Virtual Organisation Breeding Environments Toolkit: Reference Model, Management Framework and Instantiation Methodology

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Abstract. Achieving truly dynamic Virtual Organisations (VOs) as short-term, goal-oriented and opportunity-based Collaborative Networked Organisations (CNOs), in response to emerging collaboration (business) opportunities, requires the pre-existence of proper ‘breeding environments’ enabling and providing the necessary conditions and mechanisms for the rapid and fluid configuration of Virtual Organisations. VO Breeding Environments (VBEs) act as long-term supporting networks underlying the nesting environments for preparing their members and maintaining this preparedness over the time for their effective and ad-hoc collaboration in Virtual Organisations. This article introduces a VBE reference model as a reference guide for VBE initiators, VBE managers and CNO experts responsible for the creation and operation of breeding environments in different domains and application environments. As part of the VBE reference model, a VBE management framework is also introduced as a set of management activities and supporting tools to ensure that a VBE can fulfil all tasks required to achieve its objectives. Finally a VBE instantiation methodology is introduced as a controlled process, addressing systematically a set of steps, supported by different assisting means (e.g. methods and tools) for establishing the management functionalities and running of a VBE during its entire lifecycle, on the basis of the VBE reference model and VBE management framework proposed.

Keywords: Virtual Organisation Breeding Environment, Virtual Organisation, Reference Model, Management Framework, Instantiation Methodology

1. Introduction

In the past decades a wide variety of long-term strategic alliances of organisations such as industry clusters (Porter, 1998), industrial districts (Becattini, 1990) and business ecosystems (Moore, 1996) have emerged in a common region aggregating a group of organisations that are willing to cooperate/collaborate in order to respond to business opportunities that would not be possible, or would have a higher cost, if attempted individually. These long-term strategic alliances have been limited to the geographical closeness of their members, which has some advantages like a common local culture facilitating the creation of trust and ‘sense of community’. Nevertheless, with the fast progress of Information and Communication Technologies (ICTs) in recent years, and nowadays market turbulence and globalisation, new virtual forms of these long-term strategic alliances have emerged, including the Virtual Industry Clusters (VICs) (Molina et al, 1998) and the Virtual Organisation Breeding Environments (VBEs) (Camarinha-Matos & Afsarmanesh, 2003) supported by novel ICT-infrastructures and computer networks. These current market and technological trends are inducing the organisations, specially the small and medium-sized enterprises (SMEs), to overcome their geographical boundaries and enter into one or more Collaborative Networked Organisations (CNOs) in the global landscape. Thus in order to have access to a broader range of market opportunities and increase their chances of survivability in turbulent market conditions, by sharing their core-competencies and resources to better respond to worldwide emerging business opportunities (Camarinha-Matos & Afsarmanesh, 2006).

Virtual Organisation Breeding Environments (VBEs) also known as source networks or supporting networks, are long-term strategic alliances of organisations aimed at offering the necessary conditions (e.g. human, financial, social, infrastructural and organisational) to support the rapid and fluid configuration of Virtual Organisations. VBEs mainly focus on creating an adequate environment for the establishment of cooperation agreements, common operation principles, common interoperable infrastructures, common ontologies, and mutual trust among others, with the objective of preparing their members (organisations and support institutions) to be ready to collaborate in potential VOs that will be established when a collaboration (business) opportunity arises or is identified by a VBE member acting as a broker (Camarinha-Matos & Afsarmanesh, 2007a).

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Virtual Organisations (VOs) are short-term and dynamic coalitions of organisations that may be tailored within a breeding environment to respond to a single collaboration (business) opportunity by integrating the skills or core-competencies and resources required to meet or exceed the quality, time and cost frames expected by the customer, and that will dissolve once their mission/goal has been accomplished, and whose cooperation is supported by computer networks (Camarinha-Matos & Afsarmanesh, 2007a).

This article presents a VBE toolkit composed by a reference model, management framework and an instantiation methodology as a set of guidelines and assisting means for supporting the processes and activities involved in the creation and operation of new breeding environments. The VBE toolkit aims to provide the VBE initiators, VBE managers and CNO experts an understanding of the requirements as well as provision of mechanisms, functionalities and ICT tools to manage and support the entire VBE lifecycle and its actors.

2. VBE Characterization

Virtual Organisation Breeding Environments (VBEs) focus on transforming the linear value-chain point-to-point connections among organisations to a network structure known as a value network in order to increase their chances to get involved in collaboration (business) opportunities. VBEs apply effective ICT-infrastructures to overcome the restriction of geographic proximity and to provide common grounds for interaction among its members, with the aim of facilitating the configuration and establishment of Virtual Organisations (VOs).

VBEs focus then on introducing new approaches and mechanisms to build trust as a pre-requisite for any effective collaboration and seek to improve the preparedness of their members for joining the potential future VOs by defining a common base ICT-infrastructure and cooperative business rules among autonomous, geographically distributed and heterogeneous organisations by electronic means (e.g. information systems and databases) (Afsarmanesh & Camarinha-Matos, 2005).

2.1 VBE Aims and Advantages

As mentioned before, VBEs aim to establish the base trust for their members to collaborate in VOs by reducing the cost and time to find suitable partners for VOs configurations and by providing the assisting means (e.g. methods and tools) to reduce the set-up times during the VO creation process (Camarinha-Matos et al, 2005).

Furthermore, VBEs establishment can provide different advantages to their members (e.g. reasons to create and joint a breeding environment), some of the most relevant ones according to Camarinha-Matos & Abreu (2005), Afsarmanesh & Camarinha-Matos (2005) and Camarinha-Matos & Afsarmanesh (2006) are: (1) agility in opportunity-based VO creation for profiting from emerging collaboration (business) opportunities; (2) acquiring an apparent larger size to compete with larger companies; (3) lobbying and marketing influence to expand geography coverage/presence to access global market opportunities; (4) better negotiation power in joint purchasing conditions; (5) access to a transparent, easy-to-use and affordable “plug-and-play” ICT-infrastructure as an enabler of interoperation among VBE members; (6) provision of mechanisms, guidelines and assisting services to facilitate the VO creation process; (7) proactive VBE members profiling and competency management to assure the availability of competencies and resources for responding to collaboration (business) opportunities; (8) provision of supporting services like insurance, coaching, training, etc. through support institutions; (9) introduction of mechanisms to build trust among VBE members; and (10) provision of general guidelines for collaboration such as working and sharing principles.

Nevertheless for VBEs to function properly and generate all these advantages there is a set of requirements that need to be met such as (Afsarmanesh & Camarinha-Matos, 2005): (1) a strong ICT-infrastructure providing a set of tools to support the VBE management and the VO creation process; (2) active involvement from the VBE members, including provision of up-to-date information about their core-competencies; (3) proper establishment of a viable VBE business model; and (4) proper establishment of VBE management strategies and governance rules.

2.2 VBE value creation perspective

VBEs represent real business ecosystems where trust is incrementally build and where dynamic VOs are created whenever collaboration (business) opportunities arise and/or are identified. A VBE creates value for its stakeholders by offering a bundle of services, understood as different methodologies and tools, for the establishment of a common ground for interaction and cooperation between VBE members towards their involvement in truly dynamic VOs. Equally, a VBE creates value for the market mainly
through dynamic VO creation processes aiming to select the most suitable VO partners based on their core-competencies in order to exploit their unique capabilities and strategic assets to deliver a product and/or a service within the required time-, cost- and quality frame expected by the customer. In general, VBEs value creation strategies aim to help their members to discover and develop new ways of fostering innovation and economic growth through collaboration means (Romero et al, 2006).

