JOOMLA! WORLD CONFERENCE 2026

Model Driven Joomla Development

Create the ideas. Let the code follow.

Herman Peeren





Who migrated an extension from Joomla 3 to Joomla 4?



Who migrated an extension from Joomla 3 to Joomla 4?

... and who enjoyed it?

Describe it once.
Let the code follow.

A new Joomla version? Change the generator, press a button.

Spot the difference.



Five admin list views in Joomla core.

The same ideas, written by hand. Five times.

Toolbar ×5	Search, filters ×5	Ordering ×5
Check-out ×5	Permissions ×5	Batch, trash ×5

Five components, one meta-model.

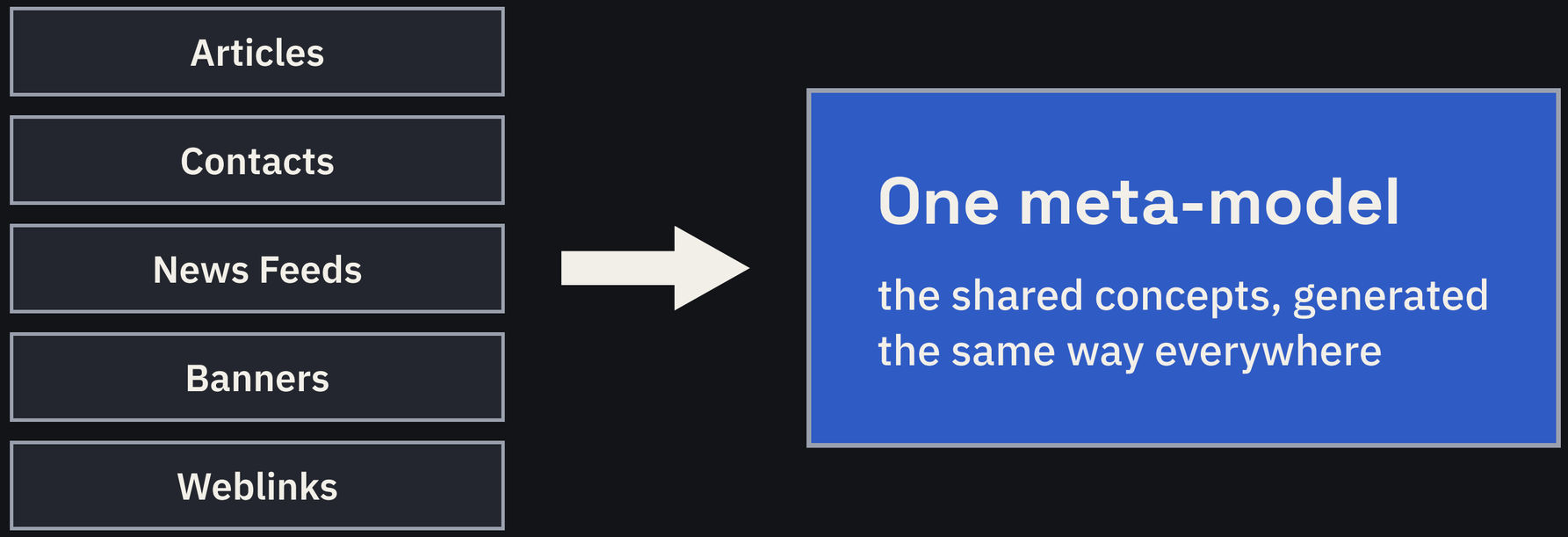


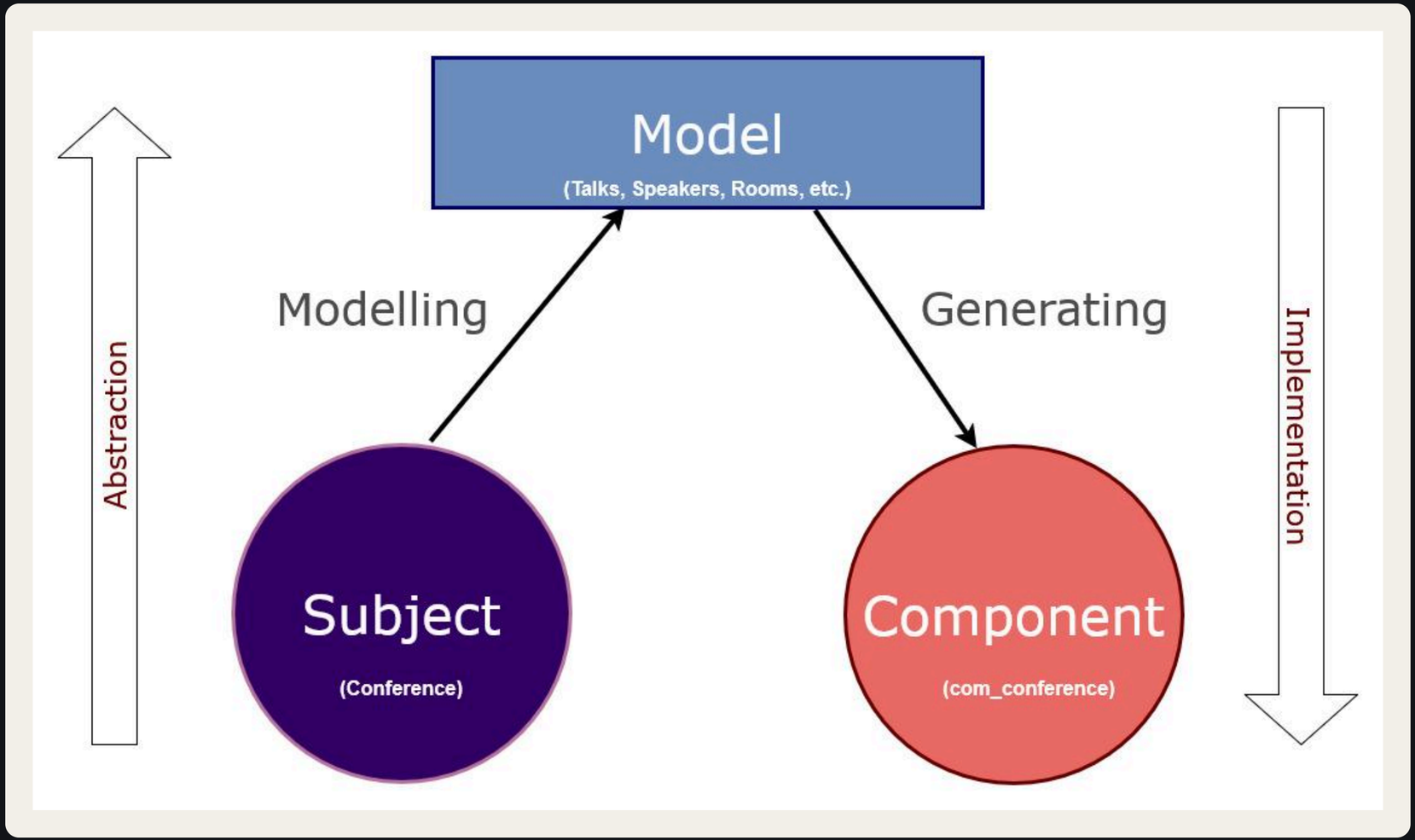


Photo: Stephencdickson, CC BY-SA 4.0, Wikimedia Commons

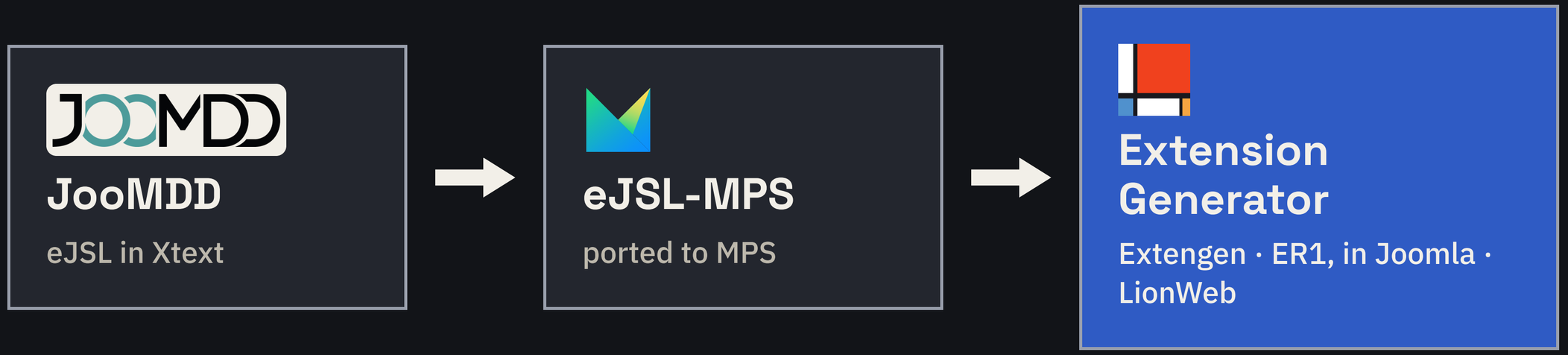
The pattern on cards. The weaving by machine.

