Modernize Enterprise Legacy Application with Gen AI

ABOUT ME

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CTO at Brain Station 23

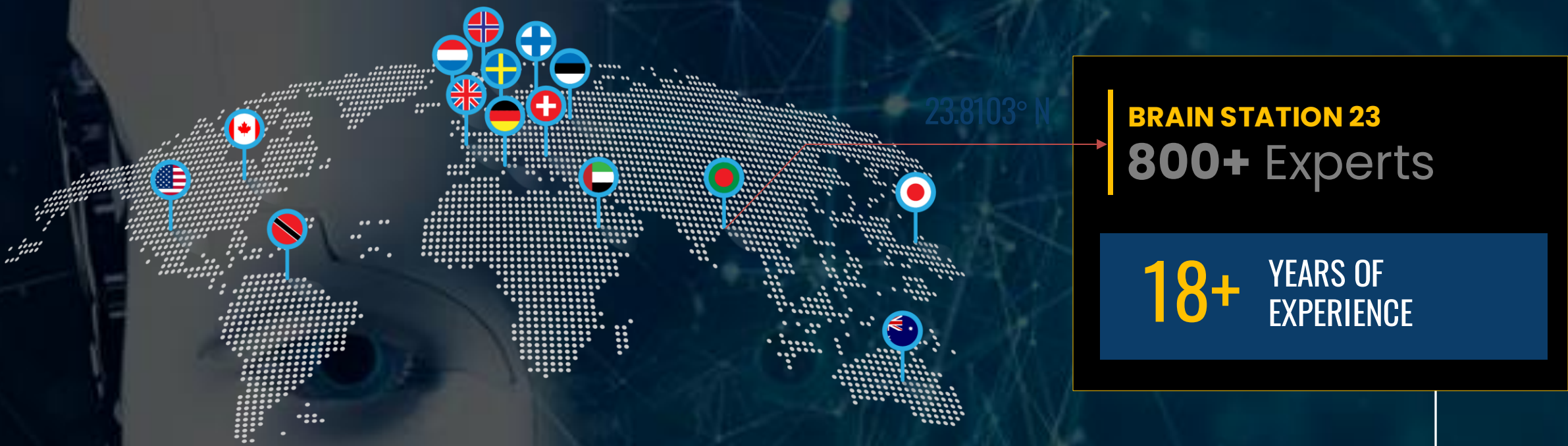**AWS Ambassador**

Co-founder & Leader, AWS User Group Bangladesh

BRAIN STATION 23

THE **BRAIN STATION NETWORK**

23.8103° N

BRAIN STATION 23
800+ Experts

18+ YEARS OF EXPERIENCE

BANGLADESH	GERMANY	NETHERLANDS	UNITED STATES	NORWAY
TRINIDAD & TOBAGO	AUSTRALIA	JAPAN	UNITED ARAB EMIRATES	FINLAND
SWITZERLAND	SWEDEN	UNITED KINGDOM	CANADA	ESTONIA

ISO 9001:2015
(Quality management system certification)

ISO 27001: 2013
(International standard for information security management system)

CMMI: Level 3
(Capability Maturity Model Integration)

- **Proven Expertise**: Successfully modernized legacy systems using AI, demonstrating technical proficiency.
- **Efficiency**: AI significantly reduced development time and cost.
- **Scalability**: Scalable approach and applicable to complex projects.
- **Future-Ready**: AI-driven modernization prepares businesses for future technological advancements.
- **Opportunity**: Ready to tackle more legacy systems and deliver modern, high-performing solutions.

OUR **KEY CLIENTS**

TOYOTA | NISSAN | axiata | telenor

Unipet | CO·WELL | VEON | syngenta

MEGAWAREHOUSE.CO.ZA | BT | MetLife | HSBC

Galápagos | abbvie | Senscom | Haier

Maruboshi | BAT | brac | Unilever

1500+
Clients across 25 Countries

WE'RE PROUD TO HAVE WORKED WITH AMAZING CLIENTS FROM

FORTUNE 100 BEST COMPANIES | Y Combinator

App Modernization

10+ Clients

Leverage our engineering capabilities and agile delivery process to modernize Legacy Enterprise applications without documentation & knowledge from team.

Cloud Security

100+ Clients

We help customers securely configure their AWS Account or AWS Organization with best practices and implement cloud-native security solutions that meet PCI, SOC 2, HIPAA, and GDPR compliance.

