



“Professional Virtual Communities” PVC Reference Framework

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1 Introduction and Motivation

In the current industrial context, the rapid evolution of technology has moved the focus from efficiency to creativity, for delivering suitable products and services to the economy. Furthermore, global challenges, such as environment, resources, competition, etc., are imposing new and harder constraints. With these challenges to face, the human capital is considered as an essential competitive advantage of business entities, being those both individuals, enterprises or communities.

Despite this situation, individual human potential is scarcely realized within current organizational business entities and inter-organization business relationships. Best in class corporations are currently perceiving that they are approaching a limit of the possible improvements actually achievable in the exploitation of knowledge workers' human capital within current organizational structures. In addition to that, the European systemic innovation (i.e. societal changes determined by the introduction of technological infrastructures) promised by the developments of the Information and Communication Technology has been realised to a very limited extent, as compared to its potential, and the multicultural diversity, peculiarity and potential richness of Europe, is not generally used as a competitive advantage by the economic system. All the above evidenced situations are contributing to the fact that the European industrial competitiveness and growth is lagging behind with respect to other regions.

In response to the more and more dynamic market conditions, there is also a tendency of companies in expelling permanent expert knowledge resources to outsource them. This for the sake of economic efficiency, as well as of the fast-changing “knowledge” necessities. Among other causes, this situation is also activating a trend towards the increase of the percentage of Individual Professionals, which already constitute a considerable share of the total EU work force, as opposed to the Corporate Professionals' one.

Knowledge workers' main causes of dissatisfaction are the occupational precariousness, the poor recognition and reward of their professional achievements, and the restriction of their social interactions within the boundaries of very small communities during the working time (which is becoming greater and greater with respect to the available free time).

A new organizational arrangement, referred to as Professional Virtual Community (PVC), is now emerging as the evolution of previous organizational associative schemes (Virtual Communities, Community of Practices, Professional Communities) in order to address the objectives of increasing, at the same time:

- the European Industrial competitiveness,
- the Knowledge workers' quality of life.

The analysis of the two major objectives, passing through the identification of the corresponding challenges and potential solutions, as well on the base of specified assumptions, led to the identification of the overall PVC characteristics, as outlined in the Tables 1 and 2 below. The assumptions are made of basic observations of existing social networks carried out by the authors and represent an intuitive resolutions of the underlying issues. Furthermore some of those assumptions have been also elaborated and investigated in the literature (e.g. see *Fleming, Kimble et al.* and *Ludford et al.* for the assumptions related to human interaction)

Objective	Current challenges	Potential solutions	Assumptions	The PVC Solution (PVC characteristics)
Increase the European Industrial competitiveness	European economic growth is lagging behind with respect to other regions.	Increase of business entities competitive advantage through “innovation”	Peer human interaction enhance creativity and innovation People cultural diversity is a key factor for innovation	The PVC (peer multicultural community) is an organizational form more suited for generating innovation in its interaction with other organizational forms. ICT means allow massive multi cultural interaction
	Classical enterprise “static” organizations, aimed at optimizing efficiency and productiveness, are inadequate to face dynamic markets (characterized by ever-transient conditions) .	Increase of business entities “flexibility”	Individuals accept large degree of flexibility in work conditions, if mechanism are in place to guarantee the occupational security.	The PVC (stable, business oriented organization) provides: <ul style="list-style-type: none"> to individuals, diversification of working opportunities (complementary to and co-existent with classical occupational forms) to companies, an economically efficient availability of knowledge resources or knowledge-based solutions.

Table 1 – PVC characteristics addressing competitiveness

Objectives	Current challenges	Potential solutions	Assumptions	The PVC Solution (PVC characteristics)
Increase Knowledge workers' quality of life	Knowledge workers increased precariousness, due to the companies' trend of outsourcing expert knowledge resources (or alternatively hiring on a temporary base)	The enlargement of the scope of individuals' working opportunities increases the “stability” of knowledge workers	The perceived “stability” is based on the individual perception of own knowledge exploitability	The PVC is an organizational form that makes explicit and fosters the personal knowledge “employability” (i.e. the business exploitation of personal knowledge) through the formation of Virtual Teams of members in response to business opportunities ICT means allow for an extensive market reach
	Knowledge workers' dissatisfaction for their working conditions (poor recognition and reward, scarce social networks developed at work)	Increase workers “recognition” and “social interaction”	Fair recognition of individual knowledge, business and social merits is assured by bottom up self-organized peer organizations	The PVC, through peer assessment and self organization approach provide individuals with a sense of fairness in attribution of personal recognition. The PVC implicitly introduce social dimension (networking and relationships) in working environments.

