When DDD Met AI:
Practical Stories from Enterprise Trenches

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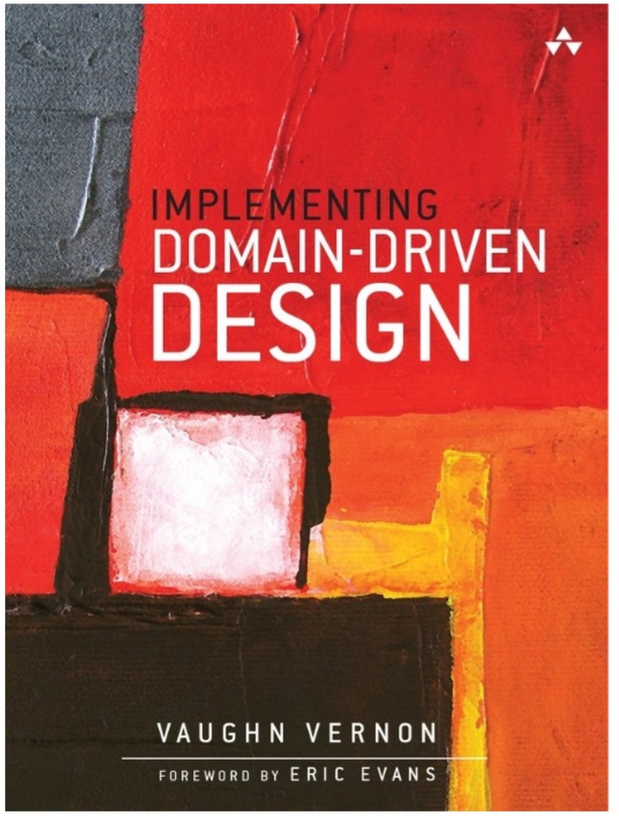
TIMETOACT Österreich

I help teams ship LLM products faster

LinkedIn

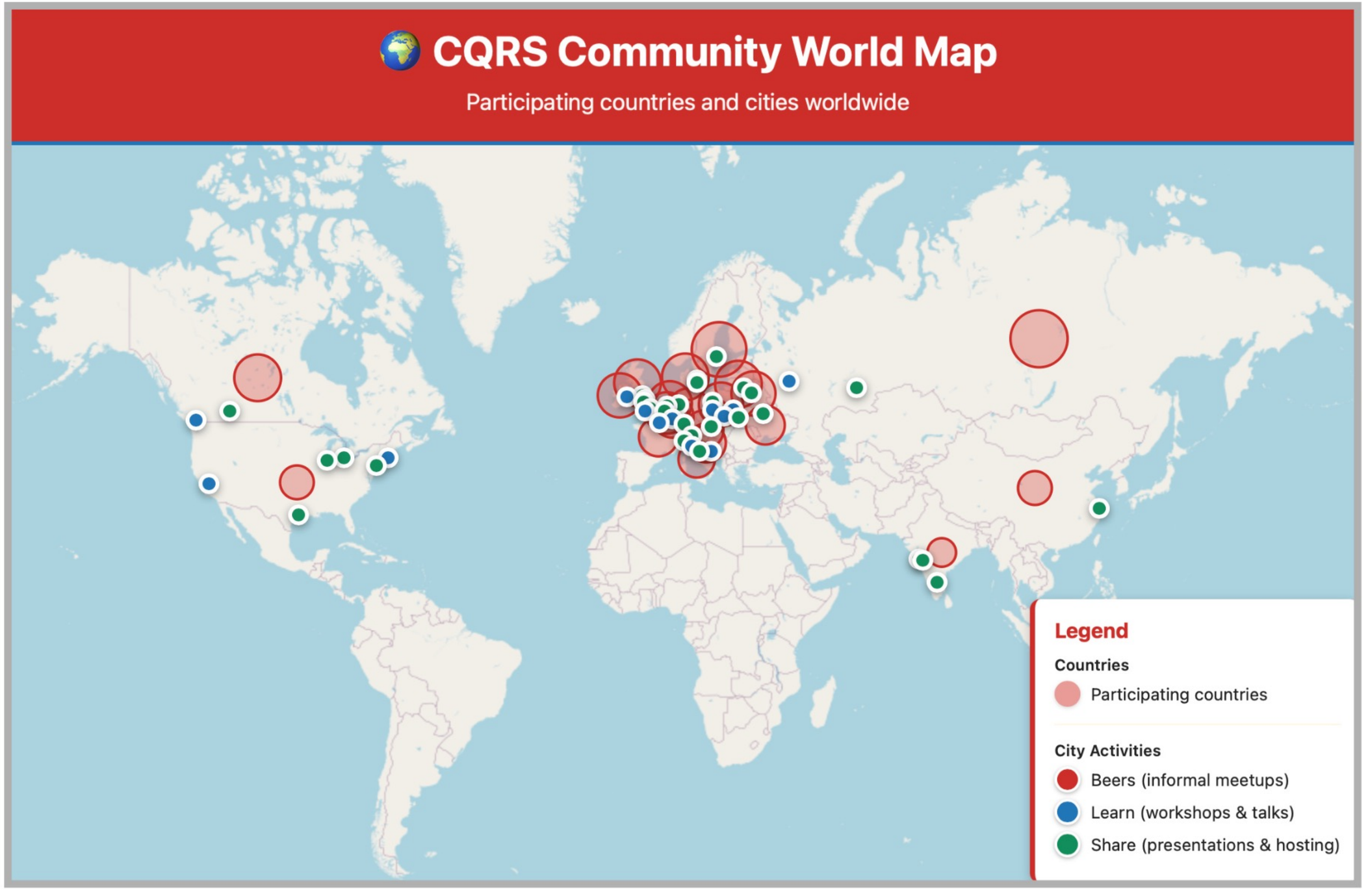
Portland, Maine 2012 (c) Martin Fowler

Being the **Worst**



LOKAD CQRS

EVENT SOURCING


CQRS Community World Map
Participating countries and cities worldwide
Legend
Countries
Participating countries
City Activities
Beers (informal meetups)
Learn (workshops & talks)
Share (presentations & hosting)

3 stories of how

DDD saved AI Enterprise Projects

400 EUR/hour

30yo codebase

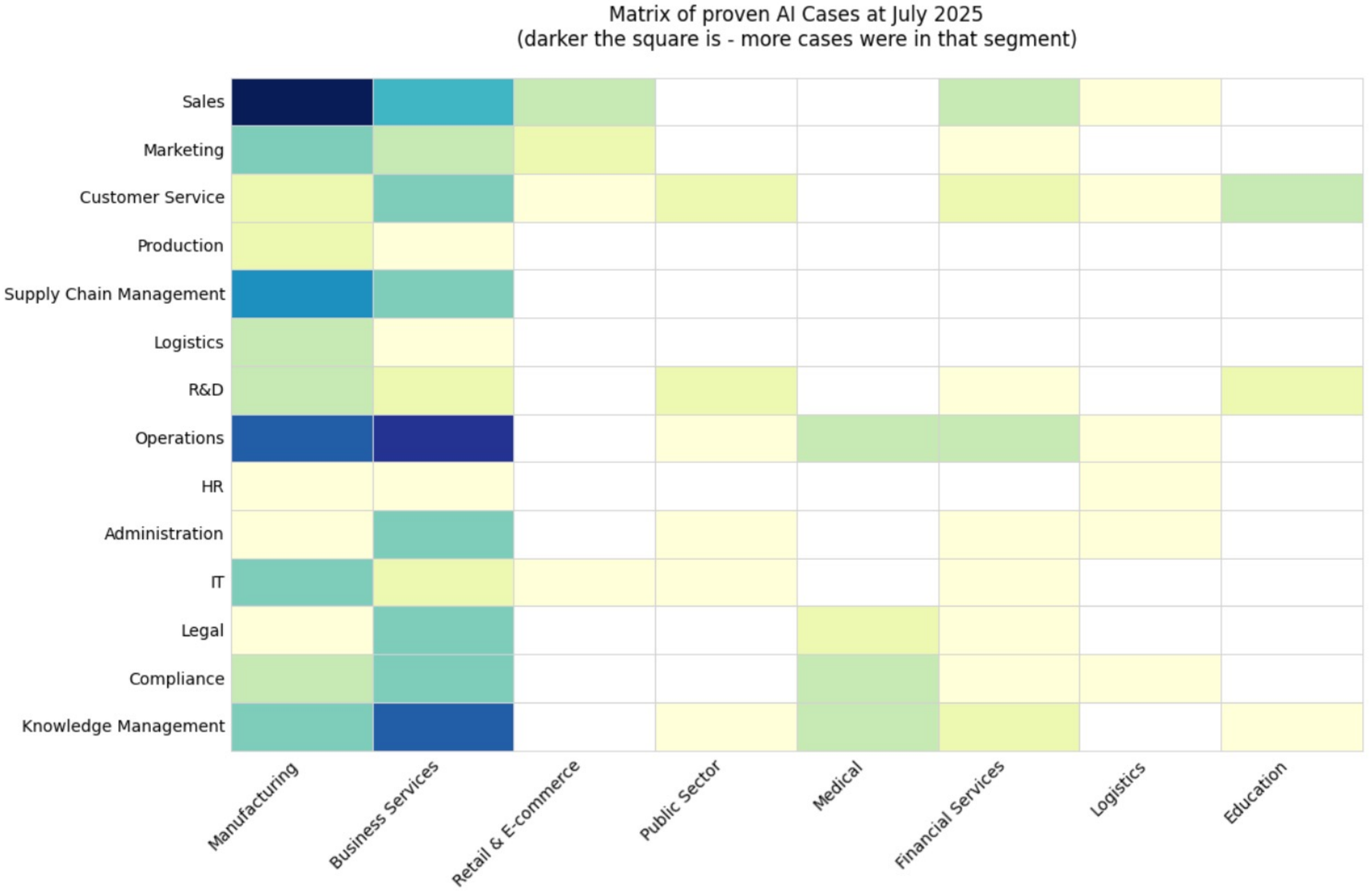
Hail Mary Project

What does "peculiar" mean?

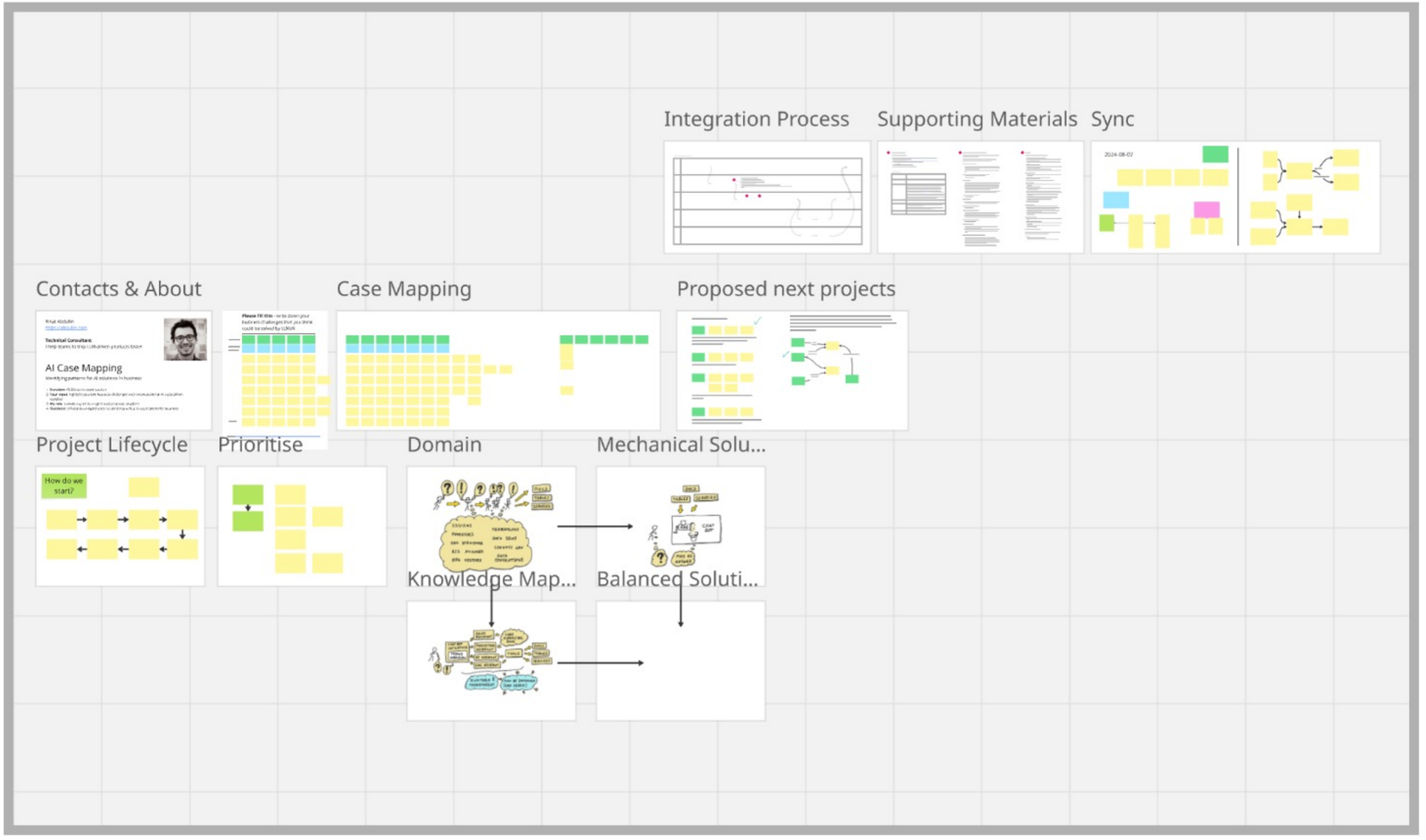
Stories are possible thanks to AI Research