DevOps (CI/CD + IaC)

50+ Clients

Empowering companies to swiftly adapt to evolving market conditions and competition by utilizing our efficient and error-free code deployment solutions.

ML, Gen AI & Analytics

25+ Clients

Unlock the power of data confidently with our cutting-edge AI/ML and analytics solutions, whether you are looking to implement GenAI into your business strategy, architecting a data roadmap, or exploring how to best evaluate large language models (LLM).

Cloud Migration (App + Data)

5+ Clients

AWS customers can take their business to new heights with our comprehensive cloud migration solutions that seamlessly and securely move your applications and data to the cloud for increased scalability, flexibility, and cost savings.

Technical Audit

70+ Clients

Comprised of Infrastructure audit & code review to suggest best practices & propose futuristic approach for the system

- ✓ CISSP, CCISO, CISM, OSCP, eCPPT & CEH Certified experts. Experts recognized by 500 fortune companies.
- ✓ We have over 60 AWS certified resources & 100+ AWS DevOps practitioners & 20 AWS SAs in the team, AWS specialty certified resources 7. Azure certified resource 10.
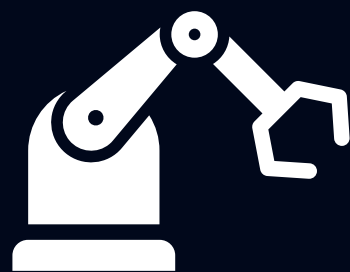- ✓ **1681 PenTests completed**
- ✓ **100+ Code & Infra Audit completed**

Topic Areas

- The Importance of Modernizing Legacy Software
- AI-Driven Solutions for Efficient System Transformation
- Expertise in Legacy System Transition
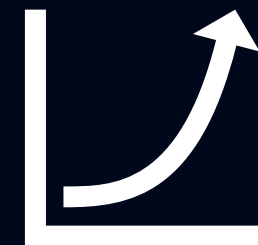- Use Cases in Modernization

AI's ROLE IN MODERNIZATION

Automation of Repetitive Tasks
AI automates code classification, refactoring, and migration, saving time and reducing manual effort

Error Detection and Resolution
AI tools identify and resolve errors in legacy systems quickly, ensuring smoother transitions to modern platforms.

Enhanced Development Workflow
By handling routine tasks, AI allows developers to focus on strategic elements, improving overall project quality and speed.

Challenge	Solution
Understanding legacy codebases	AI tools for rapid code analysis.
Ensuring data integrity	Comprehensive testing frameworks during AI migration.
Scalability of modernized systems	Modern frameworks like .NET and Flutter for scalability.

MODERNIZE LEGACY SYSTEM WITH AI

Why Modernization?

Modernizing legacy software is essential to stay competitive, efficient, and adaptable in today's fast-evolving technological landscape. Legacy systems often become a bottleneck, lacking support, flexibility, and integration options with modern platforms.

Modernization ensures:

➢ Enhanced performance & maintainability

➢ Compatibility with current technologies

➢ Reduced technical debt and long-term costs

➢ Improved user experience and business agility

Key Aspects of Modernization with AI Support

Key Aspect	Challenges in Legacy Projects	AI-Powered Solutions
Lack of Documentation & Manuals	Many legacy projects lack documentation, making it difficult to understand code structure.	AI can generate documentation by analyzing code, creating manuals, and detailing functions.
Limited Resource Availability	Older technologies often have limited support and fewer skilled developers.	AI can bridge this gap by assisting in code migration and training new technologies.
Unavailability of Core Team	Original developers may no longer be available, leading to knowledge loss.	AI can analyze, interpret, and suggest code improvements, acting as a virtual assistant to decode legacy logic.

ENSURING READINESS WITH AI-DRIVEN DEVELOPMENT

AI-Assisted Test-Driven Development (TDD)

- AI support in TDD helps streamline testing and solution generation.
- **Automatic Solution Generation**: After writing test cases, AI can suggest or auto-generate solutions, validating that development is on track.
- **Continuous Feedback Loop**: AI assists by confirming accuracy, guiding code refactoring, and improving code quality.

Adaptable Approaches for Modernization

- **Engineering & Problem-Solving Mindset:**
  - Modernization often requires adapting to various technologies. With a flexible approach, we can handle each modernization project effectively.
- **AI as a Collaborative Tool**:
  - **Customizable Paths**: AI enables different strategies depending on technology needs.
  - **Accelerated Process**: AI reduces time to implement by offering suggestions and identifying optimization opportunities.

