

TREDENCE

— Beyond Possible —



THE COMING COLLISION

MAXIMIZING BUSINESS IMPACT WITH GENERATIVE AI

Value Creation in Healthcare and Life Sciences,
• While Avoiding Spiraling Model Costs •

Introduction

Chief data and analytics officers at healthcare and life sciences organizations have a vision for how generative AI can transform critical front- and back-office processes. Some 56% of US healthcare executives have either developed a generative AI strategy to date, are working on one, or plan to do so.¹ Similarly, nearly half (46) percent of their life sciences counterparts have created a vision for using generative and predictive AI to transform key business processes.²

High-value use cases for providers and payers include using generative AI to improve clinician productivity, streamline patient and member interactions with contact centers, automate back-office processes, detect fraud, and personalize marketing. Life sciences companies can deploy generative AI solutions across drug development, manufacturing, and commercialization or with patient-facing processes, such as health education, symptom triage, and disease management. Medical technology companies can leverage comparable processes to develop new devices and bring them to market. And insurers can use generative AI to create unique member records, develop high-value segments, and personalize communications.

To capitalize on generative AI, these industry organizations must migrate and modernize data and create a structure that scales cost-effectively. Healthcare, life sciences, and medical technology CDOs have often gotten a rude awakening as they pilot generative AI solutions. It's not uncommon for a \$200K generative AI pilot to end up costing \$1M or more due to the cost of data wrangling and computing required to train and operate models.³ Answering a single query with generative AI can cost up to 1,000 times more than a comparable Google search.⁴

Healthcare organizations operate under value-based care models, where they are rewarded for providing quality care at a lower cost point. In contrast, life sciences and medical technology companies must amortize R&D budgets across multiple initiatives and cost-effectively manage drug or medical device development through years of trials and regulatory reviews. Thus, controlling generative AI costs and reaping sizeable ROI on these investments will be critical to industry organizations' ability to extend this innovative technology across their businesses.

¹ Aaron Feinberg, Eric Berger, and Rebecca Hammond, 2023 Healthcare Provider IT Report: Doubling Down on Innovation, Bain, September 12, 2023, <https://www.bain.com/insights/2023-healthcare-provider-it-report-doubling-down-on-innovation/>

² Mahmood Majeed and Asheesh Shukla, "Life sciences backs generative AI to drive value in 2024," report, ZS.com, December 7, 2023, <https://www.zs.com/insights/life-sciences-technology-leader-insights-generative-ai>

³ Interview with Tredence generative AI expert.

⁴ "AI's Cost Curve Has Big Tech Losing Money," article, Pymnts, October 12, 2023, <https://www.pymnts.com/news/artificial-intelligence/2023/ai-cost-curve-has-big-tech-losing-money/>

Conquering Challenges to Reap Value with Generative AI

Healthcare, life sciences, and medical technology organizations face the following challenges as they seek to exploit generative AI's abilities to create new business advantages:



Data is trapped in silos

Data is locked in legacy systems, often due to multiple mergers and acquisitions, which result in overlapping technology. As a result, teams lack a single version of truth for patient, clinical, device, and other types of data. They may spend excessive time gathering, integrating, and preparing data for analytics and other purposes.



A wide array of regulations governs core business processes

Healthcare, life sciences, and medical technology organizations must abide by relevant regulations, such as the Health Insurance Portability and Accountability Act (HIPAA), which requires that covered entities and business associates safeguard the privacy and security of PHI. Other regulations governing business and operational processes include the 21st Century Cures Act, Clinical Laboratory Improvements Amendments, Health Information for Technology and Climate Act (HITECH) Act, Medicaid and Medicare, and US Food and Drug Administration, and more. Penalties for non-compliant practices and data breaches can be severe.



Large-language models may hallucinate answers

Hallucination refers to any model output that cannot be inferred from the underlying data set. It includes content that is nonsensical and demonstrably false; content that is untruthful but may be hard to detect as incorrect; and answers that are accurate but are not derived from source data. A recent study found that LLMs may hallucinate between 3-27% of the time, depending on the model.⁵ Hallucinations can be hard to discern, confuse users, and cause them to make bad decisions based on faulty answers.