Amazing community

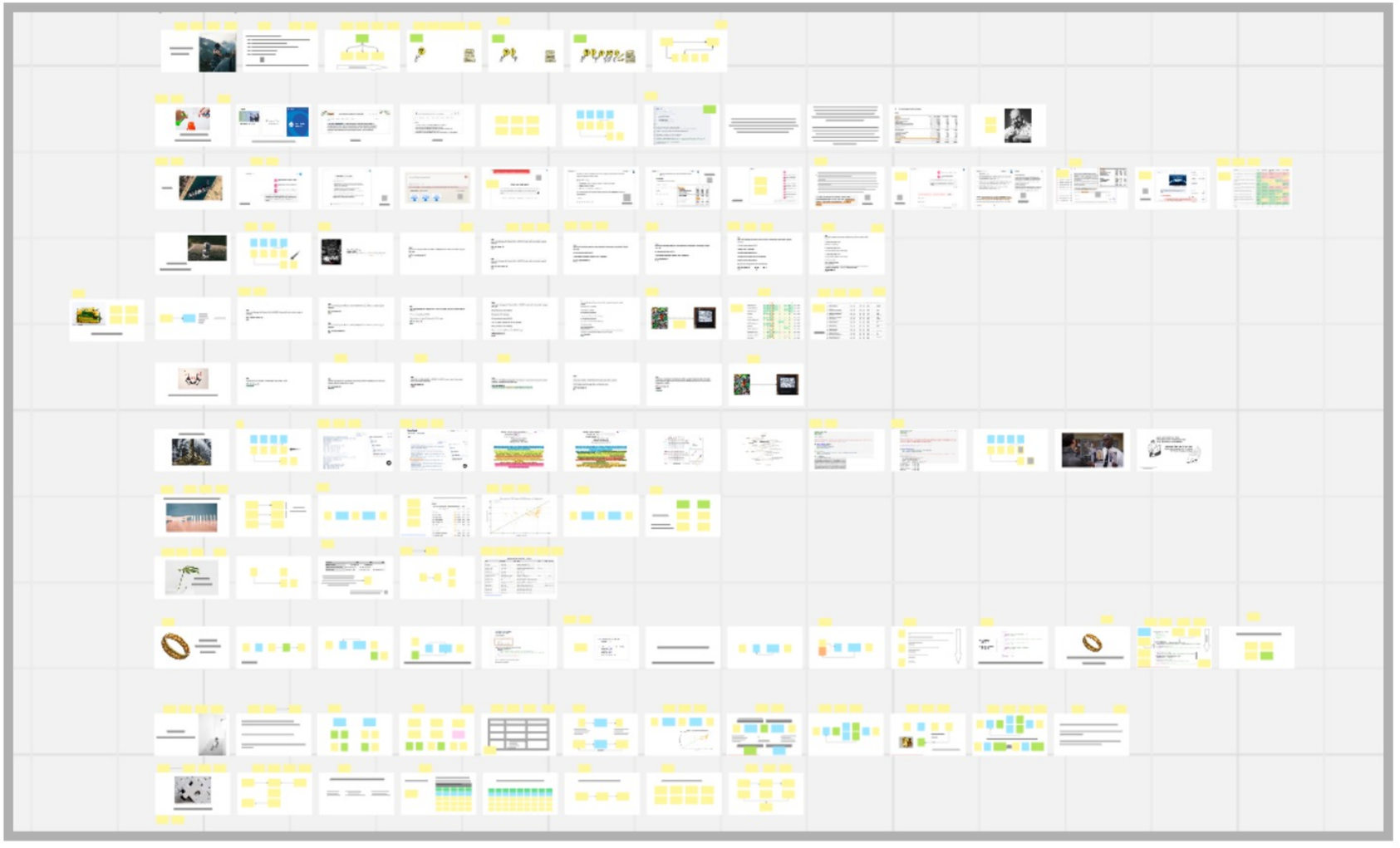
Map & Statistics



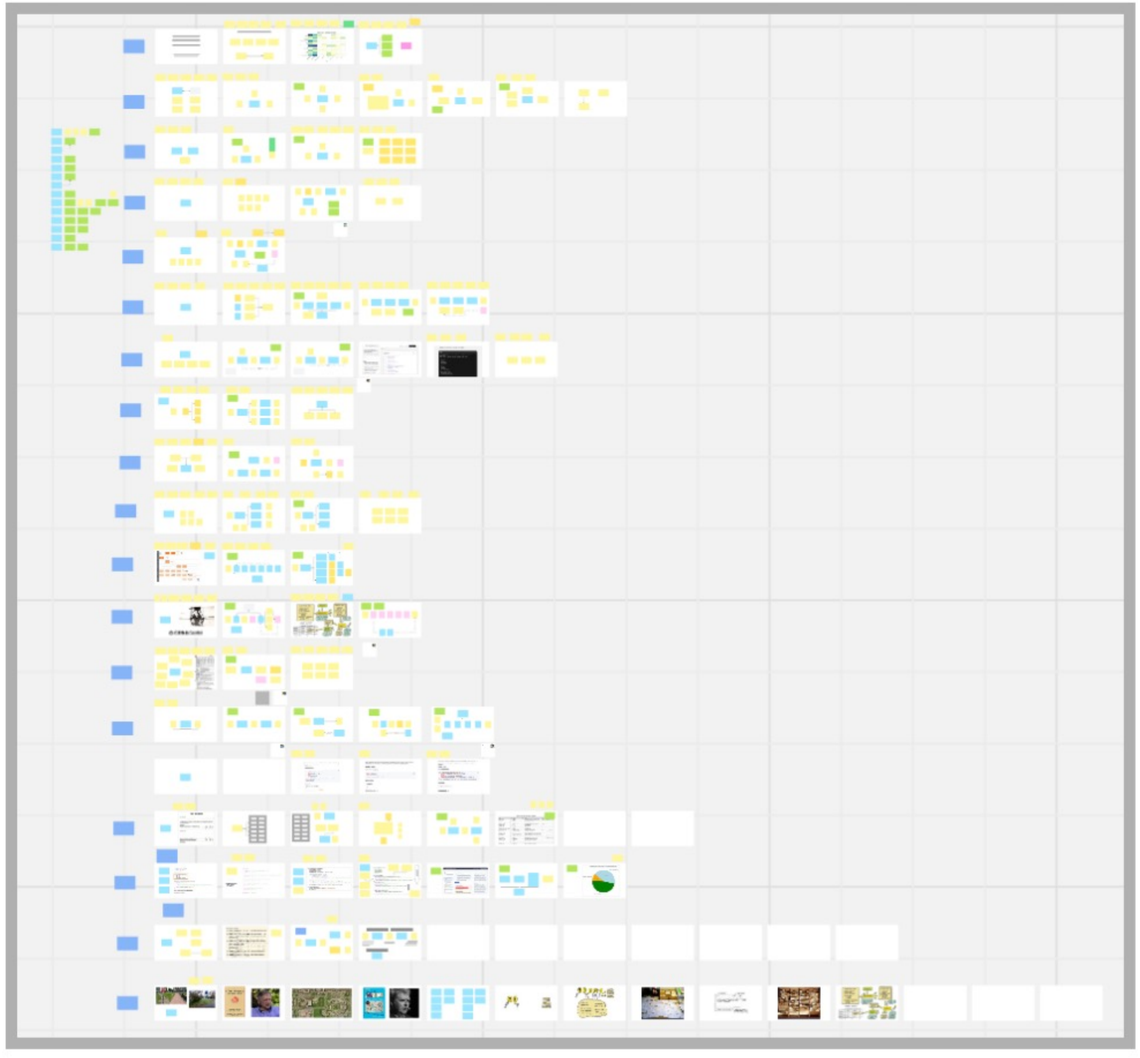
AI Case Mapping



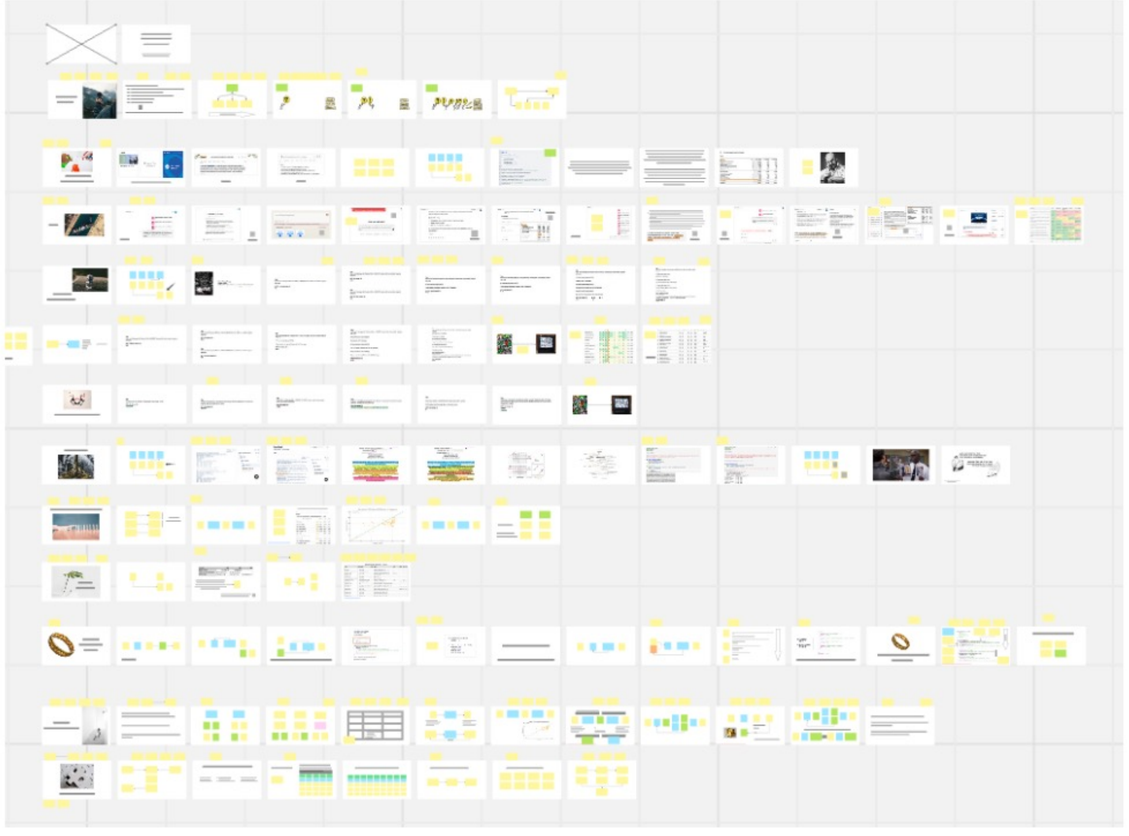
LLM Fundamentals

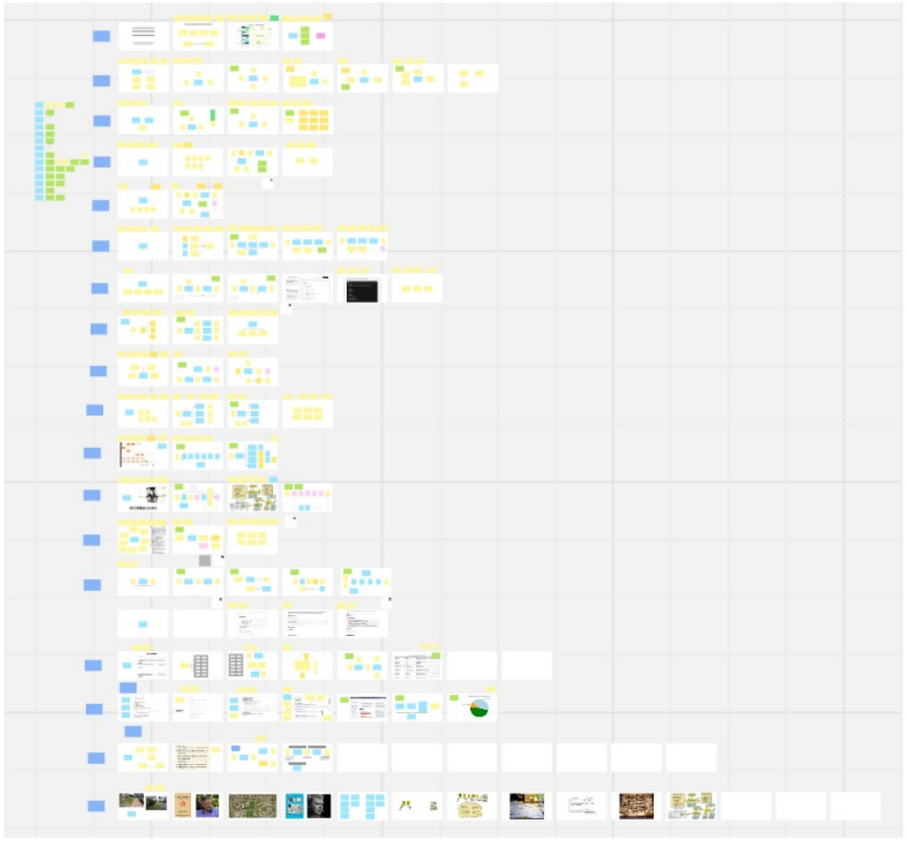


Patterns & Practices



Building AI Assistants: Patterns and Practices





Courses

Data Extraction at scale

AI Platform

AI Search & Chatbot

3 categories of projects

These stories -
are more
interesting!

Story of

400 EUR per hour


EU Regulation
Local Policies
400 EUR/h gap
Company Procedures
Operations


1

2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Chairman
Malta Financial Services Authority

Minister of Finance, the Economy and Investment

FINANCIAL INSTITUTIONS ACT
(CAP. 376)

Financial Institutions Act (Safeguarding of Funds) Regulations, 2010

IN exercise of the powers conferred by article 12(2) of the Financial Institutions Act, the Minister of Finance, the Economy and Investment, acting on the advice of the competent authority has made the following regulations:-

Part 1
Preliminary

Citation

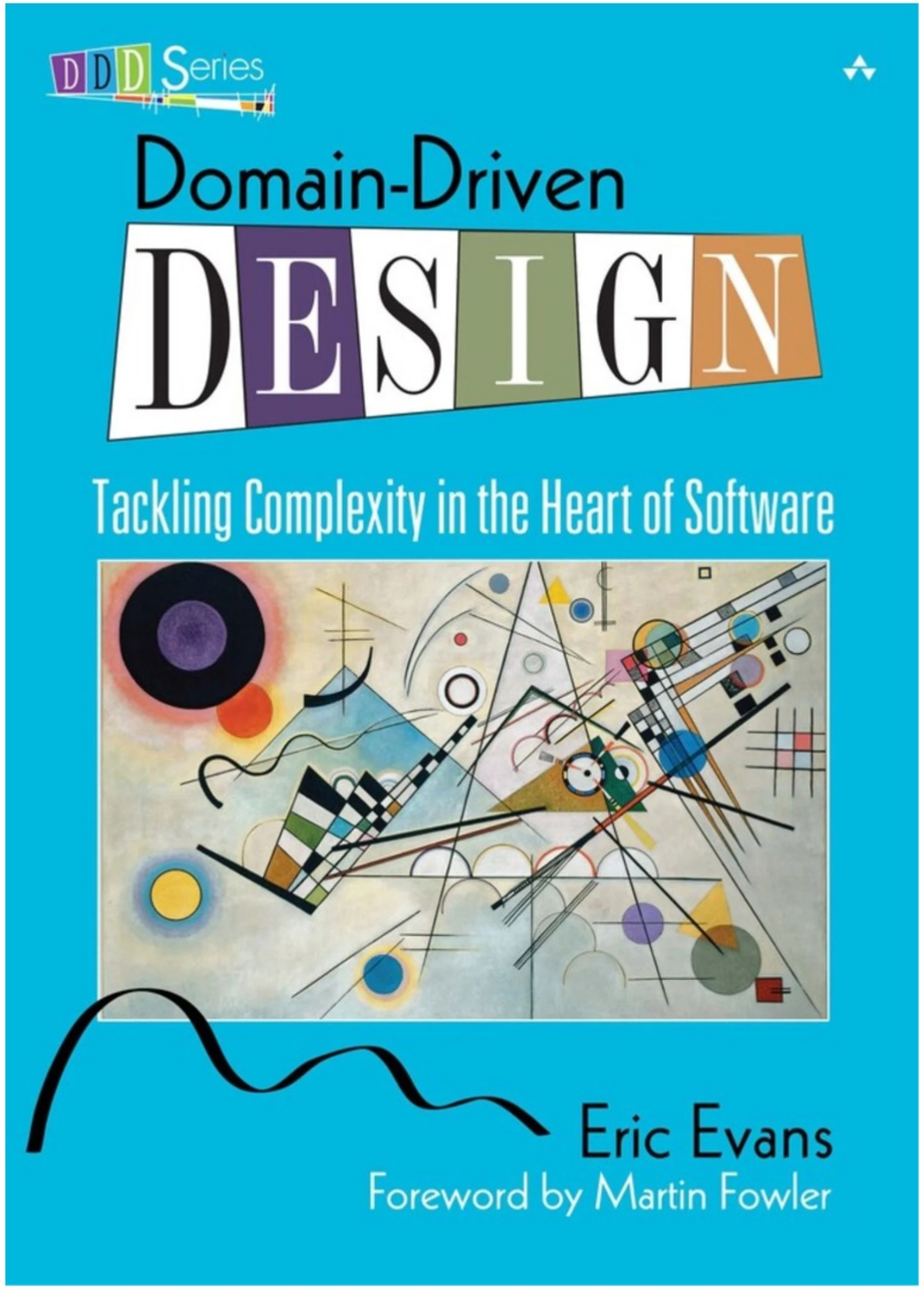
1. The title of these regulations is the Financial Institutions Act (Safeguarding of Funds) Regulations, 2010.

