CED—2025: International scientific conference on economic development and legacy of Simon Kuznets

REIMAGINING ACCOUNTING AND CONTROL INFORMATION SYSTEMS FOR MANAGING ECONOMIC SECURITY OF CORPORATE INNOVATIVE DEVELOPMENT

Hanifa Jafarli – D.Sc. in Economics, Professor, Professor of the Azerbaijan State University of Economics (UNEC), Baku, Azerbaijan

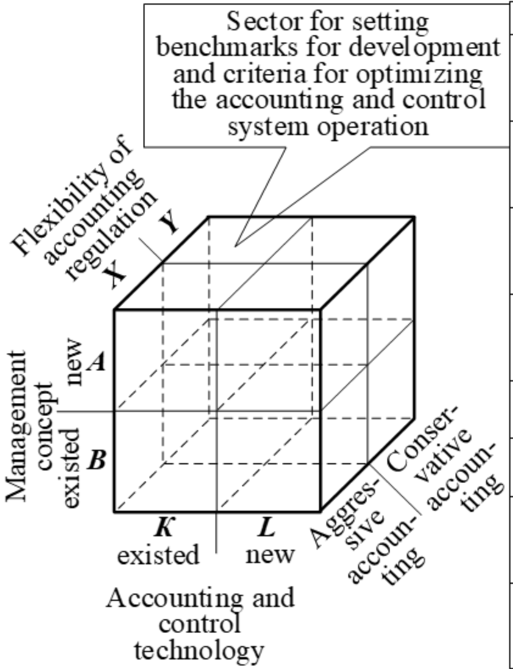
Andriy Pylypenko – D.Sc. in Economics, Professor, Head of the Simon Kuznets Kharkiv National University of Economics Accounting and Business Consulting Department, Kharkiv, Ukraine

Olexandr Popov – D.Sc. in Economics, Professor, Professor of Management department, National Technical University «Kharkiv Polytechnic Institute», Kharkiv, Ukraine

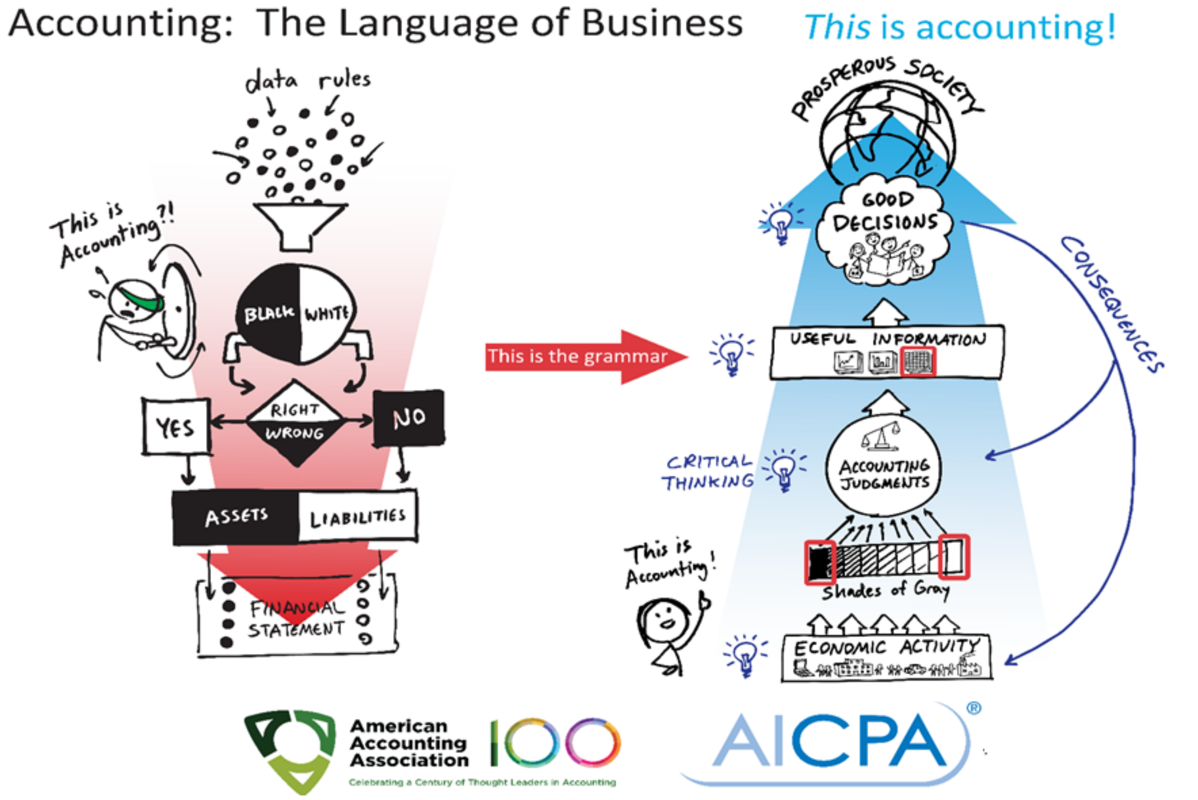
Natalia Nebaba – D.Sc. in Economics, Professor, Head of the Department of Economic Modelling, Accounting and Statistics, Oles Honchar Dnipro National University, Dnipro, Ukraine

Maxim Korneyev – D.Sc. in Economics, Professor, Dean of the Faculty of Innovative Technologies, University of Customs and Finance, Dnipro, Ukraine

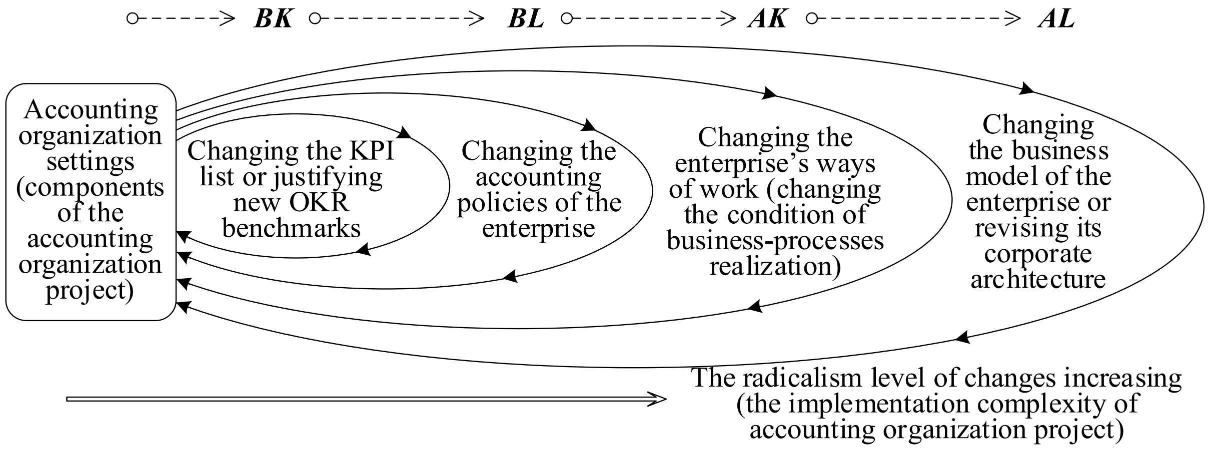
DETERMINING THE DIRECTIONS AND TOOLS OF THE ACCOUNTING AND CONTROL DESIGN WITHIN MANAGEMENT



