

# **DEMOS group meeting**

**Group update**

**13/05/2025, Mikhail Mikhasenko**

# General info

## Services and Onboarding

- Main info: Organization repo, [GitHub](#)
- Mattermost
- Mailing list
- Indico

## DEMOS Consortium

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- Internal mailing lists:
  - [democratizing-models-pi@cern.ch](mailto:democratizing-models-pi@cern.ch): coordinators (closed)
- Mattermost: [Invite link](#)
- Indico: <https://indico.global/category/1482/>
- [DEMOS information website](#)



mmikhasenko opened on Mar 5 · edited by yaschelh

Hi Yasmin, [@yaschelh](#),

Welcome to the DEMOS project!

I've added instructions to sign to services to [README](#); could you please try to proceed?

- GitHub
- mattermost
- linked CERN account -- [yaschelh@uni-mainz.de](mailto:yaschelh@uni-mainz.de)
- mailing lists
- indico

# Cooperation agreement

- **Thanks to all PI, and Uni lawyer**
- **Daniela Klobes**  
Institute for Experimental Physics I,  
Ruhr-Universität Bochum (RUB)
- **Christopher Jäger**  
Justitiar / Lawyer  
Ruhr-Universität Bochum (RUB)  
Justitiariat / Legal Department

Kooperationsvereinbarung DEMOS v.3 vom 22.04.2026

## Kooperationsvereinbarung

zwischen

**Ruhr-Universität Bochum**, vertreten durch den Rektor, Universitätsstraße 150, 44801  
Bochum, Ausführende Stellen:

Fakultät für Physik und Astronomie

Experimentalphysik I, Prof. Dr. Mikhail Mikhasenko & Prof. Dr. Miriam Fritsch

Theoretische Physik II, Prof. Dr. John Bulava & Prof. Dr. Evgeny Epelbaum

Theoretische Physik IV, Prof. Dr. Julia Tjus

- nachfolgend RUB genannt -

und

**Universität Hamburg**, vertreten durch den Präsidenten, Mittelweg 177, 20148 Hamburg

München, den

i.A. Ass. Jur.  
X Miriam  
KIRMAYER



TUM Legal Office

i.A. Miriam Kirmayer

# Logo completion winner

Thanks to Dresden group

To follow up:

- Version for presentations
- Digital / printable

Entry 2



# DIGUM development

## Follow up in person meeting

Dear All,

thank you for the fruitful and nice meeting 2. A few follow-ups are below.

We decided to hold the workshop in Aachen (I followed up with Tim) on either of the following dates:

09/24/2026 + 09/24/2026

10/01/2026 + 10/02/2026

We will fix the dates in the next two weeks upon inquiry from Bridget Murphy and Thomas Schörner.

It will be a morning to next-day afternoon workshop, and the participants will include (at least, others a

- TG RDM and respective ErUM-Data RDM project representatives
- TG FI
- TG User Interfaces
- DAPHNE4NFDI and PUNCH4NFDI

A potential outcome could be a community Strategy Paper or White Paper, and we will discuss the wo meetings. In this context, here are the links to the previous meeting and white paper by Markus Demle discussed:

<https://indico.desy.de/event/36243/>

<https://erumdatahub.de/wp-content/uploads/2024/01/paper-fed-inf.pdf>

I scheduled our RDM TG - meeting 3 for Fr 12.06.2026, 14:00 - 15:30, and send a corresponding cal If it does not work for you, please let me know and I will make another scheduling attempt.

I uploaded our documents as "attachments" on the TB ErUM-Wiki site:

<https://wiki.erumdatahub.de/bin/view/DIG-UM/Topic%20Groups/Research%20Data%20Management/>

The minutes will follow shortly before Meeting 3.

Please let me know if I forgot anything.