Generative AI programs require strong governance

Generative AI's challenges are well-known. Healthcare organizations need to implement strong governance to ensure models are free from hallucination and bias before they are used to optimize processes. Similarly, these organizations will want to monitor models to prevent drift.

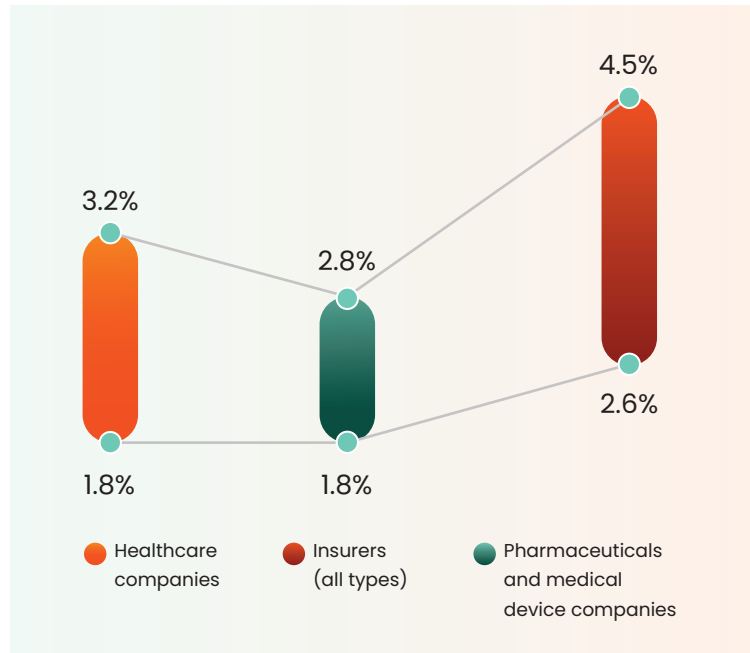
Governance also protects data and model output from misuse, safeguarding healthcare organizations' valuable insights and intellectual property.

⁵ Cade Metz, "Chatbots May 'Hallucinate' More Often Than Many Realize," article, New York Times, November 6, 2023, <https://www.nytimes.com/2023/11/06/technology/chatbots-hallucination-rates.html>

Reap More ROI with **Generative AI**

Migrating and modernizing data enables industry organizations to improve data access, quality, and usability, empowering teams with the data and insights they need to innovate and optimize processes. It creates a solid data foundation for analytics and AI activities while strengthening compliance with all relevant regulations.

By migrating and modernizing data, enabling use cases with generative AI, and creating a structure that scales, industry organizations can create a dynamic flywheel of process optimization. Leaders can expect to achieve the following revenue gains:⁶



Use This Roadmap to **Galvanize Growth with AI as a Service**

Ready to get started? Here's how your industry organization can accelerate progress toward driving value with generative AI.



1. Migrate and modernize your data

Tredence will hold a discovery workshop with your team to determine the current state of your data architecture and prioritize top business and analytics cases based on data readiness and business value.

We then work with you to finalize all functional and non-functional requirements and create the technical architecture plan. Next, we develop the governance strategy, data model, and data pipeline teams need to build analytics and AI and ML models. The data is ingested, harmonized, and progressively improved in bronze, silver, and gold zones. As a result, business users gain a single version of data truth and curated data sets at their desired level of quality to use for analytics, reporting, process optimization, and innovation.

⁶Michael Chui, Eric Hazan, Roger Roberts, Alex Singla, Kate Smaje, Alex Sukharevsky, Lareina Yee, and Rodney Zempel, The economic potential of generative AI: The next productivity frontier, report, McKinsey, June 2023, page 25, <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#/>



2. Discover your generative AI journey

Tredence will help you prioritize high-value use cases and perform a comprehensive fit-analysis to assess the current state and determine the necessary steps to bridge the gap between existing capabilities and desired outcomes. You gain a generative AI roadmap, customized architecture, and ROI-driven use cases within four to six weeks.



