Business transformation projects-The role of artificial intelligence and communication in enhancing strategic performance (RAICESP)

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Keywords
Artificial intelligence, complex communication techniques, AI, requirements, strategic business transformation projects, performance, enterprise and business architecture, decision-making

Abstract
This chapter's targeted focus is on the usage of Artificial Intelligence (AI) Subdomains (AIS) and especially Complex Communication Technics (CCT) in enhancing business performance. Knowing that enhancing business performance needs frequent Business Transformation Initiatives or Projects (BTIP). BTIPs are complex because there are many standard and AI tools and methodologies that are difficult to integrate with the enterprise's legacy constructs. Therefore, the BTIP adopts an In-House Implemented (IHI) RAICESP-based Transformation Framework (simply Framework) and the Framework integrates a Natural Language (NL) Processing (NLP) integration environment to define, manage, integrate, and improve RAICESP's Features (RAICESPF). The RAICESP needs an interdisciplinary approach and advanced Polymathics basics. The hyper-evolution of technologies and managing RAICESPs has started from casual communication, to written documents (by domain specialists), and today BTIPs use AI, CCT, and modelling methodologies to avoid the misinterpretation of verbal communication and written documents or prose. RAICESPs' models present concise business scenarios and solutions. The evolution of AIS and NLP Integration Environments (NLPIE), has the aim of improving RAICESPs and related features' management in general, but it reestablishes the "old" pseudo prose-age, in which requirements' definitions were documented in prose format and their generation by AISs makes features and requirements management even fuzzier, therefore how to manage such an evolution? Or is it rather a regression? And the main research question is: How can a BTIP manage and enhance RAICESPs' and common features and requirements' implementations without regressions? The probable answer would be "Using refinement, modelling, and architectural methodologies" to support the CCT, which is difficult to integrate with automated AISs, NLPIEs… This chapter proposes a Framework, CCT, and a realistic set of RAICESPs' management recommendations.

Introduction

The BTIP and the roles of AIS (AIS) and lingual components like NL, Large Language Models (LLM), Small Language Models (SML), and others, for managing, implementing, and capturing Enterprises' various needs and requirements like the RAICESP are of strategic importance; knowing that BTIPs are considered complex change and transformation projects. The usage of AISs and associated lingual components results in more complex BTIPs and associated RAICESPs' management, because (Cranmer, 2023; Vasudevan, & Reddivari, 2025):

- AISs include a wide range of heterogeneous AI topics and especially Generative AI (GenAI).
- GenAI is used to automate capturing user needs or RAICESP Elements or artifacts (RAICESPE) Generation (RAICESPG) in various APplication or Domains (APD), and AIS's contexts.
- In this chapter, it is assumed that AIS and the resulting RAICESPG clone the Human Factor (HF) and its Brain (HFB).
- The word 'cloning' is over-valuated, because the RAICESP manages and generates RAICESPEs and then 'converts' them to a well-defined format.
- To simplify the over-complex BTIP and RAICESP, it is recommended to use a Polymathic AIS (PAIS) concept, where GenAI is its central component.
- The RAICESP applies an avant-garde and Polymathic approach and uses Enterprise

Architecture (EA) and AI-based Aggregated Models (EAA_Models).

- Presents a Mathematical Model (MM) based performance model.
- RAICESP and common Requirements management and engineering are central phases and they affect all BTIP aspects and performances.

EAA_Models include RAICESPG's elements, different requirement management formats, and adapted conversion-interfaces. RAICESPG processes use different AISs, like Deep Learning (DL) and Machine Learning (ML), which must be pretrained models to enable 'usable models'. Such models are pretrained on gained actions and experiences and are stored as Learning Processes for Requirement Management (LP4RM) that are related to data collections that are accessed through Dynamic In-Memory DataSets (DIDS). PAIS is used for AI-based integrations and interactions required to interrelate different fields like DL, ML, NLP, DIDSs, and others (Cranmer, 2023).

Figure 1. The PAIS' approach and AIS' interactions.

The PAIS is a "generalized intelligence" vision, which is antagonistic to today's popular commercial-products vision, which privileges a specialist AIS approach that is applied in specific and precise BTIP context. PAISs have many capabilities, like: 1) NLPIEs' integration and interfacing; Image-text recognition processes; 2) Dynamic Decision-Making Processes (DDMP); 3) Generating EA Models (EAM), and EAA_Models; and Heuristics-reasoning, which are used in different APDs' Requirement Management Engineering (RME) processes. AISs are related to Artificial Generic Intelligence (AGI), as presented in Figure 1, that is supported by the Information and Communication System (ICS) to: 1) Run LP4RM for RAICESPG and RAICESPEs; 2) Ensure needed performance for RAICESPGs; and 2) Manage experience-based LP4RMs with HF Intelligence (HFI). PAIS helps AISs based on BTIP (and hence the RAICESP) in integration processes and to use interdisciplinary approaches. BTIP starts with a Digital Transformation (DT) sub-project, which should be the 1st strategic goal of the BTIP or RAICESP Vision and Roadmap (RVR); to enable BTIP's or AIFs-based (re)engineering to implement IHI solutions and not external AIS commercial products, which guarantee too-fast progress and high costs. Simultaneously, the PAIS privileges Polymathic capabilities other than strictly AISs (Envisioning, 2025). External AI services and products based on RAICESP solutions are incompatible with IHI-solutions, which use EAA_Models to integrate 'loosely-coupled' external solutions. PAIS interacts with the RAICESP to enable frequent BTIP changes, and to enable also:

- The usage of IHI-concepts for the RAICESPs' and AISs' integrations.
- The management of RAICESPs' delimiters/interfaces, and RAICESPGs' operations.
- AISs-based RAICESPG processes to automate requirements management, and RAICESPEs by using DL/NL, NLP, ML, and other AISs.
- To manage LP4RM Repository (LPR) that persists requirements' management' related experiences, choreographies, and solutions.
- The LPR tries to proactively predict BTIP's problem-types, risks, and possible eXtremely High Failure Rates (XHFR).
- Robust BTIP's architecture(s), and EAA_Models to offer solutions by using EA-methodologies.
- Decision-Making (DM) Systems (DMS) which try to process and solve problem-types, and to mitigate

risks and to execute enhancements' RAICESPs' Actions (RAICESPA).
- A specific research mixed-method and Polymathics for complex undertakings, like the RAICESP.
- RAICESPAs are applied in all RAICESP's actions, which are requested by EAA_Models and previewed in the RVR, to successfully achieve BTIP's goals and objectives.
- RAICESPAs are used in choreographies like Business Processes (BP) Models (BPM), or other types of WorkFlows (WF) modules, and ICS' components.
- RAICESPAs are a collection of semi-manual and automated actions.

The focus is on BTIPs and for that reason the author advises the reader to refer to his (IHI) Polymathic Transformation Framework (IHIPTF) related chapters/works, and guides, like: The IHIPTF-Guide (Trad, 2024a); The IHIPTF-Glossary (Trad, 2024b); A related core-syllabus (Trad, 2024d); The AHMM4PROJECT (Trad, 2024e); The AI-based transformations concept (Trad, 2024f); and this chapter's abbreviations section which can be found at the chapter's end.

