

# Managing Interdisciplinary Human Intellectual capital for project and organizational development.

Evangelos Markopoulos<sup>1</sup>, Philipp Robl<sup>2</sup>, Emma Luisa Gann<sup>2</sup>

<sup>1</sup> Queen Mary University of London, School of Business and Management, 327 Mile End Road, GB E1 4NS, London, United Kingdom

<sup>2</sup> Turku University of Applied Sciences. Faculty of Engineering and Management, Jukahaisenkatu 3, 20520 Turku, Finland.

<sup>3</sup> Hult International Business School. 35 Commercial Road, E1 1LD, London, United Kingdom

e.markopoulos@qmul.ac.uk; philipp.robl@hotmail.com, emma.gann@hotmail.de

**Abstract.** Due to outdated evaluation systems and their misleading parameters, organizations increasingly struggle to manage Human interdisciplinary intellectual Capital (HIIC) regarding project and general development. The education of current experts is not able to keep up with the speed of nowadays disruptive evolution of modern challenges, making the managing process of HIIC within organizational projects increasingly inefficient. This paper aims to develop a framework which can be used as a tool for organizational and project development to accurately identify and manage Human intellectual capital (HIC) free from inaccurate parameters. Such parameters are values that serve to make judgements about progress and performance and are historically a rather static assessment tool. The framework uses the concept of applied philosophy for organizational culture and the Company Democracy Models for knowledge management. This research identifies and redefines human intellectual capital parameters under a modern perspective in order to better reflect the HIIC challenges.

**Keywords:** Human Intellectual Capital · Human Interdisciplinary Intellectual capital · Project management · Evaluation parameters · Agile · Applied Philosophy · Aristotle · Socio-ecological skills · Framework · Intrapreneurship · Company democracy Model · Golden Mean · Change management

## 1 Introduction

Managing Human interdisciplinary intellectual capital towards project and business development turns increasingly inaccurate due to the use of misleading evaluation methods and their outdated qualification indicators.

Experts, who spend their whole career in a specific field, struggle to keep up with the pace of nowadays disruptive evolution of modern challenges and education, resulting in a lack of understanding how to define such modern dynamics and a loss in

the ability to efficiently manage the process of Human interdisciplinary intellectual Capital (HIIC) [1].

One of the reasons could be the transition from self-conducted expert problem solving to team-based problem solvers, deriving from a new work life balance trend that strives for more flexibility [2]. These two workforce generations can be characterized as the static generation, which created a successful foundation through hierarchical led organizations in the past, and the fast-moving flexible agile generation of the future [3].

Primary research has shown that indicators used for evaluation and management, don't have the same expression anymore and therefore they need adjustment to include modern dynamics and changes. Socio-ecological skills developed around the way people measure qualification, such as the importance of team building or intrapreneurship as an answer to the rising difficulty to compete with the technological advancement, are still not reflected within the current evaluation and management systems. If the public and the private sector will not emphasize on adapting democratized innovation into organizational development, they will face disruptive economical threats in the transition from today's management to the future that will be led by younger generations [4].

## **2 Teams and Teaming challenges**

Technological advancement and globalization are changing people's behaviors towards complex and uncertain dynamics. In order to keep up with global challenges, people are obliged to gain a better understanding of these changes since they are knowledge related and therefore crucial for competing [5].

Modern organizations have to address a vast variety of constantly changing dynamics to respond to trends, stay competitive and create meaningful disruption. This only can be effectively done with the collective output, feedback and especially awareness of teaming [6]. Considering the complexity of such constantly evolving economical dynamics it is unlikely they can be fully comprehended individually, therefore teaming with the right interdisciplinary intellectual capital (IIC) is crucial.

The Company Democracy Model (CDM) [7], and its democratic teaming derivatives offer accurate insights and teaming practices that enable organizations to efficiently detect such unknown dynamics, understand the circumstances better and achieve increased interaction with the market changing parameters [8], [9]. By offering interdependent agile flexibility, as well as the organizational culture, in which everyone can deliver valuable input to maximize the overall understanding, a certain democratized innovation is created that effectively covers and targets the rising challenges of managing HIIC [4].

However, the major difficulty relies on proper selection of the individual IIC since these dynamics come along with yet unknown qualification requirements. Therefore, new indicators need to be researched to create a process that effectively evaluate the capabilities of team members timewise. Teams in the past were built on knowledge-based requirements where every member was expected to deliver the best possible work needed to serve a project. It was supposed to only use internal resources to fulfill the common goal and to stay within their boundaries [10]. Now, due to the

challenges of the current fast-changing dynamics like trends, customer behavior, business strategies, business models, competitive landscape, and most important technology, the applicable parameters are fluctuating and therefore make the traditional teaming process quite challenging and questionable.

