Reuse and guidance for generative AI solution development and implementation: knowledge management perspective

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Problem

Generative AI has significant potential to increase the productivity of knowledge work.

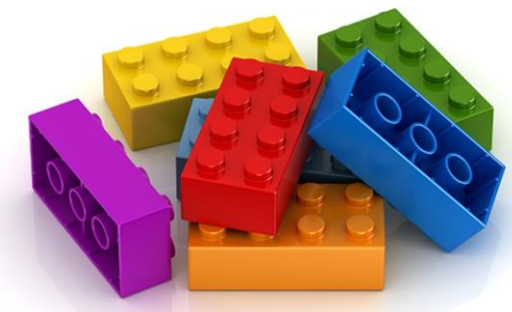However, tangible business value from Generative AI implementation projects is still limited.
"**only 26% of companies** have advanced beyond the proof-of-concept stage to generate value" Source: BCG's report (de Bellefonds et al, 2024).
"Despite $30–40 billion in enterprise investment into GenAI, **95% of organizations are getting zero return.**" Source: MIT report (Challapally et al, 2025).
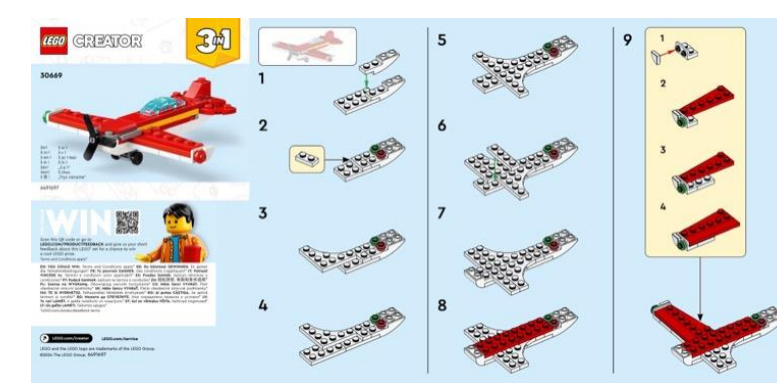
Adopting Generative AI and creating value from it is **especially challenging for small and medium-sized enterprises (SMEs)**, which lack the technical expertise and capabilities to implement GenAI solutions effectively.
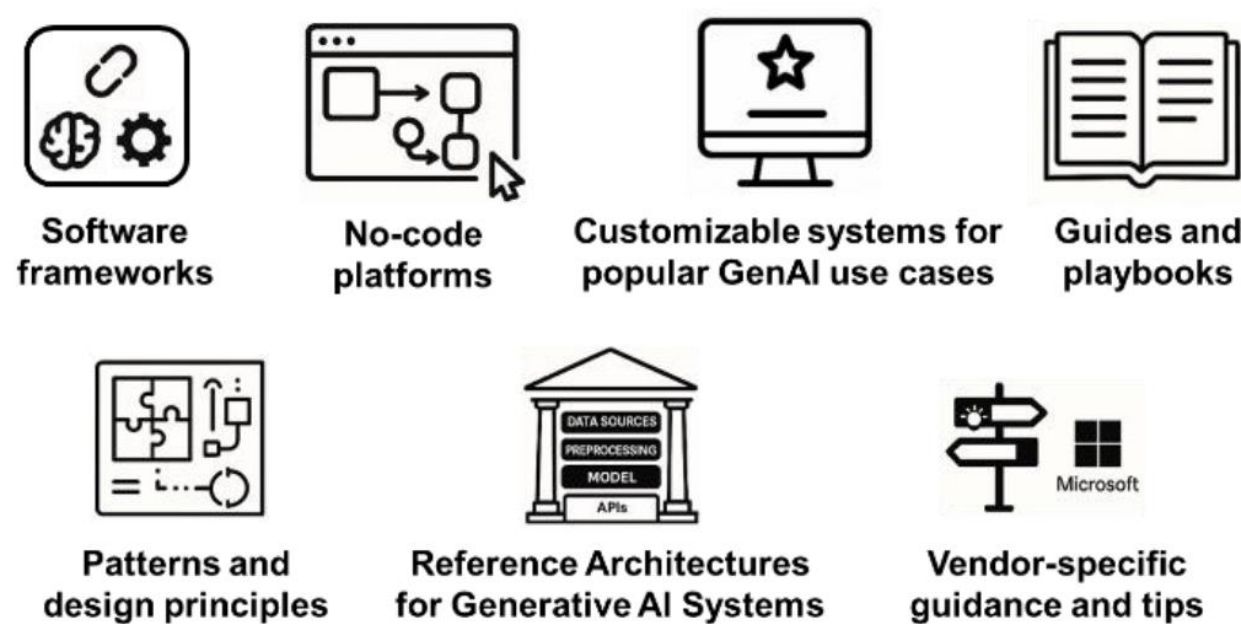
Approach