RDP for RAICESPs' Management

Introduction and Basics

This RDP's related methodology, implementation (or prototype), and chapter use the following artefacts, assumptions, facts, and conditions (Trad, 2023a, 2024f):
- The Research-Question (RQ) is: "How can the RAICESP support BTIPs, RAICESPEs, and RAICESPGs ?". And the related Auxiliary-Question (AQ) is: "How can GenAI, AISs, and PAIS support RAICESPGs' and RAICESP's automated (re)generation processes?".
- Uses a Polymathic research mixed-method approach, which is a qualitative heuristics concept.
- The use of sets of configured, initialized, and hard-linked Critical Success Factors (CSF), Critical Success Areas (CSA), Key Performance-Indicators (KPI), and ICS' source code (NLPIE, or ICS' programming language) VARiables (VAR).
- A selected CSA maps (1 to 1) to RAICESP's important sections (this chapter is built on sections); and the 1st CSA (and hence the 1st section) is the RDP section.
- The evaluation is enabled and checked by the Applied Holistic Mathematical Model (AHMM) for RAICESPE (AHMM4RAI) and Framework's components.
- The evaluation and processing approaches are supported by the DMS and Knowledge-Management System (KMS) (simply Intelligence).
- The selected CSFs, CSAs, KPIs, and VARs are BTIP's sets of Factors; and these Factors are evaluated by Intelligence's IHI Dynamic Heuristics-Decision-Tree (IDHDT).
- Uses generated services (that map to IDHDT actions), to process and solve BTIP's and RAICESP's problem-types, and to offer solutions.
- It is assumed (which is a hypothesis that relates to the mentioned RQ), that BTIP's 'generated' services are stocked in Blocks to be called by ICS', RAICESPEs', and AIS' requests.
- It is assumed that BTIP's Refined, Unbundled (and transformation) Processes (RUP) of Legacy Requirements' Management (LRM), ICS's components, and other resources, were successfully terminated; and that the needed services were generated.
- Non-conventional modelling techniques like EA Modelling (or Models, EAM), RAICESPE Modelling (RAICESPEM), Composite AI Models (CAIM), ICS Models (ICSM), and intelligence interfaces.
- The used CAIMs contain EAMs, RAICESPEMs, and other types of models (which are simply EAA_Models). That implies that an EAA_Model is a mixture of the models.

Advanced Constructs

As shown in Figure 2, the RDP contains the following steps and phases (Trad, 2023a, 2024f):
- The Polymathic Literature Review Process (PLRP) that is an in-depth checking and analysis of the used resources. It has proven that there aren't any similar frameworks and concepts that use terms and techniques like RAICESPG, RUP, AHMM4RAI, EAA_Models... And more specifically the Polymathical approach.
- There aren't any relevant scholar-references which analyze the presented chapter's RQ, hypotheses/assumptions, and CSAs (or sections).

- BTIPs and RAICESPGs are very risky and have XHFRs, that has already been proven in previous author's RDPs and PLRPs. And this major fact is the most relevant one that supports this chapter's and RDP's flow and conclusions.
- RQ's most important gap and weakness is that there is a major lack of Polymathic skills, concepts, profiles, and hence frameworks, that are essential for AISs, RAICESPGs, and it is recommended to apply the PAIS approach.
- The PLRP consulted resources like: 1) Articles, books (and chapters), and resources associated with RAICESPEs, RAICESPG, (P)AISs, EAA_Models, CAIMS, EAMs, ICSMs, AHMM, and RUPs; 2) Author's previously published chapters, consulting projects, and Framework; 3) RAICESP's architecture models and feasibility; 4) Various RAICESPE and RAICESPG topics; and 5) The application of the Polymathic Empirical Engineering Research Model (PEERM).
- A significant research gap was confirmed, and that implies that there is a need for RAICESP's research-analysis.

RDP's main phases are: 1) Setting up the Framework; 2) Phase "1" uses CSA's Decision-Tables (CSA_DT), and is RDP's heuristics-based evaluation-phase; and 3) Problem-types' processing and solving-phase.

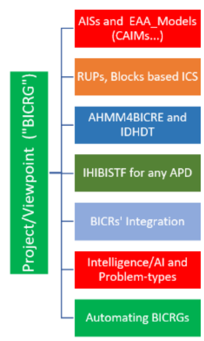

Figure 2. The RAICESPE and RAICESPG Viewpoint.

The Framework-Framework

BTIP's (and RAICESP's) main aim is to provide solutions (in the form of recommendations), patterns/concepts, and an RVR. Where the RVR includes BTIP's timeline that depicts the integration of RAICESP's components, like RAICESPE's WFs (RAICESPEWF). The RAICESP uses a well-established method, the Architecture Development Method (ADM) (The Open Group, 2011) that is The Open Group's Architecture Framework (TOGAF) main method. TOGAF is an BTIP's transformation-enabler. TOGAF's ADM-based Framework contains various Sections (FrameworkS): 1) Supports BTIPs and RAICESP's integrations; 2) Offers Framework's Platform (FrameworkP) and infrastructure; 3) Offers Framework's Cases (FrameworkC); 4) Offers RUP's transformed Blocks (FrameworkB); 5) Offers Framework's Dictionary (and Syllabus) (FrameworkD); and 6) Has an implementation/development Framework Environment (FrameworkE). The BTIP and RAICESP, need FrameworkSs, which provide the following:

- The FrameworkB that offers pools of (generated) Blocks (and unbundling concepts), and relates to existing EA methodologies, artefacts, and legacy resources, like TOGAF's ADM.
- The FrameworkCs illustrate BTIPs' and RAICESP's Applied Case-Studies (BACS) that support the Conceptual Proof of Concept's (CPoC).
- The FrameworkD is BTIP's reference dictionary; and some abbreviations can be found at the end of this chapter.
- The FrameworkE presents a transformation-concept and associated environment.
- The FrameworkM is a methodology which enables BTIPs and RAICESPs to interface with ICSs ' and AISs' components, and external methodologies.
- The FrameworkP shows BTIPs and RAICESPs ' usage of ICS platforms and infrastructures.

The FrameworkM applies EAA_Models to support BTIPs and standard methodologies, like TOGAF, Unified Modelling Language (UML), and others. The RAICESP requires all the presented sections to be used, but where the FrameworkM, FrameworkC, and FrameworkE are the most strategic ones.