Showcasing Our Modernization Expertise: Project Experience

VISUAL BASIC TO .NET

OVERVIEW

Modernizing a Visual Basic medical management system into a .NET 8 web application

CONTEXT

➢ **Legacy System:** Visual Basic desktop application.

➢ **Objective:** Migrate to .NET 8 for scalability.

➢ **Significance:** Enhance user experience and security.

➢ **Efficiency:** AI-driven, faster migration process.
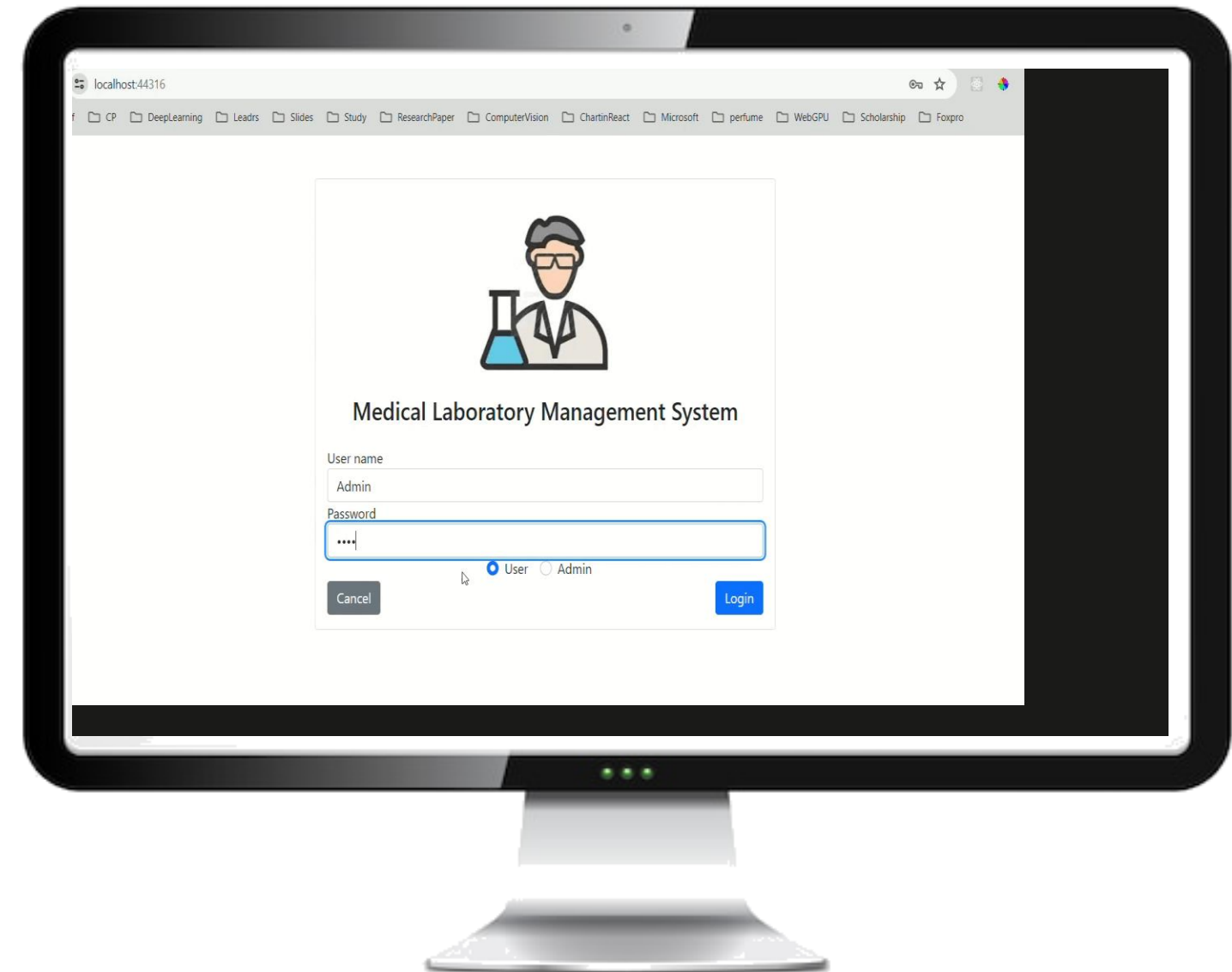
TECHNOLOGY CONVERTION

BENEFITS

- **Rapid Migration:** Completed in just **17 hours!**
- **Cost-Effective:** Reduced development costs significantly.
- **Enhanced Performance:** Utilized modern .NET framework.
- **Scalability:** Supports larger, complex projects.
- **Improved Security:** Leveraged advanced security features.
- **Streamlined Process:** Skipped unnecessary intermediate steps.
- **Better User Experience:** Delivered modern, user-friendly web applications.
- **Innovation Potential:** Applicable across various legacy systems.

