Article

Enterprise transformation project-AI based manager's profile's selection

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Abstract: The artificial intelligence (AI)-based architect's profile's selection (simply iSelection) uses a polymathic mathematical model and AI-subdomains' integration for enabling automated and optimized human resources (HR) processes and activities. HR-related processes and activities in the selection, support, problem-solving, and just-in-time evaluation of a transformation manager's or key team members' polymathic profile (TPProfile). Where a TPProfile can be a classical business manager, transformation manager, project manager, or an enterprise architect. iSelection-related selection processes use many types of artifacts, like critical success factors (CSF), AI-subdomain' integration environments, and an enterprise-wide decision-making system (DMS). iSelection focuses on TPProfiles for various kinds of transformation projects, like the case of the transformation of enterprises' HRs (EHR) processes, activities, and related fields, like enterprise resources planning (ERP) environments, financial systems, human factors (HF) evolution, and AI-subdomains. The iSelection tries to offer a well-defined (or specific) TPProfile, which includes HF's original-authentic capabilities, education, affinities, and possible polymathical characteristics. Such a profile can also be influenced by educational or training curriculum (ETC), which also takes into account transformation projects' acquired experiences. Knowing that selected TPProfiles are supported by an internal (or external) transformation framework (TF), which can support standard transformation activities, and solving various types of iSelection's problems. Enterprise transformation projects (simply projects) face extremely high failure rates (XHFR) of about 95%, which makes EHR selection processes very complex.

Keywords: enterprise's human resource; enterprise transformation projects; artificial intelligence; profile's selection; critical success factor

1. Introduction

This research and development project (RDP) and applied holistic mathematical model for architect's profile (AHMM4AP) will try to prove that iSelection is capable of finding the right polymathical TPProfile for projects and enterprises or organizations (simply entity). It is assumed that a TPProfile is a combination of ETCs, predispositions, affinities, experiences, and many types of skills in various fields. The selected TPProfile is the project's manager, leader, or/and architect, and his selection depends on the AHMM4AP that uses CSFs and an adapted mixed-research method (Trad and Kalpić, 2020). In order that iSelection optimally supports EHRs, the entity must use an in-house implemented (IHI) DMS, knowledge management system (KMS), AIMs, information and communication systems (ICS) models (ICSM), and enterprise architecture (EA) models (EAM). iSelection is supported by an IHI polymathical TF (IHIPTF) to evaluate TPProfiles characteristics, manage the project's implementation phase, and avoid XHFRs. Where the TPProfile leads the transformation of the legacy ICS (LICS) into an AI-based ICS. iSelection takes into account TPProfile's ETC and the needed cross-functional skills and characteristics.

Knowing that the project's implementation phase is the main reason for XFHRs. The TPProfile (or future transformation manager, project manager, or enterprise architect) is a strategic and central CSF for managing complex projects. Where all the project's activities are AI-enabled and use fully automated processes. It is recommended to refer to and read related documents that are online (https://ibistm.org/rdp.html), like:

- The IHIPTF—the guide.
- The IHIPTF—the glossary.
- The applied polymathical/holistic mathematical model for enterprise transformation projects (AHMM4PROJECT).

This article is a structured continuation of the author's previous related works on transformation initiatives and the project's critical profiles, like:

- The polymathic set of MMs or the AHMM4PROJECT(s).
- Deep learning integration for projects (DLI4P) in projects.
- Machine learning integration for projects (MLI4P) (Trad, 2022).
- The business, societal, and enterprise architecture framework: an artificial intelligence, data sciences, and big data-based approach.
- An applied mathematical model for business transformation and enterprise architecture: the holistic organizational intelligence and knowledge management pattern's integration.
- Enterprise transformation projects: The polymathic enterprise architecture-based generic learning processes (PEAbGLP) (Trad, 2024c).
- The business transformation and enterprise architecture framework—the applied holistic mathematical model's persistence concept (AHMMPC).
- The selection and training framework (STF) for managers in business innovation transformation projects (Trad and Kalpić, 2013a).
- An applied mathematical model for business transformation and enterprise architecture: the holistic profile management system (HPMS).
- The selection and training framework (STF) for managers in business innovation and transformation eProjects—the profile of a business transformation manager.
- The selection and training framework (STF) for managers in business innovation and transformation projects—Integrating the restructuring process of the global economy.
- The business transformation project's architect's profile (BTPAP) (Trad and Kalpić, 2021), on which this article is built. And is empowered with AI-subdomains and tools that are relevant for the EHR.
- The architect of the adaptive business system (AofABS) preceded the BTPAP and focused on the manager's EA capabilities.
- Farhoomand's works present three types of profiles: Advocate, Technocrat, and Samaritan (Farhoomand, 2004).
- Academic and educational transformation projects—The role of team-based learning in polymathics (RTBLP).
- Academic and educational transformation projects—The role of team-based learning in polymathics for the university cycle (RTBLP4UC).
- The role of artificial intelligence in the global business education (RAIGBE) (Trad, 2021).

- Educational and public administration transformation projects—The role of polymathics-based artificial intelligence (RPBAI) (Trad, 2024a).

2. The research and development project

2.1. Basics

This article presents the RDP for iSelection, which uses a polymathic approach for selecting TPProfile's and Project's needed skills. These skills are mainly based on the technocrat's profile (Farhoomand, 2004), which is antagonistic to the usually used accountants' profiles that have no in-depth and concrete knowledge in AI-enabled projects, which is the main reason for XHFRs (The Economist, 2000). The RDP uses the IHIPTF and architecture development method (ADM) to promote the fact that iSelection is agnostic to any application domain (APD) or AI-subdomain (The Open Group, 2011a). The DMS is used to check the TPProfile (or the advanced technocrat profile) for projects, knowing that there is a knowledge gap related to the lack of polymathic skills, which were initially described in the author's architect of adaptive business systems (AofABS) and BTPAP (Trad and Kalpić, 2013). The RDP uses IHIPTF's main modules: 1) AI-enabled DMS; 2) KMS; and 3) the heuristics decision tree (HDT). The IHIPTF supports the transformation of the LICS and manages new AI-based technologies, EAMs, and methodologies, like the Open Group's Architecture Framework's (TOGAF).

2.2. The literature review and the knowledge gap

In the mentioned author's preceding research activities and articles, a major knowledge gap was located and is associated with actual standards, concepts, and methodologies that are usually used in projects. iSelection offers the TPProfile, which is the evolution of the author's previous AofABS and BTPAP proposed profiles. The selected TPProfile must be capable of decreasing the risk of XHFRs that are related to the project's implementation phase(s), as shown in **Figure 1**. iSelection is used by EHRs, and the research question (RQ) is, "Which TPProfile is required for projects?"
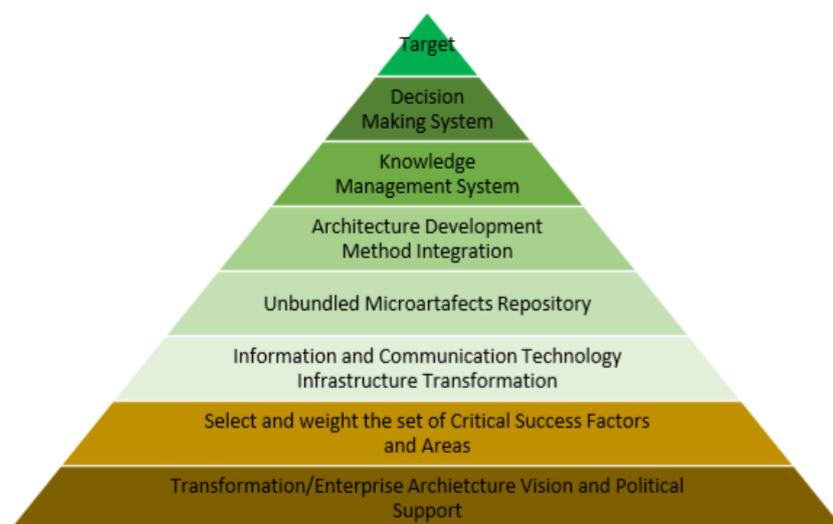
Figure 1. Levels of project's interaction.

This RDP uses hypotheses (or assumptions and even constraints) that are in fact linked to the project's critical success areas (CSA), and the RDP corresponds to the first and main CSA and RQ. RQ's real scope and feasibility and RDP's credibility depend on the perceived hypotheses (and assumptions). Where RQ's main hypotheses depend on the following project's transformational activities' (and phases) successful finalization of:

- The Project's start, budget, and vision were hammered and documented.
- There is political support, advanced EHR and AI-subdomain skills, related and experiences.
- The project has successfully implemented an IHI factors management system (FMS), polymathic rating and weighting concept (PRWC), HDT, and IHIPTF.
- The entity privileges IHI solutions and AI-subdomains' integration.
- The project's team (a set of HFs) has the needed skills for AI-models' (AIM) implementation.
- A hypothesis corresponds to a CSA.

The knowledge gap is in the literature review that is mainly based on the XHFRs (Trad and Kalpić, 2013). The authors' previous works have located important gaps in projects, existing methodologies, and polymathic concepts. The RDP researches the iSelection, which inherits AofABS and BTPAP's findings and complements them with up-to-date AI-subdomains and polymathics related to EHR (Farhoomand, 2004). And this RDP is a polymathic concept to combine: 1) project and APD topics; 2) DMS/KMS, AHMM4AP, and HDT; 3) EHR models and topics; 4) iSelection's application; 5) AI-subdomains, AIMs, and EAMs; 6) integrating HR and management standards; 7) transformation methodologies like the IHIPTF; and 8) CSFs, CSA, key performance indicators (KPI), and variables (simply factors).

2.3. Review and check of CSFs and CSAs

The IHIPTF uses CSAs that in turn contain sets of CSFs, where a CSF contains a set of KPIs, where each KPI corresponds to a single project's VAR (that can be an EHR requirement) (Peterson, 2011). Factors are used to estimate a project's feasibility, TPProfile's capacities, and whether the transformation will be successful. The project and EHR use the polymathic rating-weightings concept (PRWC) for evaluations and enhancements. The literature review, IHIPTF, RDP's experiences, DMS-based evaluation-processes and factors that are applied and evaluated by using the following rules:

- Used references have to be credible and are estimated by the author and are classified using an RDP process.
- The project's evolution is measured by factors.
- AIMs and EAMs have to be manageable and reversible.
- The ADM is mature and can be used to manage iSelection's integration.
- The ADM manages IHIPTF's phases, iterations, and factors tuning.
- If the evaluation and aggregations of all the project's CSA decision tables (CSA_DT) are positive, value and exceed the agreed minimum, then the project continues and implements a proof of concept (PoC).
- The PoC presents the EHR-oriented transformation steps and problem-solving

capacities (Jonkers et al., 2012).