Table 2 – PVC characteristics addressing quality of life

It is worth noting that the PVC organisational form is not conceived as an alternative to existing ones (for-profit companies, VOs, VBEs, research centres, universities, etc.), but rather is intended to interact with those forms, with the aim of optimally addressing the above mentioned objectives.

2 The conceptual framework for “PVC”

2.1 The PVC definition

The Professional Virtual Community is a human-centric business entity, which has been designed to maximize the realization of knowledge workers and to best support innovation cycles within the related socio-economic environment.

The PVC is an association of individuals identified by a specific knowledge scope with an explicit business orientation, aimed at generating value through members’ interaction, sharing and collaboration. This interaction among the members is optimized by the synergic use of ICT-mediated and face-to-face mechanisms.

The PVC generated value consists of:

- Advanced Knowledge (i.e. the creation of new knowledge relevant to the community knowledge scope)
- Professional services (i.e. the collaborative business activities performed by the members exploiting the community knowledge)
- Social cohesion (i.e. the social relationships among the members that enable their collaboration readiness - namely the effort reduction to start collaboration - and foster knowledge sharing and co-creation)

The epiphenomenon of the human cohesion realized in the PVC is the generation of higher functional abilities which can be referred to as “collective intelligence”.

The PVC business activities are performed by Virtual Teams (temporary aggregation of PVC members for addressing specific business opportunities). Those activities consists of professional knowledge services (consultancies, studies, etc.) typically exploiting the “frontier” knowledge developed by the community (original applications of state-of-the-art knowledge, first implementations of emerging innovative methodologies, etc.).

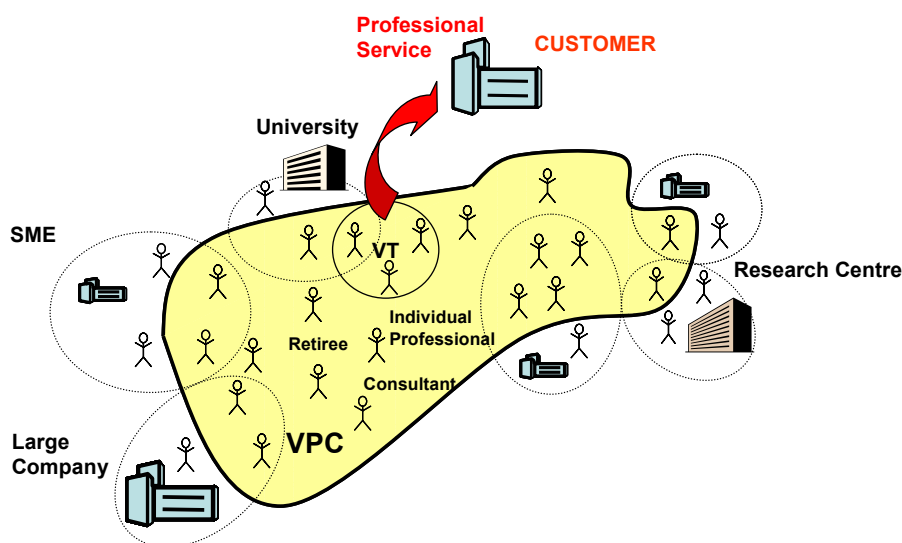


Figure 1 – The PVC model



The general principle ruling the PVC members' participation is that it is up to the members to decide the type and the extent of their individual involvement in the community activities, which is complementary to and co-existent with their normal working occupational forms. The PVC members are not PVC employees.

The PVC members can be individual professionals, free-lances, company employees, researchers (from university or research centres), retired knowledge workers, and even common people. The PVC composition depends on its specific typology and on the socio-economic environment in which the PVC is established.

2.2 The foundational principles of the PVC concept

The PVC concept is rooted on:

- the alignment of collective objectives to the individual's ones,
- the harmonization of the Knowledge, Business and Social value system of knowledge workers, and on
- the composition of the seemingly contradictory collaboration and competition drivers.

2.2.1 The “holographic” nature of the PVC business entity

Traditional for-profit business entities are pursuing business objectives that are eventually aimed at satisfying needs and expectation of their shareholders. Knowledge workers are used as resources for the execution of company value creation processes and are rewarded mostly in a mere economic way. As a result, the objectives of the individuals are necessarily not coincident with the company objectives, or at least are only partially satisfied. This can also be true for not-for-profit business entities, which generally are pursuing societal objectives relevant to certain categories of stakeholders and are not directly aimed at the knowledge workers' overall satisfaction.

