

Fabric WebAssembly Chaincode

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› Introduction

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- › **Mentor(s):**
 - › Jay Guo, @guoger, IBM
 - › Morgan Bauer, @MHBauer, IBM
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- › **Hyperledger project:** Hyperledger Fabric

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› Project Description

- › Hyperledger Fabric chaincode shims are only available in Golang, nodejs, and java.
- › WebAssembly exposes lots of languages for development such as C, Rust, and many more
- › This project aims to integrate WebAssembly based smart contract in Hyperledger Fabric

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› Project Objectives:

- › Research on WebAssembly and do a feasibility study
- › Create an integration layer for deploying WebAssembly based chaincodes on Hyperledger Fabric
- › The integration layer should have none to minimal affect on Hyperledger Fabric core code

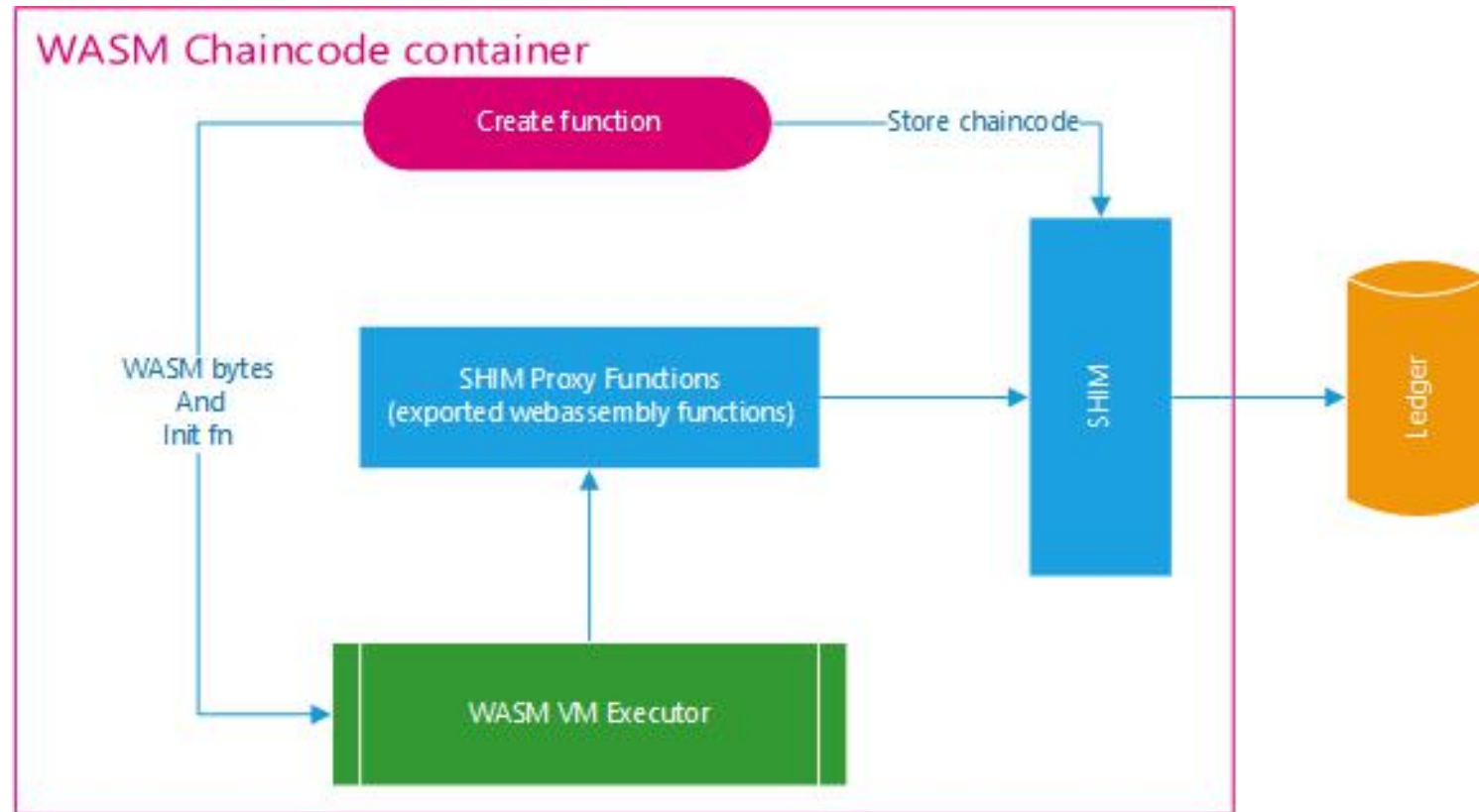
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› Project Deliverables:

- › Integration layer for WebAssembly based chaincodes
- › Essential shim wrapper functions to expose Hyperledger Fabric shim functionalities for WebAssembly based chaincode
- › End to End example using one of the language other than java, js, go lang