Jacquard, 1804

Make a model. Generate from it.



History of the Extension Generator.



Describe it once, generate the rest.

JOOMDD



THE EXTENTION BUILDER
YOU'VE BEEN LOOKING FOR

Extension Generator

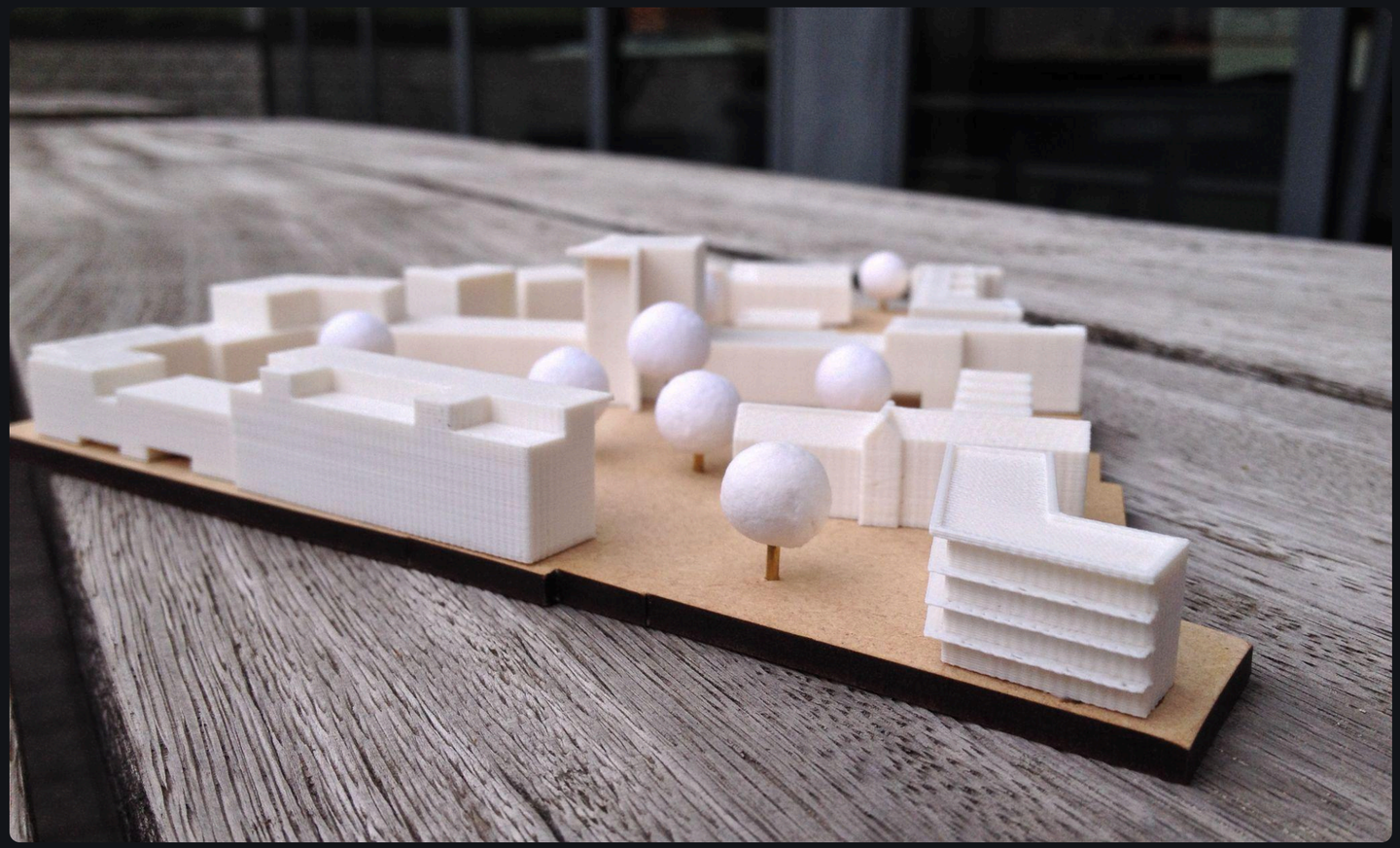
Extension Generator · 2022–

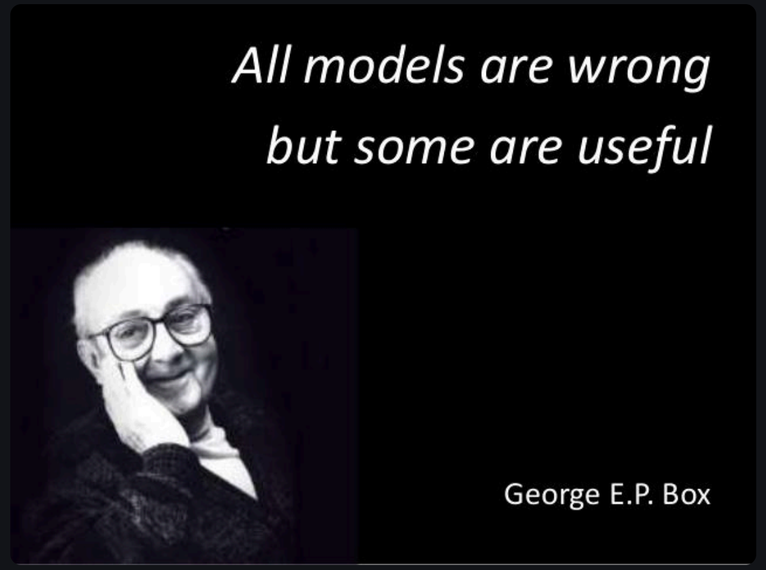
Joomla Component Builder · Llewellyn van der Merwe · 2016–

JooMDD · Paderborn & THM · 2014–2020

2014 2016 2020 2022 2026

All models are wrong, but some are useful.





George E. P. Box

A plugin from a model.

