Embracing AI in legacy modernization:

A deep dive into the role of language models

By **Dmitry Andrievskiy,** Lead System Architect,
Legacy Modernization Services, Luxoft

In Brief

- **Financial institutions face a challenge: merging legacy systems with modern tech advancements. Luxoft's Dmitry Andrievskiy spotlights the potential of AI in this transformation**

- **The "ChatGPT experiment" by Luxoft reveals promising initial results, especially in converting legacy codes to modern equivalents. Its applications range from testing to management**

- **While direct code conversion with AI might face constraints, its manifold applications in the legacy modernization process offer unprecedented efficiencies**

- **The fusion of legacy systems and AI isn't optional. It's essential for financial institutions to remain relevant in today's fast-evolving tech environment. Luxoft is at the forefront of this change**

Financial sectors, revered for their traditional stability, are presently at a technological crossroads. On one hand, there's the undeniable gravitas of their legacy systems — decades-old bastions of operations. On the other, the beckoning future is powered by the relentless march of technological innovation, especially in the realm of artificial intelligence. At Luxoft, our aim has been to bridge this dichotomy, and nowhere is this more evident than in our approach to legacy modernization.

The legacy conundrum

To appreciate the potential of AI in legacy modernization, one must first understand the gravity of the legacy situation.

Many institutions, particularly those in the financial sector, operate on systems and codes that were established decades ago. These systems, while robust, lack the agility and adaptability of modern tech architectures. They often operate in silos, are resistant to integrations, and can be costly to maintain.

However, the mere thought of overhauling these vast infrastructures can be daunting. The risks are manifold — downtimes, data migration issues, potential security vulnerabilities, not to mention the immense financial implications. This is where Luxoft's expertise in legacy modernization takes center stage. Our primary task has been to safely navigate this transformation, ensuring minimal disruptions while maximizing future readiness.
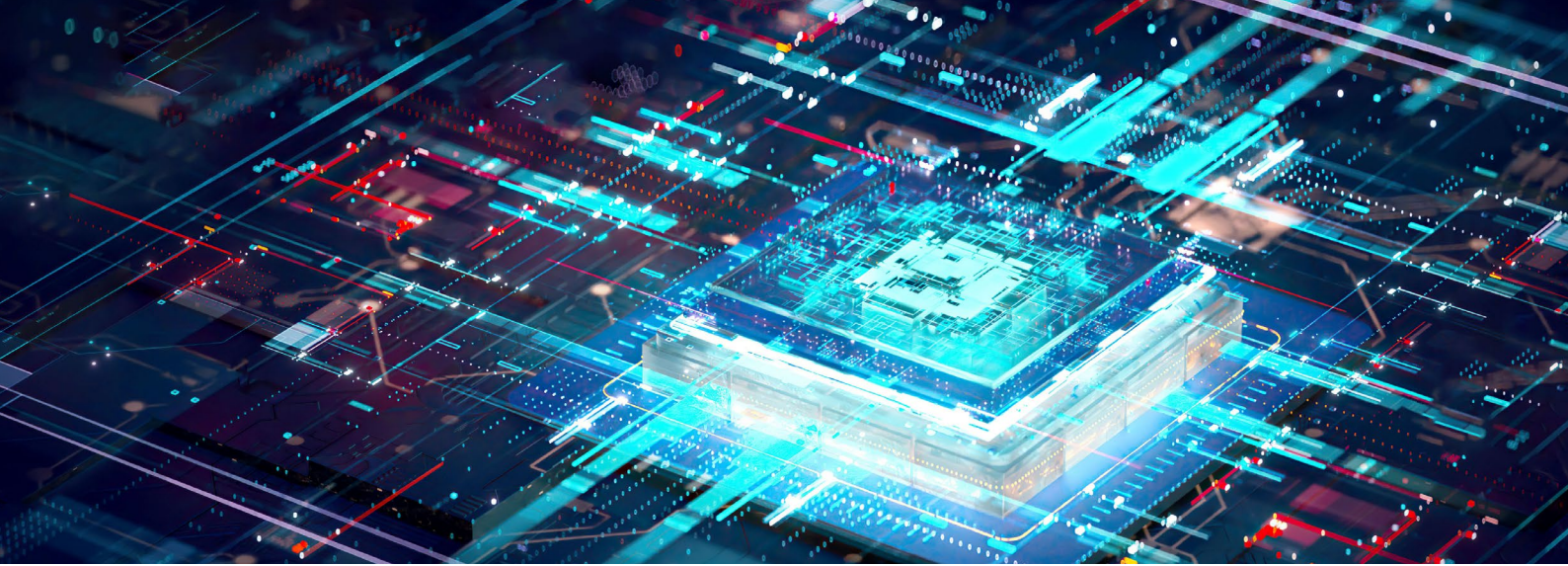
The ChatGPT experiment

It was in this context that ChatGPT emerged as a potential ally. The premise was tantalizingly simple: Could a sophisticated language model, adept at understanding and generating human-like text, aid in the intricate process of converting legacy code to modern alternatives?

