Designing, building and owning a project in 2021

I'll get a call from a client to design a new 12 storey office building (with lower level retail) directly adjacent to their existing campus in a downtown location. They are looking to expand, but need to make sure it is feasible without investing too much money and time into a design. I tell them I, and my team, including other design/engineering/construction partners, will get right on it. If the client wants to "use their guy", I'll ask if they've got IPD experience and what their track record is. I'll be able to look up their "BIM score" and decide if I'm in, or not. A couple days later, service agreements are signed and I'm off to the races.

I am able to grab site data (either as a mode, or as topos, site features, context, etc.), via the web, and load this information into a web-based, desktop, or tablet-based tool to do some preliminary site analysis (including data overlays for zoning, code, public services, utilities, climatic conditions, etc. and maybe even massing studies and renderings). It won't matter who the data comes from, or which tool, on which platform I'm using. I'll be able to store the information in my project portal, online, and switch between platforms, as necessary.

I'll be able to share my initial site analysis with my client and other project team members, via a web-based portal, with everyone collaborating (synchronously or asynchronously) adding comments and data from other domain sources (geotechnical, insurance ratings, building supply sourcing locations, etc.) to be sure we have a thorough understanding of the constraints and possibilities the site may have.

The owner likes the results and decides to move forward, we have a meeting with all parties involved review the BIM Execution Plan and make sure everybody is happy with what they are expected to do and when. We'll put a contingency plan in place for any unforeseen obstacles (bankruptcy, political/neighborhood backlash, economy tanking) to be sure everyone is covered and how we cope. After three or four planning meetings, we'll send the standard contracts around, see that they are reviewed and signed within a week or so… easy to do when the lawyers aren't involved….

As I begin creating the LOD 100 building model, the owner/developer/contractor can "look over my shoulder" and add information as they view updates to the model on the project portal. The BIM coordinator/facilitator's role gathers steam on this project, making sure communications and data are flowing smoothly, timely, and correctly.

When the LOD 100 model reaches completion the owner/developer/contractor can review the financials and talk to the city planning, zoning and building officials about possible issues, solutions and timetable. Everyone is working from a web-based model viewer of the project and are able to comment, all comments stored for future review and reference.

While working on the LOD 200 model, the geotechnical and survey engineers do a relatively quick verification of exiting site conditions and fill in any holes in the existing context data. Preliminary massing/space studies enable the building energy performance simulation and analysis to inform the design team about all alternative strategies of the building in the urban site, given average AND historical climatic conditions. The contractor is able to review and update cost analysis for construction every week to be sure things haven't spiraled out of control as the owner gets more excited about the development and design of the project. He shares his cost impact with the designers so they can determine where to shift or cut costs, or find out how much room they have to work with, giving a little more "bang" to the project. At the end of the LOD 200 phase, the owner/developer/contractor are able to take renderings to the bank to secure financing, to the city to secure planning and zoning commitments, to the community to assure them that they are working toward the city's sustainable design and smart urban growth goals, all while using great renderings to sell the project to prospective tenants.

Within a couple of weeks, LOD 300 is underway, basically repeating LOD 200, but with greater detail. The architect and contractor are spending more time to locate and specify products for the project, determining the best sources, globally, based on performance criteria, cost, availability, timetable, and overall carbon footprint (fabrication, shipping, raw vs. recycled material usage, etc.). As products are selected, the models/databases will be updated to include the specifics. Suppliers will be notified and asked to review the models and provide feedback to design team choices. Adjustments are made based on supplier expertise and the model/database is updated with cost and timetable values.

About midway though the LOD 300 process, the entire team has agreed that the design has been nailed down so they can "fast-track" the construction process and begin site demolition and excavation earlier with a "Phase 1" foundation and infrastructure development package. This part of the process moves quickly to LOD 400 while the "Phase 2" development package at LOD 300 finishes up. It should be ready within a couple weeks so the contractor can look forward to an actual start date and further revise the construction management Gantt charts and fabrication timetables. As the Phase 2 LOD 300 process winds up, the contractor is verifying the final LOD 300 model data is being delivered to the various fabricators to finalize the details they started a few weeks ago midway through the LOD 300 process. Phase 1 LOD 400 is complete, with BOMs, costs, and schedules in place, with the contractor itching to get things started onsite. The city building permit department is given the models and within a week permits are issued and demo begins.

While Phase 1 begins, within a couple weeks of the "start" of Phase 2 LOD 400, the final product delivery orders and schedules will be nailed down. The contractor/construction manager is finishing up detailing and installation processes for Phase 2, reviewing logistics with the owner, city zoning and building officials, delivery services, and product suppliers. The city building permit department is issued "final" models and permitting takes less than a week. Everybody is feeling pretty good, even with the prospect of a heavier that average rainfall predicted and possibly active hurricane season. The contractor assures everyone she is able to make adjustments, as necessary, and everyone will be able to track progress on the project website, including movies/pictures, BOM and installation checklists, regardless of the weather.

Tick-tock, tick-tock….

Upon completion of the project, the city receives a final version of the emergency assistance model for their emergency services database, giving police, firefighters, and EMS real-time information about the status of the building and occupants during any possible emergency. The final systems checks on the automated building systems will be completed using a final version of the building services systems model, with all sensors and equipment located, verified and loaded into the building's CMMS and automation controls systems. Use and performance data will be collected, stored, and analyzed on a quarterly basis to determine how well the building is measuring against the design criteria. The results will be shared with the owners and designers to make notes about how to improve the next building and how suppliers can improve their products. Universities will be able to aggregate the performance, as well as carbon footprint and embodied energy, data from multiple buildings and help the city to determine if their sustainability goals are being met, what adjustments need to be made and how future owners/developers can help.

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