2.4. The applied mathematical-model

Factors define HDT's root node(s) to be used by the AHMM4AP to support and evaluate projects and related APDs like the EHR (Morrison, 2016). iSelection uses factors-based AHMM4AP that has a nomenclature that is shown in **Figure 2**, and its main characteristics and artifacts are:

- The $\sum$ symbol symbolizes the summation of HDT's weightings (1 to 10).
- The U symbol represents sets' union.
- The project is an AHMM4AP instance and model.
- Factors have weightings and ratings, which are tunable.
- Weightings and ratings for factors are ϵ {1 … 10} (integer values).
- Weightings are used for CSFs and CSAs, and ratings for KPIs.
- Used as an interface for AI-subdomains, methods, and algorithms.
- Supports EHR, AI, and EA models.
- Offers meta-model's checking.
- Methods can be quantitative or qualitative and support the research mixed model (QQRMM).

Basic Mathematical Model's (BMM) Nomenclature

Iteration	= An integer variable *"i"* that denotes a *Project/ADM iteration*	
microRequirement	= (maps to) KPI	(N1)
CSF	= $\sum$ KPI	(N2)
Requirement	= (maps to) CSF = U microRequirement	(N3)
CSA	= $\sum$ CSF	(N4)
microMapping microArtefact/Req	= microArtefact + (maps to) microRequirement	(N5)
microKnowledgeArtefact	= U knowledgeItem(s)	(N6)
neuron	= action->data + microKnowledgeArtefact	(N7)
microArtefact / neural network	= U neurons	(N8)
microArtefactScenario	= U microartefact	(N9)
AI/Decision Making	= U microArtefactScenario	(N10)
microEntity	= U microArtefact	(N11)
Entity or Enterprise	= U microEntity	(N12)
EnityIntelligence	= U AI based Decision Making	(N13)
BMM(*Iteration*) as an instance	= EnityIntelligence(*Iteration*)	(N14)

The Generic AHMM's Formulation

AHMM	= U ADMs + BMMs	(N15)

AHMM's Application and Instantiation for iSelection and EHR

Domain	= EHR	(N16)
AHMM4(*Domain*)	= U ADMs + BMMs(*Domain*)	(N17)

Figure 2. AHMM's nomenclature (Trad and Kalpić, 2020).

2.5. The QQRMM

An EHR or iSelection problem type (or instance) is evaluated by the HDT, then the QQRMM processes returned object-collections to offer a set of possible solutions. The popular quantitative (simply analyzing data collections) is limited, partial, and not suited for the EHR and complex TPProfile detection. The HDT and its interface to the QQRM offer a dynamic (mainly) qualitative heuristics engine. The AHMM4AP supports the EHR and iSelection and can have the following views: Static view, Behavioural view; and Skeleton view (for microartefacts' scenarios). The AHMM4AP is modeled using the formula for the business transformation mathematical model (BTMM) that abstracts the EHR and projects in general:

Ql = Qualitative; Qn = Quantitative; Wg = Weigthing.

$$AHMM4AP = Wg1 \times AHMM4AP\_Ql + Wg2 \times AHMM4AP\_Qn \quad (N18)$$

$$AHMM4AP = \sum AHMM4AP\text{'s instance} \quad (N19)$$

$$BTMM = \sum AHMM4AP \text{ instances} \quad (N20)$$

The BTMM's objective function (OF) uses EHR, iSelection, and common project constraints and factors to be tuned by the AHMM4AP. VARs are used for maximization (or minimization) of OF, like in the case of TPProfile's experiences in concrete projects. The PoC is the constraint that success is a VAR that can have the binary values of 0 or 1 (true or false), and OF's definition is:

$$\text{Minimize risks for BTMM(EHR)} \quad (N21)$$

$$\text{Optimize EHR's iSelection operations} \quad (N22)$$

$$\text{Maximize iSelection probabilities} \quad (N23)$$

The AHMM4AP serves as a skeleton for the EHR and project that uses microartefacts-based scenarios to support iSelection operations. The BTMM is a mixture of EHR disciplines, iSelection techniques, and project-related methodologies. iSelection interfaces the AI-based DMS (and KMS) to evaluate possible TPProfiles and to solve related problem types (Agievich, 2014).

## 3. LCIS, ICS, EA, and needed artefacts

3.1. Basics

This article and RDP assume that the entity adopts an IHI approach and not a simplistic purchase of AI products for EHR activities and approaches. An IHI is a long-term approach suited for complex TPProfiles finding knowing that other approaches failed and projects have an XHFR that is superior to 95%. The entity has to prepare its environment for a long-term iSelection approach by combining project methodologies, AI and EA techniques, and ICS technologies. And that is done by:
- Transforming the LCIS and delivering an AI and services-enabled ICS.
- Offering needed artifacts and services in the form of blocks.
- Offering EAMs.

- Interfacing AI-subdomains and EHR systems (EHRS).

3.2. Transforming the LCIS and delivering an ICS

As shown in **Figure 3**, a project starts with the unbundling of the siloed LCIS into a dynamic ICS that includes a pool of services that are assembled in blocks; that is commonly known as digital transformations (DT). The unbundling process' (UP) also delivers AI-based architectural BBs (ABB) and an entity's polymathic dictionary and glossary (EPDG) that includes AI-subdomains' main terms and keywords (Trad, 2024b) to be used by the EHR and AIMs, which also includes common APD terms, vocabulary, definitions, and reference profile models.
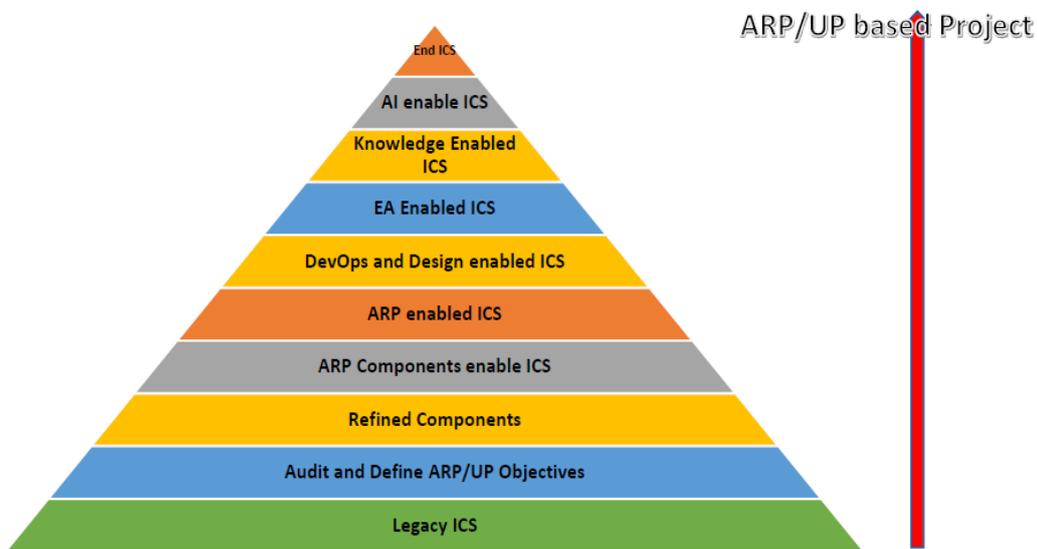
Figure 3. UP's phases (Trad, 2024a).

3.3. Offering artefacts, services, and blocks

The EHRS implementation uses blocks like ABBs, compound BBs (CBB), and EHR-specific blocks. The ADM synchronizes UPs, where blocks can be used to offer EHR templates and TPProfile patterns. UPs extract legacy APDs (or EHRs) models because entities already have EHR experiences. An entity can define its own EHR methodology (EHRM), which can include (Trad, 2024b): 1) The decision-making notation (DMN) for modeling HR's operational decisions: 2) HR's business processes (BP); 3) designing its ICS platform; 4) adapted AIMs; and 5) EAMs.

3.4. Offering EAMs

As mentioned, projects and EHR use standard methodologies, like TOGAF for implementing EAMs, AIMs, and blocks for the EHRS (The Open Group, 1999); but that all needs important upskillings in the following fields that are due to the: 1) Lack of EAMs and AIMs-related experiences; 2) inadequate project and EHR strategies and roadmaps; 3) lack of knowledge for implementing EHRS' platform; 4) complexities related to interfacing external HR systems or frameworks; and 5) the complexities related to synchronization of the project's phases, as shown in **Figure 4**.
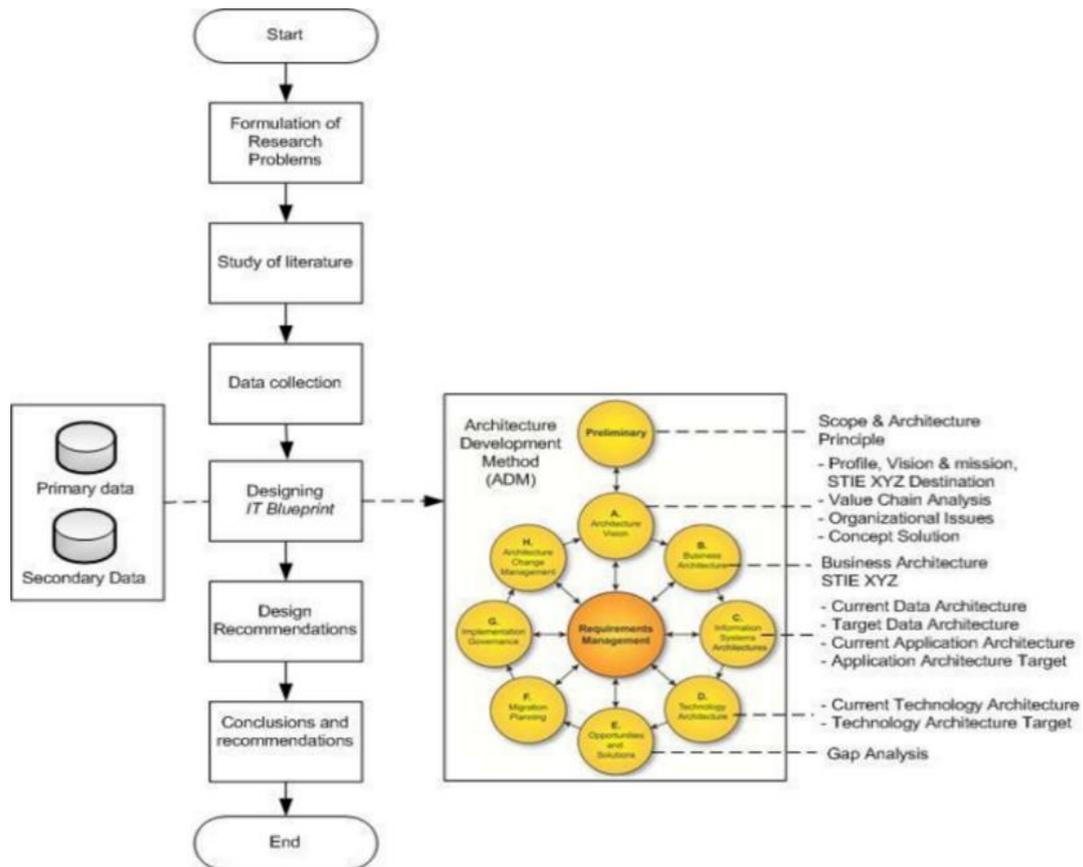
Figure 1: Conceptual Model

Figure 4. ADM's phases (Holilah et al., 2019).