EVERY PLUGIN

name
organisation
version
services

TASK

routines
parameters
routine code

WORKFLOW

contexts
before a transition
after a transition

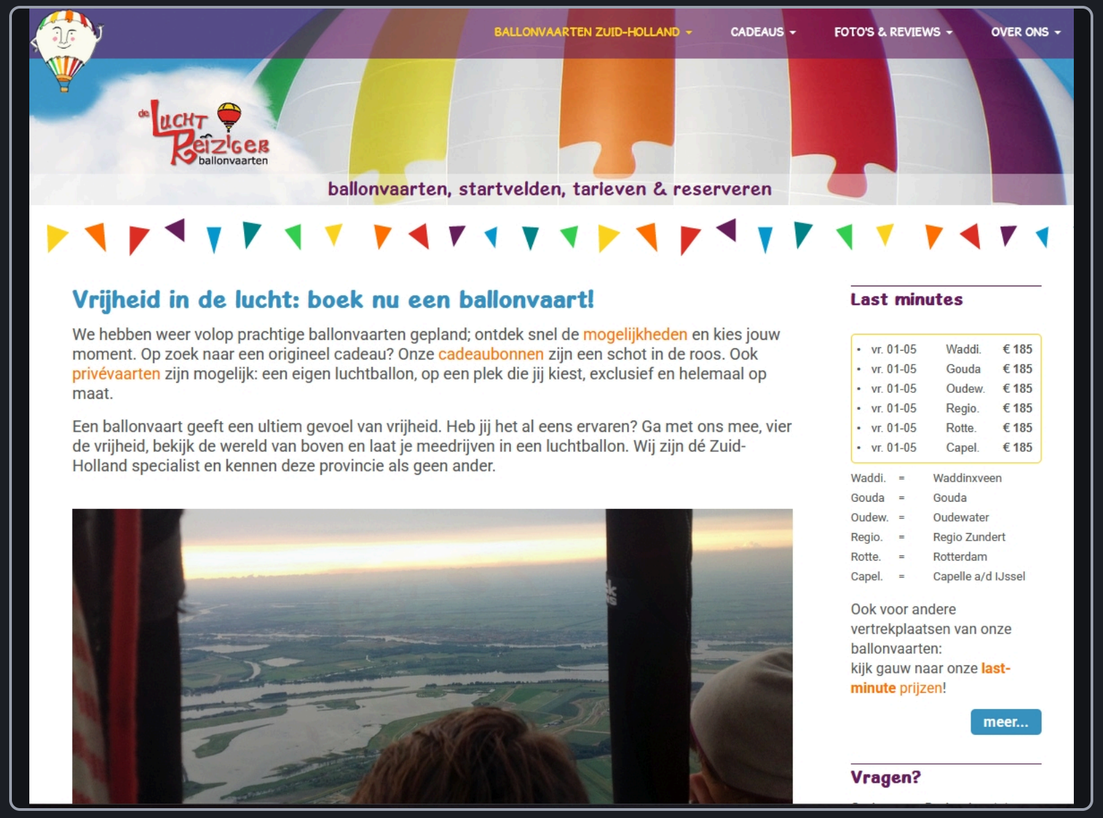
SMART SEARCH

table, item name
layout
taxonomies

Only what is specific per type. The rest is generated.

A balloon company needs bookkeeping.





A sold ticket is money you owe.

Ticket sold

Account	Debit	Credit
Bank	218	
Tickets not yet flown		200
VAT payable 9%		18

Flight flown

Account	Debit	Credit
Tickets not yet flown	200	
Revenue: flights		200

Flight cancelled because of the wind? No entry. The ticket stays a liability.

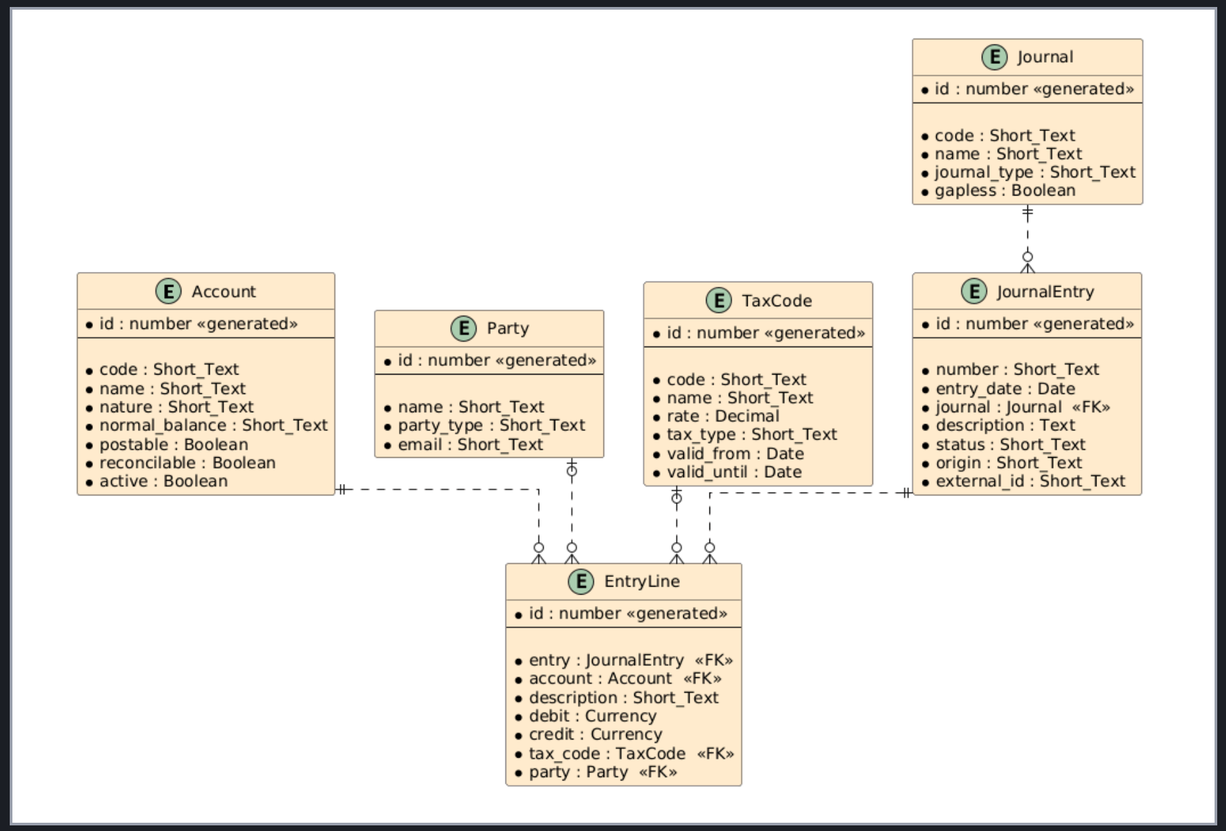
The accountant’s mental model.

THINGS TO STORE: ENTITIES

Account	Journal	Journal entry	Entry line
Tax code	Customer / supplier	Period	Ledger

DEMO

From model to a working component.



1. Open the accounting model
2. Add one entity and its pages, live
3. Generate
4. Install on Joomla 6
5. Use the new screens

The accountant’s extended mental model.

THINGS TO STORE: ENTITIES

- Account
- Journal
- Journal entry
- Entry line
- Tax code
- Customer / supplier
- Period
- Ledger

IDEAS THAT ARE NOT ENTITIES

- Account role
- Posting rule
- Localisation pack
- Status flow

ER1 speaks data, not accounting.

A model is written in a meta-language.
ER1 is the Extension Generator's standard meta-language.

ER1 CAN EXPRESS

Entities, fields, relations, pages

ER1 CANNOT EXPRESS

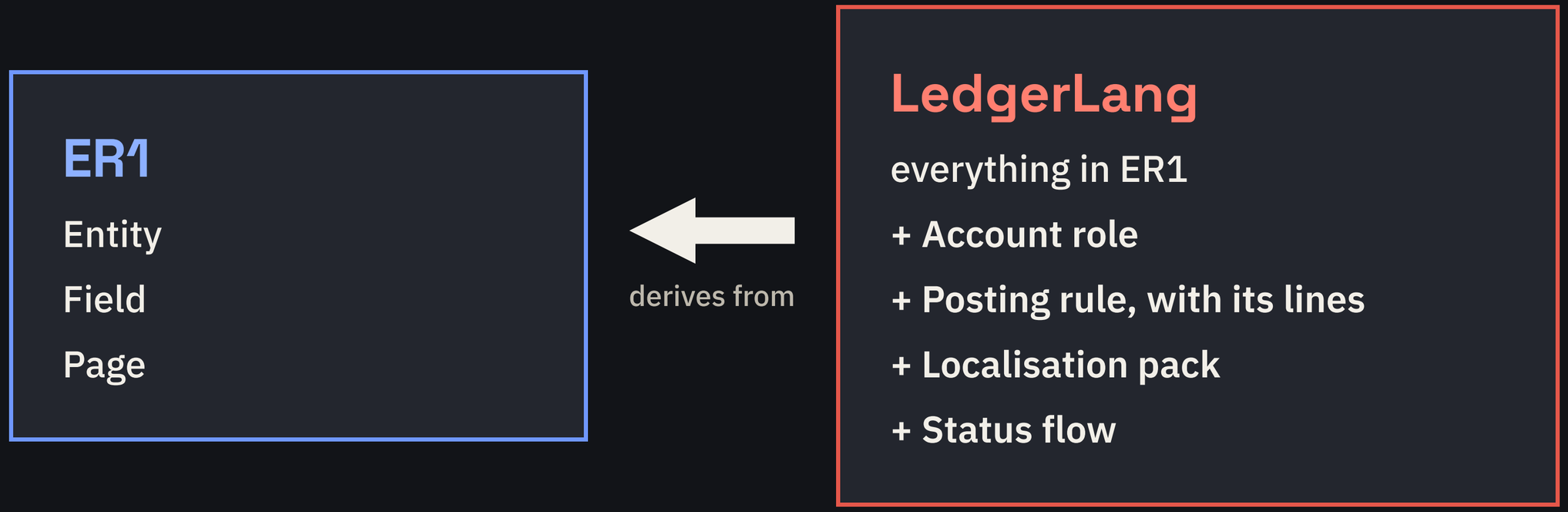
Account roles, posting rules, local standards, status flow

Replace-all renames.
A model can add.