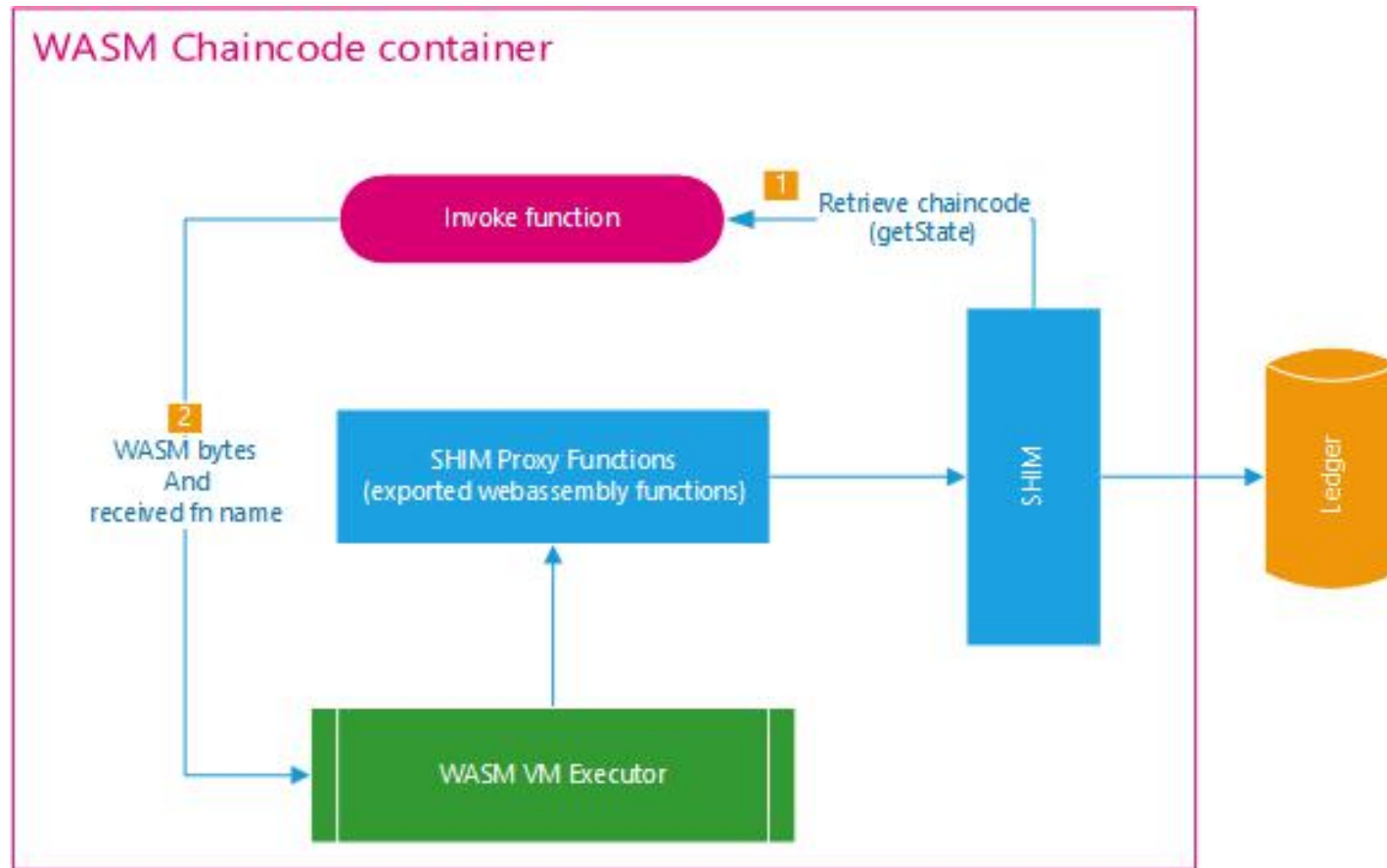
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› How it all works



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› How it all works



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DEMO



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- › **Project Execution & Accomplishments:**
 - › Learned about WebAssembly, Golang
 - › Using github issues for new feature requests and bug reports.
 - › Using github actions for CI pipeline
 - › Most challenging part would be looking for feasible WebAssembly based execution engine
 - › My main accomplishment would be getting a good grasp on how to work in open source community.

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- › **Recommendations for future work:**
 - › Create minimal interfaces for languages that can be compiled to WebAssembly
 - › Expose all other shim functions such as acl for WebAssembly chaincodes
 - › Easier exception feedback mechanism from host module to WebAssembly chaincode
 - › Try other WebAssembly execution engines as this area is evolving daily
 - › Create more examples using languages such as python, dotnet etc.
 - › Benchmarking