KGC The Knowledge Graph Conference

The Missing Layer: Extracting Organizational Intelligence from Technical Documentation

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** Work done while employed at AWS*

THE DOCUMENTATION TRAP

Invaluable knowledge trapped in unstructured documents

Institutional memory walks out the door with experts

Existing tools are expert-facing, not author-facing

“A BUILDING ARCHITECT WALKS INTO A KNOWLEDGE GRAPH…”

Design optimization at global data center scale

Documentation-heavy domain by nature

Semantic rigor needed at the point of authoring

MEASURED RESULTS – KGC 2025 *

33% improvement in AI readability

29% better technical detail access accuracy

Information navigation 5/10 → 9/10

* Rendek & Adeshina, KGC 2025 Lightning Talk — thanks to Soji Adeshina

THE AUTHORING BOTTLENECK

Schema-first approaches don't fit fast-paced teams

GraphRAG pipelines add complexity, not clarity

The author is the person closest to the knowledge

THE PIVOTAL QUESTION

What if the documentation was the knowledge graph?

Fast authoring for humans and LLMs

Formal reasoning when you need it - same document

KGC

DOT-LD: THREE ELEMENTS

Define your system structure right in your markdown!

Configuration Block (hidden in output):

```
::config
// Style: type: shape, color, size
equipment: round-rectangle, #4A90E2, 120

// Entities: name: type=...
ChillerSystem: type=equipment
::
```

Inline References:

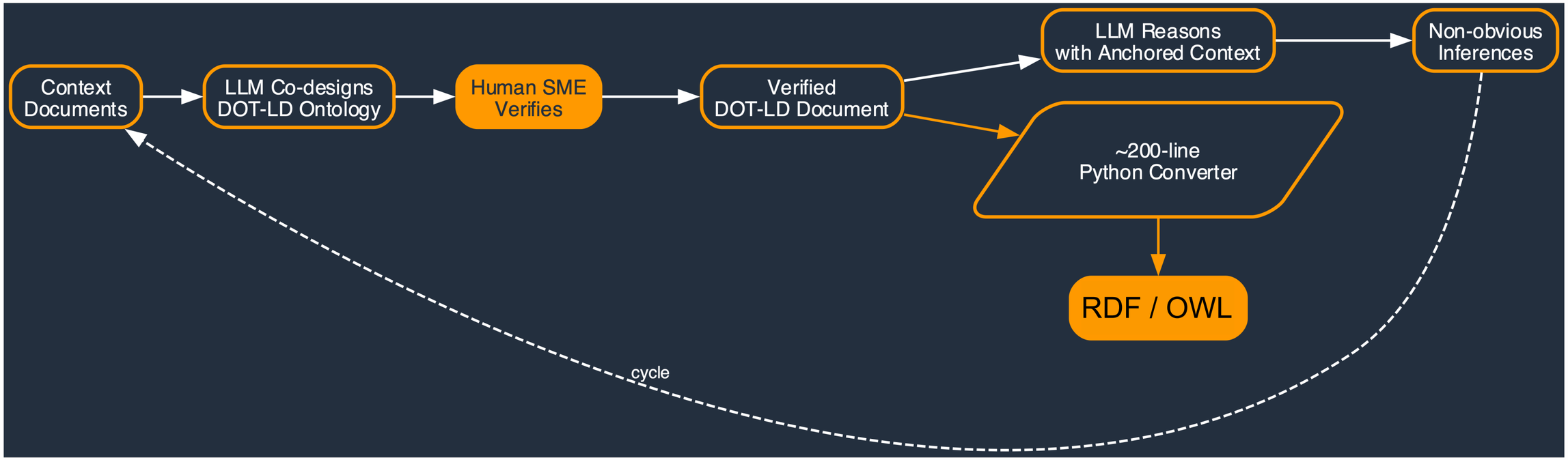
```
The [[ChillerSystem]] includes...
```

Relationships (hidden in output):

```
::rel Source -> Target [label] ::
```

Valid DOT-LD = Valid Markdown

THE HUMAN–LLM–FORMALISM PIPELINE



SYSTEM 1 AND SYSTEM 2… SAME DOCUMENT?

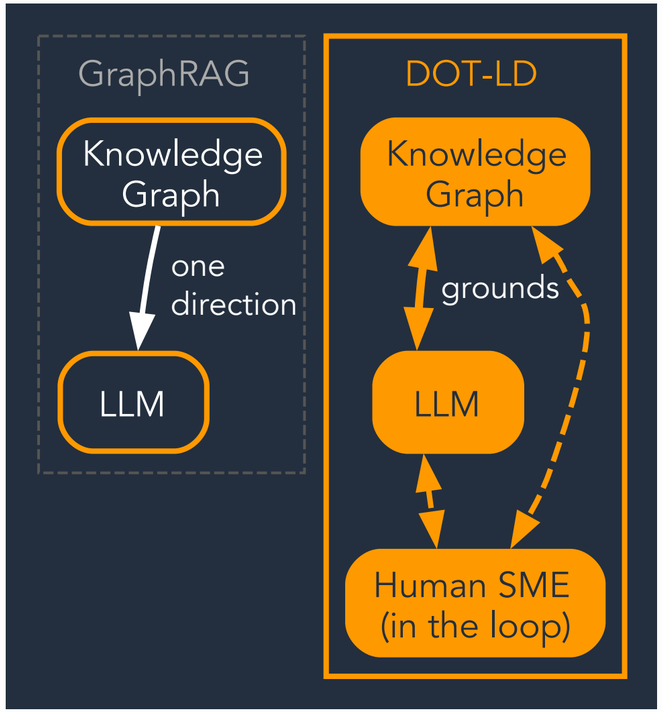
System 1 - fast, intuitive: prose + LLM reasoning

