

# The User Guide to Composable Al

How companies are rapidly generating business results from Al



## Preface

This paper has been written to guide business, technology and data teams on how to plan and deploy artificial intelligence initiatives more effectively using Composable AI, a modular way to quickly generate tangible and incremental business value from AI investments, while helping those investments to scale for the long-term.

Although some entry-level artificial Intelligence capabilities are now tantalisingly inexpensive, Al investments have historically represented substantial and ongoing investments. Consider that just the daily operating cost for ChatGPT has been pegged at \$700,000. Even a lean approach to Al can cost hundreds of thousands of pounds and many businesses invest millions with no guarantee of success or value generation. Furthermore, deployed Al systems tend to work in an isolated environment with limited access to wider business processes – another example of how new technology often recreates silos.

The clear competitive advantage that AI should provide is now spurring investments on a massive scale but even companies that are mature and experienced can have difficulty finding the value they aimed to achieve, and too many initiatives simply fall flat.

In fact, according to a recent article in Harvard Business Review, the failure rate could be as high as 80% for AI projects, "almost double the rate of corporate IT project failures a decade ago." An earlier article in IIOT World featured a similar lament and cited Gartner as pegging the failure rate at 85%. There are many reasons but three underlying problems contribute to most failures, namely the challenge of ensuring each AI model is working as efficiently as possible, each has access to the information it needs, and each is functioning effectively with the others.

Few succeed in implementing that ideal, resulting in disappointments and cost overruns. One of the reasons for this comes down to the different goals in adopting AI usually involves adopting different kinds of AI technology and solutions such as machine learning, natural language processing, or Generative AI. Each of these can potentially magnify the complexity and management challenges your organisation is already facing.

Xiatech is simplifying the adoption of AI through Composable AI, which this paper outlines so you can adopt AI more effectively than using traditional approaches.



## Composability: A Clear Alternative

Composable AI is designed to bridge the gap between the potential of AI and the real-world challenges that often defeat it. In a Composable AI approach, connected AI assets have better access to what they need. AI assets that are underperforming will seek help and inputs from other AI assets in

the ecosystem, and offer back assistance once their performance level becomes stable and positive. This way, single AI applications will minimise the risk of failure by collaborating with other AI functions.

While each AI has a single objective, they actively look for other AI systems with some overlap with them in order to collaborate and propagate their benefits across your entire organisation, creating a network of connected AI-based applications that perform better in collaboration than when they had to work in isolation in a traditional input-processoutput AI application.

Best of all, the AI environment becomes a virtuous circle that grows stronger and the overall value and utility of the AI assets is increased over time. Composable AI generates a fast payback by enabling organisations to incrementally add AI models that provide new AI capabilities faster than deploying Isolated AI.

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## Why You Need to Embrace AI

There are many inducements to adopting AI, ranging from the potential to better serve customers to generating cost savings and, of course, the upside of potentially greatly improved decision making and problem solving. Indeed, in many business sectors, AI is becoming a baseline capability that helps define and shape an organisation's competitive posture. In fact, 84% of global organisations believe it will give them a competitive advantage, according to research by Statista.

As might be imagined, the different goals in adopting AI usually involve adopting different kinds of AI technology and solutions such as machine learning, natural language processing, or Generative AI. Each of these can potentially magnify the complexity and management challenges your organisation is already facing.

Al successes have been achieved in optimising routine processes and in achieving greater operational efficiencies. For example, Al has proven very valuable in predicting customer preferences and enhancing personalisation. Vast pools of data that do not readily reveal their value to humans unaided are fodder for Al that often spot potential new customers, unmet customer needs, or potential new business opportunities.

Also, AI can often be teamed closely with humans to inform and accelerate insights and decisions.



## Why Current Methods to Adopting AI are Costing Companies

While AI has tremendous potential to help companies do more with less and improve time to value, there are also many implementation challenges holding back adoption. These range from poor data quality and weak infrastructure to difficulties integrating AI and high costs. Within these challenges lies another, namely that AI systems often become siloes unto themselves and may not adequately cooperate or share data. We call these pockets of disconnected AI, Isolated AI.



#### Different approaches to deploying AI

Typically, AI is adopted to solve some very specific business cases, initially with a pilot to test systems and performance and later expanding to optimise results and monitor whether the particular objective is being met on an ongoing basis.

The result can be a series of silos that hardly communicate, let alone cooperate, and that may end up keeping AI initiatives from delivering full value because their isolation means their "intelligence" is starved for perspective and wider information access, and then stultifies and falls short of its potential. In other words, each AI is focused on meeting its own objective and its performance is usually monitored by a dedicated team of stakeholders.