Best  
HG

- Thomas adds something
- **October (likely)**

# Other news

- ErUM-Data last round reports — [workshop in Aachen \(29-30/04\)](#)
- CERN AI hangout

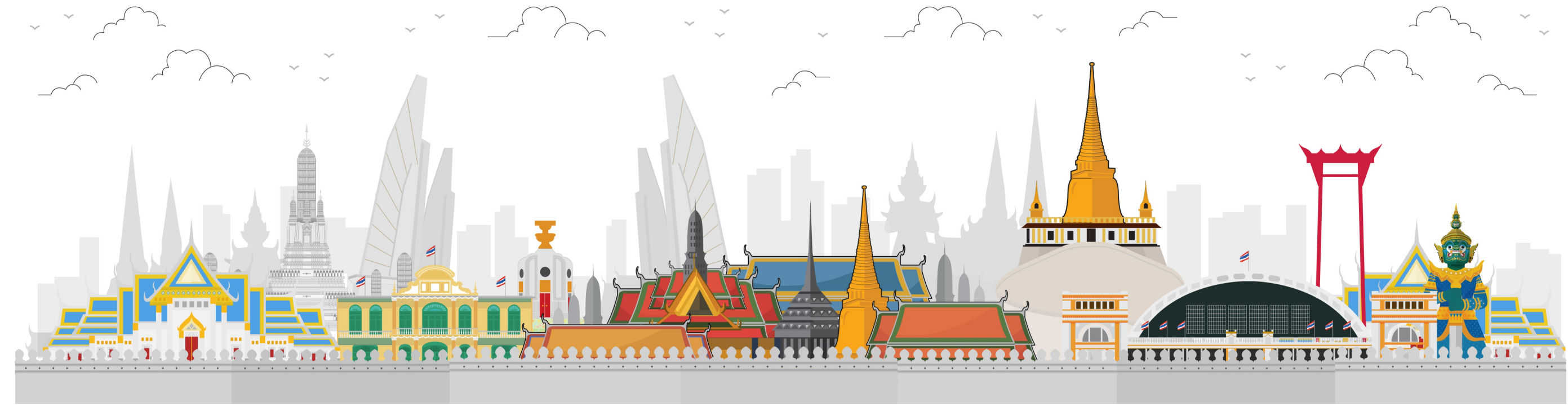
- HZDR phasing out mattermost

 Mattermost Announcement Bot BOT 11:26 AM  
⚠️ As part of the ongoing transition to [Matrix](#), team creation in Mattermost will be disabled for regular users starting April 24, 2026. ⚠️  
If you still need a new Mattermost team (which is discouraged) please contact [support@hifis.net](mailto:support@hifis.net).  
For information on getting started with Matrix, see the [getting-started guide](#).  
Thank you for your understanding. 🙏

Mattermost

# Conferences

- CHEP2026, May 26, Thailand (not aware of participate)
- PyHEP, Nikhef, Sep 26.
- JuliaCon, Mainz, Nuclear and Particle Symposium,
- JuliaHEP, Munich, Oct 26
- HS3 meeting



# Fellows from US



Bundesministerium  
für Forschung, Technologie  
und Raumfahrt

RESEARCH WITH NORTH AMERICA

Hop-On Fellowships

*Maßnahmenbeschreibung*

Die Fördermaßnahme „Hop-On Fellowships“ zielt darauf ab, erfahrene Forschende oder Doktorandinnen und Doktoranden **aus den USA in bereits laufende BMFTR-geförderte** Forschungs- und Innovationsvorhaben in den Schlüsseltechnologien und strategischen Forschungsfeldern der **Hightech Agenda Deutschland (HTAD) zu integrieren**. Diese müssen in Abgrenzung zu den laufenden Aktivitäten zusätzliche Aspekte und Aufgaben bearbeiten, die das bereits laufende Vorhaben sinnvoll ergänzen.

