to begin a dialogue on how to offer the marketplace a document that clarified the meaning, importance, structure and practice of an Integrative Design Process. An Integrative Process (IP) is increasingly being seen as critical to achieving both cost efficiencies and building performance. For example, national public meetings on green building underwriting (conducted at Federal Reserve regional offices in 2010) concluded that a consensus IP is such an important part of their underwriting, that "it should be a condition of financing". This is according to the National Consensus Green Building Underwriting Committee and Fireman's Fund Insurance Company.<sup>1</sup>

In response to this growing market interest, most design professionals give lip service to this process, but very few teams do it well. Consequently, after more than six years of work, an ANSI Standard was created to inform designers, engineers, constructors, facilities managers and building owners about the advantages of the IP and to take the mystery out of how to do it. The resulting *Integrative Process (IP) ANSI Consensus National Standard Guide® 2.0 for Design and Construction of Sustainable Buildings and Communities* was published in February 2012.<sup>2</sup>

In 2009, we wrote a book to provide a practical guide and delve deeper into the "lessons learned" from our experience implementing the IP. This book, *The Integrative Design Guide to Green Buildings: Redefining the Practice of Sustainability*, serves as a kind of reference guide for the current *IP ANSI Standard Guide*. Throughout 2009 and into 2010, approximately thirty peer reviewers, selected from a wide range of design and construction professions, were engaged to evaluate the book's detailed practices and stages. The *IP ANSI Standard Guide* was the result; it synthesizes and reflects the suggestions, comments and edits that grew out of this peer review process.

### Definition of IP

The IP actively seeks to design and construct projects that are cost-effective over both the short and long term by engaging all project team members in an intentional process of collaboration to discover mutually beneficial interrelationships and synergies between systems and components. It is done in a way that unifies technical and living systems so that high levels of building performance, human performance and environmental benefits are achieved.

