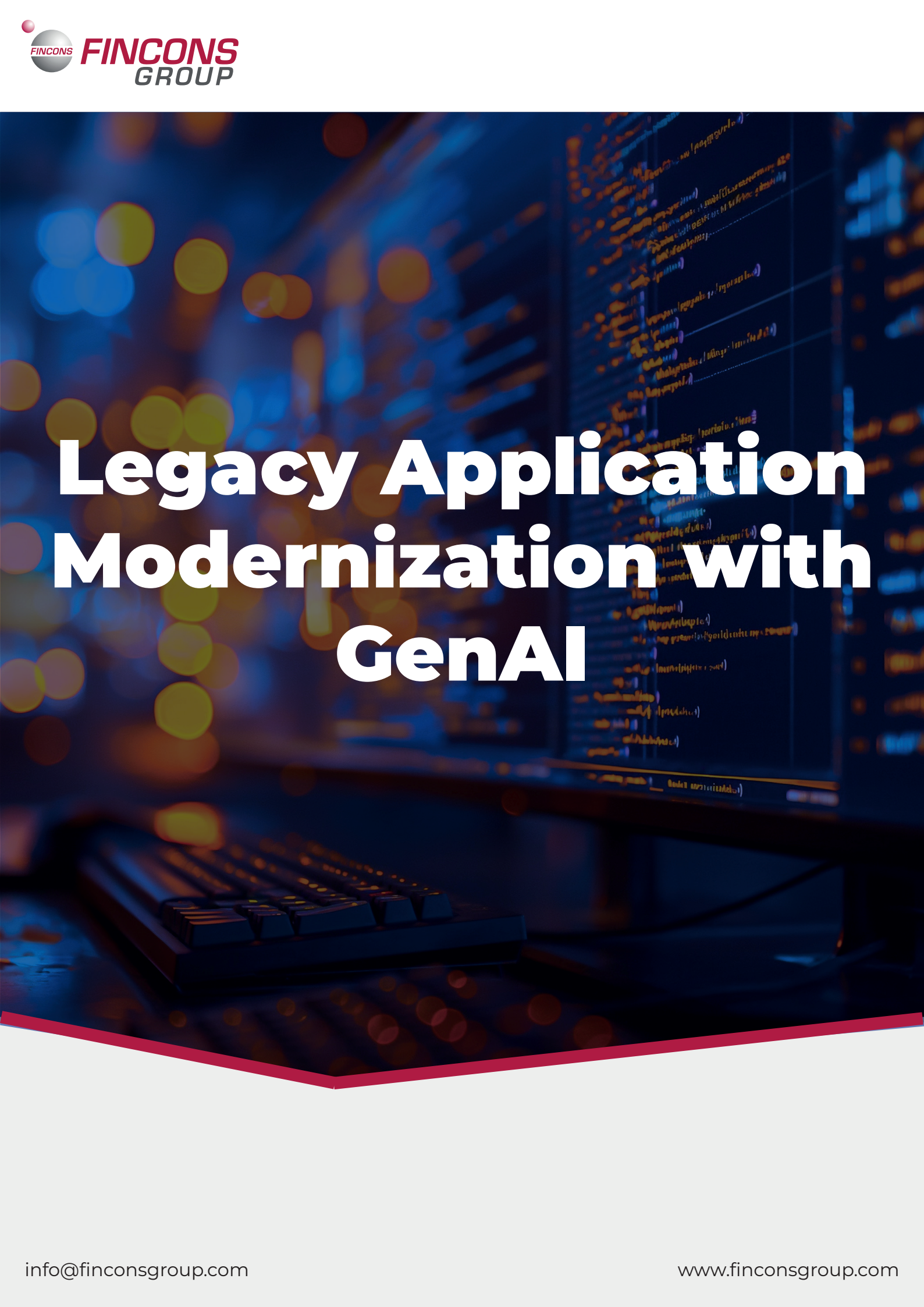




Legacy Application Modernization with GenAI



■ THE NEED TO MODERNIZE LEGACY APPLICATIONS

Many companies still run their business **relying on legacy applications** that were typically developed many years ago based on custom requirements and have been modified over time. Although these applications are functionally adequate for current business needs, they are built on **technologies that are now obsolete**, difficult to maintain and hard to evolve due to a **lack of internal know-how** caused by turnover and retirements and also to a very **limited availability of professionals** on the market with skills in these outdated technologies. The shortage of skilled resources is further compounded by the **year-over-year rise in costs for operating and maintaining the platforms** on which the legacy applications run. In this scenario, it becomes crucial for companies to modernize their applications while maintaining control over costs, timelines, and risks. Thanks to **the advent and evolution of GenAI technologies**, a new approach capable of **reducing the costs and risks associated with application modernization projects** is now possible.