As every project is different, following a generalized approach on team building and teaming is ineffective. Modern dynamics require individualized parameters that focus on diverted external abilities to develop accuracy. Social interaction outside a team to support innovation within the team becomes crucial [11]. The better the interaction with the external environment is, the more agile the team will be, increasing its consistency, awareness and effectiveness towards project and organizational development.

### **3 The challenge of agile teaming indicators**

The major difficulty in managing HIIC for project and organizational development origins from the complexity to specifically identify and allocate individual agile teaming indicators that are impacted by the new dynamics. The modern parameters which are necessary to form effective agile teaming are constantly evolving due to human advancement and make accurate evaluation difficult as they move away from the static concepts [12]. Even though there is an abundance of literature in the field of change management, such as Kotter's "Leading Change" [13], the challenge lies in capturing and re-framing parametrical perceptions of the relationship between the contribution of experience, qualification and socio-economical skills to such measurements [14].

Over the past 50 years, outdated industrial systems used measurement methods like the evaluation of various efficiency degrees, performance metrics and scores to generalize interdisciplinary intellectual capital and individual credibility [15]. This used to be a reasonable approach, considering that the flow of information happened at a much slower pace and from a limited number of sources compared to today.

Henceforth, such knowledge-based changes are responsible for making this static approach outdated. Due to technology, certain indicators do not have their justification anymore but are yet taken into account for every evaluation. The easy access to knowledge and tools through technology has shifted these indicators from gradable qualifications to agile and intangible. Many, if not most, of the business problems can be traced back to inefficient use of knowledge; even though the right knowledge is available to businesses, but not effectively extracted and explored. [16]. A paradigm shift from industrial expert learning towards agile and democratic information processing can be observed.

### **4 Research Methodology and Results**

Due to the fact, that there is limited research work on individual parameters and indicators that are valuable for managing HIIC, empirical research is conducted to gather current real-life data. The academic stock available for literature, defines how HIIC was evaluated in the past and where indicators are impacted by modern dynamics.

The correlating outcome from present quantitative and qualitative re-search in form of a specified survey and interviews, offer insights about the change of perception. Concluding, this correlation can generate new Key indicators that are used to effectively identify agile teaming parameters in order to develop a modern management approach of HIIC towards projects and organizations.

Similar to Karl Sveiby's IC model [17] to measure Intellectual capital by intangible assets [18] or the Kirckpatrick's four Level model [19], the quantitative research was categorized into demographics, academic competence, internal capability and external credibility. This serves as a control group and aims to show a clear depiction of the shift between evaluating traditional static- and modern agile indicators in the context of how dynamics have changed them.

One outcome that offers a vivid example, was the evaluation of static indicators like educational career. The change from the focus on grades or the subject studied, to the evaluation of the institutions ranking and how to cope with such social structures, underlines the theory that outdated indicators are still use to actually measure undefined parameters. 49% of those surveyed, mentioned that the name of the institution is used as a far more important indicator for Human Intellectual capital than the actual expression like the GPA or the subject studied, which only was highlighted by 26%. This proves that the actual applied indicator is secondary for evaluating credibility due to modern changes, thus the right selection for teaming and managing HIIC becomes increasingly inefficient.

Analysis of the research conducted, demonstrated fields which are still rated as crucial and which expressions over the time give a better insight into modern credibility, capacity, consistency, and effectiveness. These fields form 16 key indicators, that when put together in the right model, form a new and efficient approach to identify HIIC for either teams, employers or every individual kind of project. By creating this new model, which accounts static and agile indicators, a new mean merged parameter is created.

Due to this, the outcome of selecting the right HIIC free from invaluable parameters will be maximized and adjusted to the nowadays speed of processing information. Applying this new approach in identifying valuable IIC enables organizations to manage HIIC more efficiently while offering a productive perspective to-wards changing dynamics and future trends by including the overall awareness of effective teaming.

## **5 Degree of Interdisciplinary Intellectual capital**

After creating an indicator data pool from empirical research, a comparison is conducted to define indicators that used to be evaluated in the past (Observation) and expected to be accurate, for any kind of qualification, in the future (Table 1).

