Enterprise Blockchain Integration
SAP Business Processes on Private Blockchains

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Abstract
Distributed ledger systems use cryptography to secure digital records and establish consensus among counterparties. This project integrates a blockchain-based distributed ledger with existing SAP Enterprise Resource Management systems. This prototype models a purchase order process and lays the foundation for connecting other multi-party business processes with blockchain systems.

Background
Blockchains are append-only ledgers in which new transactions are cryptographically secured, then distributed to a network of independent nodes. Smart contracts are records stored on blockchains which encode rules for updating the ledger state, allowing the execution of programs that model complex systems.

SAP is a suite of enterprise software that incorporates database systems, business process automation, and many other features. SAP is widely used by businesses globally, including by 98% of companies in the Fortune Global 500.

Architecture

Evaluation
Our project successfully integrated a Hyperledger Fabric blockchain with SAP ERP systems, including a management dashboard and vendor-facing websites.

Our iterative approach enabled us to make consistent progress while refining the requirements and design. We created extensive documentation that will allow future blockchain development efforts to reference our work and extend it.