IMANDRA

SysML v2 and Imandra IML Verification

Roadmap and plan - Q1 2024

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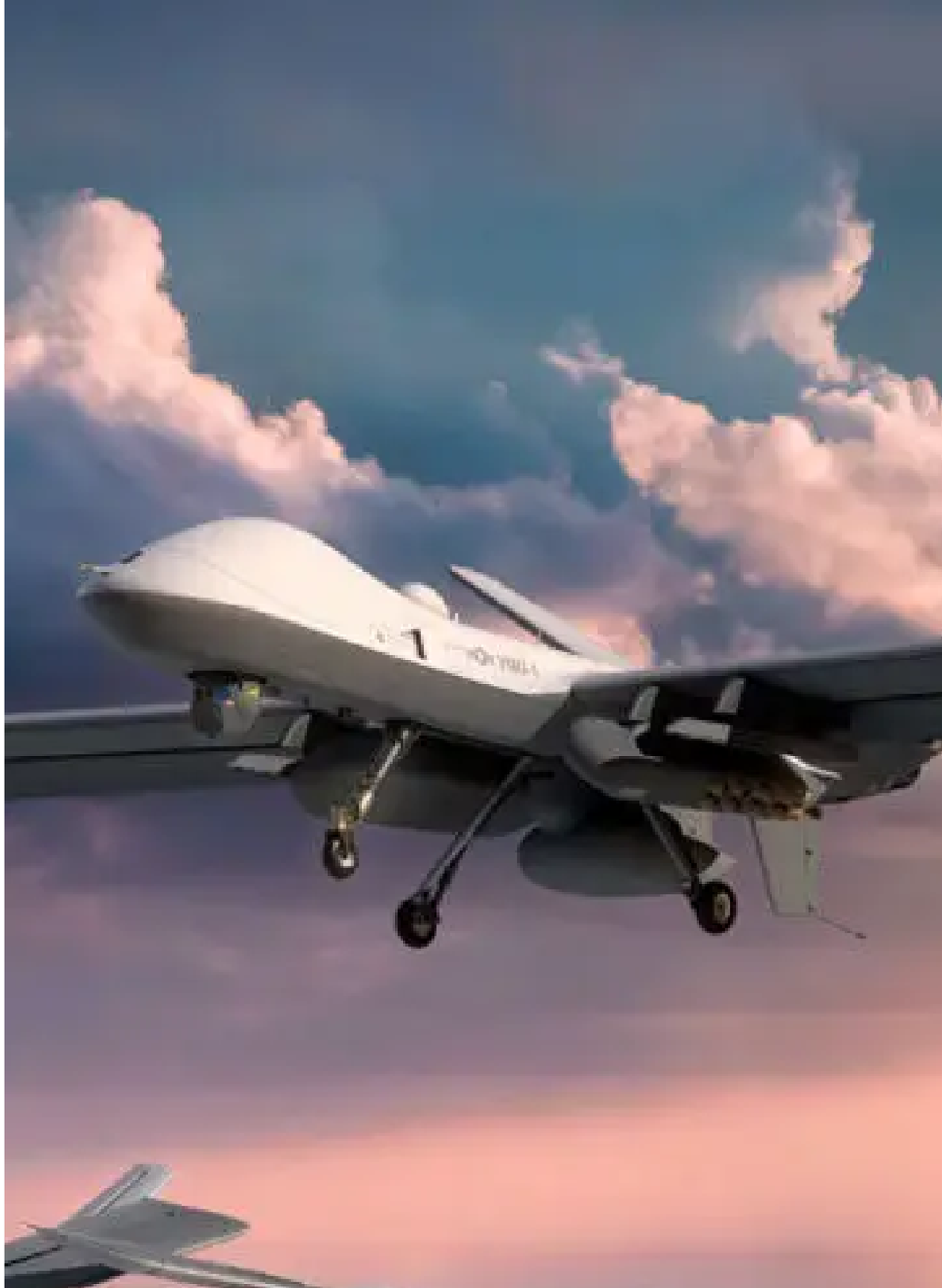


What is Imandra

Imandra is a cloud-native automated reasoning engine

for the analysis of algorithms bringing unprecedented rigor and automation to algorithm design and governance.

***Automated Reasoning* is AI for algorithms** -
automated mathematical techniques combining symbolic (e.g., automated theorem proving) and statistical (e.g., neural networks) AI for performing reasoning tasks such as analyzing all possible behaviors of an algorithm, controller, or synthesizing solutions to complex planning or constraint problems.

Learn more at:

www.imandra.ai/core

Process Automation

Highly automated formal analysis (verification and explainability) of complex software components.