The aimed coincidence of the objectives of its individual members to the ones of the PVC itself, differentiates the PVC business paradigm from the one typical of traditional companies and results in the holographic nature of the PVC, in which the Part (the Individual) represents the Whole (the community) and the Whole itself is aligned to the Parts.

2.2.2 The “KBS” principle

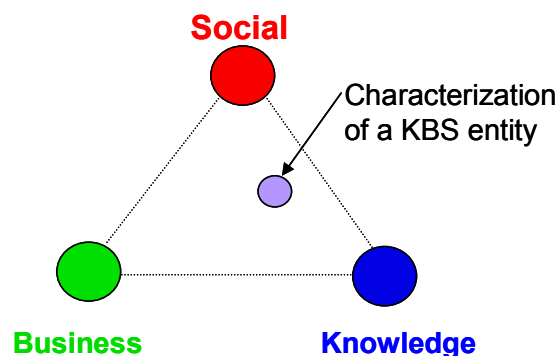
The fundamental principle on which the PVC is built on is that the “collective intelligence” (i.e. the full professional capability for individuals) can emerge only if three fundamental dimensions are simultaneously addressed in a comprehensive and balanced way. The three fundamental dimensions are:

- Knowledge
- Business
- Social

The balance of the three fundamental dimensions is considered the key to the full deployment of knowledge workers creativity and productivity. According to the PVC holographic nature, the KBS principle (Knowledge-Business-Social) equally applies to the community as a whole, which is deemed to be sustainable, motivated and durable only if a comprehensive and appropriate

inclusion of the three dimensions is addressed. As a matter of fact, the absence of the business dimension would result in a limited activity scope, putting at risk the PVC sustainability and members’ viability to spend significant time in the community activities. The lack of the social element, ensuring trusted relationships among the members, would limit the readiness to approach business opportunities and impair the free share of knowledge among members. Not addressing the knowledge development element would limit the usefulness of the community for the build-up of the knowledge society, reduce motivation of the knowledge worker and impairs his aspiration to obtain higher recognition and even economical reward.

The KBS principle infers a tri-dimensional value system for the PVC which can be represented in the “KBS Chromo-Framework”, which takes advantage of the analogy of the three fundamental dimensions with the three fundamental colors (Blue for the Knowledge, Green for the Business, and Red for the Social dimension). Each KBS entity is then represented by a specific blending of the three basic colours, resulting in one determined chromatic integration.



The KBS chromo-framework

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Figure 2 – The KBS Chromo-framework

2.2.3 The PVC “oxymoronic” interactions

The collective intelligence aimed at by PVCs is enabled by the seemingly contradictory interactions among opposite elements:

- **Knowledge diversity within the same specified scope.** Though the knowledge scope of the PVC is specified, membership is open to diverse disciplines (even generic unstructured knowledge) and aims to allow interactions among members with different age, culture, expertise, etc.

It has been proven (Lee Fleming, Perfecting Cross-pollination. Harvard Business review September 2004) that the diversity of team member’s disciplinary knowledge increases the probability of breakthrough innovation. The PVC enables the interaction of diverse knowledge within a focused community environment (same principles, same values, same intent, etc.)



- **Connectivity among separated environments (multiple belonging).** The members belong to the community and, at the same time, belong to other business organizations, even in the sense that they may be employed by a traditional corporate organization and are allowed to spend independent time within the community. The ability of the team to exploit members' knowledge diversity is enhanced by team members' simultaneous participation in multiple professional and social networks (Violina Ratcheva, Sheffield University, 2005)
- **Collaboration among conflicting interests.** The value generation within the PVC is generated collectively (higher value generated by the interaction of multiple individuals) and occurs through members' interaction in sharing and creating of value objects.

The collaborative principle implies a joint intent among the individuals and their autonomous decision to participate in the activity.

This collaboration is also competitive in the sense that:

- within the same collaborative team, the members compete to gain knowledge rights' allocation
- several collaborative teams compete to access business opportunities
- members compete to become “hubs” of social relationships with others

Co-creation is enhanced by competition (individual intent increases motivation and creativity).

2.3 The PVC Business strategy

The business strategy of the PVC business entity consists in being a market “Front Runner” characterised by:

- High adaptability to market conditions (i.e. being able to provide the new services satisfying the emerging needs of the market) through a flat self-adaptive organisation.
- Provision of Top Quality services

The PVC professional services are designed to address the market area that is not optimally covered by any of the traditional actors involved in supporting innovation processes (Universities, Research centres, Consultancy firms). The PVC positions itself at the intersection of the traditional actor's value proposition, with whom the PVC is intended to collaborate instead of competing.

An exemplary PVC professional service consists in supporting first implementations of an emerging innovative methodology, so characterised by “Innovation driven knowledge creation” (i.e. the Virtual Team develops ad hoc new knowledge to produce innovation).