The PEERM and RDP's Central Phases

This RDP's applicable phases are: 1) Phase "1" (Ph1) uses CSA_DTs, and is the RDP's empirical phase, which evaluates selected CSAs, CSFs, and their outcomes are summarized in Figure 21. This RDP's and chapter's CSAs are: a) The RDP for the RAICESP; b) The usages of distributed ICS, EA, EAA_Models, and basic technologies; c) The roles of AISs, NLP, AIA, and GenAI; d) The roles of RAICESPEs, RAICESPGs, and RAICESP; and e) BACSs and CPoC usages; and 2) Phase "2" (Ph2), presents how to solve a concrete RAICESPE problem-type(s), by using of Intelligence and its embedded IDHDT. This RDP applies the PEERM, which is optimal for BTIPs, RAICESP, AISs, and NLPIEs. The CPoC's final outcome is synthesized in Figure 6; and the Framework supports the RAICESP's implementation and offers a set of solutions and recommendations, which include an RVR. As already mentioned, the RDP applies the IHI Research Mixed-Method Approach (IHIRMMA) that is different from popular and conventional (that are mainly quantitative and statistical) disciplines, and is mainly a qualitative research model. The IHIRMMA includes (Easterbrook, Singer, Storey, & Damian, 2008; Quinlan, 2015): 1) The IDHDT that is a heuristics reasoning engine; 2) Specific and limited usages of Quantitative (Qn) Methods (QnM) for risks' mitigations; 3) The dominant Qualitative (Ql) set of Methods (QlM) for RAICESP's and POTP's common problem-types solving; 4) The IDHDT based dynamic LP4RMs, that are based on the pseudo-Action Research's (AR) learning approach; and 5) The AHMM4RAI, which supports and checks RAICESP's and enables its operations, like calling the IDHDT's and Intelligence's actions and processes. The RDP, IHIRMMA, IDHDT, and other mentioned components are complex, and they use performance-intensive processes that need powerful ICS', EA's, EAA_Models' very performant distributed architectures and basic technologies.

The Optimal Usages of Distributed ICS, EA, EAA_Models Architectures and Basic Technologies

The Basic Concepts

In this CSA's presents an integration concept for an enterprise's ICS, EA methodology, and EAA_Models resources to deliver an optimal platform and infrastructure. Knowing that ICSs, RAICESP, AIFDs, and BTIPs heavily use EAA_Models (that include EAMs, ICSM, CAIMs, and other models), repositories (for services/Blocks and resources) are exchanged using different formats. The mentioned exchanges require robust RAICESP Performance Measurement (RAICESPPM) (and management) on different BTIP levels and include:

- The optimization of ICS' modules and components' performances like central processors, memories, comm-buses, multi-threading…
- The optimization of DIDS' usage to improve the data-accesses performances.
- The optimization of Central Processing Units' (CPU) usage concepts.
- The optimization of EAA_Models' performances by applying well-designed diagrams.
- The checking of ICS' and related components' availabilities and scalabilities.

RAICESPPM is, in fact, an enterprise's performance measurement. The mentioned optimization processes use the AHMM4RAI and its internal MetaModels, where the AHMM4RAI ensures integrity-checking, Gap-Analysis (GAPA), Risk mitigation-management, and other operations. A MetaModel is a set of related DIDSs, QlMs, and QnMs; and modules like GAPA use the Framework's Factors Management System (FMS) and the Polymathic Rating-Weighting Concept (PRWC) for weightings' evaluations. The AHMM4RAI is linked to MetaModels, which can identify and set the initial collections of Factors to support the RAICESP in applying the PRWC, FMS, and Factors to be used by NLPIEs and DIDSs.

Using and Integrating DIDSs

RAICESPGs use IHI DIDS (IDIDS) based Architecture (IDIDSA) which improves the classical (or legacy) and "slow" Boolean Algebra based Architectures (BAA). The IDIDSA organizes ICS' resources, which are generally very busy processing static IDSs and large strings, which implies too frequent and unnecessary type and content conversions, which can be hindered. Therefore, IDIDSA enhances AISs', RAICESPG's, and hence ICS' performances. IDIDSA's main characteristics and capabilities are:

- It can enhance a BAA and simplify ICS' architectures.
- Improves all ICS' processing and platform operations.
- Enables the processing of EAA_Models and other types of operations and models.
- Enhances ICS' Programming Languages (PL) usage and performance…
- An IDIDSA abstracts and simplifies RAICESPG's integration, interfacing, and management.
- RAICESPGs Processing (RAICESPGP) enhancements and management, by using interface classes like the RAICESPGP_Class, where RAICESPGP's abstractions are mapped to concrete PL classes.

The RAICESPGP's abstractions, entities, and attributes have the following descriptions, characteristics, and constraints:

- W is a Weighting set and used by variables (VAR).
- VARs are evaluated, and then the resulting performance value V is returned.
- …
- IDA represents IDIDSA's artefacts.
- MDL represents various types of models.
- ICO represents ICS', RAICESPG's, and AIS' operations.
- PLA represents Programming Languages (PL) Activities and NLP also.
- ….
- Δ is the mathematical sign for GAPA.
- PHS represents a BTIP phase.
- Itr represents a PHS iteration.
- PRC represents RAICESPGP's processing value.
- EVAL represents PRWC's processing value.
- E1 and E2 are intermediary variables.
- ….
- PRC(PHS)=IDA+∑MDL+∑ICO+∑PLA… (1.1)
- …
- EVAL(PRC)=∑PRC(PHS) (1.2)
- …
- E1=EVAL(PRC[Itr-1])=∑PRC[Itr-1](PHS) (1.3)
- E2=EVAL(PRC[Itr])=∑PRC[Itr](PHS)
- …
- Δ(RAICESPGP(Itr))=E1-E2 (1.4)
- …
- BTIP_Status=∑Δ(RAICESPGP(Itr)) (1.5)

The Distributed RAICESPGP

The RAICESPGP needs a distributed ICS or the Cloud, and such a Cloud-based RAICESPG(P) is a collection of deployed-hosted RAICESPGPs on the 'On Premises Hosting Model', which the enterprise manages RAICESPGPs (Charles, 2017; The Open Group, 2021). RUP unbundles and transforms the enterprise's siloed legacy components and resources into AIS-enabled components in RAICESPG's context. RUP-based transformations enable the auto-generation (and refinement) processes, which are RAICESPG's basic activities. RAICESPG can also regenerate applications' roadmaps, RVR, and various types of cartographies. RAICESPG's auto-generation processes use existing EA modelling language environments like the Archimate Modelling Language (AML) (The Open Group, 2025). For the RDP, the AML is used for RAICESPG's activities like auto-generation, refinements, and classifications; applying the various types of RAICESPE Diagrams (RAICESPED) and other assisting diagrams (Engelsman, Jonkers, & Quartel, 2010; Togaf-Modeling, 2020). The distributed ICS (or Cloud) enables IDIDSA and EAA_Models implementation for all APDs

Cloud-based RAICESPGs use AIS engines like the Google Cloud Platform's (GCP) AI-Engine, include ML models (MLM) and support : Prepare, Build, Validate, and Deploy activities (Green, 2020; Sullivan, 2020). RAICESPGs require efficient technologies that include (Gomstyn, Jonker, & McGrath, 2024): 1)

Distributed ICS resources like CPUs, memory, hard-disk, and others; 2) Real-Time (RT) Operating Systems (OS); 3) Serverless RAICESPG-platforms; and 4) RAICESPG-functions for event-driven and serverless installations. Distributed ICSs are very important for applying RAICESPGs for different APDs.