3. Develop a minimum viable product (MVP)

Next, Tredence will work with you to develop an MVP that will showcase generative AI's potential for transforming critical use cases, to provide rapid support and gain broad-based stakeholder support for the technology. This process includes using Figma to craft use-case designs; setting up cloud instances; and executing, deploying, and validating generative AI models. You gain a production-ready MVP within 10-12 weeks.



4. Scale your MVP

Tredence will work with your team to extend your MVP to broader business processes and integrate it enterprise-wide. We use best-in-class MLOps and LLMOps processes to enable continuous monitoring of models and optimize their performance. We also facilitate change management, allowing your team to transition easily to new processes.



5. Leverage AI as a service

You could build, manage, and monitor models, but why not use a partner's skills and services to scale faster and reap more ROI?

Tredence provides a lab and factory model with tools, analytics, and people; end-to-end ownership of generative AI capabilities from conception to production; and one-touch managed services. Our teams possess all relevant skills, such as data science and engineering, prompt engineering, DevOps, IT, MLOps, and LLMOps.



6. Optimize costs

Tredence provides accelerators and processes to help enterprises reduce LLM costs. We use LLMOps processes to enforce standardization and repeatability across the generative AI lifecycle. We work with clients to select the right foundation models for each use case; automate data pipeline processes; simplify model design; and provide prebuilt, pre-trained domain-specific models that speed time to value.

