Flexible Facility Development in the Manufacturing & Life Sciences Industry

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ABSTRACT: Time-to-market demands drive the construction and renovation of facilities in the manufacturing and life sciences (MLS) industry. Traditional design-bid-build delivery is rarely a viable economic option for facilities that manufacturer products with long development cycles, such as a new microprocessor or pharmaceutical drug. In many cases, this means designing a facility without knowing the full functional requirements of the building or having complete knowledge of the manufacturing processes housed within. In response to these challenges, the MLS industry is advancing the concept of a ***flexible facility***, where specific building components or systems are generalized and decoupled from one another to expedite delivery. While there is a clear need for these types of facilities, recent efforts to bring flexibility into practice have been sporadic and unguided. Therefore, the goal of this presentation is to advance a thoughtful, future research direction for flexible facilities in the MLS industry. This direction leverages multiple streams of research, including the sources of uncertainty underpinning the need for flexibility, as well as approaches to managing flexibility found in the domains of industrial engineering and engineering design.