2.3 VBE Lifecycle

The VBE lifecycle depicted in Figure 1 represents all the stages that a breeding environment may go through, from its creation stage to its possible dissolution, and also the key business processes carried out by the VBE administration during these stages. The creation stage can be divided into two sub-stages, namely the initiation and recruiting sub-stage, dealing with the strategic planning and initial incubation of the breeding environment, and the foundation sub-stage, dealing with the VBE constitution and launching. The operation stage deals with the normal VBE existence, while the evolution stage deals with small changes in the VBE daily operating principles in order to remain competitive. The metamorphosis stage deals with major changes in the VBE operating principles leading to a new form of operation. Finally, the dissolution stage deals with the cease of the VBE existence (Afsarmanesh & Camarinha-Matos, 2005).

![Figure 1. VBE Lifecycle: Key Business Processes Overview](image-url)
The VBE reference model focuses on providing a comprehensive overview of the key elements/components of a breeding environment and the main requirements to create and manage one during its entire lifecycle. Table 1 and 2 present a model-based VBE reference model derived from the ARCON modelling framework (Camarinha-Matos & Afsarmanesh, 2007b) defining two sub-spaces, each one with four modelling views, providing an abstract representation of a breeding environment from its inside (endogenous elements) and its outside (exogenous interactions). It is important to mention at this point that the VBE reference model proposed gives a synthetic overview of the key elements a breeding environment; nevertheless it can not be considered as fully complete since new elements can be added as required by the VBE initiators, VBE managers and CNO experts’ needs and VBEs characteristics according their domains and application environments.

3.1 VBE Endogenous Elements

The VBE endogenous elements aim at identifying a set of characteristic properties that can together capture the VBE constituting elements. Modelling views proposed by ARCON modelling framework for this sub-space are: (1) structural - addressing the VBE network structure in terms of its constituent elements such as actors, roles and their relationships, as well as the network topology; (2) Componential - focusing on the VBE resources composition such as human, technological, information, knowledge, and ontologies; (3) Functional - attending the VBE processes, procedures and methodologies as the base functions/operations related to the different VBE lifecycle stages; and (4) Behavioural - covering the VBE principles, policies and governance rules that drive and constrain the VBE and its members behaviour (see Table 1).

### Table 1 – VBE Reference Model Endogenous Sub-space (Romero et al, 2008a)

<table>
<thead>
<tr>
<th>Structural (3.1.1)</th>
<th>Componential (3.1.2)</th>
<th>Functional (3.1.3)</th>
<th>Behavioural (3.1.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actors:</strong></td>
<td><strong>Physical Resources:</strong></td>
<td><strong>Fundamental Processes:</strong></td>
<td><strong>Prescriptive Behaviour:</strong></td>
</tr>
<tr>
<td>Private Organisations</td>
<td>Machinery</td>
<td>Membership and Structure Management</td>
<td>Cultural Principles:</td>
</tr>
<tr>
<td>Government Institutions</td>
<td>ICT Resources:</td>
<td>New VBE Members</td>
<td>Regional Traditions</td>
</tr>
<tr>
<td>NGOs</td>
<td>Hardware</td>
<td>Registration</td>
<td>Business Culture</td>
</tr>
<tr>
<td><strong>Roles:</strong></td>
<td>o VBE Member(s)</td>
<td>VBE Members Roles, Rights &amp; Responsibilities Management</td>
<td>NGO Culture</td>
</tr>
<tr>
<td>o VO Support Provider</td>
<td>o Software</td>
<td>VBE Members Rewarding Management</td>
<td>VBE Culture:</td>
</tr>
<tr>
<td>o Opportunity Broker</td>
<td>o VBE Management System</td>
<td><strong>Info./Knowledge Resources:</strong></td>
<td>▪ Commitment</td>
</tr>
<tr>
<td>o VO Planner</td>
<td></td>
<td>VBE-Inheritance Information</td>
<td>▪ Leadership</td>
</tr>
<tr>
<td>o VO Coordinator</td>
<td></td>
<td>VBE Value System</td>
<td>▪ Trust</td>
</tr>
<tr>
<td>VBE Administrator</td>
<td></td>
<td>Information</td>
<td>▪ Self-learning</td>
</tr>
<tr>
<td>VBE Support Provider</td>
<td></td>
<td>VBE Support Institutions</td>
<td>▪ Long-term and Global Vision</td>
</tr>
<tr>
<td>o Ontology Provider</td>
<td></td>
<td>Information</td>
<td>▪ Effective Communication</td>
</tr>
<tr>
<td>o Service Provider</td>
<td></td>
<td>VOs Information</td>
<td>▪ Innovation</td>
</tr>
<tr>
<td>o Support Institution</td>
<td></td>
<td><strong>VO Inheritance Information:</strong></td>
<td><strong>Governance Principles:</strong></td>
</tr>
<tr>
<td>Public (Guests)</td>
<td></td>
<td></td>
<td>▪ Honesty, Trust and Integrity</td>
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<tr>
<td>VBE Advisor(s)</td>
<td></td>
<td><strong>VO Information Management:</strong></td>
<td>▪ Openness</td>
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<td></td>
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<td></td>
<td>▪ Performance Orientation</td>
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<td></td>
<td></td>
<td><strong>VO Creation Management:</strong></td>
<td>▪ Responsibility and Accountability</td>
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<td></td>
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<td></td>
<td>▪ Mutual Respect</td>
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<td><strong>Decision Support Management:</strong></td>
<td>▪ Commitment to VBE</td>
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<td></td>
<td></td>
<td><strong>VO Competency Gap Analysis:</strong></td>
<td>▪ Membership Eligibility Principles</td>
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<td></td>
<td></td>
<td>Lack of Performance Warning</td>
<td>▪ Leadership Role Principles</td>
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<td></td>
<td>Lack Trust Level Warning</td>
<td>▪ Contract Enforcement Policy</td>
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<td></td>
<td></td>
<td><strong>VO Creation Management:</strong></td>
<td>▪ Brokering Principles</td>
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<td></td>
<td><strong>Collaboration Opportunity Identification:</strong></td>
<td>▪ Decision-Making Principles</td>
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<td></td>
<td></td>
<td><strong>Collaboration Opportunity Characterization and VO Rough Planning:</strong></td>
<td>▪ Rewarding and Sanctioning Principles</td>
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<td></td>
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<td>▪ Partners Search and Suggestion/Selection</td>
<td>▪ Interoperability Principles</td>
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<td></td>
<td>▪ Agreements/Contracts Negotiation</td>
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<td></td>
<td></td>
<td><strong>VO Inheritance Documentation:</strong></td>
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<td></td>
<td></td>
<td><strong>VO Information Management:</strong></td>
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<td></td>
<td><strong>VO Registration Management:</strong></td>
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<td></td>
<td><strong>VO Inheritance Information Management:</strong></td>
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</table>
3.1.1 VBE Structural View

In the structural modelling view a variety of VBE actors, roles, relationships and other structural characteristics can be identified. VBE actors are those organisations that are registered at the breeding environment (Camarinha-Matos & Afsarmanesh, 2007b), for instance: (1) business entities - providing products and services to the market that get involved in the VO to gain quantitative profit [economic sustainability] (e.g. private organisations, government institutions); (2) non-profit institutions - that get involved in the VO to gain qualitative profit [social prestige] (e.g. NGOs); and/or (3) support institutions - such as legal and contractual service providers, and companies supporting life maintenance to individuals [access to new customers] (e.g. insurance and training companies, ministries, sector associations, chamber of commerce, environmental organisations).