The complexity of AI means that projects are often slower to implement than planned and likewise, often end up being more costly. Contributing factors can come from the technology itself, a poorly defined project scope, and difficulties integrating with existing systems. This can require customisation and trial-and-error fixes as well as modifications to the systems that AI interfaces with. In addition, each subsequent AI project is as complex and costly as the previous one, since Isolated AIs are not designed to benefit from other existing AIs.

Because of this, costs and delivery pace do not scale well as AI practice is expanded through the organisation. And even well-intended changes in systems can have unforeseen consequences.

Finally, monitoring, testing and retesting are particularly critical tasks to consider. Al systems (that is, the AI models themselves plus the infrastructure they require to run) must be run through complex exercises to ensure they work and work as expected. This includes making sure their performance statistics are periodically monitored and produce alerts when needed, as well as manually or automatically trigger re-training processes when there is a drift. Even here with all these in place, the unknowns inherent in an AI development path can turn into costs.



## **Composability and AI**

As mentioned earlier, Composable AI refers to an approach that is built on flexibility and modularity. Rather than simply adopting multiple, disconnected and incompatible AI functions, or attempting to build a single monolithic AI system, a composable approach is built on components and smaller units set up to be configured and reconfigured and to interface and function together as well as with legacy elements.

From the start, this approach focuses on the future, ensuring that today's investments are ready to adapt to tomorrow's challenges. It is an approach that can be cost effective and efficient in comparison with the more traditional ways of approaching AI.

So, let's look at how Composable AI works in practice.

First and foremost, you need complete and accurate data that is continuously up-to-date to run your Composable AI models. Xiatech's Xfuze platform provides a great example since its end-to-end data pipeline automates the sourcing of data, the transformation of data (such as preparing and cleansing data), and visualising this data and insights all in real-time across all of your connected Composable AI models and projects.

The need to use AI should be driven by a business need such as the objective of increasing sales, reducing waste or optimising margins. To achieve this, a retailer, for example, may seek to better segment its customer base based on historic and predicted customer purchasing and behaviour. In the world of Isolated AI, you would deploy just one data model. In the world of Composable AI, you have a connected ecosystem of composable data models: customer segmentation, customer lifetime value estimation, sales forecasting, etc.



The diagram below shows a **connected ecosystem of Composable AIs**; and they work together to deliver capabilities and value to a company.





We will now take you on a step-by-step journey to show you how organisations are using the power of Composable AI to create incremental business value, starting with customer segmentation. The journey can start anywhere.

#### **CUSTOMER SEGMENTATION**

A marketing team seeks to improve customer communication through better personalisation. The team utilises a Customer Segmentation model that automatically groups clients based on their purchasing habits, behaviours as they interact with the organisation, as well as their socio-economic and demographic characteristics

#### **CUSTOMER LIFETIME VALUE**

Once that Customer Segmentation model is available in production, Composable AI opens a few possibilities on where to go next. The team leverages the historic data from their customer base, as well as the results provided by the existing Customer Segmentation model to create and connect a Customer's Lifetime Value model that estimates the potential revenue likely to be coming from a given customer cohort.

In a traditional (Isolated) AI delivery model, the team would have trained the Customer Lifetime Value model in isolation, without making use of the existing Customer Segmentation model, and therefore having the two models working separately, creating silos that would be difficult to break as the expansion of AI accelerates throughout the business. Also, when the 2 models are working separately, they will be prone to divert in their assessments, creating inconsistencies that lead to confusion and mistrust to the people having to work with their outcomes.

Step

Step

Step

#### **PRODUCT RECOMMENDATION**

Now that the first two Composable AI models are working and collaborating in production, the team decides to focus on setting up (or improving) a Product Recommendation model. In the Composable AI world, the Product Recommendation model can not only use all of the product, sales and customer data available, but also all of the outputs (with performance-related assurances) from both Customer Segmentation and Customer Lifetime Value models. Again, in an Isolated AI delivery fashion, the Product Recommendation Engine would not be able to fetch additional information about customers coming from existing AI models. This fact would therefore affect its capacity to deliver high-quality recommendations to clients.



Step

Step

#### PRODUCT AFFINITY

Once a Product Recommendation model is in place and stable, the team decides to revisit an old Product Affinity model that helped them create promotional product combinations as well as place products in the right locations in stores and on websites. Now, thanks to Composable AI, the Product Affinity model can not only read information from historic basket compositions, but also from the recommendations provided by Product Recommendation. It can even provide different Product Affinities for each customer segment provided by Customer Segmentation. In a traditional delivery, Product Affinity would only use historic market basket analysis to produce results. Therefore, working only with past data at a global level, not using likelihoods to purchase from Product Recommendations or any customer information or personalisation from customerrelated AI models.

