



MySQL 5.1 Event Scheduler

**The friendly behind the
scenes helper**

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Software Engineer

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MySQL Community Team Lead

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Innovation Everywhere

About us - Andrey "Poohie" Hristov

- MySQL Software Engineer
- MySQL Connectors Software Developer
- Author of
 - the Event Scheduler in MySQL 5.1
 - Connector/C++
 - Connector/OO.org
 - PHP drivers for MySQL



about us -Giuseppe Maxia

- a.k.a. The Data Charmer
- MySQL Community Team Lead
- Long time hacking with MySQL features
- Formerly, database consultant, designer, coder.
- A passion for QA
- An even greater passion for open source
- ... and community
- Passionate blogger
- <http://datacharmer.blogspot.com>



Updated presentation slides

- you will find an up to date copy of these slides at:
- <http://datacharmer.org/presentations/uc2009/>

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- Twitter me
 - @datacharmer "your feedback here"
- Post a comment on the MySQL Conference Facebook group
- Send a public message (becomes a blog post)
 - post@posterous.com
- Blog about it (if you already have a blog)
- Find my boss in the corridors and tell him I was great!

MySQL 5.1 GA

The Time Has Come...



MySQL Server 5.1

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Davi Arnaut
Kaj Arno
David Axmark
Igor Babaev
Patrik Backman
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Jim Winstead
He Zhenxing
Li Zhou
Michael Zinner

Plus many more from Support, Community, Marketing
and the wider MySQL community

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We can answer the hard questions

Brian Aker	Adam Donnison	Mads Martin Jørgensen	Elliot Murphy	Sveta Smirnova
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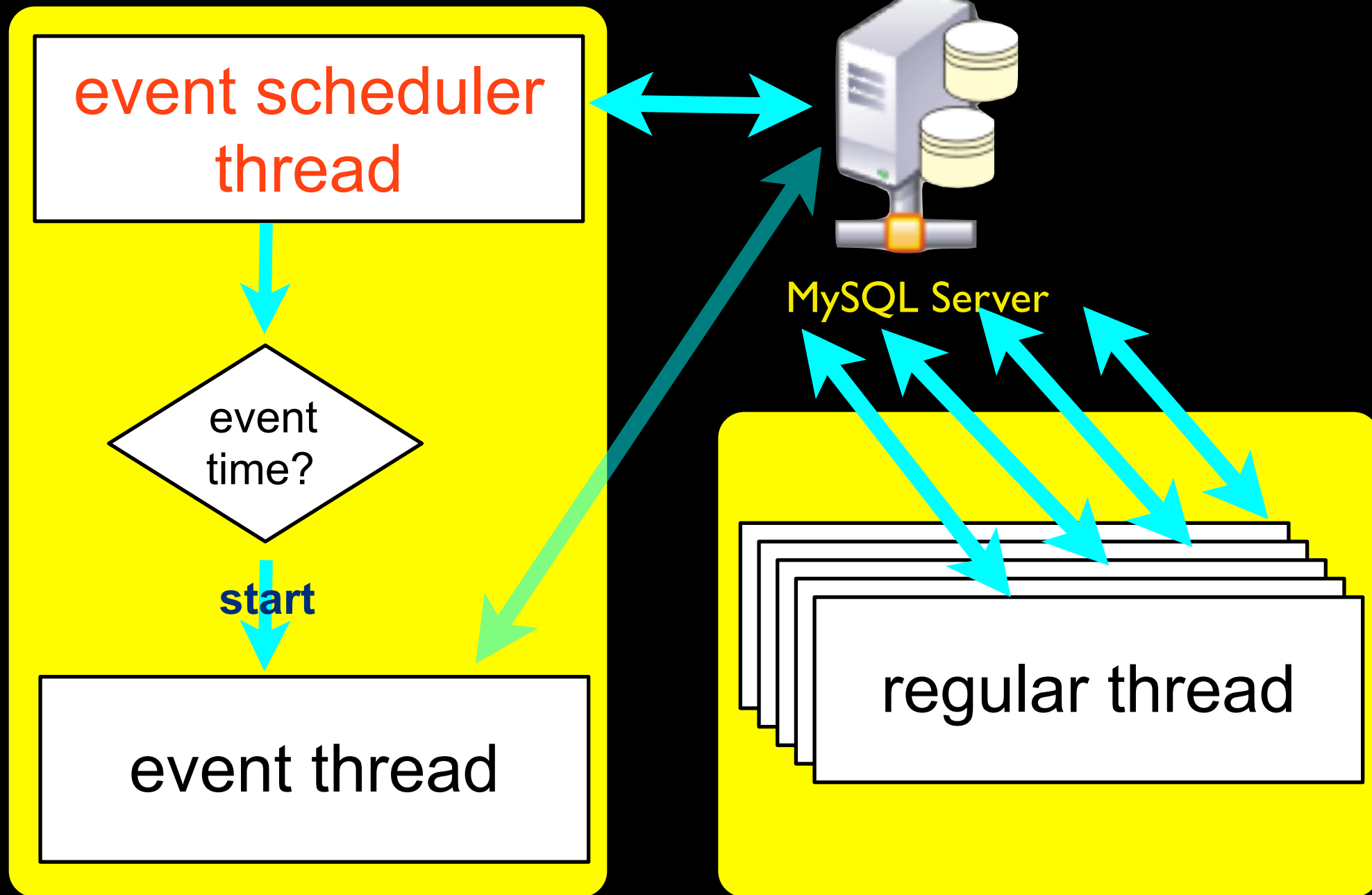
The event Scheduler