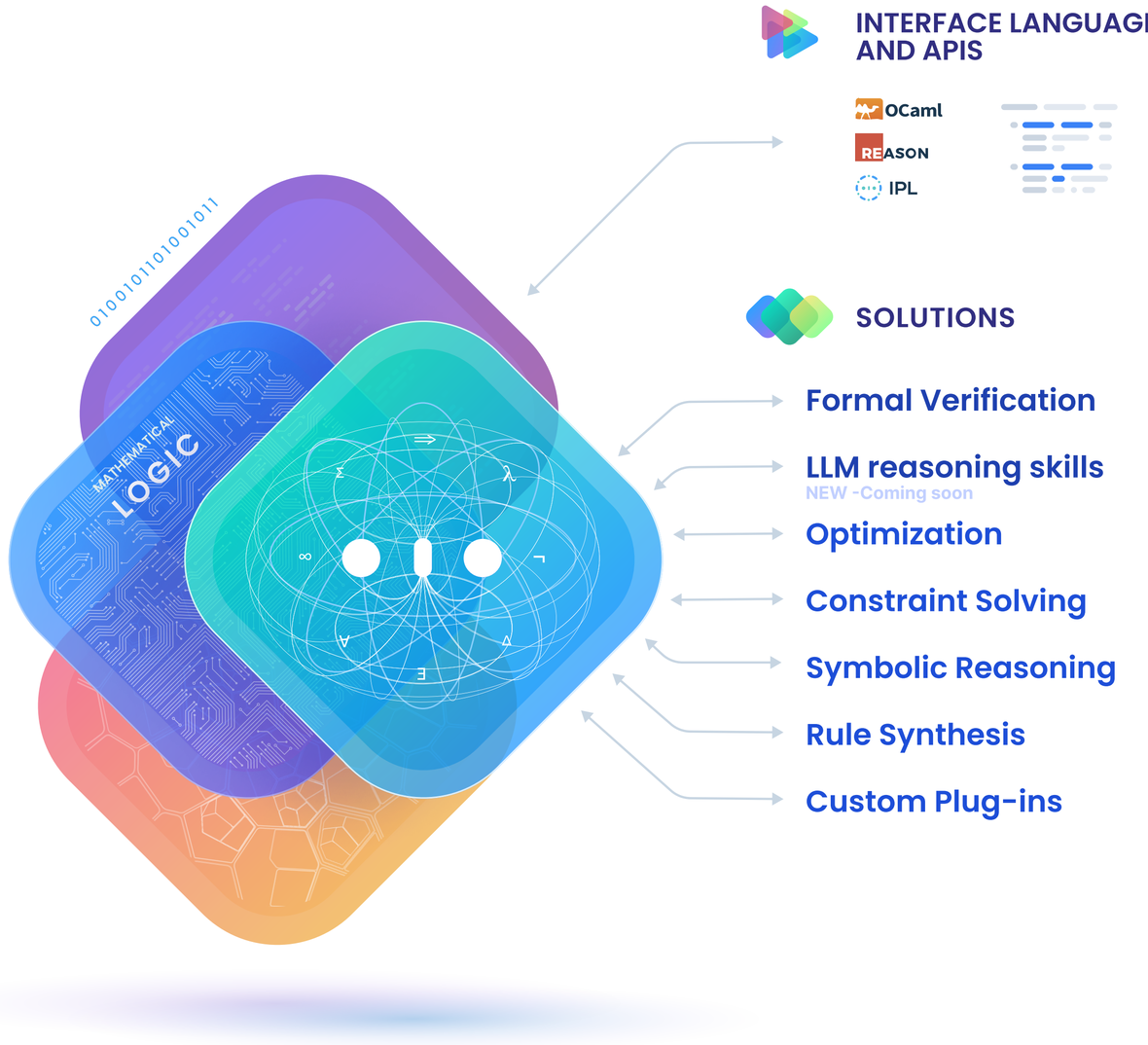
Interfaces and Extentions

Tooling and interfaces for LLMs, SysML, ROS, FIX, neural networks, and others

Speed and Scalability

Cloud-native computing taking full advantage of parallelization.

With Imandra, we can apply automated reasoning to the world's most complex and safety-critical software.



Planned Offering (1/2)

SCOPE

Formal Verification

- **Model checking**
- **Automatic requirement evaluation**
- **Constraint solving**
- **Solution synthesis**

Natural Language Interface

- **Hallucination-free ChatBots** for SysML v2 Models
- **Synthesize SysML v2 models and verification plans from natural language**
- **Ask questions about SysML v2 models** using natural language
- **Enable more stakeholder participation** (vendor, partner, customer)

Tailored Capabilities

- **Automated conversion** from SysML v1 to v2
- **Formally verification consulting** for complex proofs
- **Integration with other tools**

Planned Offering (2/2)

TIMELINE

Prototyping and Pilot

- **Manual conversion** of SysML v2 models to Imandra Modeling Language (IML)
- **Model checking and formal verification**

H2 2023

Early Access

- **Model checking** (formal verification)
- **Automatic conversion** of SysML → IML (transpiler)
  - Support for SysML v2 structural elements and constraints
- **Initial natural language interface** (ChatBot)

H1 2024

We are here

Beta Release

- **Model checking** (formal verification)
- **Automatic conversion** of SysML → IML (transpiler)
  - Support for SysML v2 structural elements, constraints, and behavior (state machines)
- **Natural language interface**
- **Integration with MBSE tools**
- **SysML v1 → SysML v2 conversion** (service contract required)

H2 2024

1.0 Launch

- **Model checking**
- **Advanced formal methods** for SysML v2
- **Automatic conversion** of SysML → IML (transpiler)
- **Natural language interface**
- **Integration with multiple MBSE tools**
- **SysML v1 → SysML v2 converter** (beta)

Early 2025

IMANDRA

Thanks for listening.

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Our world runs on complex and safety-critical software.

Imandra democratizes automated reasoning - the science of managing software complexity.

Please check out our website for documentation and other materials:
https://www.imandra.ai