RAICESPGs and APDs

RAICESPGs in APD contexts can offer: 1) A generic-platform approach based on "On-demand" self-services, requirement management, resource planning, availability, and Cloud-services models: 1) Infrastructure as a Service (IaaS); 2) Platform as a Service (PaaS); and 3) Software as a Services (SaaS). These are enforced by AI(FS) as a Service (AIaaS). BTIPs uses AIaaS to support RAICESP's activities in a specific APD; and for an APD, RAICESPG's evolution can be evaluated using the PRWC. SaaSs and AIaaS-based RAICESPG ensure: Scalable; Secured; and Reliable Cloud-platforms that can (IBM, 2025): 1) Synchronize and streamline RME processes; 2) Manage RAICESP's activities; 3) Balance APD's efficiencies and performances; 4) Ensure RME's continuous developments; 5) Enhance sustainability; 6) Automate RAICESPGs and software integration processes; 7) Support accessibility of quality of DIDSs; 8) Streamlines RAICESPEs with applications and their components; 9) Enforce governance, compliance and audits; 10) Supports the management of innovative requirement management-concepts to generate RAICESPEDs. RME is an engineering method (and process) that extracts, defines, documents, and maintains BTIP's or it modules' requirements or needs, which also includes related relations, associations, methods/functions, and constraints. It is an APD activity and not a classical Software Engineering (SE) one, and is a very critical BTIP phase, because it ensures that the final transformed ICS and components meet the defined needs/requirements. The requirements are defined by an actor, which can be an APD analyst, user, or stakeholder. And RME's main characteristics are (Engelsman, Jonkers, & Quartel, 2010; Sajna, 2025):

- The elicitation sub-phase is responsible for gathering information about the final ICS' requirements management from different actors.
- The analysis sub-phase is responsible for analyzing, clarifying, and refining gathered requirements management and information.
- The specification sub-phase is responsible for documenting requirements management by using AML diagrams (or others) in a synchronized, concise, and unambiguous way.
- The validation sub-phase is responsible for ensuring that the depicted or documented requirements' management is accurate and can be integrated in the ICS.
- The management sub-phase is responsible for tracking, storing, and controlling well-organized requirements' management changes that are managed by BTIP's implementation lifecycle.
- Map RME artefacts (or RAICESPEs) to other BTIP resources.
- In essence, an RME bridges the gap between real-world problems and functional software or system solutions and components.
- It ensures that the BTIP or the final product is technically robust but that it also meets users' requirements, management/needs, and expectations.
- Uses modelling languages like the AML to create or generate RAICESPEDs.

RAICESPEDs and AML

The RAICESP uses the Requirement Management and Engineering Process (RMEP) that interacts with EA methodologies like TOGAF and its ADM, to enable the implementation of requirements management, and can also include (Engelsman, Jonkers, & Quartel, 2010).:

- A generic requirement management cycle which is repeatable in ADM's phases and contains 3 steps: 1) Problem-type(s) investigations; 2) Proposition of possible (or alternative) solution(s); and 3) The selection, validation, and of the selected solution(s).
- A framework like the Framework that sets applied RME techniques in the critical cycle, and it enables the configuration of RMEPs so they fit in the enterprise by (re)implementing LRMs and using ADM's phases.
- To use the AML, which should be enforced to enable support for requirements management modeling. Knowing that AML complements EA like TOGAF, by applying a modeling-language.

- The RME cycle is similar to problem-chains that have two distinct views on EAMS: 1) The designed artifact or RAICESPE that can represent a solution for a given problem; and 2) Is a "frame of reference" that delimits requirements management's design (or solution area).

RAICESPEDs and RMEs Cycles

The RME starts with the request for 'organizational change' or BTIP, as such complex undertakings cannot be treated as starting from scratch (or greenfield), but must transform legacy resources like LRMs, as shown by the EA/architecture model A1. This means that requirements' management (or goals) defined the 'requirements model M' must be defined as 'relative' to EA/architecture A1, to enable the requested changes. Therefore, EA/architecture A1 behaves as a problem-type oriented RME. Then, a new version of EA/architecture A2 is designed and implemented to support requirements management and goals integration in model M. This means that EA/architecture A2 is a design artifact that results from a solution-oriented RME. The RME decomposes requirement management in 3 steps (Engelsman, Jonkers, & Quartel, 2010):

- Problem-type investigation focuses on the problem-type, like 'organizational change', by analyzing the causes and by defining goals to manage these changes.
- Investigate solution possibilities or alternatives to refine defined goals to find possible or realistic solutions. And also analyses to predict gaps between refined goals and realizations.
- Validates possible solutions and tries to select the 'optimal' one.

The RME can have a generic approach, and its cycles can be repeated in TOGAF's ADM phases, and the related identification, analysis, and refinements of possible solutions come in the 2nd-step". That needs methodologies like EA. All these operations must be pre-defined in Vision and Roadmap Viewpoint's (VRV) architecture vision.

AISs, NLP, AIA, and GenAI Support

AISs, NLPIEs, LLMs, and Unified Communication

This CSA describes the applied AISs, NLPIEs, LLMs, GenAI, and unified communication that are needed to support RAICESPGs and EA/ADM's automated processes. Such complex processes are needed to facilitate RME's and ADM's phases interactions and to avoid XHFRs. And the mentioned fields are stubs for future RAICESPGs-related processes.

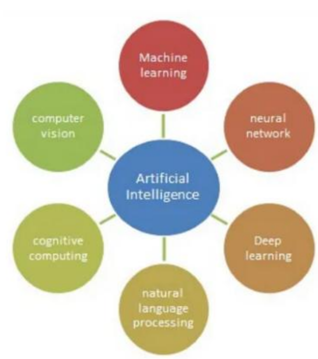

Figure 3. AISs' used subjects (Rancho Labs, 2021).

The PAIS can be built on modelled and inter-related AISs that support RAICESPGs through automation processes. Such processes use NLP scripts and Models (NLPM), DDMP… As shown in Figure 3, AISs' main topics are (Rancho Labs, 2021; Garanhel, 2023; Riedl, 2023; Trad, 2022; Lisowski, 2025; Khan, 2024):

- NLP processes NLs and processes IDIDSs by applying: Classifications; Searching; and analyzing data from input streams.
- LLMs are applied for different types of NLs to mimic HF's interpretations.
- NLPs and LLMs are different and are changing HFs' interactions with AISs and RAICESPGs.
- LLMs are AI-Models which can analyze, understand, and apply RAICESPGs.
- ML applied algorithms to support ICS' components to support: Supervised; Unsupervised; or

Reinforcement Learning actions for requirements management.
- Deep Learning (DL) uses Data-Analysis (DA) for (self)learning, and offers usable results.
- DA processes IDIDSs and interfaces structured data storage.
- BigData (BD) manages huge data-volumes and applies the 3 Vs: Volume, Velocity, and Variety.
- The Model Context Protocol (MCP), is a unified communication-environment for AISs and Agentic AI (AIA).
- AIAs support RAICESPGs by: Generating RAICESPEDs; Generating Code; Summarizing reports; and Communicating HFs.
- NLPIEs and related NLP-Scripts manage ICS' resources and NLPMs, which in turn analyze and understand NLs to generate RAICESPEs.