Furthermore, different roles can be assumed by the VBE actors. The following roles are considered in a breeding environment (Camarinha-Matos & Afsarmanesh, 2007b): (1) VBE member - as the basic role played by those organisations that are registered in the VBE and are ready to participate in the VBE activities; (2) VBE administrator or manager - responsible for the VBE operation and evolution, promotion of cooperation among the VBE members, filling the skill/competency gaps in the VBE by searching and recruiting/inviting new organisations into the VBE, daily management of the VBE general processes, conflict resolution, preparation of a VBE bag of assets, and making common VBE policies, among others; (3) Broker - responsible for identifying and acquiring new collaboration opportunities by marketing the VBE competencies and negotiating with potential customers; (4) VO planner - responsible for identifying the necessary competencies in the potential VO partners to structure a new virtual organisation; (5) VO coordinator - responsible for the VO management during its lifecycle in order to fulfil the goals set for the collaboration opportunity; (6) VBE advisor - responsible for advising in specific expertise fields to the VBE members and/or VBE administrator; (7) VBE services provider(s) - responsible for providing a wide variety of services, supporting tools and mechanism to the different VBE actors; (8) VBE ontology provider - responsible for providing common VBE services to the different VBE actors; (9) support institution(s) - responsible for trying to keep-updated the VBE with the new trends and technologies in its expertise field to propose solutions that are optimised for assisting VBE members and/or VBE manager in different purposes; and (9) VBE guest played by an organisation outside of the VBE that is interested in finding general information about the breeding environment to become perhaps a new VBE member.
Moreover, different relationships can be established between the VBE members, each one involving different degrees of interdependencies that range from networking to collaboration, crossing coordination and cooperation, in order to plot a continuum of collaboration towards stronger inter-organisational relationships (Camarinha-Matos & Afsarmanesh, 2006): (1) networking involves communication and information exchange for mutual benefit, while (2) coordination in addition involves aligning/altering activities so that more efficient results can be achieved, and (3) cooperation extends the interdependencies to share resources for achieving compatible goals. These given concepts represent the “building blocks” for (4) collaboration seen as a process in which risks, resources, responsibilities and rewards are shared to achieve common goals (Camarinha-Matos & Afsarmanesh, 2006).

Finally, in order to distinguish the features of a new VBE a semi-typology is proposed by Afsarmanesh & Camarinha-Matos (2007) in order to identify and postulate specific attributes for existing and emerging VBEs towards determining relevant profiling and competency characteristics. This semi-typology may be summarised in four VBE types or domains: (1) stable products/services domain, (2) stable one-of-a-kind domain, (3) emerging domain, and (4) innovation driven domain (Afsarmanesh & Camarinha-Matos, 2007).

3.1.2 VBE Componental View

In the componental modelling view different resources can be associated to the VBE it-self, for instance: (1) physical resources - as any production equipment needed for the specific application domain of the VBE (e.g. shared facilities layout, equipment that is used to manufacture/offer products and/or services, etc.) (Romero et al, 2007a; 2008b); (2) ICT resources - as entities characterizing the ICT equipment, software and infrastructures used/shared in the VBE (Rabelo et al, 2006; Rabelo & Gusmeroli, 2008; Romero et al, 2007a; 2008b); (3) human resources - available in the VBE, namely in terms of their competencies, profile, potential roles that they can perform, etc. (Camarinha-Matos & Afsarmanesh, 2007b; Romero et al, 2007a; 2008b); (4) information/knowledge resources - as entities including the information and knowledge repositories that are shared by the VBE members (Romero et al, 2007a; 2008b); and (4) ontology resources - as entities representing the main (common) ontologies1 used in the VBE and that facilitate the mutual understanding among the VBE members (Afsarmanesh & Ermilova, 2007; Plisson, 2007; Romero et al, 2007a; 2008b).

3.1.3 VBE Functional View

In the functional modelling view a set of fundamental and background processes, procedures and methodologies can be defined as important catalysts for ensuring the success of all VBE management activities. This modelling view will be further detailed in Section 4 as the “VBE management framework” (Adapted from Romero & Molina, 2009).

3.1.4 VBE Behavioural View

In the behavioural modelling view a set of principles, bylaws and rules can be defined in order to regulate/govern the behaviour of the VBE members during the breeding environment lifecycle. A VBE governance model (Romero et al, 2007b) will help to define who can make what decisions, who is/are accountable for which effects, and how each of the VBE actors must work to operate the VBE business process effectively. Some elements to include in a VBE governance model according to Romero et al (2007b) are: (1) principles - for example honesty, trust, integrity, openness, performance orientation, responsibility, accountability, mutual respect, commitment to the VBE, etc.; (2) bylaws - such as rights and duties policies, membership policies, incentives, sanctions, security issues, ICT use guidelines, conflict resolution policy, financial policies, amendments to bylaws, intellectual property rights policies, etc.; (3) rules - for instance (a) functions/operation rules (e.g. general management and support process, business process management, membership management, knowledge management, etc.); (b) behavioural rules such as VBE culture (e.g. commitment, leadership, trust, self-learning, long-term and global vision, effective communication, innovation, etc.); and VBE ethical code (e.g. sharing attitude, awareness for win-win opportunities, no discrimination, collaboration, merits recognition etc.).

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1 An “ontology” refers to a form of dictionary aimed to support a common understanding of related concepts among different entities. It represents a formal classification of knowledge and helps to support the interoperability of knowledge among different entities (e.g. VBE actors and/or VBEs).
3.2 VBE Exogenous Elements

The VBE exogenous interactions aim to reveal the VBE interactions with its surrounding environment. Modelling views proposed by ARCON modelling framework for this sub-space are: (1) Market - addressing the interactions with customers and competitors; (2) Support - attending the support services provided by third-party institutions; (3) Societal - capturing the interactions between the VBE and the society in general; and (4) Constituency - focusing on the interaction with the potential VBE members (see Table 2).

