

EXTENDABLE APPLICATIONS IN GO

PHILIP SAHLI, 1.11.2023

ABOUT ME

PHILIP SAHLI

- living in Münsingen
- married, 2 sons
- Cloud System Architect for Swiss Post
- Outdoor activities, Tech stuff including Cloud, Kubernetes & Go Programming



AGENDA

EXTENDABLE APPLICATIONS IN 10 MINUTES

- (My) definition of extendable application
- Introduce of Personas
- Approaches
- Demo
- Questions

**AN EXTENDABLE GO APPLICATION IS A
COMPILED SOFTWARE THAT CAN BE
EXTENDED WITH PLUGINS BY A THIRD PARTY
TO ADD CAPABILITIES FOR THEIR USERS.**

PERSONAS

PERSONAS

REPRESENTING THE THREE INVOLVED PARTIES



Emily

Senior Software Developer

Likes innovation



Mark

Junior Go Developer

Adopts industry-standards



Steve

DevOps Engineer

Automate everything

THE ROLES OF THE PERSONAS

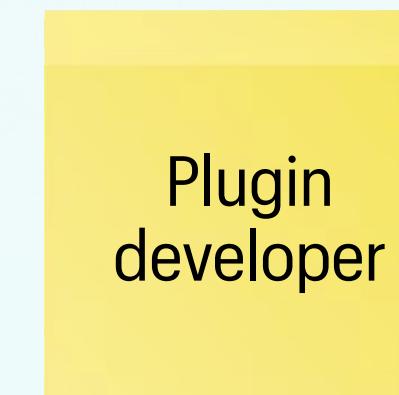
WHAT ROLE DO THEY PLAY?