Interpretation and applicability.

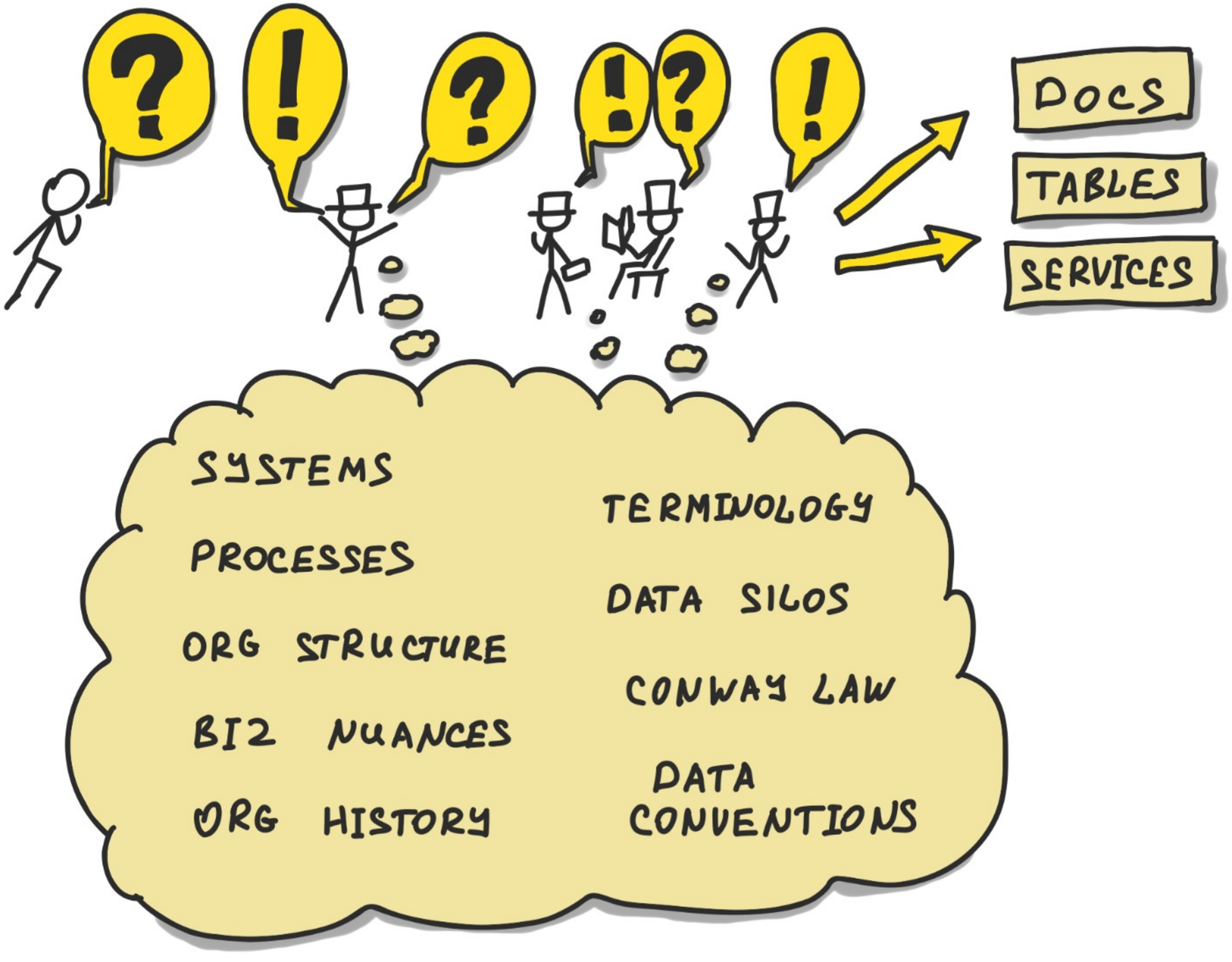
Cap. 376.

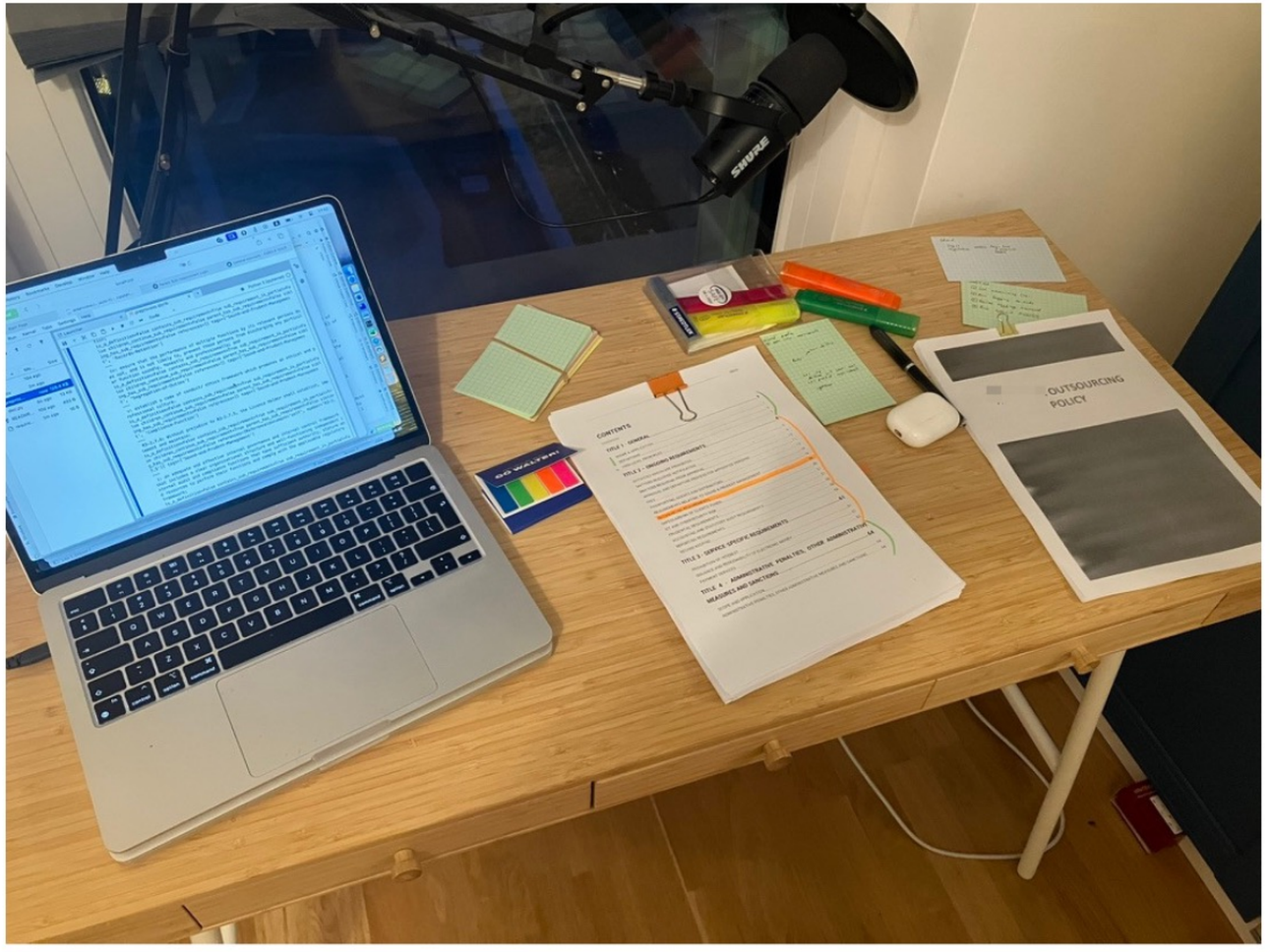
2. (1) Any reference in these regulations to the Act is a reference to the Financial Institutions Act, and subject to the provisions of subregulation (2), the provisions of article 2 of the said Act shall also apply to these regulations.

ChatGPT o1 pro could find some problems!



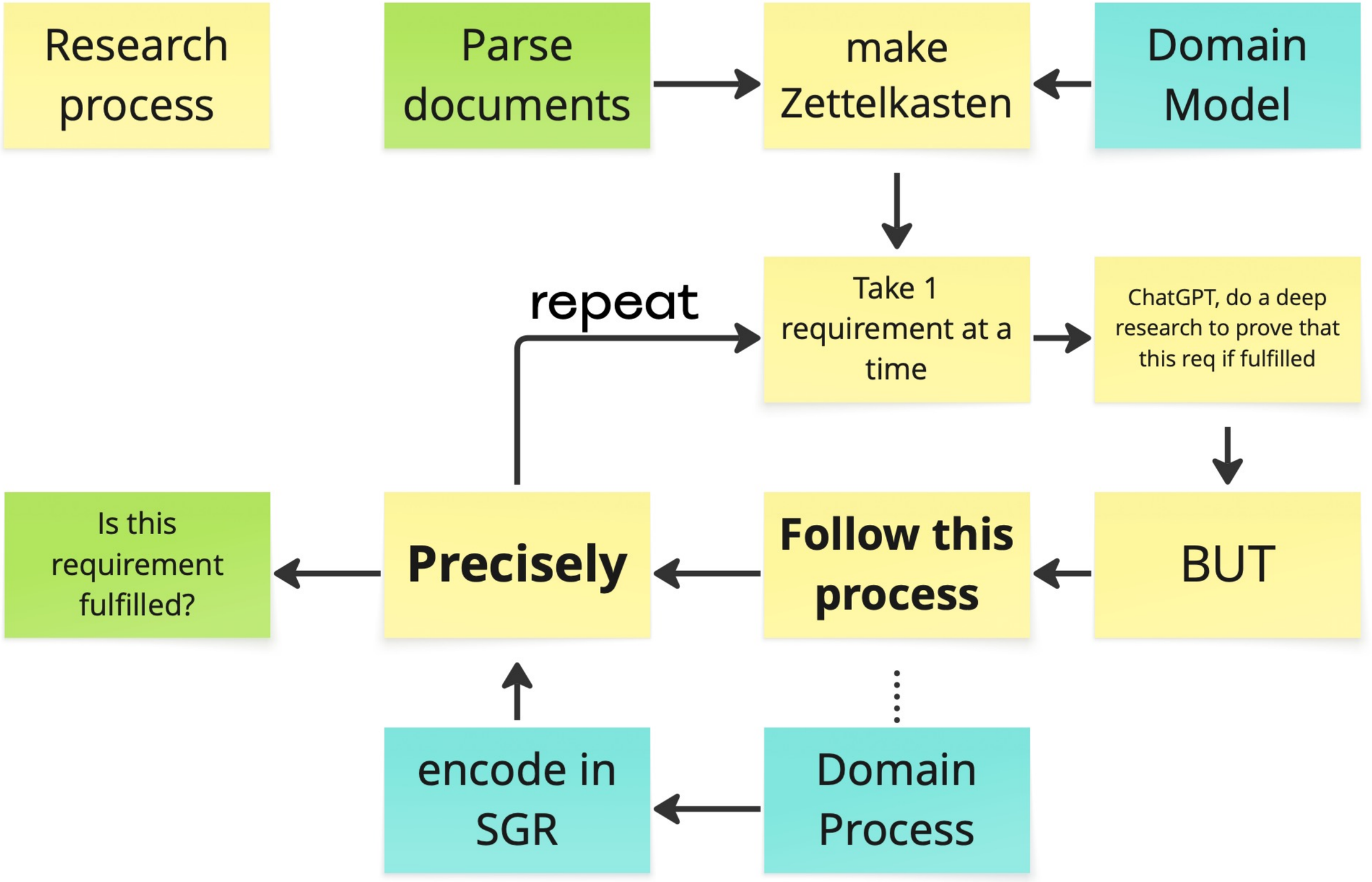
What would Erik Evans do?

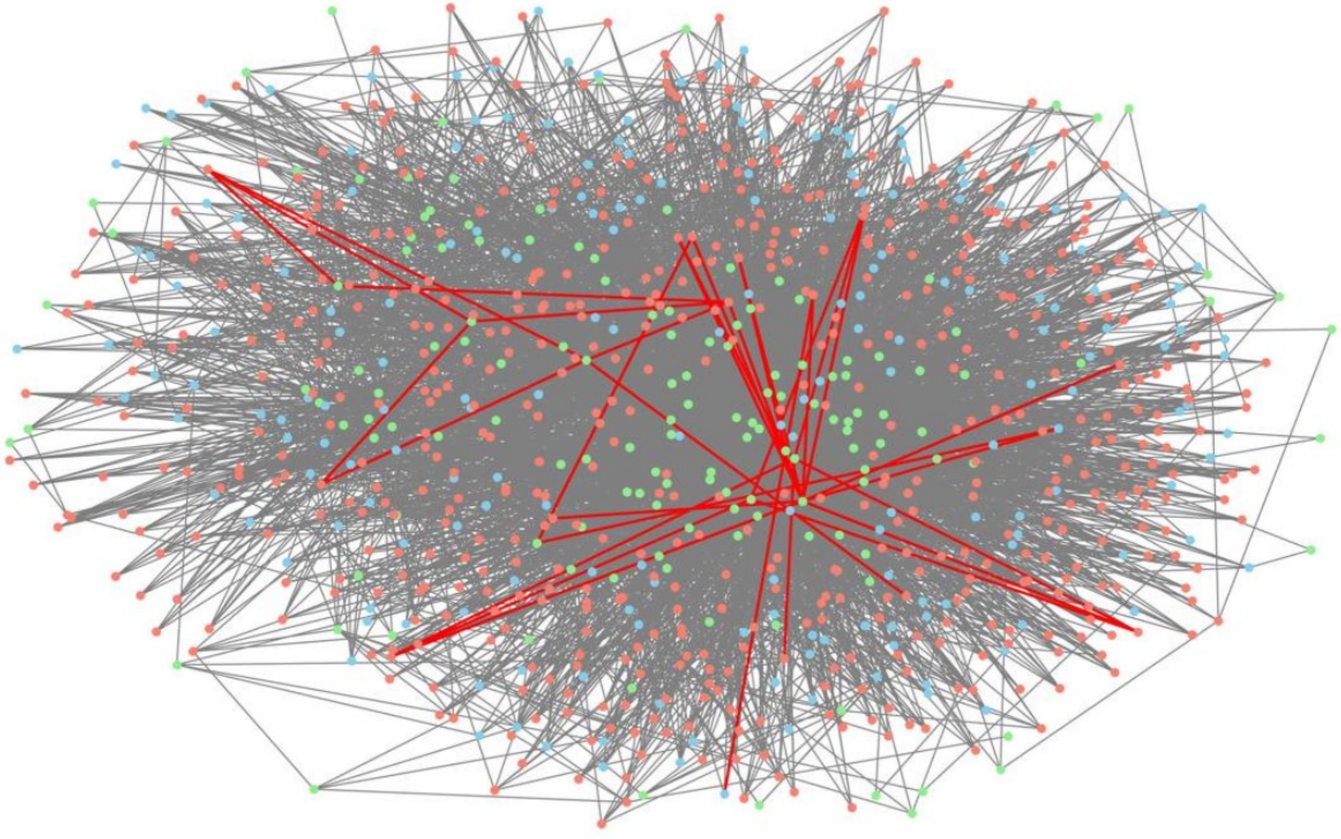

DOCS
TABLES
SERVICES
SYSTEMS
PROCESSES
ORG STRUCTURE
BIZ NUANCES
ORG HISTORY
TERMINOLOGY
DATA SILOS
CONWAY LAW
DATA CONVENTIONS



If you can't do it on paper, LLM won't do it better.