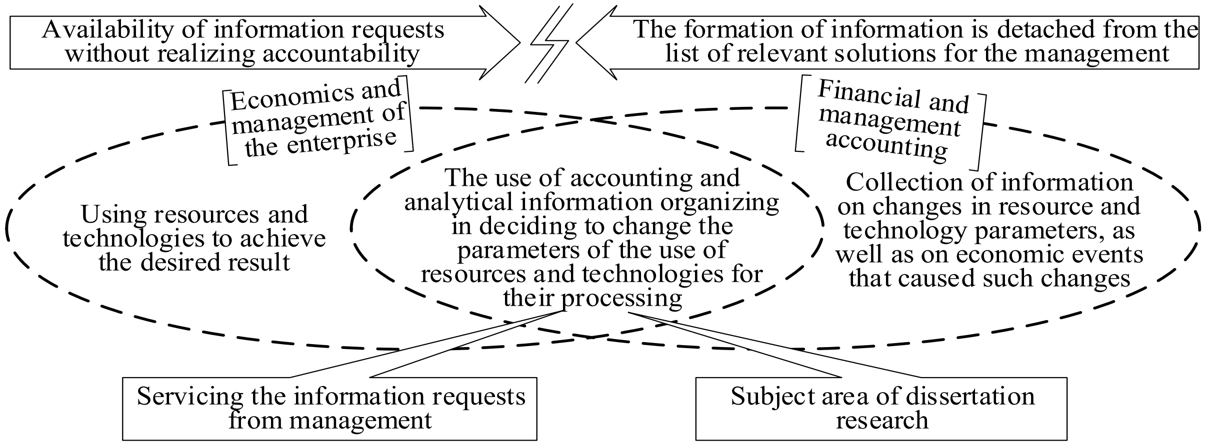
Sector	Description
ALX	The accounting policies for new forms and methods of management requires an expansion of the accounting methods and indicators
ALY	The enterprise assets estimation and events recording are accounted with earlier recognition of costs and liabilities
AKX	Within the existing accounting system, new instruments and methods are focused on the faster recognition of income
AKY	Revision of management methods involves conservatism in decision making (preferred use of max-min criterion)
BKX	Minor adjustments to accounting policies and accounting regulations to increase prudence
BKY	Можливий перегляд облікових оцінок. Перегляд організації обліку в рамках змін законодавства
BLX	Changing the rules for displaying events and transactions to increase the attractiveness of the financial condition
BLY	Changing the rules for recording transactions and valuing assets to increase the reliability of information



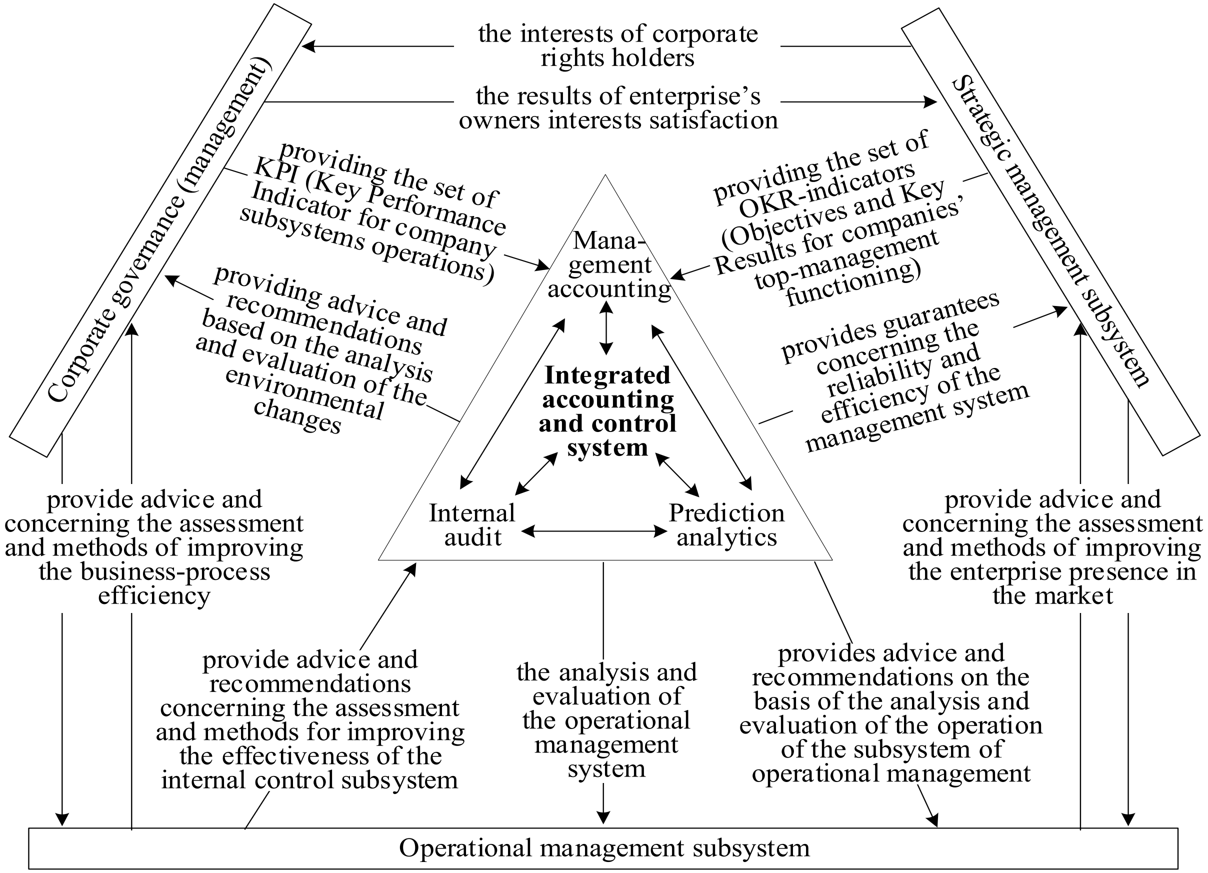
THE CUMULATIVE ACCUMULATION OF CHANGES IN THE PARAMETERS OF ACCOUNTING AND ANALYTICAL SUPPORT FOR DECISION-MAKING SYSTEM



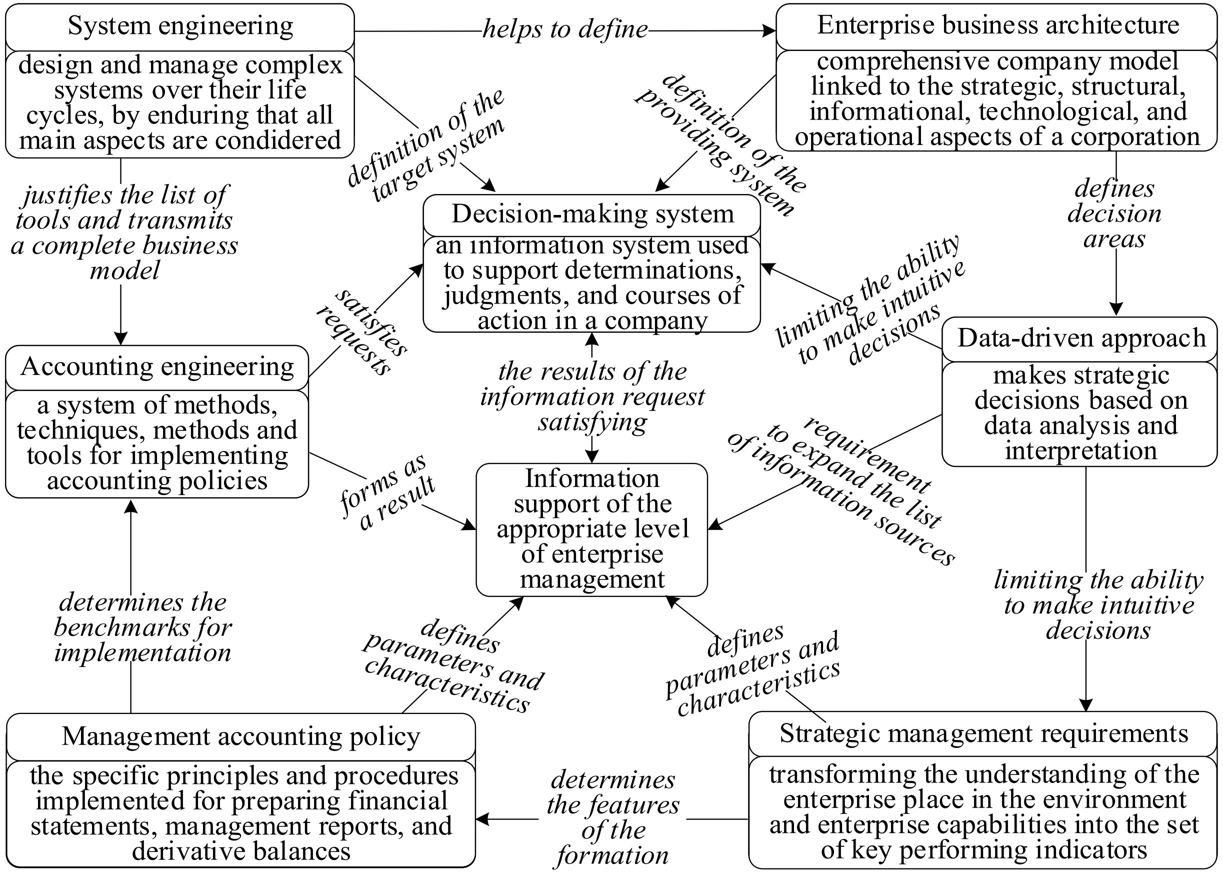
THE IDENTIFICATION OF PROBLEM AREA OF SCIENTIFIC RESEARCHES INTERSECTION IN THE AREAS OF ACCOUNTING, ECONOMICS, AND MANAGEMENT

