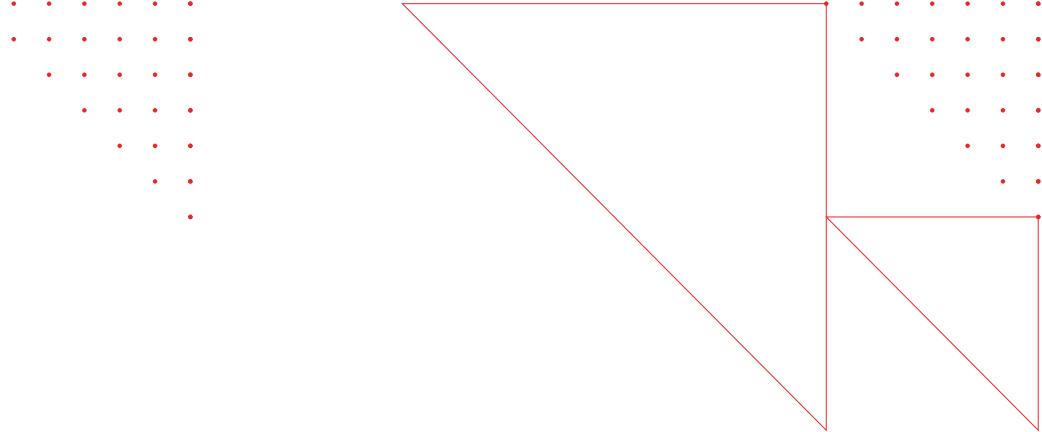





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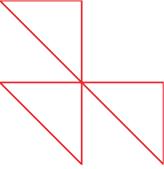


Elevate your Software Solutioning game with Generative AI

Leverage DesignMate to reduce the design
cycle time by 30%

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Korde, Praveen Krishna T, Deesha Chaware





Inefficient and extended Software Solution Designs (SSD) lead to missed deadlines, and increased costs

Solution design is a key phase in software development, outlining product architecture and requirements. Solution Design falls under innovation, which receives **20%** of the technology budget in leading organizations. [Report](#)

Such a high budget is attributed to the inefficiencies in the SSD creation process.