AIA WFs (AIAWF) support RAICESPGs' processes by applying automated-choreography.

Using AIAs, AIAWFs' for RAICESPGs

The BTIP, RAICESP, and RAICESPGs use the AIA, which offers (Stryker, 2025; FabriXAI, 2025; Winland, Bozorg, & Stryker, 2025):
- Application Programming Interfaces (API) management.
- Tasks-operations management that requires designing WFs.
- Prompts to support AIAWFs' actions to enable GenAI Models (GenAIM).
- A Multi-AIA (MAIA) interface which supports RAICESPGs and related problem-types.
- To share experiences and enhance linked LP4RMs.
- AIAWFs deliver decisions with non-HF's commanding and synchronize RAICESPGs.
- AIAWFs offer a concept for complex problem-types that require an iterative approach.
- AIAWFs major steps are: 1) Understanding APD's problem-types and gathering information for RMEs; 2) Applying checking and diagnostics for RAICESPEs; 3) Using tools for RAICESPEDs; and 3) Finalizing and learning.
- An EAA_Models based AIA Architecture(s) (AIAA).
- AIAAs support "thinking", learning, based on IDIDSs, and refine RAICESPE
- Continuous processes to tune RAICESPGS by improving LP4RMs and GenAI's processing.
- Adapts autonomously to new contexts based on LP4RMs, and delivers RAICESPEDs.

Using LP4RMs and Applying GenAI for RAICESPEDs

For different APDs, high-quality RAICESPEDs are important for supporting BTIPs and for ensuring less labor-intensive processes, minimizing HF's interventions (and expertise), improving maintenance processes, and continuous enhancements of RMEPs. The RAICESP is supported by GenAI and LLMs, which enable enhancements, by (Khan, 2024): 1) Streamlining RAICESPG processes; 2) Offering AIAWFs which support DIDS-processing, retrieval, and evaluations; 3) Reengineer requirements' management and RAICESPEs; 4) Refine LRMs to deliver RAICESPEDs; 5) Intelligence offers RT-actions deliver insights: 6) Improves RAICESPEs' and RAICESPGs' effectiveness; 7) Uses the NLP, to optimize DIDS; 8) Offers multi-tasking, and specialized analysis; and 9) Offering deployment-processes for RMEs. GenAI is applied to generate or create new requirements management content, which can include: texts and/or images, based on defined conversion patterns. And then LLMs generate HF-like texts, and can be supported by Small Language Models (SLM) which carry out specific tasks that require less effort and IDIDSs. And at last, the Retrieval-Augmented Generation (RAG) enhances the process models by extracting detailed information. There are various GenAI tools that can support in RAICESPGs by using (Engelsman, Jonkers, & Quartel, 2010; Sajna, 2025; Generativeai, 2025):
- Text Generation (TG), which applies MLMs to generate new texts based on requirement management patterns.
- Image Generation (IG), which applies DL-algorithms that generate requirement management diagrams.
- Video or presentation Generation (VG) uses algorithms to generate requirements management-related presentations as videos.
- Technological-transformations (or BTIPs) which apply AISs and GenAI that are changing how EA and

RME-tasks are done.
- Governance, which has profoundly changed by AISs' usage that incorporate also AML, and frameworks to manage requirements' management.
- Iterative ADM phases and GAPA for RMEs, because according to 'Harvard Business Review' more than 50% of BTIPs face failure because of weak management.
- RAICESPEDs that capture user needs and transform them into requirements management.
- RAICESPG classifies and prioritizes requirements management and automates the RME, which is an iterative process in which actions are executed in all ADM phases.
- The RMEP combines other RME-processes which run simultaneously. It analyzes and documents the collected requirements' management.
- Common error detection and corrections; such errors can be: 1) Scope-creep, which are the result of "minor changes" that can cause major problems; 2) Over-engineering can have negative impacts on requirements' management; 3) Insufficient information and feedback; and 4) Various types of resistances
- Integration of RME in SE processes improves communication and inputs.
- AIS to RMEPs is efficient and hence implies that the transformed ICS becomes trustworthy.

Enabling AIS for RAICESPGs

AIS are AI-systems that have the following Factors, robustness, fairness, explainability, interpretability, transparency, safety, and security. The mentioned Factors (or qualities) generate trust and confidence in AI-systems among BTIP's actors like engineers and users. And offer the following (Gomstyn, Jonker, & McGrath, 2024).:

- Mitigates potential risks that are related to EAA_Models and CAIMs, such risks which can negatively influence users, enterprises, and others.
- Guides enterprises in their development, integration, and evaluation of AISs, and there are frameworks to support such activities like the ones from: 1) The National Institute of Standards and Technology (NIST) AI Risk Management Framework; 2) EU's Ethics Guidelines for Trustworthy Artificial Intelligence; and 3) Organization for Economic Co-operation and Development (OECD) AI Principles.
- A better understanding of how ICSs and AISs are crucial for trusting their efficacy, but AISs, MLMs, and DL models are used as black boxes with practically no transparency.
- Proactive detection of CAIMs that underperform or generate harmful outputs, which undermine trust.
- Offering guiding-principles and goals for AIS which can include: Accountability, Explainability, Fairness, Interpretability (and transparency), Privacy, Reliability, Robustness (and security), and Safety.
- Accountability entails holding AIS actors accountable for the proposed AI solution.
- Explainability verifies CAIM's outputs and delivers explanations.
- Fairness is the equitable treatment of users, people, and groups.
- Privacy is about the protection of personal (or sensitive) data-information that is used.
- Reliability is intended to function without failures for a defined period.
- Robustness and security offer protection mechanisms to block adversarial attacks and unauthorized access, minimizing cybersecurity risks and vulnerabilities.
- Safety refers to AISs which protects HF's life, health, property, and environment.
- The list of potential risk categories that can harm: People, Enterprise, and Ecosystem.
- Detect and prevent dire scenarios and consequences by mitigating risks.
- Clarifying the differences between the terms AIS, Ethical AI (EAI), and Responsible AI (RAI), which are frequently interchanged.
- AIS is an AI-system or AFSs that establish trust in an enterprise or BTIP.
- EAI is an AI-system that has ethical considerations, which reflect HF values and moral perceptions.
- RAI is an AI-system that encompasses and embeds ethics in AISs and AIAWFs.

