Ask most people what houses are built from and they will suggest materials like bricks and wood and stone. Ask some builders what homes are built from and they will say, "data." Every building project contains thousands of discreet bits of information including codes, inspections, job orders, material estimates, customer walkthroughs, bids and so much more. In the race towards greater efficiency and profitability in the home building market, it may just be the company with the best data management who will win. Data management also includes the data required to make the sale. We are quickly moving away from simple demographics towards psychographics—an intimate understanding of what physical, intellectual and emotional needs must be met in order to move the needle towards an initial sale.

The real question that needs to be answered is how that data is managed after it is collected. According to consulting firm McKinsey, costs and schedule overruns were the norm in the construction sector.[29] Large projects typically took 20 percent longer than estimated and were up to 80 percent over budget. Project planning (often done on paper) often lacked coordination between office and the field. Contracts were also not coordinated or digitally stored. And supply chain management was antiquated at best. Until very recently, construction was among the least digitized of all industries. Couple this with the demand for green building materials, the affordable housing crisis and relative drop in available housebuilding workers and you have a construction industry ripe for disruption.

Surveying and Geolocation go High Tech

One major reason projects get delayed and over budget is geological surprises. Particularly in a market with increased government regulation and customer desires for green and healthy housing, rapidly determining which building sites are healthy and safe is a high priority. Drone and UAV (Unmanned Aerial Vehicle) technologies have a big part to play here. When connected with new techniques in 3-D laser scanning, geographic information systems, high definition photography and LIDAR (which uses optical lasers to detect thousands of points per second) these far ranging scans can be inexpensively and rapidly integrated with project-planning tools such as Building Information Modeling (BIM). When connected with detailed geographic information systems, surveying can be done more quickly and with greater accuracy than ever before.
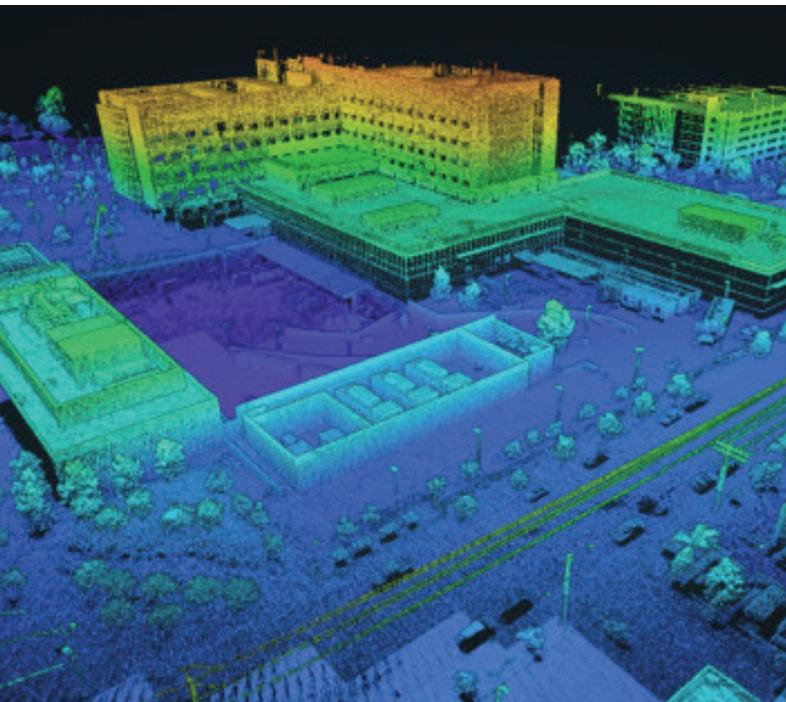
Best CAD Practices

redhawkus.com

5-D BIM

There is a need for a single source that provides a coordinated, real-time view of all aspects of a project–including schedule, cost, materials, process and design. Enter 5-D Building Information Management–a five–dimensional representation of the physical and functional characteristics of any given project. It contains the three dimensions with which we are most familiar—height, width and depth representations of the design and plan for the dwelling, and then adds two additional dimensions–project costs (money) and schedule (time). This information is then synthesized into a format where project owners can quickly and easily see what impact any impending change may have on the project design, materials, cost and schedule, and allows project planners to identify problems earlier in the game and brainstorm possible solutions. Ultimately, we can expect these visualization systems to go immersive with technologies like AR and VR.