Because of the knowledge sharing and collaborative knowledge creation mechanisms the PVC provides also a “lifelong learning” service to its members, implicitly through their participation to the PVC activities.

2.4 PVC Business model principles

A business model is a theoretical abstraction explaining the rationale behind the “logic of earning money” (or, for the non-for profit organizations, the logic of being sustainable) of the business and organizations. The identification of the business model for an organisation follows the definition of its business strategy and precedes the definition of the relevant operational processes (which



define in detail how the elements identified by the business model are actually exchanged and accrued along the organisation operations).

The basic distinctive characteristics of generic PVC business models are:

The multi-dimensionality of its value system, according for the inclusion of Business, Knowledge and Social dimensions.

- The business dimension entails values such as “money”, “working time”, “business activities” etc.
- The knowledge dimension entails values such as “access to information”, “execution of training sessions”, “new knowledge generated” etc.
- The social dimension entails values such as “trusted links to other persons”, “social relationships”, etc.

A **multi-stakeholder perspective** in determining and assessing the viability of the Value Proposition.

2.5 The PVC governance Principles

The main Governance Principles characterizing a Human-centric organization, as the ECOLEAD Business oriented PVC is intended to be, can be defined as follows:

- **Empowerment.** All decisions and responsibility must be taken, as far as possible, at the lowest hierarchical level. As a result, for instance, the PVC business activities are fully endorsed by the VT members (the contract is between VT and the client, the PVC itself carrying out a brokerage function)
- **Self-commitment.** The members’ participation to PVC activities, in terms of both quantity (which percentage of their working time) and typology (which kind of activities, such as research, industrial application, internal projects etc.), is decided by the member itself on a voluntary basis. The PVC member is not a PVC employee.
- **Self-organising leadership.** The organisation of PVC collaborative activities is left, as much as possible, to the actors actually performing those activities.
- **Peer assessment.** Any time there is the necessity for subjective evaluation (e.g. project selection and award, prize award, quality control, subjective performance metrics) this is done by assembling an ad –hoc peer committee which is empowered to take the decision.

These governance principle results in a PVC organisational structure which is:

- as flat as possible,
- dynamic, in the sense that, by design, is not a-priori defined. Leaderships and the related hierarchical relationships are created depending on the specific context and for the duration of the specific activity
- straightforward, linking directly the organisational entities which are asked to add value along the relevant process (so avoiding the non-adding value interposition of hierarchical intermediaries)

2.6 The KBS chromo strategic management system

The strategic management of the PVC is realised through the application of the KBS principle to:

- members behavioural estimation, to assure the respect of the PVC ground rules corresponding to the shared value system , as well as to support their enactment;
- members’ self-assessment for managing personal improving actions;
- PVC assessment in terms of community capability and performance, necessary for managing improving actions
- Metrics for evaluating the satisfaction of all PVC stakeholders

The Chromo-Management system is used to set the strategic targets for both individuals and PVC. For individuals the Chromo-Management system is aimed at:

- setting the desired status for individual KBS satisfaction,
- comparing it with the current status as measured by relevant indicators,
- and activating enablers to acquire the capabilities necessary to achieve the target.

For the PVC community, the chromo management system is aimed at steering the direction of the PVC toward the desired target of all the individuals (the collective target).

This figure shows the PVC strategic management model which correlates Values, Enablers and Results and provides a tool for guiding the individual to reach its personal excellence objectives (My-Mirror) and another tool for guiding the overall community path toward excellence.