WHAT

What is the event scheduler

- Temporal triggers
- NOT related to a specific table
- Execute SQL code
 - at a given time
 - or at given intervals
- Created by Andrey Hristov
- First released with MySQL 5.1

How does it work?



The event Scheduler

WHY

Why using the event scheduler?

- Cross platform scheduler
- No external applications needed
- No overhead

The event Scheduler

HOW

How to use the event scheduler

1. Enable the event scheduler

A. in the option file

- **event-scheduler=1**

B. online

- **SET GLOBAL event_scheduler=ON;**

2. Create an event

3. Check the effects

Event creation syntax

```
CREATE EVENT event_name
ON SCHEDULE
    AT {DATE AND TIME}
DO
    {SQL COMMAND} ;
```

```
CREATE EVENT event_name
ON SCHEDULE
    EVERY {X}
    {SECOND | MINUTE | HOUR | DAY | MONTH | YEAR | WEEK}
DO
    {SQL COMMAND} ;
```

Event creation syntax

```
CREATE EVENT event_name  
ON SCHEDULE {schedule clause}
```

```
[ON COMPLETION [NOT] PRESERVE]  
[STARTS {DATE TIME}]  
[ENDS {DATE TIME} ]  
[ENABLE|DISABLE]
```

```
DO  
    {SQL COMMAND} ;
```

Creating an event at a given time

```
CREATE EVENT event_name
ON SCHEDULE AT '2009-04-21 15:55:00'
DO
    INSERT INTO some_table VALUES
    ('gotcha', now());
```

```
CREATE EVENT event_name
ON SCHEDULE AT now() + interval 20 minute
DO
    CALL smart_procedure();
```


Creating a recurring event

```
CREATE EVENT event_name
ON SCHEDULE EVERY 20 MINUTE
DO
    INSERT INTO some_table VALUES
    ('gotcha', now());
```

```
CREATE EVENT event_name
ON SCHEDULE every 7 DAY
DO
    CALL smart_procedure();
```