3.5. Interfacing AI-subdomains and external EHRSs

The EHRS offers a concept for interfacing internal and external EHR-related frameworks, which include (The Open Group, 2022; Trad, 2024b):

- Catalogued (E) HR and other common frameworks.
- Management and measurement frameworks (like Balanced Scorecard…).
- Connectors having EA/ADM capabilities to support implementations.
- Management of the project's roadmap, goals, and requirements.
- Administration frameworks for managing risks, accounting, and planning as shown in **Figure 5**.
- AI-subdomains' interfacing using generic interfaces.
- Management of punctual EHR coaching, training for AI support.
- Collaborative cross-functional work to amplify AI capabilities.
- Scrutiny and regulation frameworks.
- Generative AI (GenAI) online platforms and interfaces.
- Avatar EHR or common tutors.
- …
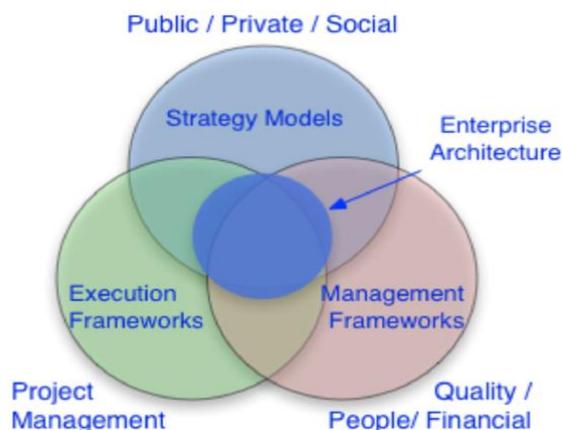
Figure 5. Grouping frameworks and finding the intersection (The Open Group, 2022).

4. Applied AI-subdomains and AIMs for EHRs

4.1. Fundemants

AI-subdomains communicate with each other by using projects and ICS components; they also can integrate various media formats, like the eXtensible markup language (XML) format, and many others. Imported (or exported) data files and structures are combined with other project artefacts, DMS, and other components to deliver AI-subdomains for EHRS' integration. AI-subdomains include BigData (BD), machine learning (ML), deep learning (DL), data sciences (DS), and others. The AHMM4AP is used for the project's AI-subsystems' integrity checking, gap analysis (GAPA), financial analysis, risk management, and many other types of strategic DMSs. AI-subdomains use mathematical models (MM) and hence in-memory DataSets (IDS) that can be interrelated with mixed-research method(s) that are based on mainly qualitative and associated quantitative research methods. The project takes a transformative entity-wide view and not just AI-subdomain usage in a specific case; it also promotes AI-subdomains that support the central reasoning engine for the qualitative HDT and their IDSs' interfaces.

### 4.2. The setup and use of IDSs

IDSs' main characteristics, parts, components, or modules are (Cluster Protocol, 2024):

- They can have different formats depending on the applications of AI-subdomains…
- The quality-of-data (QoD) and quantity of data in IDSs are important factors in estimating the applicability of AIMs.
- QoD must ensure that used data is errors-free; otherwise, IDSs will be full of biases or irrelevant information, which will cause the AIM to deliver erroneous predictions.
- QoD needs data cleaning and data augmentation.
- Quantity of data improves predictions because more data means better AIMs, but that can prove itself wrong…

- IDSs' related preparations are important for AI-subdomains, like ML, that include: 1) irrelevant data identifying and discarding; 2) duplicated data detection and removal; 3) noise data filtering; 4) incorrect data-type correction; 5) missing-value corrections; 6) multicollinearity improvements; 7) outliers are managed; and 8) unacceptable formats are discarded.
- They enable AIMs-based training and learning processes.

4.3. The use of AIMs

An AIM is a program (or logic) that autonomously supports specific business tasks, in an automated manner. Like the human brain (HB), it learns, solves problems, and makes predictions. It does learn from experience like the HB, but it acquires knowledge from massive IDSs and applies MM-techniques and algorithms, to derive insights. An example case, is an AIM that is used to compare pictures of telephones and PCs (and laptops), using training on labeled images of both. To find differences, the AIM analyzes the inputted images to detect patterns, like size, keyboard, used building materials, and applications screen's design. When the AIM is highly trained, it can be used for DMS activities, as shown in **Figure 6**. AIMs can be used for different applications like image-recognition task, and they can be applied for workflows, natural language processing (NLP), anomaly-detection, predictive-modeling, forecasting, robotics… (Airbyte, 2024).
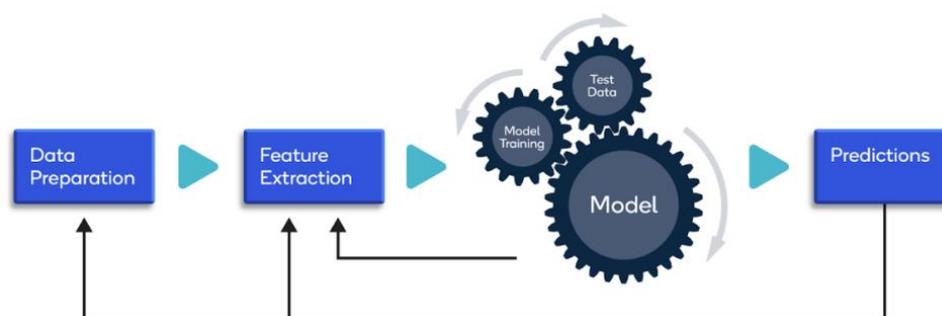
Figure 6. The usage of AIMs (Airbyte, 2024).

4.4. Integrating AIMs

As shown in **Figure 7**, supporting EHR AIM needs (Airbyte, 2024; Cluster Protocol, 2024):
- Identifying EHR's problem types to solve and goals to be achieved.
- Data preparation and gathering (in IDSs) reflect workflows.
- IDSs can contain structured, unstructured, static, or streaming data, and inconsistencies must be removed from all types of IDSs.
- Training, validation, and testing data splitting into three IDSs as follows: training, validation, and testing.
- AIM training uses backpropagation to incrementally tune its internal parameters.
- Hyperparameter tuning of batch size, learning rate, and regularization methods keeps the balance between underfitting and overfitting.
- AIM's assessment is done by using validation IDSs, to evaluate AIM's effectiveness.

- Testing and deployment use testing IDSs, and the AIM has to meet defined EHR use cases, and if the results are satisfactory, then deployment processes are initiated.
- Continuous evaluation and enhancements are supported by monitoring and updating the applied AIMs to adapt to the transformation of data patterns. Received reports help in understanding AIM's performances and how to make needed adjustments to keep it relevant and enrich EHR learning processes (LP).
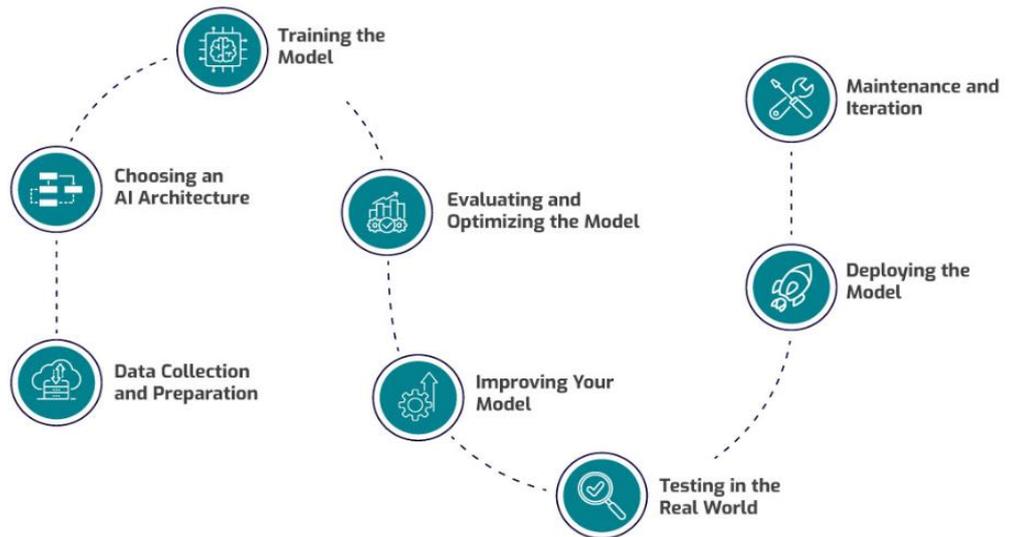

Figure 7. The creation of an AIM (Airbyte, 2024).