Table 2 – VBE Reference Model Exogenous Sub-space (Romero et al, 2008a)

<table>
<thead>
<tr>
<th>Market (3.2.1)</th>
<th>Support (3.2.2)</th>
<th>Societal (3.2.3)</th>
<th>Constituency (3.2.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• VBE Mission Statement</td>
<td>• Profit</td>
<td>• Legal Status</td>
<td>• VBE Reason for Existence</td>
</tr>
<tr>
<td>• VBE Vision Statement</td>
<td>• Non-Profit</td>
<td>o Legal Entity</td>
<td>• Attracting &amp; Recruiting Strategy</td>
</tr>
<tr>
<td>• VBE General Strategy</td>
<td>• Governmental</td>
<td>o Informal Entity</td>
<td>o Advertising</td>
</tr>
<tr>
<td>• VBE (Long-term) Goals</td>
<td>• NGO</td>
<td></td>
<td>o Industrial Fairs</td>
</tr>
<tr>
<td>References/Testimonials</td>
<td>Support Entities:</td>
<td>Legal Issues:</td>
<td>o Motivating</td>
</tr>
<tr>
<td>Network Profile:</td>
<td>• Certification Entities:</td>
<td>• Conflict Resolutions</td>
<td>o Community</td>
</tr>
<tr>
<td>• Who are we?</td>
<td>o National Institutions</td>
<td></td>
<td>Participation</td>
</tr>
<tr>
<td>• How to contact us?</td>
<td>o International Institutions</td>
<td>• Intellectual Property Rights</td>
<td>o Incentives</td>
</tr>
<tr>
<td>Market &amp; Branding</td>
<td>• Insurance Entities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy:</td>
<td>o Private Institutions</td>
<td></td>
<td>Rules of Adhesion:</td>
</tr>
<tr>
<td>• Marketing/Advertisement</td>
<td>o Public Institutions</td>
<td>• Charter of Foundation</td>
<td></td>
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<tr>
<td>Strategy:</td>
<td>• Logistics Entities</td>
<td></td>
<td>• Rewards mechanism for</td>
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<tr>
<td>o Broadcast</td>
<td></td>
<td>• Notice of Termination of</td>
<td></td>
</tr>
<tr>
<td>• Branding Strategy</td>
<td>• “Standard” Registries:</td>
<td></td>
<td>Business</td>
</tr>
<tr>
<td>Market Interactions:</td>
<td>o Clearing Centres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Customers (of the VBE &amp; VO):</td>
<td>o Mater Data Providers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Strategic Customers</td>
<td>• Financial Entities:</td>
<td></td>
<td>Potential Members:</td>
</tr>
<tr>
<td>o Potential Customers</td>
<td>o Banks</td>
<td></td>
<td>• Business Organisations</td>
</tr>
<tr>
<td>• Competitors:</td>
<td>o Investors</td>
<td></td>
<td>o Private Institutions</td>
</tr>
<tr>
<td>o “Indirect” Competitors</td>
<td>o Sponsors</td>
<td></td>
<td>o Individual Experts</td>
</tr>
<tr>
<td>• (Potential) Suppliers</td>
<td>• Coaching Entities:</td>
<td></td>
<td>• Public Institutions</td>
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<tr>
<td>• Substitutors</td>
<td>o Advertisers</td>
<td></td>
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<tr>
<td>• Complementors</td>
<td>o Individual Experts</td>
<td></td>
<td></td>
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<tr>
<td>Interactions/Transactions:</td>
<td>Training Entities:</td>
<td></td>
<td>Sustainability Factors:</td>
</tr>
<tr>
<td>• Bidding</td>
<td>o Advertisers</td>
<td>• Members Searching:</td>
<td></td>
</tr>
<tr>
<td>• Handling Inquiries</td>
<td>o Individual Experts</td>
<td>o Invitation</td>
<td></td>
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<tr>
<td>• Contracting (with Customers)</td>
<td>Research Entities:</td>
<td></td>
<td>o Solicitation</td>
</tr>
<tr>
<td>Service Acquisition:</td>
<td>o Universities</td>
<td></td>
<td>o Rewarding</td>
</tr>
<tr>
<td>• Financial Relation</td>
<td>o Research Institutes</td>
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<tr>
<td>• Technological Service</td>
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<td>• Training Action</td>
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<td>• Coaching Action</td>
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<td>• Guarantee Action</td>
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<tr>
<td>• Knowledge Transfer</td>
<td></td>
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<td>• Consulting Service</td>
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<td>Agreement Establishment</td>
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<td>• Agreements</td>
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<td>• Contracts</td>
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<td>• Covenants</td>
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</tbody>
</table>

3.2.1 VBE Market View

The market modelling view covers different issues related to the interactions between the VBE with both customers and competitors. The VBE interaction with its customers involves elements such as transactions and established commitments (e.g. contracts), marketing and branding issues, etc. In contrast, VBE interactions with its competitors include elements such as: market positioning, market strategy, policies, etc. The VBE purpose/mission and its value proposition are also part of this dimension (Romero et al, 2006; 2007a; 2008b).
3.2.2 VBE Support View

The support modelling view is related to the support services provided by third-party institutions (VBE outside organisations). Examples include certification entities, insurance entities, logistics entities, financial entities, coaching entities, training entities, research entities, etc. (Romero et al, 2006; 2007a; 2008b).

3.2.3 VBE Societal View

The societal modelling view captures the issues related to interactions between the VBE and the society in general. Although this perspective can have a very broad scope, the idea is to model the impacts that VBE has or potentially can have on the society (e.g. impact on employment, economic sustainability of a given region, potential for attraction of new investments) as well as the constraints and facilitating elements (e.g. legal issues, public body decisions, education level) the society provides to the VBE development (Romero et al, 2006; 2007a; 2008b).

3.2.4 VBE Constituency View

The constituency modelling view focuses on the interactions with the universe of potential new VBE members. For example: the interactions with those organisations that are not part of the VBE but that the VBE administration might be interested in attracting. Therefore, general issues like network sustainability, attraction factors, what builds/provides a community sense or specific aspects such as rules of adhesion and specific “marketing” policies for members are considered in this view (Romero et al, 2006; 2007a; 2008b).

4. VBE Management Framework

In order to provide more detail on the VBE reference model functional modelling view a VBE management framework (see Figure 2) is provided as a widespread overview of the key business processes (management functionalities) required to support and facilitate the VBE management activities needed to be performed during the VBE lifecycle, under a three division classification: VBE actors management, VO creation and registration management, and VBE general management.

![Figure 2. VBE Management Framework (Adapted from Romero & Molina, 2009)](image_url)