#### INVENTORY OPTIMISATION

At this point, the Composable AI ecosystem can be considered mature. The team decides to involve the supply chain department which is in need of optimising inventory to better plan purchase orders. In a Composable AI world, the Inventory Optimisation Model would not just use budgets, targets and demand curves coming from the management team, but also can refine its suggestions by using the Customer Lifetime Values (that estimate revenue for the next year, too), Customer Segmentation (e.g. if many high-value customers are located near a particular warehouse, channel, or geographic area), and Product Affinity (to produce purchase orders containing products that are expected to be bought together in many cases)

> Hadn't the team used Composable AI, Inventory Optimisation wouldn't have been able to benefit from all of the other AI models already delivering value in other business areas, and would keep working in a disconnected manner.

Step

#### **KEEP GROWING**

Just as in the previous steps, a team, or multiple teams, would pick the next most pressing issue or business priority and build the corresponding Composable AI model in a way that is connected to everything already existing in the Composable AI ecosystem.

Composable AI, connected through an ecosystem, is a collection of shared AI resources that benefits the entire organisation.



## What's Required to Succeed with AI

To create maximum value from AI, a hyper-integrated business is needed and this involves unifying systems, data, processes, insights and analytics. In doing so, Composable AI is able to network across the organisation.

Some of the foundational elements that are key to Composable AI success, and, frankly, any AI adoption, include:

Data sources need to be identified and their governance understood. Who controls the data and how it is being used? How might it change? How might such changes impact AI implementation?

Data preparation. Quality data is important for accurate and timely results so the implementation process might include an audit of data quality and, if needed, efforts to ensure data is clean, accurate, and consistently present.

Data pipelines that are automated, from the ingestion of the data through to the sharing of the data between AI projects, and its preparation and cleansing of the data throughout, ensures data and actionable insights are accurate and up to date in real-time across an organisation.

Developing models. Al and ML depend on ingesting enough data, with the right characteristics, to prime the system for work. This will often be all or part of a data set with which the Al is intended to function.

A BI platform to quickly access timely information about all your organisation: from top-level KPIs to data quality and volume, including everything related to specific insights and fostering a data exploration and analysis practice that will eventually lead to trusted data-driven decision making, paving the way for AI to be finally introduced as a central element.

Xiatech's Xfuze platform provides these data management capabilities in its Composable AI solution, along with the ability to interact and visualise the outputs of AI projects through a single portal, along with advanced insights and analytics.



## The Value of Composable AI

Composable AI is the best way to create value from your AI investments. It enhances speed to market and incrementally improves the value delivered by AI. This is so because once the first AI model is in place, all of the functionality and tasks that are common to all Composable AIs will not need to be implemented for subsequent Composable AIs (software, data and BI infrastructure, data connections, etc).

Furthermore, because Composable AI maximises flexibility, it is much easier to shift and refine the capabilities of AI while in motion so that the organisation can seize opportunities and steer clear of risks: Als become components that can be plugged in or out according to their performance and the latest business needs. It ensures that the organisation is fully prepared for changing market conditions and ready to seize new opportunities, while optimising the operational costs of AI.

Because of all that, Composable AI also generates a quick payback. Once the foundation of Composable AI is in place, incrementally adding AI models not only provides new AI capabilities, the total cost of each AI quickly decreases as business value is generated from the initial and proceeding investments so organisations witness a faster overall AI payback than with Isolated AIs.

#### Last but not least,

Composable AI is aligned with modern IT thinking by being modular and flexible, able to integrate and build on the best available data and technology, while giving the business the agility to adopt AI that delivers results in an ever changing environment.

An article in <u>The AI Journal</u> noted that 2023 was the first year that Composable AI surpassed platformbased AI as the preferred approach among a surveyed group of manufacturers. This implies a small but significant revolution in how deployment is conceived and implemented. Rather than being held hostage by a highly linear process, often signified by the "waterfall" development approach, Composable AI invites continued innovation and integration on an ongoing basis. That means, companies no longer have to risk an innovation becoming obsolete before it is implemented and it spells an improvement in time to value.

Xiatech, building its approach to Composable AI on its modern all-in-one Xfuze Hyper-Integration Platform, gives customers the capability to integrate AI/ML resources with each other, and with any other IT resources. It is an approach that pulls back the veil to reveal AI as it should be: Adaptable, integrated, accessible and more productive from day one.

