Northeastern University

AI SOLUTIONS HUB

From AI ideas to working solutions

SERVICES & SOLUTIONS CATALOG

FOR ORGANIZATIONS

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Move From AI Ideas to Working Solutions

RESEARCH DEPTH. PRACTICAL DELIVERY.

The AI Solutions Hub at The Institute for Experiential AI helps organizations identify valuable AI opportunities, build and test custom solutions, and prepare them for real-world deployment. Our solutions are practical, scalable, and built on Responsible AI principles, and they can be deployed on-premise or in the cloud.

BRING US

- An operational challenge
- A promising use case
- A prototype that needs direction
- A portfolio of AI opportunities

WHY NORTHEASTERN

- **Breadth:** multidisciplinary experts on call
- **Speed:** hands-on builders and co-ops
- **Longevity:** knowledge transfer and upskilling so your team can evolve and own the work

AN ENGAGEMENT CAN DELIVER

Prioritized roadmap	Working prototype	Path to deployment
Opportunities assessed for value, feasibility, data readiness, and risk.	A solution stakeholders can test with real workflows and data.	Technical direction, responsible AI practices, and knowledge transfer.

> "Working with Northeastern's Institute for Experiential AI gave us the level of rigor and depth we needed to validate a completely new diagnostic modality. The collaboration went far beyond model training. It shaped how we think about robustness, scalability, and regulatory readiness."
>
> **Sergio Schirmer Almenara Ribeiro**, Founder & CEO, Radiolife

Ways to Work With Us

Engagements do not have to follow every stage. We start with the level of support your opportunity requires.

	ROADMAP + SCOPE Find the right opportunity	**FDE** Test + prototype	**BUILD + DEPLOY** Production solutions
What we do	Assess AI opportunities, decide whether to buy, extend, or build, and design the right solution.	Investigate a defined workflow or use case and create a prototype stakeholders can evaluate before a larger build.	Design, engineer, and integrate custom AI around your workflows, users, data, and security requirements.
What you get	A prioritized roadmap, a buy-or-build recommendation, a solution design, or any combination	A requirements document, recommended technical approach, or testable non-production prototype	A solution built to operate in your real environment, plus knowledge transfer
Choose this if…	You need to know where to focus, what to buy, or what to build.	You want to clarify requirements or test feasibility before funding a full build.	You need a production-ready application, or an existing prototype moved toward production.
Details	**Page 5**	**Page 6**	**Page 7**

Every engagement can pair with custom learning to build your team's skills alongside the solution. Looking for something faster? See our ready-to-run engagements.

Roadmap + Scope

FIND THE RIGHT OPPORTUNITY

Not every AI idea deserves a build, and not every build should be custom. We help you decide where AI can create value, whether to buy, extend, or build, and what the right solution looks like. Take on one piece or combine them.

TAKE ONE, OR COMBINE THEM

Opportunity roadmap

Assess and prioritize AI opportunities across your organization, so you know which ones are worth pursuing first.

Buy vs. build analysis

Compare off-the-shelf tools, extending systems you already use, and custom development for a specific need, with a clear recommendation and the tradeoffs behind it.

Solution design

Define the architecture, data, integrations, users, and responsible AI requirements for a chosen solution, ready for whoever builds it: your team, a vendor, or the AI Solutions Hub.

HOW WE ASSESS OPPORTUNITIES

Value

Scored on a custom prioritization metric we build with your team.

Feasibility

What your current stack can support today, and how to prepare for what's next.

Data readiness

Clean existing data and set up pipelines so new data arrives AI-ready.

Risk

Evaluated with a custom risk framework we build with your team, including bias and fairness testing.

IDEAL FOR

Organizations with a portfolio of AI ideas, a vendor decision to make, or a use case that needs a design before anyone builds it.

THE OUTPUT

Any combination of a prioritized roadmap, a buy-or-build recommendation, and a solution design.

Forward-Deployed Engineers

TEST + PROTOTYPE A DEFINED WORKFLOW

FDE is a focused engagement for a defined workflow or use case that would benefit from technical discovery, scoping, or prototyping. An AI Solutions Hub technical lead oversees the work, while two certified Northeastern graduate students provide hands-on technical capacity.

What counts as a defined workflow? A specific, repeatable process with a clear owner, such as triaging intake requests. No formal process map required.

MATCH THE WORK TO WHAT YOU NEED TO LEARN		
01 Investigate Examine users, current process, data, pain points, and dependencies. **Output:** a clearer definition of the opportunity and recommended next step.	**02 Scope** Define requirements, data, risks, and technical feasibility. **Output:** an actionable requirements document and technical approach.	**03 Prototype** Build a working demonstration your team can test and react to. **Output:** a testable, non-production prototype.

