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The Center for Cyber Defenders

Expanding computer security knowledge

Bring Domain Specific Languages to Ethereum

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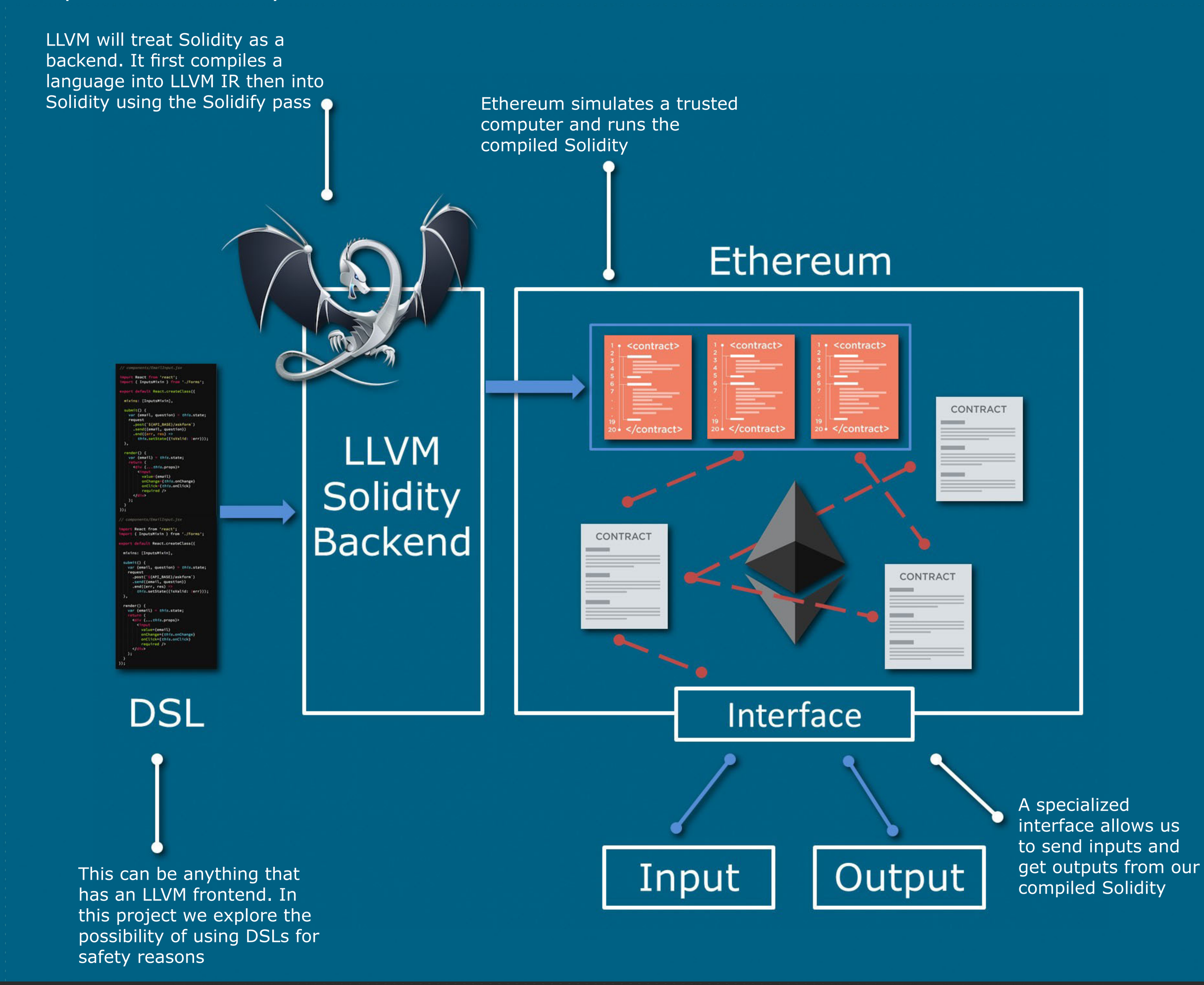
Abstract

In this project we explore the feasibility of bringing Domain Specific Languages to the Ethereum blockchain. Ethereum can be thought of as a global, public, cloud computer where programs in the form of smart contracts have their own storage space on the blockchain. A Smart contract is designed to execute in a decentralized fashion, where no single entity can modify the results of its execution. This allows anybody to trust the integrity of a smart contracts computation without having to place trust in any third party. While smart contracts are secure in theory, they are very difficult to program safely in practice. By creating a toolchain to compile lightweight domain-specific languages into Ethereum's dominant language, Solidity, we allow non-specialists to effectively develop safe and useful smart contracts. For example lawyers from a certain firm can have a proprietary DSL that codifies basic laws safely converted to solidity to be securely executed on the blockchain. In another example, a simple provenance tracking language can be compiled and securely executed on the blockchain.



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