Module 6.2 Assignment

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Case Study: Evolutionary Architecture at Amazon (2002)

Amazon's journey in evolutionary architecture provides valuable insights into managing large-scale systems. Starting in 1996 with a monolithic application called Obidos, Amazon initially housed all its business logic, display logic, and functionality in a single system. However, as the company grew, this monolithic structure became increasingly complex and inflexible, hindering scalability and evolution. Recognizing these limitations, Amazon underwent a significant architectural transformation between 2001 and 2005, shifting from a two-tier monolith to a fully distributed, decentralized services platform. This innovative move to a service-oriented architecture (SOA) was one of the first of its kind at such a scale. The transformation yielded impressive results, dramatically improving deployment frequency from 15,000 deployments per day in 2011 to nearly 136,000 per day by 2015.

Key lessons from this transformation include the benefits of strict service orientation in providing excellent isolation and improving ownership and control. Additionally, prohibiting direct database access by clients enabled better scaling and reliability improvements without affecting clients. Perhaps most importantly, the shift to SOA significantly benefited both development and operational processes. Each service now has a dedicated team responsible for its entire lifecycle, from conception to operation, allowing for rapid innovation with a strong customer focus. This case study underscores the advantages of transitioning from a monolithic architecture to a service-oriented one, particularly for large-scale, rapidly evolving systems, enabling greater flexibility, scalability, and faster innovation while maintaining system reliability and performance.