



15th International Conference on Restructuring of the Global Economy (ROGE-2026) Promoting Sustainability

Business Transformation Projects-Polymathics, Artificial Intelligence,
and Patterns (PAIP)

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INTRODUCTION

This chapter presents:

- How to design Polymathic Artificial Intelligence (AI) patterns and how to use them in the Design Principles phase(s) (PAIPDP).
- AI based Patterns (AIbP) are designed, architected, and supported by an in-house Polymathic Generic Learning Process(es) (simply Learning).
- Learning is transcendent to any transformation domain and AI topic (or domain).
- The transcendent PAIPDP also uses pattern-based interfaces to support all AI (and related technology) sub-domains, like Data Sciences (DS), Machine Learning (ML)... The PAIPDP uses existing author's research works and a transformation framework that is specialized in Enterprise Transformation Projects.
- Knowing that Projects have eXtreme High Failure Rates (XHFR); and AI makes even more complex.

INTRODUCTION

This chapter presents:

- PAIPDP standardized access to AI operations, supports operational activities for the enterprise (simply Entity).
- Operations' integrity is in turn supported by the Applied Holistic Mathematical Model (AHMM) for AI (AHMM4AI), which is the product of research in the domains of decision making, AI, business engineering, organizational engineering, information technology, and applied mathematical models.
- PAIPDP applies a Polymathic concept that is interdisciplinary and is founded the Polymathic Enterprise MetaModel (PEMM).

KEYWORDS

- AI, Learning Processes...
- Patterns, Design Principles, Enterprise Architecture...
- Business Transformation Framework, Ratings/Weightings Concepts...
- Polymathics, Meta Models, Enterprise Agile Methods...
- Organizational Engineering...
- Mathematical Models, Artificial Intelligence...
- Critical Success Factors, and Performance Indicators

THE RESEARCH DEVELOPMENT PROJECT

- An Innovative, Polymathic, and Unique Concept.
- Viewpoints.
- Factors and weightings...
- Specific mixed method...
- Mainly related to XHFRs...
- Polymathics...
- Unconventional.
- CSA/CSA_DT Processing and Resulting Findings
- ...

STANDARD TOPICS AND DOMAINS

- Managing Complexities, Skills, and Polymathics
- AI's Integration
- Disassembling Processes, Meta-Models, and the PEMM
- Implementing Factors, FMS, and PRWC
- The ADM Based TDM
- ...

DATA MANAGEMENT AND ACCESS

- Data-Management, DAMC, and Data-Transformation Models
- The Class-diagram and mapping concepts
- The PEMM can be used to show the relationships between different types of data-models
- DB Centric concept (DBCC)
- A DataBase Centric Implementations (DBCI)
- Specific Data-Management for the PAIPDP
- ...

EA, DESIGN, MODELLING AND PATTERNS

- The Role and Limitations of EA Models.
- Using inter-operable Blocks.
- Offers an Application Reference Model (ARM).
- Applying EA methodologies and Patterns.
- The Holistic Enterprise Architecture Pattern's (HEAP).
- Integrating Modelling Diagrams.
- Mapping tables for the relationships between various data points (source, intermediate or destination).
- ...

PAIPDP BASIC AI DOMAINS, TOPICS, AND PATTERNS

- PAIPDPs offer IHI and standardized construction of ICS components and adopts a systematic use of DPs
- Data Analytics
- Data Science Integration and Modelling
- Big-Data
- PAIPDP's Integration Capabilities
- The FIDE
- Patterns for AI- Subsystems
- ...

PAIPDP ADVANCED DOMAINS, TOPICS, AND PATTERNS

- A Qualitative Approach
- Optimal Development and Operations Processes and Integrating Business Intelligence
- The Roles of Education, Profile, and Skills
- P2T
- The PQLC
- Possible APDs
- ...

THE OUTCOME

CSA Category of CSFs/KPIs	Transformation Capability	Average Result	Table
The RDP's Integration	Usable-Mature	From 1 to 10. 9.20	1
Standard Topics	Transformable-Possible-Complex	From 1 to 10. 8.20	2
Data Management	VeryComplex	From 1 to 10. 8.50	3
EA models for AI	Transformable-Possible-Mature	From 1 to 10. 8.25	4
PAIPD's Basic Domains	Heterogenous-Complex	From 1 to 10. 8.25	5
PAIPD's Advanced Domains	Heterogenous-Complex	From 1 to 10. 8.25	6
Possible APDs	Heterogenous-Complex	From 1 to 10. 8.20	7
Evaluate First Phase			

CONCLUSION AND RECOMMENDATIONS

- IHPTF shows how to implement an Anti-Locked-In (ALI) transformation framework and related modules.
- This RDP uses a qualitative approach for AI.
- The RDP proved the existence of an important PAIPD knowledge gap and XHFRs.
- The AHMM4AI supports the PAIPD.
- The HDT supports IHPTF's modules reasoning.
- Cross-functional/Polymathic AI skills are needed.
- The IHPTF uses and interfaces existing frameworks, standards, and methodologies.
- The PAIPDs offers the needed sets of AI patterns.
- The PoC checked PAIPD's feasibility.
- ...