This approach enables the **semi-automatic migration** of legacy applications from outdated architecture patterns, frameworks, and programming languages **to state-of-the-art technologies**, while preserving processes, application flows, business logic, and data models, thus avoiding the risks and complexities of data migration. To effectively reduce project costs, complexity, and risks, Fincons has developed an **application migration engine** that harnesses the power of GenAI to **accelerate and orchestrate each phase of the modernization journey**.

The Fincons engine not only translates the code 'literally', but also **transforms the application to adopt the target architecture, patterns, and frameworks** (e.g. from monolithic applications to microservices).





■ A NEW APPROACH TO APPLICATION MODERNIZATION

Fincons' proposed approach is based on know-how, tools and methodology designed in our internal Technology Innovation Hub and evolved thanks to its early adoption experiences.

KNOW-HOW

- Available GenAI tools and LLM models
- Source and target applications technologies and frameworks
- GenAI directives/Design of specific and complex prompts

MIGRATION ENGINE

- Semi-automatic and iterative migration
- Possibility to adopt different GenAI technologies (LLM agnostic)
- Ability to manage different sources and target architectures
- Generation of easy-to-read code, documentation and test cases

METHODOLOGY

- Approach and structured methodology organized into phases covering the entire project lifecycle

■ FINCONS ENGINE

Fincons has designed and developed a legacy application migration engine that industrializes and optimizes GenAI usage and effectiveness, capable of running with your preferred LLM model. This engine orchestrates several steps of the migration process to be both efficient and manageable. Main features:



1. SCANNING

Source code scanning, cleansing, and files grouping into units to be transformed



2. PROMPTING

GenAI prompt customization for optimal code conversion



3. CONVERSION

Code conversion by mean of GenAI APIs



4. GENERATION

Target source tree generation



5. DOCUMENTATION AND TEST CASES

Generation of commented code, documentation, and test cases



6. KPI

KPI measurement in order to evaluate the code conversion accuracy and effectiveness



■ METHODOLOGY

To effectively and successfully apply a GenAI application migration approach, Fincons proposes these steps:

1

GOALS SETTING

- Definition of: migration type, target application architecture, target technical architecture, test strategy

2

EXISTING SOURCE APPLICATION ASSESSMENT

- Source application structure analysis
- Source file categorization based on type and role
- Most representative use cases application flow investigation
- Source application code practices, patterns and best practice analysis

3

TARGET ARCHITECTURE DEFINITION

- High level target architecture definition (e.g. monolithic vs. modular)
- Definition of target frameworks and patterns
- Back-end API granularity definition, if required
- Logical mapping between each source file category and target components

4

ENGINE CONFIGURATION

- Fincons migration engine configuration for the specific context
- GenAI prompt design based on source vs. target components mapping and required transformation
- Incorporation of new GenAI prompts into Fincons' engine

5

ITERATIVE APPROACH

- Pilot on a specific representative code base
- Fine-tuning based on Pilot outputs with iterative runs

6

MIGRATION

- Source code cleansing and code usage statistics gathering to prevent the migration of unnecessary elements
- Source migration involving the extended code base
- Test, KPI monitoring and refinement of the migrated code through successive iterations



■ BENEFITS

- ✓ **EFFICIENCY**
Dramatic reduction in migration project effort, duration, and cost, increasing the feasibility of application modernization initiatives
- ✓ **MASSIVE AND ITERATIVE APPROACH**
The same code can be migrated many times during the project, allowing for incremental adjustments and improvements which usually depend on the source application architecture and design features
- ✓ **MEASURABILITY**
The GenAI assisted approach allows to define quality and success KPIs and to measure them throughout the entire duration of the project as part of DevOps processes
- ✓ **TRANSFORMATIVE MIGRATION**
The GenAI-assisted approach enables not only the translation and migration of the code, but also the transformation of the application architecture, structure, and technical documentation, facilitating application maintenance

■ ABOUT US

Fincons Group is an international IT business consulting and system integration company that has been supporting companies for more than 40 years in seizing the opportunities of digital change by offering cutting-edge technologies and innovative solutions that always anticipate the future. Fincons offers advice on IT strategies in various fields, as well as system integration services for leading vendor products, proprietary solutions and IT services in Smart-Shore through its Delivery Center to companies in the Energy & Utilities, Financial Services and Insurance, Media, Manufacturing, Public Administration, Transportation sectors and to International Institutions. The Group now has over 2,500 professionals and 17 offices in Italy, Switzerland, UK, Germany, France, Belgium, the US and India.

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