Creating a recurring event

```
CREATE EVENT event_name
ON SCHEDULE EVERY 10 MINUTE
STARTS NOW() + INTERVAL 2 HOUR
ENDS NOW() + INTERVAL 4 HOUR
DO
    CALL some_procedure();
```

```
# creates an event that runs every
# 10 minutes, but does not start now.
# It will start in 2 hours
# and end two hours later
```

looking for events

SHOW EVENTS\G

Db:	test
Name:	e1
Definer:	msandbox@%
Time zone:	SYSTEM
Type:	RECURRING
Execute at:	NULL
Interval value:	20
Interval field:	MINUTE
Starts:	2009-04-04 22:16:24
Ends:	NULL
Status:	ENABLED
Originator:	0
character_set_client:	latin1
collation_connection:	latin1_swedish_ci
Database Collation:	latin1_swedish_ci

looking for events

```
SELECT * FROM INFORMATION_SCHEMA.EVENTS\G
      EVENT_SCHEMA: test
      EVENT_NAME: e1
      DEFINER: msandbox@%
      TIME_ZONE: SYSTEM
      EVENT_BODY: SQL
EVENT_DEFINITION: CALL proc1()
      EVENT_TYPE: RECURRING
      EXECUTE_AT: NULL
      INTERVAL_VALUE: 20
      INTERVAL_FIELD: MINUTE
```

...

looking for events

```
SELECT * FROM INFORMATION_SCHEMA.EVENTS\G
```

...

```
      SQL_MODE:  
      STARTS: 2009-04-18 22:16:24  
      ENDS: NULL  
      STATUS: ENABLED  
ON_COMPLETION: NOT PRESERVE  
      CREATED: 2009-04-18 22:14:54  
      LAST_ALTERED: 2009-04-18 22:16:23  
      LAST_EXECUTED: 2009-04-18 22:16:24  
      EVENT_COMMENT:  
      ORIGINATOR: 0
```

Altering events

```
CREATE EVENT event_name
ON SCHEDULE EVERY 20 MINUTE
STARTS NOW() + INTERVAL 1 HOUR
DO
    INSERT INTO some_table VALUES
    ('gotcha', now());

ALTER EVENT event_name
ON SCHEDULE EVERY 20 MINUTE
STARTS NOW() + INTERVAL 1 MINUTE;
```

The event Scheduler

WHEN

When is the event scheduler useful?

- Data cleanup
 - Consistency checks
 - Refreshing stale data
 - dropping old partitions
 - creating new ones
- Extract-Transform-Load (ETL) operations
 - Creating summary tables
 - Prepare detail data for warehousing
- Whenever you don't need to use external resources (email, operating system info)

The event Scheduler

CAVEATS

Something to be aware of

- Not preserved
 - By default, events are removed after their last execution.
- The **BINLOG_FORMAT** is the one of the Event Scheduler thread, not the one used in the client that created it

Something to be aware of

- **Errors**
 - Errors go to the error log only (not visible to the client that created the events)
 - Factual errors detected at run time, not at creation time
 - e.g. table not found
 - procedure called with wrong parameters
- WHAT TO DO: create a procedure, test it, and then attach it to an event

Something to be aware of

- Replication
 - events creation are replicated with "slaveside_disabled"
 - events actions are replicated
- Compare with triggers where
 - triggers are replicated
 - trigger actions aren't

Something to be aware of

- The events scheduler **cannot access the operating system.**
- Thus, the event scheduler CAN NOT
 - send email
 - list directories
 - write to arbitrary files
 - run applications
- BUT, we have a hack for that. Stay with us