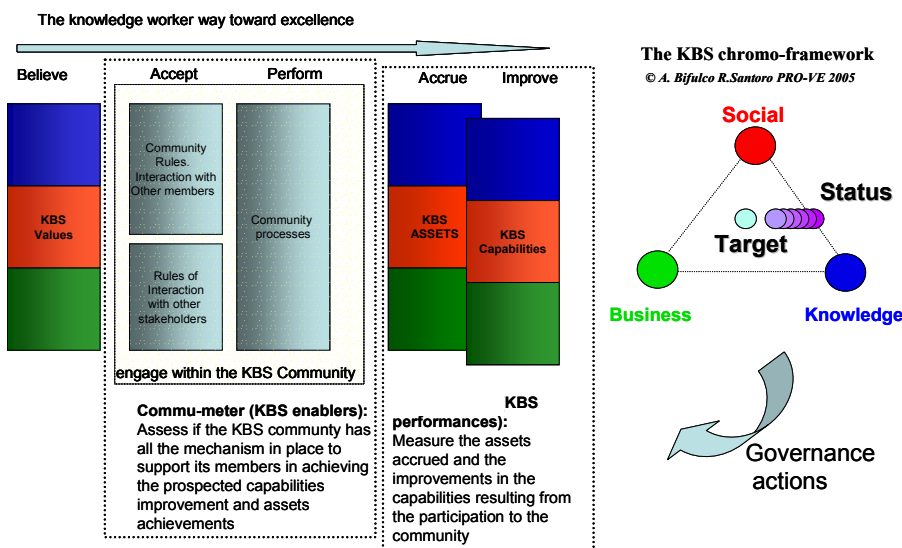


Figure 3 – The PVC chromo-management system

3 The Methodological Approach for “PVC” Implementation

This section provides the approach to identify the appropriate type and characteristics of a PVC to be established, which satisfies the expectations of the PVC’s stakeholders.

3.1 PVC Stakeholder needs

Depending on the context in which the PVC it is intended to be established, it is important first to identify the PVC stakeholders, which are the actors directly and indirectly involved in the KBS activities addressed by the PVC. Typical PVC stakeholders are:

- Citizen
- Knowledge worker
- Enterprise
- Research centre
- VBE
- Public Institution

3.2 Stakeholder needs

Needs and expectation relevant to the PVC can be systematically derived for each stakeholder by analyzing those against the three PVC characterizing fundamentals, in turn sub-structured in their major elements:

Knowledge

- Single Discipline Knowledge (well established knowledge disciplines, for which general principles and their relationships are already identified, scientifically formulated, and included in a consistent Body of Knowledge – e.g. “acoustics”)
- Multi-discipline Knowledge (a potential new knowledge discipline, possibly resulting from the multidisciplinary integration of a number of established disciplines – e.g. biophotonics)
- Unstructured Knowledge (a knowledge scope not coincident with an established or an incipient knowledge discipline and indirectly defined by a specific challenge, possibly for breakthrough innovation – e.g. develop an innovative new way of generating artificial light)

Business

- Business “capacity” (related to the ability of incrementing the stakeholder business reach)
- Business “capability” (related to the ability of incrementing the employability of the stakeholder Knowledge & Competence)
- Business “sustainability” (related to the capability of assuring long term economic perspectives to the stakeholder)

Social

- Social reach (related to the stakeholder capability of accessing and activating social interactions)
- Social capital development (related to the capability of generating social assets through the exploitation of social interactions)
- Social stability (related to the capability of assuring balance between stakeholder individual interests and freedom as compared to the limits imposed by the social compromises).

The combination of those two dimensions (PVC stakeholders and PVC main characterizing issues) provides a grid for the identification of specific needs/expectations.

3.3 The PVC typologies


The PVC typologies are defined along three dimensions:

- Knowledge/innovation scope (ranging from incremental innovation within defined disciplines to breakthrough innovation from unstructured knowledge bases)
- Business legal entity (ranging from not-for-profit “de facto” association to for-profit corporation with identified shareholders)
- Socio-economic settings (ranging from stand-alone PVC offering services to the open market, to PVC fully entangled to VBE serving VBE strategic objectives)

One type is defined by a specific value associated to these KBS dimensions

PVC Knowledge/ Innovation scope	PVC Business legal entities	PVC related Socio-economic settings
Incremental innovation from defined disciplines	Not-for-profit entity fostering profitable businesses for its members	Stand-alone community serving the open market
...
Breakthrough innovation from unstructured knowledge	For-profit entity enabling capitalization of KBS assets for PVC owners and members	Entangled to Sectoral end/or Regional Industrial settings

From



To

Figure 4 – The PVC typologies

3.4 THE PVC OPERATIONAL MODEL

The PVC Value system (which can be structured in its Knowledge, Business and Social parts) gives an identity to the PVC and includes all the ethical values that the members shall “believe” in. It is the base for the social compromise among the members and influences the definition of the way in which the members behave and operate within the PVC. So the PVC Value system allows the constitution of the PVC as a social constituency, as well as influences the definition of the business processes and the relevant organisation.

The PVC’s value system is then the base for the development of the rules (addressing both the relationships among themselves and with other stakeholders) that the PVC’s members will “accept” through the acceptance of dedicated Agreements, as well as of the PVC value-adding processes that the PVC members will “perform” when actually engaging in the PVC community.

Through their operations within the PVC, the members will “accrue” Knowledge, Business and Social assets, as well as they will “improve” their capabilities in acquiring them. Dedicated Metrics

will be aimed at assessing the PVC and the members’ capabilities, as well as the performances actually achieved.

Other metrics will measure the compliance of the members’ behaviour to the values included in the Value system (to support the social compromise) , while a third category of metrics will support the PVC strategic management system (stakeholder satisfaction and processes effectiveness/efficiency).