Challenges in SSD creation

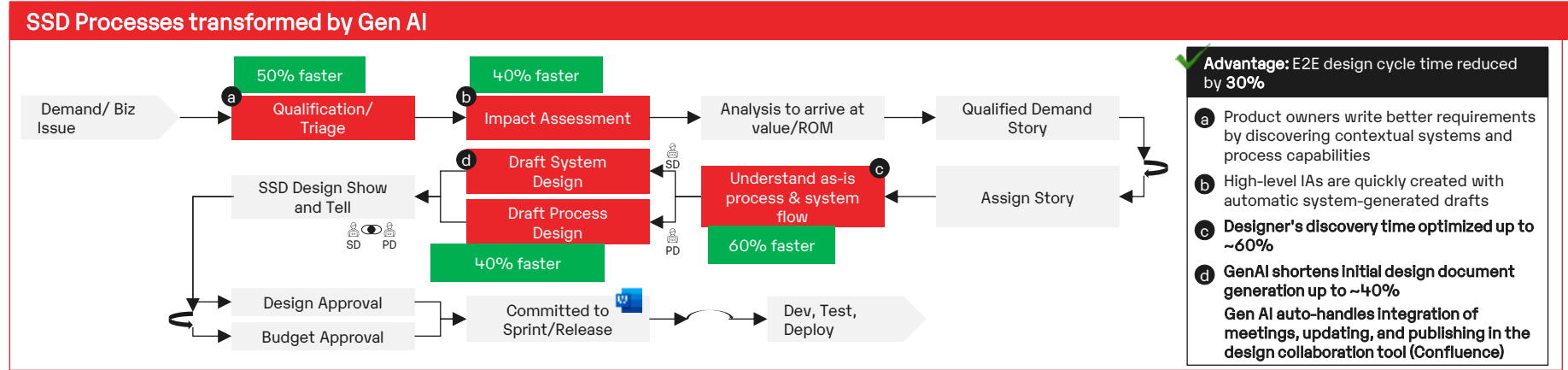
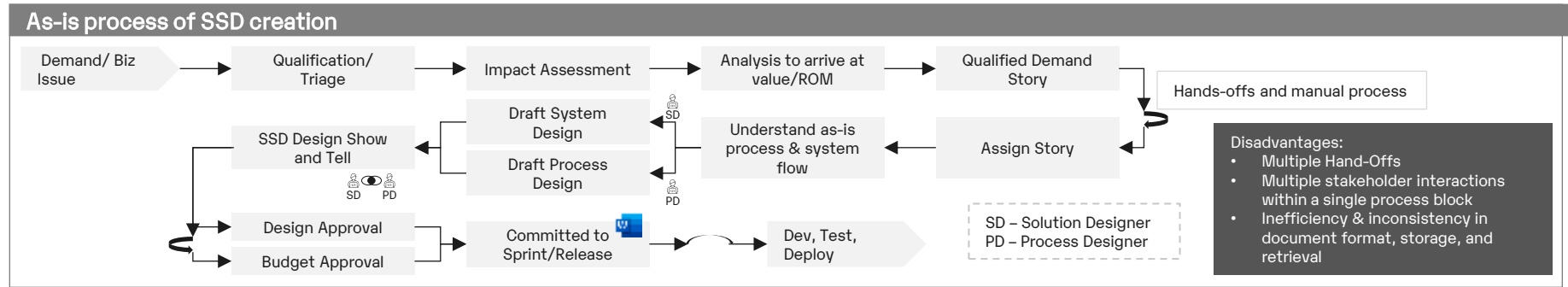
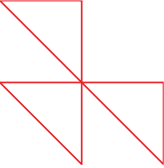
- Knowledge Fragmentation:**
Design info is scattered across formats and systems, causing inconsistencies.
- Knowledge Concentration:**
Reliance on a few experts creates bottlenecks & risks if they are unavailable.
- Technology Evolution:**
Frequent tech changes outpace manual design methods.
- Inconsistent Quality:**
Manual designs are prone to human error, leading to inconsistencies.

Impacts

- ~15 -20%** increase in time-to-market due to delays in design retrieval and inefficient design processes
- 26%** more project delays are experienced by organizations with high dependency on key individuals

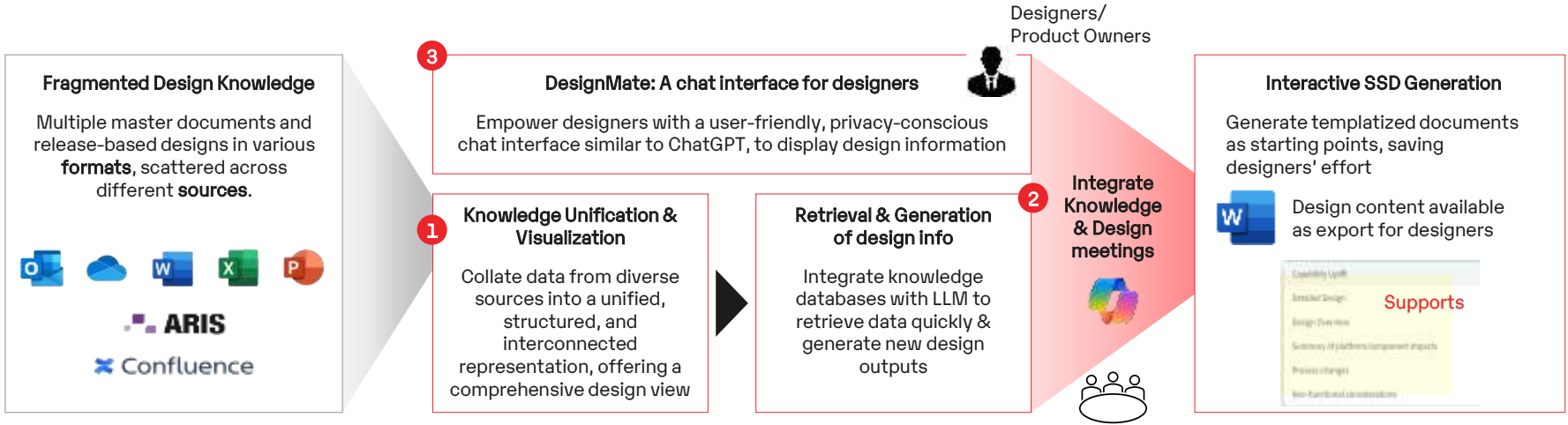
Generative AI can revolutionize the software development lifecycle across various phases, including requirement analysis and design phase, enhancing employee productivity and accelerating time to market for software products.