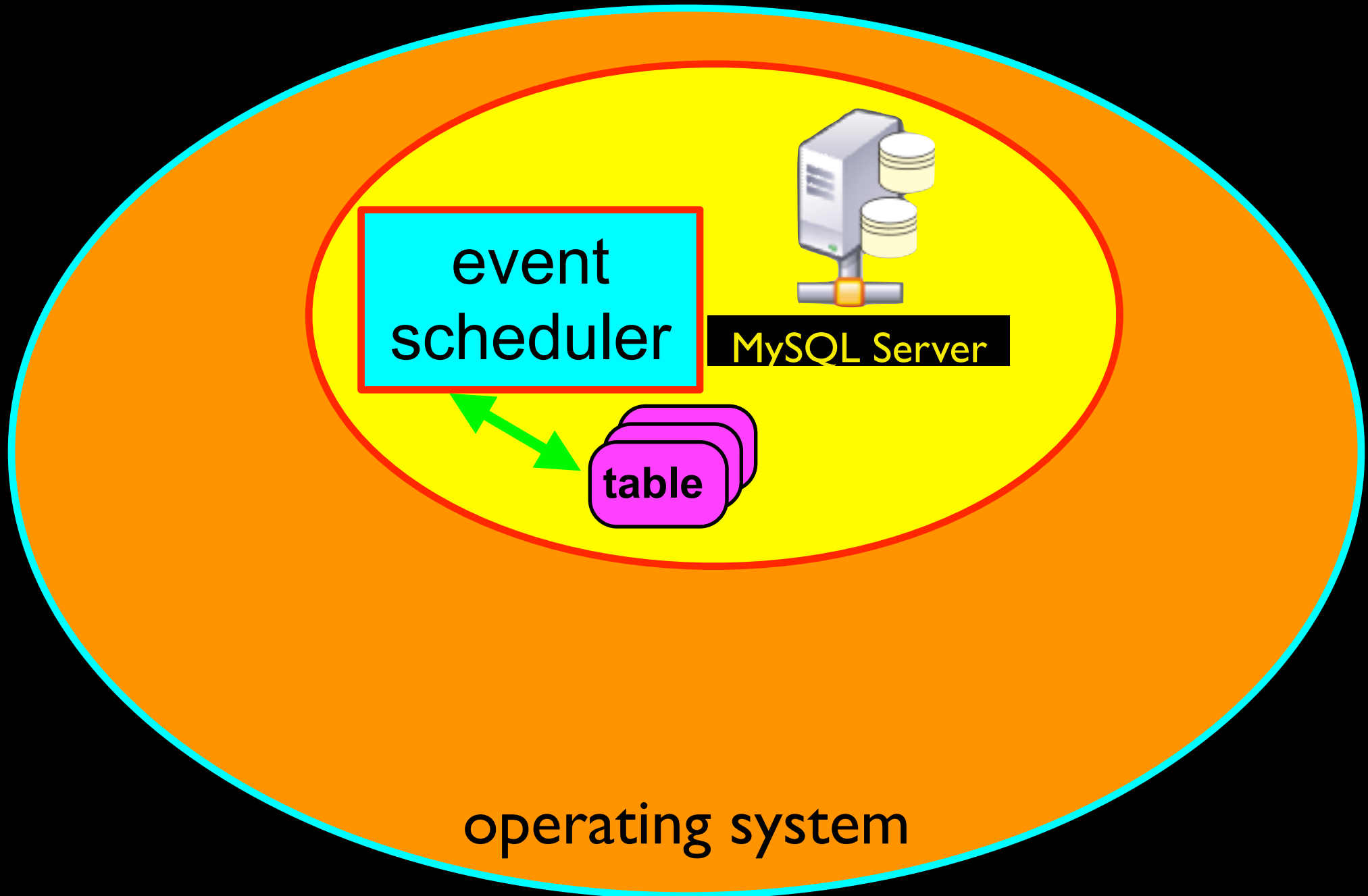
The event Scheduler

TRICKS

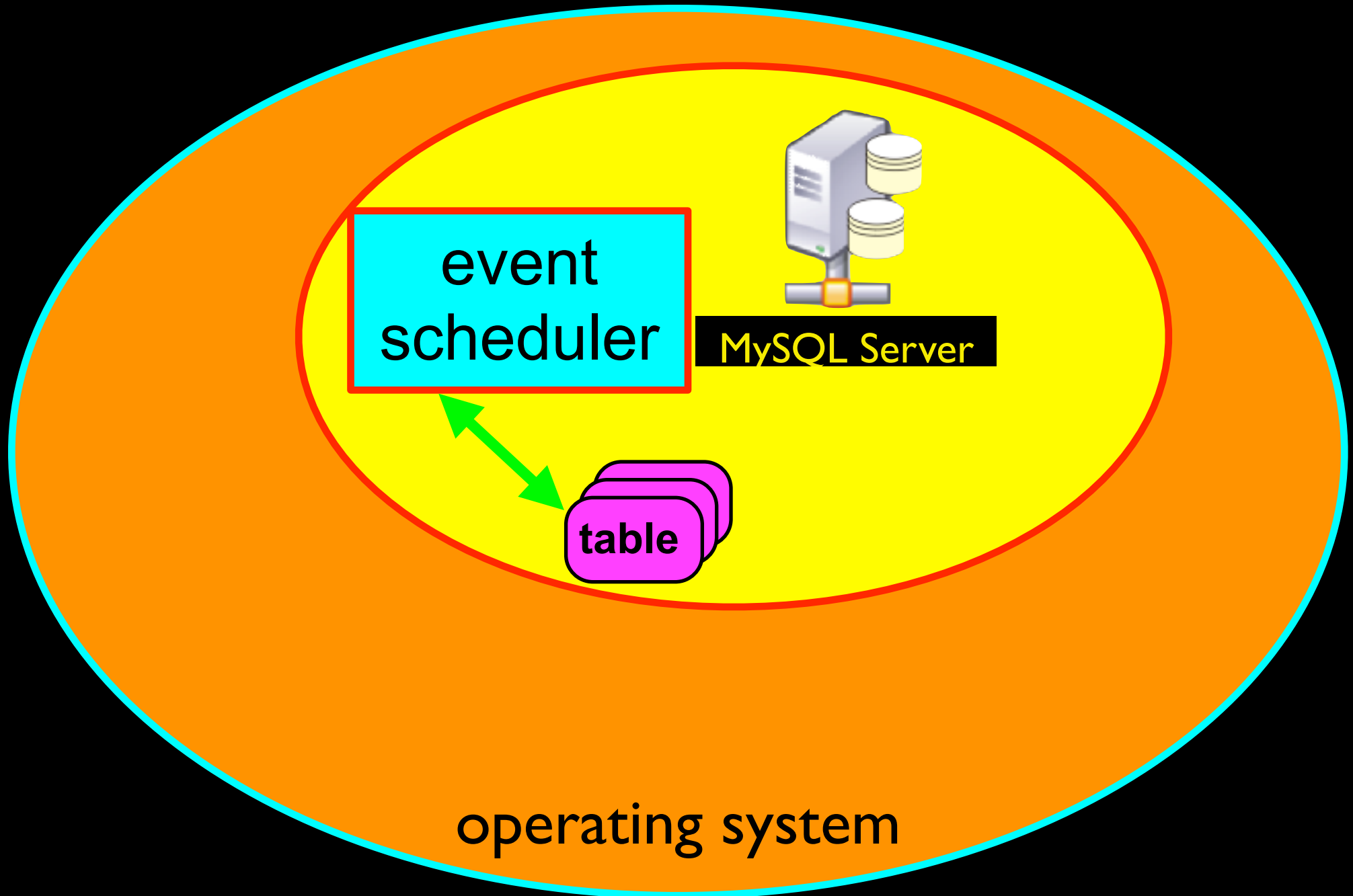
Hacking the event scheduler

- Purging the process list
- Combine the event scheduler with MySQL Proxy and Federated tables to use Operating System commands