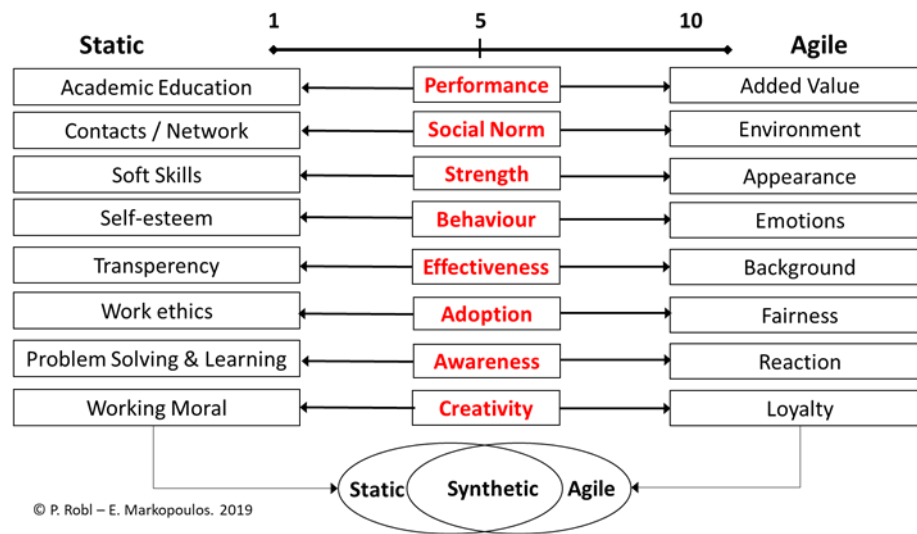
This comparison will then be transformed, with the help of Aristoteles golden mean theory [20], into a new mean-indicator to measure truthfully modern interdisciplinary intellectual capital which has its position between old, proven, new and necessary.

**Table 1.** Extraction of correlating parameters.

Static	Observation	Agile	Observation
Academic Education	Knowledge	Added Value	Self-innovation
Contacts /Network	Society	Environment	Culture
Soft skills	Expertise	Appearance	Communication
Self-esteem	Secureness	Emotions	Psychological
Transparency	Capacity	Background	Consistency
Work ethics	Awareness	Fairness	Strategical
Problem solving & learning	Dynamic	Reaction	Behavior
Moral	Learning curve	Loyalty	Integrity

## 6 Aristotelian Applied Philosophy

By applying Aristotle’s golden mean theory used for the new framework static and agile parameters are set in order to create a score which considers the modern dynamics. The model uses a shift on a scale between 1-10 to evaluate the degree of HIIC between the traditional and modern approach (Fig.1). The numerical values of the synergetic parameters are then used to calculate the Sum of Total Interdisciplinary Capital. This applied philosophy [21] framework must be conducted by an evaluator and the evaluated team members to deliver, as observed in Figure 2, scores for the predetermined IC as well as for the observed IC in order to assure individual accuracy.



**Fig. 1.** Golden mean parameter Framework.

The measured scores of the synergetic expression in the center from Figure 1, is then transferred to Figure 2, which accurately calculates the Sum of Total Interdisciplinary Capital. When the required indicators are allocated before teaming or the team evaluation process, and compared to the parameters observed, then this can assure a

truly transparent, credible and accurate outcome of the evaluated IIC. Once both numerical data points are transferred into the separate colons then they are multiplied. These results are summed and averaged, resulting in a number (MIC) that gives an exact expression about how much of the new agile capacities are fulfilled. After both MIC values are extracted, from the evaluator and from the evaluated, they are compared with a simple percentage calculation offering insight about how much the modern qualification level is fulfilled.