Fourier
Garten
(cont.)


Research process
Parse documents
make Zettelkasten
Domain Model
repeat
Take 1 requirement at a time
ChatGPT, do a deep research to prove that this req if fulfilled
Is this requirement fulfilled?
Precisely
Follow this process
BUT
encode in SGR
Domain Process



Research process

Compliance Gap Analysis Platform

Review Queue 27 | Compliance Workbench

Regulation Navigator

376

- COPILOT
- CHAPTER 376
- PRELIMINARY
- LICENSING AND REGISTRATION REQUIREMENTS.
- OBLIGATIONS OF FINANCIAL AND OTHER INSTITUTIONS
  - 8.
  - 8A.
  - 8B.
  - 8C.
  - 8D.
  - 8E.
  - 8F.
  - 8G. Without prejudice to any anti-money laundering or combat...
  - 9.
  - 10.
  - 10A. The granting of interest or of any other benefit relate...

Analysis Detail

← Previous 1 of 27 Next →

View Source Document (Page 37)

OBLIGATIONS OF FINANCIAL AND OTHER INSTITUTIONS

10B

(1) A payment institution providing payment services as referred to in paragraphs 2(a) to (f) of the Second Schedule and an electronic money institution shall safeguard all funds received from any person making use of its services, or received through another payment service provider for the execution of payment transactions, or in exchange for electronic money that has been issued.

Add Review

Compliance Assessment

NON-COMPLIANT

Risk Level: Critical - Immediate Action Required

Reason: Completely Missing

Remediation Requirements

- The internal document should explicitly state the safeguarding measures for funds received from users or other payment service

Evidence Viewer

View Source Document (Page 5)

View Source Document (Page 5)

DDD unlocked this AI project

Schema-guided reasoning (SGR)

Ontology / Classification

Sub-routine

order

Preliminary analysis

Answer

Supporting evidence

Verification

```python
ReasonForNoncompliance = Literal[
    "None",
    "CompletelyMissing",
    "PartiallyIncomplete",
    "DirectlyContradicts",
    "NeedsCrossReference",
    "FormalOnly"
]

class Conclusion(BaseModel):
    does_this_regulation_apply_to_the_documents: Applicability = Field(...,
        description="Is this regulation clause applicable to the documents? Does it fall into the scope?"
    )
    missing: Optional[List[str]] = Field(...,
        description="Brief explanation of what should be changed in document to comply with the regulation"
    )
    answer: YesNoNA = Field(...,
        description="Does the document comply with the requirements?"
    )
    gapSeverity: GapSeverity = Field(...,
        description="Classify HOW SERIOUS the gap is based on potential real-world outcomes"
    )
    reasonForNoncompliance: ReasonForNoncompliance = Field(...,
        description="Why is it noncompliant?"
    )
    relevant_clauses: List[str] = Field(...,
        description="List of clause ids that address the requirement directly."
    )
    patch: Optional[List[Proposal]] = Field(...,
        description="If feasible, provide minimal changes to make the document compliant with the r
    )
```

© Rinat Abdullin - Building AI Assistants: Patterns and Practices

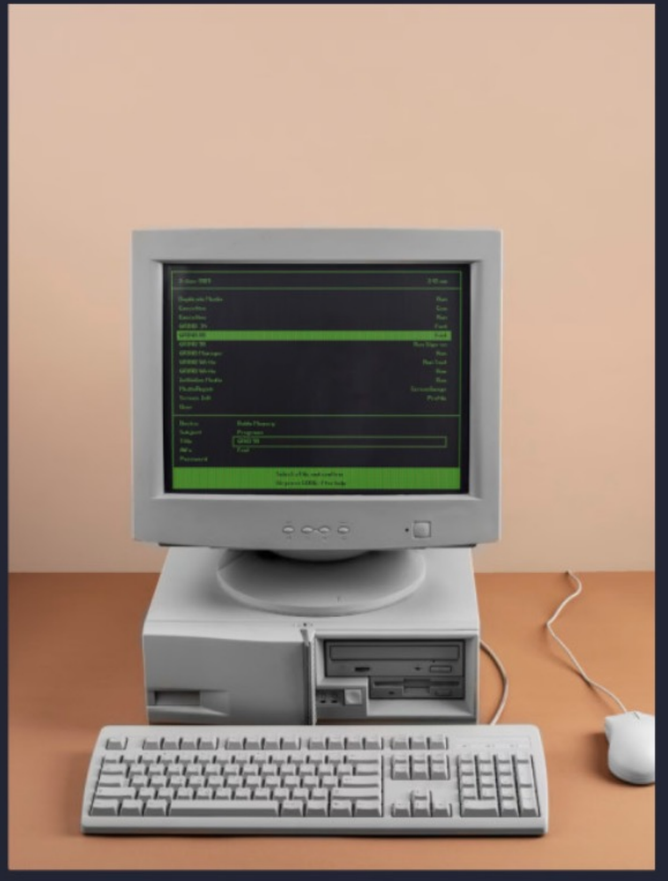
Schema-Guided Reasoning

Story of

30yo code

Key Challenges

- Two previous modernization attempts had failed – too complex, too risky, and not sufficiently predictable.
- The system was business-critical – downtime was not an option.
- Key knowledge holders were nearing retirement.
- The application ran as a terminal app, and users worked exclusively with keyboard shortcuts – a complete UI overhaul would have been unacceptable.



500.000

Lines of ABL Code

A massive code base to be migrated 1:1 to a modern stack.

1.109

Screens

All use cases must remain available, and all keyboard shortcuts must continue to function.

146

Tables in Progress

Migration of data to PostgreSQL. Locking mechanisms must remain intact.

Not Vibe Coding

ChatGPT o1 pro could find some problems!

What would Alberto Brandolini do?

What would Erik Evans do?

What would Greg Young do?

Model the development process

Code is irrelevant.

Tests/Specs/Requirements matter

LLM can do that

DDD can distill process and personas

Unfeasible to read 500000 lines of code for every change

SGR can enforce process

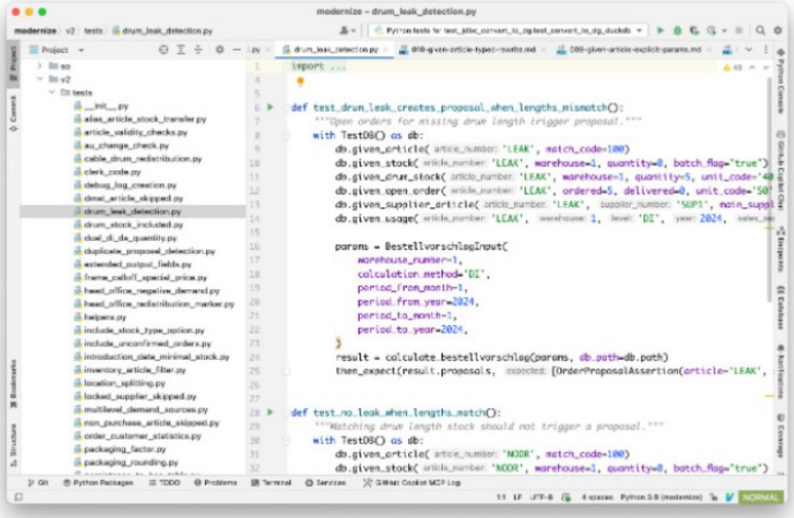
AI Code Factory

Humans can oversee

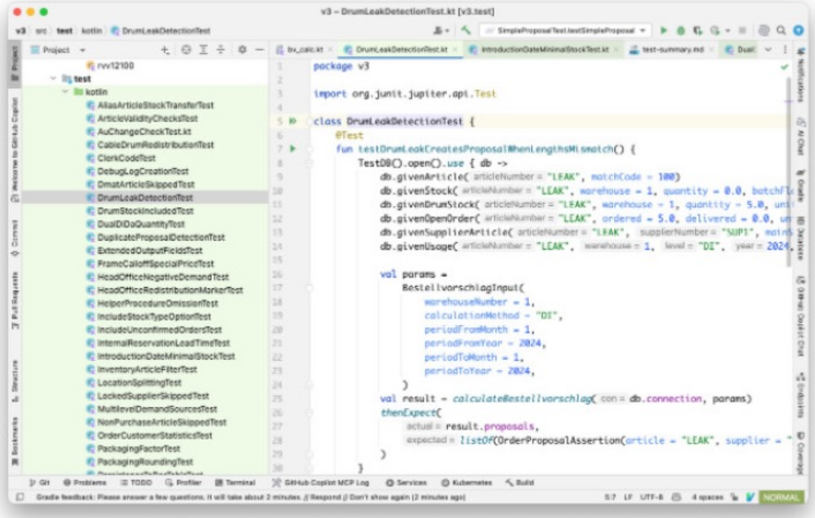
Responsibilities in Code Factory

Human		AI+Code
factory code	Task prioritisation	200% tests
rules and guidelines	quality review	200% code

Why 200% tests and code?



Python

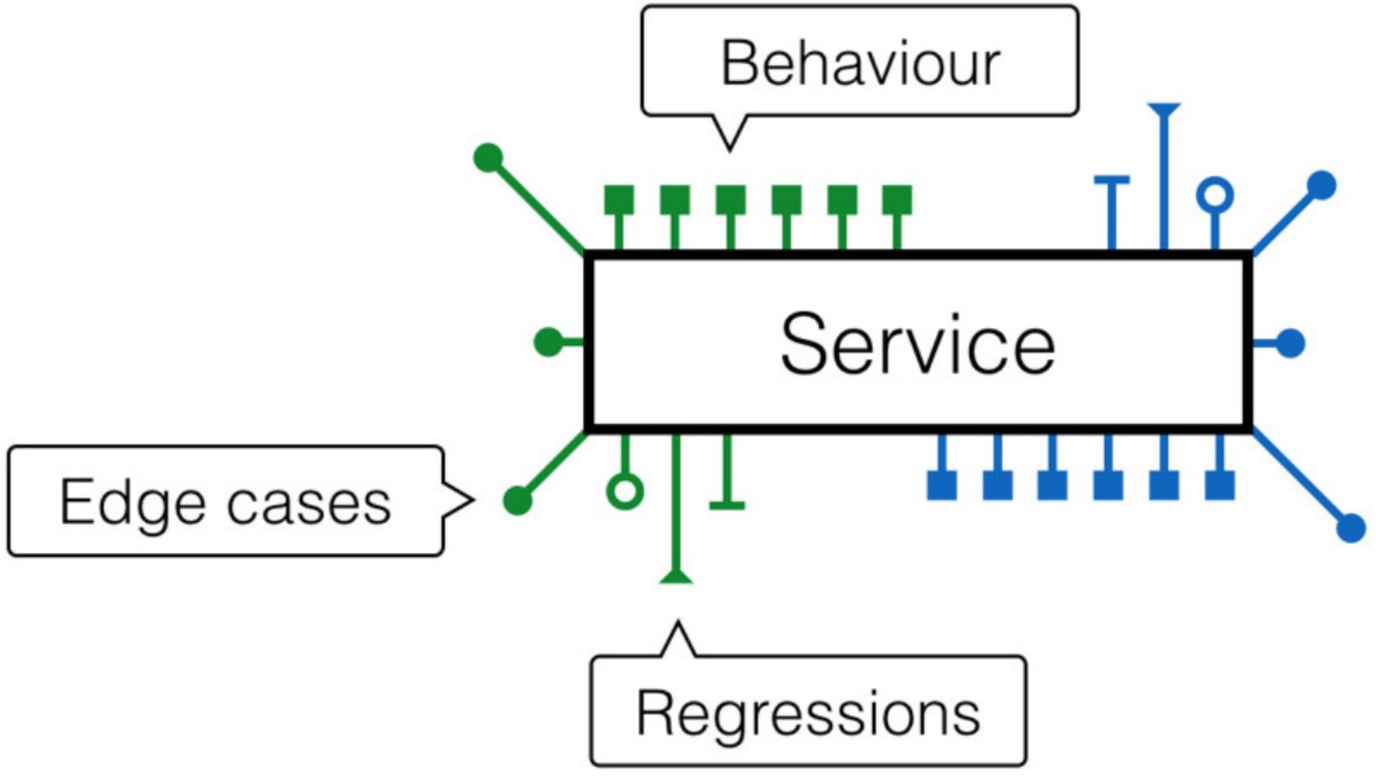


Kotlin

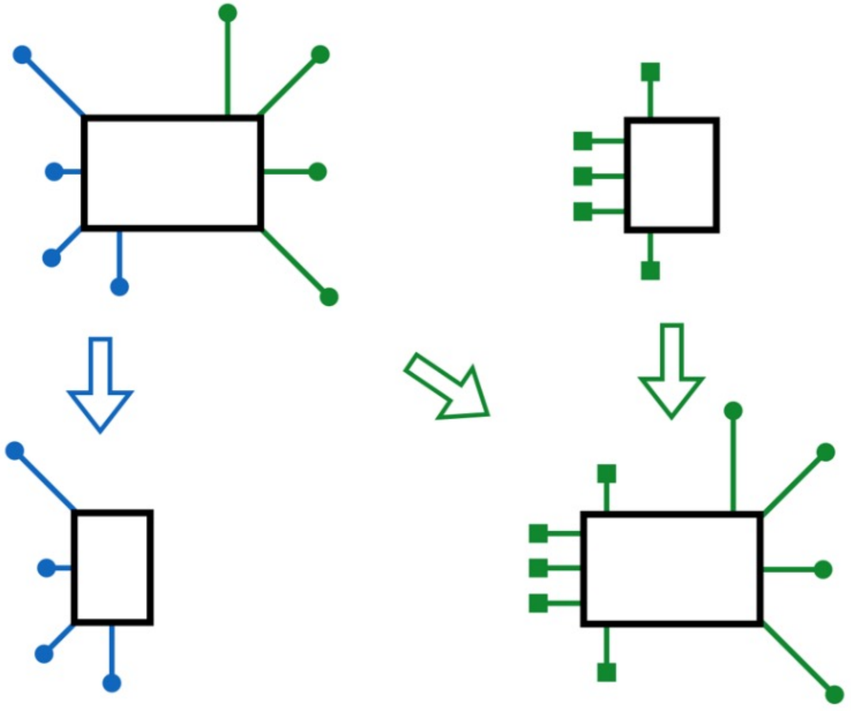
We've done it twice!

```kotlin
@Test
fun testLocationSplitUsesDefaultWhenArticleInvalid() {
    TestDB().open().use { db ->
        db.givenArticle( articleNumber = "L2", matchCode = 100)
        db.givenArticleSettings( articleNumber = "L2", splitFlag = "X")
        db.givenStock( articleNumber = "L2", warehouse = 80, quantity = 0.0)
        db.givenWarehouse( warehouseNumber = 80, warehouseType = "G")
        db.givenSupplierArticle( articleNumber = "L2",  supplierNumber = "SUP1", mainSupplier = true, leadTime = 1, minQty = 1.0)
        db.givenUsage( articleNumber = "L2",  warehouse = 80,  level = "DI",  year = 2024,  salesSeries = listOf(5.0),
         returnsSeries = emptyList())
        db.givenCfg( section = "LIF",  key = "SUP1",  name = "BVSPLIT",  typeCode = "80",  content = "A,0;A;;;")
        db.givenCfg( section = "LAG",  key = "A",  name = "LORT",  typeCode = "80",  content = "")

        val params =
            BestellvorschlagInput(
                warehouseNumber = 80,
                calculationMethod = "DI",
                periodFromMonth = 1,
                periodFromYear = 2024,
                periodToMonth = 1,
                periodToYear = 2024,
            )
        val result = calculateBestellvorschlag( con = db.connection, params)

        thenExpect(
            actual = result.proposals,
            expected = listOf(
                OrderProposalAssertion(supplier = "SUP1", article = "L2", locationCode = "A")
            ),
        )
    }
}
```