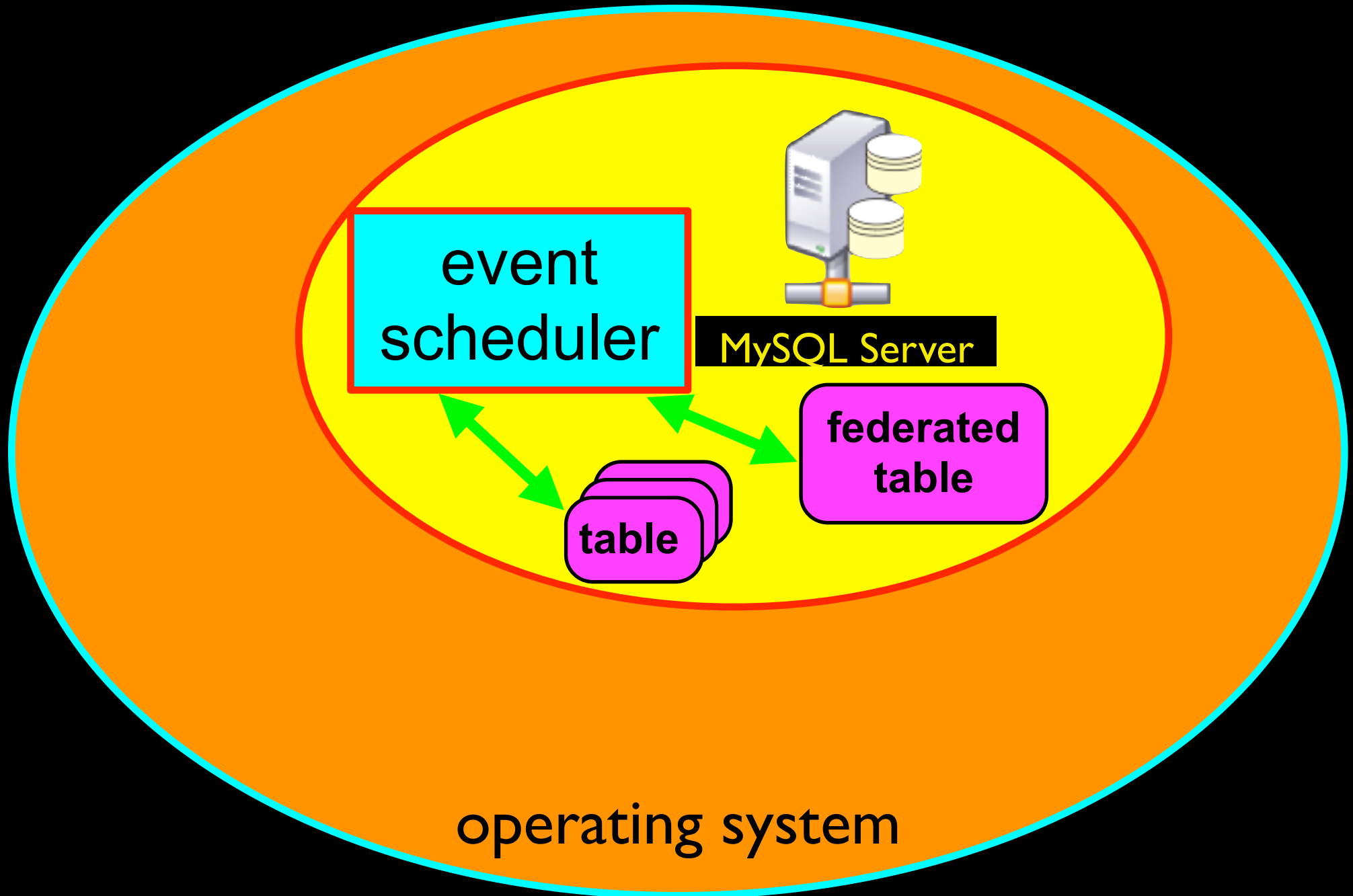
operating system from the event scheduler (1)