A BTIP can apply a specific strategy to achieve AIS, where AI-systems, AI-algorithms, and DIDS respect AIS principles by applying (Gomstyn, Jonker, & McGrath, 2024).: 1) Assessing AIAWFs; 2) Continuous monitoring for problems detections; 3) Risk management by using a risk-management framework; 3) Applying automated documentation; 4) Using AI governance frameworks; and 5) Building an IHI concept for AIS and EAI. An enterprise or a BTIP must establish an EAI for AIS (EU, 2019).

RAICESPEs, RAICESPGs , and the RAICESP
Integrating and Respecting AIS

AIS minimizes major problems and uses the associated framework. But managers are not aware of potential risks that are related to AISs; and The BTIP and RAICESP are considered as AIS undertakings when they have met the following principles and uses a 4 steps framework to enable the use of AISs in an ethical, lawful and robust manner, and these steps, principles, and benefits are (Abercrombie, 2024):

- In step 1 of 4, the BTIP defines AIS's and RAICESPG's strategies, design concepts, and planning schemes; having the focus on analyzing an HF-oriented BACS to assess risks and impacts.
- In step 2 of 4, the BTIP defines data and DIDS' strategies; Reliable quality-data is AIS' kernel.
- In step 3 of 4, the BTIP defines and sets up the required algorithms, logic, and instructions for implementing the AISs, DDMPs, and RAICESPGs.
- In step 4 of 4, the BTIP defines deployment and governance strategies and processes.

Integrating and Respecting AIS based RAICESP artefacts

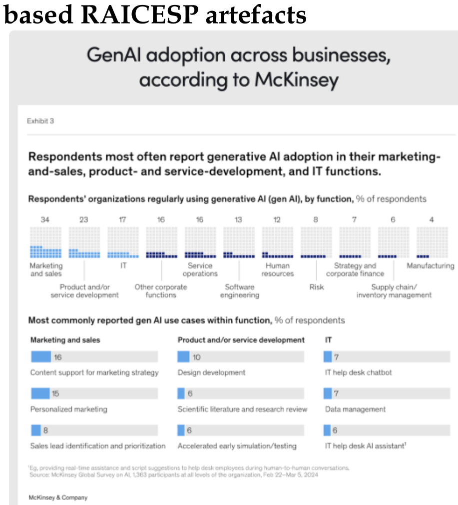

Figure 4. The holistic approach to GenAI (Matuszewska, 2024).

AISs like GenAI, ML, and DL use autonomous or self-learning to be able to interpret various forms of resources and to transform them into requirements' management. AISs can hence (re)use LP4RMs and various stored RAICESPGs' outcomes to tackle topics that are related to requirements' management like: 1) HF's behaviors and emotions; 2) Identifying requirements' management' relevant objects on diagrams (or images and pictures); 3) Inputs from meetings in which it recognizes and memories requirements' management related facts; 4) Processes requirements' management' related videos and audios; 5) Transforms text documents, legacy source-code, and other hard-resources into requirements' management; 6) Automates AIS compliances into RAICESPGs… The efficient techniques and benefits of AIS, AISs, GenAI, ML, and other on RAICESPGs by supporting (Tipp, 2024; APM, 2020; Marsh, 2018; Paul, 2020; Project Management Institute, 2017):

- The generation of requirements management from gained experiences and modifying requirements management's contents and the way they are applied.
- RAICESP artefacts' personalization and creative processes when interacting with users through design tools.
- Improves ethical values, which include diversity, avoiding deepfakes, authenticity, and others.
- As shown in Figure 4, to find requirement management patterns in massive IDIDS and other BTIP

resources. It is used across various APDs.
- A Holistic and Polymathical approach by trying to establish Artificial General Intelligence (AGI) system.
- RAICESPGs' automation processes by using AISs based environments tools that make architects focus on creative work and tuning.
- Managing possible risk-types that can be due to the creation of incoherent requirements management, blocking creativity, lack of responsible behaviors, loss of control…

Integrating Existing RME Techniques and Concepts

The integration of existing, generated, or legacy RMEs and related resources needs coherent techniques and concepts (Tipp, 2024; APM, 2020; Marsh, 2018; Paul, 2020; Project Management Institute, 2017):
- The Association for Project Management (APM) defines requirements management and RMEs as artefacts which depict stakeholders' demands and needs, and the needed acceptance criteria.
- RMEs define a requirements management engineering process.
- Elicitation contains sub-stages like : Brainstorming; Card-sorting; Documents' analysis; Focus groups; Interviews; Observations and understanding; Prototyping; Surveys; and Users' profiles definition.
- All the mentioned activities and tasks need a high level of automation or RAICESP artefacts, because about 80% of BTIP's errors are due to RME, and it is estimated that only 20% of BTIP's time is used of RME.
- To avoid such a high error rate and even XHFRs, it is recommended to: 1) Categorize requirements management as Functional or Non-functional; 2) Apply prioritization queues to sort by: Must have; Should have; Could have; or Won't have.
- RMEs apply document requirements management and use EA tools and AML to depict these requirements' management; and such documents can include: 1) An introduction and background to the BTIP; 2) The description of the relevant EAA_Models; 3) A glossary; and 4) The requirements' management. Which include detailed descriptions and necessary elements.

The RME can use various techniques like mind-maps, BPMs (or WFs), UML, AML, user-stories, and others. User-stories are BTIP's requirements management framed from the users' Viewpoint or perspective, detailing what is needed. This user-story's format is user-centric, which focuses on fulfilling the needs. Besides the conceptual and theoretical advantages, user-stories are too frequently poorly documented, which results in causing problem-types. To avoid such a situation, the Framework and RAICESP define a set of criteria for applying feasible user-stories (Tipp, 2024): Clear requirements management validation processes; Reviewing to find errors; Prototyping to test with users' support; Using test-cases; Using Users' eXperiences (UX)… Requirements management stage supports the tracking of made changes, and ensuring that such changes meet BTIP's defined needs, and that includes (Tipp, 2024; APM, 2020; Marsh, 2018; Paul, 2020; Project Management Institute, 2017):
- Traceability ensures that URS can be traced back to their original form.
- Requirements management's alignment with BTIP's overall goals and objectives.
- Linear (rigid/traditional) vs iterative (agile) approaches for BTIP's (or project) management methodologies for requirements management implementations.
- Configuration management supports linear and iterative approaches, and focuses on maintenance, (controlled) changes, and quality control procedures in RME's scope.

Integrating AML, RAICESP artefacts, and RME Techniques and Concepts

AML is used for RME, which is represented as part of AML's motivation aspect, which is in its requirements management domain. It focuses on understanding the stakeholders' and users' needs and expectations, and for managing associated EAMs and EAA_Models' implementations. AML offers a structured manner to build s that include their associations and relationships to other artefacts like goals, principles, and constraints. Integrating AML (and its RAICESPEDs), RAICESP artefacts, and RME techniques and concepts supports BTIPs by (Visual-paradigm, 2025):
- Stakeholders' specific RAICESPEDs can be modeled in detail.