Revolutionize Solution Design with Gen AI to accelerate knowledge gathering, retrieval, and content generation, cutting the design cycle time up to 30%

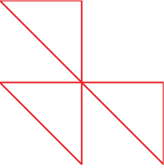


Adopt the DesignMate Framework powered by Generative AI for an interactive and standardized automated SSD generation

Key components of DesignMate: Use a systematic approach to understand user demands, retrieve relevant data, conduct impact analysis, and generate tailored solution designs.



Implement the DesignMate Framework to boost design efficiency up to 30%, accelerate time to market up to 15%, and enable consistent, rapid software releases to maintain a competitive edge.

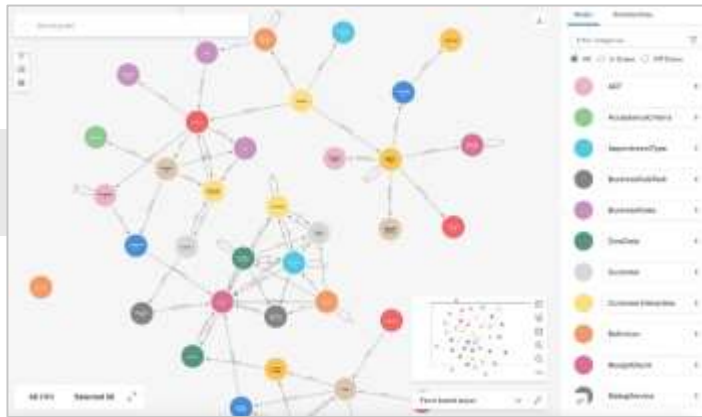


Design Knowledge Unification: Integrate data from diverse sources into a unified, structured, and interconnected representation, offering a comprehensive design view

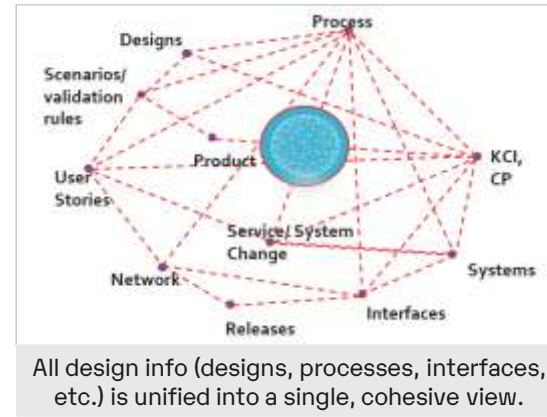
1 2 3

Crucial design data is dispersed, increasing retrieval time by up to **40%**, as service providers often avoid knowledge graphs due to the complexity and need for specialized domain expertise.

Consolidate diverse design information (processes, biz capabilities, n/w, technology)—by identifying key **entities** (product, journey) and establishing **relationships** between them. Create an ontology and store the resulting **knowledge graph**. Use query languages for data retrieval and manipulation and integrate **visualization tools** to explore and present the graph data for interactive experience.