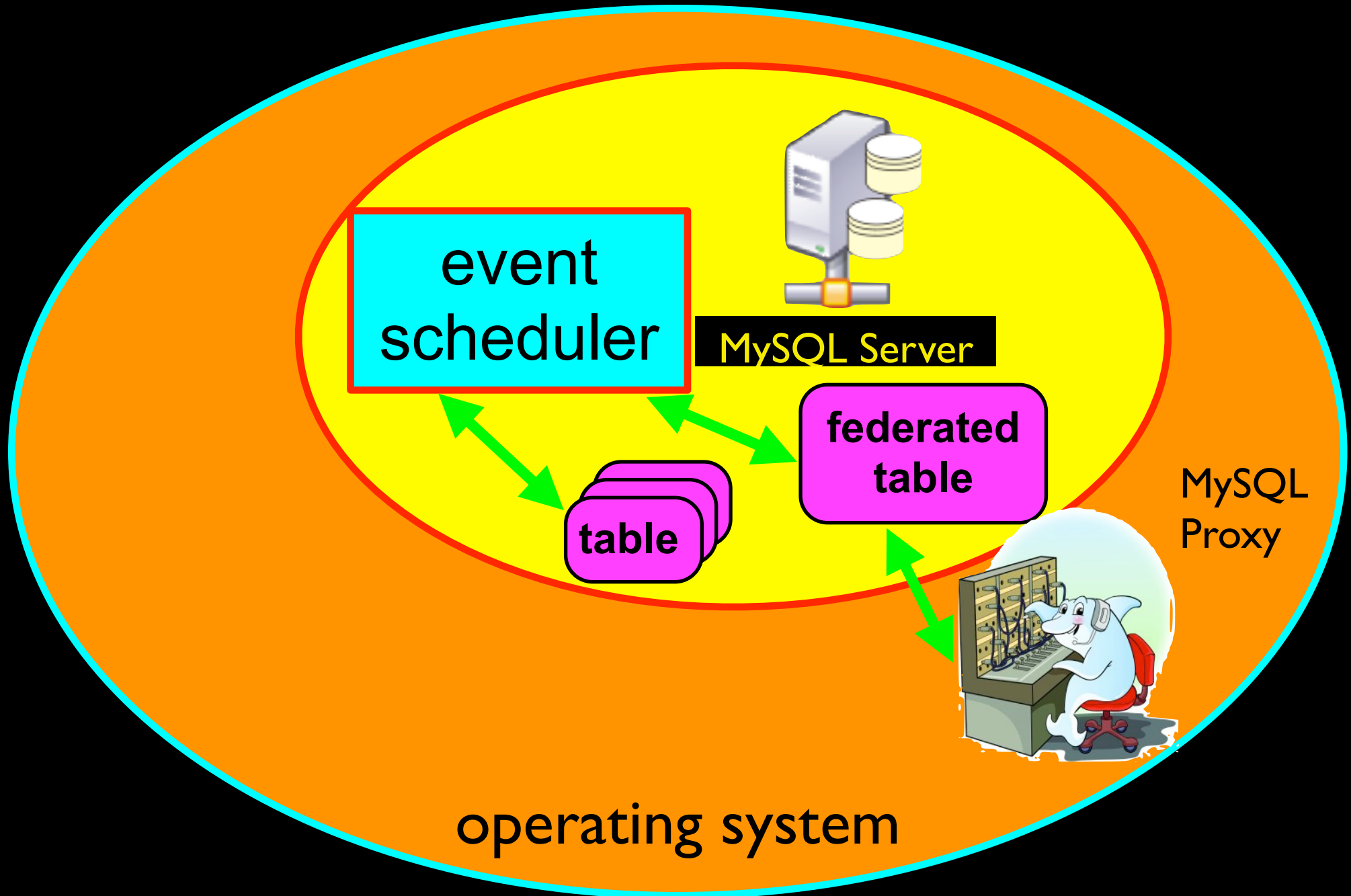
operating system from the event scheduler (2)