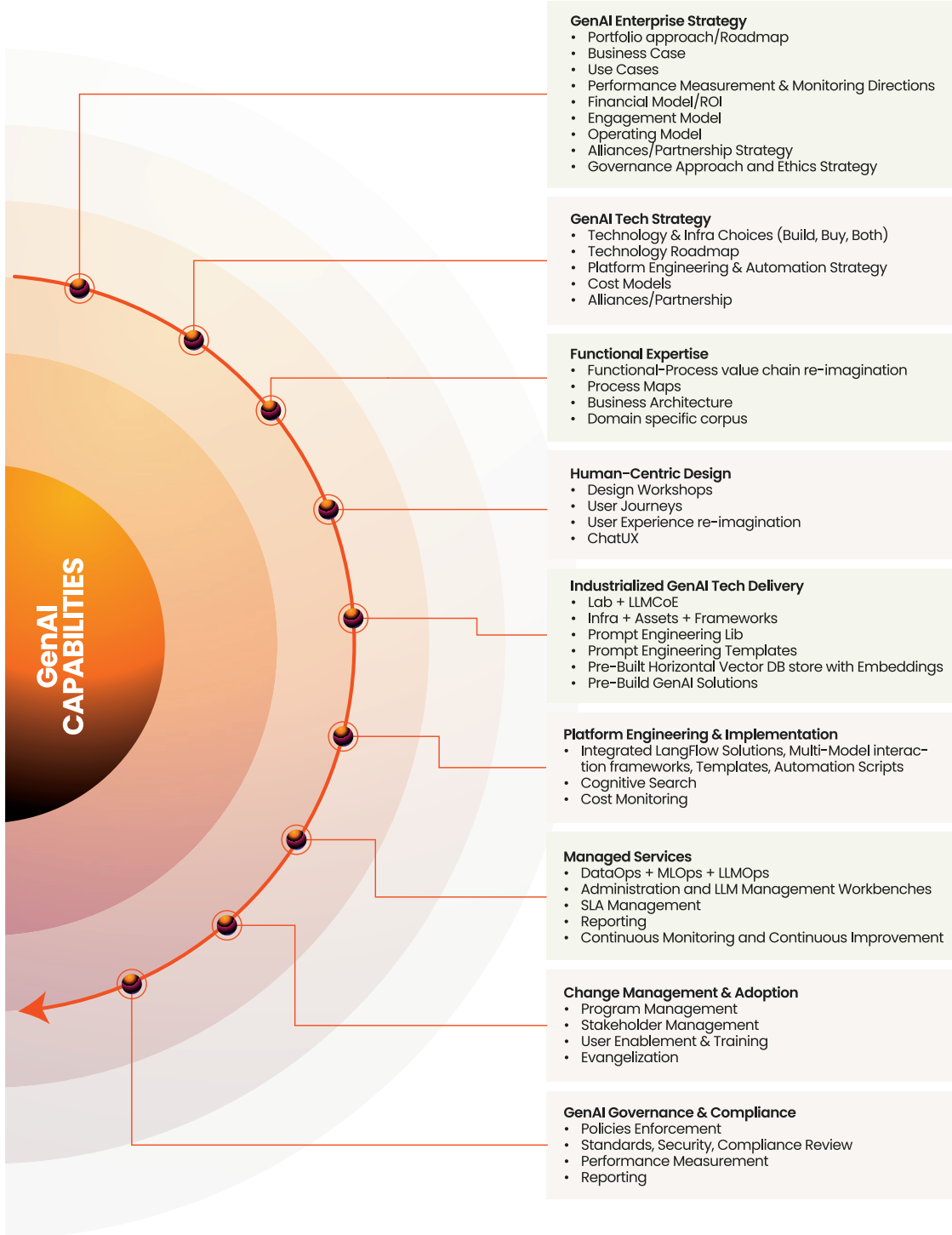


7. Planning for change management

Tredence provides end-to-end change and stakeholder management, from preparing business cases to implementing appropriate governance, training users, and collaborating with teams to gain high adoption of new solutions.

Tredence Provides Generative AI as a Service

Capabilities to Accelerate Enterprise Business Outcomes



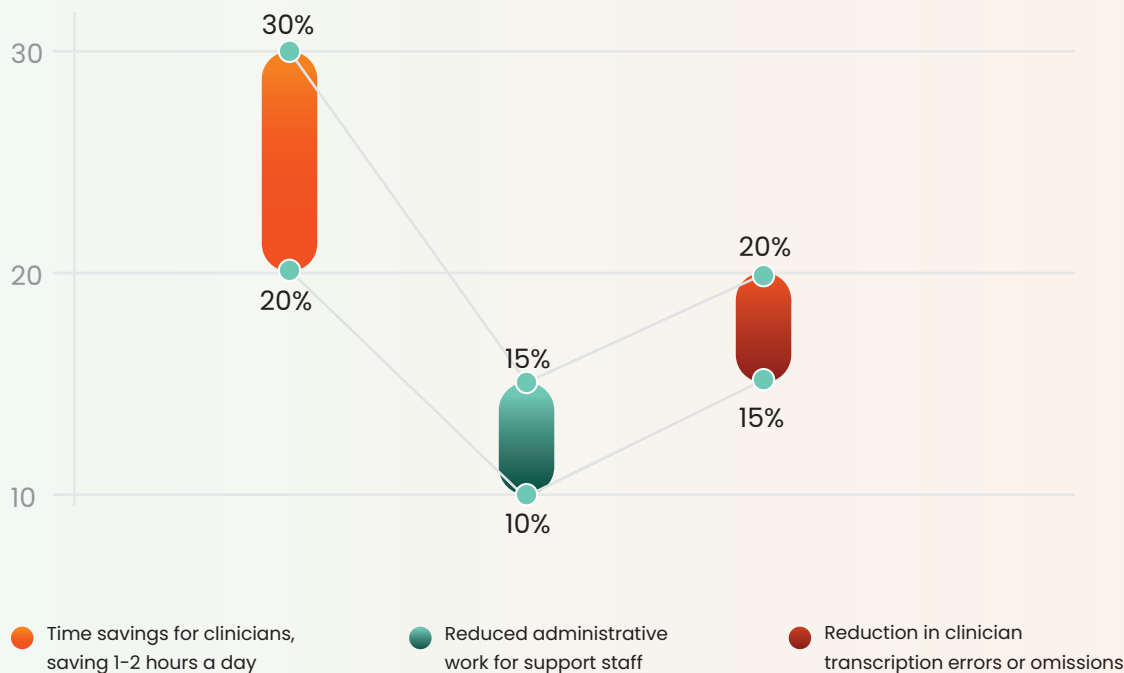
Harness These Accelerators to **Drive Faster Business Value**

Tredence provides ready-to-deploy accelerators to optimize use cases and unlock new business value, empower clinicians to serve more patients and achieve better outcomes, share knowledge and insights across the organization and uncover new business opportunities with generative AI.