Find	Entity
Replace with	Posting rule

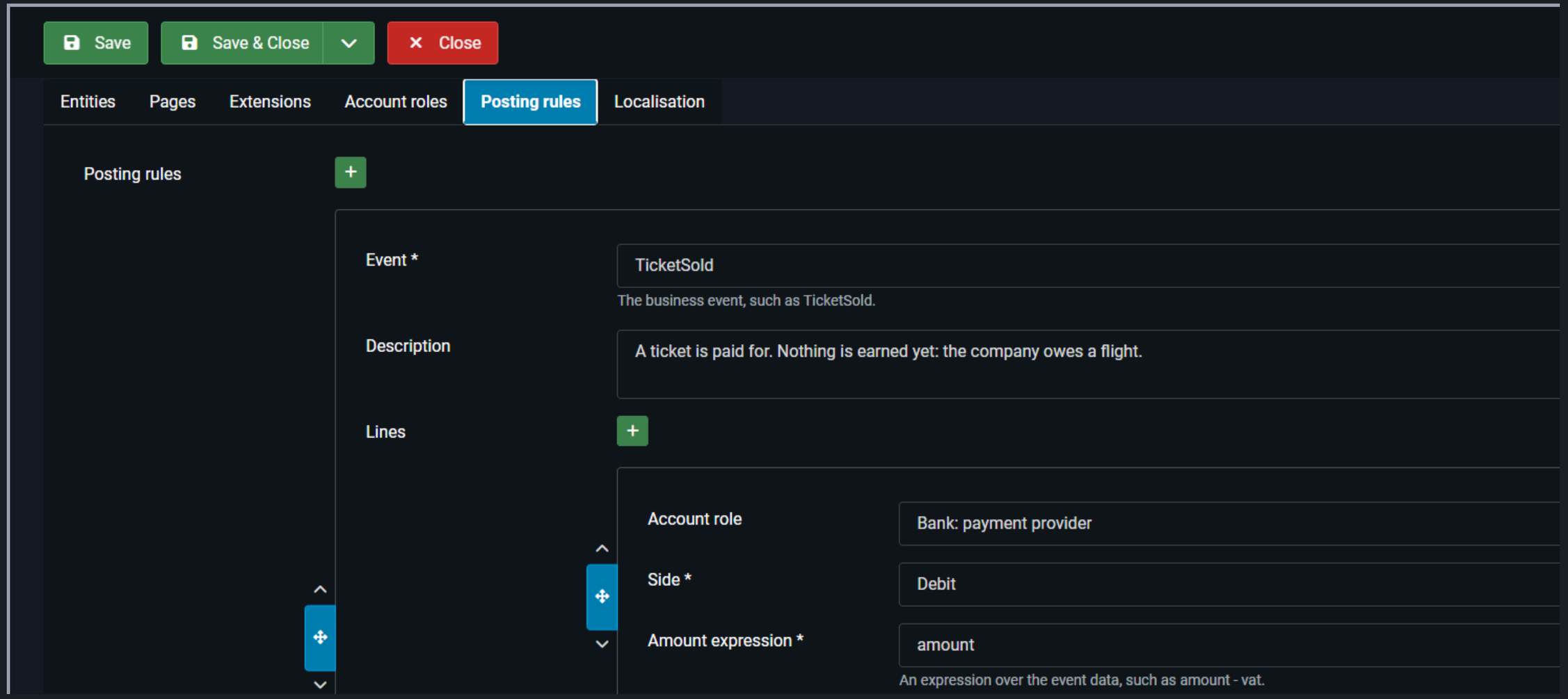
Not a new name. A new idea.

LedgerLang adds new concepts to ER1.



DEMO

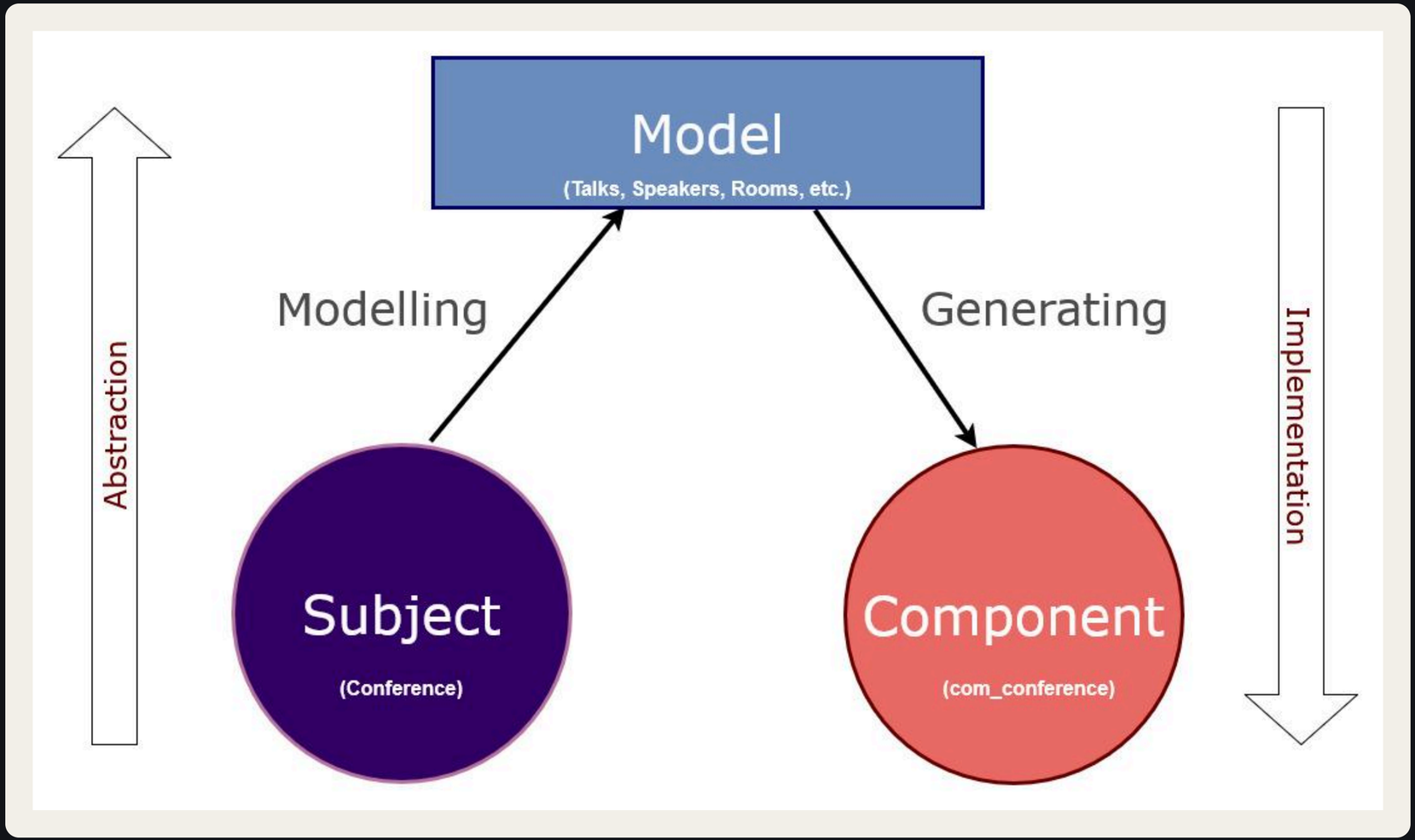
New concepts appear as new tabs.