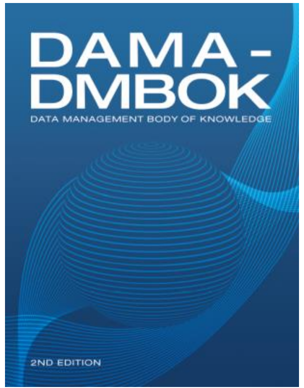


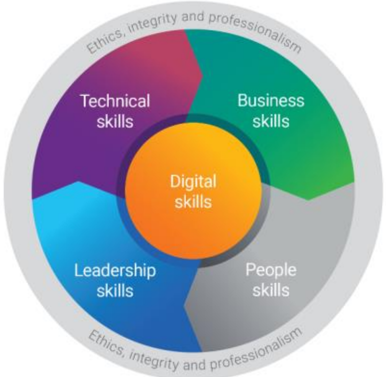
THE INTERCONNECTION BETWEEN AN INTEGRATED ACCOUNTING AND THE CONTROLLING SYSTEM AND LEVELS OF MANAGEMENT HIERARCHY

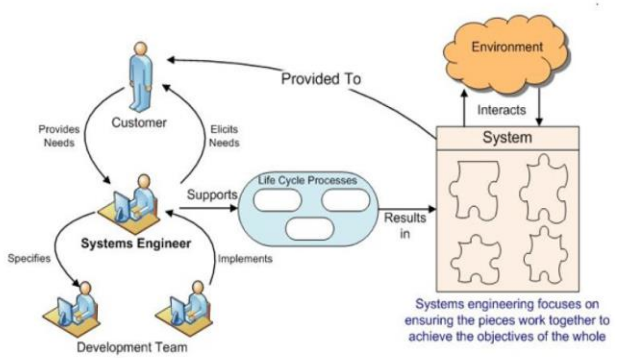


THE ACCOUNTING ENGINEERING CONCEPT UNDERSTANDING AND ITS RELATIONS WITH ENTERPRISES' BUSINESS ARCHITECTURE MAPPING

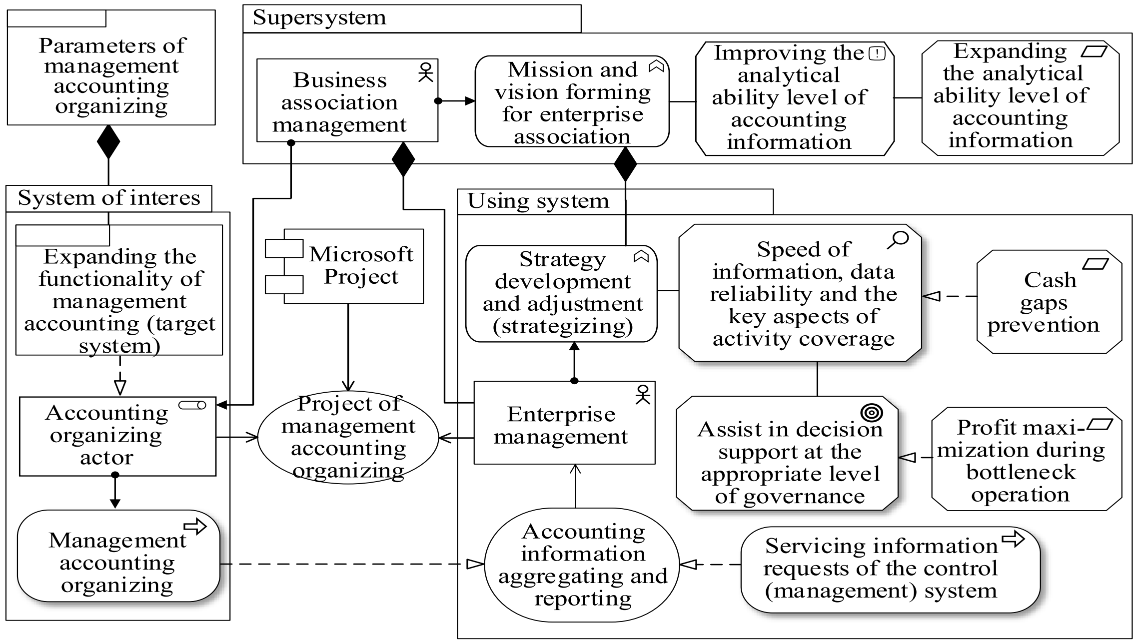




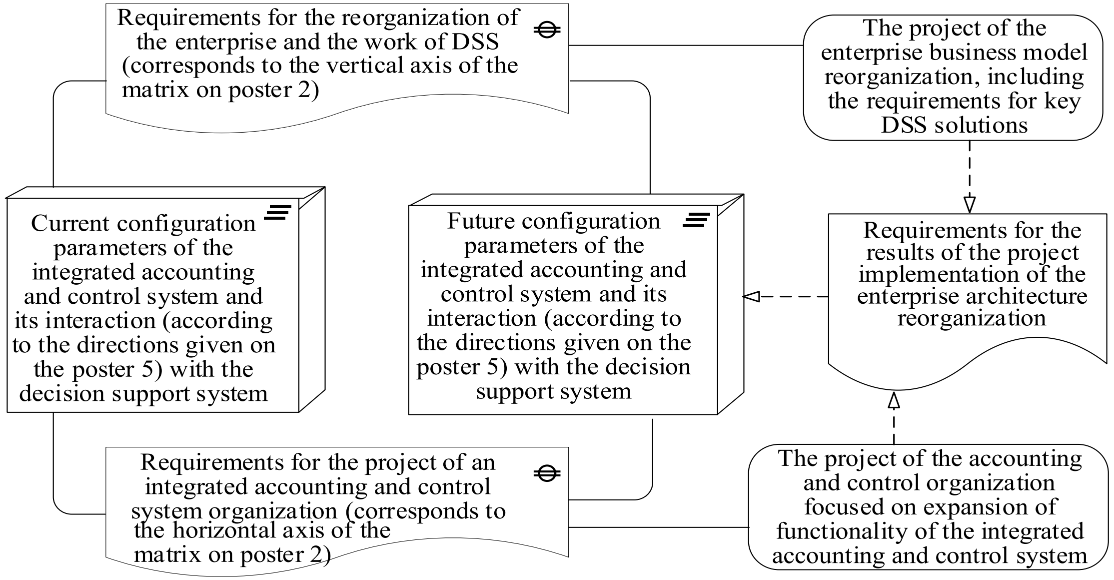




THE PROJECT APPROACH TO THE ACCOUNTING AND ANALYTICAL INFORMATION DEVELOPMENT



CONSIDERING THE ACCOUNTING DESIGN AS CORPORATE ARCHITECTURE TRANSFORMATION



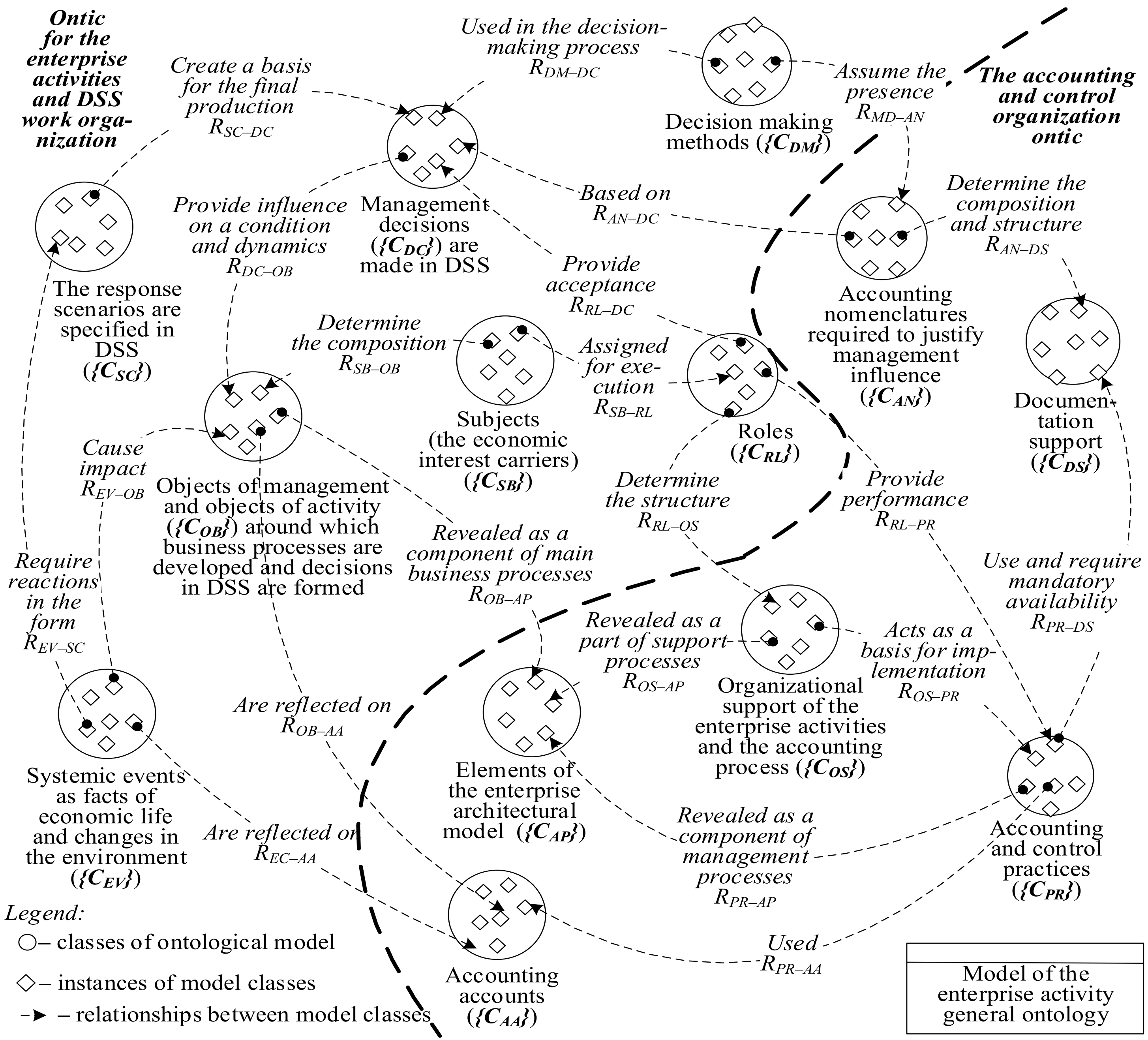
THE TRANSPARENCY LEVEL OF INTERNAL MANAGEMENT REPORTING ASSESSMENT

The principle of design as an criterion (K_n)	Characteristics of the report for evaluation (i)	Assessment component weight (a_i)	Criteria for assessing the compliance of the report components with the declared principles of the organization ($j = 1,2 \ldots n$)	Criterion significance, x_{ij}
Relevance and intelligibility (K_1)	Relationship between the report and decision making	0,13	Full harmonization of report and decisions	1,00
			Partial disclosure of information for DSS	0,75
			Limited characteristics of options for the development of organizational capacity	0,50
			The information is not related to DSS	0,25