With Xiatech's Xfuze Hyper-Integration Platform, customers can integrate multiple AI models enabling them to collaborate across a complex ecosystem of technologies, data and processes.



To learn more about Xiatech, Xfuze and Composable AI, visit https://www.xiatech.io/composable-ai or contact us via the website

to schedule a call to hear how to get started with Composable AI.

In the meantime, we have provided answers to frequently asked questions that may interest you.

## **Frequently Asked Composable AI Questions**

1. What are the common steps to deliver each Composable AI solution?

We have provided a step by step journey of how each Composable AI model is deployed through an ecosystem. This can be found on page 6.

2. How do Composable AI models decide which data they will use when training and optimising themselves?

Each Composable AI model contains a dictionary of all possible features it could use to function, with some of them being compulsory and others optional. Some of the optional features might be outputs from other Composable AIs. In this case, both the Composable AI outputting data as well as the Composable AI receiving contain mechanisms to measure how trustworthy that information is (what is the likelihood to be erroneous, how complicated was to produce that piece of information, etc), so the receiving Composable AI can make a decision on whether to use it or not. The overall aim is to re-use the good information being produced from Composable AIs, while avoiding errors to be propagated across the Composable AI ecosystem.

3. How do Composable AI models avoid errors to be propagated into other Composable AI models that will utilise their outputs?

Composable Als produce all types of outputs that are then published into the Composable Al ecosystem for other Composable Als to reuse if they want to. One caveat of this is that, as all Al systems, Composable Als might be producing erroneous results from time to time. In order for these errors not to be propagated across the Composable Al network, every piece of data being produced by Composable Als has a confidence or reliability score. These scores will help other Composable Als determine whether to use that piece of data or not.

#### 4. Can Composable AI work if only a subset of data is available?

Each Composable AI model contains a dictionary of all possible features it could use to function, with some of them being compulsory and others optional. As long as all compulsory features are available, the Composable AI will be able to run. However, the more optional data is plugged in, the better the performance of the Composable AI is expected to be.

#### 5. What's the ideal time range of historical data to be used in Composable AI models?

A typical rule of thumb is that two years is the ideal amount of data needed to spot different behavioural traits elongated over time as well as seasonality and holiday patterns. However, that is not a hard requirement for any Composable AI to work. We just expect performance to increase as more historical data becomes available. That said, one important caveat is that sometimes past data might be misleading in periods of extraordinary uncertainty such as a global recession or pandemic, or a large-scale conflict. In those cases, it becomes necessary to either reduce the noise related to those extraordinary events, or neglect that time period entirely.



#### 6. Can Composable AI work outside of Xfuze?

Yes but it would cost a lot of money because most platforms in the market don't have the full suite of capabilities such as found in Xfuze, which features system integration, data management, business intelligence, advanced analytics and process automation.

#### 7. Can Xfuze deploy any AI model?

Yes, we can deploy any AI model including Gen AI on the Xfuze platform. In addition, thanks to Composable AI, the Gen AI model becomes connected to other AI models, and, using Xfuze, is accessible across the organisation. By connected, we mean that any other model in your Composable AI ecosystem can utilise the outputs of your Gen AI implementation model. Likewise, Gen AI can benefit from the models currently deployed through the Composable AI ecosystem.

#### 8. What are the investments needed to go live with Composable AI?

Very little if you embrace Xiatech's approach to Composable AI and use its Xfuze platform. Generally, with any AI project, there are a number of investments required to develop, test, deploy and maintain each Isolated AI model and these include a data lake, devops infrastructure, a training / optimisation pipeline and an inference pipeline. You also need people including a data scientist, a machine learning engineer, a data engineer, a devops engineer and a business analyst. By embracing Composable AI, and using Xiatech's Xfuze platform, you don't need to buy and maintain the technology investments, which in the future will be shared across all Composable AIs, and the only people cost might be a data scientist if you don't want to use Xiatech's experts. In other words, the fastest way - and the most cost effective way - to deploy Composable AI is to leverage a solution provider such as Xiatech.

## **About Xiatech**

Xiatech shortens time-to-insights, accelerates digital transformation, and extends the value of legacy technology investments by providing organisations with Xfuze, the world's first ML-powered composable Hyper-Integration Platform that innovatively connects systems, creates a single view of data and delivers actionable insights in one solution. To learn more about how organisations are quickly generating results in weeks, visit **www.xiatech.io** or our **Xfuze Showplace**.