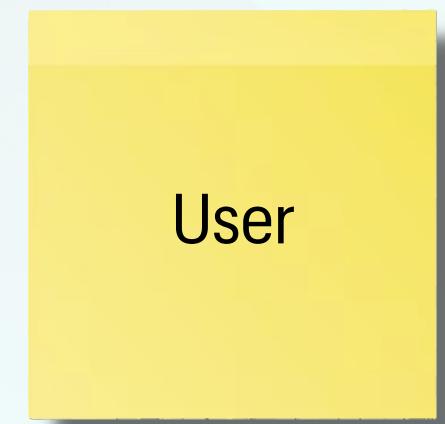
EMILY



MARK



STEVE



APPROACHES

Go plugins

Compiled in extensions

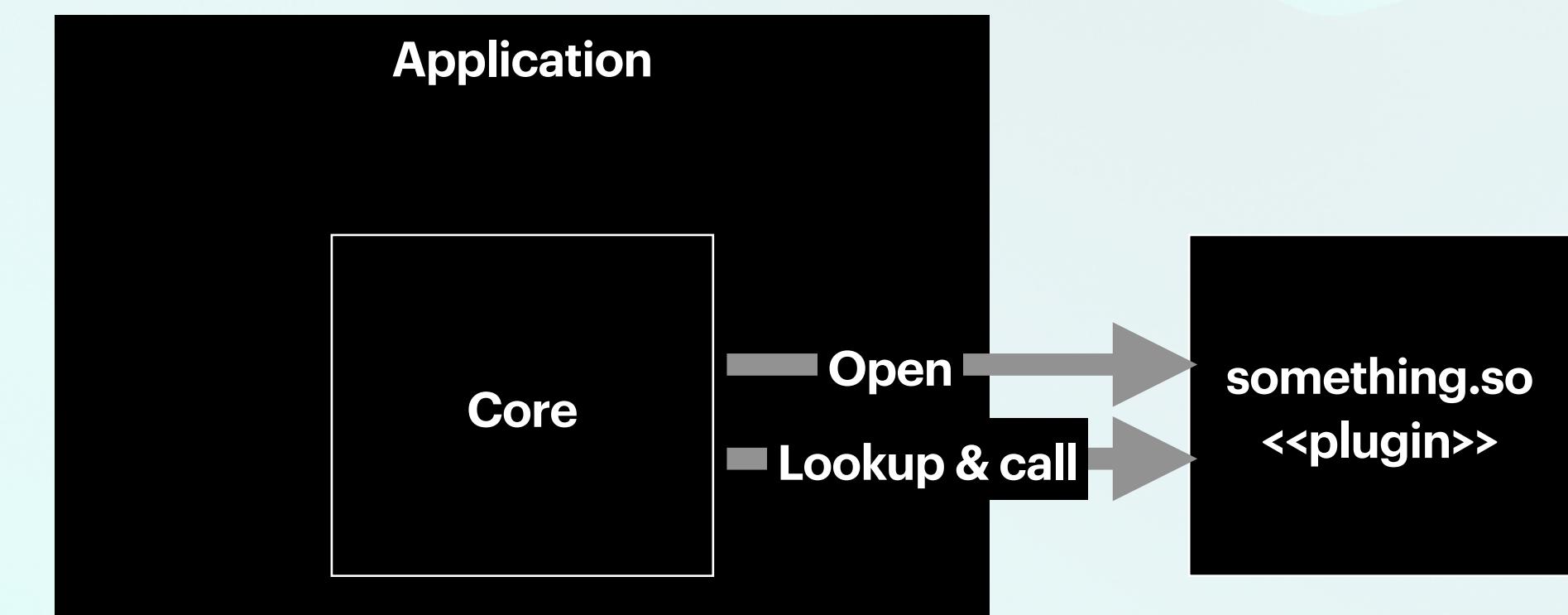
Embedded scripting

Out of process

#1

PLUGIN PACKAGE FROM THE STANDARD LIBRARY

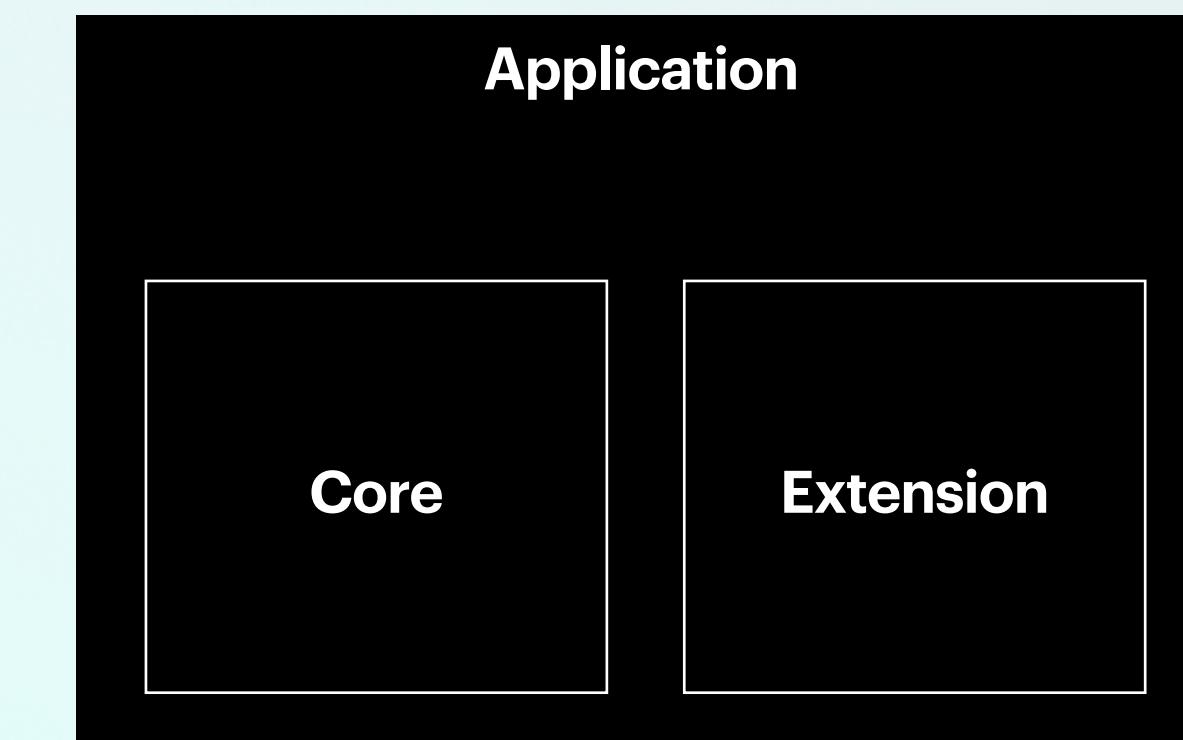
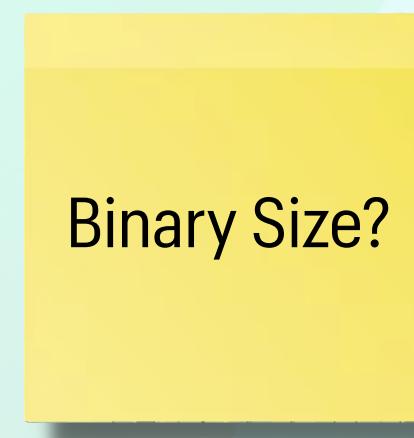
- A Go plugin is a Go main package with exported functions and variables that has been built to a *plugin_name.so* file