Die Maßnahme dient dem **Aufbau, der Aufrechterhaltung und der Stärkung der Zusammenarbeit** mit Partnern in den USA und soll die Etablierung von deutsch-US-amerikanischen Forschungsk Kooperationen unterstützen. Sie soll aber auch zum nachhaltigen **Ausbau des Forschungs- und Innovationsstandorts Deutschland** beitragen und qualifizierte Wissenschaftlerinnen und Wissenschaftler sowie Doktorandinnen und Doktoranden ansprechen.

Die „Hop-On Fellowships“ ermöglichen Forschungseinrichtungen in Deutschland, die eine Projektförderung des BMFTR erhalten, Stellen/Aufenthalte für erfahrene Forschende oder Doktorandinnen und Doktoranden zu beantragen, die dann zusätzlich im BMFTR-geförderten Vorhaben tätig werden. Diese Tätigkeit soll klar umrissene zusätzliche Aspekte/ Aufgaben umfassen, die das jeweils bereits laufende BMFTR-Vorhaben **sinnvoll ergänzen** und zur Umsetzung der Forschungsziele beitragen. Durch die Beteiligung der US-Forschenden muss ein deutlich erkennbarer wissenschaftlicher Mehrwert entstehen.

- Die Skizze soll maximal 10 Seiten
- **30.06.2026** (Linie A: Erfahrene Forschende)
- **15.09.2026** (Linie B: Doktorandinnen und Doktoranden)

# Project development



# FlatPPL

Flat Portable Probabilistic Language

Declarative statistical models  
for durable scientific workflows



## Project thesis

Write one rigorous model once, then convert it across languages, inference engines, standards, and archives.



## Authoring

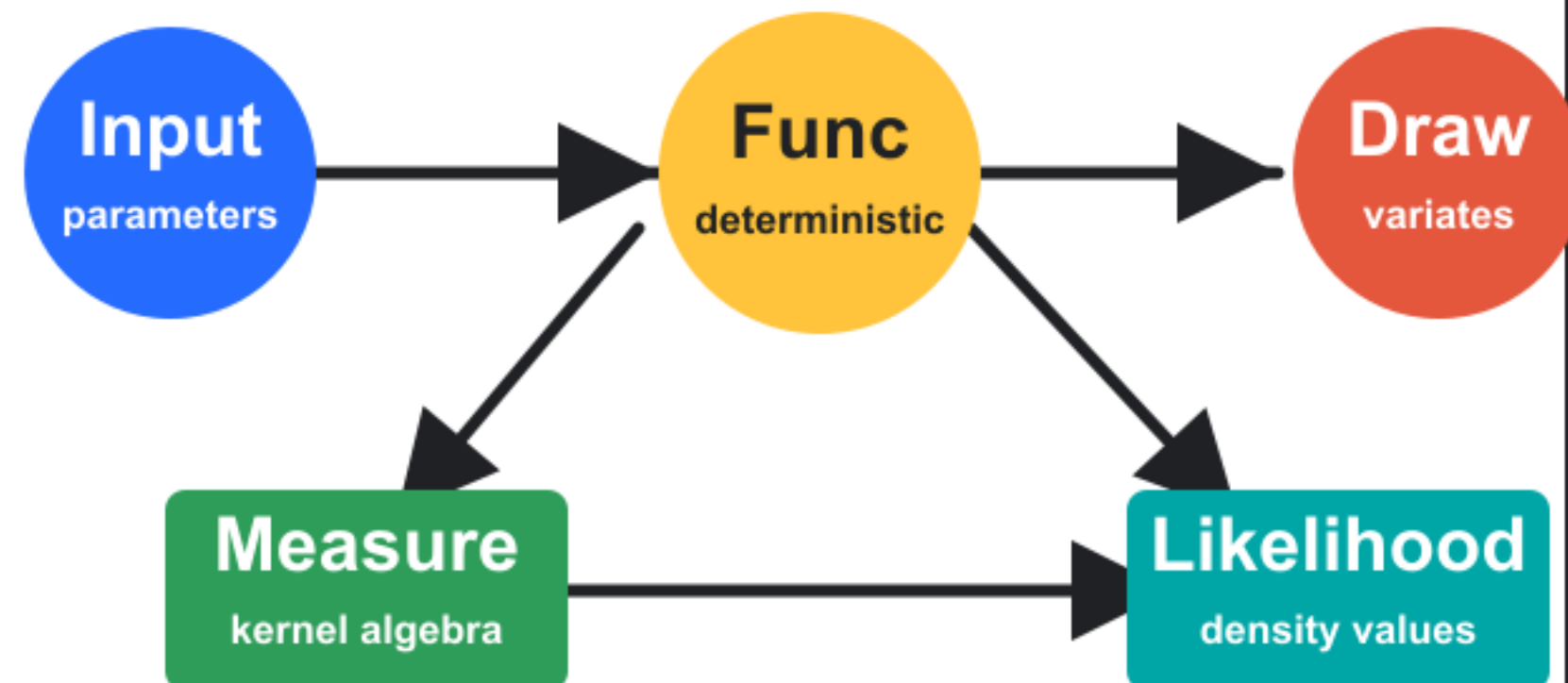
Small canonical surface  
Single flat namespace  
No loops or dynamic branching

```
theta = input(...)
mu = f(theta)
x ~ Normal(mu, s)
```