Improving the analytical nature of accounting	The analytical nomenclatures sufficiency for DSS	0,15	High analytical information	1,00
			Limited use of DDDM	0,66
			Limited compliance with requests	0,33
			Impossibility to satisfy requests	0,00
Maximum coverage of requests (K_3)	The degree of stakeholder's interests satisfaction	0,12	All possible types of requests are covered	1,00
			Partial consideration of interests	0,80
			Taking into account the majority of interests	0,60
			Satisfies only a certain interest	0,30
…	…	…	…	…
Cautions (K_7)	Matching with matrix on slide 2	0,11	Corresponds to a given level of conservatism	1,00
			Higher conservatism in the assessment	0,66
			Higher level of accounting creativity	0,33
Permanence of aiming (K_8)	Overcomes the asymmetry of accounting information	0,12	Cumulative satisfaction of DSS requests	1,00
			Limited satisfaction of all parties	0,80
			Contributes to the growth of asymmetry	0,50
			Focused on a specific user	0,30
Final evaluation according to the survey of N experts (subjects of the organization) according to M evaluation criteria			$K = \left(\sum_{n=1}^{N}\sum_{i=1}^{M} a_i \times x_{ij}\right)/N$	K

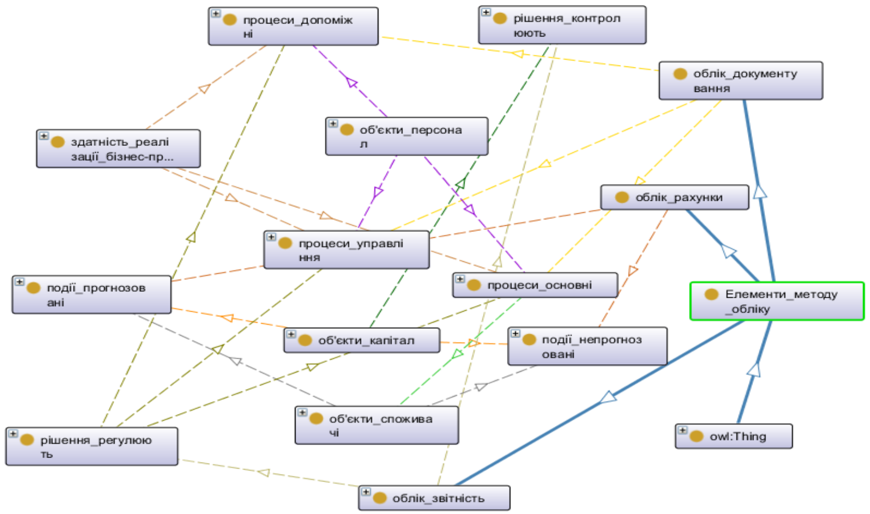
THE EXAMPLE OF INTERNAL REPORTING TRANSPARENCY EVALUATION FOR ENERGY GROUP LLC BUSINESS PROCESSES