4.5. AIMs training and LPs

Supporting an AIM needs the following activities and operations (Airbyte, 2024; Cluster Protocol, 2024):

- AIM's training process includes improving LPs to offer predictions or decisions based on inputted IDS, which includes various steps.
- The selection of the right model step offers an algorithm that corresponds to the IDS and the problem to be solved.
- The preparation step splits the IDS into training, validation, and test sets of data.
- The feeding step inputs IDSs into the AIM in batches during the training phase.
- The backpropagation step adjusts AIMs by PRWC (weightings) that is based on predictions' errors.
- The validation step, uses validation IDSs to tune AIMs' hyperparameters without overfitting.
- Testing step, evaluates AIMs' performances on unseen IDSs to ensure generalization.

AIMs' training faces many challenges, and overfitting, underfitting, and ensuring AIM's interpretability are barriers that AI engineers face (Airbyte, 2024; Cluster Protocol, 2024):

- Overfitting is the case in which an AIM learns too much from the training of IDSs, which results in including noise and outliers and causes poor performances on new IDSs.

- Underfitting is the case when the AIM is very simple and can capture underlying trends in the IDSs.
- Interpretability refers to the ability to understand AIMs' made decisions, which is a determinant factor.
- Cross-validation: Using different parts of the data to train and validate models helps in assessing various types of performances.
- AIM's explainability: Tools and techniques can help in explaining models' decisions, and that can build trust and aid in debugging processes.
- AIMs and LPs use AI services.

4.6. The use of AI services

AI-subdomains use specialized services, application programming interfaces (API), and AI as a service (AIaaS), which cover a wide spectrum of required AI functions and operations, like understanding human languages, recognizing objects in images and videos as shown in **Figure 8**, learning from data, understanding speech, analyzing sentiments, suggesting personalized advices/recommendations, and others. The AIaaS offers (Amazon, 2024a; Hackney, 2023; Primo AI, 2024; RedHat, 2021):

- The AIaaS platform-ecosystem is optimal for fast commoditization in cloud-services-based ICSs. Cloud vendors offer a range of standardized, pre-configured AI services. Like AI services that support the deployment of chatbots, financial services, fraud detection…
- Services-oriented architecture (SOA) and microservices architecture (MSA), which accompanied the decline of LICS' architectures. The emergence of SOA and MSA enables the implementation of cloud services, like AIaaS.
- LICS architectures, an application is a set of units, whereas SOA and MSA support applications composed of atomic blocks, which support the implementation of AIaaS functions.
- Commoditization of AI functions in AIaaS offers: 1) Optimizing ICS-infrastructure costs; 2) 'pay as you go' model; 3) reduction of specialists' costs; 4) 'out of the box' pre-trained AI models can be used; and 5) integration with other DICSs.
- Supports various APDs like image recognition, as shown in **Figure 8**, that enables a user to identify objects by taking a photo.
- There are many AI frameworks that deliver AI services for various AI-subdomains like ML as a service (MLaaS).
- AI services are mainly used by generic LPs.
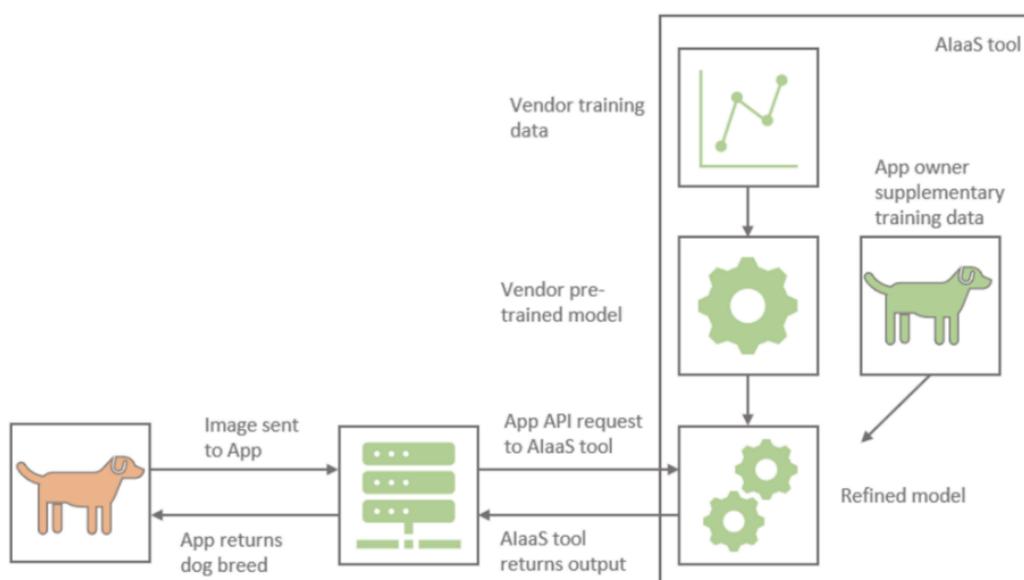
Figure 8. An AIaaS based application that recognizes objects (Hackney, 2023).

4.7. Generic LPs' approach

There is a strong interaction between projects, AI-subdomains' implementation and LPs, and therefore the entity has to implement EHR generic learning processes (EHRGLP). The EHRGLP manages all entities' LPs that include ML, DL, DS, traditional-legacy LPs, and other types of LPs. The EHRGLP proposes an IHI concept for an EHRGLP. EHRGLP's approach supports and interfaces with all AI-subdomains. The EHRGLP uses a polymathic approach (Orayer, 2023) and the IHIPTF for projects' finalization. Projects have XHFRs, and added to this major complexity, AI-subdomains implementations and related products can force siloed-integration implementation approaches, which are the main reason for XHFRs. The EHRGLP ensures an entity's sustainability, just-in-time decision-making, and operational efficiencies. There are various types of AI-LPs types: 1) Artificial narrow intelligence (ANI); 2) artificial general intelligence (AGI); and 3) artificial superintelligence (ASI). AI-LPs can be classified by their ability to function like the HB (Galeon, 2024). Where AGI is the case where AI can reason and offer decisions like the HB, where the level of precision is still to be defined. AI-based problem-solving, which HBs cannot solve, like EHR problem types or mathematical reasoning. And ML is interesting for EHR and TPProfile because it has different types of LPs, which are 1) supervised, 2) unsupervised, and 3) reinforcement LPs.

Unsupervised ML (UML) supports LPs that are learning processes based on comparing objects. UML is different from SML because the content does not use labeled data samples to execute tasks like data analysis (DA) or DS. By using comparison based on data objects' characteristics (differentiating their elements), like in the case of image segmentation. Image segmentation's goal is to classify and group similar images according to their similarities, without pre-established solutions. Which is optimal in DMS processes like products selection.

Reinforcement ML (RML) LPs are based on learning from experiences and interactions with the environment(s), where LPs correspond to HBs' way of reasoning. ML explores DMS options and offers feasible recommendations (or rewards) and

eventually penalties, depending on the selected factors. And the objective is that ML improves and persists LPs with the most rewards and therefore improves DMS' performances.

DL LPs are based on neural networks (NN), which is a subcategory of ML that in turn uses artificial NNs (ANN) to solve-process more IDSs and deeper/complex AIMs. DL efficiency exceeds ML because it is capable of analyzing more complex IDSs using deeper, sophisticated NN-based processing. Like in the case of an image recognition, the DL LP analyzes the shapes.

ML supports the evolution of AI-based projects, DMS, and various AI-subdomains (like DS, BD…). AI-subdomains like DS, BD, and others need a project and entity strategic roadmap that defines AI-based transformation processes to implement a DMS where the roles of DS, AI cartography, and AIMs are central (Magnimind Academy, 2023).

5. The role of polymathical skills and predispositions

5.1. The role of complexities

Projects face various problem types due to complexities that are mainly related to UPs of the LCIS and APD components. A successful UP delivers EHR blocks and BP Models (BPM) for EHR scenarios. iSelection proposes the TPProfile that super-classes the previous BTPAP and AofABIS by adding skills and predispositions like polymathic capabilities, which include (Crebert et al., 2011; KPU, 2020): 1) The use of IHIPTF; 2) agile project management (APM); 3) modeling EHR, AI, EA, and BP models; 4) integration of standard methodologies… 5) adopting an ADM-based transformation development method (TDM); 6) implementing an EHRS continuum; 7) finding solutions and resolving complex problems and difficulties; 8) having the capacity to reconvert and upskill fast.

The EHR supports team members' evolution and upskilling roadmap, which can have long-term impacts. XHFRs have negative causes (Bryce, 2015; Buch-Madsen, 2011; Heywood et al., 2010; Kenkare, 2022; Wikipedia, 2023):

- Negative impacts on teams' efficiencies, engagement, retention, and cause important resources/financial losses.
- Project's duration extensions and the loss of skilled profiles.
- Destabilization of workplace culture that is averse to projects and generating resistances.
- Customer services like incorporation.
- Cause panic, generate pressure, and create conflicts.
- The main reason for XHFRs is that teams expect simple approaches and reject complicities…
- Diminish polymathic capacities.
- Complexity is strongly linked to cross-functional projects, EHRS', and AI modeling.
- Important factors are: Volume of tasks; The nature of project's components; speed-of-change (SoC); andlrs skills.
- Benefits of managing complexities are: Higher-returns; reducing-costs; and

improved performances.

- To detect complexities fatal effects and the Project needs to apply accountability, control processes, the complexities of management strategies (CMS) manage complexities and stop their wide spreading.
- A CMS supports the continuous-rise of project's complexities, where a CMS links various domains, tasks… It also: Reduces stress; supports upskilling; improves cognitive abilities…

5.2. The role of polymathics

The EHR and iSelection need to find, filter, and support polymathic capacities by (Burke, 2020; Cotellessa, 2018):

- Team members can have some polymathic capacities, and some are real-full polymathic profiles. As shown in **Figure 9**, the majority of people show some polymathic characteristics, but a smaller category has full polymathic cross-functional capacities.
- Avoiding the classical accountant-based managers' profile, who just aim for short-term financial gains…
- The constant need for upskilling and adaptability.
- Coordination and implementation of many parallel project tasks.
- Detecting relations of the project's topics and components and avoiding redundancy.
- Abstraction, EAM, ICSM, and AIM capacities…
- Replacing pressure with just-in-time problem-solving.
- Proactively managing complexities and requirements.
- Using various standard methodologies and packages.
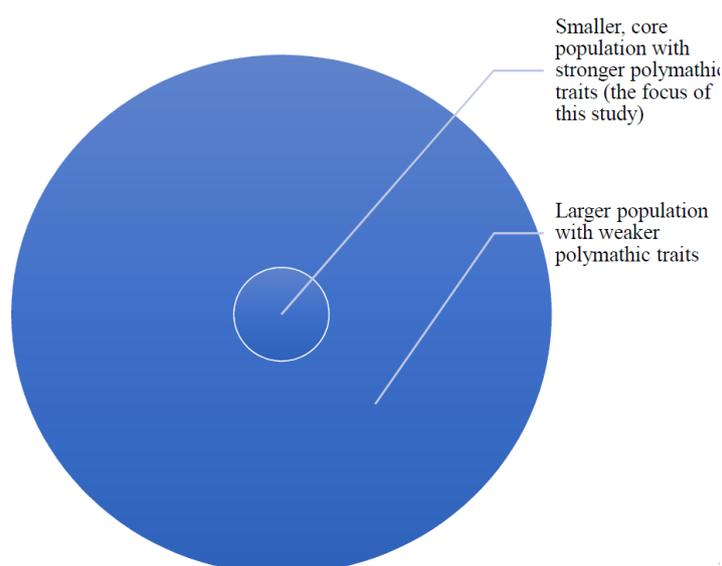
Figure 9. The relation between polymathic groups (Cotellessa, 2018).