FlatPPL, FlatPPY, FlatPPJ

## Static mathematical graph

A directed acyclic graph of named objects:



Reify sub-DAGs as functions, measures, and Markov kernels.

## Portability

Profiles map subsets  
to target ecosystems:

HS3

RooFit

Stan

JAX

C++ / Python / Julia, plus future engines.



**FAIR models**

find, access, reuse



**Two modes**

generate and score



**FlatPIR**

rewrite and optimize



**Decades**

preservation ready

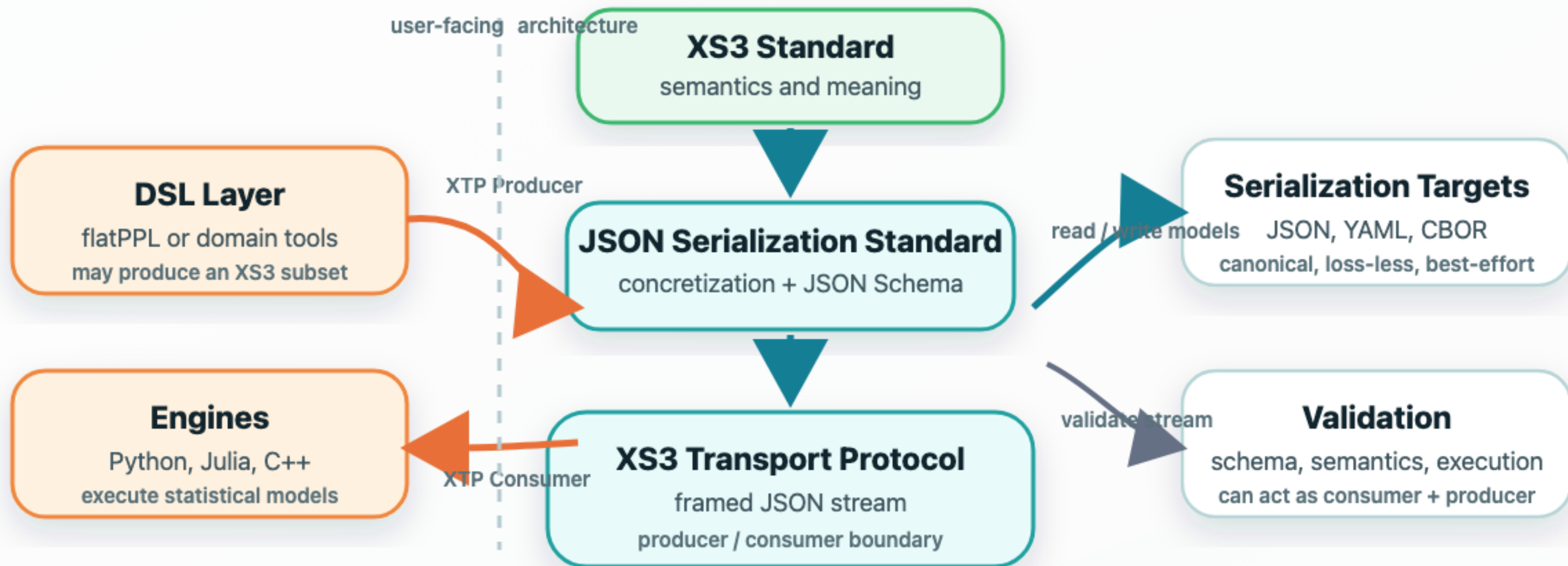
# XS3 Architecture

A bottom-up, FAIR, KISS ecosystem for defining, serializing, validating, transporting, and executing statistical models across languages and tools.

<b>Version</b>	0.0.1-dev.1
<b>Format</b>	Typst documentation
<b>Nature</b>	Architecture, not software

## Layered XS3 Ecosystem

The semantic standard informs JSON concretization; XTP then bridges files, DSLs, validators, registries, and engines.



## Design Principles

- Bottom-up
- FAIR
- KISS

Stable common semantics; replaceable layers.  
Producers can support useful XS3 subsets.  
Consumers validate the complete transport contract.

## Validation Ladder

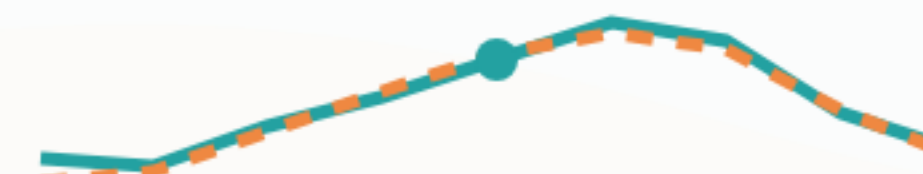
- Schema**  
JSON Schema validators such as ajv
- Semantic**  
functions exist, structure forms a DAG
- Execution**  