From bookkeeping to an ERP, one model at a time.

HikaShop	J2Commerce	Balloon tickets
Invoicing	**Accounting core**	Inventory
CRM	HR	Local standards

Make a model. Generate from it.



First leaving out. Then something new.



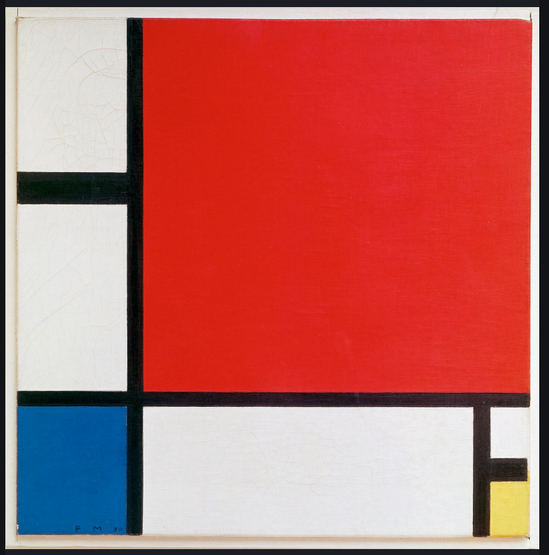
1908



1911



1912

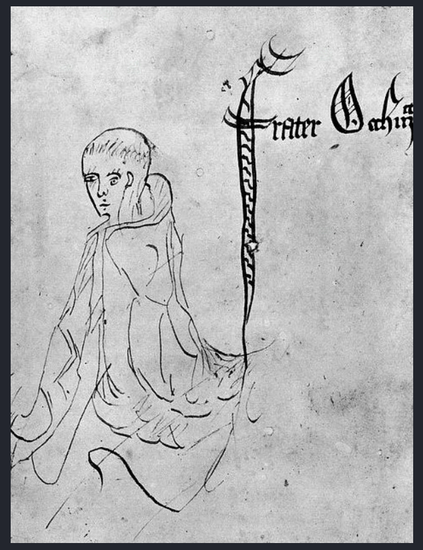


1930

generalising: the tree loses details

a new concept

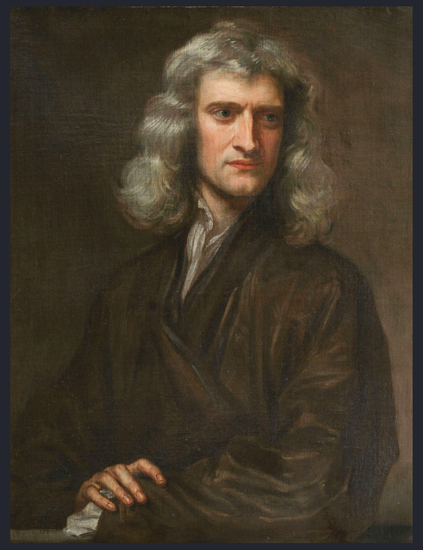
No more concepts than needed.
And add the ones you need.





Ockham's razor

Choose the simplest explanation: no more entities than necessary.





Newton adds time

A new entity, not derived from anything else. It was needed.

Other paradigms are other meta-models.

CRUD

store the current state

entity · field · record

Event Sourcing

store what happened

event · stream · projection

DCI

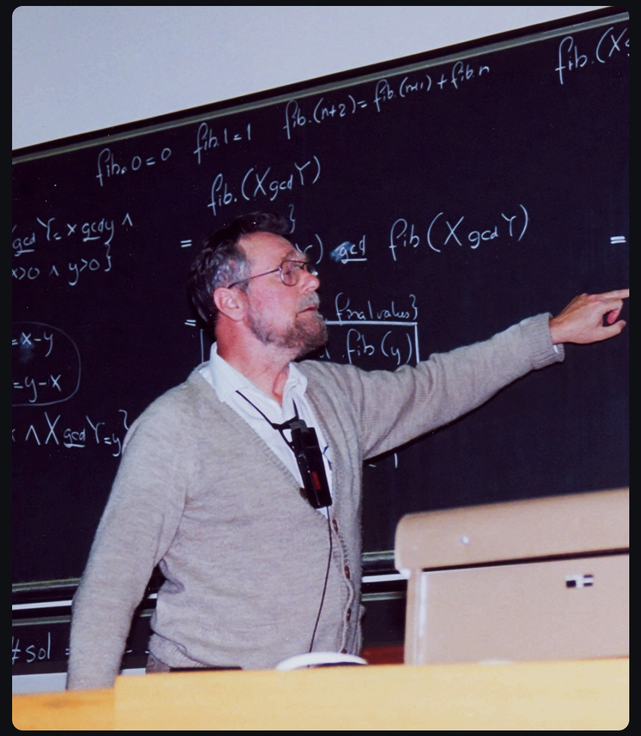
objects playing roles

data · context · role

A generator is for another target system. A paradigm is another way of thinking: other concepts.

“The purpose of abstraction is not to be vague, but to create a new semantic level in which one can be absolutely precise.”

Edsger W. Dijkstra, 1972



Dijkstra lecturing at ETH Zurich, 1994. Photo: Andreas F. Borchert, CC BY-SA 4.0

The boring part gets generated.
The interesting part stays.

Creativity: inventing new concepts.

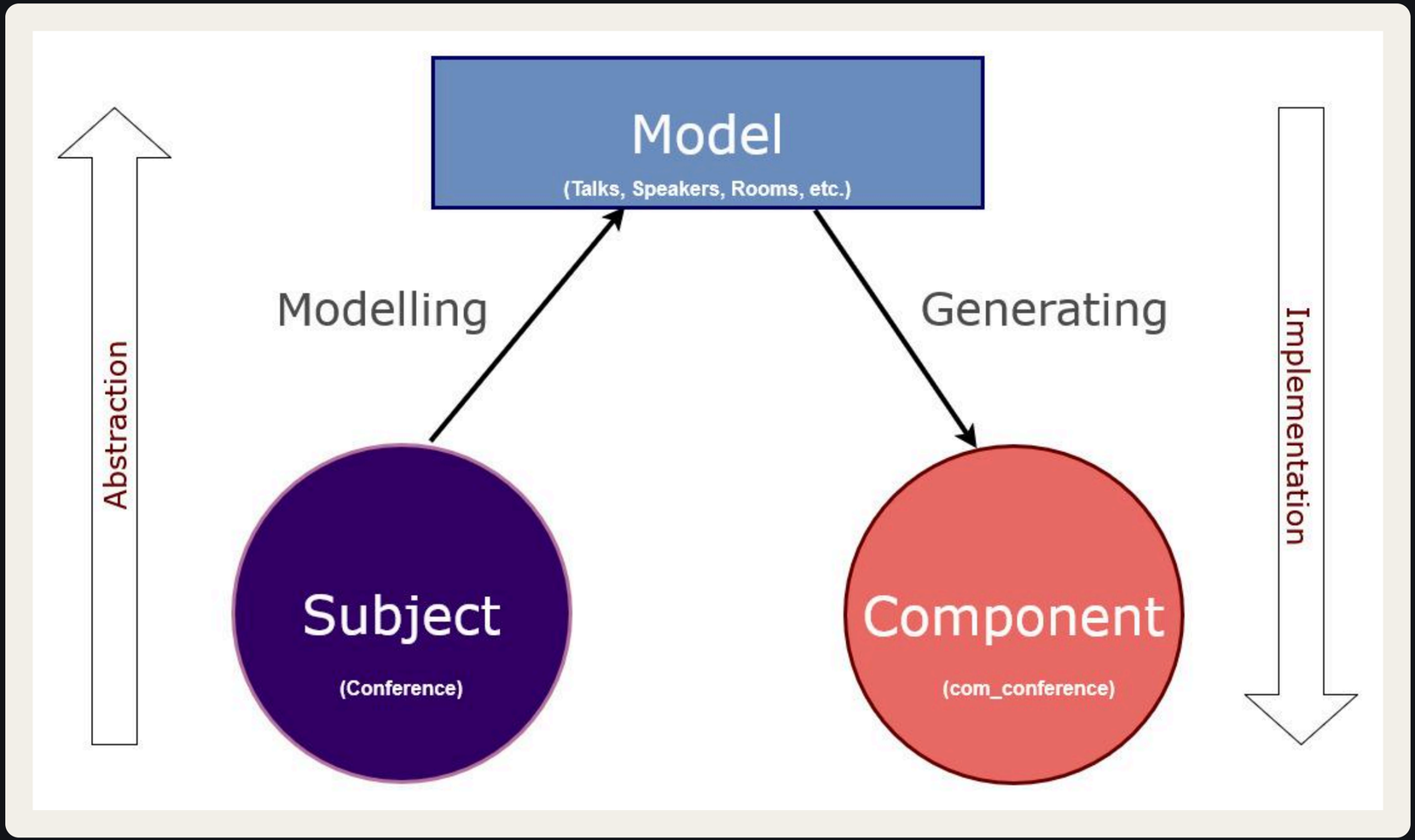
1931

No system is ever complete. There is always room for a new idea.

after Kurt Gödel



Make a model. Generate from it.