The PVC has been designed as the enabler of members’ realisation. A member joining the PVC should then:

- Increment his/her KBS assets
- Improve his/her KBS capabilities (the ones that support the achievement of KBS assets)

The figure below shows a synoptic graph describing the example key members’ capabilities identified.

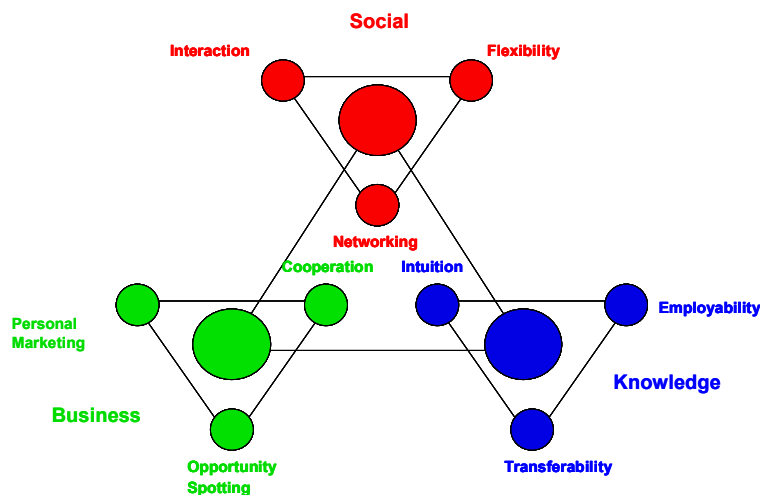


Figure 5 – The KBS capabilities

3.5 PVC Rules and agreements

The reference “rules” of the PVC are based on the PVC Value system and formalised in the PVC agreements. The agreements are divided into internal and external agreements

Internal agreements

- PVC Member Agreement, defining the members’ benefits and dues, the rules for members’ qualification, evaluation and membership management, the PVC deontological code, the processes for initiating and conducting business or knowledge development activities, the processes for members interaction, the rules for the assignment of internal projects, general IPR management principles etc.
- Non disclosure agreement related to the access of emerging approaches in the PVC knowledge internal markets
- PVC Virtual Team Agreement, defining the assignment of the roles in a Virtual team, the work, profit and liability sharing among the VT members, project generated IPR partition and protection measurers etc.



- PVC Contract for Internal projects template, template contract between the PVC and a Virtual Team of its members, ruling internal projects for the PVC knowledge development

External agreements

- PVC Article of Association. The PVC Article of Association (also referred to as bylaw, or statute) is the foundation document of the PVC that shall state in unambiguous and synthetic terms the legal nature, scope, mission and the objectives of the Community, along with information regarding the internal organisation and management structure (e.g. directive council, members’ assembly power and election mechanisms) .
- PVC Agreement with members’ organisations, defining the general rules of members’ participation and behaviour in PVC activities, with reference to the members obligations toward their employer (or professional order in case of individual professionals). This agreement include for instance confidentiality constraints, IPR management principles etc.
- PVC standard Contract clauses for External projects, template of standard clauses to be included in the contract between the External client and Virtual Teams

3.6 Reference Processes And Organisational Structure

The “PVC business processes and organisational elements of the PVC operational model address the mechanisms put into action in the actual operation of PVCs.

3.6.1 PVC Organisational entities

The organisational entities are PVC internal organisational settings aimed at managing and operating specific functions. The minimal institutional structure to enable the legal recognition for economic activity is the PVC Directive Council, which holds the legal responsibility of the association, elected by the general assembly of members. It includes the President of the Association, chairing the Directive Council and in charge of all executive activities on its behalf. Te board also takes care of administrative and external acquisition processes (PVC economic balance, payroll, economic transactions, taxes, membership management, acquisition of external services etc.).

All other organizational elements are intended to offer services to the members and are formed by the member themselves through peer self-organisation and election:

- PVC Marketing and communication. Organisational entity taking care of PVC overall marketing and communication processes
- PVC Steering Board. The organisational entity in charge of setting the PVC overall strategy, assuring the alignment of all PVC activities (Knowledge, Business and Social) with the defined scope and objectives, managing the updating/ evolution of the PVC rules, governing the PVC general management processes.
- PVC Technical committee. Organisational entity constituted by all the Technical Area leaders in charge of managing the PVC roadmapping activities. The technical area leaders, elected by the members general assembly, are the responsible for the main technical areas in which the community knowledge roadmap is partitioned (this partition is decided by the Steering board)
- Event Committees. Organisational entity nominated by the Steering Board aimed at the organisation and execution of PVC physical events.