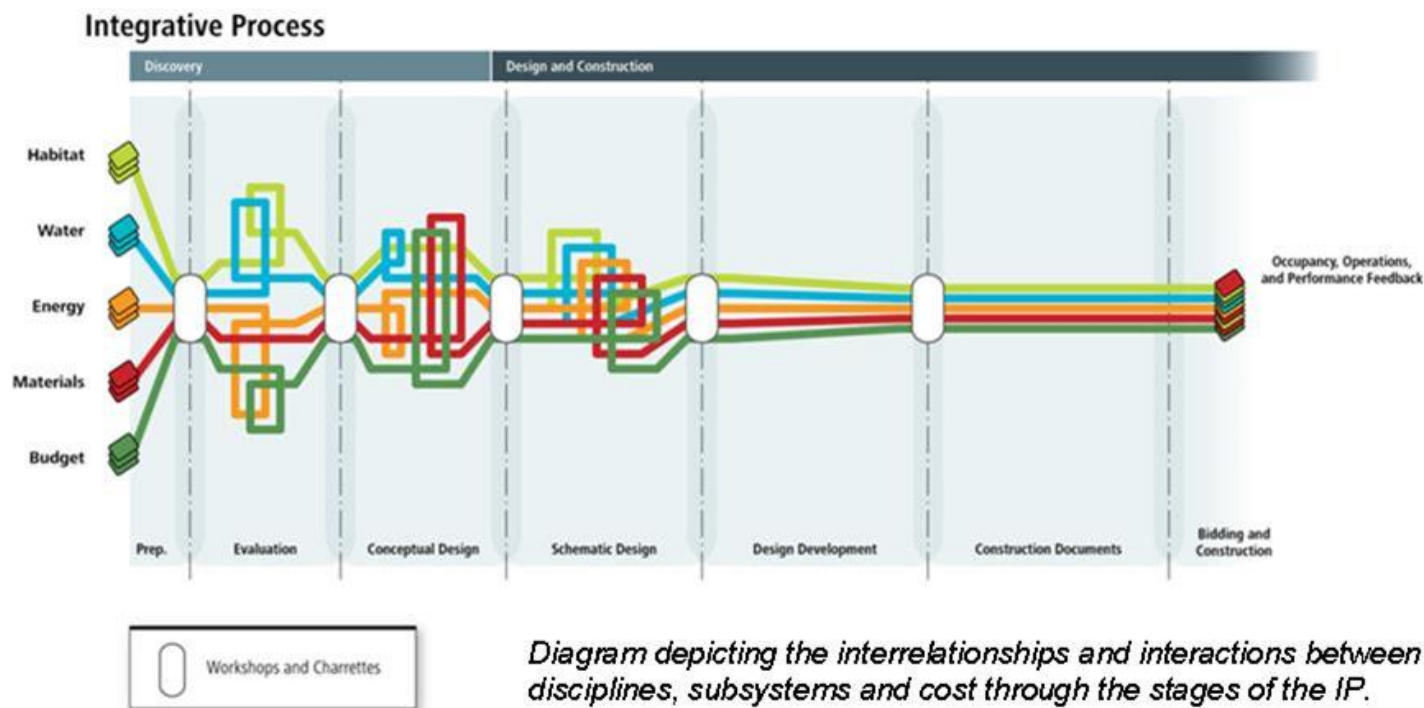
### Philosophy Underlying IP

When working in a traditional linear way, the design process isolates design and construction disciplines into silos (e.g., architects, mechanical engineers, landscape architects and constructors) creating fragmented solutions. These 'solutions' can, and do, create unintended consequences – some are positive, but most are negative. However, when working to holistically integrate the input of diverse team members early in the process, it becomes possible to achieve significant efficiencies, cost savings and other benefits.

To work this way requires that those who hold knowledge across various disciplines be brought together in ways that enable the thinking from each discipline to inform and link with the others. This synthesis requires a process that explores all major issues in parallel. The entire design and construction team should group-think and problem-solve together to identify synergistic opportunities and the resultant benefits.

For example, by enhancing insulation levels, optimizing lighting, increasing air distribution efficiency and installing high performance glazing, we can downsize a building's mechanical systems (equipment such as furnaces, air conditioners, heat pumps, fans, etc.). In many climates, entire perimeter heating systems can be eliminated. The cost savings achieved through the mechanical equipment reductions pay for the changes that allowed for the downsizing in the first place. The building ends up costing the same (or even less), but energy consumption and utility bills will be reduced dramatically.

The IP mandates more coordination. It encourages team members to challenge typical assumptions and rules-of-thumb from the very beginning of the project. Opportunities presented by building and site systems are considered early and examined before schematic design starts, or at the very least, while it proceeds. Integrating the many systems involved in a building requires the expertise of each team member responsible for each system be brought together for this very purpose. It rarely happens by accident. In short, all issues need to be addressed concurrently, with everyone present, at the earliest possible time because you can never be sure where an innovative solution may come from. This can be summarized as: **Everybody Engaging Every issue, Early.**



## Relationship to USGBC's LEED Green Building Rating System

The availability of the above documents and thinking contributed to the USGBC's creation of a new credit in LEED v4. This IP credit includes activities associated with "Discovery" and "Implementation" across energy- and water-related systems.

The credit rewards project teams for gathering and analyzing information during Discovery to make improved building design decisions during Implementation. It encourages project teams to identify synergistic opportunities early in the process that can improve performance and often lower costs. As described above, improving the envelope may make it possible to downsize the HVAC system, but if it happens late in the process, the chiller, boiler and distribution systems are already designed and often bought, and savings may no longer be possible.

Compliance with the *IP ANSI Standard Guide* is not required to achieve the LEED credit. However, it is recommended, since it helps teams pursue a collaborative process versus the conventional approach to design and construction (which is typically linear and oppositional).

## More Information

For a detailed discussion of the new LEED v4 IP credit, please see 7group's [Understanding Integrative Design in LEED v4](#).

**John Boecker**  
7group Partner

<sup>1</sup> Bushnell, Steve. "Risk Reduction Statement." *The Institute for Market Transformation to Sustainability*. Web

([http://mts.sustainableproducts.com/CMP\\_FFIC\\_Risk\\_Reduction\\_Statement.pdf](http://mts.sustainableproducts.com/CMP_FFIC_Risk_Reduction_Statement.pdf)). 16 April 2014.

<sup>2</sup> It was based on an earlier version *ANSI/MTS 1.0 Whole Systems Integrated Process Guide (WSIP)-2007 for Sustainable Buildings & Communities*®.

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7group • 183 West Main Street • Kutztown, PA 19530