Building blocks + **Guidelines** → **Real results**

Benefits:
Quicker implementation, Less risks, Less resources, Higher solution quality

Existing approaches and research gap

- Software frameworks
- No-code platforms
- Customizable systems for popular GenAI use cases
- Guides and playbooks
- Patterns and design principles
- Reference Architectures for Generative AI Systems
- Vendor-specific guidance and tips

Limitations:
- Some of them provide lower-level building blocks and require AI expertise
- Some of them are too general,
- Some of them support only fragmented solution types (e.g. customer support chatbots);
- Some of them are vendor-specific (e.g. for Microsoft Copilot and Azure)
- Some of them address only one of the business or technical levels
- Some of them are not publicly available - proprietary solutions from IT and consulting companies.

Knowledge management (KM) perspective may help to improve reuse support and guidance

Knowledge processes as the basis for scoping and structuring GenAI services and solution development

Knowledge services as an approach for specifying the role of GenAI in KM

GenAI solution development & implementation support

Leverage organizational knowledge using GenAI

All the KM enablers should be addressed human capital, processes, technology and infrastructure, governance and culture

Generative AI-enhanced Knowledge Management (GAIK) project – the implementation of this approach

The primary project goal:
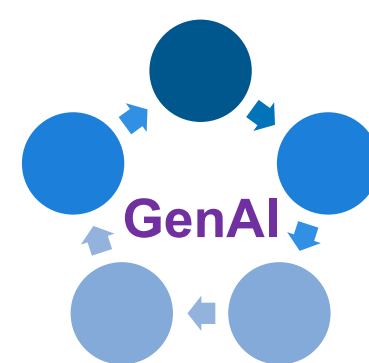Creation of the open toolkit for knowledge-focused GenAI solution development and implementation

Target audience: Small and Medium-sized companies (SMEs)

Timeline: 01.02.2025 – 31.01.2027

Methodology: Action Design Research

Knowledge processes / GenAI

Co-funded by the European Union (EAKR), universities and companies

Co-funded by the European Union

Project consortium:
3 universities and 5 companies
And we are extending cooperation with solution user companies, tech providers and international partners

Haaga-Helia   Tampere University   UNIVERSITY OF HELSINKI

University-Industry cooperation

includes **Research, Development and Innovation**

Target audience of the toolkit:

A. **Managers and/or domain experts with digital skills** (no-code development, vibe coding, GenAI application skills)

B. **IT specialists** with software development and coding skills with limited GenAI experience
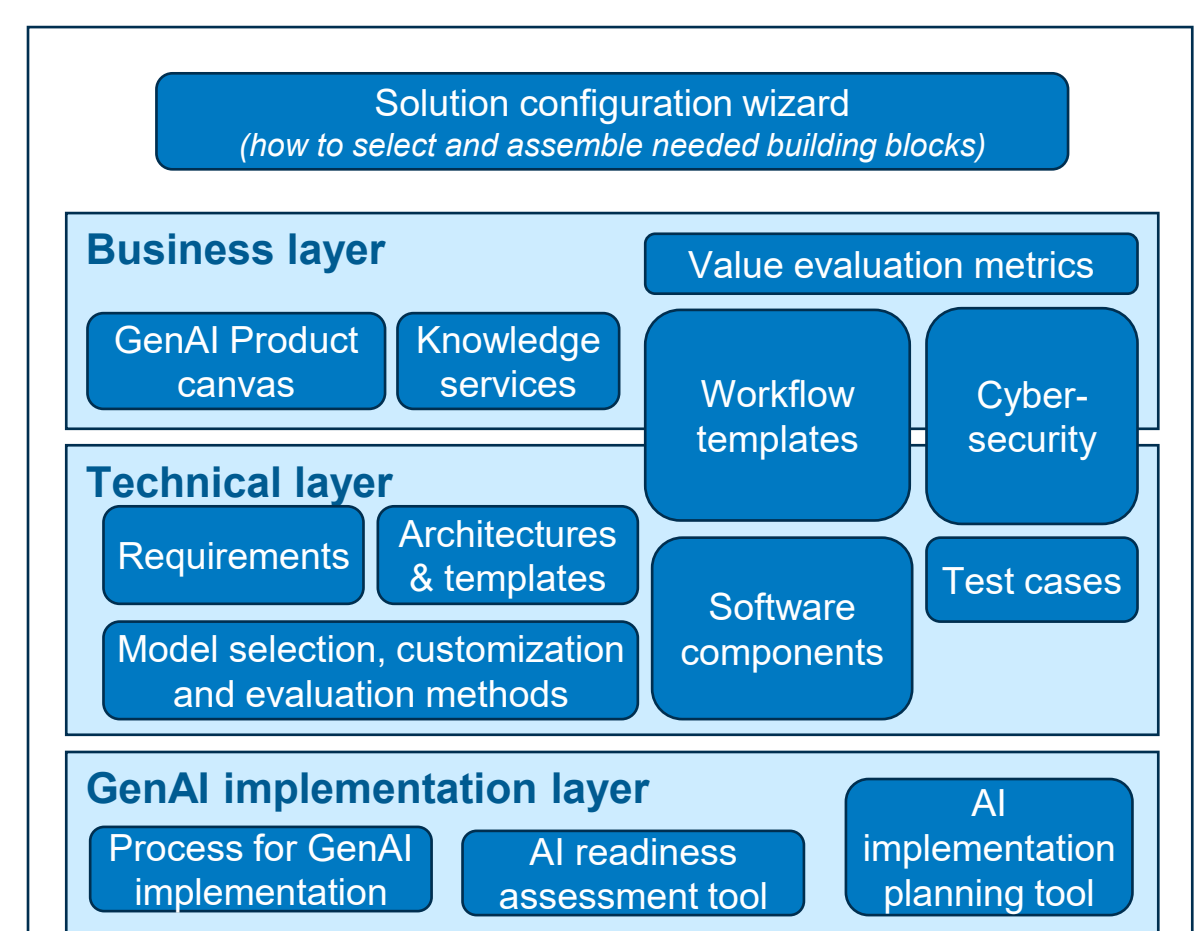
Requirements for the GenAI toolkit

