

BIM, CIS/2 and the Future

Retooling the Steel Industry to Add More Value

By Thomas Hartmann, P.E.

The structural engineering and steel construction industry (SESCI) had a jump on the building information modeling (BIM) industry before BIM was even born. It is called CIS/2, and it came into being in the 1990s with the development of personal computers.

For the sake of argument, I will propose that the term “BIM” first appeared around 2004. It is rooted in an earlier term, “Building Product Model,” which was discussed by Charles Eastman of Georgia Tech in the 1970s. In the United Kingdom, the Steel Construction Institute holds copyrights to CIS/2 publications that date back to 1993. Comprehensive information under the banner of CIMsteel Integration Standards Release 2: Second Edition (2003) is available at www.cis2.org, which reports that it was last modified on Thursday August 14, 2003 – seven years ago.

So CIMsteel/2 was fully developed and documented before the word BIM was ever spoken. “CIM” stands for Computer Integrated Manufacturing, which is undoubtedly the first cousin of today’s BIM. CIS/2 is an acronym for Computer Integration (Manufacturing of) Steel, Release 2. The steel industry was progressively articulating a computer integration strategy long before CIS/2; in fact, more than 35 years of thinking has gone into solving the problem that we now call “BIM” inside the construction industry. AISC has, in fact, supported the adoption of CIS/2 to aid the economy and efficiency of producing structural steel.

So what happened? Why is the SESCO not leading the development of BIM in the design and construction community? The answer is that CIS/2 has not added enough value to improve the business of those who try to adopt the standard. It is simply not “standard” enough.

As a thought exercise, imagine the changes in the SESCO compared to the changes in the computer industry. Many U.S. software vendors adopted CIS/2 as a part of their steel detailing and structural engineering products. There are CIS/2 import and export file

functions in many of the engineering software packages, so the technology is available to share at a detailing level. A structural engineer in the past could and still can share very capable CIS/2 models with the owner, architect, contractors, fabricators and detailers. In the computer industry, in the same timeframe, IBM developed a new computer called a “PC” and even wrote an operating system – ironically called OS/2 – to compete with Microsoft DOS, which became the *de facto* standard. The computer industry advanced and advanced, yet the steel industry somehow managed to continue with “business as usual.”

“Business as usual” is the problem with CIS/2, and with BIM in general, for the steel industry. The differences, one can argue, must be within the economic and competitive environments of each industry. The computer industry flourished, but the SESCO languishes in its traditional delivery methods and approach.

We can identify the parallels and differences in the two developments to understand what happened. DOS, the disk operating system, along with the IBM PC hardware specifications, became *the* standards adopted by an entire industry. CIS/2 was developed by an international consortium inside the steel industry. European and US companies participated and contributed to the base of CIS knowledge. One difference is that the steel industry was already mature, with lots of active organizations and competing companies. The introduction of CIS/2 required a business to adapt to a new practice. It also needed a form of vertical integration, that is, data-sharing between businesses that in fact may be rivals. Personal computers were new to business; there was no retooling of an existing operation. PC technology enhanced business operations – and from the perspective of computer technology supporting the business, one can argue that the SESCO is as progressive with computer technology as any other industry.

Lack of vertical integration is one problem in the steel industry. This is another important and essential difference in the adoption



outcomes. The construction industry is made up of mostly small players. As a result, no SESCO participant is willing to give away any proprietary knowledge. Examples include CAD drawings, engineering analytical models, BIM models, steel detailing models, CNC files output for the control of steel fabrication machines – the list goes on. Recognize, on the other hand, that there is no problem with sharing a letter or email. The sharing issue is related to the expert knowledge. If this specialized knowledge is given away, it diminishes the economic advantage of one firm over another. It tends to create a more competitive environment than currently exists, and that environment is already too competitive.

Given this background, is it possible to adapt CIS/2? Secondly, does it remain valuable in the current business environment? The answer to both of these questions is, “Maybe.” Ultimately, there is one driving force: market and customer needs determine what is valuable. Given that new BIM standards are currently emerging, CIS/2 may not, in fact, provide the value necessary to compete. Retooling the SESCO is absolutely necessary to compete globally. A second option is to change the business environment. One idea is to integrate projects vertically using Integrated Project Delivery (IPD) contracts ... but that is a whole new topic for another time. ■

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