VBE fundamental processes, also known as main processes, are those business processes that fundamentally affect the VBE performance and influence how well other processes are executed to increase the VBE competitiveness (see Table 3).
<table>
<thead>
<tr>
<th>Functionality</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VBE Actors’ Management</strong></td>
<td>Set of management activities and supporting tools allowing integration, accreditation, disintegration, rewarding, and categorization of members within the VBE. It is separated into mechanisms for members’ registration, members’ rewarding, and assignment of roles and responsibilities to VBE members (Afsarmanesh &amp; Camarinha-Matos, 2005; Sittek et al, 2007; Romero et al, 2008c; 2008d).</td>
</tr>
<tr>
<td><strong>Profiling &amp; Competency Management</strong></td>
<td>Set of management activities and supporting tools for creating and maintaining profiles for VBE members, for the VBE itself, and for the VOs registered within the VBE, as well as for the competency-based assessment of new VBE members and discovery of new competencies out of the collective competencies of all VBE members in the breeding environment (Ermilova &amp; Afsarmanesh, 2006; Ermilova &amp; Afsarmanesh, 2008).</td>
</tr>
<tr>
<td><strong>Collaboration Opportunity Identification</strong></td>
<td>Set of management activities and supporting tools for identifying collaboration opportunities that will trigger the formation of new VOs. Collaboration opportunities detection will be according to the VBE competency domain. A collaboration opportunity might be external, originated by a (potential) customer or internally detected by a VBE member acting as a broker (Demšar et al, 2007; Camarinha-Matos et al, 2007).</td>
</tr>
<tr>
<td><strong>Collaboration Opportunity Characterization &amp; VO Rough Planning</strong></td>
<td>Set of management activities and supporting tools for identifying the required competencies, capabilities and capacities needed to respond to the collaboration opportunity identified, as well as for defining a rough structure for the potential VO, including its organisational form and the VO partners’ corresponding roles. At this stage it is important to define the VO partnership form which is typically regulated by contracts and cooperation agreements (Concha et al, 2008; Camarinha-Matos et al, 2007).</td>
</tr>
<tr>
<td><strong>Partners Search &amp; Selection</strong></td>
<td>Set of management activities and supporting tools devoted to the identification of potential VO partners, their assessment and intelligent selection by matching their competencies with the competencies required to respond to the collaboration opportunity identified. Some elements for search and selection could be: technical, economical, reliability indicators, preferences, etc. (Jarimo et al, 2006; Baldo et al, 2007; Camarinha-Matos et al, 2007).</td>
</tr>
<tr>
<td><strong>Agreement/Contract Negotiation Wizard</strong></td>
<td>Agreement Negotiation: Set of management activities and supporting tools that will assist human actors (VO partners) during the negotiation processes (iterative process to reach agreements and align needs with offers) towards the VO constitution. Management activities include formulation and modelling of contracts and agreements, as well as the contracting process itself. Important issues to consider in this process include: determination of the objects of negotiation; negotiation protocols; decision-making process and corresponding parameters; representation of agreements (Camarinha-Matos &amp; Oliveira, 2006; Camarinha-Matos et al, 2007; Oliveira et al, 2008). Contracting: As a set of management activities and supporting tools that will assist the contracting process through the formulation and modelling of contracts and agreements as well as the contracting process itself, before a VO can effectively be launched (Camarinha-Matos &amp; Oliveira, 2006; Camarinha-Matos et al, 2007 Oliveira et al, 2008).</td>
</tr>
<tr>
<td><strong>Virtual Organisations Information Management</strong></td>
<td>Set of managing activities and supporting tools to manage the information related to the VOs registered within the VBE. (1) VO Registration: This task comprises the process of registering a newly created VO in the VBE; and (2) VO Inheritance Information: This task comprises the management of inheritance information after VO dissolution; information feeds back into the VBE to create sustainable effects and to provide the VBE members with lessons learned from previous VOs (Loss et al, 2006; Karvonen et al, 2007).</td>
</tr>
<tr>
<td><strong>VBE General Management</strong></td>
<td>Set of management activities and supporting tools for basic trust assessment of VBE membership applicants, and subsequent dynamic trust appraisal and monitoring during their ongoing VBE membership (Msanjila &amp; Afsarmanesh, 2006).</td>
</tr>
<tr>
<td><strong>Performance Management</strong></td>
<td>Set of management activities and supporting tools based-on a systematic procedure of planning, monitoring, rating and rewarding VBE actors’ performance based-on the definition of key performance indicators (Camarinha-Matos &amp; Abreu, 2005).</td>
</tr>
<tr>
<td><strong>Decision Support Management</strong></td>
<td>Set of management activities and supporting tools for monitoring key performance indicators in the VBE and issuance of notifications and warnings. It is separated into mechanisms for VBE competency gap analysis, lack of performance warning, and low trust level warning (Afsarmanesh &amp; Ermilova, 2007).</td>
</tr>
</tbody>
</table>

*VBE background processes*, also known as supporting processes, are those business processes that run basic but relevant business processes in charge of supporting the VBE effective management during its lifecycle. The supporting processes are characterised for its necessity for maintaining, leverage and optimizing daily VBE business operations (see Table 4).
Furthermore, a VBE Breeding Environment & Virtual Organisation Integral Business Process Management Framework can be found in Romero & Molina (2009), where a set of process models have been developed using Business Process Management Notation (BPMN) to depict what happens during each VBE and VO management processes in order to provide a rationale of the business processes that should be carried-out by a set of VBE actors to achieve the expected business process results.

5. VBE Instantiation Methodology

VBES creation in different domains is a difficult task without the existence of a comprehensive reference model, a lot of endogenous and exogenous elements need to be predefined and established for their further successful introduction and activation during the VBE lifecycle.

The VBE instantiation methodology presented in this work has as its main objective to support the VBE instantiation process through devising mechanisms and methodologies to instantiate the VBE reference model proposed to different application environments, thus adhering to the principle of replicability.

The development of a VBE instantiation methodology was a challenging process. The main challenges faced by the authors when developing this methodology were that since breeding environments are still a new research area, no “related” methodologies/guidelines for VBE instantiation process were found in literature, therefore the VBE instantiation methodology proposed was developed from scratch; and that the VBE instantiation methodology required the combination and variety of models developed by many authors, specially in the IP-ECOLEAD project, addressing different VBE aspects from the VBE actors roles, rights and responsibilities definition to the specific aspects such as information/knowledge needed to be stored for supporting a variety of management processes in a breeding environment.

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic &amp; Marketing Management</td>
<td>Set of management activities and supporting tools that will support the strategic formulation process, including the marketing and branding activities, for promoting the VBE competencies among its potential VBE members and potential VO customers (Strum et al, 2004).</td>
</tr>
<tr>
<td>Financial, Accounting &amp; Resource Management</td>
<td>Set of management activities and supporting tools based-on accounting procedures to guarantee the VBE financial health and ensure the effective, efficient and equitable use of the VBE resources (Romero et al, 2006; 2007a; 2008b).</td>
</tr>
<tr>
<td>Governance Management</td>
<td>Set of management activities and supporting tools that refer to the VBE policy management, including internal operational rules and bylaws, for supporting the operation, regulation, and control of the VBE network structure: actors, positions, authorities, roles, rights, responsibilities and relationships between them (Romero et al, 2006; 2007b; 2008b).</td>
</tr>
<tr>
<td>VBE Bag of Assets Management</td>
<td>Set of management activities and supporting tools for handling the VBE assets, including: documents to share, software tools to share, lessons learned, VBE governance policies, etc. It is separated into mechanisms for enforcing proper access rights (public, restricted, private) for all VBE stakeholders, and announcement of news (dashboard) (Afsarmanesh &amp; Ermilova, 2007).</td>
</tr>
<tr>
<td>Value System Information Management</td>
<td>Set of management activities and supporting tools that will provide features for supporting and handling both, material and immaterial values, within the VBE (Romero et al, 2007a; 2008b).</td>
</tr>
<tr>
<td>Ontology Management</td>
<td>Set of management activities and supporting tools for VBE ontology adaptation into a specific VBE domain sector, VBE ontology evolution during the VBE lifecycle, as well as for VBE ontology learning process (e.g. in the form of a dictionary of the VBE related concepts) (Afsarmanesh &amp; Ermilova, 2007; Plisson, 2007).</td>
</tr>
<tr>
<td>ICT Management</td>
<td>Set of management activities and supporting tools for managing a low cost, easy-to-access and operational ICT-infrastructure that will allow VBE actors with different distributed/heterogeneous applications to communicate with each other transparently and seamlessly, in order to support collaboration (business) between them over the Internet (Rabelo et al, 2006; Rabelo &amp; Gusmeroli, 2008).</td>
</tr>
<tr>
<td>Support Institutions Information Management</td>
<td>Set of management activities and supporting tools for identifying and integrating Support Institutions into the VBE. Support Institutions information will be entered through registration mechanism, like the one applied to the VBE members’ registration process (Romero et al, 2006).</td>
</tr>
<tr>
<td>Innovation Management</td>
<td>Set of management activities and supporting tools for managing VBE members ideas by promoting their generation, confrontation and combination for creating new synergies that may lead into new products, processes and/or services (Serrano &amp; Fischer, 2007).</td>
</tr>
</tbody>
</table>
5.1 VBE Instantiation Definition