Direction of DSS work, accompanied by reporting		Estimation of a current condition of the organization within the sets of accounting practice parameters			Evaluation of the results of the implementation of the proposed set of management reports		
		Total assessment by direction	Average for a group of experts	Given the weight of a_i	Total assessment by direction	Average for a group of experts	Given the weight of a_i
Providing resources for business process inputs	K_1	2,50	0,63	0,08	2,75	0,69	0,09
	K_2	2,65	0,66	0,10	3,32	0,83	0,12
	K_3	3,00	0,75	0,09	3,20	0,80	0,10
	…	…	…	…	…	…	…
	K_7	1,98	0,50	0,05	2,98	0,75	0,08
	K_8	2,40	0,60	0,07	2,90	0,73	0,09
	Final assessment (K)			0,65	–	–	0,77
Reflection in accounting for the movement of material flow	K_1	2,75	0,69	0,09	3,25	0,81	0,11
	K_2	2,99	0,75	0,11	3,66	0,92	0,14
	K_3	3,40	0,85	0,10	3,40	0,85	0,10
	…	…	…	…	…	…	…
	K_7	2,65	0,66	0,07	2,65	0,66	0,07
	K_8	3,10	0,78	0,09	3,10	0,78	0,09
	Final assessment (K)			0,76	–	–	0,82

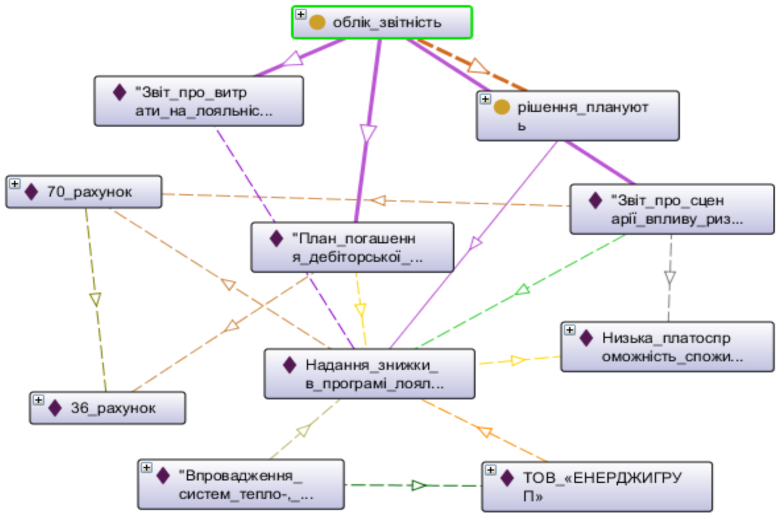
LOGIC OF ENTERPRISE ONTOLOGY FORMATION AND ITS INTERPRETATION IN ARCHITECTURAL MODELING



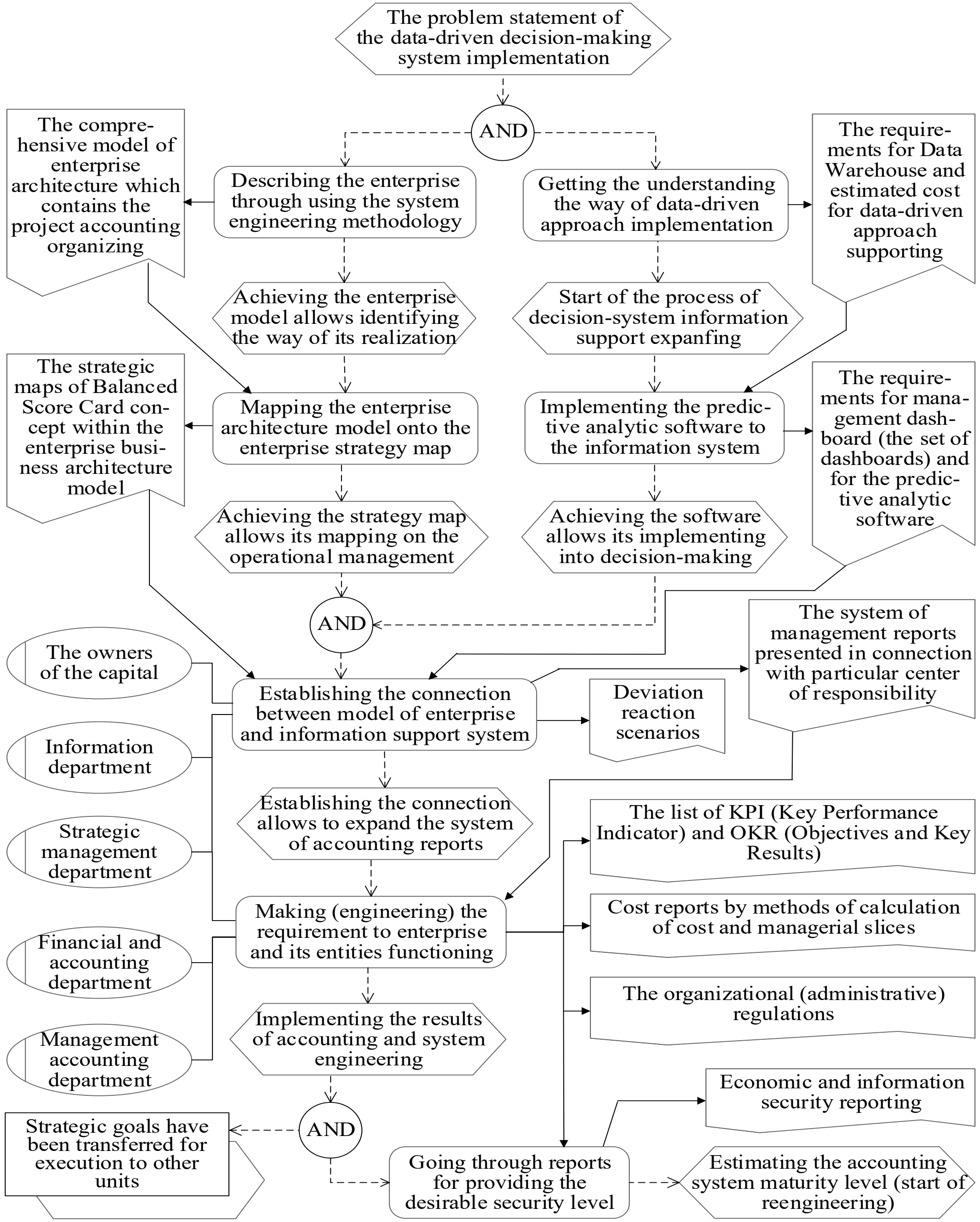
THE ARCHITECTURAL ELEMENT «GENERAL ONTOLOGY MODEL» WHICH IS MADE IN THE PROTÉGÉ SYSTEM