Summarizing **Patient-Clinician Conversations**

Leaders at large healthcare systems want to focus clinicians on patient care, not transcribing notes. Generative AI can be used to summarize patient-clinician visits, capturing open-ended dialogue and domain-specific elements, such as diagnoses and treatment medication recommendations, which require medical expertise.

Large language model (LLM) solutions can summarize these conversations, breaking them into categories to develop clear synopses with takeaways and action items. These solutions advance medical knowledge, optimize patient treatment plans, and enhance the standard of care.



Creating **Personalized Care Plans**

Healthcare systems can extend clinician productivity gains by using generative AI to develop personalized patient care plans. A partner can deploy domain-specific data models on LLMs that enable clinicians to enter queries via a chat interface or execute requests via a batch process.

Queries can span multiple patient-clinician encounters. The clinician can ask the LLM solution to synthesize recommended treatment and care

plans from other providers or generate a new care plan based on the patient's current visit.

A proprietary domain-specific data model uses an API to ingest data from systems such as care notes, post-acute care records, electronic health records, and other data sources. Documents are parsed, stored in chunks, and transformed with embeddings. When queried, the LLM sends the best responses to a specialist or fine-tuned LLM, which generates the recommended care plan.



Provide personalized service to patients



Leverage past patient records to craft an optimal care plan

Accelerating **Knowledge Management**

Clinicians research and assimilate data from multiple sources to answer patient questions. Similarly, life sciences and medical technology companies must analyze vast reams of data on clinical and device trials, research studies, and patient records to identify white space for innovation and speed the development of new products.

These companies can build domain-specific Q&A systems on LLMs, where users can ask questions, and the systems will automatically respond with relevant answers.



Save time for clinicians and R&D and product teams



Improve the user experience



Focus experts on high-value analytical work

Developing Knowledge Graphs

Healthcare companies are turning to knowledge graphs to visualize data and relationships more easily, speed time to insight, and make critical decisions. With generative AI-powered knowledge graphs, data can be queried to create interconnected visual results that are more accurate, relevant, and comprehensive than traditional relational database results.



Streamline data integration, standardization, and entity and relationship definition



Automate knowledge graph modeling and creation

Success Stories

See What Your Peers are Achieving with Generative AI

Here's how leading healthcare, life sciences, and medical technology organizations are using generative AI to transform key business processes.

Large Senior-focused Health @ Home Company

Harmonizing Member Data

Creating a golden record of healthcare patient data is challenging, given the fact that patients see multiple providers. Providers need to be able to definitively identify patients and capture all variations of their personally identifiable information (PII), such as names and contact details, to streamline insurance billing and claims disputes.

With a hybrid solution that uses AI models and business rules to review member data, this senior medical care company can authoritatively identify unique individuals and find all variations of core PII elements. The solution drops duplicate records across millions of data points, normalizes data formats, identifies missing data, and uses similarity matrices to match unique records.



33% reduction in ER (Emergency Room) visits



>40% improvement in MLR (Medical Loss Ratio)



>50% neighborhood engagement



95% patient satisfaction

Leading U.S. Biopharmaceutical Company

Identifying Medical Insights and **Mapping Key Opinion Leader Networks**

This leading biopharmaceutical company had access to rich, disparate unstructured data sources. However, identifying insights was labor-intensive, requiring extensive manual work. Medical strategy teams had to read through reams of text to identify new patterns in healthcare plan (HCP) leader sentiment.

The medical strategy team wanted to interact with the most influential key opinion leaders (KOLs) and digital opinion leaders (DOLs) at HCPs who could amplify awareness and understanding of the biopharmaceutical

company's products in the healthcare market. Identifying these KOLs/DOLs and their networks and subnetworks was an added challenge.