Enterprise instantiation process has been conceptualised as a supporting process for specific description/modelling of a particular organisation, or network, based-on a specific reference model or architecture. A reference model or architecture serves as a reference guide in the creation and maintenance process of an entity to obtain and maintain a consistent list of requirements to define, prototype, design, implement, and execute business processes according to certain requirements. Instantiation concept is traditionally associated with enterprise modelling, mainly with enterprise reference models and architectures like CIMOSA (CIM Open System Architecture) and GERAM (Generalised Enterprise Reference Architecture and Methodology).

An instantiation process serves as a controlled approach to guide an enterprise in the derivation process of a reference model or architecture through three modelling levels (general, partial, and particular) that will allow detailing business requirements in each level: from general enterprise business requirements (requirements definition), through the optimisation and specification of partial requirements (design specification), to particular implementation in a specific domain (implementation description). Each modelling level analysed from different modelling points of view: function, information, resources, and organisation.

For the purpose of this article a VBE instantiation process can be referred as a controlled process characterizing a new breeding environment based-on a VBE reference model and the VBE domain specificities. The VBE instantiation process addresses systematically a set of steps, which are supported by mechanisms and methodologies, for the specification and/or generation of a customised VBE model, describing its components to characterise a specific VBE typology, and these components together represent an instance of the VBE reference model.

5.2 VBE Instantiation Approach

For the VBE instantiation process a methodology is proposed as a set of steps, supported by different mechanisms and methodologies, to customise the VBE reference model proposed according to the specificities of a VBE network. Figure 3 depicts the VBE instantiation approach followed by the authors, which is a two step process:

![Figure 3. VBE Instantiation Approach](image)

*Step 1* was to derive a model-based VBE reference model from the ARCON modelling framework. The ARCON modelling framework (Camarinha-Matos & Afsarmanesh, 2007b) provided the architectural guidelines to comprehensively identify the VBE elements/components necessary to bring those concepts to life in a particular VBE domain. Furthermore, the ARCON modelling framework served as the modelling framework for guiding VBE implementations in general, with the aim of standardizing certain key aspects of those implementations, and provide a written list of requirements with traceability capabilities to guarantee that all needed concepts, relationships and components are established, designed and implemented correctly by following the ARCON architecture guidelines provided to support a successful VBE creation and operation.

The ARCON modelling framework in summary offers three modelling perspectives or axes: *X-axis* with two sub-spaces to define VBEs environmental characteristics, each one with four modelling dimensions/views (endogenous - structural, componential, functional, behavioural and exogenous - market, support, societal, constituency) as mentioned before; *Y-axis* considering the VBE lifecycle (creation, operation/evolution, metamorphosis and dissolution), and *Z-axis* proposing tree levels of abstraction in a modelling intent for VBEs (general, specific and implementation) (Camarinha-Matos & Afsarmanesh, 2007b). The *VBE reference model* (see Tables 1 & 2) was the result (output) of this first step, this model includes two sub-spaces, each one with four modelling views, providing an abstract representation of a VBE as a long-term “strategic” collaborative network from its inside (endogenous elements) and its outside (exogenous interactions) (see Tables 1 & 2).
**Step 2** was to define a set of mechanism and methodologies needed to establish and characterise the management functionalities required to run a VBE (a particular model) that are described in the *VBE instantiation methodology* proposed. The *VBE instantiation methodology* is the description of the set of steps to be followed for creating and managing a VBE during its entire lifecycle. Figure 4 presents an overview of the main steps to be followed by the VBE administration to create and manage a breeding environment during its lifecycle, based-on UML notation.

![Figure 4. VBE Instantiation Methodology based-on the VBE Lifecycle (Romero et al, 2008a)](image)

Each of the *VBE instantiation processes* introduced in Figure 4 will be detailed in section 5.3 with a description of their main activities, resources, methodologies and supporting tools in order to provide the VBE administration with a set of guidelines and assisting means to instantiate the *VBE reference model* to a VBE particular case (see Tables 5 to 17).

### 5.3 VBE Instantiation Methodology

The *VBE instantiation process* happens only once for every specific breeding environment - a priori to its creation. As such, different VBE characteristics are needed to be identified at this time, independently of the VBE lifecycle stages during which they may be activated or applied.

The *VBE instantiation methodology* aims to identify the necessary components and functionalities required during all the VBE lifecycle stages to support its actors (stakeholders) towards the successful creation of a breeding environment and its effective and efficiently management (operation) towards the achievement of the VBE strategic goals.

#### 5.3.1 VBE Creation Stage: Initiation and Recruiting Sub-stage

As depicted in Figures 5 and 6, the *VBE creation stage* is divided in two sub-stages: (1) *VBE initiation and recruiting* - referring to the processes of planning the creation of a new breeding environment by following a number of preparation steps to facilitate the execution of all operational activities (see Tables 5 to 7) and (2) *VBE foundation* - referring to the processes of set-up and running an ICT-infrastructure to support the VBE operation, establishing the VBE governance structure, and populating the VBE by registering founding members and their related support institutions to allow the breeding environment initiate its operations (see Tables 8 to 11).
During the VBE initiation and recruiting sub-stage, three processes should be performed:

1. **Environmental analysis** - focusing on the VBE creation drivers and the identification of the attractors (reasons) for organisations to join the VBE. The expected results from this process are the identification of the critical success factors for the VBE business model in a specific domain sector (see Table 5);  
2. **Strategic planning** - addressing the VBE goal setting, strategy analysis and strategy formulation towards the VBE business model definition. Expected results: VBE identity statements (e.g. mission, vision, goals) and first draft of the business plan including marketing, operational, organisational, financial and legal aspects (see Table 6); and  
3. **Strategy implementation** - covering the VBE strategy implementation plan at business processes, ICT-infrastructure and governance levels. Expected results: Business processes required to enable a successful VBE management framework, an interoperable ICT-infrastructure for supporting the information systems and repositories related to the VBE business processes, and a VBE governance structure (see Table 7).