EXAMPLE WORKFLOWS

- Research, matching, and qualification
- Industry-specific AI assistants and agents
- Contract and document intelligence
- Data synchronization and transition
- Reporting and dashboards
- Ticket, claim, or intake triage
- Internal knowledge search and summarization
- Sales follow-up and CRM workflows

FDE IS A GOOD FIT WHEN

- You have a defined workflow worth investigating
- You want to test feasibility before funding a larger build
- You can provide process knowledge and representative or sample data
- Your team can join regular check-ins and give feedback

How FDE works: *FDE is a paid, scoped engagement led by the AI Solutions Hub. You contract with Northeastern for defined outputs, delivered by an AISH technical lead and Northeastern graduate students. FDE prototypes are designed to test an idea and inform next steps, not to serve as production-ready applications.*

Build + Deploy

CUSTOM AI SOLUTIONS IN YOUR REAL ENVIRONMENT

We design and develop AI applications around your workflows, users, data, security requirements, and technology environment. Already have a prototype? We strengthen it through engineering, integration, testing, deployment planning, and MLOps.

A CLEAR PATH FROM CHALLENGE TO CAPABILITY				
01 **Discover** Define the challenge, users, outcomes, data, constraints, and success measures.	**02** **Design** Assess feasibility and create the technical, responsible AI, and delivery approach.	**03** **Build** Develop and test iteratively with input from your team and end users.	**04** **Deploy** Prepare for your infrastructure, integrations, governance, and security.	**05** **Sustain** Transfer knowledge so your team can maintain, use, and extend the work.

PROTOTYPE OR PRODUCTION?

	FDE PROTOTYPE	BUILD + DEPLOY
Purpose	Test an idea and inform next steps	Operate reliably in your real environment
Data	Representative or sample data	Sensitive or production data
Systems	Standalone demonstration	Integrated with live production systems
Security + governance	Scoped for evaluation	Built to your security and governance requirements
Ownership	Your team evaluates and decides	Deployed, documented, and handed off for your team to maintain

Deployment: *cloud, on-premise, or both, built to fit your infrastructure and security model. The result is AI that works now and builds capacity for later.*

Pair the Solution With Your People

AI SOLUTIONS HUB + NORTHEASTERN CUSTOM LEARNING

A solution only creates value if people use it well. Northeastern's custom learning team delivers live, expert-led programs built around your team's roles and taught in the tools they already use, so capability grows alongside the technology.

IF YOUR AISH WORK IS...	PAIR IT WITH CUSTOM LEARNING
Roadmap + Scope Leaders deciding where AI fits	**AI Strategy pathway** Essential AI for Leaders, Identifying AI Opportunities, Evaluating AI Opportunities
FDE or Build + Deploy Teams adopting a new AI tool in their workflow	**AI Enablement pathway** Maximizing Productivity with Generative AI, Turning Your LLM Into Your Work Assistant
A data-heavy build Data readiness is the constraint	**Data courses** Developing an Organizational Data Strategy, Cultivating Data-Driven Decision Making
Technical handoff Your engineers will own and extend the work	**Technical courses** Building Predictive and Prescriptive AI Data Models, Maximizing Productivity with GitHub Copilot
Any solution touching risk Governance and oversight need to keep pace	**Responsible AI** Establishing RAI Governance and Data Ethics, plus Northeastern's Responsible AI Practice

PROOF: BANGOR SAVINGS BANK

A two-year initiative combined workforce assessment and development with a data opportunity roadmap and a custom recommendation engine built with the AI Solutions Hub. **96% of program participants now use generative AI in their daily work, up from 56% before training.**

Explore custom learning ⟶ ai.northeastern.edu/education

What We Build

AI BUILT AROUND REAL WORK

01

Knowledge + document intelligence

Extract, classify, summarize, search, and reason across contracts, reports, policies, transcripts, and other unstructured information.

02

Prediction + decision support

Use historical and real-time data to forecast demand, assess risk, prioritize work, and support better operational decisions.

03

Workflow automation

Reduce repetitive work with AI-enabled intake, routing, grading, scheduling, reporting, and human-in-the-loop review.

04

Custom AI applications

Build secure assistants, conversational interfaces, analytical tools, and full-stack applications designed for your organization.

