Factors are used to process CSA_DTs. Factors are linked to specific Project and Intelligence mechanisms, where the AHMM4EBPM makes calls to NLP scripts. The AHMM4EBPM maps relationships between ICS, requirements, Project's Blocks, identifiers, and CSAs. The PoC starts-up IHIPTF's client development environment-interface, which is shown in Fig. 8. IHIPTF client-interface enables NLP development activities.

Fig. 8. IHIPTF client-interface.

The NLP client-interface implements scripts to process Projects CSAs. Intelligence uses the AHMM4EBPM that offers HDT actions to offers solutions.

6.2 Phase "1"

Preparing DSs and their import/export interactions XML-files. These XML-files are used by the AHMM4EBPM and its MMs, as well as MDTCAS, OOM, BPM, and other diagrams and artefacts. In this PoC and its related Applied Case Study (ACS), shows an AHMM4EBPM based transformation where BPMs, MMs and DSs the main constructs. A DS is used by various types of methodologies and technologies. BPMs use DSs during the implementation phase that is coordinated by the IHIPTF a transformation framework is needed [42].

The AHMM4EBPM interfaces Intelligence and PRWC/Factors which are shown and evaluated in Table 1, and using the CSA_DT's Tables Weighting and Rating Enumerator (CTWRE) that is shown in Figure 9. The AHMM4EBPM maps to MMs, Project's resources and the PRWC defines relationships between the Project, FMS, and Factors.

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

Fig. 9. The CTWRE's values.

The APD that is the usage of BPMs and the used CSA_DTs contain the evaluation of a Project CSA, where a specific CSA corresponds to a concrete Project-topic. RDP's final Phase's "1" evaluations are the synthesis of all CSA_DTs or Project's (PRJ) DT (PRJ_DT). APDs' evaluations use FMS, PRWC, and Factors to enforces Intelligence's processing and to avoid regressions or XHFRs. IHIPTF Enumerators are applied to all CSAs/CSA_DTs and PRJ_DT's processing and final-findings, where:

- CSA_DT=AVG(∑CSF_KPI) (3.1).
- PRJ_DT=AVG(∑CSA_DT) (3.2).
- Phase_1=PRWC(PRJ_DT) (3.3).

CSA Category of CSFs/KPIs	Transformation Capability	Average Result	Table CSA_DT
The RDP's Integration	Mature	9.0	
The DSs and OOM	Possible	8.20	
The Role of MDTCAS, EASD...	Possible	8.00	
The Role of PRWC and FMS	Possible	8.0	
The Role of IHIPTF and its modules	Complex	7.0	
The Role of BPM	Possible	8.0	
The Role of AHMM4	Complex	7.0	
Phase's 1 Outcome (AHMM4EBPM)	VeryComplex	6.0	

Evaluate First Phase

Table 1. The RDP's outcome is 8.6.

After initializing the IHIPTF and its modules, main-client, Factors/CSFs were linked to a selected HDT node. Table 1 presents Phase's 1 results and that shows that the AHMM4EBPM

is “Feasible”. AHMM4EBPM’s main constraint to implement the PRWC is that CSAs having an average result below 8.0 will be ignored. As Phase 1 is Feasible.

6.3 The ACS and Applied BP(M)s

PoC’s uses the ArchiSurance ACS which is an insurance management system that has a legacy ICS (includes a mainframe), and Intelligence (KMS/DMS). For the AHMM4EBPM, the ArchiSurance-ACS is optimal, because it applies the merger of business system’s landscape which is siloed, which causes major data and ICS redundancies, functional-overlaps and archaic maintenance/integration activities. This ACS analyses the transformation of the “claim files service, customer file service” [43]. For the AHMM4BPM the Business Process View (BPV) (Baseline) (BPVB) is relevant, where an ArchiMate BP groups-behaviour based on ordering of activities that produces a set of products (or services). BPM based EAMs takes into account the most important BPs (and their relationships), but does not show all the details their flows. This PoC uses a BP Viewpoint which shows a high-level structure and composition of (1 or n) BPs (in TOGAF it is referred to as the Process Flow Diagram (PFD)). Fig. 10, presents 2 central BPs of ArchiSurance, with their sub-BPs: 1) Issue new-policy; and 2) Handle claim.

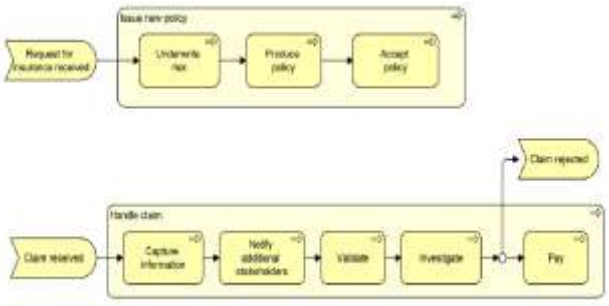

Fig. 10. The BPVB [43].

The Application Behaviour View (ABV) (Target) (ABVT) of ACS’ data-warehousing architecture that is shown in Fig. 11. Customers use these data that is processed to create customer-specific-profiles that are in-turn used for calculation of their insurance-premiums. This data is processes and aggregated to offer new insurance-products and to adjust Entity’s risk-exposures.