Tests make it easy to write code

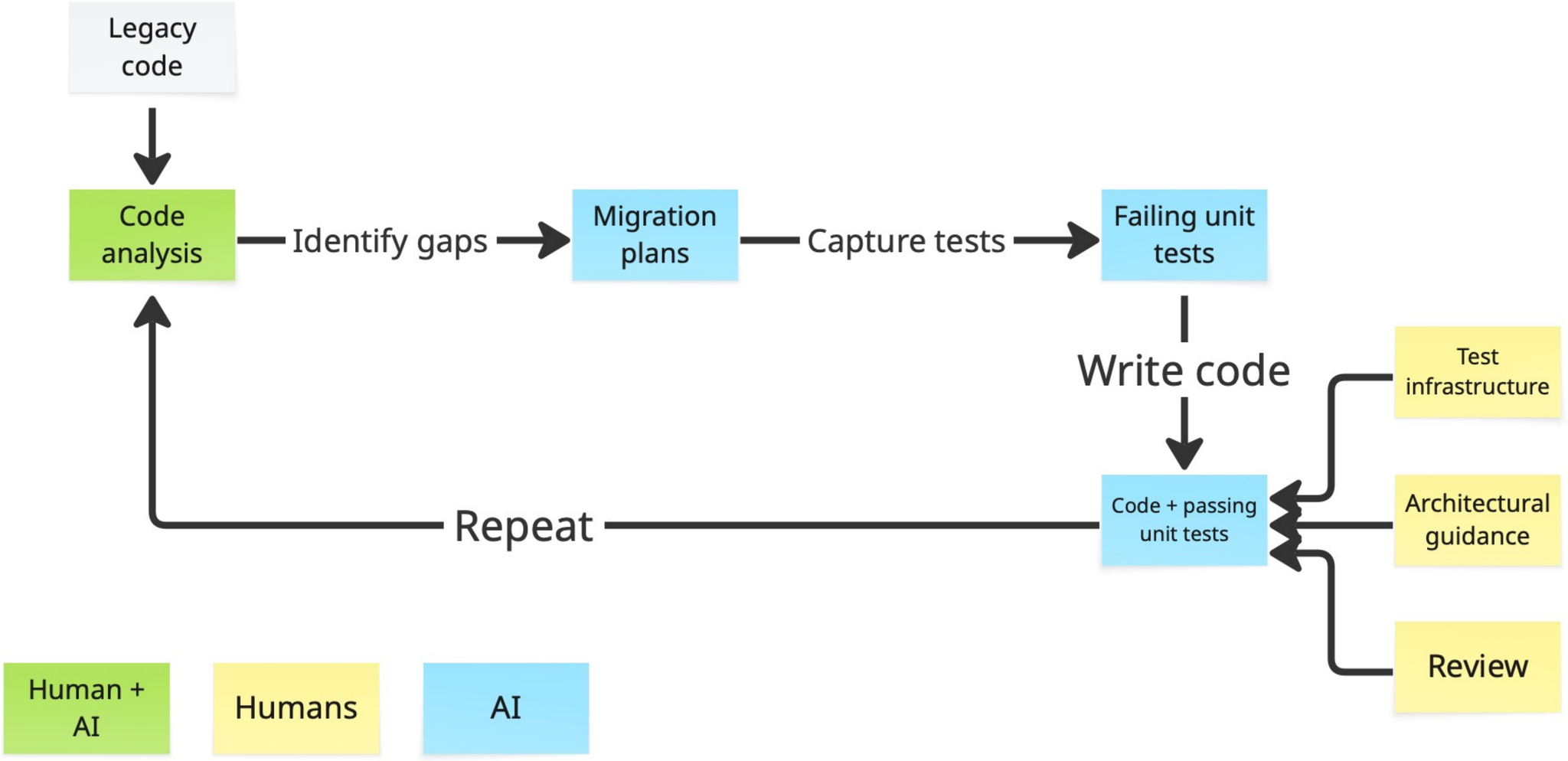


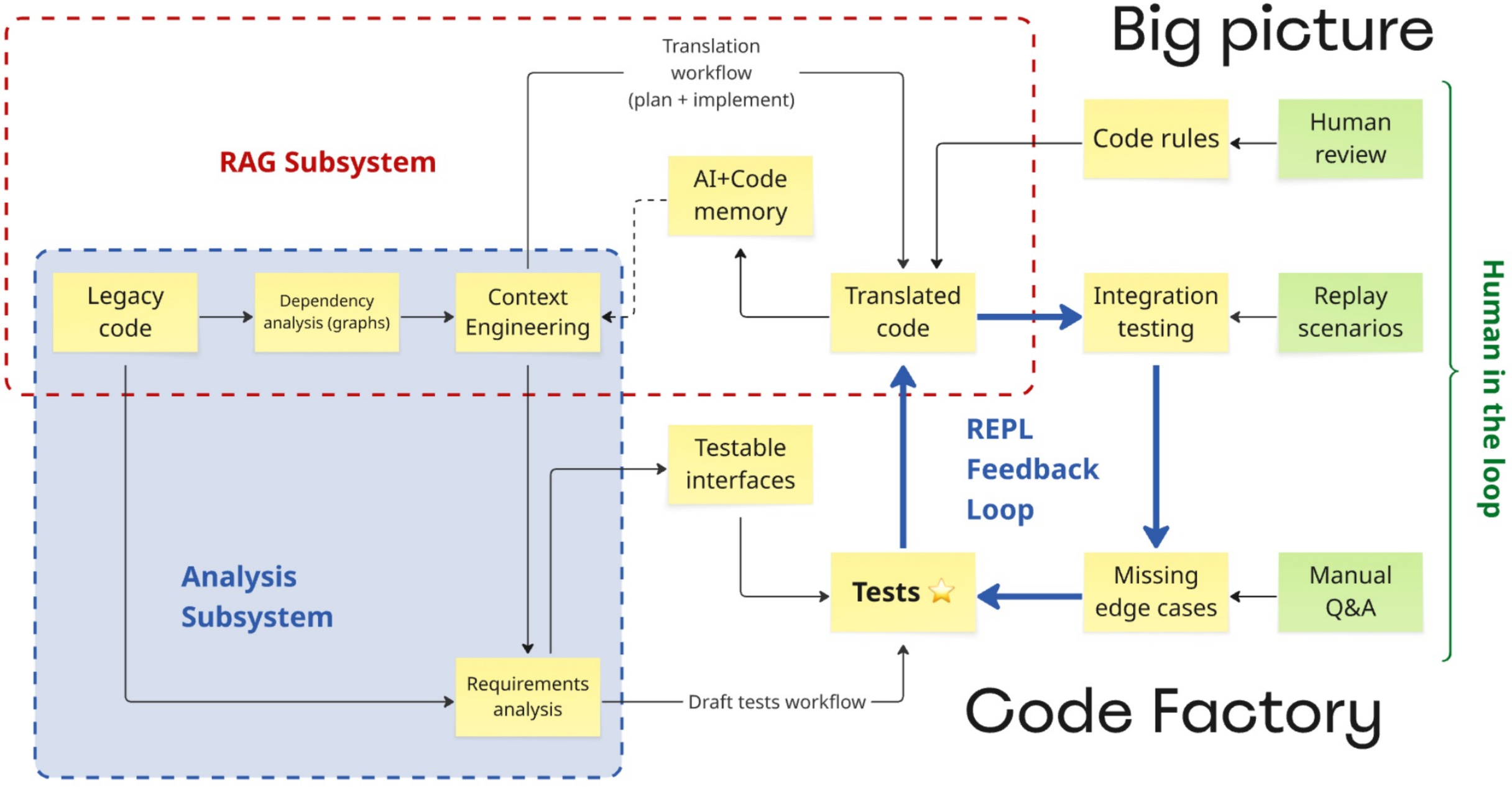
Easy to reshape code



... or to rewrite it in a different language

The process with AI and code




Big picture
Translation workflow (plan + implement)
RAG Subsystem
AI+Code memory
Code rules
Human review
Legacy code
Dependency analysis (graphs)
Context Engineering
Translated code
Integration testing
Replay scenarios
Human in the loop
REPL Feedback Loop
Testable interfaces
Analysis Subsystem
Tests
Missing edge cases
Manual Q&A
Requirements analysis
Draft tests workflow
Code Factory

Learn more

[SafeShift - DE]

DDD unlocked this AI project

Apply compliance reasoning process to a process of coding with AI

Story of

Hail Mary Project

Datasheet extraction

MEAN WELL

DC-DC Step-Up Constant Current LED driver **LDH-45 series**

■ Features :

- DC/DC step-up converter
- Constant current output : 350mA to 1050mA
- Wide output LED string voltage up to 126VDC
- High efficiency up to 95%
- Built-in EMI filter, comply with BS EN/EN55015 without additional input filter and capacitors
- PWM + analog dimming and remote ON/OFF control ((Blank) type or W type)
- DALI dimming ((Blank)DA type or WDA type)
- Protections: Short circuit / Over voltage / Under voltage
- Cooling by free air convection
- Fully encapsulated
- 3 years warranty

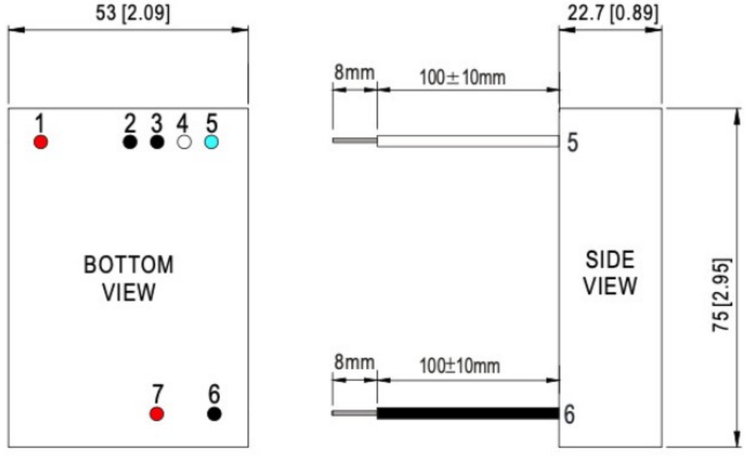
LDH-45□-350○ □=A or B; A: 9~18VDC input range, B: 18~32VDC input range
○=(Blank) or W or (Blank)DA or WDA ;
(Blank): PIN style, PWM+analog dimming
W: Wire style, PWM+analog dimming
(Blank)DA: PIN style, DALI dimming
WDA: Wire style, DALI dimming

SPECIFICATION

MODEL			LDH-45A-350○	LDH-45A-500○	LDH-45A-700○	LDH-45A-1050○	LDH-45B-350○	LDH-45B-500○	LDH-45B-700○	LDH-45B-1050○
OUTPUT	RATED CURRENT		350mA	500mA	700mA	1050mA	350mA	500mA	700mA	1050mA
	CURRENT ACCURACY(Typ.)		±5% at 12VDC input				±5% at 24VDC input			
	VOLTAGE RANGE Note.2	Non-DALI	12~86VDC	12~86VDC	12~64VDC	12~43VDC	21~126VDC	21~86VDC	21~64VDC	21~43VDC
		DALI	24~86VDC	24~86VDC	24~64VDC	24~43VDC	36~126VDC	36~86VDC	36~64VDC	36~43VDC
	NO LOAD OUTPUT VOLTAGE(max.)		100V	100V	75V	50V	146V	100V	75V	50V
	RATED POWER		30.1W	43W	44.8W	45.15W	44.1W	43W	44.8W	45.15W
	RIPPLE & NOISE (max.) Note.3		2.5Vp-p	2.5Vp-p	1.9Vp-p	1.9Vp-p	2.5Vp-p	1.7Vp-p	1.2Vp-p	1.2Vp-p
INPUT	RATED VOLTAGE		12VDC				24VDC			
	VOLTAGE RANGE Note.2		9~18VDC				18~32VDC			
	EFFICIENCY (max.)		91%	90%	90%	91%	93%	94%	95%	95%
	DC CURRENT (Typ.)		2.8A	4.1A	4.2A	4.2A	2.1A	2.1A	2A	2A
PWM DIMMING & ON/OFF CONTROL	REMOTE ON/OFF		Leave open if not used							
			Power ON with dimming: PWM signal >2~8VDC or open circuit, between PWM DIM and DIM-							
			Power OFF : PWM signal <0.5VDC or short or PWM duty is equal to 0%, between PWM DIM and DIM-							
	PWM DIMMING FREQUENCY		1K~10KHz							
	QUIESCENT INPUT CURRENT IN SHUTDOWN MODE(Typ.)		7mA when PWM dimming OFF							
ANALOG DIMMING & ON/OFF CONTROL	REMOTE ON/OFF		Leave open if not used							
			Power on with dimming: DC input +0.25~6VDC or open circuit, between Analog DIM and DIM-							
			Power off : DC input <0.2VDC or short, between Analog DIM and DIM-							
	DIM INPUT VOLTAGE RANGE		0.25~1.3VDC							
	MAX. OPERATION VOLTAGE		6V. The output current remains constant when voltage changes from 1.3V to 6V							
	QUIESCENT INPUT CURRENT IN SHUTDOWN MODE(Typ.)		7mA when Analog dimming OFF							
PROTECTION	SHORT CIRCUIT		Protection type : Power OFF and fuse open							
	OVER VOLTAGE (max.)		108V	100V	75V	50V	146V	100V	75V	50V
			Protection type : Constant output voltage and shut off o/p current, recovers automatically after fault condition is removed							
ENVIRONMENT	WORKING TEMP.		-40 ~ +70°C (Refer to "Derating Curve")							
	WORKING HUMIDITY		20 ~ 90% RH non-condensing							
	STORAGE TEMP., HUMIDITY		-40 ~ +85°C, 10 ~ 95% RH							
	TEMP. COEFFICIENT		±0.03%/°C (0 ~ 50°C)							
	VIBRATION		10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes							
SAFETY & EMC	SAFETY STANDARDS		LVD:BS EN/EN61347-1, BS EN/EN61347-2-13, EAC TP TC 004 approved							
	EMC EMISSION		Compliance to BS EN/EN55015;EAC TP TC 020							
	EMC IMMUNITY		Compliance to BS EN/EN61547,BS EN/EN61000-4-2,3,4,6,8; light industry level, criteria A;EAC TP TC 020							
OTHERS	MTBF		1170.3Khrs min. MIL-HDBK-217F (25°C)							
	DIMENSION		75*53*22.7mm (L*W*H)							
	PACKING		138g;10pcs/14.8Kg/0.83CUFT (Blank) type or (Blank) DA type),1.04CUFT (W type or WDA type)							
NOTE	1. All parameters are specified at normal input(12VDC,24VDC), rated load, 25°C, 70% RH ambient. 2. (Blank) type and W type output voltage must step up by 3 Volts from input DC voltage. (Blank)DA type and WDA type output voltage must step up by 12 Volts from input DC voltage. 3. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf parallel capacitor. ※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx									

