This paper presents the Architecture Framework for Product Family Master Plan. This framework supports the identification of a program architecture (the way cost competitive variance is provided for a full range of products) for a product program for product-based companies during the early stages of a product development project. The framework consists of three basic aspects: the market, product program, production and a time aspect-captured in the multi-level roadmap. One of the unique features is that these aspects are linked, allowing for an early clarification of critical issues through a structured process. The framework enables companies to identify a program architecture as the basis for improving time-to-market and R&D efficiency for products derived from the architecture. Case studies show that significant reductions of development lead time up to 50% is possible. Significance: Many companies are front-loading different activities when designing new product programs. This paper suggests an operational framework for identifying a program architecture during the early development phases, to enable a significantly improved ability to launch new competitive products with fewer resources.