

Architecting the AI Bridge

Integrating LLMs and DMN with Drools,
Spring Boot, and the MCP Protocol

Speakers: Alex & Tim







A wide-angle photograph of a beach at dusk or dawn. The sky is filled with dark, heavy clouds, with a soft glow of light breaking through near the horizon. The ocean is calm with gentle waves washing onto the shore. On the left, a sandy dune is silhouetted against the sky, with a line of trees. The overall mood is quiet and contemplative.

Your temperature spikes.

Something's wrong

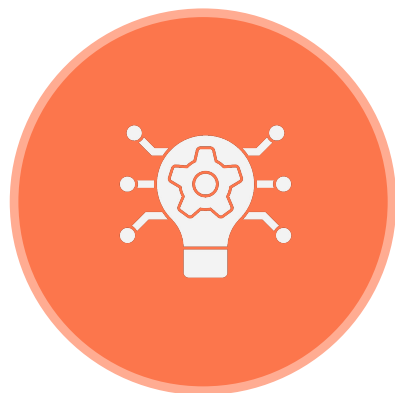
You call your doctor, but no answer. What next?

Call doctor – no
immediate answer

8h wait
time E.R.

The hospital is
on **diversion**

0 ICU
beds



The Core Problem

Statistically correct.
Situationally wrong.

Models can't keep up with
fast-changing conditions

GenAI = probability,
not precision

Public models are
based on public data,
not your knowledge

Who We Are

Alex

25+ years building enterprise software, nearly 20 shaping Drools, jBPM and Kogito as PPMC for Apache KIE, now driving Aletyx to bridge AI with business certainty.



Tim

15+ years in rules, processes, and AI integration. Helping enterprises build intelligent systems that deliver compliant, explainable, and value-driven automation.



LLMs

Large Language Models (LLMs) provide baseline intelligence.

They can *understand* complex, nuanced situations expressed in natural language and give human-like responses.

But *intelligence* alone isn't enough



Symbolic AI

Symbolic AI ensures deterministic reliability.

It applies policies consistently, offers transparency, and provides auditability for compliance.

This is where AI shifts from probabilistic guesses to guaranteed rules.