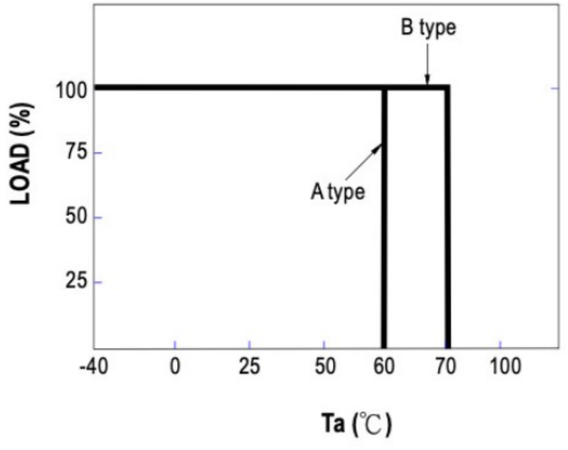
There can be nuances

LDH (Wire Style):

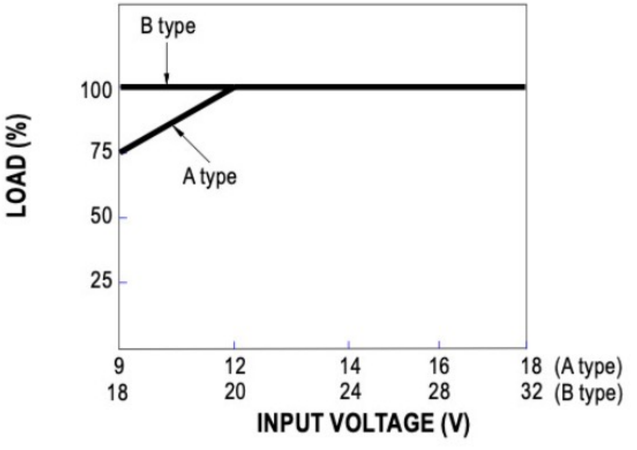


PIN No.	Output	Description
1	Vin+(red)	DC Supply
2	Vin-(black)	Don't connect to Vout-
3	DIM-(black)	○=W type:GND of DIM signal Don't connect to Vout- or Vin-
	DA-(white)	○=WDA type:DALI- signal
4	Analog DIM (white)	○=W type: ON/OFF and analog dimming (leave open if not used)
	DA+(blue)	○=WDA type:DALI+ signal
5	PWM DIM (blue)	ON/OFF and PWM dimming (leave open if not used) [WDA type:no such PIN]
6	Vout-(black)	LED - connection
7	Vout+(red)	LED + connection

■ Derating Curve

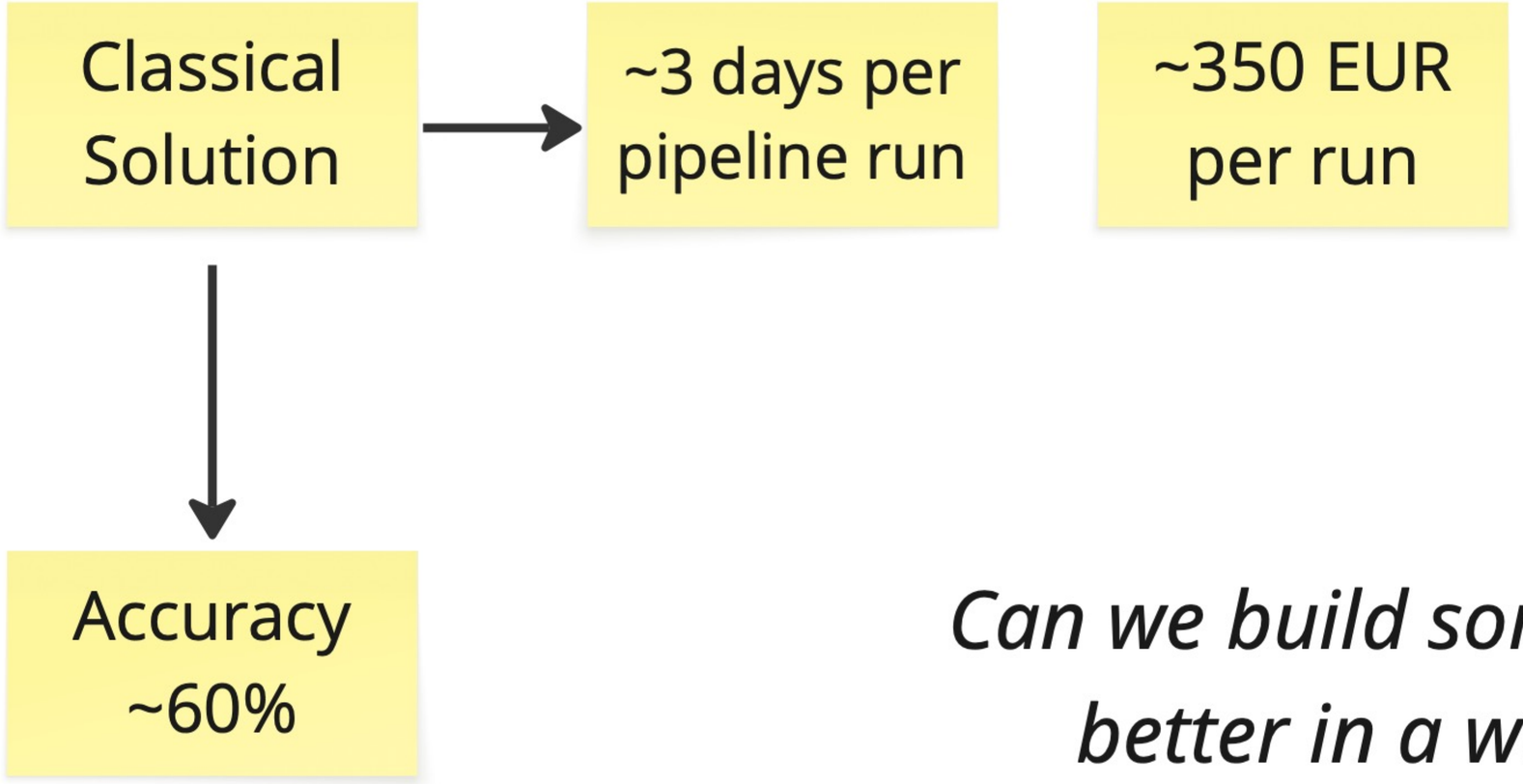


■ Static Characteristics



ChatGPT Pro could extract some, but not 20000

Additional **engineering** constraints



Can we build something better in a week?

Can it be done?

What do we know?

Tests matter

SGR

Model the thinking behind extraction process

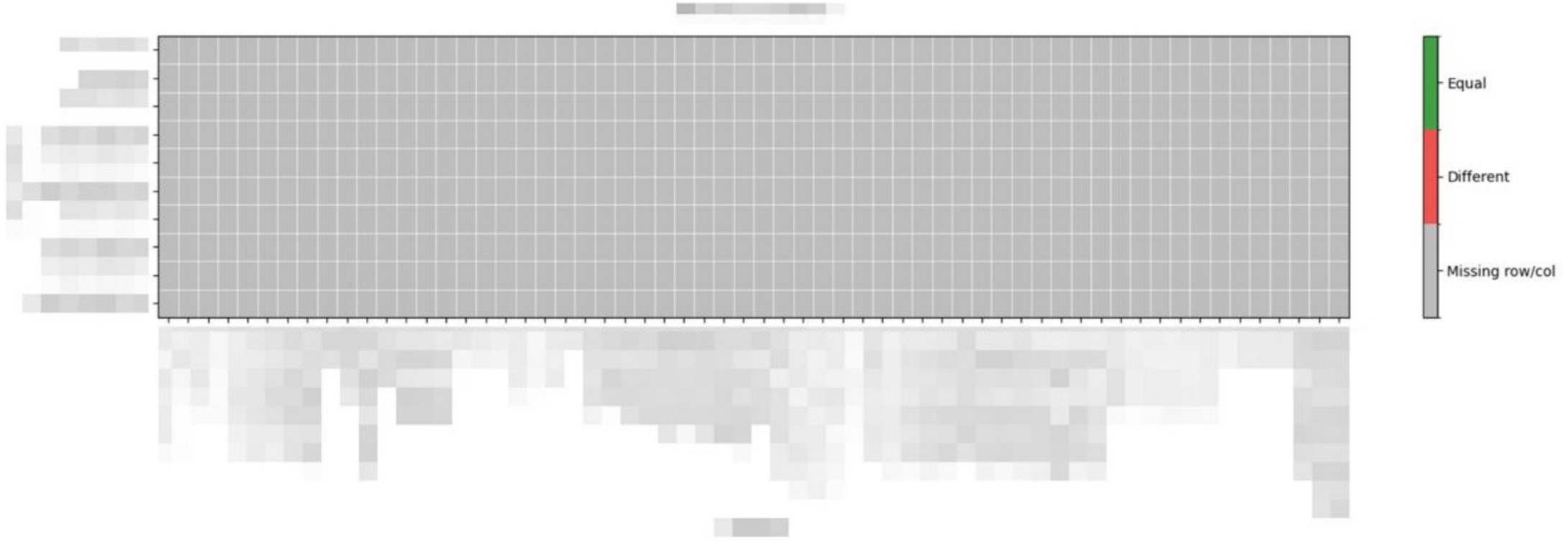
Model the extraction process by a lazy DevOps without time

Day 1

What do we do?

Let's gather test data.