- Virtual Teams. Organisational entity constituted through the self-aggregation of PVC members for exploiting a specific business opportunity or working for a PVC internal project. The Virtual Team leader takes the role of the project manager.
- Peer Evaluation committees. Organisational entities constituted through the self-aggregation of PVC members for addressing a subjective evaluation process. This might be the case, for instance, of the member qualification process, the quality control of internal PVC project results, and all other cases where a subjective judgement shall be exerted for assessment.

3.6.2 PVC Value-adding and Management business processes

The processes of a generic organisation can be differentiated in:

- Value-adding processes (i.e. the processes by which the organisation produces the values needed for the accomplishment of its mission)
- Management system processes (the processes needed to govern the organisation in such a way to allow the realisation of its mission and to assure incrementing quality of the produced values)

Value-adding Processes

Since in the PVC case the values generated are threefold (knowledge, business and social values), the value adding processes can be analysed separately, and the totality of the PVC processes related to the PVC operation phase can be structured as follows:

Knowledge processes

- Knowledge sharing (the advanced mechanisms by which the members' knowledge is exchanged among them. Those mechanism are necessarily based on personal interaction. The pure information sharing, the one that does not deserve interaction among members, is considered only a basic support function for the interaction mechanisms)
- Knowledge creation (the interaction mechanisms among members used to produce new knowledge, from the conception of new ideas up to the support for large scale implementations. This new knowledge is at the base of innovative competences for practical applications or innovative products/services. “Base” research uncorrelated to practical application domains is out of the scope).
- Research Roadmapping, (the processes aimed at developing Research Roadmaps and Studies to support the strategic decisions of all the stakeholders of the Research in the field, and in particular the relevant policy makers)

Business processes

- Marketing (the processes followed by each member for generating PVC business opportunities with external clients. These processes are performed independently by the PVC members and are based on the list of available incipient services (i.e. the totality of professional services that the PVC as a whole is able to provide). These processes address also the elicitation of needs and expectations from potential clients.

- VT constitution (all the processes related to the constitution and dissolution of Virtual Teams for the exploitation of an actual business opportunity, such as profile matching, legal agreement, VT agreement among members, IPR agreement with the relevant owners, etc.)
- VT operation (all processes regarding the execution of a contract signed by a VT with an external client for the provision of a PVC service, including both VT management and value adding processes)

Social processes

- Networking (the processes aimed at supporting the continuous establishment of new social links and relationships among PVC members, as well as the promotion of the PVC to prospective members. These processes are intended to be performed by the members themselves)
- Events (the processes related to the organisation and execution of physical and virtual events)
- Facilitation (the community facilitation processes aimed at fostering the development of community social capital. These processes are intended to be performed by appointed “facilitators”)

Management system Processes

- Evaluation (individual and aggregated estimations of the quality of the “enabling mechanisms”. Measurement of members capabilities and assets, evaluation of individual and collective performance etc.. “My-mirror” , “Commu-meter”, etc.)
- Administration (management of members’ lifecycle from registration to subscription, management of internal currency and relevant internal cash flows. External and internal orders management. Budgeting and balance, Tax obligations etc.)
- Marketing and communication (management of marketing and communication activities at PVC level)
- Decision making (members qualification, acceptance of deliverables, strategic management, regulate internal money inflation, re-invest surplus in internal projects, etc.)

4 The “PVC” Elements Of Innovation

The PVC can be seen as a radical evolution of “Community of Practices” to overcome their limits due to the lack of an explicit business dimension. As a matter of facts, the absence of such a dimension :

- jeopardizes members’ motivation and even viability to spend significant time in the community activities
- reduces the scope of community activities
- impedes a deep sharing and an actual co-development of knowledge and competences
- induces mistrust because of hidden Companies’ or members’ business interests

- Prevent individuals and their companies to accrue the economic value which is actually generated through the community activities.

So the need to evolve towards a “balanced KBS entity”, which is in itself the main characteristic and the substantial innovation element of the PVC. As a consequence of the balanced KBS principle the PVC includes innovative forms of:

- Business strategy and positioning (collaboration at the crossroads of traditional organization operating in research, business and education)
- Business model (multi-stakeholder and multi-value)
- Management system processes: chromo management system of individuals (my mirror) and community strategic management (Commu-meter)
- Value adding processes
 - knowledge creation (garden of ideas)
 - Buisness teams lifecycles (Self organising leadership)
 - Social connections among organizations through individuals (social entanglements)

5 Trends and research areas for “PVC”

PVC TRENDS

Several new social and industrial phenomena are acquiring a growing relevance in the knowledge society, and have aspects and/or causes which may result in strong favour of the adoption of PVCs at large. An important phenomenon is the continuous increase in population life expectancy, where for example gains in life expectancy estimated in Canada¹ is 11 years over the 50-year period between 1989 and 2040.