engine-specific validation points

## Four User Stories

- read\_gen\_exe
- dsl\_proc\_write
- read\_proc\_dsl
- dsl\_proc\_gen\_exe

Core paths cover model files, DSLs, engines, and round-trip processing through XTP.

## Simple Fit Example



```
$ my_dsl model.dsl --to_xtf engine.run()
```

Pipes, registries, notebooks, and engines share one model meaning.

# Members

# Steffen Albrecht

## Hamburg

- Background



# Julian Kuhlmann

## Munich (TUM)

- Background



# Caspar Schmitt

Munich (LMU)

- Background



# Hendric Jonas

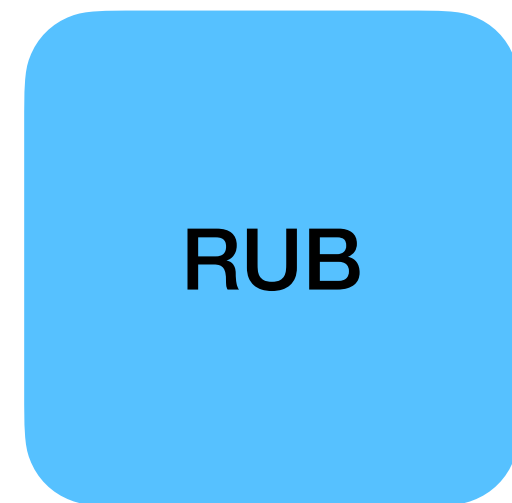
Bochum

- Background: theoretical hadron/nuclear physics



# Teams

HP AP NP



Misha  
Miriam  
John  
**Marian**  
**Hendric**

Eugeny  
**Swen**

Julia  
**Johannes**

LP



Uwe  
**Sebastian**  
**Anton**

PP



Carsten  
**Steffen**  
**(Simon)**

LP PP HP



Philipp  
Lukas  
**Julien**

Oliver  
Stefan  
**Ben**

Thomas  
**Lorenz**  
**Caspar**

HP



Nils  
**Yasemine**

PP



Gordon

# Coordination roles

## Internal management

- 1.5 year mandate for coordinator + deputy, then swap
- Among PI: Postdocs and authors get coordinator roles
- **WP** coordinator + deputy — will be easier to report
- Assignment:
  - volunteers, or
  - natural by biggest contribution within