Purpose: knowledge-focused GenAI solution development and implementation
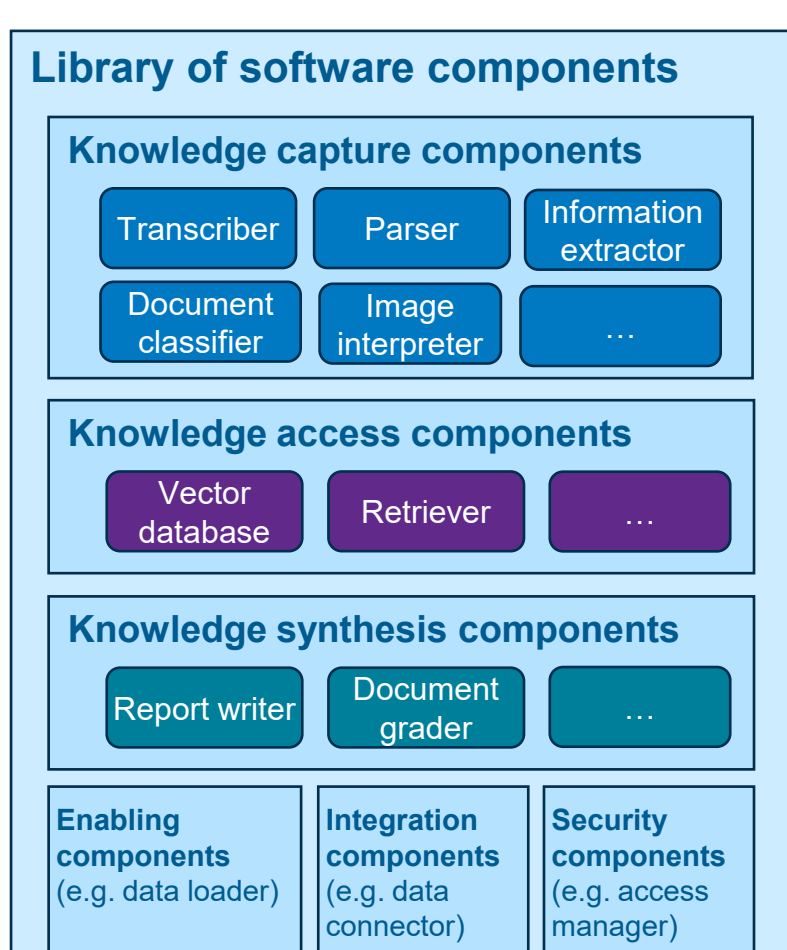
Scope of the GenAI toolkit