Tredence developed a natural language processing (NLP) platform that consumed unstructured data from disparate sources and generated insights for the company's medical affairs teams. The team deployed key NLP use cases to identify changing patterns in HCP insights and improved KOL/DOL tracking and regulatory compliance.



Eliminated **80%** of manual work with automation



Medical insights generation through analysis of **20K+** MSL notes and **50K+** scientific publications



Increased volumes of KOLs by **10%**



Set Structure with **Tredence** – then Scale

Tredence solves last-mile challenges with data science and AI, closing the gap between creating insights and unlocking their full value. We provide the expertise, services, tooling, and partnerships that healthcare, life sciences, and medical technology organizations need to succeed with generative AI.



Provides full-spectrum generative AI skills

Tredence offers unrivaled expertise across the entire generative AI value chain, including LLM engineering, development, and operations; and platform engineering capabilities.



Offers domain and industry-specific expertise

Tredence combines data and AI strategy-setting and execution with healthcare analytics, demand forecasting, marketing technology, revenue growth management, supply chain, and other capabilities. We integrate these domains and industry insights to help enterprises crack the generative AI code, deploying new solutions that will unlock significant value.



Delivers generative AI accelerators

Our accelerators can be deployed within weeks, providing rapid results, and helping enterprise teams create a culture of innovation and value discovery. We provide knowledge management, patient and member experience management, software development, and other accelerators.



Detects hallucinations

Building on industry best practices and academic research, Tredence has developed a methodology to detect hallucinations and isolate problematic text in responses. The methodology leverages retrieval augmented generation (RAG), natural language inference (NLI), and the integrated gradient method to provide an overall confidence interval score in answers, identify hallucinations, and highlight correct and incorrect text. This approach enables users to leverage trustworthy responses while also alerting LLMops teams to the need to finetune model responses.



Providing access to our ATOM.AI ecosystem

ATOM.AI, our intelligently engineered accelerator ecosystem, significantly reduces development time for generative AI pilot projects, enhancing efficiency and speed-to-market. We partner with hyperscalers to develop healthcare solutions that speed time to value and speed to scale.



Galvanize Growth with Generative AI This Year.

Gain Value in Months. **Scale Results.**

Drive workforce productivity and innovation with a generative AI strategy and plan that will unlock significant value for your firm. By teaming with Tredence, you gain access to skills, technologies, and services to optimize the end-to-end generative AI lifecycle, including experimentation, productionization, and operationalization.

Keep your focus on optimizing service delivery and bringing new drugs and devices to market while leveraging Tredence's AI-as-a-service capabilities to accelerate your path to value. You'll be able to scale models across your business, creating new levels of clarity and control that help you drive revenues and profitability.

Ready to **get started?**

Contact us to schedule a 60-minute discovery call, where we'll learn about your needs, discuss high-value use cases, and quantify the ROI you can achieve by using generative AI to transform critical workflows.

About Tredence Healthcare & Life Sciences Vertical

We are a HITRUST certified, choice partner to 6 of the top 15 HLS majors. Our solutions manage 7M+ lives, process 100M+ clinical/claims records and enable breakthrough results across hyper-personalized member engagement, value-based care, pharma supply chain and manufacturing resiliency, supporting industry leading healthcare & life sciences enterprises, HealthTechs and BioTechs.

About Tredence Inc.

Tredence is a global data science and AI solutions provider focused on solving the last mile problem in AI. The 'last mile' is the gap between insight creation and value realization. Tredence is Great Place to Work-Certified, recognized as a 'Leader' in the Forrester Wave for Customer Analytics Services, and honored as Partner of the Year by Databricks in 2023 & 2022, as well as by GCP in 2023 and Microsoft in 2022.

Tredence is 2,500-plus employees strong with offices in San Francisco Bay Area, Chicago, London, Toronto, and Bangalore, with the largest companies in Retail, CPG, Hi-tech, Telecom, Healthcare, Travel, and Industrials as clients.

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