#2

COMPILED IN EXTENSIONS

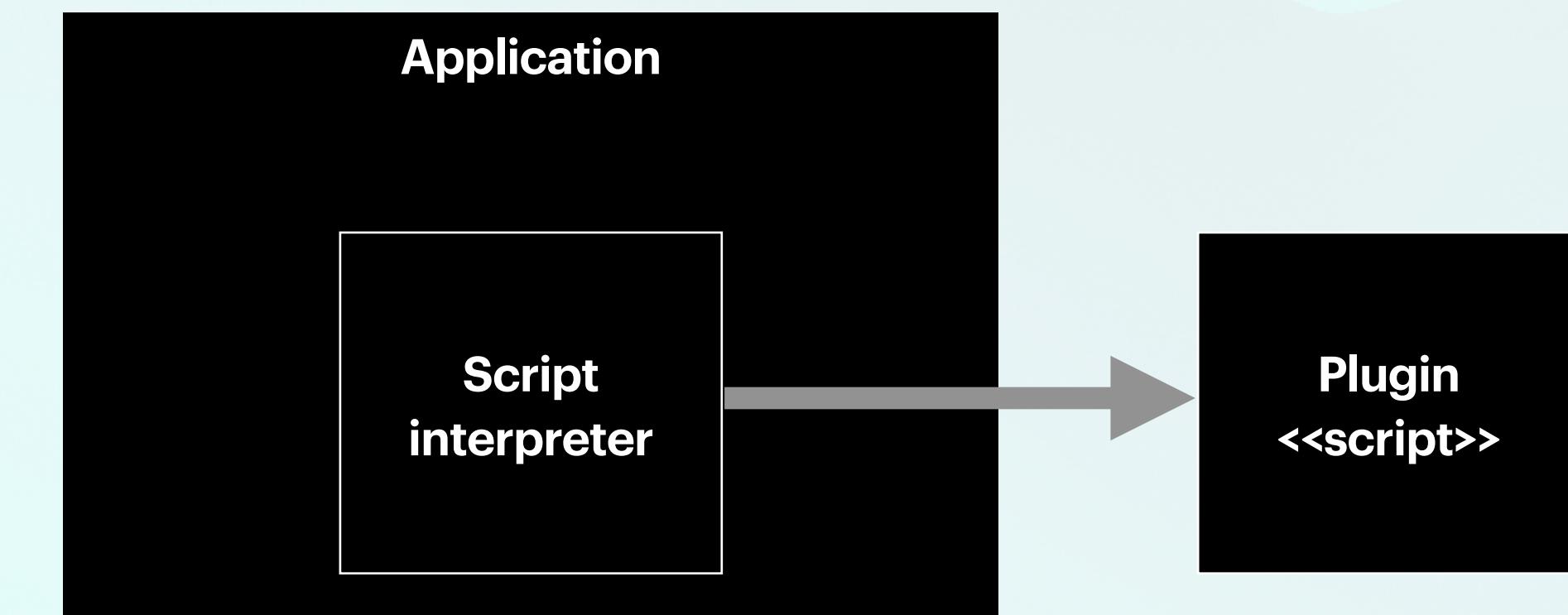
- Image formats and database drivers are built into the binary



