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This article suggests a framework for modelling a production system architecture in the early phases of product development. The challenge in these phases is that the products to be produced are not completely defined and yet decisions need to be made early in the process on what investments are needed and appropriate to enable determination of obtainable product quality. In order to meet this challenge, it is suggested that a visual modelling framework be adopted that clarifies which product and production features are known at a specific time of the project and which features will be worked on – leading to an improved basis for prioritizing activities in the project. Requirements for the contents of the framework are presented, and literature on production and system models is reviewed. The production system architecture modelling framework is founded on methods and approaches in literature and adjusted to fit the modelling requirements of a production system architecture at an early phase of development. The production system architecture models capture and describe the structure, capabilities and expansions of the production system architecture underdevelopment. The production system architecture modelling framework is tested in a case study, and the results indicate that the modelling process facilitates identification of critical factors of the production system architecture, that the production system architecture models capture and describe the structure, capabilities and expansions of a production system architecture under development, and that the production system architecture models can facilitate dialogue on the production system architecture between heterogeneous stakeholder groups.

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