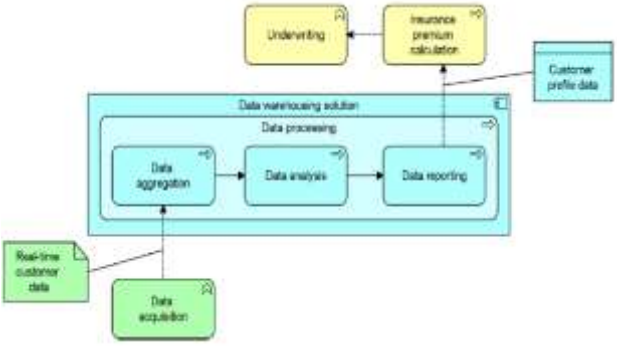

Fig. 11. The ABVT [43].

6.4 MDTCAS and BP(M)s’ Inter-Operability

MDTCAS that includes BPM(N), can support BMPs’ inter-operability by [44, 45]:

- Import/exporting XML formats.…
- Exchanging BPMN models, where serialized XML-files contain both the model’s semantics and the diagram-interchange information.
- BPMs conversions to OOM/UML activity diagrams using the eXtensible Stylesheet Language Transformations (XSLT).
- Because of tools’ limitations and efficiency an Activity diagram is more adapted.
- It should tool independent and the use of XML metadata

interchange representation of both models (as input and output) and by using XSLT for transformation.

6.5 MDTCAS and TDM

For this PoC, a Polymathic approach is tested by setting-up the ADM based TDM phases that look as follows:

- Phase A (Architecture Vision) establishes a BPM and MDTCAS based development cycles; and setting-up constraints and goals.
- Phase B (Business Architecture) establishes Project's target-architecture which realizes key Project's requirements.
- GAPA phase uses the Application Communication Diagram that shows the transformed and modelled BPMs based ICS and the target application-landscape.
- Phase D (Target Technology Architecture) presents ICS' transformed infrastructure.
- Phases E and F (Implementation and Migration Planning) presents the transition-architecture and intermediate solutions/situation.

6.5 Phase "2"- Solving a Problem-Type

Intelligence solves problem-types, where Factors have related sets of actions that are executed in a given HDT-node. And for that the action CSF_AHMM4EBPM_Feasibility_Procedure (from the PRJ_DT) was executed and delivered a set of solutions. Solving problem-types includes the execution of actions and offering possible solutions for various Project's operations, where each action can recreate a new Problem-instance and that creates the AR based HDT-tree. The HDT uses the QQRMM that contain objective-functions which: 1) In Phase 1, the AHMM4EBPM, implements NLP scripts to process CSA_DTs, and related PoC's constraints like the CSF_AHMM4EBPM_Feasibility_Procedure; 2) Intelligence is configured and uses the PRWC and FMS to support the HDT; 3) Links HDT-node to data-structures; and 4) The HDT executes the CSF_AHMM4EBPM_Feasibility_Procedure to deliver solutions. Solution-nodes activities are: 1) NLP-scripts are called-executed by IHIPTF's modules like the GAPA, FMS, and PRWC; 2) These NLP-scripts are executed in the background to offer values; and 3) These resultant-values are converted into actions, conclusions, and recommendations.

7 Conclusion

In this article the focus is on AHMM() and its AHMM4EBPM variant; where the AHMM4EBPM analyses and supports BPM based Projects (or Project's BPM components). The RDP offers the following list of BPM, common, business, EA, technical and managerial conclusions and recommendations:

- The RQ is: "Which AHMM4EBPM characteristics, elements, and structure are requested to enable mainly BPM and services-based Projects and Entity's sustainable evolution(s)?"
- As mentioned for reading this article, it is recommended to refer to IHIPTF's related guides, and Project's fundamental works, which are: 1) The AHMM4PROJECT [1]; 2) The IHIPTF Guide [2]; and 3) The IHIPTF Glossary [3].
- The major managerial finding-recommendation that was generated by the previous research phases was that the business transformation manager must be an architect of adaptive business systems.

- This RDP is based on QQRMM which uses Factors is used by the AHMM4EBPM.
- A Project starts with the U4BMP, which uses RPs; which in-turn delivers services and resources. These processes are automated for the generation of Blocks and EAM/EBPM models.
- BPMs integrate, use and interface DSs, OOM/UML, (and therefore XML-files) to support: 1) EAMs, and services; 2) Extracts BPMs (or other choreographies); and 3) Services (SOA, MSA or other).
- The MDTCAS focuses on BPM(N)s, which combines of existing and legacy concepts and methodologies.
- BPM related MMs are used to support the AHMM4EBPM that is used for BPM-modules' integrity-checking, modelling, GAPA, and other critical activities.
- The AHMM() (and its AHMM4EBPM variant) concept, strategy, and implementation is feasibility.
- The AHMM4EBPM applies qualitative approach that enriches the GLP.
- The AHMM4EBPM relates various selected BPMs, EAMs, Factors, and MMs that are inter-related.
- The AHMM4EBPM, as well as all ICS and APD domains, use DSs which is a common artefact/media, that can be generalized.
- AHMM4EBPM based Intelligence replaces obsolete legacy DMS.
- The PoC uses the IHIPTF and Factors and the he final outcomes deduces that the proposed AHMM4EBPM is complex but feasible.

Acknowledgement:

The AHMM4EBPM is the MM to be independently implemented the other MMs well be implemented in the near future. These MMs will serve for the development of the following articles: 1) The AHMM4EBPM based Processing Computer System; and 2) The AHMM4EBPM based AI-Subdomains Integrator.

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