#3

EMBEDDED SCRIPTING

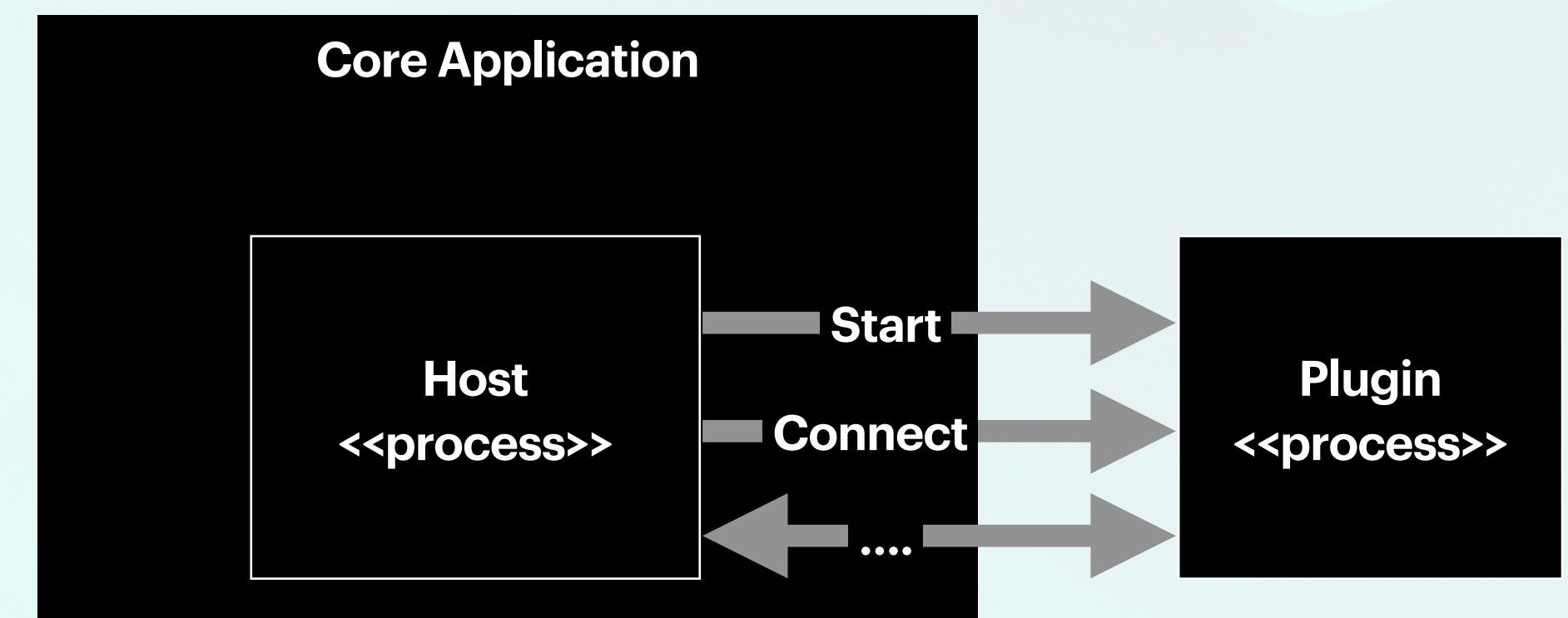
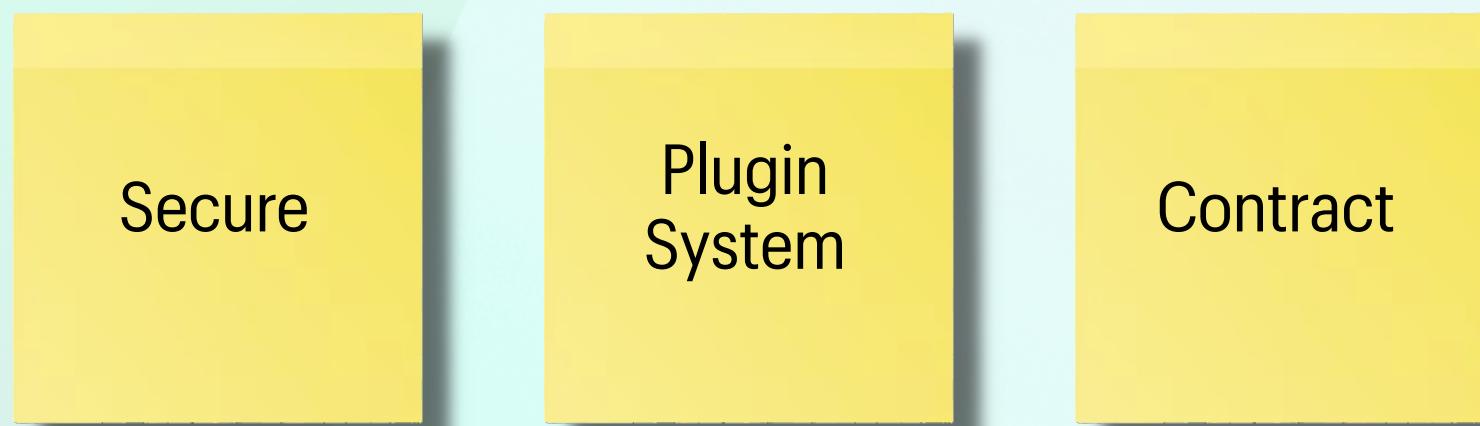
- Incorporation of a scripting language interpreter within a Go application