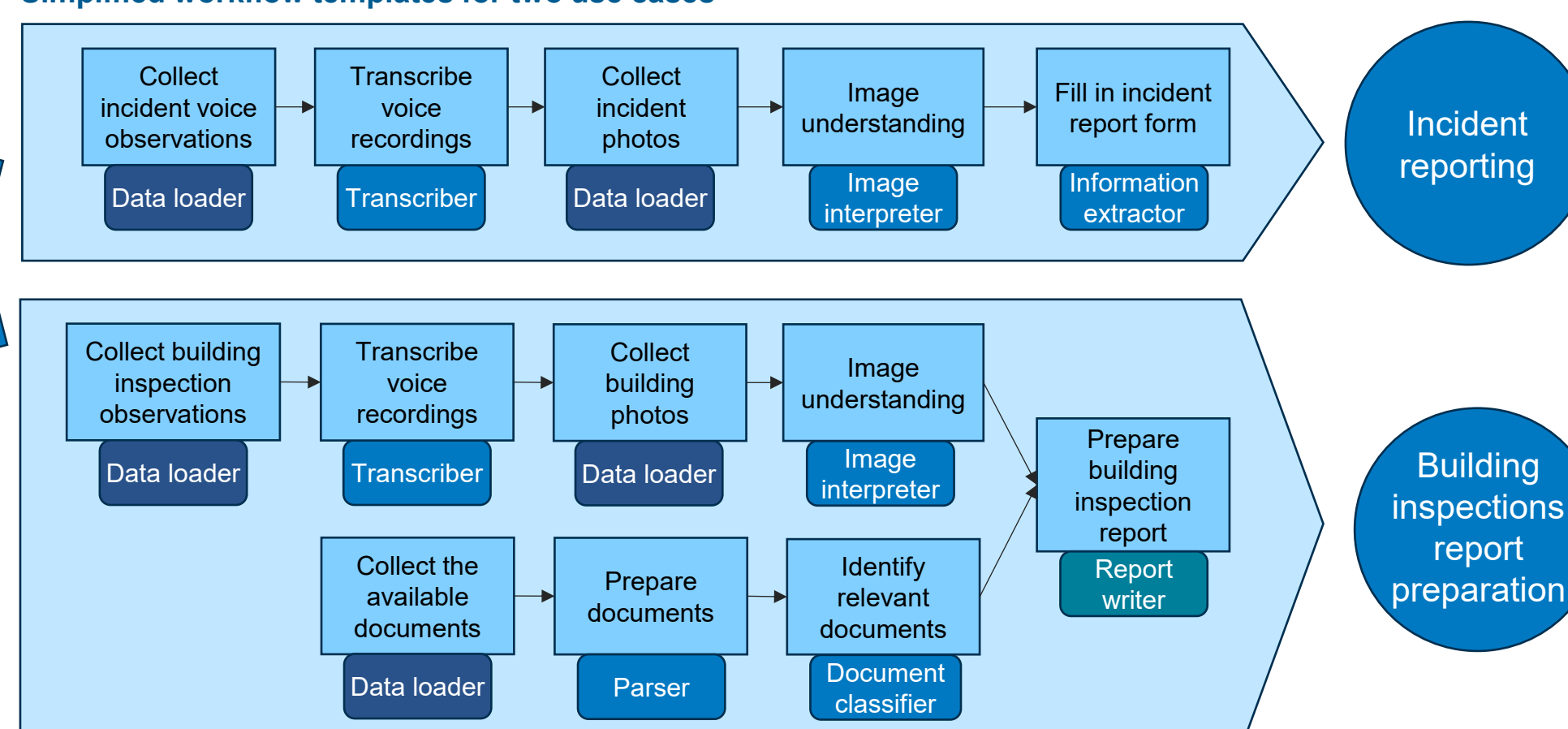| Knowledge process	Generic use cases
Knowledge capture Extraction of needed information from business documents/notes, voice recordings, videos, emails	A. **Incident reporting in industry (e.g. for equipment, buildings)** B. Creating construction site diaries C. Creation of transcripts and closed captions in various languages for instructional videos and podcasts (e.g. for healthcare, construction) D. ...
Knowledge access Intelligent access to organizational knowledge (document repositories, databases, wikis, CRMs)	A. Search and recommendations for audio and video content library B. Customer onboarding and sales assistant for complex products and services C. ...
Knowledge synthesis Automatic generation of business reports and documents	A. **Building inspection report preparation** B. Sales proposal generation C. ...

Design principles

The GenAI toolkit vision

Solution configuration wizard *(how to select and assemble needed building blocks)*

Business layer
- GenAI Product canvas
- Knowledge services
- Value evaluation metrics
- Workflow templates
- Cyber-security

Technical layer
- Requirements
- Architectures & templates
- Model selection, customization and evaluation methods
- Software components
- Test cases

GenAI implementation layer
- Process for GenAI implementation
- AI readiness assessment tool
- AI implementation planning tool

Fragment of the toolkit

Library of software components

Knowledge capture components
- Transcriber
- Parser
- Information extractor
- Document classifier
- Image interpreter
- ...

Knowledge access components
- Vector database
- Retriever
- ...

Knowledge synthesis components
- Report writer
- Document grader
- ...

Enabling components (e.g. data loader)
Integration components (e.g. data connector)
Security components (e.g. access manager)

Simplified workflow templates for two use cases

Collect incident voice observations (Data loader) → Transcribe voice recordings (Transcriber) → Collect incident photos (Data loader) → Image understanding (Image interpreter) → Fill in incident report form (Information extractor) → **Incident reporting**

Collect building inspection observations (Data loader) → Transcribe voice recordings (Transcriber) → Collect building photos (Data loader) → Image understanding (Image interpreter) → Prepare building inspection report (Report writer) → **Building inspections report preparation**

Collect the available documents (Data loader) → Prepare documents (Parser) → Identify relevant documents (Document classifier)

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