

ORACLE

Newest MySQL Component Services Features

Or how to make a HTTP server accessing table data in a component

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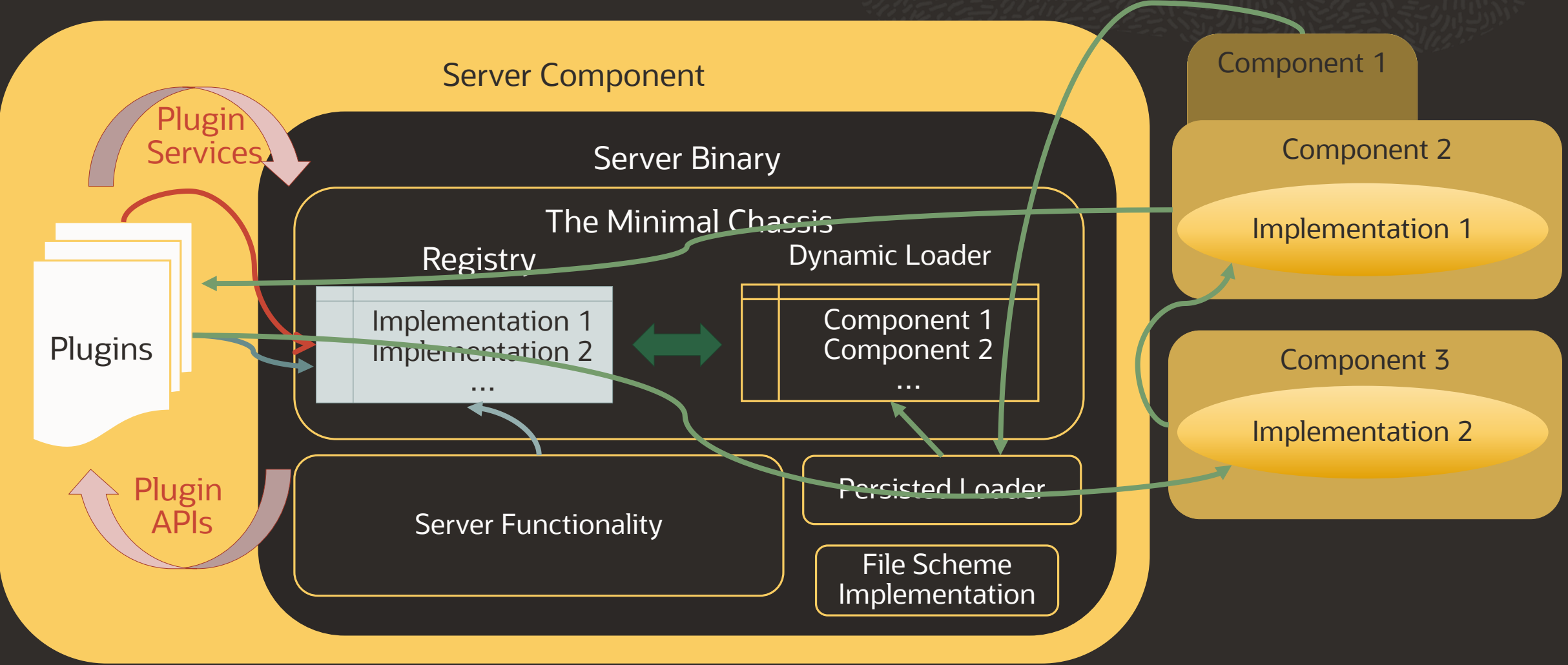
About Me: Georgi “Joro” Kodinov

- Working on MySQL since 2006
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- Background in Banking IT