#4

OUT OF PROCESS

- Separate process communicating through inter-process communication to isolate plugins from the host process
- [hashicorp/go-plugin](https://github.com/hashicorp/go-plugin) & others



Contract

- Interface
- Error Handling
- Docs
- Versioning

*Emily**Mark*

HASHICORP'S GO-PLUGIN

ABSTRACTING AWAY THE COMPLEXITIES OF INTER-PROCESS COMMUNICATION

- Licensed under Mozilla Public License v2.0
- Used in Hashicorp's projects and others
- gRPC based
- Plugins are Go interface implementations
- Cross-language support
- Complex arguments and return values
- Built-in Logging
- Protocol Versioning
- Security features (checksum verification, TLS)

Go plugins

Compiled in extensions

Embedded scripting

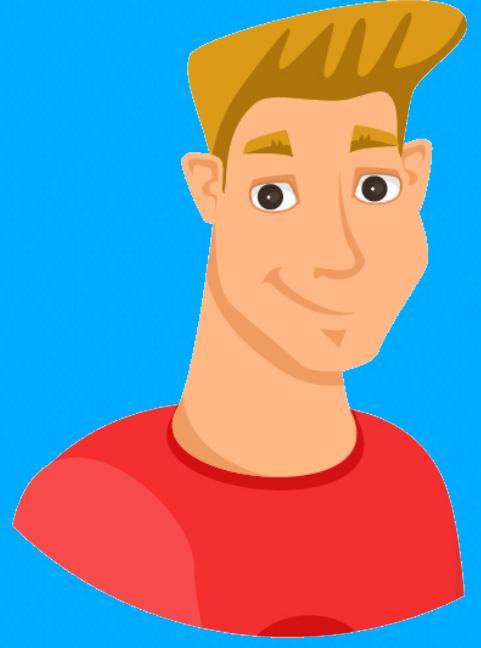
Out of process

MOST POPULAR PROJECT

HASHICORP/GO-PLUGIN IMPORTED BY

- OpenTofu (Plugins aka Providers)
- Grafana ([Backend plugins](#))
- Steampipe ([Plugins](#))
- Velero ([Plugins](#))
- Gitlab ([Fleet](#))

“CACHER” DEMO



Developed an
extendable
Caching
Software
“Cacher”

Developed a
plugin for
“Cacher” to use
AWS Dynamodb
as backend

Uses the
Software
“Cacher” to
store data in a
AWS Dynamodb

<https://github.com/philipsahli/cacher>

THANK YOU!

QUESTIONS?