5.3. The role of education and predispositions

The EHR and iSelection depend on team members' educational backgrounds and predispositions (EURSC, 2022; Trad, 2023a, 2023b):

- Polymathic capacities have to be detected and filtered early, ideally in primary school. Such TPProfiles must be coached through all training and educational cycles as shown in **Figure 10**.
- These profiles must be adapted for multicultural, multilingual, multi-technical, and cross-functional environments.
- There is an immense lack of experienced professionals with polymathic capacities, which should be detected already in the primary and secondary schools or cycles (PSC). Then tuned in the university cycle (UC).
- The detection process should be based on an interdisciplinary core (RbIC), and it includes various APDs, fields, AI-subdomains, and topics related to entity (re)organization, change management, business/financial, AI, ICS, MM-Algorithms, and others.
- RbIC and iSelection can be used by EHR specialists and managers, to select future team members.
- This needs very experienced and qualified polymath EHR specialists and educators to coach and select the right approach.
- The RbIC links various complex subjects and defines their relationships and can use frameworks like 1) AI or EA environments to support UC teaching and learning (Pushpakumara et al., 2021); 2) different types of training environments; 3) an agile coaching environment; and 4) ICS and organizational-change concepts.
- Manging complexities that result from various project domains like LCIS, DMS, KMS, and others.
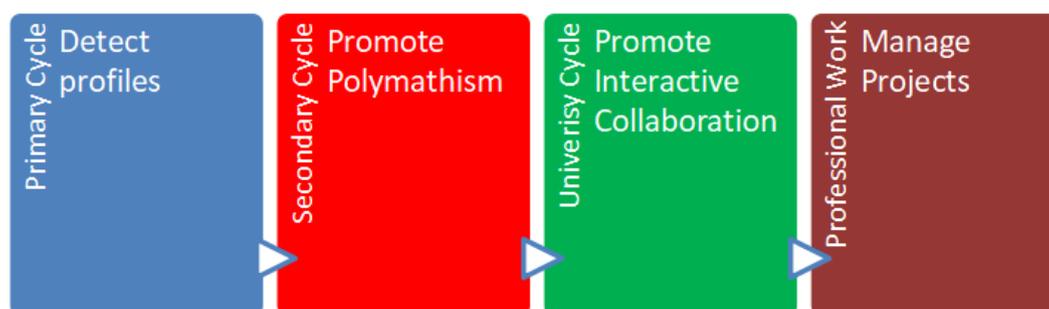

Figure 10. iSelection's related cycles.

5.4. Cross-functional characteristics

The EHR and iSelection have to define the needed Cross-Functional Characteristics (CFC) that can include (Cotellessa, 2018; Hayashi et al., 2022; Page et al., 2005; Satterlee, 1996; Scaled Agile, 2022; Tuononen et al., 2022):

- To implement, structure, design, develop, and transform effective RbIC that incorporates evolutive quality, enhancement' concepts, cross-functional project teams, orientation support, vocational renewal, linking topics, defining goals and planning, avoiding redundant tasks, managing complexities, and focusing on requirements…
- Using collaborative environments like the scaled agile framework (SAFe) and manage resultants, LPs, and return on experiences (ROE). These activities can

include: brainstorming, managing, modeling, planning, coordinating actions, critical thinking, virtual collaboration/communication…

- Enforcing governance and ethical principles…

- Modeling CFC skills in a coordinated manner, because cross-functional capacities and multidisciplinarity also have their major disadvantages, like the time (and efforts) required to be asserted as a polymathical profile.

- Such a TPProfile is an expert in all fundamental fields, and he can correlate them.

- And fields related to the QQRMM, like complex qualitative methods; knowing that polymathic scholars publish less and they are always underestimated. And as a result, such experts face important difficulties.

- TPProfiles are negatively viewed because enterprises and society give value to single-discipline expertise. As shown in **Figure 11**, there are some common features to polymathic profiles, which are experts across domains.

- EHRGLP can also include the polymathics-based project-oriented learning (PPOL) to support coaching.

- The PPOL emphasizes the manner in which EHRS problem types are managed and planned and, at the same time, enriches EHRGPL. Where planning categorizes big tasks and small tasks.

- PPOLs supports CFC's: 1) Integration of skills; 2) autonomous work; 3) proving capabilities; 4) evaluating status; and 5) integrating LPs.
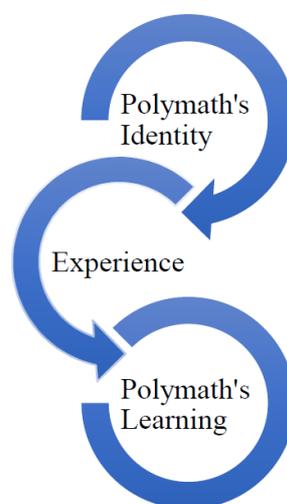
Figure 11. TPProfiles' development (Cotellessa, 2018).

5.5. Problem-solving affinities

The EHR and iSelection have to define the needed Problem-Solving Affinities (PSA) that can include (Woudenberg and Unis, 2023):

- Supporting CFC interactions, and can be enlarged to include external actors' interactions. Connecting team members with external specialists using system thinking.

- Polymathic system thinking is a type of brainstorming/thinking that spans over various domains and offers: 1) a holistic systemized model; 2) a systemized model that includes technical and functional/business (EHR) domains; 3) solving complex EHR or project problem types as shown in **Figure 12**; 4) different EHR

viewpoints; and 5) an IHIPTF that includes physical, logical, and persona factors.

- EHRSs are complex, and the use of avant-garde AI-subdomains, ICS technologies, and EAMs has created a major transformation paradigm shift.

- As AI-subdomains are embedded in ICSs, polymath thinking has become strategic and crucial because polymath system thinking relates multiple disciplines.

- That needs a large set of concrete skills, like critical thinking, AI/ICS modeling, creativity, adaptability, supporting complex implementation tasks, leveraging multidisciplinary knowledge/skills, adaptability, and improving virtual collaboration.
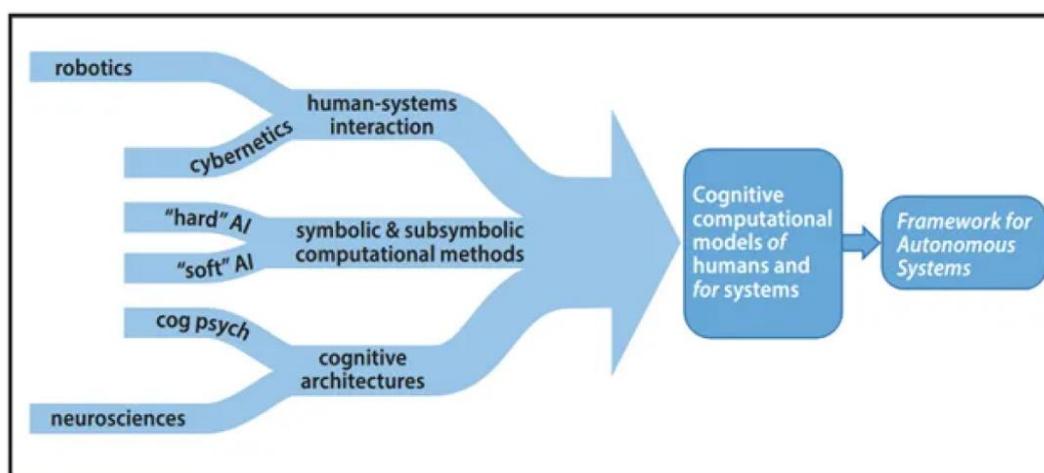
Figure 12. Complex projects support autonomous systems (Woudenberg and Unis, 2023).

6. iSelection and the TPProfile

6.1. Basics

The iSelection filters, checks, and assesses profiles that have project experiences and affinities that include EHR capabilities like 1) lean EHRS capabilities; 2) integrated AI-subdomain environments; 3) HR specialists' integration; 4) APM usage; and 5) coordination of HR specialists. The iSelection estimates skills needed for projects that include various fields and rounds up the needed profile. iSelection's assessed skills have crucial impacts on the project's implementation phases. iSelection factors qualify specialists or managers, who can be continuously coached to enhance their skills and check project statuses; and how to change ICS operations, use the right SoC, and AI-automate, and to reschedule project tasks. The deceiving XHFRs, complexities, and the importance of projects, DTs, and change management need to analyze HR, EHR(S), and profile trends.

AI-subdomains are heavily used by EHRS, and the latest research indicates HR-trends show that the following factors are crucial: Diversity, equity, inclusion, and belonging (DEIandB). Compensation, ICS-technologies evolution, demographic changes, and changing expectations factors are also important. AI-based content-analysis checks EHR-trends, which can be categorized into 9 meta-trends (Gibbard, 2024). AI based EHR needs to hire skilled HR staff, and have a policy of internal

transparency to be sure that AI-subdomains do not become a control environment. AI based EHR views and characteristics are (Sakka et al., 2022):

- AI based DMS frees EHRTs from routine tasks and allows them to focus on strategic tasks.
- Transforming EHR's position in an entity to shift from a reactive to a proactive posture in DMS activities.
- Financial consequences that are related to cutting costs.
- The impact of AI on EHR practices and competencies that include talent acquisition, to employees' management, and developing robust teams.
- Talent acquisition and management to find suitable applicants.
- Performance appraisal for employees that have presented high levels of productivity and participation.
- Training and development are crucial to keeping up with AI and ICS evolutions.
- Employees' motivation and engagement are estimated by AI-subdomains and inform managers about the findings.
- (Re)assessing EHR's position in an entity and justifying upgrading the EHR functions.
- Anticipated skills' set(s) for active engagement with AI demand the transformation of HR tasks in order to accompany the increasing centrality of EHR.
- Financial and legal implications of AI-subdomain usage effects on cost-benefit calculations.