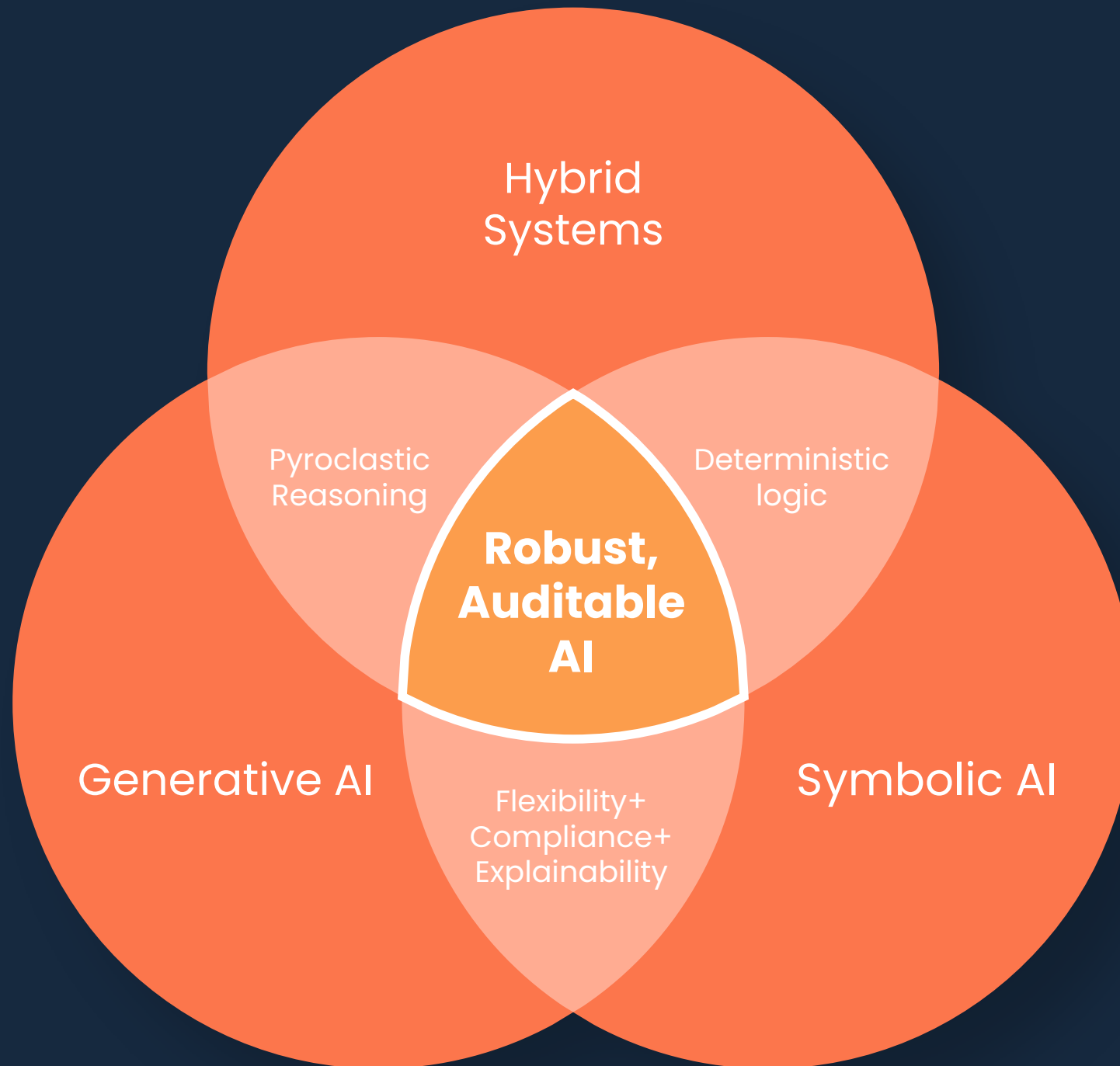


Hybrid AI

Hybrid AI unites LLM intelligence with symbolic AI reliability.

It combines adaptability with consistency, ensuring decisions are both intelligent and auditable in real-world operations.

Without Hybrid AI, enterprises risk choosing between flexibility without control or control without adaptability.

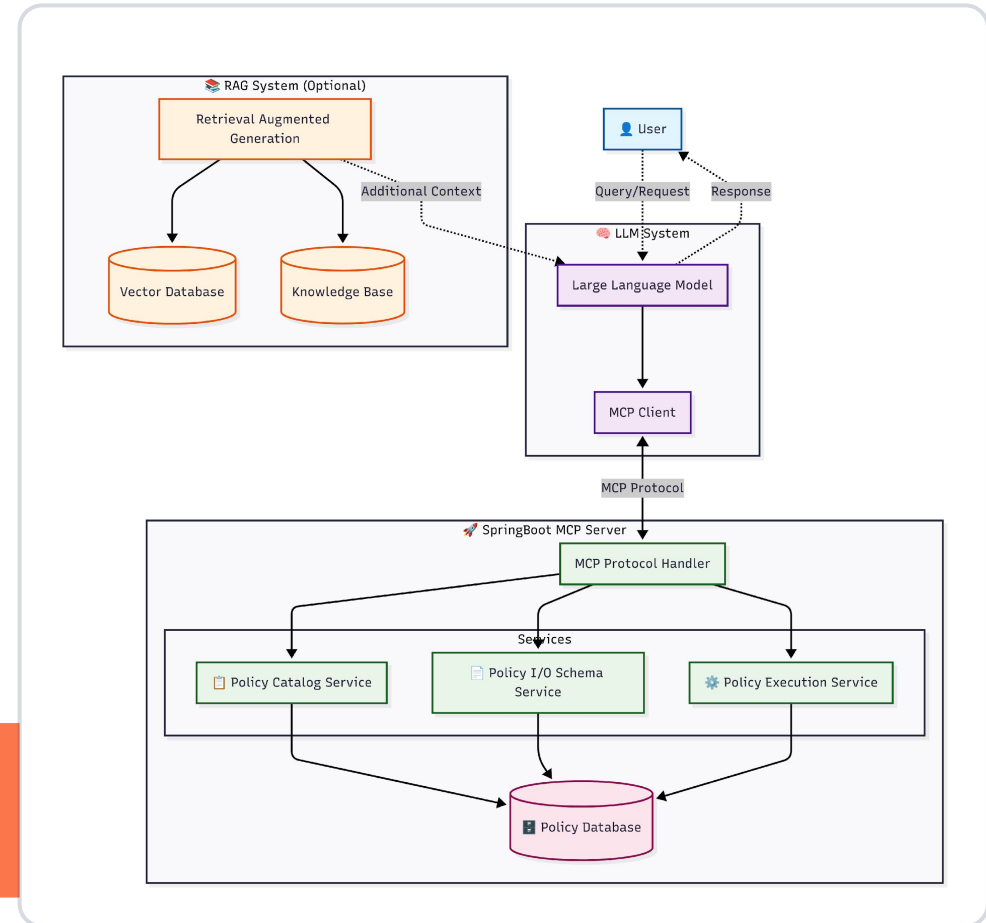




Introducing the Bridge

You need a bridge architecture a framework that connects LLM reasoning, symbolic rules, and system integration into one seamless flow.

This is exactly what we've built using proven enterprise technologies.