One model, three target systems.

Accounting model

Joomla 6

MVC, XML forms

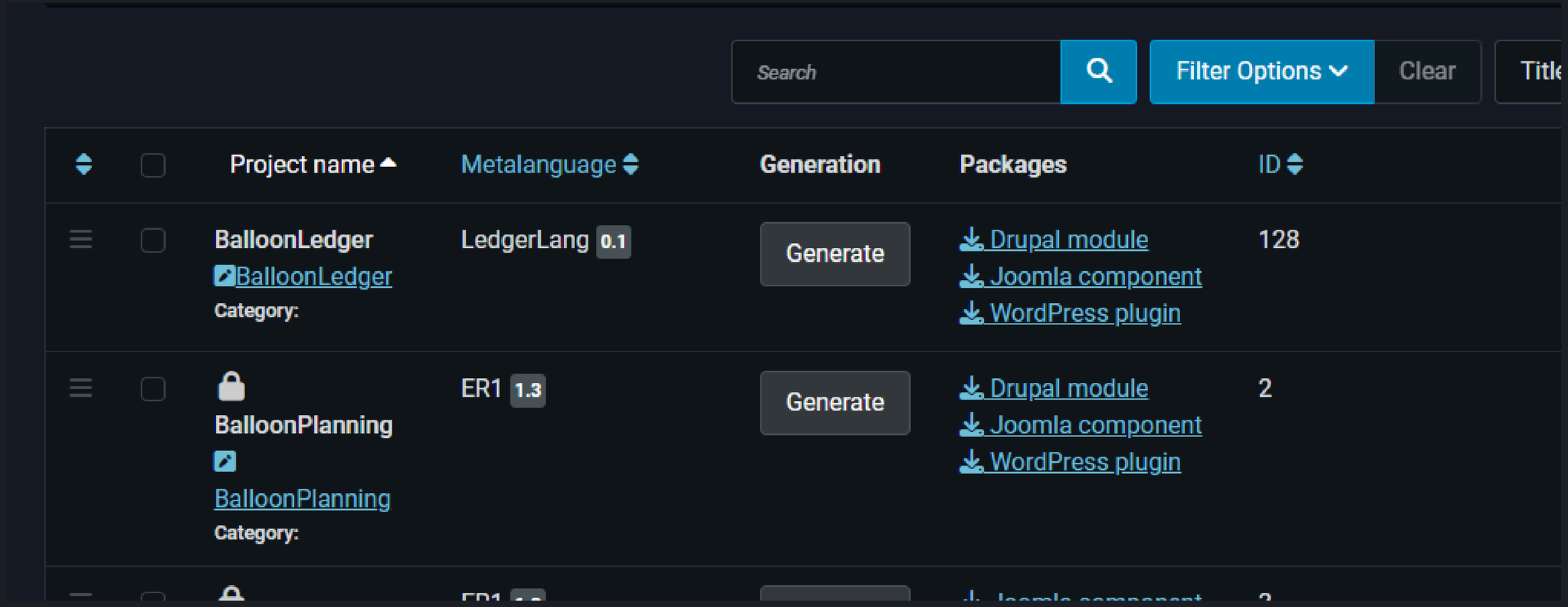
WordPress

hooks, WP_List_Table

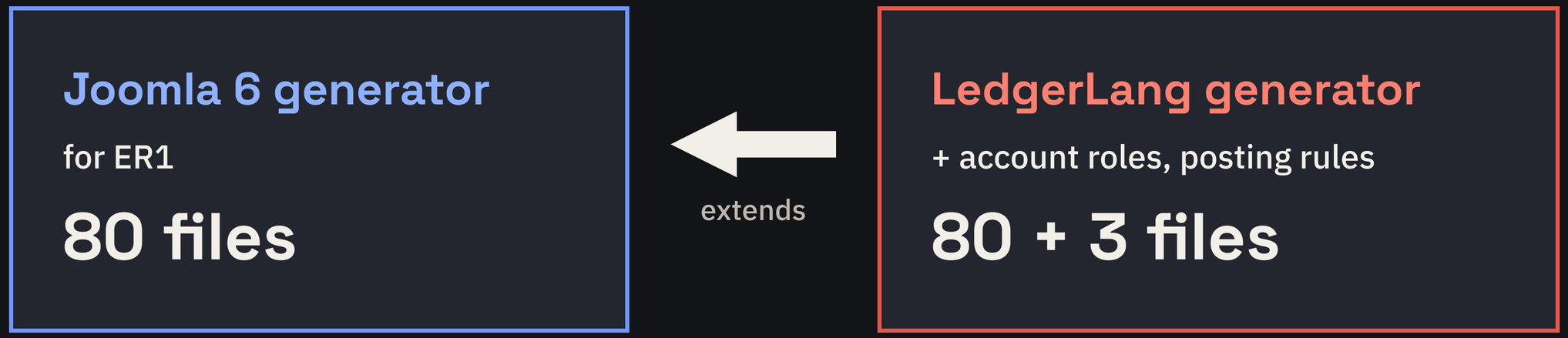
Drupal

entities, YAML, Form API

One project, three packages.