- Realizing by using various EA elements (like business services, applications, infrastructure).
- Using relationships like ‘realization’ and ‘aggregation’ to link requirements management with other EA elements.
- Using Viewpoints like the Requirements Realization Viewpoint, which is used to deisgn/model how requirements management is implemented by various EA elements.
- Applying the motivation aspect is important for understanding the ‘why’ of the proposed RAICESPEDs, including their goals, principles, and requirements’ management.
- Using the Requirements Realization Viewpoint (RRV), which enables the architect or designer to model requirements’ management realization(s) by using EA/AML’s core elements, like business actors, business services, business processes, application services, application components… Commonly, requirements management results from the Goal Refinement Viewpoint (GRV).
- Using the GRV to refine requirements management into more detailed requirements management, and the aggregation-relationship is applied for such a task.

Advanced AML Topics

Advanced AML topics related to RME and RAICESPGs are (Gaydamaka, 2019; Ronanki, Cabrero-Daniel, Horkoff, & Berger, 2023):

- Actual applied methods of RME contain many diagram and model types which can be described using various languages like UML, AML, or others.
- Such languages ensure the end-systems consistency and completeness.
- RME is BTIP’s most crucial phase and its related development processes, operational concepts, architectural descriptions…
- Describes the supposed end-system’s behavior that is obtained by performing 2 internally interrelated end-system’s behaviors (System-Decomposed Behavior 1 and System Decomposed Behavior 2), as shown in Figure 5.
- Applying GenAI-based RME to produce RAICESP artefacts and RAICESPEDs, which is supported by applying automation, which are normally (or manually) resource-intensive processes.
- GenAI simplifies RME tasks due to its capacity to understand and interpret various context-types efficiently; and the usage of prompt-engineering enhances such an undertaking.
- There are 2 processes related to requirements management, especially requirements classification and tracking, which are automated using GPT (like GPT-3.5 turbo API) and prompt patterns.
- ML and DL methods support RMEs by applying: requirements management classification; Prioritization; Tracing: Ambiguities’ detection; and Modelling.
- The majority of actual ML and DL methods/approaches use supervised-learning, which needs massive amounts of task-specific labelled training data.
- The use of pre-trained LLMs improves designers and developers' productivity, and reduces source code and RAICESPEDs’ complexities.
- LLMs are integrated in the design and development Integrated Development Environments.
- Prompt-engineering or (prompts’ programming, or simply prompting) is used to select and compose sentences which are used to deliver an ‘expected output '.
- Prompt-engineering permits model users to use plain language, in place of a PL. Prompt-engineering intention is to improve GenAI and hence RAICESPG.
- The increased usage of selected and composed NL commands to obtain expected outputs from GenAIM like a pre-trained LLM, is prompt engineering. But NL commands can be very ambiguous, which can lead to errors.
- The usage of the Question Refinement Pattern (QRP) can improve RME’s efficiency and support RAICESPGs.
- Applying the ensemble-approach, which combines different prompt-patterns, offers a robust and adaptable classification method.

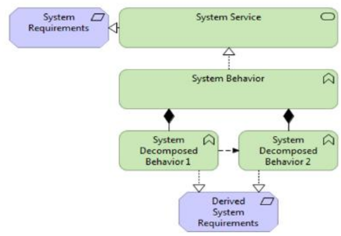

Figure 5. System behavior decomposition (Gaydamaka, 2019).

The BACSs and CPoC

Advanced Topics-Editors and Publishers

This last section applies different types of BACSs, and the 1st type is associated with the common requirements' management, RAICESP artefacts, and RME.

GenAI, AISs, LLM, and NLP BACSs

GenAI is changing RMEPs by automating: requirements' management' related processes; IDIDS/data accesses; Personalizing patterns; Using AISs for RAICESPGs; and Generating RME reports. The LLM, DL, and NLP basic BACSs are used to support the following (Yao, Wu, Li, Xu, Li, Huang, Li, & Jiulong, 2024; Lopomo, 2024):

- Chatbots and LLMs support users' experiences to understand messages/prompts.
- LLMs help with RAICESPGs based on prompts or by inspecting structured-data.
- LLMs are applied for NLs' translations to produce accurate RAICESPEDs.
- LLMs support LP4RMs' updating by analyzing RAICESPGs' modifications…
- LLMs automate the generation of requirements management descriptions, and improve data.
- NLP supports search engines to analyze designers' or users' requests, to modify RAICESPGs.
- NLP uses speech-to-text and vice-versa, which can support RAICESPGs
- Transforming LRMs can be based on legacy-information (or resources) extractions and design-documents' summarizations
- NLP parses unstructured legacy text-files and data-volumes to generate RAICESPEs and eventually RAICESPEDs.
- The sharing of RAICESPEDs and EAA_Models to support: 1) Comparing existing RAICESPEs and RAICESPEDs; 2) Applying a strategy to detect progress; and 3) Adjusting RAICESPEDs and RAICESPGs.

RAICESPG and RME BACSs

The RAICESPG's, and RME's BACSs are used to support the following (Vasudevan, & Reddivari, 2025):

- Various ICS fields are witnessing a hyper-evolution that is mainly due to advancements in AISs, and especially in GenAI and LLMs; which in turn affects RMEPs.
- RME is a very critical BTIP phase and involves the classification, gathering, and defining requirements management (and RAICESPEs).
- This BACS examines the application of GenAI in RME, with the main goal of analyzing the practical implications, identifying current research scopes/trends, and showing topics for further improvements and developments.
- This BACS applied a systematic literature review that has addressed 3 RQs and analyzed 44 studies.
- GenAIMs, and specifically LLMs, are extensively used in various RME's tasks, showing the versatility and LLMs' capabilities in improving RME processes.

The Setup and CPoC's Environment

The CPoC was developed using the Framework, AISs, GENAI, and the following environments: 1) Framework's NLP; 2) Microsoft Visual Studio; 3) Java Enterprise Edition (JEE)tools/ environments; and 4) Various AI-libraries like ML.NET. The executed PLRP was RDP's kernel part of Ph1, which analyzed various relevant (re)sources of chapters, documents, references, and links, which were verified using Framework's repository. Afterwards, the collections of selected Factors (CSAs, CSFs, and KPIs) were tuned and linked to Framework's NLP scripts. The CPoC's and BACSs' preparations included the following techniques, features, and tools/environments (Paul, & Cadle, 2020; Jonkers, Band, & Quartel, 2012; Vasudevan, & Reddivari, 2025):

- The analysis of Open Group's BACS (ArchiSurance) that presents a case of a RUP, DT, EA/RME-technics, and AML activities.
- The set of Factors were initialized-tuned, and integrated; and then the Framework (and PRWC) was synchronized with TOGAF's ADM.
- The set of CSAs was linked to sets of CSFs and RAICESPEs (and RAICESPGs).
- The design and development of EAA_Models that represent the used AISs, AIAs, AIAWFs, and the integration of RAICESPEs (and RAICESPEDs).
- Ph1, is used for evaluation of Factors and the outcomes/results are presented in Figure 7.
- The CPoC includes three phases, and if Ph1 was successful, then an RAICESP problem-type is evaluated and processed to be solved in Ph2.
- KPIs' values originated from (pre)defined Framework's enumerations, which were persisted in the CSA_DT's Tables Weighting and Rating Enumerator (CTWRE) or Figure 6's column 2.
- The CPoC (or Ph2) tries to solve a specific problem-type; and offers a set of solutions and recommendations.