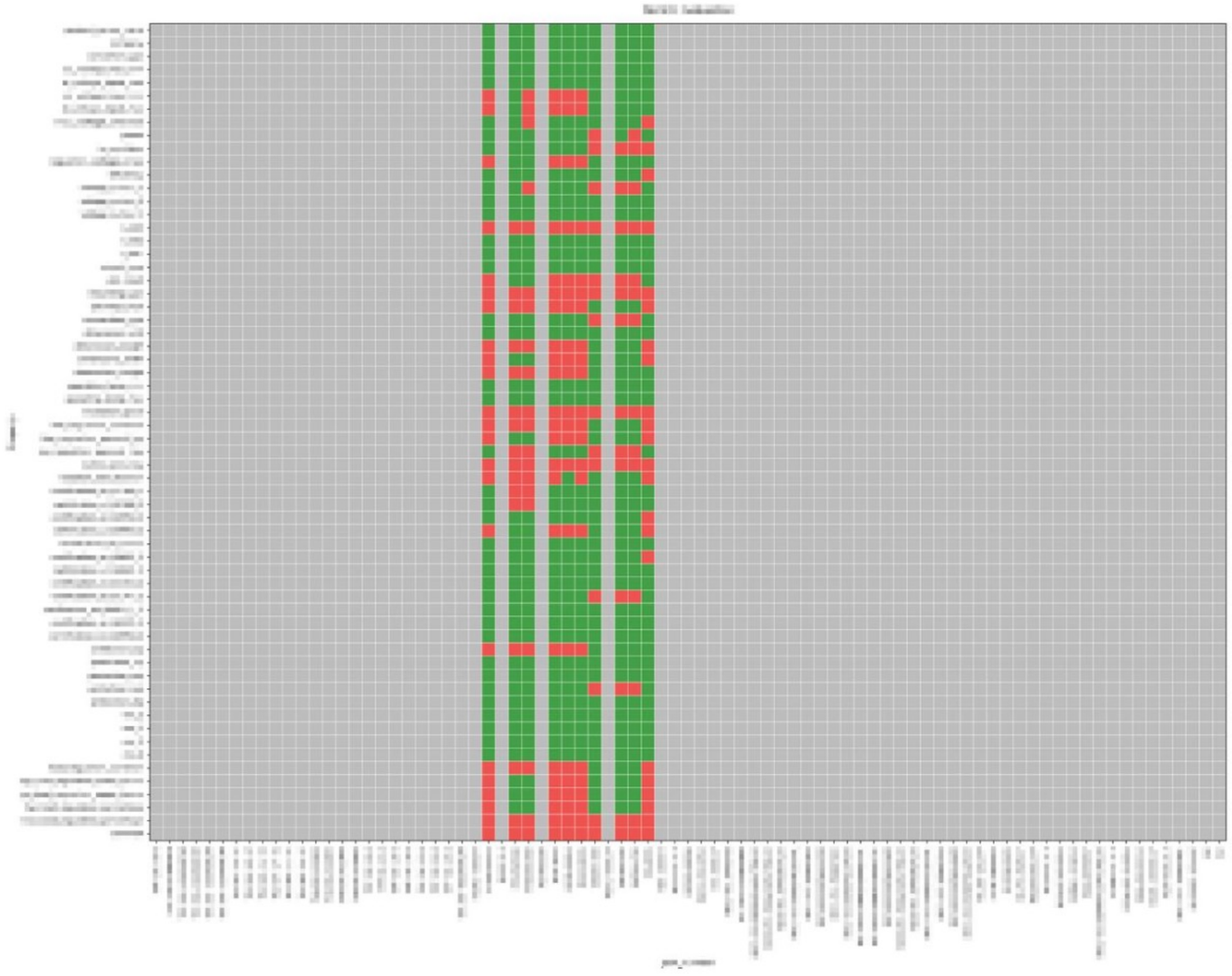
In Excel



Day 2

Gathering data

Unit tests that fail

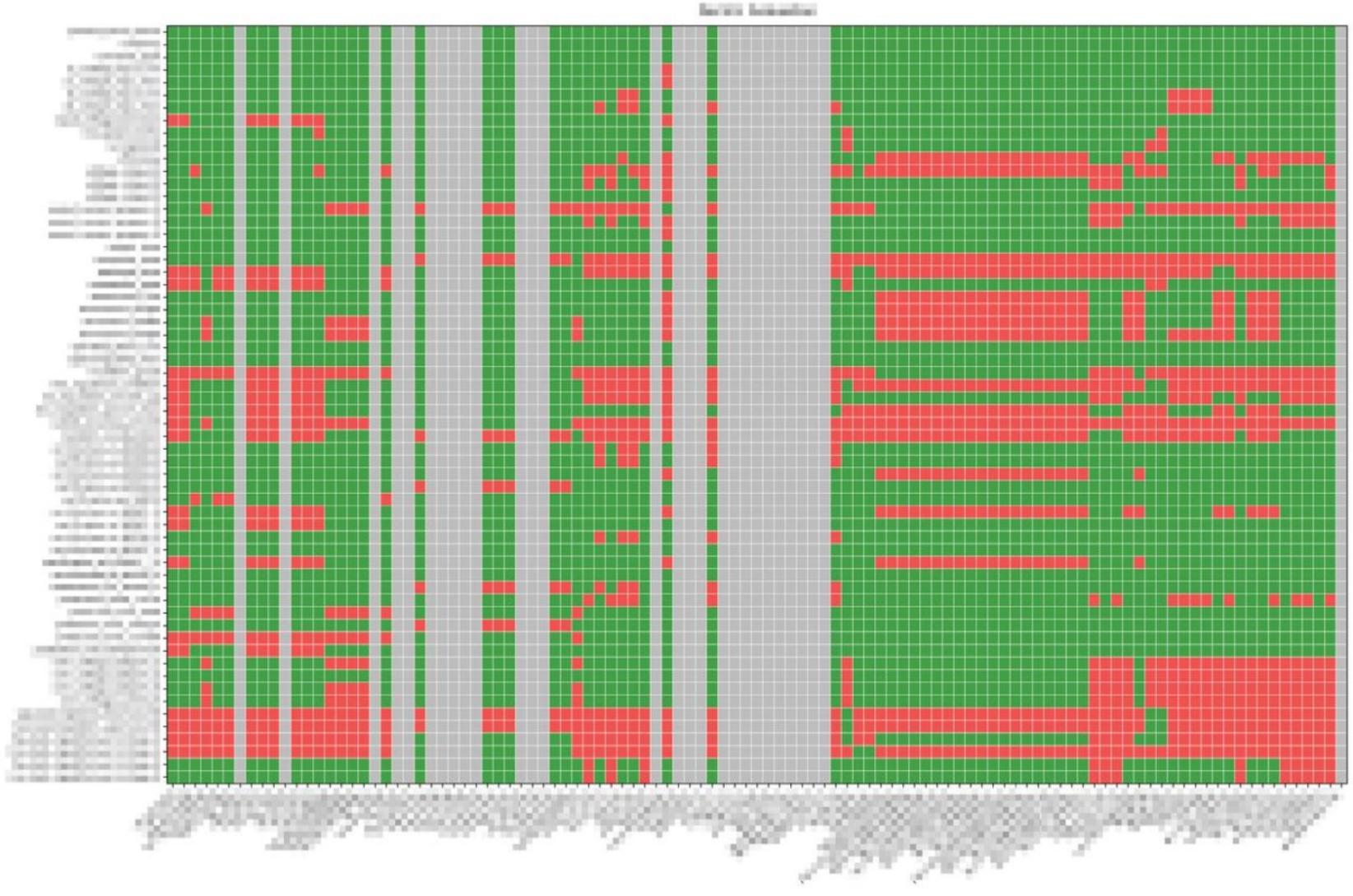


Day 3

46.9% Accuracy

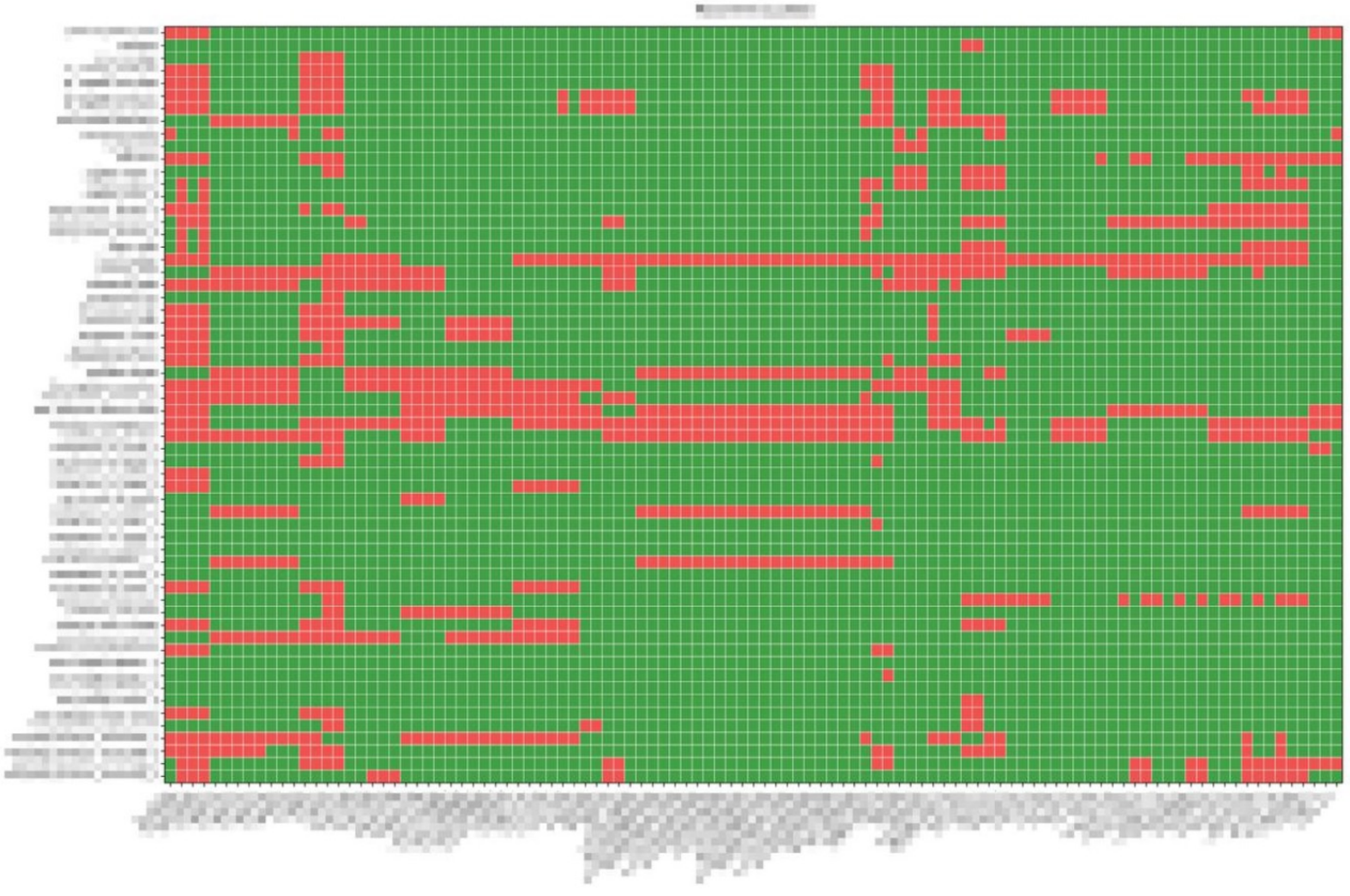
Started experimenting

Day 4



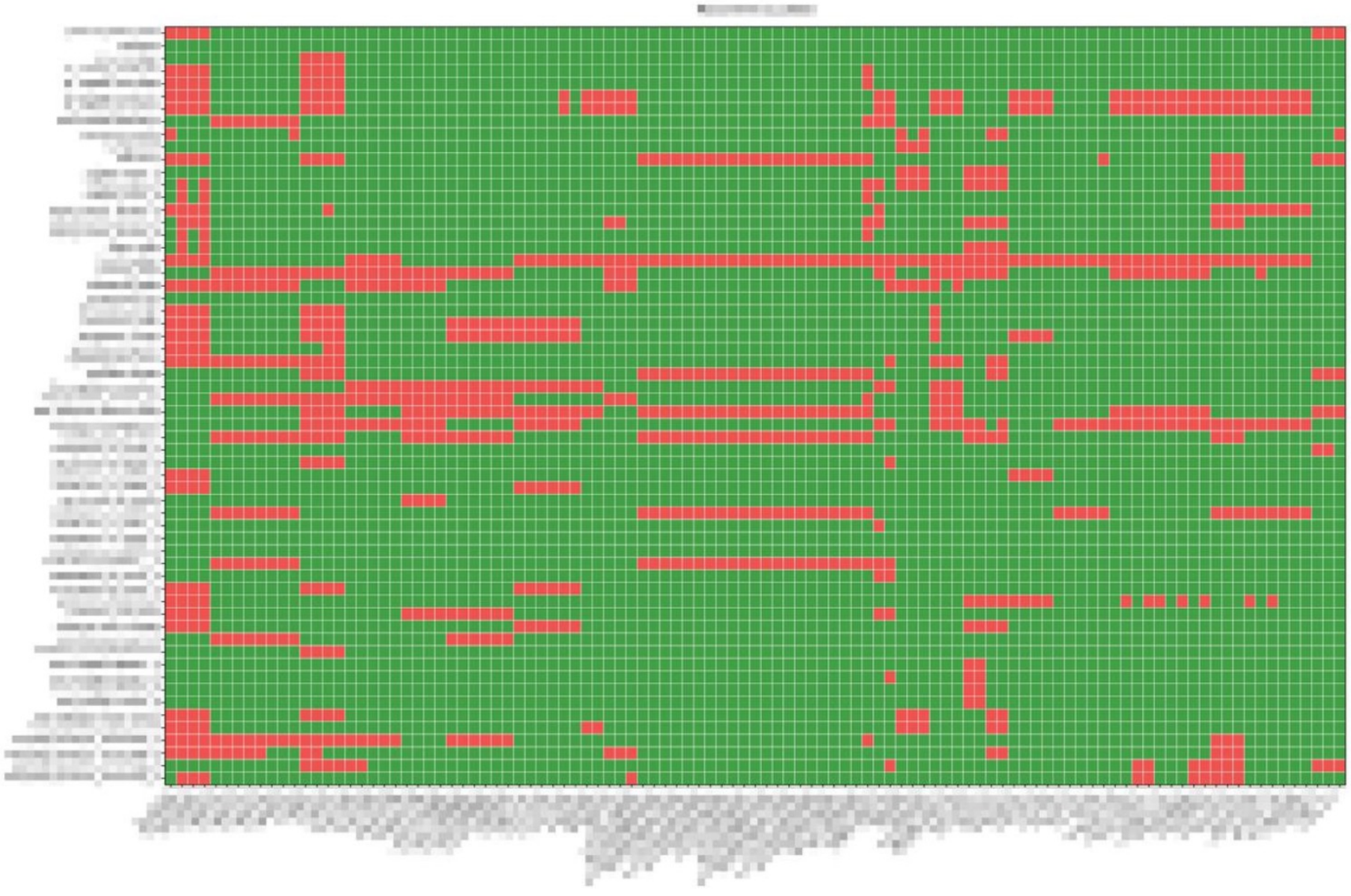
62.2% Accuracy

Day 5



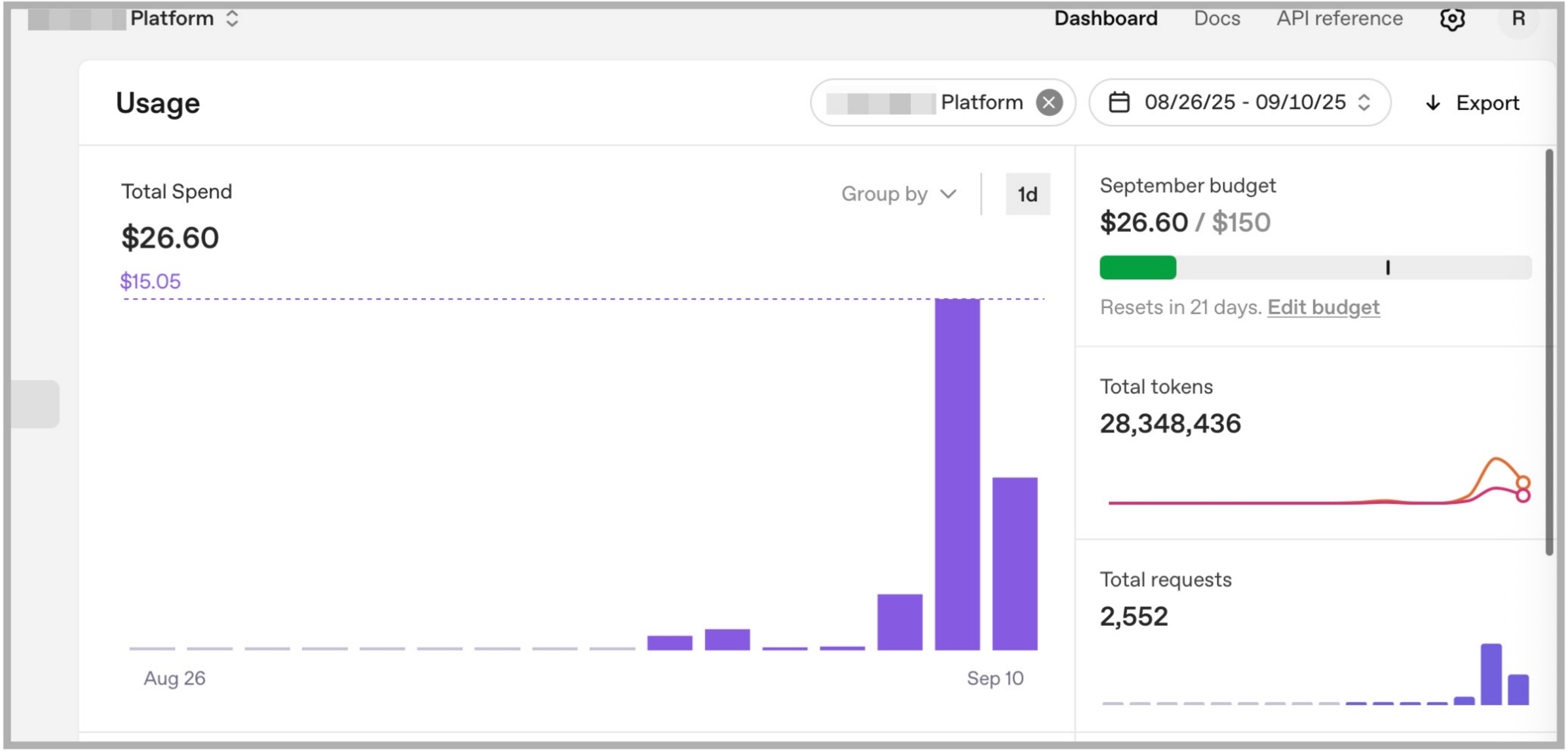
82.4% Accuracy

Day 6



Customer Evaluation- 99.7%

Total OpenAI expenses



Discovered unusual architecture as a side effect

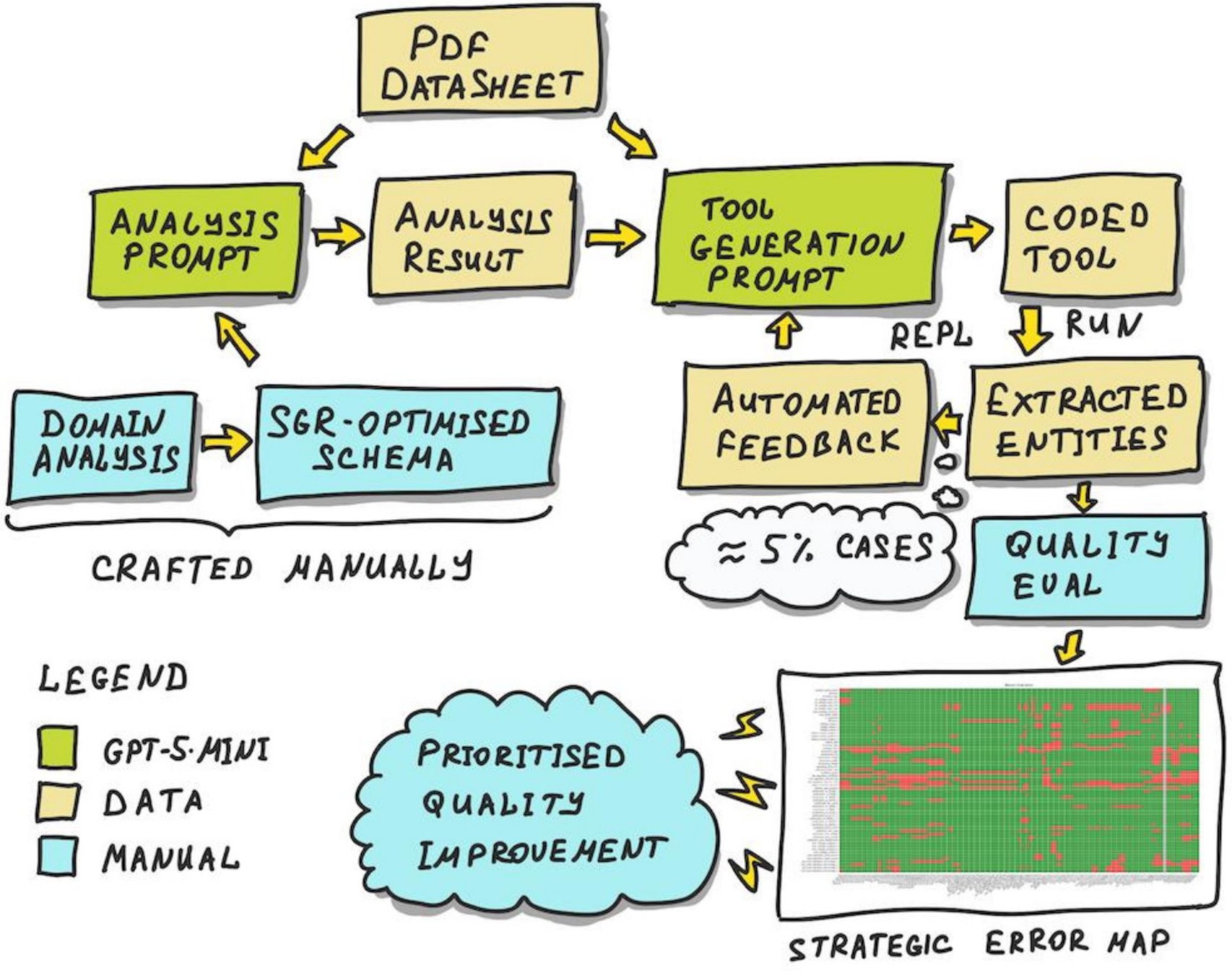
687 Tools

109922 lines of code

No human ever saw or will see the code

Architecture?