RESULT: VISUAL BASIC TO .NET

Before: Visual Basic Medical Management

After: .NET Medical Management

FOX PRO TO .NET

OVERVIEW

Converted a small-scale FoxPro application to .NET

CONTEXT

- **Project Motivation:** Showcase technology transition expertise.
- **Objective:** Convert FoxPro to .NET efficiently.
- **Challenge:** FoxPro is uncommon and unfamiliar.
- **Scale:** Small-scale project for feasibility.
- **Success:** Proved capability with legacy systems.
- **Confidence:** Ready for larger, complex projects.

BENEFITS

- **Rapid Understanding:** AI quickly classified FoxPro codebase.
- **Accelerated Development:** Completed in just 9 hours!
- **Modernization:** Transformed into a modern web framework.
- **Efficiency:** Reduced development time drastically.
- **Inspiration:** Showcased AI's value in legacy modernization.
- **Strategic Focus:** Prioritized development over mundane tasks.

TECHNOLOGY CONVERTION

RESULT: FOX PRO APP TO .NET WEB

Fox Pro Application
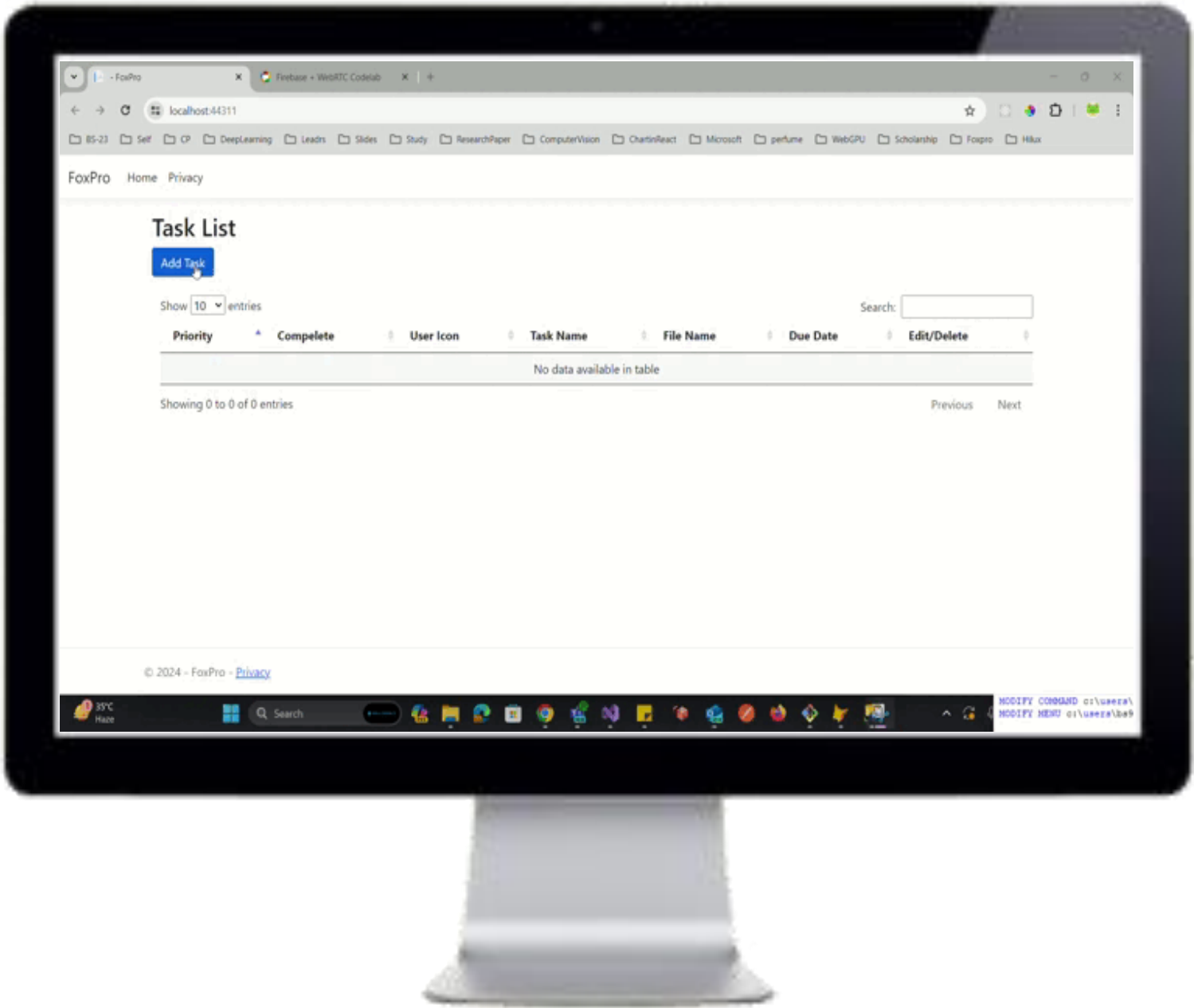
.Net Web Application