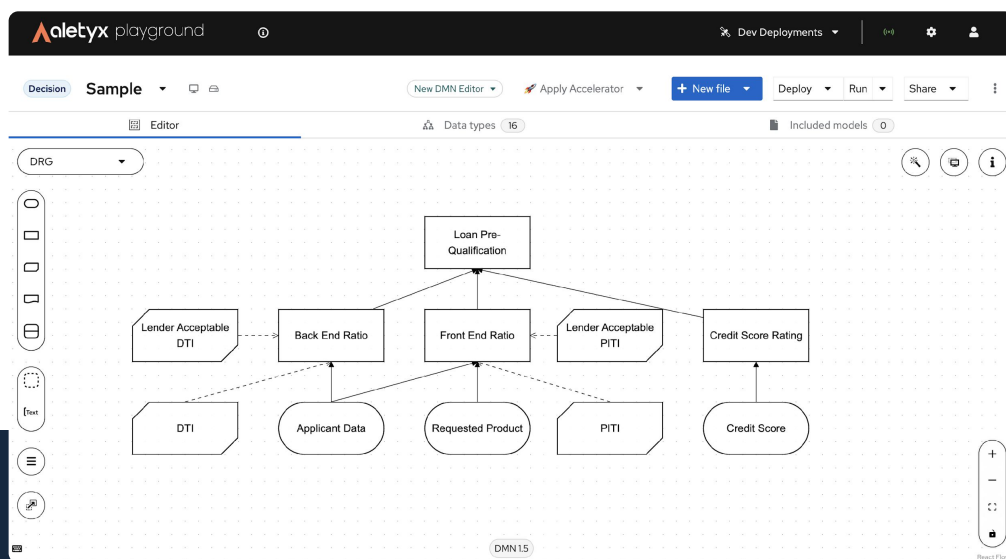


DMN in Action

This represents executable knowledge:

Business users can update rules without coding

Protocol changes propagate instantly across AI interaction



The screenshot shows the Aletyx playground interface with the evaluation table for 'Loan Pre-Qualification'. The table has columns for 'Credit Score Rating (Credit_Score_Rating)', 'Back End Ratio (Back_End_Ratio)', 'Front End Ratio (Front_End_Ratio)', 'Loan Pre-Qualification (Loan_Qualification)', and 'Annotations'. The 'Loan Pre-Qualification' column is further divided into 'Qualification (string)' and 'Reason (string)'. There are 5 rows of data.

F	Credit Score Rating (Credit_Score_Rating)	Back End Ratio (Back_End_Ratio)	Front End Ratio (Front_End_Ratio)	Loan Pre-Qualification (Loan_Qualification)		Annotations
				Qualification (string)	Reason (string)	
1	"Poor", "Bad"	-	-	"Not Qualified"	"Credit Score too low."	
2	-	"Insufficient"	"Sufficient"	"Not Qualified"	"Debt to income ratio is too high."	
3	-	"Sufficient"	"Insufficient"	"Not Qualified"	"Mortgage payment to income ratio is too high."	
4	-	"Insufficient"	"Insufficient"	"Not Qualified"	"Debt to income ratio is too high AND mortgage payment to income ratio is too high."	
5	"Fair", "Good", "Excellent"	"Sufficient"	"Sufficient"	"Qualified"	"The borrower has been successfully prequalified for the requested loan."	

DMN

Characteristics

OPEN STANDARD

Decision Model &
Notation (OMG standard)

EXECUTABLE POLICIES

rules can be directly run
in production

BUSINESS-FRIENDLY

non-technical users
can edit without coding

INSTANT ADAPTATION

updates apply immediately
across AI workflows

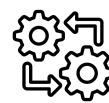
AUDITABILITY

transparent and
traceable decision logic

Developer Friendly



Apache Drools →
world's most mature
decision engine



Spring Boot →
scalable enterprise
integration



Model Context Protocol →
enables LLMs to execute
DMN rules in real time

This stack ensures enterprise-grade reliability and agility.

How the Bridge Works



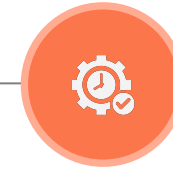
Natural language queries enter via the LLM



MCP bridges LLM reasoning with policies in real time.



Policies and decisions are executed deterministically through DMN



Actions are orchestrated in real time

This is AI moving from information retrieval to coordinated business action.

A thin white vertical line runs down the left side of the slide, ending in a small orange triangle pointing upwards to the left.

Demo:
**The Bridge
in Action**

Key Takeaways



Hybrid AI is the Future

Leverage the strengths of both GenAI and Symbolic AI for flexible, consistent, and explainable solutions.



DMN: Predictable Decisions

open standard for human-readable, machine-executable decision logic with deterministic outcomes.



The AI Bridge: Seamless Integration

Connect LLMs to structured, deterministic logic using Drools, Spring Boot, and MCP Protocol.

Questions?

**Feel free to book a session
and let's expand on your
questions and share insights!**

