"Production Planning in Direct Digital Manufacturing"

Session Chairs:

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Session purpose:

The advances in materials science and additive manufacturing (AM) technologies are on the verge of changing the manufacturing and supply chain management landscape. With AM objects are produced layer-by-layer directly from their 3D model without the need for special molds and tooling. At the introduction phase of AM technologies in the 1980s, they have been utilized in the prototyping of new products. Recently, their use has been extended to the direct manufacturing of parts and/or products for end users. Hence the term direct digital manufacturing (DDM) has emerged. DDM entails manufacturing technologies that use digital models for the direct production of prototypes, tools, parts/components and finished products. In the near-medium future, rather than replacing traditional manufacturing, DDM is expected to complement it. Aerospace and defense, biomedical, and automotive industries have been adopting DDM for products that are produced in small batches and require a high degree of customization. The adoption of DDM has implications for production planning and supply chain management.

This invited session aims to bring together experts to share developments on production planning in DDM systems. We encourage high quality submissions of modeling and new solution approaches, as well as real case studies dealing with production planning problems of DDM.

Session topics:

The session is devoted to a broad spectrum of problems associated with production planning in DDM systems. This invited session welcomes original theoretical contributions and real-life applications to production planning and scheduling problems in DDM. Considering the nature of underlying AM technologies inclusion of cost estimation, build time estimation, build orientation, stacking and modeling of uncertainty within DDM context are examples of relevant session topics. Other related aspects of production planning problems in DDM are also welcome.