An even more important metric is the increase in life expectancy for population aged 65, i.e. after the standard retirement age, which in US shows an increase of nearly 1 year per decade in the last 30 years. Such condition is associated to a global improvement of health status in the retired population, with an increasing number of aged people seeking for flexible part-time professional work and for social opportunities, which would be the exact offering of emerging Professional Virtual Communities.

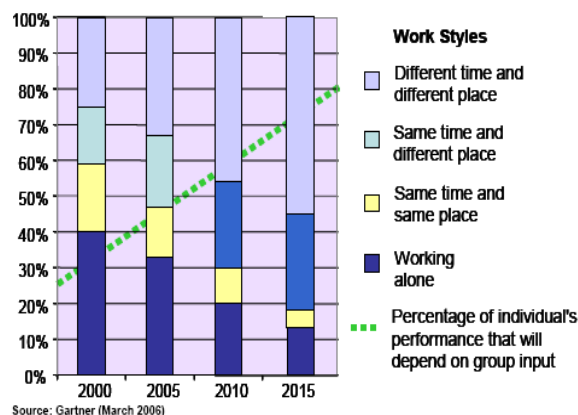


Figure 6 – Evolution of working styles

¹ Sarah Hogan and Jeremy Lise, Health Canada, “Life Expectancy, Health Expectancy, and the Life Cycle”



From a social point of view, there is furthermore a clear trend to increasing socialisation approaches through the web, with an evolution from the simple chat environments to increasingly address professional life, as in an increasing number of blogs dedicated to scientific and professional subjects, or through growing professional communities which are devoted to the facilitation of contacts among qualified people (the linkedin initiative).

With respect to industrial trends, most recent studies show an evident trend towards new characteristics of workers in the most advanced economies. McKinsey 2005 report evidences a growing importance of knowledge workers, capable of complex and dynamic interactions and of complex decisions, while leveraging knowledge, judgement, experience and instinct.

With 41% of US labour market and 70% of new US jobs created since 1998, the new knowledge worker profile is the evolution of employees in front of a stable propensity to outsourcing and insourcing of transactional services.

At the same time, a 2006 study by Frost & Sullivan shows a growing importance of collaboration, counting for 36% of overall corporate performance, and in particular for 36% on labour productivity, 30% on product development, and 30% on Innovation, while a study by Gartner Group in March 2006 (fig. 6) highlights a significant positive trend in the percentage of individual's performance that will depend on group input up to some 70% in 2015.

Such trends and the highlighted extreme importance of knowledge workers and of collaborative mechanisms in the industrial framework, is considered to put higher relevance to the development of PVCs, which can actually offer an organisational solution (combined with adequate technological tools) to the needs of better exploiting knowledge workers in future industrial environments.

RESEARCH CHALLENGES

The main research challenges which need to be addressed to support future deployment of the emerging PVC paradigm are listed below:

- Identification of open legal and social issues;
- Evaluation of viable approaches to the integration of PVCs into the market: workplace opportunities and direct interaction with market;
- Identification of roadmap to best exploitation of PVC potential. It includes in details:
 - Characterization and assessment of collaborative practices;
 - Collaboration cultures
 - Dynamic knowledge aggregation and intellectual property
 - Relationships to VO and VBE
 - Legal provisions for new forms of legal entities
 - Interfaces to existing professional bodies
 - Relationships to employers and unions



6 Conclusions

This report has presented the fundamental principles and the practices defining the Professional Virtual Community PVC paradigm. The PVC is intended as an innovative organizational structure allowing the individual to full exploit its Knowledge Business and Social potential. Such an organisation is supposed to realise a “collective intelligence” out of all the individual intellectual capabilities involved in innovation processes, able to attain higher level capabilities.

This thesis is not demonstrated in this chapter, but its feasibility is envisioned by the authors, on the base of the observation of the effectiveness of human interactions, in terms of creativity, capability of understanding and intellect capabilities at general, when motivated self-organized teams aggregate to pursue a common goal.

The introduction of PVCs in the business environment and their envisioned structured interplay with traditional business entities and other emerging networked organizations such as VBEs and VOs, is thought to enable a breakthrough in the way “Innovation cycles” are managed, by removing organisational barriers to human interaction which currently impede the full exploitation of human potential.

Further research and experimentation in real business contexts is needed to consolidate the theoretical framework of PVCs as well as the implementation and operational processes described in this chapter.

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