System 2 - slower, deliberate: RDF/OWL, SPARQL, proofs

Same document - no parallel artifacts

THIS IS NOT GRAPHRAG

THE FLIP - BIDIRECTIONAL BY DESIGN



NOT ROCKET SCIENCE

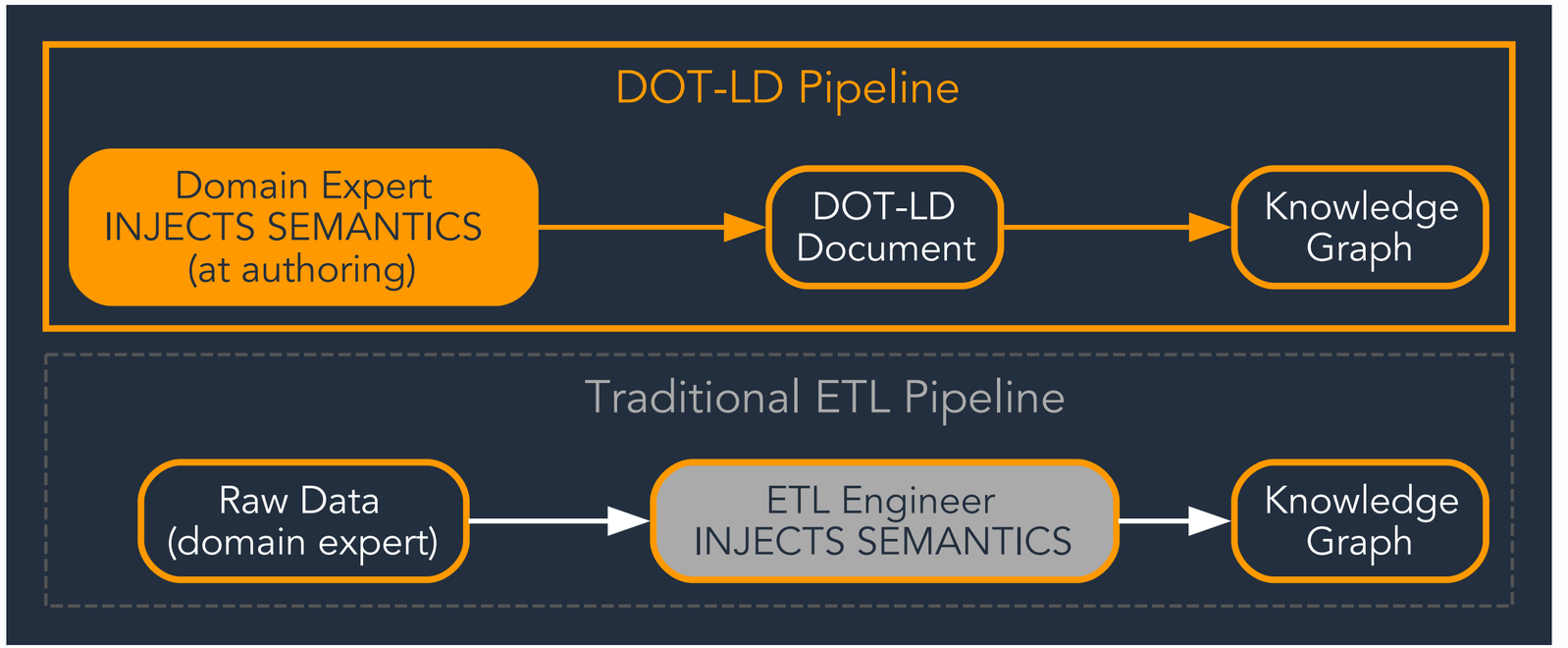
40 lines of Python - OMG Semantic Augmentation Challenge

~200 lines of Python - DOT-LD → RDF/OWL converter

The barrier is educational, not technical

SEMANTICS SHIFT LEFT

SEMANTICS INJECTED AT AUTHORING TIME



NEURO-SYMBOLIC. IN PRACTICE.

Non-symbolic - prose, LLM reasoning, flexibility

Symbolic - typed entities, relationships, RDF/OWL

Hybrid - both, in the same document

DOMAIN EXPERTS CAN BUILD KNOWLEDGE GRAPHS

Adoption bottleneck - solved at the authoring layer

Industry-agnostic - specs, regs, protocols, procedures

Open source - explore, contribute, stress-test

A PRACTITIONER'S NEED, A PIONEER'S VALIDATION

Built because it was needed

Validated because the abstraction is right

github.com/aws-samples/sample-dot-ld-knowledge-graph-syntax *

* adarende@amazon.com • DOT-LD is open source

FUTURE WORK

More software support

conversions, validations, etc.

Cross-document and multi-author alignment

identifier management, mostly

KGC The Knowledge Graph Conference

#KGC2026

Join the Conversation

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www.knowledgegraph.tech

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