6.2. Trends

Employee experience (EX) is not included in the meta-trend, which is an unfortunate fact… Actual Entity's EHR most important issues are closely related to EXs, and their use is EHRS' top priority. There is the need to analyze EHR trends and the roles of AI-subdomains and ICS technologies are crucial for EHR's specialists and managers, especially in selecting profiles and in making strategic decisions. And the actual EHR trends are (Gibbard, 2024):

- AI-subdomains are used in various APDs, and the EHRS is a dominant factor in transforming the labor market, improving productivity, and predicting XHFRs. GenAI will not result in cutting jobs, but there will be major changes. Employees have to adapt to AI-subdomains because it will support them in their work. AI-subdomains must be included in team members' performance and development skills roadmap.
- Polymathic skills are central for projects and hence for EHR practices. Entities have to consider which AI skills are required and how the entity will identify skill gaps. That can be done by upskilling, external sourcing, or hiring new members. Strategic thinking and problem solving are very important; therefore, continuous learning is the best approach for the AI challenge.
- Motivation is important, and entities must motivate employees to return to their workplace to enhance productivity, collaboration, and cost-reduction savings… The increased return-to-office (RTO) policies have improved the need for hybrid and remote work models.

- DEIandB efforts are decreasing because of members' discontentment because of SoCs. But demographics, legal, and economic changes are encouraging. Cost reduction and financial goals to skills shortages. Therefore, iSelection practices must be adapted and changed.

- Mental-health has become an important factor as high rates of members' stress (and burnouts) are increasing exponentially and have become a mental health issue.

- Projects cause major changes, organizational restructurings, management transitions, and ICS/technology changes, and that causes members' resistances and fatigue. Entities focus on rapid financial gains and not on members mental health.

- Trust in management is low because of the focus on financial gains and members disillusionment that is due to fatigue, which causes their mistrust of the management. Such a status causes instability, uncertainty, conflicts… Which also puts managers in a difficult position. Members look for esteem and meaning, and if not satisfied, they leave.

- EHR has to transform its skills and moderately agilise its activities, especially in HR's key areas. And AI is at the top of the areas list, and public relations skills are also needed. Current frequent and brutal layoffs and RTO operations: EHR has to anticipate such an exposure and manage its internal and external impacts. AI-subdomains have already been used by EHRs, but the evolution of GenAI brings new opportunities for EHR professionals at various levels to improve their efficiency.

- Payments for employees have become a central factor for entities and team members because of societal economic uncertainties, organizational restructuring, layoffs, costs of living, elevated inflation… So, members need a just level of salary and costs like transportation and others. Entities try to rebalance their compensation costs, which needs a clear strategy on pay equity and pay transparency.

- Sustainability is actually a strategy for an entity's branding and internal operations' execution. An EHR has to promote eco-friendly practices in its HR policies, provide members with understanding on its sustainability goals, and implement AI, automation, and ICS technologies. Entities have to drive carefully to emphasize environmental sustainability and define it as a key strategic priority.

6.3. EHRS' processes automation

AI-subdomains influence all EHR activities, approaches, and tools used to optimize iSelection domains like recruitment, training, and talent-management activities. And using AI-subdomains like GenAI enables personalization and creative automation and the transformation of traditional HR activities. Entities can mix traditional activities and AI-subdomains with GenAI, which can improve EHR's processes. As shown in **Figure 13**, EHR's processes automation (EHRAP) is based on (IBM, 2024):

- AI-subdomains enable EHRAPs and make them agile, and that supports the EHR department (EHRD), which is one of the entity's vital departments. Because it is

responsible for selecting, finding, recruiting, profiling, and training applicants. They also administer existing team members (or HFs), and for these activities, EHRAPs are important to streamline processes.

- Empower EHRD and team (EHRT) with offloading tedious tasks and enable them to do higher-value tasks.

- Talent acquisition (TA) is supported by AI-subdomains, which enable extensive integrations, orchestration of interview scheduling, follow-up communications, TA chasing... The EHRT uses orchestration to automate. That includes candidates' sourcing and recruiting, focusing on strategic and relationship-building aspects of TA, which improves productivity and builds candidate experiences.

- HR procurement is used to respond to newly acquired clients' preferences (or new deliverables); for that, an entity needs dynamic and flexible team members, because business priorities are quickly shifting. Sourcing and staffing team members is a costly process, and orchestration can optimize these processes.

- Onboarding needs human attention and consequent administrative work. Orchestration automates time-consuming, repetitive BPs and frees the entity's resources. Orchestration sets up accounts and standardizes experiences for new team members who will receive equal treatment like scheduling training sessions and welcome emails… EHRTs use orchestration to deliver high-quality, human-centric care for team members. Orchestrations use an AI-subdomain, the NLP, which uses scripts to draw from a catalogue of templated or prebuilt and customized profile skills to execute processes that are specific to important EHR processes.

- Career mobility conditions for qualified, competent, and efficient team members who want to advance are important in order to retain them and to reduce turnover. Offering opportunities for job mobility for team members as advancements.

- Prebuilt skills are managed by orchestration to create job-description's templates and to share between managers, providing matching candidates' lists, and managing communication.

- Custom skills are managed by OpenAPI to create and publish automations as skills in orchestration scripts. NLP is used to access and run automation activities that interface with internal and external EHRSs to find TPProfiles.

- Integrations are achieved by using orchestration, collaboration, and communications to analyze and track applicants.
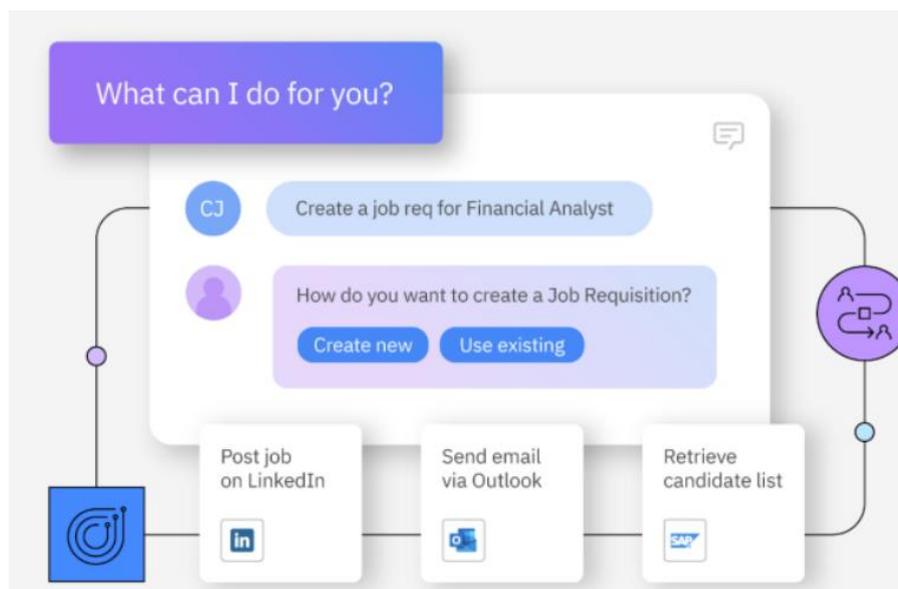
Figure 13. EHRAP's activities (IBM, 2024).

6.4. Polymathism and generic profiles

Identifying polymathic team members is based on the constraint that their profiles must match the TPProfile, who is or can become competent in at least 3 different APDs (or domains) and can synchronize these skills into a top one-percent skill set. TPProfiles are experts who have excellent skills in one APD and have the capacity to collaborate across various project disciplines with other experts (Mansi, 2024). AI-subdomains are restructuring the working environment, which is negatively viewed by EHRs and HFs, which can impact their skills. There is the possibility to open new opportunities but layoffs that are inevitable, and today there is a shift towards an AI-driven society and economy, which is a major societal shift. HFs' concerns must be seriously taken into account because that can create collective resistance to change (R2C) and avoid using AI-subdomains as a justification for just financial gains. It is important to promote AI literacy in entities and their respective ecosystems; therefore, the EHRD must organize training programs, build polymathic/cross-functional teams, support innovation, and organize AI committees to supervise ethical and acceptable AI-based projects. Entity's executive management has to establish continuous learning to enable HFs to cope with the fast evolution of AI, APDs, and ICS technologies (Goncalves, 2024). Concerning polymathism and generic TTProfiles, selected managers or team members perquisites are (The Open Group, 2011d):

- iSelection is tuned using factors.
- Must have polymathic capabilities and cross-functional skills.
- Is a flexible and agile person who is capable of transforming LCIS.
- To manage complex concepts and use the HDT.
- Managing the feasibility of AI, EA, and ICS models.
- Managing and communicating with stakeholders and various partners.
- Managing conflicts, resistances, finding trade-offs, solving problems…
- Definite project paradigms to map to requirements and EAMs' goals.
- The manager is similar to a city planner or building architect.

- EAMs and AIMs are used to support the project, DMS, and EHRS.
- Producing EA and AI documentation related to the project's decisions.
- Should be involved in all the project's phases, components, and collaboration with clients.
- Manage requirements engineering to understand project's needs.
- Manage the project's implementation phase.
- To tune TPProfile's key characteristics and persist gained experiences.

6.5. TPProfile's key characteristics and experiences

The project's difficulties are related to its duration, which can take 5 to 25 years to be successfully finished. Complexities lie in interconnecting various project activities like UPs and AIMs' usage (Farhoomand et al., 2004). iSelection checks if the person has deep-innovation capacities and can implement EAMs and BPs, where BPs support sub-systems like the DMS and KMS. iSelection analyzes HF's educational background and its relations to projects, AI-subdomains, ICS technologies, and business engineering. An HF must have the ability to understand an entity's specific transformation paradigm and the ability to apply versatile and extensive methodological skills (which is the most important factor) (Gartner, 2020). The IHIPTF offers iSelection that includes training concepts to support team members in improving polymathic capabilities, which include BP, NLP, and business scenario' implementations. These techniques are used to automate AI and EAMs. The knowledge of ICS' platform and their scalability is also mandatory, and the manager must have many years of experience in this domain and hands-on skills. Hands-on skills include (Krigsman, 2008; The Open Group, 2011d): 1) EA, business architectures, and BPMs; 2) AI-subdomains and automated environments; 3) APM and DevOps; 4) ADM and synchronized integration processes; 5) organizational (re)engineering; 6) DMS and LMS; and other fields; 7) building interfaces; 8) requirements engineering; 9) risk management; 10) leveraging opportunities.