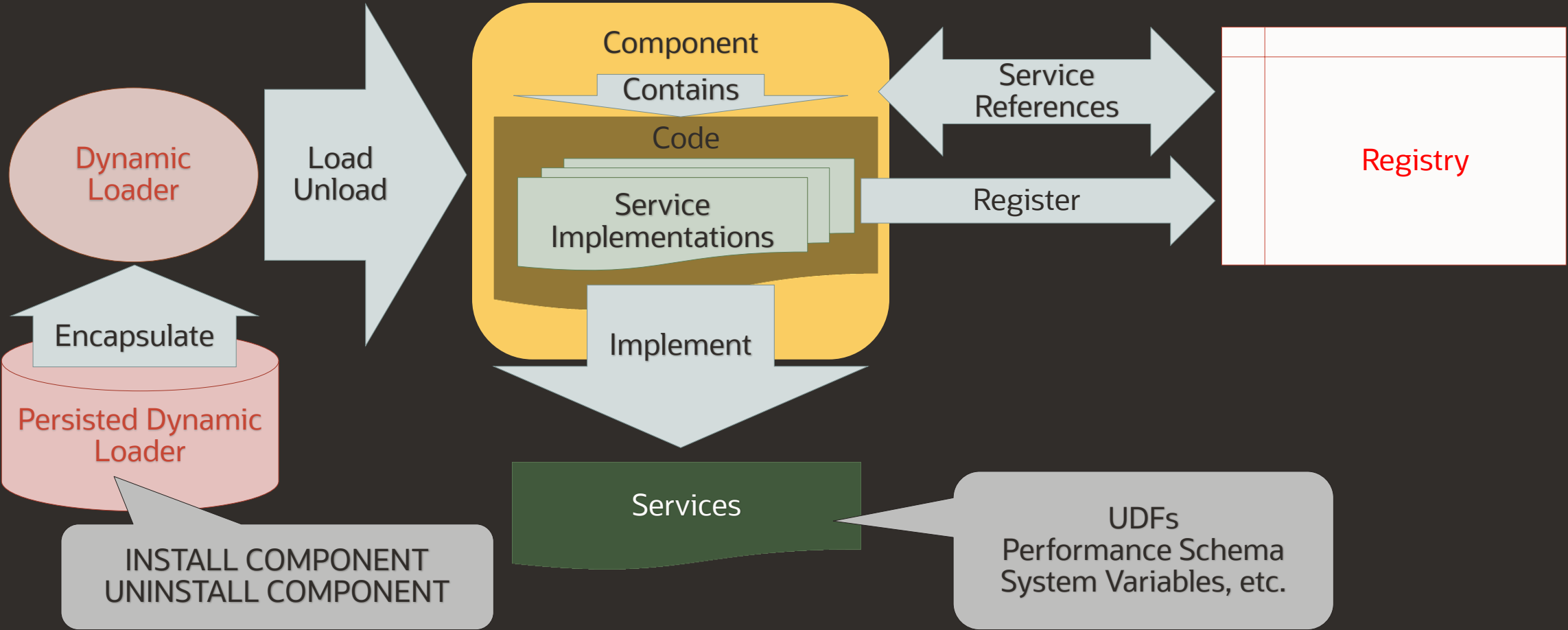
Component Infrastructure Architecture

A Refresher!

MySQL Server Modularization: The Big Picture



Components: Terminology



Component Service Inventory

Component Services: The Inventory

Service Registry

Dynamic Loader

Error logging

System/status variables

User defined functions

Performance Schema

- New tables and Instrumentation

Security Context

Password validation

Runtime errors

Collated Strings

Table Access

Etc.

- **More than 90 service related headers !**
- **Check your `include/mysql/components/services` source directory!**
- **Or Doxygen:**
https://dev.mysql.com/doc/dev/mysql-server/latest/PAGE_COMPONENTS.html

Noteworthy Additions To Services: Keyring Back-ends

- **Allows access to keyring data. And implementing new keyring back-ends!**
- Keyring APIs migrated to component APIs
- The server is calling the Keyring component service APIs
- There's a “shim” implementation inside the server to call the plugin APIs
- Few keyring back-end plugins are migrated to components and deprecated!
- Work ongoing to migrate all of them
- See e.g.
https://github.com/mysql/mysql-server/blob/8.0/include/mysql/components/services/keyring_reader_with_status.h

Noteworthy Additions To Services: Set system variable values

- **Allows components to set system variable values**
- Takes the value as a string
- See **mysql_system_variable_update_string**
https://github.com/mysql/mysql-server/blob/8.0/include/mysql/components/services/mysql_system_variable.h

Noteworthy Additions To Services: Query Attributes

- **Provides access to the query attributes of the running query**
- Needs to be called from within a server session running a query
- Can e.g. read these values from an UDF or an Audit event handler
- See **`include/mysql/components/services/mysql_query_attributes.h`**

Noteworthy Additions To Services: Table Access

- **Can read and write data from a table**
- Can do table/index scans or lookups
- Handles table structure consistency checks
- Does separate transactions
- Perfect for managing persistent component “system” data
- See **`include/mysql/components/services/table_access_service.h`**

Demo!

A HTTP server component accessing table data

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Using libmicrohttpd

CAUTION! USE AT YOUR OWN RISK!



- This is **NOT** production ready code!
- Things are **MISSING**:
 - Authentication
 - Authorization
 - Logging
 - Instrumentation of resource use

Further Reading

- https://github.com/gkodinov/mysql_httpd_table_access
- https://dev.mysql.com/doc/dev/mysql-server/latest/PAGE_EXTENDING.html
- <https://forums.mysql.com/>
- <https://bugs.mysql.com>

Thank you for using MySQL!

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