ANDROID TO FLUTTER APP

OVERVIEW

Converting a native Android app to Flutter using AI

CONTEXT

➢ **Platform Expertise:** Android and Flutter architecture knowledge.

➢ **Business Logic Understanding:** Grasp of the app's functionality.

➢ **Structured Codebase:** Clean, well-organized legacy code.

➢ **UI/Controller Division:** Early conversion strategies tested.

➢ **Flow-Based Approach:** Quick migration of user flows.

➢ **Bottom-Up Approach:** Built solid foundation for APIs.
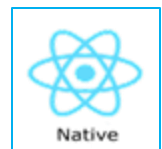
BENEFITS

• **Faster Conversion:** Reduced development time.

• **Efficient AI Utilization:** Handled complex tasks with precision.

• **Robust Architecture:** Ensured scalable, maintainable code.

• **Improved Accuracy:** Enhanced mapping of dependencies.

• **Comprehensive Solution:** Handled larger codebases effectively.

• **Strategic AI Tool Use:** Leveraged ChatGPT and Codium effectively

TECHNOLOGY CONVERTION

SUCCESS STORY

OVERVIEW

Accelerated legacy to modern tech conversion using AI in one week

CONTEXT

➢ **Legacy technology:** Web Forms, .NET version 4.8

➢ **Targeted upgrade:** .NET4.8, MVC

➢ **Initial timeline:** 2 months

➢ **AI-assisted solution:** 7 days

Aspect	Client's Plan	Outcome with AI Assistance
Project Duration	2 months	Completed in 7 days
Technology Transition	.NET 4.6 Web Forms	Migrated to .NET 4.8 with MVC
Efficiency Boost	Standard Development	AI-driven, reduced workload by 75%
Client Satisfaction	Expected timely delivery	Exceeded expectations with faster launch

OUR FINDINGS

Findings:

- **Design Patterns Aid Modernization**: Projects following design patterns are easier to modernize, with smoother transitions.
- **Improved Outcomes**: Design-pattern-based projects consistently show better modernization results.
- **Test Cases Enhance Clarity**: Pre-existing test cases simplify migration, making it faster and more reliable.
- **Effortless Validation**: Proper test cases help confirm migration accuracy without extra setup.
- **Reduced Setup for Verification**: Existing tests eliminate the need for new roles or extensive retesting.

Traditional Approach vs AI-Assisted Modernization Approach

Aspect	Traditional Approach	AI-Assisted Modernization Approach
Skilled Personnel Requirement	Relies on legacy tech experts; **60-70%** of time spent on upskilling	Reduces need for specialized skills by **40%** with AI-driven analysis
Time Efficiency	Typically **2-3x longer** due to manual updates and testing	AI speeds up projects by **up to 75%**, completing in days instead of months
Error Reduction	Higher risk of errors, **30% chance** of initial bugs	AI reduces errors by **50%** with automated validation
Cost Savings	Increased costs due to labor and time requirements	Saves **30-40%** in costs by reducing manual work and project duration
Testing & Validation	New tests needed, adding **20-25% extra time**	AI leverages existing tests for rapid validation and implementation
Client Satisfaction	**65% satisfaction** due to extended timelines	**85-90% satisfaction** with faster, reliable project completion

Thank You