The TPProfile is primarily a technocrat but also needs soft skills to manage team members (or the HF) and their para-psychological, behavioral, and cultural characteristics or aspects. In cases of project problems or XHFRs, the manager tends to use justifications like HFs personification to justify complex ICS, AI, business, and other project problem types, which is a clear fact of incompetence and is the primary reason for XHFRs. The mentioned personification tactics for enforcing responsibilities and prioritizing accountant profiles, which undermine engineers and TPProfiles.

6.6. iSelection skills' framework(s)

iSelection interfaces existing major skills frameworks like TOGAF's Enterprise Architecture Skills, shown in **Figure 14**, which present EA Skills as the basis for TPProfile. TPProfile skills set that can be mapped to existing frameworks like (Goncalves, 2024; The Open Group, 2011d):
- Generic skills, which include leadership, teamwork, and interpersonal skills…
- Business skills, which include implementing business cases, BPMs…
- EA skills, which include modeling, building block design…
- Program skills, which include managing change, APM…

- ICS general skills include applications, migration planning…
- Technical ICS skills include software engineering, data management…
- Design of complex ICS systems, requirements discovery, and analysis…
- Legal and governance environments include data protection laws…
- Technical-depth in various business and technical disciplines.
- Method-driven approach for projects and deployment methods.
- Facilitates consensus building, synthesizes, and translates features into actionable requirements…
- Ai-subdomains are reshaping team members working habits.
- AI and technical proficiency are a priority and enable effective collaboration, enhancing DMS.
- Adaptability, is a major factor, and team members must adopt a mindset of continuous learning and adaptability.
- Creativity for AI-subdomains that manage data and routine tasks, needed for faster innovation.
- Emotional intelligence is needed to understand and manage HF's emotions, where empathy, active listening, and communication are essential characteristics.
- Ethical judgment and integrity are needed when AI-based DMS makes decisions that impact HFs' future, ethical values…

IT Architect Roles	Architecture Board Member	Architecture Sponsor	IT Architecture Manager	IT Architecture Technology	IT Architecture Data	IT Architecture Application	IT Architecture Business	Program or Project Manager	IT Designer
Enterprise Architecture Skills									
Business Modelling	2	2	4	3	3	4	4	2	2
Business Process Design	1	1	4	3	3	4	4	2	2
Role Design	2	2	4	3	3	4	4	2	2
Organization Design	2	2	4	3	3	4	4	2	2
Data Design	1	1	3	3	4	3	3	2	3
Application Design	1	1	3	3	3	4	3	2	3
Systems Integration	1	1	4	4	3	3	3	2	2
IT Industry Standards	1	1	4	4	4	4	3	2	3
Services Design	2	2	4	4	3	4	3	2	2
Architecture Principles Design	2	2	4	4	4	4	4	2	2
Architecture Views & Viewpoints Design	2	2	4	4	4	4	4	2	2
Building Block Design	1	1	4	4	4	4	4	2	3
Solutions Modelling	1	1	4	4	4	4	4	2	3
Benefits Analysis	2	2	4	4	4	4	4	4	2
Business Inter-working	3	3	4	3	3	4	4	3	1
Systems Behavior	1	1	4	4	4	4	3	3	2
Project Management	1	1	3	3	3	3	3	4	2

Figure 14. EA skills as TPProfile's fundament (The Open Group, 2011d).

6.7. Optimal AI-subdomains for ERHS

AI-subdomains are major technological advances and try to mimic HB's activities like understanding, reasoning, learning, and DMS activities, which can be simply integrated into EHR. ERHS can be used by avant-garde AI-subdomains like GenAI because (Brena, 2024; Talents, 2024):

- GenAI is a subset of AI, where it is used to generate new content, like images,

text, audio, and video, based on data models that result from learned training data IDSs. GenAI is used in EHRs' management, especially in personalized learning (and training), skills assessment (and development), talent acquisition/recruitment, employee engagement...

- Classical AI concentrates on data analysis and executing specific tasks, like evaluating performances or filtering candidates' resumes. Whereas GenAI has more capabilities, like creating new (and original) content from existing resources (especially data).

- Enhances ERHS' capabilities by offering creativity, accuracy, DMS access, data analysis, personalization… Which optimizes EHRs, recruitment processes, talent and skills management, training… And it is a major challenge.

- Is transforming HR activities and replacing routine-repetitive tasks that include interviewing and finding the right candidate. And also, recruitment to offboarding, training, skills development, and mobility.

- Used to optimize and improve the entity's complete EHR strategy.

- Enables creativity to produce innovative content, like personalized career or training recommendations…

- Quality and accuracy in the entity's huge database(s) and learning algorithms, GenAI, improve job description accuracy by aligning needed skills.

- Productivity and efficiency, using the automation of repetitive tasks, like developing job descriptions or analyzing skills, which enables EHRs to focus on the entity's strategic initiatives.

- Personalization is supported by GenAI to create personalized content for EHR specialists to enhance their knowledge and experience.

- Data analysis of voluminous IDSs to extract relevant data and support GenAI to provide detailed reports.

- Business intelligence (BI) is a mixture of GenAI and traditional AI, which enables internal and external analysis in order to identify needed skills.

- Supports dynamic job descriptions for customized training programs.

- Personal development is supported by GenAI to identify skills' gaps and generate customized training programs.

- Recruitment and talent acquisition is done by matching candidates' skills and job requirements.

- Workflows' automation, which simplifies administrative processes related to skills and EHR management.

- Enables the development of interactive training materials, increasing employees' engagement.

- Predictive analysis anticipates needed skills and professional development strategies.

- The main weakness with all actual AI-subdomains is that 1) it applies massive data techniques that do not mimic an HB, and 2) does not use HB-like reasoning concepts.

7. The PoC

7.1. Introduction

This PoC is a conceptual PoC (CPoC), which means that it develops a concept to prove iSelection's feasibility and capacities, and it assumes that the entity and project have:

- Successfully finalized UP phases, and this CPoC uses chunks of previous authors' PoCs and ACSs related to this topic. Like the application portfolio rationalization scenario ACS, which uses UPs for ICS' unification.
- To define the project's goals as shown in **Figure 15** and related factors.
- To define the manager's TPProfile and key team members; which satisfy iSelection's requirements.
- The used ACSs are related to AI-subdomains and EHR.
- The project has defined: 1) the vision and roadmap; 2) EHRS' platform; and 3) EHRD's activities.
- This CPoC focuses on the TPProfile characteristics by using iSelection and IHIPTF's modules.

CSA Category of CSFs/KPIs	Transformation Capability	Average Result	Table
The RDP's Integration	Mature	From 1 to 10. 9.0	1
The Roles of ICS, EA, and Artefacts	Risky	From 1 to 10. 8.50	2
Applied AI-Subdomains/AIMs	Risky	From 1 to 10. 8.20	3
Polymathical Skills and Predispositions	Complex	From 1 to 10. 8.00	4
iSelection and the TPProfile	VeryComplex	From 1 to 10. 7.0	5
Phase's 1 Outcome	Risky	From 1 to 10. 8.14	6

Evaluate First Phase

Figure 15. The iSelection's RDP outcome is 8.14.

7.2. CPoC's execution

The CPoC was implemented using the IHIPTF and is based on the AHMM4AP's instance. The iSelection interfaces the DMS that uses factors, and the outcomes are:

- UP's phases are terminated and delivers AI services.
- iSelection configured the skills map to the project's requirements and resources.
- iSelection defines relationships between TPProfile skills needed for the project.
- Select and tune TPProfile's related factors.
- Active IHIPTF's development setup interface, and the scripting interface was used to implement the needed AIMs.
- The selected factors are linked to HDT nodes and the pool of blocks.
- AHMM4AP-based HDT and DMS uses AI services.
- iSelection uses factors for selecting future team members that correspond to TPProfile.

- This concludes CPoC's 1st phase, and the results are presented in **Figure 15**.
- The result shows that iSelection's usage is risky.

8. Discussion

The article presented a conceptual and polymathic approach for selecting team profiles, and the CSA_DT shows that iSelection for TPProfile is complex because of the lack of HDT-based reasoning in AI-subdomains.

The author will continue with empowering the polymathic approach and improving the related AI-subdomain interactions.

9. Conclusion

This article's focus is on iSelection and how it helps in finding optimal HFs that correspond to the TPProfile. iSelection uses AI-subdomains, which are the future of ICS, projects, and related domains. Therefore, entities have to organize training and even upskilling sessions for their HFs, and this article's main recommendations are:

- The implementation phase is the major cause for projects' XHFRs.
- CPoC checked iSelection's feasibility.
- TPProfile is based on the technocrat, AofABIS, and BTPAP profiles.
- TPProfile includes polymathic and cross-functional skills.
- TPProfile predispositions and iSelection takes into account FH's ETC.
- An EFR must use a CMS for managing complexities.
- An EHRS inspects the roles of ICS, EA, and AI-artefacts.
- AI-subdomains and AIMs support EHRSs.
- iSelection depends on selected factors and uses the HDT.
- An EHR develops its own EHRM and EHRAPs.
- EHRDs and EHRTs must seriously take into account HFs' concerns because they can create resistances to change (R2C).
- AI-subdomains main weaknesses are 1) applying massive data techniques only; and 2) not using HB-like reasoning concepts.

Conflict of interest: The author declares no conflict of interest.

References

Agievich, V. (2014). Mathematical model and multi-criteria analysis of designing large-scale enterprise roadmap [PhD thesis]. Research Institute for Applied Problems of Mathematics and Informatics-Belarusian State University.

Airbyte. (2024). Types of AI Models: Your Ultimate Guide. Available online: https://airbyte.com/data-engineering-resources/types-of-ai-models (accessed on 10 October 2024).