CPoCs Ph1

A randomly chosen Factor (or CSF) links to a set of actions, which is then executed by the IDHDT-based Intelligence. And then Intelligence offers a set of possible solutions to the mentioned RAICESP problem-type. As shown in Figure 7, the AHMM4RAI, IDHDT/Intelligence, and PRWC use the evaluation's definition-scheme or the CTWRE .

CTWRE Label	Limit's Value	Description	Color
Proven, Mature	9.01-10.00	Success	Green
Possible, Feasible	8.51-9.00	Success	Green
Risky	8.01-8.50	Important Risk	Yellow
Complex	7.01-8.00	Unclear	Red
VeryComplex	5.01-7.00	Will probably fail	Red
Impossible	0.00-5.00	Failure	Red

Figure 6. CTWRE's defined-values.

The IDHDT uses a tree-based heuristic (which applies the 'rule of the thumb') and also applies the PRWC and FMS to enable problem-types solving processes. These processes use the 'iterative trial and error' concept. The RAICESP applies the AHMM4RAI to check, validate, manage, and support RAICESPEs' (and RAICESPGs) validations. The selected Factors were initialized and set by Intelligence to support the RAICESP. The PLRP and associated evaluations' NLP-scripts (used in CPoC's Ph1) integrate the mentioned Factors and deliver results which are presented in Figure 7, these results have an estimated average of (rounded) 8.40. And that means that a BTIP (and contained RAICESP) is a "Risky" undertaking. With the mentioned average, the CPoC continues with executing Ph2, in which a selected RAICESP problem-type is analyzed and processed by the IDHDT to offer possible solutions; that also means that PLRP's processes were partially successful, and that Ph1 ends, and that Ph2 starts.

CSA Category of CSFs/KPIs	Transformation Capability	Average Result	CSA_DT
The integration of the RDP for the BICR performances	Transformable-Possible	From 1 to 10. 9.00	1
The usage of distributed ICS, EA, EAA_Models, and Basic Technologies	Transformable-Possible	From 1 to 10. 9.0	2
The Roles of AISs, NLP, AIA, and GenAI	Transformable-Complex	From 1 to 10. 8.50	3
The Roles of RME, BICRG, and BICR performances	VeryComplex	From 1 to 10. 7.0	4
Phase 1 Result	Risky	From 1 to 10. 8.375	5

Evaluate First Phase

Figure 7. CPoC's Ph1 outcomes.

CPoCs Ph2

In Ph2, the IDHDT (and its associated actions), tries to solve an RAICESP problem-type (the PRB_RAICESP) that is related to RDP's RQ. Then the problem-type is linked to selected Factors (mainly CSFs) and their collections of actions; and afterward the IDHDT is executed from the tree's root node. The selected problem-type, like the PRB_RAICESP, is linked to a CSF, and also relates to the following actions: ACT_RAICESP_Define_ProblemType, ACT_RAICESP_Verify_ProblemType, ACT_RAICESP_Match_ProblemType, and ACT_RAICESP_Validate_ProblemType. And for Ph2, the CSF_RAICESP_Integration CSF was selected with the aim is to offer a set of (possible optimal solutions).

Conclusions

The author's main focus is on XHFRs that need systematic risk mitigation based on the following facts (Schmidt, 2023; Drenik, 2025; Curtis, 2024; Ryseff, De Bruhl, & Newberry, 2024; Ramanenkava, 2025; OTC, 2025):

- The reality is that most transformations fail and never deliver measurable value.
- Multiple sources confirm that XHFRs are 95%, due to complexities…
- Unqualified leadership and strategic errors are also CSF.
- AIS washing products that are in reality simple software components.
- Lack of CSFs like: Risk management, Defining clear objectives…
- Ethical, legal, and governance complexities related to privacy, ethics..
- Very technical issues, like: Technology obsolescence, High technical complexity…

GenAI and AISs-based generated content are witnessing a hyper-evolution as new evolutionary RAICESPGs and distributed ICS technologies are redefining EA and RME concepts. GenAI is BTIP's is pivotal in offering new possibilities and also serious risks, especially in fields related to legacy resources' conversions. RAICESPGs use GenAI to (re)generate and (re)produce massive requirement management related contents by the automating contents' creation and deployment. This offers designers and implementors to create EAA_Models in optimal conditions. This RDP, CPoC, and hence chapter offers the following RAICESP's recommendations and conclusions:

- This chapter's focuses on AI and AIS in the context of BTIP, where a BTIP needs a framework.
- This RDP focuses on RAICESP, RME, RAICESPEs, RAICESPGs, AIAs, AIAWFs, ADM, and EAA_Models; and also uses an IHI mixed research method.
- To define a RVR that supports BTIP's RME strategy to automate and optimize RAICESP artefacts.
- The FrameworkM uses existing methodologies like TOGAF's ADM, and also other frameworks.
- TOGAF's ADM supports RAICESP's processes and activities, and EAA_Models' developments.
- The RAICESP interfaces with the Framework and AISs.
- AISs include a range of heterogeneous AI topics and GenAI, which is used to automate requirements management, RAICESPEs, and RAICESPGs.
- AISs, RAICESPGs, and up-to-date ICS technologies to replace LRMs and associated ICS components.
- The RAICESP and RAICESPEs (and RAICESPGs) replace manual LRMs' conversion processes.
- Requirements management and RMEs' automation, efficiencies, and sustainability depend on RAICESP's and Framework's integrational capacities.
- A BTIP (and associated RAICESP) has to adopt a clear Polymathic (and holistic) concept (like the PAIS) to use EAA_Models, and especially RAICESPEDs.
- Intelligence manages RME's risks and tries to solve risks' generated problem-types.
- EAA_Models support AIAWFs' and AISs' integration; and RT requirements' management' contents management.
- RAICESP supports RAICESPEs' (and RAICESPGs) integration for cross-enterprise needs' creation processes.
- An RAICESPG-generated requirements management is today a complex process, and a BTIP and enterprise must balance between RAICESPG's automation processes and HF quality procedures.
- Apply the AIS and EAI for capturing user needs or requirements management, which is this chapter's main focus.
- An EAA_Model includes EAMs, ICSM, CAIMs, RAICESPEDs, LRMs, and other models.

- RDP's CPoC applied the selected Factors' which were associated with RAICESPGs, BTIP resources, AIAWFS, Intelligence, RQ, and AISs.
- RDP's CPoC outcome means that the RAICESP is a feasible, risky process, because of the result, 8.40.
- RAICESPPM is, in fact, an enterprise's performance measurement.

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