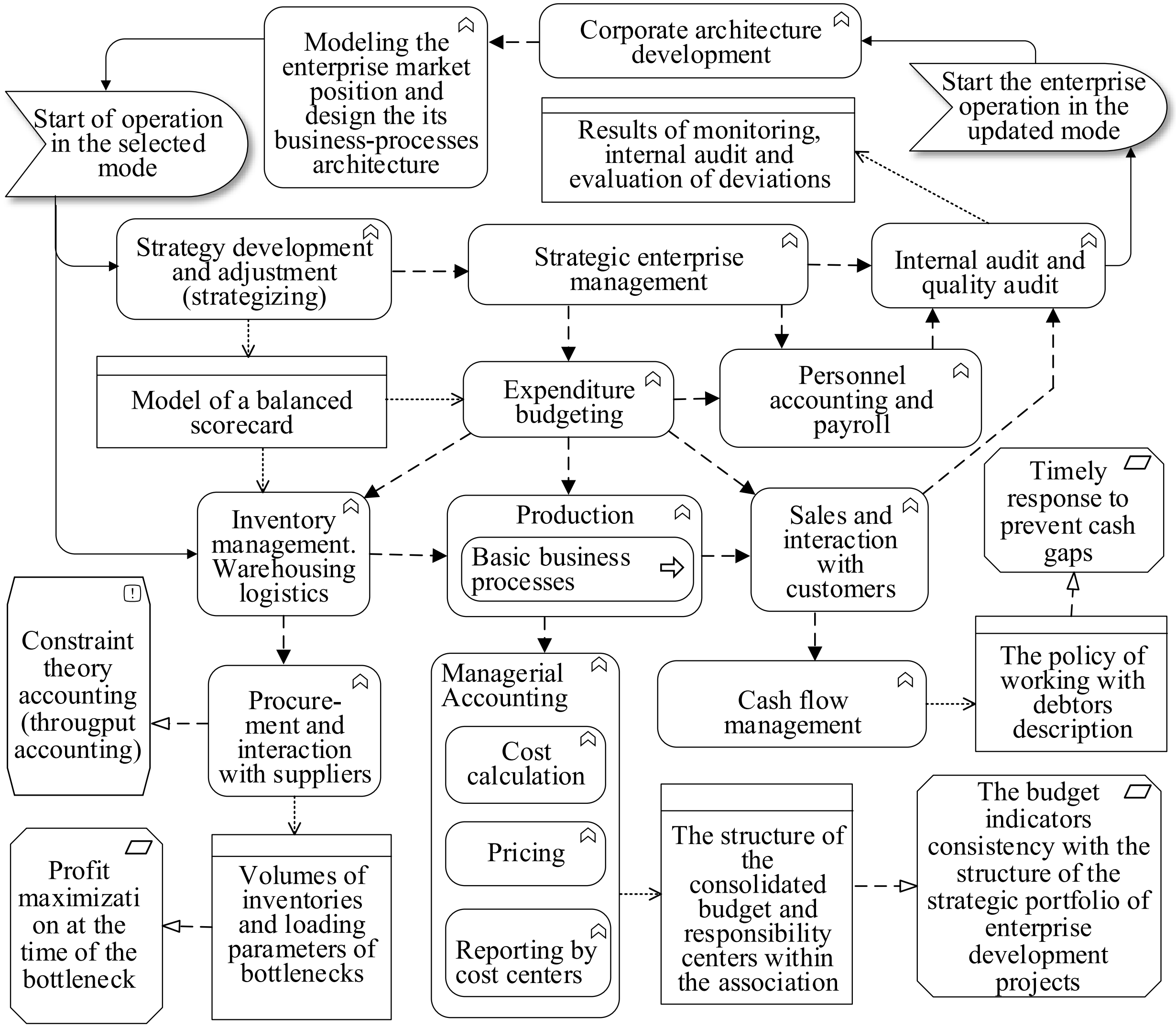
THE EXAMPLE OF THE PARAMETERS DEFINITION FOR THE INTEGRATED ACCOUNT AND CONTROL SYSTEM DESIGN



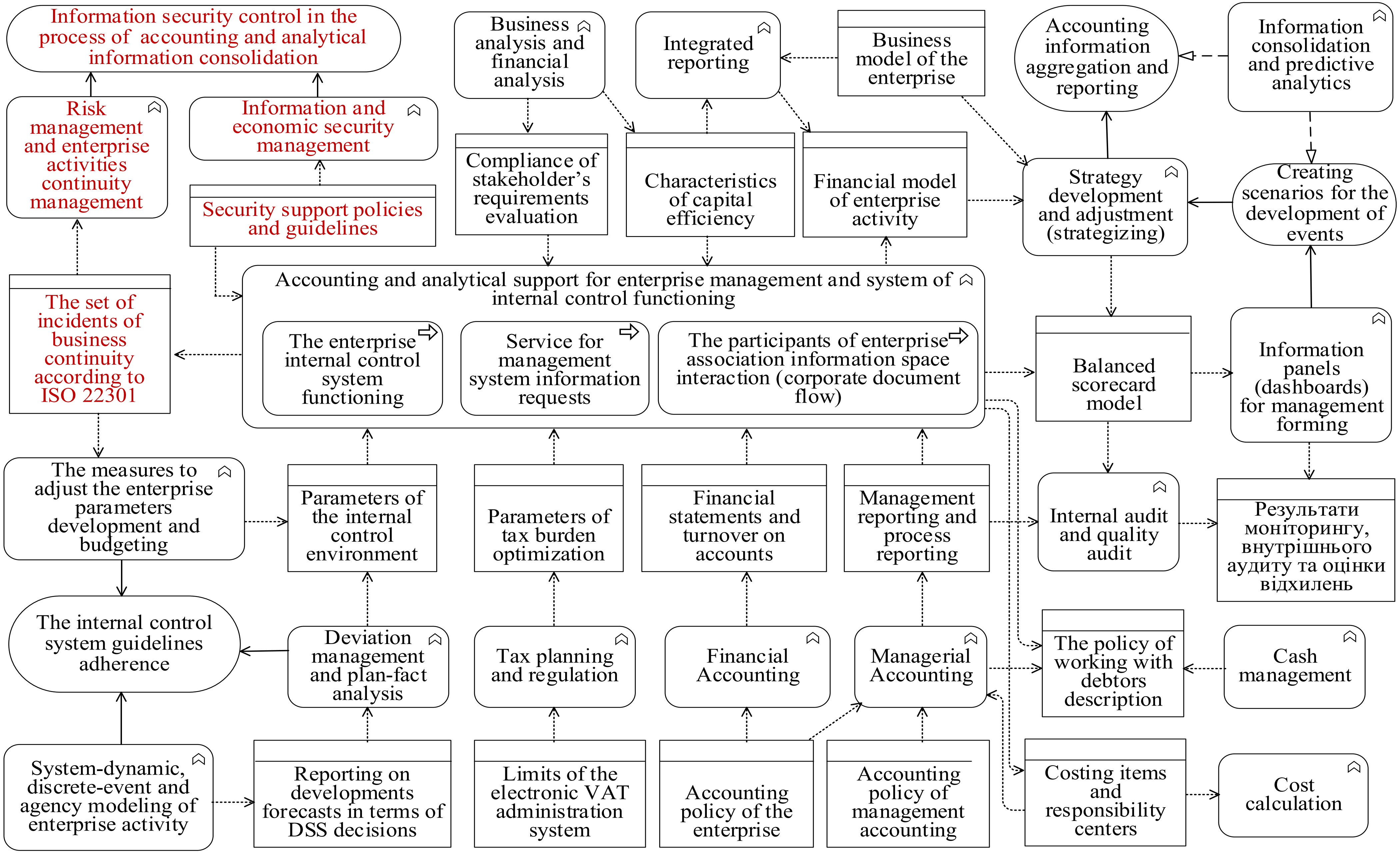
THE PROCESS OF DATA-DRIVEN DECISION-MAKING SYSTEM IMPLEMENTATION THROUGH THE ACCOUNTING ENGINEERING