Snapshot of Knowledge Graph



All design info (designs, processes, interfaces, etc.) is unified into a single, cohesive view.

Recommendation

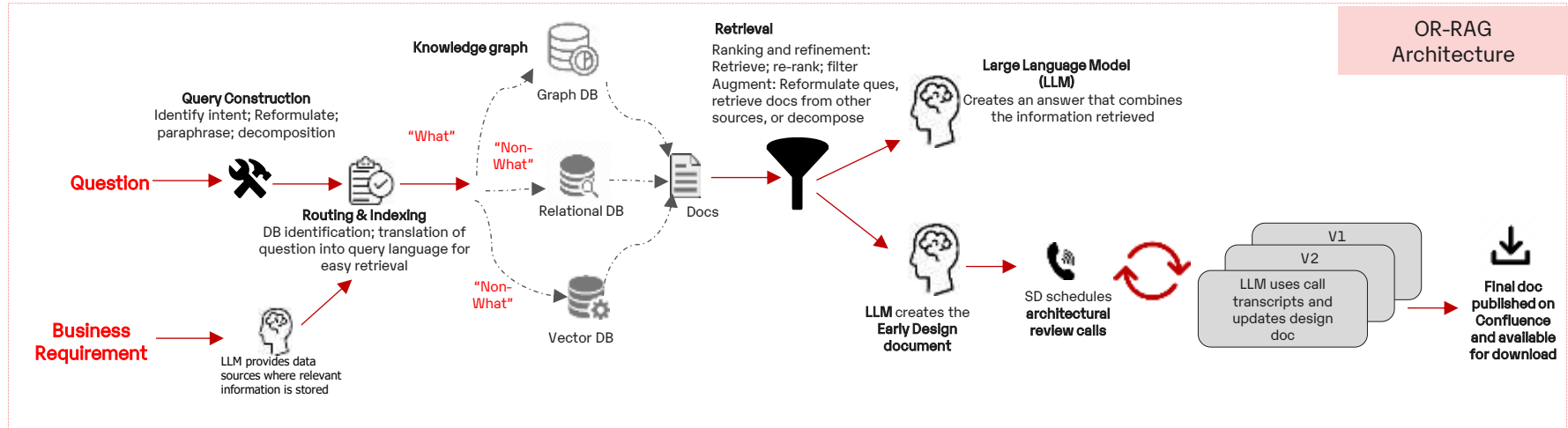
- Choose a **scalable graph database** like Neo4j, Amazon Neptune that can handle large datasets and complex queries efficiently
- Emphasize Reusability by adopting **Flexible Schemas** that can accommodate various data types and structures, making it easier to integrate new data sources; **Reusable Query Engines** facilitating complex queries and analytics

Retrieval & Generation of design information: Integrate knowledge databases with LLM to reduce the discovery time from weeks to a few hours

1 2 3

The As-is process for retrieving information is entirely **manual** and requires **weeks** of back-and-forth between fragmented documents, sources, and stakeholders.

Implement an **Ontology-Relevant Retrieval Augmented Generation (OR-RAG)** Architecture to streamline SSD creation. This system **interprets** demand, **routes** queries to relevant sources (e.g., "what" questions to a Graph DB), **indexes** data, and **generates** documents. Use NLP and advanced indexing for context-aware responses and create **reusable prompt templates** for role-specific content.

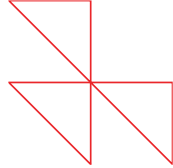


Recommendation

- Enrich documents with **Metadata** and schedule **real-time indexing** for effective search across repositories (Amazon S3, RDS, SharePoint)
- Use pre-built connectors like Amazon Kendra's out-of-the-box (OOB) options to index and search content across various data sources, enabling seamless data integration and retrieval
- Focus factors for high-quality response: Knowledge availability, Retention, Search effectiveness, Result prioritization, Code modularity

Chat interface for designers (DesignMate): Design a user-friendly conversational UI, similar to ChatGPT, to display design information