2 LLM Prompts



All in all, the pipeline generalized well enough to handle [redacted] and [redacted] with a decent score out of the box. I'll double check the biggest deviations for the gaps in the underlying domain model

Felix Krause 15.10 12:16

Yes, I'm also positively surprised, considering that the PDFs are highly different in structure!

15.10 12:17

> Felix Krause 15.10.25 12:16
> Yes, I'm also positively surprised, considering that the PDFs are highly different in structure!

DDD + LLM + SGR = 💖

Felix Krause 15.10 12:17

Super powerful combination! 🔥

> Rinat Abdullin 15.10.25 12:17
> DDD + LLM + SGR = 💖

Maybe we should print stickers

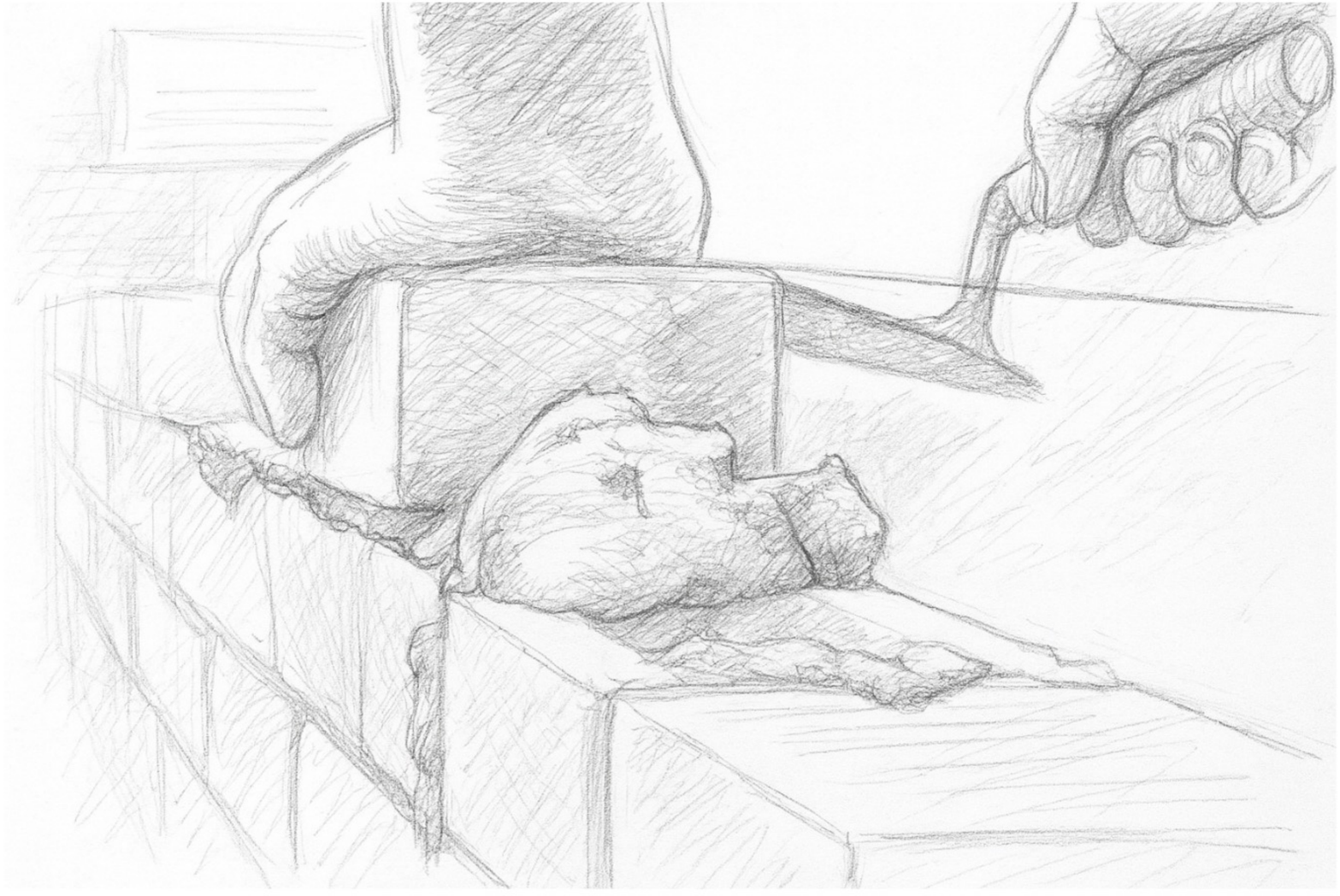
😆

DDD Unlocked this AI project and "trained" models

DDD unlocked this AI project

- SGR and Reasoning from Story 1
- Attention to the domain model
- Tests & Coding AI from Story 2

Do you see the pattern?



What next? First, slides & links

- SGR & Deep Research
- LLM Benchmarks
- Enterprise RAG Challenge
- TIMETOACT Österreich

Permalink

ENTERPRISE #3
RAG CHALLENGE

PIONEERING INNOVATION TOGETHER

REMOTE | AGENTS + REASONING | 26.11.2025

Sign up for free!

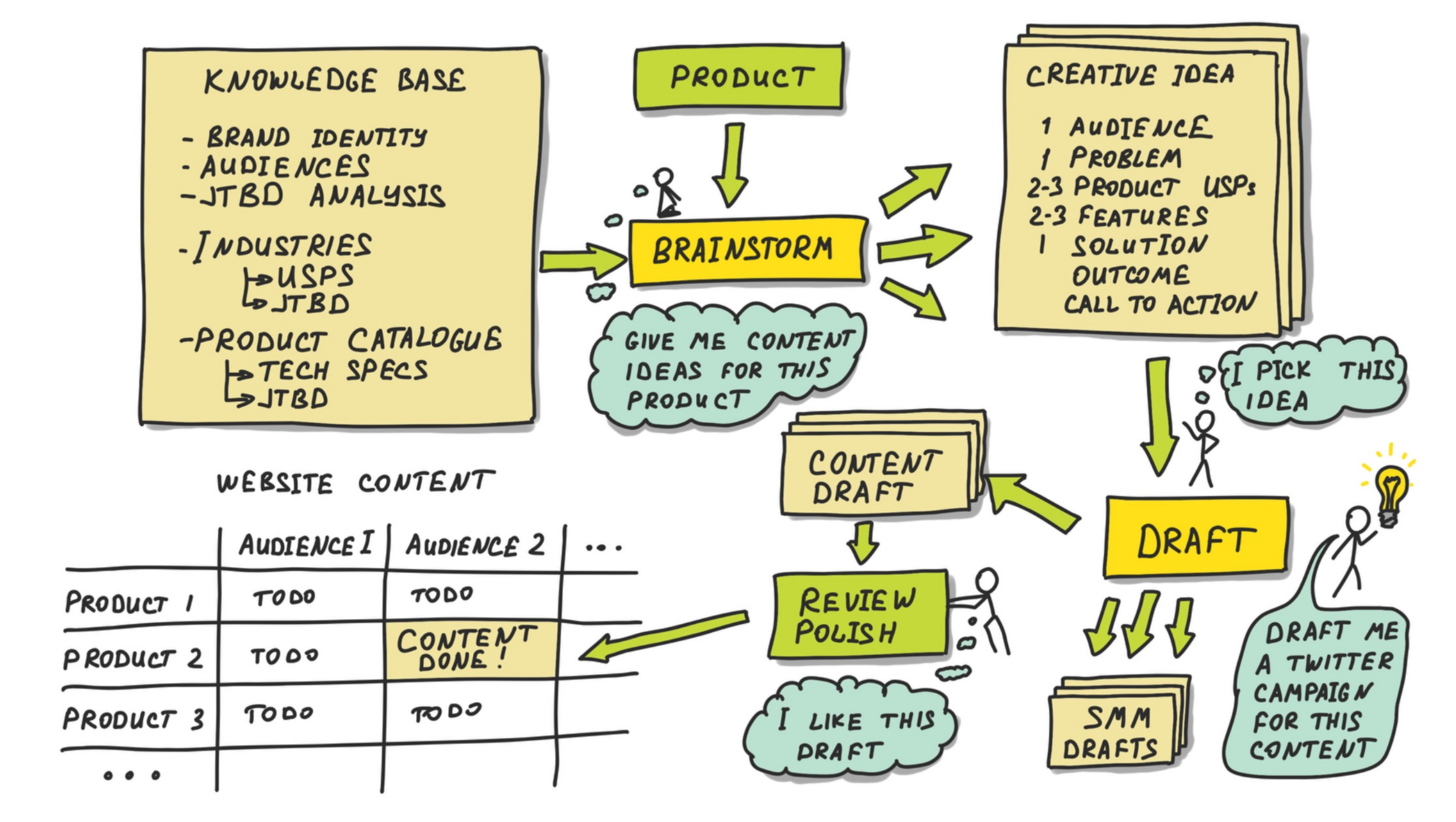
(1) DDD unlocks Enterprise AI
(2) Current AI research is amazing
(3) Community energy - amazing
(4) DDD + LLM + SGR = 💖
(5) More stories to build together!

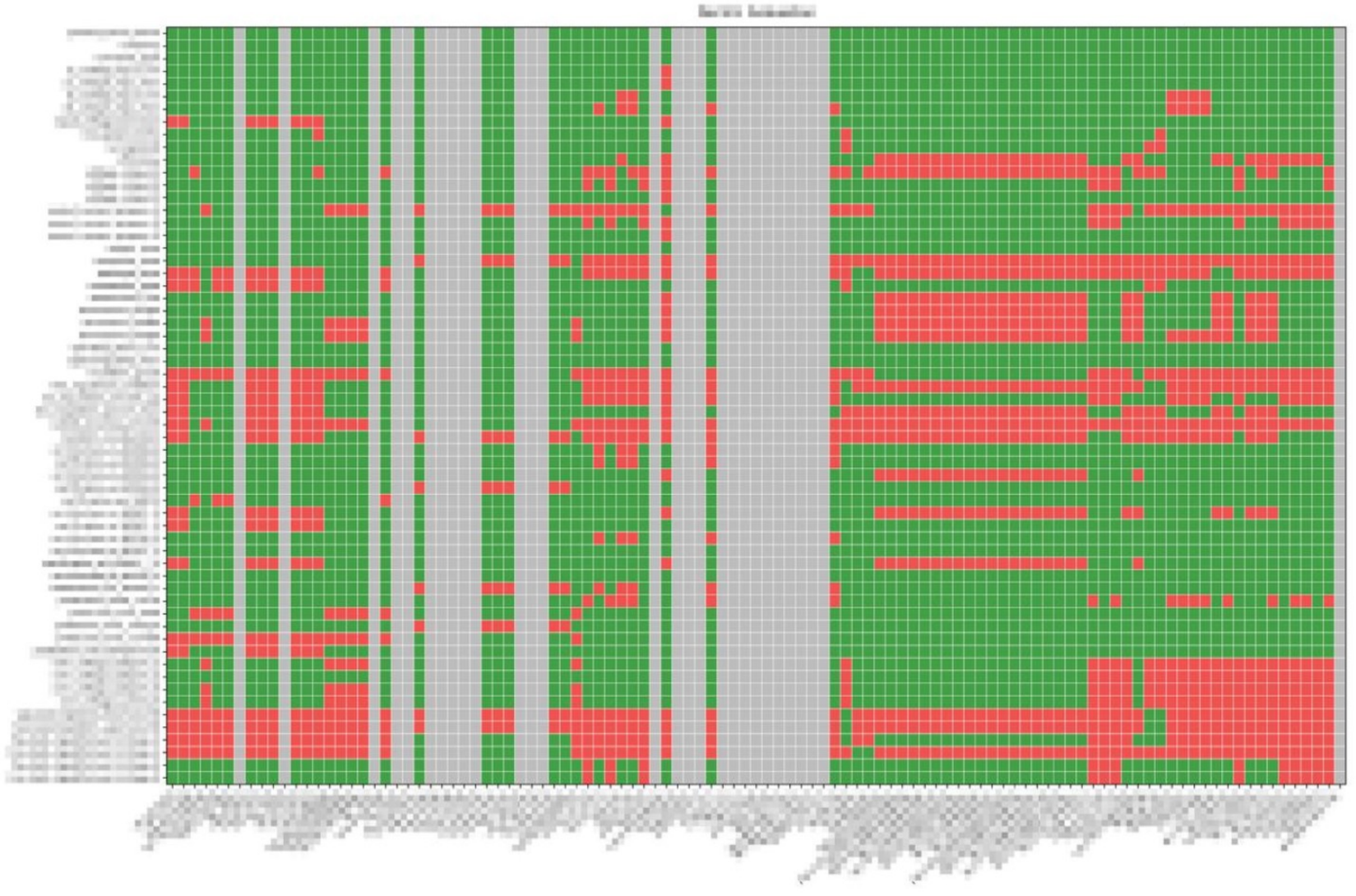
Let's talk!

LinkedIn

Thank you! 🤗

If we have spare time at the end of the talk


KNOWLEDGE BASE
- BRAND IDENTITY
- AUDIENCES
- JTBD ANALYSIS
- INDUSTRIES
→ USPS
→ JTBD
- PRODUCT CATALOGUE
→ TECH SPECS
→ JTBD
PRODUCT
BRAINSTORM
GIVE ME CONTENT IDEAS FOR THIS PRODUCT
CREATIVE IDEA
1 AUDIENCE
1 PROBLEM
2-3 PRODUCT USPs
2-3 FEATURES
1 SOLUTION
OUTCOME
CALL TO ACTION
I PICK THIS IDEA
DRAFT
CONTENT DRAFT
REVIEW POLISH
I LIKE THIS DRAFT
SMM DRAFTS
DRAFT ME A TWITTER CAMPAIGN FOR THIS CONTENT
WEBSITE CONTENT
AUDIENCE 1
AUDIENCE 2
...
PRODUCT 1
PRODUCT 2
PRODUCT 3
...
TODO
TODO
TODO
TODO
TODO
TODO
CONTENT DONE!



Strategic Error Map

Hallucination Triggers

AI Case Mapping