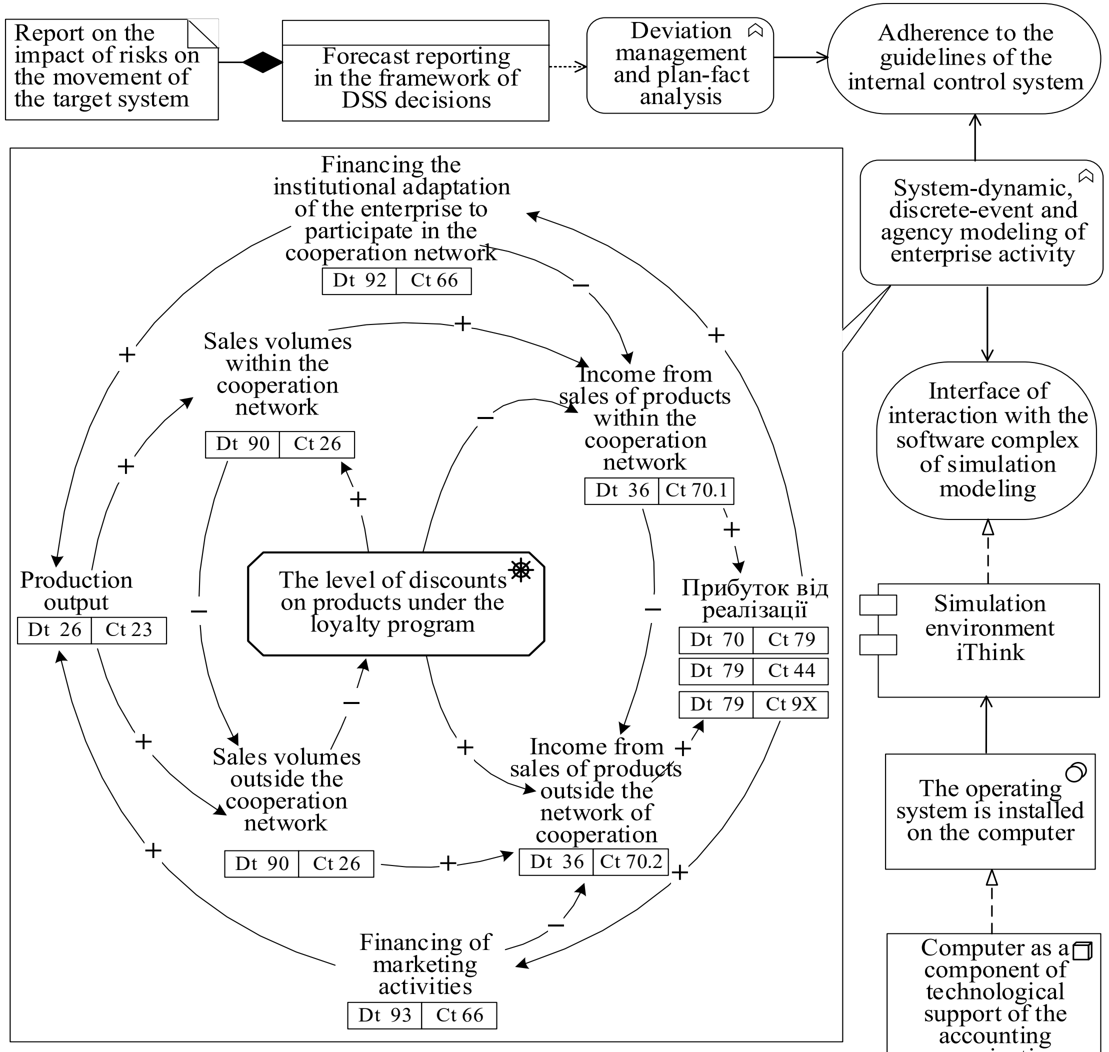
THE USAGE OF THE GENERALIZED REPRESENTATION OF THE ENTERPRISE'S DIGITAL TWIN AS A BASIS FOR THE SYSTEM OF ACCOUNTING AND ANALYTICAL INFORMATION DEPLOY MENT



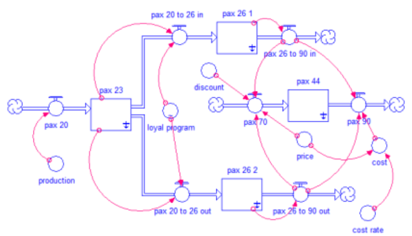
THE DESCRIPTION OF THE MODEL OF ACCOUNTING AND ANALYTICAL INFORMATION AGGREGATION (MODELING MANAGEMENT ACCOUNTING AS A «BLACK BOX»)

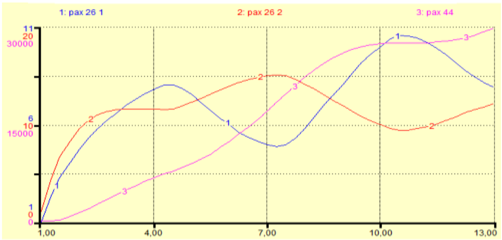


APPLICATION OF SYSTEM DYNAMICS MODELS FOR ADDING PREDICATIVE PROPERTIES TO ACCOUNTING

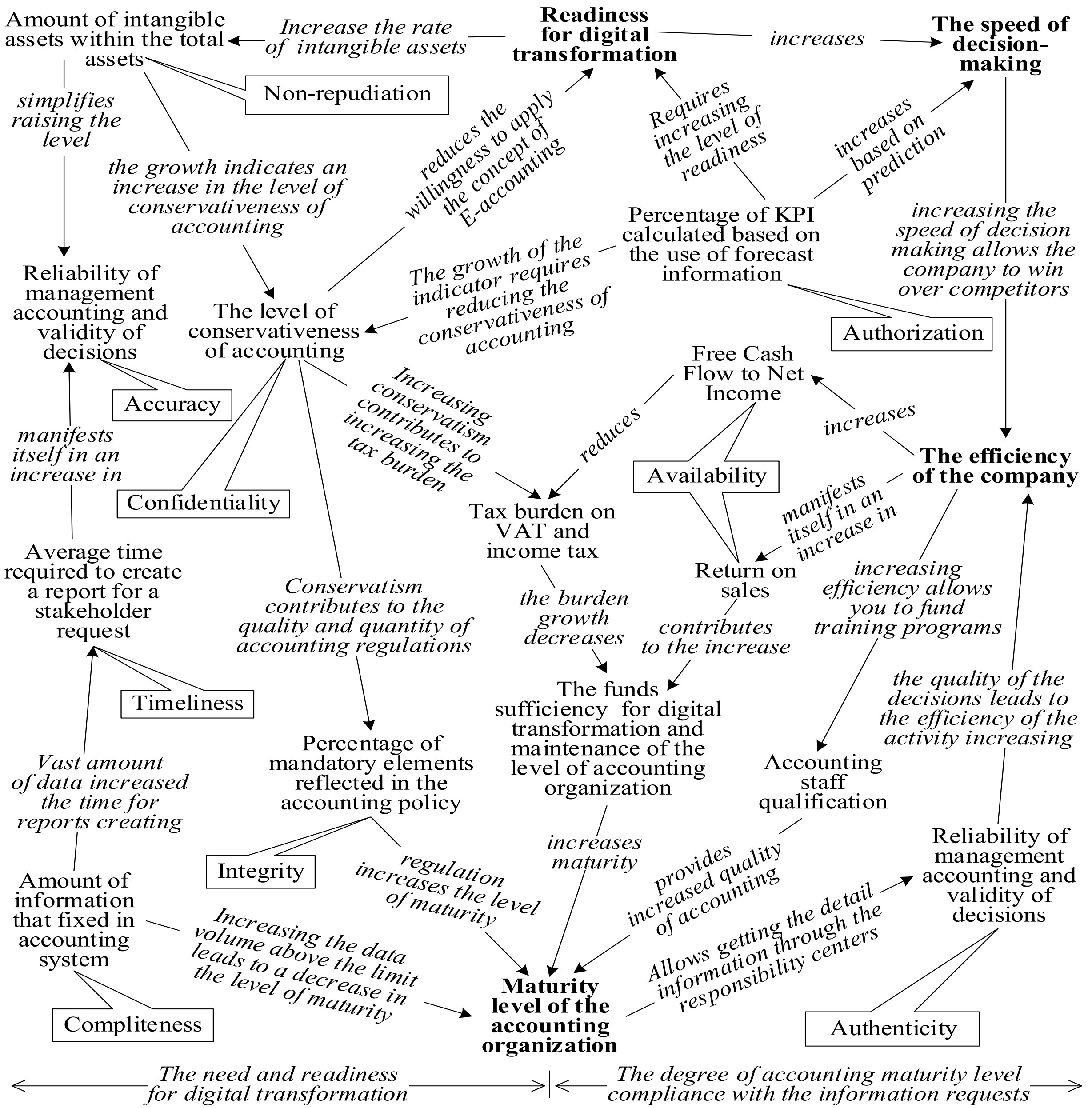


Legend: Dt | Ct – accounting nomenclature





CORRELATION BETWEEN ACCOUNTING ORGANIZATION MATURITY AND THE DECISION-MAKING PROCESS IMPROVEMENT

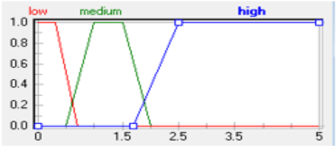


– principles for reliable accounting information described by the International Federation of Accountants (IFAC)