| WHAT YOU BUILD	WHEN YOU BUILD	HOW YOU BUILD
3D Building/Model	**4D** Time/Schedule	**5D** Cost
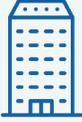
Oracle

'It is the death of the enterprise and the birth of the ecosystem. A small independent business that tries to specialize in something is better than a bigger company that tries to do everything themselves. Just imagine companies being the best at what they can be at and working together to produce an enterprise level solution through ecosystems."

– Matthew Jackson,
Global Manager of the Hercules Platform, BIMobject[30]

A SaaS-y Sort of Collaboration

One key development in the digitization of construction is the spate of new Software as a Service (SaaS) providers who offer online platforms enabling real-time sharing of information with project team members anywhere in the world. This is particularly important as so much important data was previously stuck in the analog chasm between the field and back office. Various SaaS platforms allow builders instant access and search capability for everything from client walkthroughs to part supply catalogs to permits to project bids. The addition of sensors and cameras (both still and video) allow builders, contractors, homeowners and inspectors to literally see eye-to-eye on what is happening on a job site. Onsite workers can access all this data via their laptops, tablets and mobile phones. Post project, myriads of data wranglers can find commonalities and "learn" how to do the next project more efficiently with lower costs. Eventually we can expect a lot of this data wrangling and machine learning to be automatically analyzed by computers utilizing AI and Machine Learning.
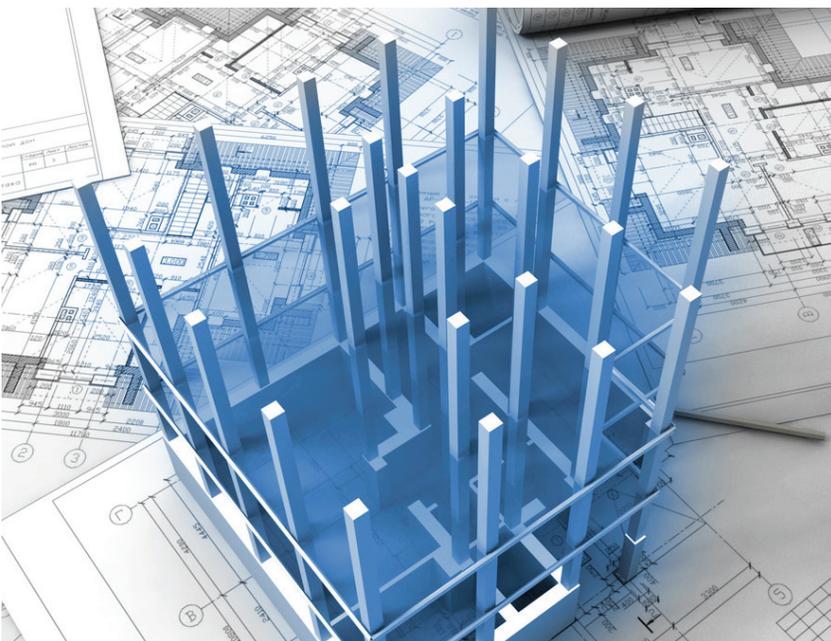
The Science of Sales

Data companies help developers and real estate agents develop a much more nuanced look at neighborhoods and who potential buyers are. These companies move beyond demographics (basic information about age, income, gender and profession) to psychographics—a more detailed look at what a potential buyer needs to flip the switch from prospect to sale.

Kapture

Of course, once you acquire a customer, you need to keep them. That's where technology support companies come in with outsourced digital customer service and customer relationship management. When coupled with a SaaS that tracks every aspect of the project process as well as digital record taking from job site cameras, builders can focus on building and leave the delicate process of keeping customers happy to specialists in that space.

sbci.com