Going through the VBE foundation sub-stage, four processes should be carried out:

1. **VBE ICT-infrastructure set-up & run + governance structure establishment** - attending the implementation of the ICT-infrastructure, including the parameterisation of all information systems and repositories, and the creation of the VBE steering committee and the publication of the VBE governance principles, rules and bylaws. Expected results: Running ICT-infrastructure and VBE actors acknowledge of the breeding environment regulations and authority (see Table 8);  
2. **VBE constitution** - addressing the population of the VBE by following a members’ registration process. Expected results: A catalogue with a complete profile of the founding VBE members’ competencies and their roles, rights and responsibilities assigned (see Table 9);  
3. **Support institutions selection** - covering the recruitment of supporting entities and service acquisition from third party institutions to support different VBE requirements. Expected results: A catalogue of the support institutions associated to the VBE (see Table 10); and  
4. **VBE launching** - focusing on starting the VBE operation.
Expected results: Public announcement to the media that the VBE is beginning its operation (see Table 11).

5.3.2 VBE Operation/Evolution Stage(s)

VBE operation stage (see Figure 7) compromises the processes of running, executing and adapting the VBE management activities to support the breeding environment reaching its objectives. A detail description of these business processes is presented in Tables 3 & 4. VBE actors’ management activities will focus on creating a full profile of the VBE actors and managing their competencies towards VO creation process (see Table 12); VO creation management will support all activities related to VO creation process in order to respond to the collaboration opportunities identified (see Table 13), and VBE general management will assist common network management activities (see Table 14).

Figure 7. VBE Operation/Evolution (Romero et al, 2008a)

Moreover, VBE evolution stage (see Figure 7) compromises a set of feedback activities carried-out through the VBE performance management process to develop improvement proposal which could include: (1) design, operation and control of new management approaches, (2) recruitment, assessment and selection of new VBE members and support institutions, (3) re-definition and assessment of VBE actors’ roles, rights and responsibilities, etc. (see Tables 5 to 11).

During VBE operation/evolution stage, two actions could take place as result of market changes and new trends appearances: metamorphosis or dissolution. VBE could go into a metamorphosis stage (see Figure 8) to respond to these environmental factors and survive by adapting its structure to these new competitive factors, or it could go into a dissolution stage (see Figure 9), if the adaptation is not possible and a closure is necessary to completely re-structure the breeding environment.

5.3.3 VBE Metamorphosis Stage

VBE metamorphosis stage (see Figure 8) refers to the VBE nature adaptation by changing its strategy, business processes and structure to tactically respond to new market changes and trends, allowing VBE to remain competitive in its domain sector (see Tables 5 to 11).

5.3.4 VBE Dissolution Stage

VBE dissolution stage (see Figure 9) refers to a closure stage where total activities in the VBE will cease. Dissolution happens when a VBE cannot achieve its objectives anymore, and even its metamorphosis cannot help the VBE to keep going with the new market changes and trends. VBE dissolution focuses mainly on planning the transfer of collected knowledge during the entire VBE lifecycle to other breeding environments. It is divided in three main processes: (1) Shared assets dissolution - aimed at returning the belongings on the VBE bag of assets to their owners. Expected results: VBE bag of assets dissolution (see Table 15); (2) Knowledge transfer - covering the capture and transfer of knowledge collected during the VBE lifecycle. Expected results: VBE knowledge base legacy (see Table 16); and (3) VBE closing - addressing the ending affairs and contracts with all VBE actors (including customers), shutting down ICT-infrastructure and announcing the VBE closing. Expected results: Contracts ended, information systems and repositories shutdown and public announcement to the media that the VBE is closing its operation (see Table 17).
6. VBE Toolkit Validation

In order to validate the VBE toolkit proposed, a set of interviews using an extensive questionnaire (30 Qs) were conducted to different VBE initiators, VBE managers and CNO experts in the following running VBE networks: CeBeNetwork (Germany), HELICE (Spain), IECOS (Mexico) and Swiss Microtech (Switzerland). The interviews/questionnaires were used as a validation instrument to prove the usefulness and value of the set of guidelines and assisting means (e.g. concepts, methods and tools) that compose the VBE toolkit for the creation and operation of new and existing breeding environments. At the same time, the questionnaires were used as a feedback mechanism to receive valuable recommendations from practitioners to improve the VBE toolkit.

Nowadays the VBE toolkit is currently being used in the Nuferj Network (Group of Moulds and Dies Industries of Joinville, Brazil) to transform this classical cluster of industries into a state-of-the-art Virtual Organisation Breeding Environment (VBE), proving in a real practical sense the contribution of this toolkit for the industry (Baldo & Rabelo, 2009).

7. Conclusions

The VBE instantiation methodology presented in this article aims to serve as a systematic and standardised guideline for supporting the processes and activities involved in the creation and management of new breeding environments. As such, the VBE reference model proposed aims at understanding the requirements as well as provision of mechanisms and functionalities for VBEs through adequate organisational models, operating principles, as well as through provision of ICT tools to support the entire VBE lifecycle and its actors.

As the base, the proposed instantiation methodology uses the VBE reference model to provide a comprehensive overview of the key generic elements, components and features of VBEs and their main requirements that must be addressed while creating and managing VBEs throughout their entire lifecycle.

The presented VBE reference model and its instantiation methodology represent a fundamental step and an effort towards defining a set of standardised guidelines which will support the instantiation (principle of replicability) of the VBE reference model into different domains and application environments, and thus support covering all activities required to customize a specific VBE model.

Finally, the estimation of required time/resources to create a VBE is different in every case, but the authors’ approach introduces a novel step-by-step methodology for VBEs instantiation and uses the provision of ECOLEAD tools and mechanisms to assist the involvement of different VBE actors and CNO experts within this VBE creation process, which was in the past mostly performed manually.
8. Acknowledgement

The research presented in this document is a contribution for the ECOLEAD Project, funded by the European Community, FP6 IP 506958, for the “Rapid Product Realization for Developing Markets Using Emerging Technologies” Research Chair, ITESM, Campus Monterrey, and for the “Technological Innovation” Research Chair, ITESM, Campus Ciudad de México. The authors wish to acknowledge the support of the Innovation Center in Design and Technology from ITESM - Campus Monterrey.

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9. Relevant URLs

European Collaborative Networked Organisations Leadership Initiative - URL: http://ecolead.vtt.fi/
CeBeNetwork - URL: http://www.cebenetwork.de/
IECOS Network - URL: http://www.iecos.com/
Swiss Microtech Network - URL: http://www.swissmicrotech.ch/
HELICE Network - URL: https://www.fundacion-helice.net/

10. References

### Table 5 – VBE Initiation & Recruiting: Environmental Analysis

<table>
<thead>
<tr>
<th>VBE Life Cycle Stage:</th>
<th>Stage A: Creation - Initiation &amp; Recruiting</th>
<th>Date Issued:</th>
<th>Month day, Year</th>
<th>Process ID:</th>
<th>A1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process:</td>
<td>1. Environmental Analysis</td>
<td></td>
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</tr>
</tbody>
</table>

#### OBJECTIVE
Identification of business drivers for VBE creation.
Identification and classification of business attractors (reasons) for organisations join the VBE.

#### SCOPE
The activity applies when there is an entity (organisation) that wants to create a VBE. The activity introduces a market, economical and technological analysis.

