Artificial Intelligence Software Development on a Budget

We recently published an article on the costs of developing an artificial intelligence application that accurately showed just how expensive AI app development *can* be. But it doesn't have to be.

It is possible to do AI software development on a budget. From leveraging open-source tools to outsourcing wisely, you can strategically manage costs while delivering high-quality AI solutions. This is especially valuable for tech leaders just getting started with artificial intelligence and looking to innovate with AI without overspending.

If you read our article about the [costs of developing artificial intelligence applications](#) and the prices got your head spinning, continue reading to learn how to balance budget constraints with cutting-edge technology to manage AI development on a budget.

Assess Your AI Needs

If you're approaching artificial intelligence with a limited budget, you need to make sure your chosen AI project will have the most business impact. [Intelligently approaching emerging tech opportunities](#) means you aren't choosing a technology simply because it is the newest and shiniest tool. Start with your company's main business objectives and identify potential use cases where AI could help you reach your goals.

For an initial AI project, identify a high-value, low-risk focus area that will transform 5-10% of the business. [Prioritize AI opportunities](#) based on their potential ROI, stakeholder buy-in, and your organization's data readiness and AI maturity level.

Data will often be the most cost-prohibitive element of any AI, machine learning, or digital transformation project. Any data science project will require a reliable data infrastructure, structured and unstructured data storage, and data labeling. Choosing a project outside of your current data readiness level will add to the expenses of collecting, organizing, and labeling data, which can be one of the highest costs in any AI project.

Another cost to avoid is unnecessary features and complexity. Choose a simple project and aim to build a minimum viable product (MVP). Any features that aren't strictly necessary to meet your business objectives should be avoided.

Integrate Existing AI Models and Off-the-Shelf Tools

Training a large language model (LLM) takes an incredible amount of time, data, and computing resources, which all add to the price tag. According to [McKinsey](#), training an AI model can cost up to $200 million per training run.

Most AI applications are better off using existing AI models such as [ChatGPT and its competitors](). Experimenting with generative AI and conversational AI features in existing software will help familiarize you with the possibilities and limitations of the technology.

ChatGPT and other generative models have APIs that allow you to easily integrate the AI model into your application without spending any money training your own model. However, some training is still required to fine-tune the model to fit your specific needs. The amount of training depends on the complexity of your application. This process includes training the model on your own company data and on any additional information necessary for the application to function. Prompt engineering and content filtering will also be required to guide the model's behavior to ensure it gives appropriate responses, avoids certain words (such as competitors), and stays on the relevant topic.

Frameworks also exist for quicker onboarding to more custom AI. Some common cloud-based solution frameworks include:

- [Vertex AI](): This fully-managed, unified artificial intelligence software development framework is part of the Google Cloud Platform. It provides access to generative AI tools such as Google's Gemini as well as 150+ Google, third-party, and open-source tools. Their no code builder feature makes it easy to build and deploy enterprise-grade generative AI applications.
- [Bedrock](): Amazon Bedrock is a managed service that provides access to several foundational models through a single API. It also provides tools for fine-tuning AI models and building generative AI applications on Amazon Web Services (AWS).
- [Cohere](): Microsoft's Azure Cloud offers an AI development studio that provides access to six large language models, including Cohere, Command, and Embed. They are the least robust of the three frameworks in terms of model training and code building tools, but they do offer a more streamlined approach to implementing generative AI on Azure.

These frameworks provide access to pre-trained models, AI APIs, and open-source tools. They make it easy to train and test ML models, unify data in one platform, and easily integrate multiple tools. However, they may lock you into particular solution stacks that remove some freedom and flexibility. In addition, the use of their no-code tools presents extremely limited options for building a custom AI application.

Optimize Cloud Costs

A household consumer products company started to experiment with the Google Cloud Platform and found it was very expensive to learn and build everything through Google's framework. They employed Gigster as an impartial expert to evaluate third-party model solutions and help build a tech stack that met their specific project needs while staying on a limited budget.

Choosing the right cloud stack will help keep costs down while ensuring you don't get locked into a specific vendor. Vendor lock-in gives your vendor a dangerous amount of leverage when it

comes to costs and may also force you to use more expensive tools if other options don't fit with your vendor's cloud stack.

Other strategies to optimize cloud costs include:
- **Spot Instances:** Unused virtual servers can be used for a significantly lower price compared to reserved instances. However, they run the risk of interruptions and should only be used for non-critical workloads.
- **Autoscaling:** This is an automated approach that increases or decreases network resources based on traffic and computing demands.
- **Continuous Cost Management:** While it may seem obvious, many companies don't have full visibility into their cloud costs. Continuously reviewing cloud computing costs and [cloud cost optimization](#) can help identify high-cost areas, unexpected expenses, and redundant resources. Monitoring cost anomalies can also help track and reduce costs from unused cloud resources or the added fees for unexpected spikes in demand.

Add Outsourced Artificial Intelligence Software Development to Your Strategy

Building an expert AI development team can be a massive expense that most organizations can't afford for what could be a single AI project. This is why many companies are looking towards outsourced AI development to complement, accelerate, and de-risk their AI strategy.

[Outsourcing development](#) provides access to a global talent pool for more diverse experiences and skill sets. Contingent workers are hired only for the parts of the project where their skills are required. This helps minimize the costs of hiring a full-time development team.

An expert AI firm can also help you evaluate cost-effective options for the correct AI project, technology stack, and development team to help you stay within budget and aligned with your business objectives. When [evaluating AI development services](#), look for AI-specific expertise, experience with custom software development, and limited reliance on templates and AI-generated code.

How to Develop AI on a Budget

As we outlined in our last post, developing artificial intelligence applications can easily cost millions of dollars in data collection and management, infrastructure costs, model training, and maintenance. However, we very rarely recommend that kind of investment, especially not for companies that are just starting out with AI.

Instead, choosing a less complex AI project that relies on your existing data and available AI models and APIs can greatly reduce the costs of AI development and improve your AI.

Gigster can help you choose the project that is right for you and create an AI development plan. Our fully managed outsourced development teams are a much more cost-effective option

compared to in-house developers or traditional software development firms. Contact us today to learn about our [AI development services](#) and share your project with us.