AI-driven Digital Business Design Assistant: A Prototype Demo

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Abstract

Constant and rapid changes in the business environment require companies to transform daily from a business and IT perspective. Managers coordinate this transformation via various design activities: business model design, enterprise architecture management, enterprise design, digital service design, business process engineering and information system design. All these activities can be embraced by the term digital business design. Business/enterprise/domain architects, service designers, business development managers, digital transformation leaders, and business analysts are examples of roles involved in digital business design. The problem is that high-quality business design is time-consuming and requires specialised expertise, often resulting in (semi-)intuitive decision-making. Our AI-driven business design assistant addresses this problem by accelerating business design activities, lowering expertise requirements, and still focusing on high-quality resultant business artefacts. The solution enables easy visual design and collaboration (an app for the Miro collaboration platform), providing a shared repository of objects, a library of reference content (best practices), AI services and method guidance. AI services use a large language model (LLM) and include object extraction from corporate or market data, generation suggestions, and library content selection. Business design experts (e.g. consultants, trainers, lecturers) can customise and extend the tool in a no-code way. The current prototype of the solution is customised for the digital service design and rollout task, assisting the following subtasks: value proposition design, value delivery activities design and IT support planning.

Keywords

Business design, AI assistant, enterprise modeling, intelligent system

1. Introduction

Continuous and fast changes in the business landscape require companies to adapt daily from a business and IT standpoint. Managers guide this transformation through several design tasks, including business model creation, enterprise architecture management, enterprise design, digital service development, requirements engineering, business process engineering, and information system design. All of these efforts fall under the banner of 'digital business design.' Roles such as business, enterprise, or domain architects, service designers, business development managers, leaders in digital transformation, and business analysts are crucial in the realm of digital business design. However, producing high-quality business designs demands significant time and specialised knowledge, often leading to decisions that lean heavily on intuition.

There are many methods and tools which support digital business design activities:

- Methodologies and modeling languages: Archimate, TOGAF, EDGY, ARIS;
- Bodies of knowledge: A *Guide* to the Business Architecture Body of Knowledge® (*BIZBOK® Guide*), Business Analysis Body of Knowledge (BABOK) Guide;
- Templates: business model canvas, value proposition canvas, Lean Service Creation Canvases, customer journey map, service blueprint, etc;

Companies use various IT tools for business design activities:

- Office software: Powerpoint, Excel and Visio from Microsoft and similar software from other providers,
- Diagramming and visual collaboration software: Miro, Draw.io, Licidcharts etc.
- Professional specialised tools: for enterprise architecture management (Mega, ARIS, LeanIX, etc.), business process modeling (Bizagi, Signavio, etc.), prototyping (Figma, Sketch, etc.)

Office software and diagramming and visual collaboration tools are too universal and provide no/limited support for digital business design tasks. Professional specialised tools are expensive, complex and require extensive training.

Also, the existing IT tools do not fully leverage intelligent assistance to support business design (A) and existing domain reference knowledge and best practices (B).

A. Intelligent assistance to support business design is emerging, fragmented and not readily available for potential users. These capabilities are either provided in research papers and prototypes or expensive specialised tools. Also, recent innovations in generative AI are not fully utilized by existing methods and tools. The current research on intelligent assistance is mainly focusing on specific business design tasks: business model design [1; 2], enterprise architecture management [3], business process modeling [4], digital service design [5; 6], information system design [7]. There is also research on Visual Inquiry Tools [8], but it is more general and not business design focused. However, these research results are fragmented and should be integrated and transformed into products, services and training suitable for the needs and capacities of digital transformation specialists.

B. Existing domain reference knowledge and best practices (e.g. industry- or function-specific) is mainly limited to libraries in expensive specialised tools. For example, "The Business Architecture Guild, in cooperation with participating tool vendors, is making downloadable versions of the Industry Reference Models available to authorised members in tool native versions" [9].

So, there is a significant potential to improve current industrial practices of IT support for digital business design activities.

2. Solution

2.1. Solution for final users

We suggest AI-based Business Design Assistant, which includes the following features:
1. **Easy visual design and collaboration**. Standard visual editing (including templates and diagrams) and collaboration functionality of the Miro collaboration platform are used.
2. **Common repository as in professional tools**. Objects and relationships created in one template (canvas or diagram) can be reused when filling a new template. If one object is used in many templates on the board, changes in the object in one place (e.g. renaming) will be propagated into other places.
3. **Library of reusable industry best practices.** Industry and function-specific knowledge is collected, curated and recommended to users. For example, in the food service industry, the following reusable elements were extracted from the existing literature and are suggested to a user:
   a. restaurant service quality items, visitor experience items for value proposition design;
   b. typical restaurant business processes and activities for designing value delivery activities;
   c. restaurant-specific classes of information systems and digital services, their functions and examples of possible software products.
4. **AI assistance**, which includes content recommendations from LLMs, extraction of objects and relations from company and market data, selection of relevant objects from library and repository, etc. Example AI services for two steps from digital service design scenario:

- AI services for the step "Define business processes for delivering product/service": Select suitable reference business processes from the library; Suggest business processes for delivering product/service;
- AI services for the step "Identify new opportunities of IT": Suggest information system classes; Select possible IS classes to support processes from the library;

Prompt templates for LLM are based on the metamodel (description of classes and relations for canvases and diagrams) and method specification (steps, inputs, outputs). Then, the prompt template population is done using instance data from the repository or library.