<b>Work Package</b>
<b>WP1.1 Harmonizing Diverse Models</b>
<b>WP1.2 Engines</b> <ul style="list-style-type: none"><li>- C++</li><li>- Python</li><li>- Julia</li></ul>
<b>WP1.3 Containers</b>
<b>WP2.1 Front-end</b> <ul style="list-style-type: none"><li>- Portal &amp; Gallery</li><li>- Language interface</li></ul>
<b>WP2.2 Back-end</b> <ul style="list-style-type: none"><li>- Registry</li><li>- CI/CD</li></ul>
<b>WP2.3 Interoperability</b>
<b>WP3.1 Documentation &amp; Outreach</b>
<b>WP3.2 Showcasing</b>
<b>WP3.3 Organization &amp; Sustainability</b>

# Milestones

## From the proposal

- Pillar I: FORMAT+ENGINES
- Pillar II : PLATFORM
- Pillar III : ENGAGEMENT

Work Package	2025				2026				2027				2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>WP1.1 Harmonizing Diverse Models</b>					1						4					
<b>WP1.2 Engines</b>																
- C++												3			7	
- Python												3			7	
- Julia												3			7	
<b>WP1.3 Containers</b>												4			10	
<b>WP2.1 Front-end</b>																
- Portal & Gallery								2				5				
- Language interface															8	
<b>WP2.2 Back-end</b>																
- Registry								2							7	
- CI/CD															7	
<b>WP2.3 Interoperability</b>																
- Registry								1				4			7	
<b>WP3.1 Documentation &amp; Outreach</b>																
- Registry								1				2				
<b>WP3.2 Showcasing</b>																
- Registry															5	
<b>WP3.3 Organization &amp; Sustainability</b>																
- Registry															6	
- Registry																11

Table 1: Major milestones for the work packages.

M	Major milestones of the project	Timeline
1	Modeling standard is defined: structural freedom is constrained, native primitives are identified.	2026.Q2
2	Portal is deployed. Model registry is established. Basic constructions are documented.	2026.Q4
3	Engines in Python, Julia, and C++ support nested model constructions.	2027.Q1
4	Model as a Service protocol is working. UUID are generated.	2027.Q2
5	Domain-specific building blocks are documented. The gallery features at least 10 diverse examples.	2027.Q3
6	Community interaction is ongoing via direct communication channels, surveys, and workshops.	2027.Q3
7	Uploading/Validation of the models is working using continuous integration tools. Engine implementations are covered with test for at least 70%.	2028.Q1
8	Language model is used to determine tags. LLM search is working.	2028.Q2
9	An overview paper is submitted.	2028.Q3
10	The registry contains at least three models for each domain.	2028.Q3
11	Steering committee has organized self-governance and contribution review and set release cycle.	2028.Q3

# Working groups and leads

## Canonical WP Tree

- **WP1** Model Format Standardization
  - **WP1.1** Harmonizing Diverse Models
  - **WP1.2** Engines
  - **WP1.3** Container-support: MaaS
- **WP2** Portal & Infrastructure
  - **WP2.1** Front-end, Model Gallery, Language Interface
  - **WP2.2** Back-end: Model Registry and CI
  - **WP2.3** Interoperability with Existing Infrastructure
- **WP3** Community Engagement
  - **WP3.1** Documentation and Outreach
  - **WP3.2** Showcasing
  - **WP3.3** Organization and Sustainability

Proposal