Amazon. (2024a). Machine Learning on AWS-Deploy high-quality AI models as APIs'. Amazon.

Brena, R. (2024). Why "AI Can't Reason" Is a Bias—We humans are proud creatures. Available online: https://towardsdatascience.com/why-ai-cant-reason-is-a-bias-3c582bba1aeb (accessed on 10 October 2024).

Bryce, T. (2015). Managing Complexity. Available online: https://www.modernanalyst.com/Resources/Articles/tabid/115/ID/3354/Managing-Complexity.aspx (accessed on 10 October 2024).

Buch-Madsen, K. (2011). Complexity Management Strategies. Available online: https://managemagazine.com/article-bank/complexity-management/complexity-management-strategies (accessed on 10 October 2024).

Burke, P. (2020). The Polymath: A Cultural History from Leonardo Da Vinci to Susan Sontag. Yale University Press, USA.

Cluster Protocol. (2024). Understanding Datasets and AI Model Training. Available online: https://medium.com/@clusterprotocol.io/understanding-datasets-and-ai-model-training-78cb9538f6bc (accessed on 10 October 2024).

Crebert, G., Patrick, C. J., Cragnolini, V., et al. (2011). Teamwork skills toolkit. Griffith University.

EURSC. (2022). Organisation of studies. Office of the Secretary-General of the European Schools. Available online: https://www.eursc.eu/en/European-Schools/studies/studies-organisation#:~:text=The%20European%20School%20system%20consists,seven%20years%20of%20secondary%20educati on (accessed on 10 October 2024).

Farhoomand, A. (2004). Managing (e)Business transformation. UK: Palgrave Macmillan.

Farhoomand, A., Lynne, M., Markus, M., et al. (2004). Managing (e)Business Transformation: A global Perspective. UK: Palgrave Macmillan.

Galeon. (2024). Types of Artificial Intelligence & learning methods: what you need to know. Galeon Care.

Gartner. (2020). IT Talent Drives Digitalization. Bridge the digital skills gap with the right IT talent strategy. Available online: https://www.gartner.com/en/information-technology/insights/digitalization-transforms-it (accessed on 10 October 2024).

Gibbard, K. (2024). HR Trends 2024: The Year of AI-Human Capital Management. Available online: https://www.sap.com/blogs/hr-trends-2024-the-year-of-ai (accessed on 10 October 2024).

Goncalves, L. (2024). 5 essential skills for thriving in the AI-driven workplace of 2025. University of Phoenix.

Hackney, H. (2023). AI As A Service—A Simple Introductory Example. Available online: https://www.architectureandgovernance.com/artificial-intelligence/ai-as-a-service-a-simple-introductory-example/ (accessed on 10 October 2024).

Hayashi, K., Shibata, S., Inoue, E., et al. (2022). Online Education Patterns, Part 1: Patterns for Linking Separate Worlds. In: Proceedings of the EuroPLoP'21: 26th European Conference on Pattern Languages of Programs. pp. 1–16. https://doi.org/10.1145/3489449.3490003

Heywood, S., Hillar, R., & Turnbull, D. (2010). Insights into organization-How do I manage the complexity in my organization? Organization Practice. McKinsey & Company.

IBM. (2024). Human resources process automation. Available online: https://www.ibm.com/products/watsonx-orchestrate/human-resources?utm_content=SRCWW&p1=Search&p4=43700080741154773&p5=p&p9=58700008770805177&gad_source=1&gclid=Cj0KCQiAu8W6BhC-ARIsACEQoDBkS7tWqhFdYAJaio8UL1qci9mmqplDITUk5vWlr3rvDaGCkjSTCVsaAs2tEALw_wcB&gclsrc=aw.ds (accessed on 10 October 2024).

Jonkers, H., Band, I., & Quartel, D. (2012a). ArchiSurance Case Study. The Open Group.

Kenkare, P. (2022). 4 reasons projects fail—and how to avoid them. Available online: https://www.zdnet.com/article/4-reasons-why-workplace-digital-transformations-fail-and-how-to-avoid-them/ (accessed on 10 October 2024).

KPU. (2020). Compare strategies for evaluating team projects. Available online: https://kpu.pressbooks.pub/groupwork/chapter/explore-strategies-for-evaluating-team-projects/ (accessed on 10 October 2024).

Krigsman, M. (2008). Business change failures: 9 success tips. Available online: http://www.zdnet.com/blog/transformationfailures/business-change-failures-9-success-tips/1080. USA. (accessed on 10 October 2024).

Magnimind Academy. (2023). Connection Between Data science, Machine learning (ML), and Artificial Intelligence (AI). Available online: https://magnimindacademy.com/blog/connection-between-data-science-machine-learning-ml-and-artificial-intelligence-ai/ (accessed on 10 October 2024).

Mansi, W. (2024). Identifying Polymathic Talent in Your Team. Available online: https://ide.hr.com/en/app/blog/2024/02/identifying-polymathic-talent-in-your-team_lsqehkmu.html (accessed on 10 October 2024).

Morrison, M. (2016). Critical Success Factors—Analysis made easy, a step by step guide. rapidBI.

Orayer, O. (2023). Is Polymath Thinking the Answer to Thriving in the AI Era? Available online: https://medium.com/@opher.brayer/is-polymath-thinking-the-answer-to-thriving-in-the-ai-era-d269000163a3 (accessed on 10 October 2024).

Page, M., Schagen, S., Fallus, K., et al. (2005). Cross-curricular themes in secondary education-Report of a CIDREE collaborative project. Consortium of Institutions for Development and Research in Education in Europe.

Peterson, S. (2011). Why it Worked: Critical Success Factors of a Financial Reform eProjects in Africa. Faculty Research Working Paper Series. Harvard Kennedy School.

Primo AI. (2024). Platforms: AI/Machine Learning as a Service (AIaaS/MLaaS). Available online: https://primo.ai/index.php?title=Platforms:_AI/Machine_Learning_as_a_Service_(AIaaS/MLaaS) (accessed on 10 October 2024).

Pushpakumara, H., Jayaweera, P., & Manjulan W. (2021). Using the Open Group Architecture Framework (TOGAF) for Quality Assurance in Higher Education Teaching and Learning. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3808691

RedHat. (2021). 6 overlooked facts of microservices. RedHat.

Sakka, F., & El Maknouzi, M., & Sadok, H. (2022). Human resource management in the era of artificial intelligence future hr work practices, anticipated skill set, financial and legal implications. Available online: https://www.researchgate.net/publication/357752461_HUMAN_RESOURCE_MANAGEMENT_IN_THE_ERA_OF_ARTIFICIAL_INTELLIGENCE_FUTURE_HR_WORK_PRACTICES_ANTICIPATED_SKILL_SET_FINANCIAL_AND_LEGAL_IMPLICATIONS (accessed on 10 October 2024).

Satterlee, B. (1996). Continuous Improvement and Quality: Implications for Higher Education. Warner Southern College (FL), USA.

Scaled Agile. (2022). Succeeding with AI in SAFe. Available online: https://www.scaledagileframework.com/succeeding-with-ai-in-safe/ (accessed on 10 October 2024).

Talents. (2024). How are AI and Generative AI transforming Human Resources? Available online: https://www.365talents.com/en/resources/how-are-ai-and-generative-ai-transforming-human-resources (accessed on 10 October 2024).

The Economist. (2000). Inside the machine. A survey of E-management. Special report: E-management. The Economist. UK.

The Open Group. (1999). Building Blocks. Introduction to Building Blocks. The Open Group, USA.

The Open Group. (2011a). Architecture Development Method. Available online: http://pubs.opengroup.org/architecture/togaf9-doc/arch/chap05.html (accessed on 10 October 2024).

The Open Group. (2011d). Architecture Skills Framework. Available online: https://pubs.opengroup.org/architecture/togaf8-doc/arch/chap30.html (accessed on 10 October 2024).

The Open Group. (2022). 7 Alignment with Other Frameworks. The TOGAF® Leader's Guide to Establishing and Evolving EA Capability. Available online: https://pubs.opengroup.org/togaf-standard/togaf-leaders-guide/togaf-leaders-guide_7.html (accessed on 10 October 2024).

Trad, A., & Kalpić, D. (2013). The Selection and Training Framework (STF) for Manager's in Business Innovation Transformation Projects—The Profile. In: Proceedings of the IEEE, ITI Conference; Croatia.

Trad, A., & Kalpić, D. (2020). Using Applied Mathematical Models for Business Transformation. IGI Global, USA.

Trad, A., & Kalpić, D. (2021). Business transformation project's architect's profile (BTPAP). The Business and Management Review, 12(02). https://doi.org/10.24052/bmr/v12nu02/art-11

Trad, A. (2022). Business Transformation and Enterprise Architecture Projects. Unmanned Aerial Vehicles and Multidisciplinary Applications Using AI Techniques, 188–240. https://doi.org/10.4018/978-1-7998-8763-8.ch009

Trad, A. (2023a). Academic and Educational Transformation Projects—The Role Team-Based Learning in Polymathics (RTBLP). IGI Global, USA.

Trad, A. (2023b). Academic and Educational Transformation Projects—The Role Team-Based Learning in Polymathics For University Cycle (RTBLP4UC). IGI Global, USA.

Trad, A. (2024a). Educational and Public Administration Transformation Projects—The Role of Polymathics Based Artificial Intelligence (RPBAI). IGI Global, USA.

Trad, A. (2024b). Polymathic Approach Enterprise Transformation Projects-implementing a business meta-model that respects environmental sustainability. In: Financial, Economic, Educational, and Technological Determinants of Environmental Sustainability. Cambridge Scholar Publishing. p. 383.

Trad, A. (2024c). Enterprise Transformation Projects: The Polymathic Enterprise Architecture-Based Generic Learning Processes (PEAbGLP). In: Machine Learning and Data Science Techniques for Effective Government Service. IGI Global. USA. pp. 29-66.

Tuononen, T., Hyytinen, H., Kleemola, K., et al. (2022). Systematic Review of Learning Generic Skills in Higher Education—Enhancing and Impeding Factors. Frontiers in Education, 7. https://doi.org/10.3389/feduc.2022.885917

Wikipedia. (2023). Complexity management. Wikipedia.

Woudenberg, M., & Unis, C.J. (2023). Systems Thinking—Skills and Insights to Resolve Wicked Problems. Available online: https://www.polymathicbeing.com/p/systems-thinking (accessed on 10 October 2024).