SOLUTIONS INCLUDE

AI for Operations

- Document Processing
- Time Series Forecasting
- AI Agents for Automation

AI for Marketing

- Chatbots & AI Assistants
- Recommendation Systems
- Next-Best Product & Churn Models

AI for Risk & Compliance

- Credit & Risk Scoring
- Fraud Detection
- Compliance Monitoring

AI for Innovation

- Generative AI Applications
- AI Copilots
- Multi-Modal AI (text, image, voice, video)

Custom AI Solutions

- Bespoke Models
- Hybrid Predictive + Generative AI

CORE CAPABILITIES

Generative AI | Predictive AI | Large Language Models | AI Agents | AI Opportunity Roadmaps | Buy vs. Build Analysis | Solution Design | Experiential AI Upskilling | End-to-End Solution Delivery | Cloud Deployment

Ready-to-Run Engagements

PROVEN WORK, PACKAGED FOR SPEED

AUTOMATED PORTFOLIO REPORTING

Reporting that runs on systems, not people. First built for a property management organization overseeing approximately 30,000 housing units, this modular platform brings fragmented financial, operational, and document data together, automates recurring reporting, and answers plain-English questions with verifiable sources.

Collect	Standardize	Report	Ask
Gather documents and records from approved systems on a schedule	Extract, check, and reconcile data into one trusted model	Dashboards, report packs, variance explanations, and alerts	Plain-English questions, traced back to their sources

Start where the work is most manual: document intelligence, then workflow automation, then a conversational layer. Every extracted field points back to its source, so teams can check the system's work instead of taking it on faith.

See the full solution ⟶ ai.northeastern.edu/example-solution-automated-portfolio-reporting

UNDERWRITING AUTOMATION + RISK TRIAGE

Fewer manual reviews, sharper risk detection. Built from work with an insurance carrier, this two-part solution reduces labor-intensive underwriting review while preserving or improving the ability to catch risk.

AUTOMATED DOCUMENT VALIDATION

- OCR, NLP, and LLM extraction across many policy document types
- Extracted values checked against internal records, with mismatches and anomalies flagged

UNDERWRITING RISK MODEL

- Classifies applications by risk level and type using internal and third-party data
- Routes the policies most in need of human review, reducing false positives

Responsible by design: built to support alignment with the NAIC Model Bulletin on AI Systems and NYDFS Circular Letter No. 7 (2024), including testing for disproportionate adverse effects. Full code, model documentation, and knowledge transfer so your team owns the solution.

Ready-to-Run Engagements

CONTINUED

PRICING ELASTICITY ANALYSIS

Clarity on which pricing decisions will strengthen your margins. Built from price elasticity modeling with a national retailer, this analysis shows exactly where price increases, holds, and shifts will strengthen performance before your pricing window closes.

WHAT THE ANALYSIS PROVIDES

- **Visibility into demand sensitivity** across products, channels, and customer segments
- **Confident guidance on price actions:** where to raise, hold, and shift to improve margin without eroding trust or volume
- **A repeatable pricing approach** for upcoming cycles and seasonal decisions

2–3 wks to first insights	**4–6 wks** to full guidance
2–5% estimated margin lift	**10–20x** estimated engagement ROI

AI PORTFOLIO PARTNER FOR PRIVATE EQUITY

From legacy to exit-ready. One embedded AI team helps private equity firms modernize legacy portfolio companies into agile, AI-enabled platforms that attract premium buyers.

Opportunity Mapping	AI Readiness	Custom Solutions	Workforce Training	Governance at Scale
High-impact AI use cases across legacy operations	Strengths and gaps across tech, data, and people	Workflow automation, system upgrades, portfolio tools	AI fluency for teams in acquired companies	Responsible AI guardrails across all investments

Learn more ⟶ ai.northeastern.edu/ai-portfolio-partner

Featured Partners

SOLUTIONS MEASURED IN OPERATIONAL IMPACT

FINANCIAL SERVICES

Bangor Savings Bank

AI strategy, workforce learning, and applied projects together, including a product recommendation engine that helps associates offer personalized recommendations at the right moment.

96% daily generative AI use, up from 56%

HEALTHCARE + LIFE SCIENCES

Radiolife

Multiplex AI models for Dengue, Chikungunya, and Oropouche, validated for clinical-grade, regulatory-ready performance on a reagent-free RF platform.

88–90% multiclass accuracy

>0.98 AUROC

30–60 sec scans

OCEAN TECH + ENVIRONMENT

Blue w(AI)ve Accelerator

AI consulting, responsible AI guidance, and technical mentorship helped blue-tech startups turn complex ocean data into deployable applications.