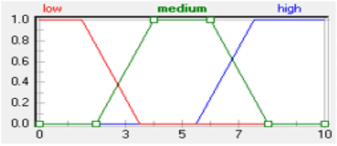
CHARACTERISTICS OF LINGUISTIC VARIABLES FOR THE MODEL PARAMETERS

Name of the parameters and levels. (variable designation within the FuzzyTech program)	Terms of variables, values of membership function					
	Starting		Middle			Finishing
	Equal 1	Decrease from 1 to 0	Increase from 0 to 1	Equal 1	Decrease from 1 to 0	Increase from 0 to 1
The need and readiness for digital transformation (RedinessLevel, RL)						
Amount of intangible assets within the total assets (IntangeRate)	0 – 0,3	0,3 – 0,7	0,5– 1,0	1,0 – 1,5	1,5 – 2,0	1,7 – 2,5
Tax burden on VAT and income tax (TaxBurden), %	0 – 1,5	1,5 – 3,5	2,0 – 4,0	4,0 – 6,0	6,0 – 8,0	5,5 – 7,5
Percentage of KPI calculated by the use of forecast information (ForecastedKPI)	0 – 5	5 – 12	5 – 10	10 – 15	15 – 20	15 – 25
Return on sales (Efficiency) , %	0 – 4	4 – 10	5 – 10	10	10 – 17	10 – 15
Free Cash Flow to Net Income (FreeCash), %	0 – 10	10- 25	10- 25	25 – 40	40 – 50	35 – 50
The degree of accounting maturity level compliance with the information requests (Maturity, ML)						
Amount of information that fixed in accounting system (AccoRate), rate	0 – 0,4	0,4 – 0,6	0,4 – 0,6	0,6 – 0,8	0,8 – 0,9	0,7 – 0,9
Average time required to create a report for a request (TimeForReport), hours	0 – 10	10 – 20	10 – 20	20	20– 30	20– 30
Reliability of management accounting and validity of decisions (Reliability), points	0 – 2	2 – 4	2 – 4	4 – 6	6 – 8	6 – 8
Share of administrative costs per accounting employee (EmploeeCost)	0 – 0,5	0,5 – 0,7	0,5 – 0,7	0,7- 1,2	1,2 – 1,6	1,2 – 2,2
Percentage of mandatory elements in the accounting policy (Policy), %	0 – 40	40 – 60	40 – 60	60–80	80–90	70 – 80

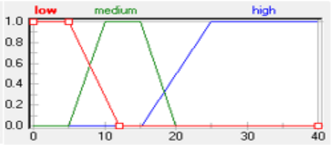
VARIABLE WITHIN THE FUZZYTECH SOFTWARE



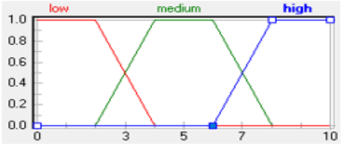
Amount of intangible assets within the total assets (IntangeRate)



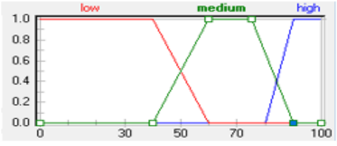
Tax burden on VAT and income tax (TaxBurden)



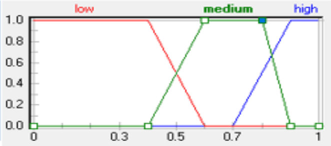
Percentage of KPI calculated by the use of forecast information (ForecastedKPI)



Reliability of management accounting and validity of decisions (Reliability)

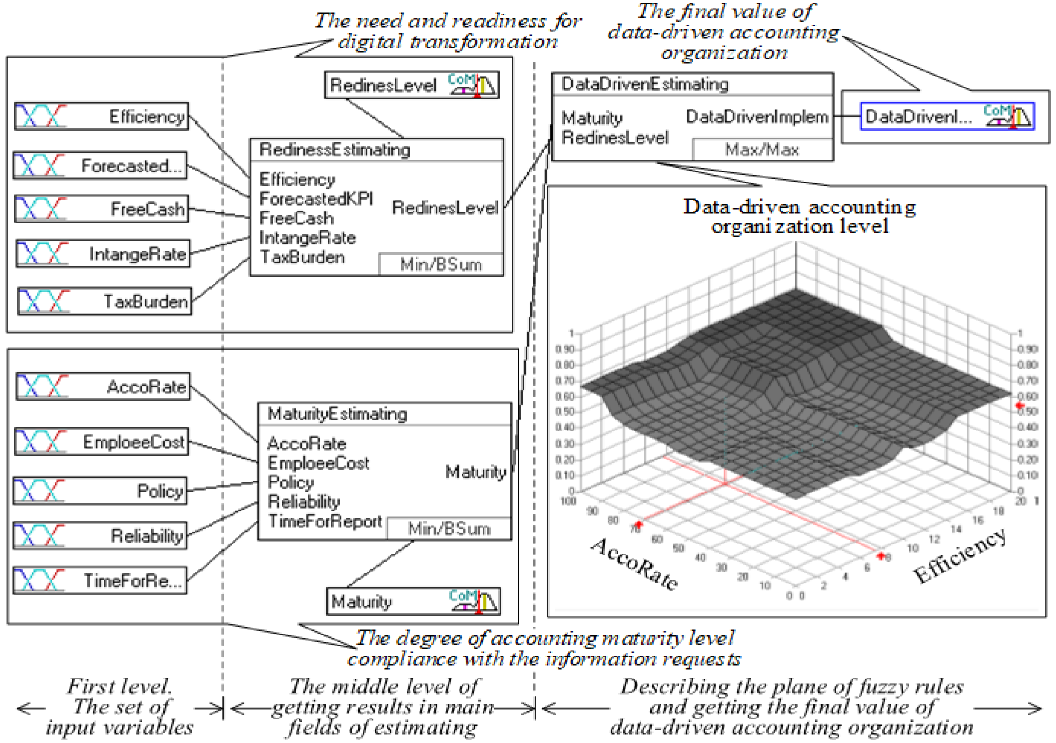


Percentage of mandatory elements in the accounting policy (Policy)



Amount of information that fixed in accounting system (AccoRate), rate

FUZZYTECH GENERAL COMPUTER MODEL AND SURFACE OF DEPENDENCE BETWEEN MAIN MODEL VARIABLES

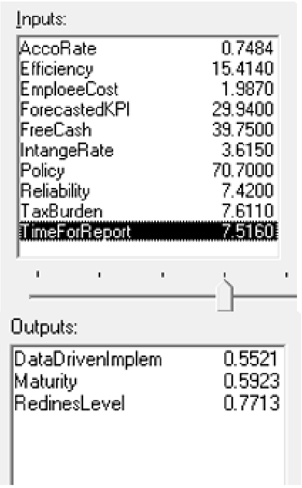


THE STRATEGIC MATRIX FOR THE RESULT OF FUZZY CONCLUSION INTERPRETATION AND GET-TING DIRECTION FOR THE IMPROVEMENT IN THE ACCOUNTING ORGANIZATION

The need and readiness for digital transformation (*RL*)		low	high
	high	Due to the excellent results of digitalization, the main goal is to produce rules for a new way of performing accounting	The main goal is to stay in this segment and continue following the chosen way of digital development of the enterprise
	low	Enterprise has to consider one of the possible ways: either improve accounting or involve digitalization	Strict accounting procedures could allow implementing some new technics for increasing information collecting

$DDDM = f\,(RL, ML)$

The degree of accounting maturity level compliance with the information requests (*ML*)



Thank you for your attention!