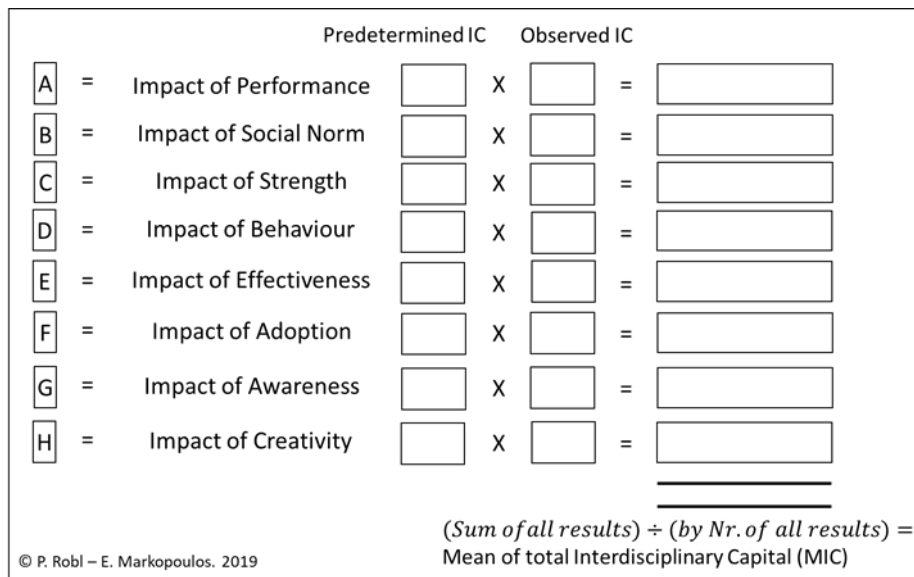


Fig. 2. Framework for calculating sum of total Intellectual Capital.

## 7 The Interdisciplinary Intellectual Identification (I<sup>2</sup>ID) Canvas

Similar to the Lean Canvas template which is used to visualize a business idea by breaking it down into its core propositions, the I<sup>2</sup>ID Canvas, as the capstone of this framework, aims to depict certain parameters and deliver an understandable expression of the core competences. The result of the developed framework delivers a flexible and agile method to make a reasonable decision whenever managing HIIC in a modern context.

Using this framework together with the pre-determined indicators allocated through the golden mean framework, offers a tool that has the ability, for every party involved, to show transparency towards the expressions stated in the first two steps. If the examples filled in the Canvas match the value and expression from the first two frameworks, an accurate evaluation can be observed offering total accuracy, free from inaccurate qualification indicators. This framework is only conducted from the evaluated team members and used by the evaluator in order to prove if the in-tangible expressions from Figure 1 are consistent.

<b>A</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>G</b>
<b>Impact of Performance</b> Academic education Examples of added Value	<b>Impact of Strength</b> Soft Skills Reference to appearance	<b>Impact of Behaviour</b> Score of self-esteem Emotions	<b>Impact of Effectiveness</b> Examples of transparency Insight of background	<b>Impact of Awareness</b> Problem solving skills Reaction
	<b>B</b>	<b>F</b>		<b>H</b>
	<b>Impact of Social Norm</b> Insight about network Adoption to environment example	<b>Impact of Adoption</b> Example of work ethic Reference to Fairness		<b>Impact of Creativity</b> Examples of learning Curve Example of integrity

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**Fig. 3.** The I<sup>2</sup>ID Canvas.

## 8 Limitations and Areas of Further Research

The I<sup>2</sup>ID canvas process is developed to help organizations, teams or projects to identify Human Interdisciplinary Intellectual capital towards project and organizational development, free from the impact of outdated measurement methods and specified threw new and time accurate parameters. By including modern dynamics such as technological achievements, personal development, and trends like convenience, work-life balance or the support of soft skills which were not taken into account, this framework aims to offer a tool for any organization to manage agile and flexibly while still being precise with traditional expectations.

The framework tested on limited subjects and therefore revealed a small amount of its potential. If this process would be conducted on a significantly higher scale and on a corporate level with the use of big data, more parameters could be extracted to develop even more time accurate expression for HIIC indicators. Further research on such new parameters could also improve the frameworks results. In the test case of this research, the use of big data could help the framework prove to modern society the need to reform educational systems in order to match future demands and maximizing the use of potential HIC [22]. HIIC operates under ethical management principles where credibility and commitment in team building, and management are related with organizational ethos in a balanced way between static and agile management. The framework is a contribution to sustainable management thought the effective utilization of the human intellectual capital in interdisciplinary environments.

## 9 Conclusions

The research conducted introduced an applied philosophy framework based on the Company Democracy Teaming model for knowledge democratization on team building and the Aristotelian golden mean applied philosophy for a wisdom driven organizational strategy and individual wisdom virtue identification [23]. To avoid and to minimize risk and failure, the developed framework offers a way to help Teams, organizations but also individuals to use expressions (Golden mean parameters) which were observed to create a guide for individuality but also valuable credibility. Using such unfamiliar but yet time accurate frameworks, enables organizations to manage the potential of HIIC more efficiently while innovating the traditional project development process. Modern knowledge has to be approached with modern methods to reveal its full potential, while managers are obligated to always adjust their systems and indicators to tackle the greatest socio-economic issue which is lack of knowledge.

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