SEMICONDUCTOR MANUFACTURING · SOUTH PORTLAND, MAINE

Diodes U.S. Manufacturing

The challenge: Diodes needed an early-warning system that would help reduce scrap, strengthen process controls, and flag quality control issues as soon as possible.

NORTHEASTERN DELIVERED

- A machine learning discovery process producing a data dictionary, data analysis, and data preparation guide that supported data cleanup and refined algorithm selection
- An unsupervised model serving as a fast, scalable anomaly screen
- Guidance to establish a repeatable foundation for future machine learning use cases

RESULTS + IMPACT

- Expanded internal data engineering capacity and cross-team efficiency
- Reusable machine learning capabilities and a faster path to future AI use cases
- Reusable data dictionary and preparation guides that reduce duplication and knowledge loss

> "The Roux's structured approach helped us strengthen our data foundation and build confidence in applying machine learning to real manufacturing challenges."
>
> **Philip Sampson**, IT Manager, Diodes U.S. Manufacturing

Published case studies are available at ai.northeastern.edu/case-studies.

Selected Work Across Industries

REPRESENTATIVE AI SOLUTIONS HUB ENGAGEMENTS

REAL ESTATE

Affordable housing organization

Automated portfolio reporting: RealPage data extraction plus LLMs that turn plain-English questions into SQL, replacing hours of weekly manual Excel work. Now a ready-to-run offering.

INSURANCE

Insurance carrier

Underwriting automation that validates documents and classifies risk, reducing manual intervention and improving fraud detection. Now a ready-to-run offering.

INSURANCE

Insurance provider

Claims complexity scoring and intelligent routing built on historical claims data to improve assignment and risk management.

HEALTHCARE

Oncology organization

Automated extraction of genomic data from testing reports and structured tumor board transcripts to speed clinical decision-making.

INFRASTRUCTURE

Infrastructure firm

A cloud-based invoice processing tool that extracts data from 300+ PDF invoices a week, cutting manual entry for project managers.

PROFESSIONAL SERVICES

Executive search firm

An interview summarization engine using fine-tuned language models and human-in-the-loop feedback for consistent, high-quality summaries.

PROFESSIONAL SERVICES

Global expert network

A machine learning pipeline that predicts research engagement outcomes, enabling faster prioritization and resource allocation.

HEALTH + WELLNESS

Musculoskeletal health startup

A retrieval-augmented generation platform delivering non-clinical insights from scientific literature and expert-curated content.

RETAIL

National retailer

Price elasticity modeling across the assortment to show where pricing power exists, now packaged as a repeatable Pricing Elasticity Analysis.

TECHNOLOGY

Open-source research software

A RAG-based support assistant that answers technical and community questions from forums and documentation.

PUBLIC SECTOR + SOCIAL IMPACT

Justice reform initiative

AI-enabled processing and visualization that turns arrest report data into transparent, interactive analytics for advocacy.

SEE OUR WORK ⟶

Case studies and example solutions

ai.northeastern.edu/ai-solutions-hub

Built Around Your Challenge, Not a Fixed Bench

AI challenges rarely fit neatly into one discipline. Every engagement can draw on expertise from across Northeastern University, so we assemble the team around your technical problem, industry context, research needs, and stage of work.

01	02	03	04
Applied AI professionals	**Faculty + researchers**	**Graduate + co-op talent**	**Domain expertise**
AI engineers, data scientists, software developers, and technical delivery expertise.	Specialized expertise from across Northeastern's research and academic network.	Emerging technical talent that extends capacity and contributes directly to applied work.	Relevant knowledge across industries, disciplines, and specialized problem areas.

YOUR CORE TEAM

Omer F. Alis, Ph.D.

Director, AI Solutions Hub

Leads the AI Solutions Hub, connecting organizations with the technical expertise, research capabilities, and talent needed to move AI initiatives forward.

Ali Hager
Program Manager

Sean Martin
Business Development Manager

Prashant Mittal
Northeastern Faculty

Jithin Veeragandham
AI Engineer

Akhil Chitreddy
AI Engineer

Jay Vipin Jajoo
AI Engineer

BRING US THE PROBLEM

Start with the need that matters most. We shape the technical approach and engagement around your goals, data, constraints, and internal capabilities.

TALK WITH OUR TEAM ⟶

AiPartnerships@northeastern.edu

ai.northeastern.edu/ai-solutions-hub

FROM RESEARCH TO PRODUCTION

Roadmap, prototype, or full build: start where your opportunity requires, and move to the next stage when you are ready.