Our initial forays were promising. Feeding COBOL snippets into ChatGPT and asking for Java equivalents yielded results that were nothing short of impressive. But when scaled to the voluminous lines of codes that institutions operate on, challenges became apparent. The costs associated with such large-scale conversions via ChatGPT were prohibitive, especially when juxtaposed with existing non-AI tools designed for the same purpose.

But to relegate ChatGPT to the sidelines based on this singular challenge would be a myopic view. Our exploration revealed its multifaceted utility in three primary areas: testing, development and management.

1. The testing arena

Testing in the financial domain is not just about checking software functionalities — it's a rigorous process ensuring that every transaction, every penny, is accounted for, and every process complies with stringent regulations.

Defect identification: Traditionally, ambiguous defect descriptions from clients have been the bane of the testing phase. These often lead to prolonged discussions, trying to distill the actual issue from a sea of words. ChatGPT, with its advanced text comprehension, can parse through these verbose descriptions, isolating the primary concern and significantly reducing the lead time to actual defect resolution.

Test design and execution: Another significant challenge is test design — determining what to test and how. Here again, LLMs can play a pivotal role. Given a high-level application functionality description, ChatGPT can outline a comprehensive testing strategy, covering all potential scenarios. Furthermore, it can facilitate automated test case generation, ensuring that the test cases are not just robust but also evolve with the changing functionalities.
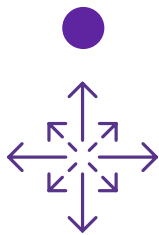
2. Development dynamics

While testing ensures software quality, the crux of legacy modernization lies in the development phase, particularly code conversion.

Error resolution: A recurring challenge of post-code conversion is the occasional failure of the new code to compile or build. Traditionally, identifying the root cause is akin to finding a needle in a haystack. Large Language Models, or LLMs can expedite this process, identifying inconsistencies or errors that prevent successful builds.

Prototyping and unit testing: Beyond direct code conversion, modern systems often require additional components — wrappers, converters, middleware, and more. Designing these from scratch is resource intensive. ChatGPT can assist developers in creating initial prototypes, streamlining the development process. Furthermore, the creation of unit tests — focused tests that validate individual units of source code — can be enhanced with AI, ensuring that the new code isn't just functional but thoroughly validated.

3. Management and beyond

Legacy modernization isn't a mere technical overhaul — it's a strategic initiative affecting every organizational facet.

Document precision: Financial institutions operate in a heavily regulated environment. This mandates that their documentation — contracts, agreements, compliance declarations — be precise. LLMs can play a dual role here: Refining the language for clarity and verifying documents for consistency, ensuring there aren't any internal contradictions.

Operational assumptions: Based on contractual obligations, projects often operate within defined parameters or assumptions. Drafting these can be routine, yet crucial. LLMs can assist managers in formulating these assumptions, ensuring that projects remain within the stipulated boundaries.

The way forward

Our journey with ChatGPT has been enlightening, to say the least. While its potential in direct code conversion might have limitations, its multifarious applications in enhancing the legacy modernization process cannot be ignored. AI, with LLMs at the forefront, promises to reshape the landscape, infusing it with efficiencies previously deemed unattainable.

The intertwining of legacy systems and AI isn't just an option — it's an imperative for modern financial institutions aiming to stay relevant in this dynamically evolving tech landscape. At Luxoft, we're not just passive observers; we're active participants, shaping the future of legacy modernization.

Are you poised to leverage AI in your legacy modernization journey? Engage with Luxoft's experts today and embark on a transformation that promises not just evolution, but revolution.

About **the author**

Dmitry Andrievskiy
Lead System Architect
Legacy Modernization Services
Luxoft

Dmitry boasts 20+ years of software design and development experience, including 16 years at Luxoft. Over the last 5 years, he's concentrated on modernizing legacy applications with cutting-edge tech. He's passionate about integrating AI into software modernization, aiming to enhance legacy system efficiency and intelligence. His goal is to lead AI-driven solutions for streamlined modernization and responsive software ecosystems in the ever-evolving digital landscape.

If you'd like to find out more visit **luxoft.com**
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