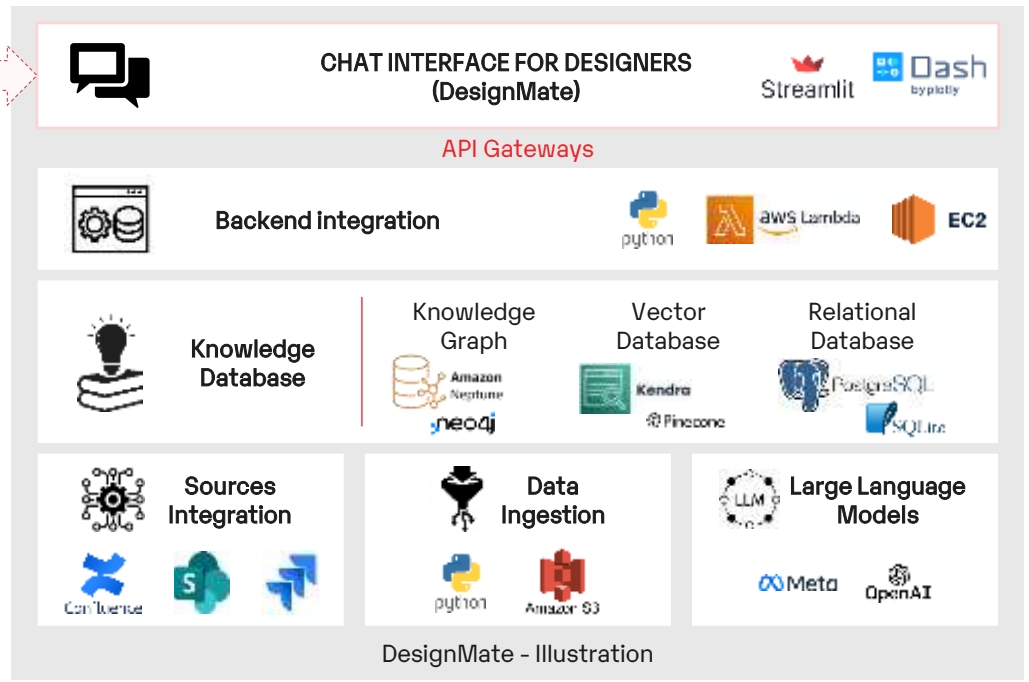
1 2 3



A window for designers to contribute to and influence the designs. DesignMate acts as an assistant to aid the speed of SSD creation.

Create a DesignMate interface in 3 easy steps

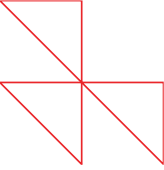
- 1 Develop a simple and intuitive chat UI using web apps & open-source platforms like Streamlit. Perform **backend server integration** to manage communication between the interface and the LLM (integrated with the knowledge database).
- 2 Connect the chat interface to the LLM with **APIs**. The backend processes the LLM's response and sends it to the interface for display to users.
- 3 Enhance the chat experience with **context management**, **error handling**, and **feedback loop**.



Recommendation

- Implement Reusable Functions: Modular functions for repetitive tasks used for e.g data loading, preprocessing, visualization
- Create Reusable Templates and Layouts: Design consistent and reusable layouts using containers, columns, and markdowns

Benefits achieved by a Broadband Network Solutions Provider in the UK by leveraging DesignMate



30 %

Improved design efficiencies with faster design discovery and automated design draft generation.

15 %

Faster Time-to-Market due to streamlined design cycles and accelerated software releases.

30 %

Reduction in design phase cost with optimized resource allocation.



Reusable tools and generic solution



Scalable and standardized design innovation



Improved customer satisfaction

The background is a solid red color. It features several white geometric patterns: a grid of squares with diagonal lines from the top-left to the bottom-right, and a central rectangular area filled with a fine grid of small white dots. The text "Thank you" is centered in the white dotted area.

Thank you