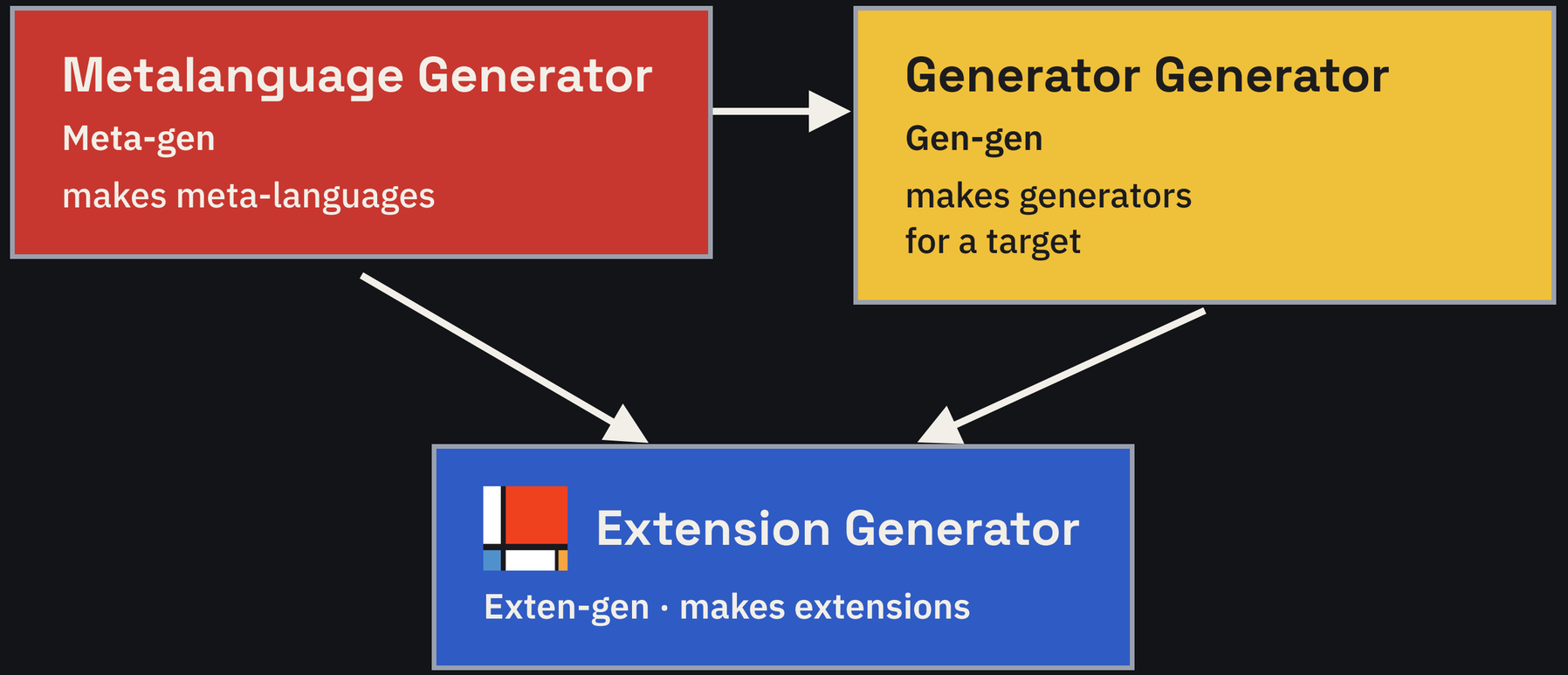


Generators can be extended too.




```
TicketSold 218 → bank debit 218 · tickets credit 200 · VAT 9% credit 18
```

Meta-languages, generators, extensions: all models.



Why not just ask an AI?

Fair question. Two answers.



The wind of AI blows in all directions. A model keeps it on course.

You don't need AI for model-driven development.
But AI does better work with a model.

Photo: Freek van Oord

AI may help write it. The model checks it.

The model	checked by the meta-language and by the expert
The meta-language	checked by Meta-gen and its parent meta-language
The generator	checked by tests and a real install

Everyone on their own island.



JCB



WordPress



Extension Generator

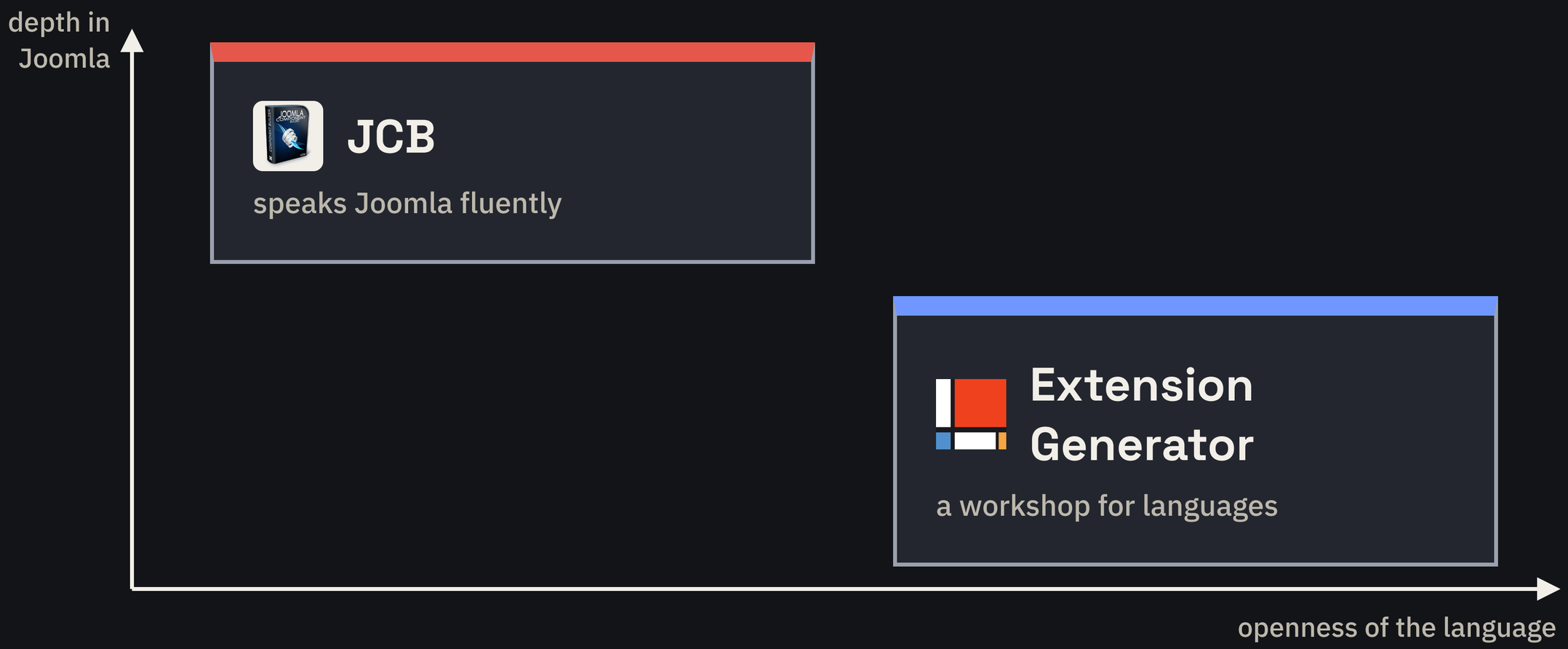


MPS

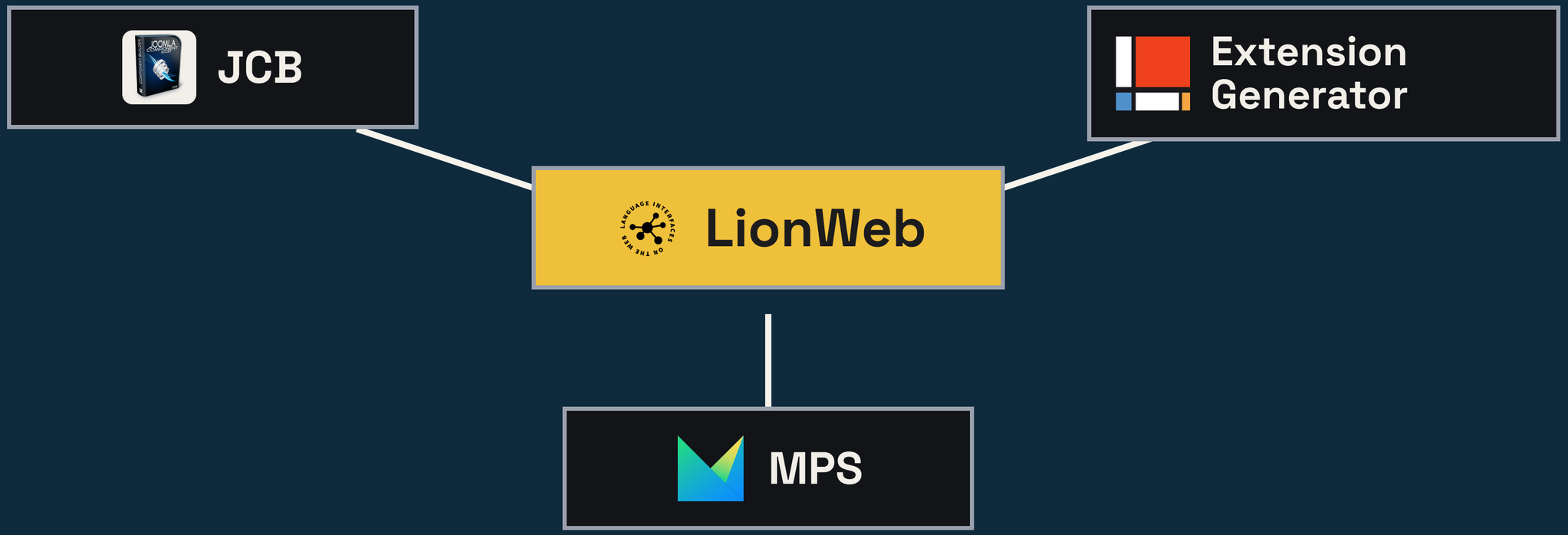


JooMDD

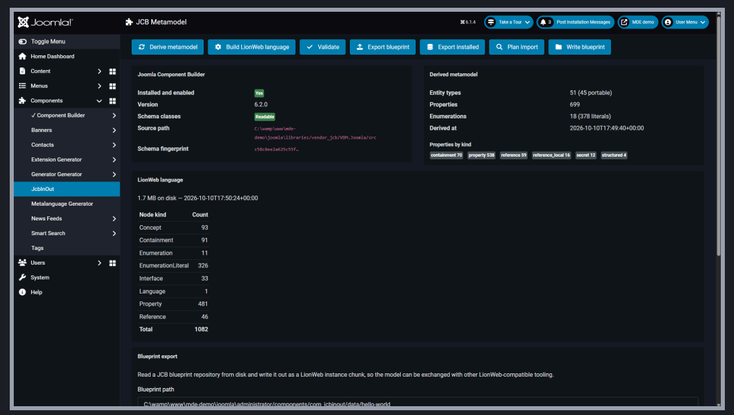
Different strengths. Together, stronger.



