# Back to the Future: From Models Back to Systems in NLP

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## 1. Abstract

For decades, NLP was built as a system: pipelines of tokenizers, parsers, taggers and hand-crafted rules, each component designed, tested and improved on its own. Then large language models took over. The pipeline collapsed into one end-to-end model, and for a few years progress in the field meant progress on the model.

That era is ending. Retrieval, tools, agents, orchestration layers and evaluation loops are bringing systems back to the center of NLP. This is not a return to the past, though. Modularity, explicit domain knowledge and component-level evaluation are coming back. Hand-coded features and rigid flows are not.

In this talk, I use the legal domain as a stress test for this shift. Law is a field where the right answer depends on which provision is in force, which source prevails and which version applies at a given date: information no model can hold, however large. Drawing on the experience of building Next-OS, an AI-native operating system for legal and compliance professionals, I show why the model is not the product, how we evaluate a system when fluent answers can still be wrong, and where this approach delivers and where it still falls short. I close with my own take on what this return to systems might mean for NLP research, and some open questions I would like to discuss with the audience.

## 2. Short Biography

Lorenzo De Mattei is Co-founder and Chief Product and Technology Officer at Aptus.AI. He holds a PhD in Computer Science and specializes in artificial intelligence and natural language processing. His research and professional experience span language technologies, natural language generation, and the application of AI to large-scale textual data. He has over eight years of experience in big-data technologies, including more than five years in the RegTech sector.

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