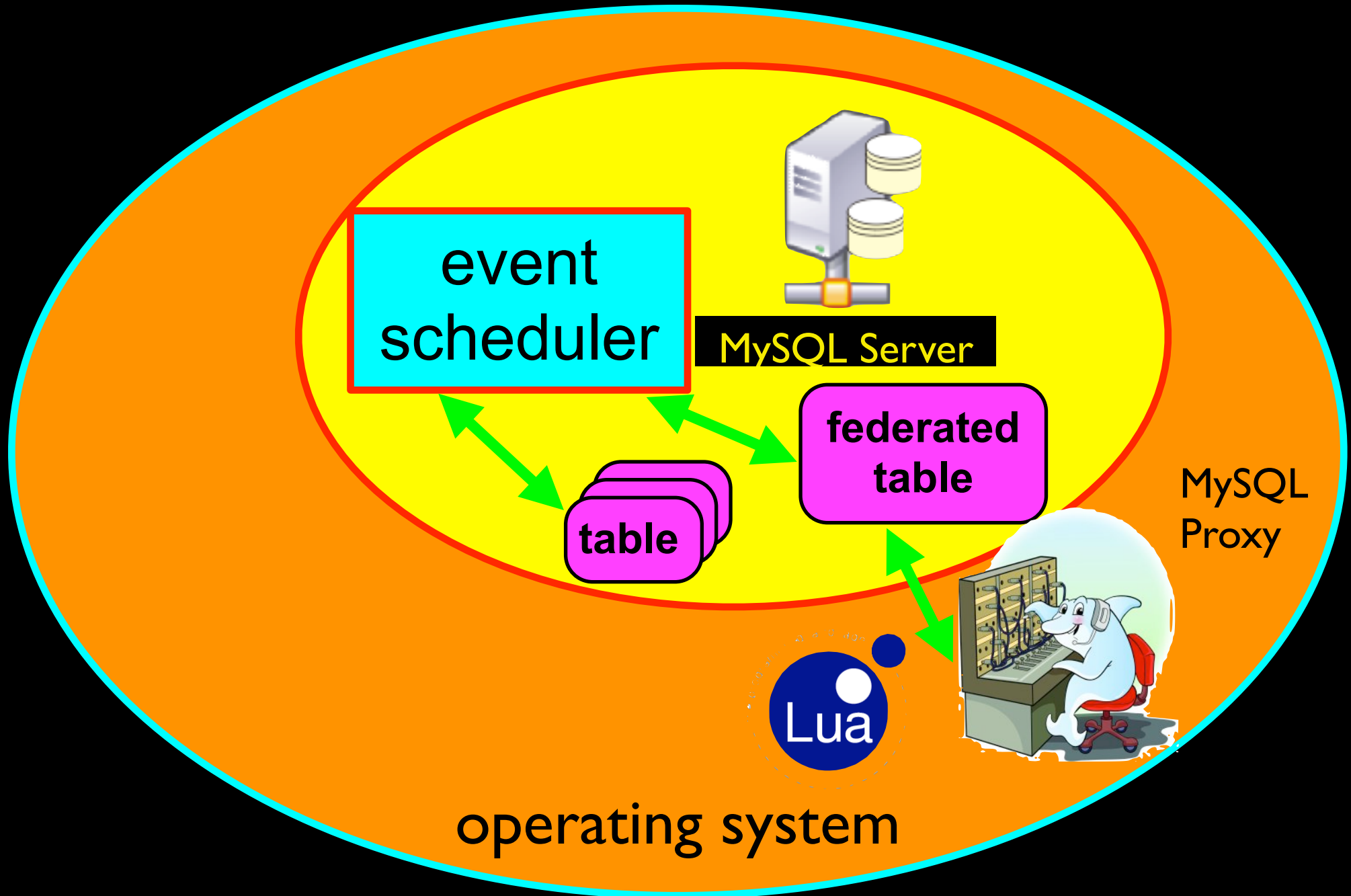
operating system from the event scheduler (2)



operating system from the event scheduler (2)



operating system from the event scheduler (2)



The event Scheduler

HANDS ON

Live demos

- Simple events
- Checking errors
- Accessing the operating system from events

Thanks!

Question time

Looking for the slides?

`http://datacharmer.org/
presentations/uc2009/`