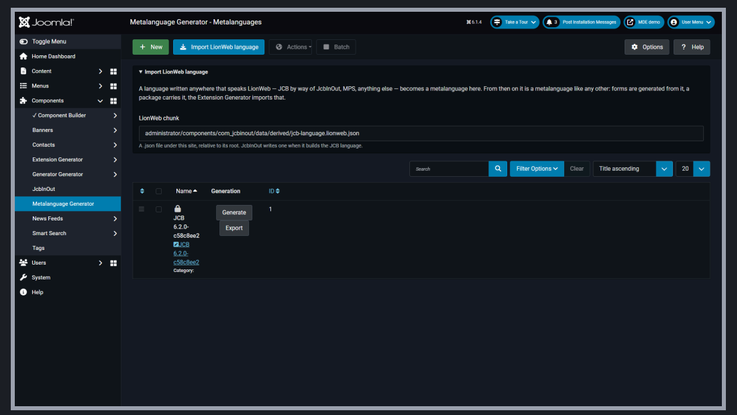
LionWeb: a bridge between the islands.



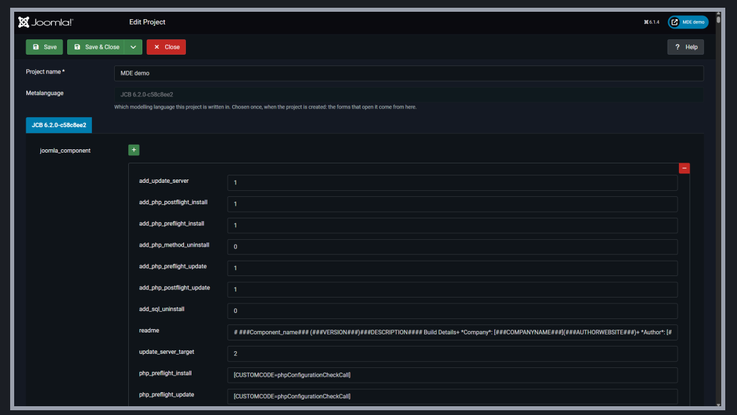
A JCB blueprint travels to the Extension Generator and back.



1 · JCB's language, read from JCB



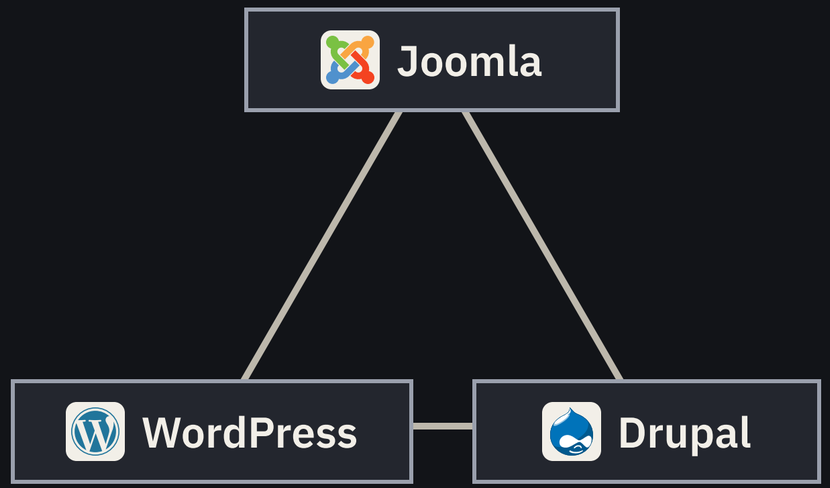
2 · imported as a meta-language



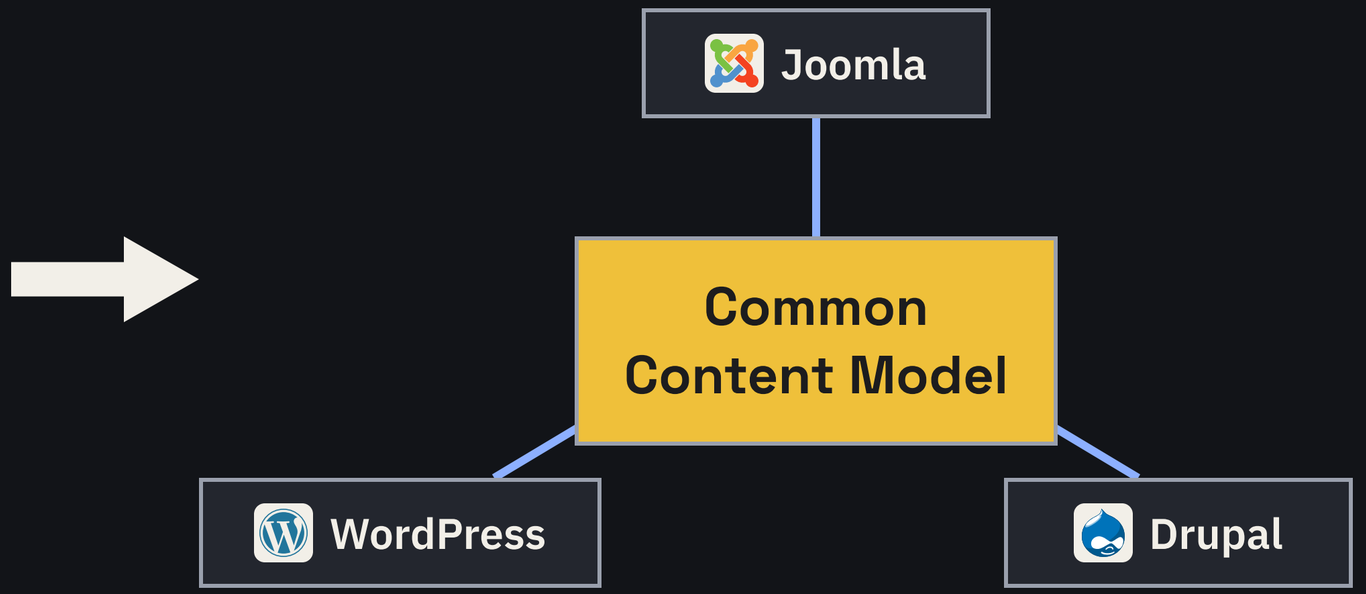
3 · the blueprint, edited here

And back in JCB: 0 to insert, 0 to update.

A common model for content, too.



a converter for every pair



one mapping per CMS

GSoC 2025: Reem Atalah, mentors Herman Peeren and Martin Klopp · based on Giner-Miguelez, Gómez and Cabot, RCIS 2022



Joomla

Tools, content, people. All together.

Thank you.

Questions?

Extension Generator github.com/HermanPeeren/Exten-gen

Metalanguage Generator github.com/HermanPeeren/Meta-gen

Generator Generator github.com/HermanPeeren/Gen-gen

Plug-gen github.com/HermanPeeren/plug-gen

JcbInOut github.com/HermanPeeren/jcbinout

generator-core github.com/HermanPeeren/generator-core



hermanpeeren.nl