5. **Method guidance and navigation** define tasks and required steps to accomplish them. There is a description for each step, used templates on the board, inputs and outputs, and available AI services. For example, the method guidance for digital service design and rollout includes the following tasks and steps:
   a. Value proposition design,
   b. Design value delivery activities (business processes),
   c. Define the required IT systems and IT services.

We combine all these components in the app for MIRO (a Visual Collaboration Platform) See figure 1.
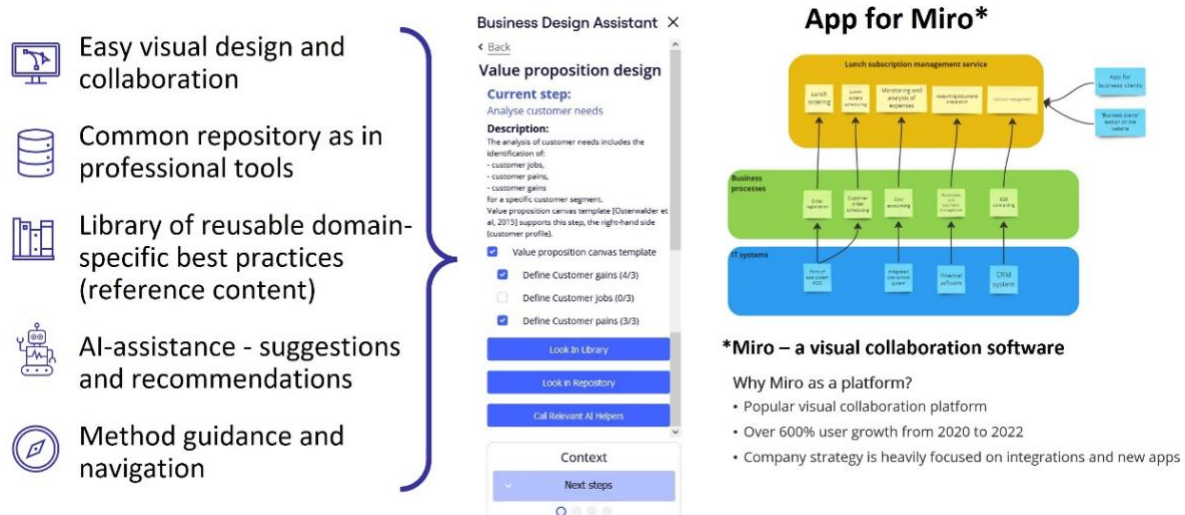

Figure 1. Key features of the business design assistant

2.2. No-code customisation and extension capabilities

The solution provides the following no-code customisation and extension capabilities:
A. Methodology customisation: Add and customise modeling templates, Method engineering, AI services customisation;
B. Metamodel customisation and extension, which describes the repository structure;
C. Library population: user interface for entering;
D. Customization of prompt templates.

These capabilities are optional and can be provided to business design experts such as consultants, trainers, and lecturers – if they want to embed their preferred methodologies into the tool.

The high-level tool's architecture, which also describes the main capabilities of the tool, is demonstrated in Figure 2.
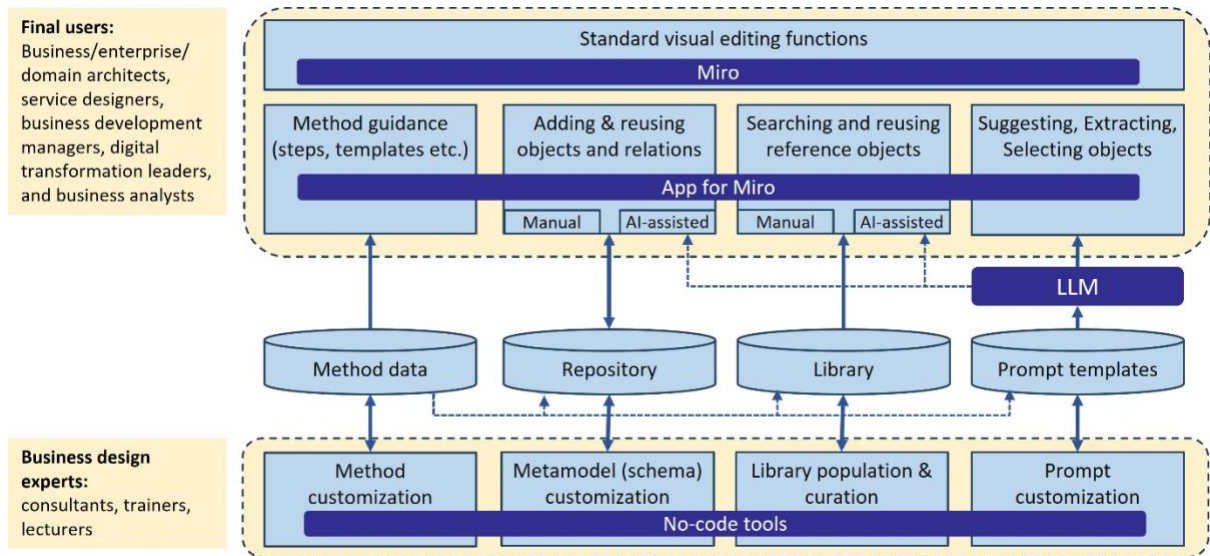
Figure 2. The architecture of the AI-driven business design assistant

3. Conclusions

The AI-driven assistant is suggested to support such tasks as business model creation, enterprise architecture management, enterprise design, digital service development, requirements engineering, business process engineering, and information system design.

Expected benefits from AI-driven digital business design assistant:

- Speed up the design and development process,
- Easy access to the professional level of business design,
- Less risky and justified decisions,
- Learning-by-doing – learning activities are embedded in the design process.

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