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**Case Study: Evolutionary Architecture at Amazon (2002)**

**Main Points Summary:**

Amazon initially operated on a monolithic architecture (Obidos) that integrated all business logic and functionalities into a single system. Over time, this setup became too complex and difficult to scale efficiently due to intertwined dependencies.

Recognizing these limitations, Amazon underwent a significant architectural transformation between 2001 and 2005. They transitioned from a monolithic architecture to a service-oriented architecture (SOA), which decentralized their systems into independently deployable services. This shift enabled faster development, improved scalability, and enhanced reliability.

**Lessons Learned:**

1. **Strict Service Orientation:** Adopting a strict service-oriented architecture provided Amazon with isolation, ownership, and control over each service, facilitating rapid innovation and development.
2. **Prohibition of Direct Database Access:** By prohibiting direct database access from client applications, Amazon could make scaling and reliability improvements to service states independently, without affecting client systems.
3. **Development and Operational Benefits:** Implementing the services model empowered teams to innovate quickly with a strong customer focus. Each service had a dedicated team responsible for its entire lifecycle, from inception to operation, fostering agility and accountability.
4. **Scalability and Productivity Gains:** The architectural transformation significantly increased Amazon's deployment frequency, from approximately 15,000 deployments per day in 2011 to nearly 136,000 per day by 2015. This demonstrated the scalability and productivity enhancements achieved through effective architectural design and implementation.