#### N° | ACTIVITY | DESCRIPTION |
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Market, Economical and Technological Analysis</td>
<td>Identify main objectives and benefits: what is the main reason for the VBE existence? Identify, classify and analyze needs to be fulfilled by the VBE: - Economical needs - Social needs - Technological needs Identify the potential industry sectors and organisations (not limited to geographic proximity) that could be involved in the VBE. Identify needs of ICT interoperability and support services to be provided to enable effectiveness in doing business and collaborating. Identify organisation core-competencies (e.g. skills and resources) that will contribute to VBE creation in its initial stage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESPONSIBLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• VBE Initiator</td>
</tr>
<tr>
<td>• VBE Manager</td>
</tr>
<tr>
<td>• VBE Advisor</td>
</tr>
<tr>
<td>• Support Institutions</td>
</tr>
</tbody>
</table>

#### GUIDELINES
- Perform market analysis:
  - Identify market trends.
  - Identify Strengths, Weakness, Opportunities and Threats for the VBE.
  - Assess the competitive scenario for the VBE business model.
  - Classify potential VBE/VO products/services according to its complexity and uncertainty (e.g. commodities, durables, fashion or capital goods).
  - Identify sustainable competitive advantages for VBE value proposition (products/services):
    - Distinct value offer.
  - Identify critical market success factors for the VBE value proposition (products/services):
    - Market share.
- Perform economical analysis:
  - Identify economical trends.
  - Identify critical economical success factors for the VBE:
    - Key industry sectors
    - Industry participation in Gross Domestic Product (GDP)
    - Importations and Exportations
    - Tax rates
- Perform technological analysis:
  - Identify technological trends.
  - Identify critical technical success factors for the VBE business model:
    - Information and Communication Technologies interoperability

#### TOOLS
- Procedures/Methodologies:
  - Market research
  - Five Forces Model
  - SWOT Analysis
  - Critical Success Factors
  - Sustainable Competitive Advantages
  - Economic-market research
  - Critical Success Factors
  - Sustainable Competitive Advantages
  - Techno-market research
  - Critical Success Factors
  - Sustainable Competitive Advantages

#### OUTPUTS:
- List of potential customer(s)/market(s) needs to be fulfilled.
- Industrial sector(s) to be covered.
- List of potential organisations (members) that could belong to the VBE.
- Needs/Requirements for transparent, easy to use, and affordable “plug-and-play” ICT-infrastructure/ middleware.

#### RESOURCES:
- Human Resources: Individual(s) or team(s) with knowledge and competency in market research, strategic planning and ICT-infrastructure developments.
- Financial Resources: Funding mechanism that could be used.
- Physical/ICT Resources: Business Intelligence Knowledge Bases and Systems.

#### COMMENTS:
- VBE Initiator refers to any organisation(s) involved in the VBE creation process.
<table>
<thead>
<tr>
<th>VBE Life Cycle Stage:</th>
<th>Stage A: Creation - Initiation &amp; Recruiting</th>
<th>Date Issued:</th>
<th>Month day, Year</th>
</tr>
</thead>
</table>

**OBJECTIVE**

VBE goal setting, strategy analysis and strategy formulation.

The activity introduces the first steps towards the VBE business model definition.

<table>
<thead>
<tr>
<th>N°</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
</tr>
</thead>
</table>
| 2.1 | Goal setting and Strategy Analysis | Definition of goals.  
- Mission  
- Vision  
- Objectives | VBE Initiator  
VBE Manager  
VBE Advisor  
Support Institutions | Respond to the following questions:  
- What is the reason for VBE creation (Mission)?  
- What does the VBE want to achieve (Vision)?  
- What are the VBE's specific objectives?  
- What would be the strategy for VBE creation and operation? | Procedures/Methodologies:  
- Strategic Management Tools (see Process C3, Activity 3.1)  
- Business Model Definition Tools  
- Business Plan Formulation Tools  
Information Systems/Repositories:  
- Business Intelligence Knowledge Bases and Systems |
| 2.2 | Strategy Formulation | Formulation of the business plan, including marketing/branding, financial and operational strategic plans for VBE creation and operation. | VBE Initiator  
VBE Manager  
VBE Advisor  
Support Institutions | Creation of the marketing/branding strategic action plan:  
- Target Customers  
- Market demographics/demands  
- Product/Service Mix  
- Advertising and Promotion  
- Pricing and Budgeting  
- Branding  
- Public relations  
- Value offer differentiation  
- Other marketing/branding issues... | Procedures/Methodologies:  
- 4Ps Marketing Mix Strategy (Product, Price, Place, and Promotion) Tools - (see Process C3, Activity 3.1):  
  o Relationship Marketing  
  o Co-branding Strategy  
  o Pricing Strategy  
Information Systems/Repositories:  
- Business Intelligence Knowledge Bases and Systems |

**OUTPUTS:**

- VBE strategy ready for its implementation (Business Model and Business Plan).

**RESOURCES:**

- Human Resources: Individual(s) or team(s) with knowledge and competency in marketing/branding, financial and operational strategic planning.
- Financial Resources: Funding mechanism to be used.
- Physical/ICT Resources: ICT Resources: Strategic Management, Project Management and Agreement/Contract Negotiation Tools/Systems (e.g. software).

**COMMENTS:**

- The VBE Strategy will guide and control the implementation of marketing/branding, financial and operational strategic plans during the VBE creation and operation.
Table 7 – VBE Initiation and Recruiting: Strategy Implementation

|----------------------|--------------------------------------------|--------------|------------|---------------------------|

**OBJECTIVE**

VBE strategy implementation at business processes, ICT-infrastructure and governance levels.

The activity introduces the final steps towards the VBE business model definition

<table>
<thead>
<tr>
<th>Nº</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
</tr>
</thead>
</table>
| 3.1 | VBE Business Processes Definition | Characterization of business processes for VBE management. | • VBE Initiator  
• VBE Manager  
• VBE Advisor  
• Support Institutions | Definition of business process functionalities, within the VBE, to enable successful management:  
• Business processes have to be classified in a manner to perform specific actions on VBE actors.  
• VBE business process taxonomy should be based on the VBE Management Framework:  
  o VBE-Actors Management:  
    • Membership and Structure Management  
    • Profiling and Competency Management  
  o VO Creation and Registration Management:  
    • Collaboration Opportunity Identification  
    • Characterization and Rough Planning  
    • Partners Search and Suggestion  
    • Contract Negotiation Wizard  
  o VBE General Management:  
    • Strategic and Marketing Management  
    • Governance Management  
    • Trust Management  
    • Performance Management  
    • Bag of Assets Management  
    • Support Institutions Information Management  
    • ICT Management  
    • Value System Management  
    • Ontology Management  
    • Decision Support Management | Procedures/Methodologies:  
  • Frameworks, Architectures and Reference Models:  
    o Enterprise Architectures:  
      • PERA (Perdue Enterprise Reference Architecture)  
      • CIMOSA (CIM Open System Architecture)  
      • Zachman (IBM Architecture)  
      • GERAM (Generalised Enterprise Referent Architecture & Methodology)  
      • FEAF (Federal Enterprise Architecture Framework)  
    o Business Architectures  
    o Information Systems Architectures  
    o Technical Architectures  
    o Product Architectures  
    o Business Process Management  
    o Other business process taxonomies:  
      • ENAPS (European Network for Advanced Performance Systems)  
      • ISO (International Organisation for Standardization)  
  • Business Process Management  
  • Diagrams:  
    o Cause & Effect diagram  
    o Cross functional diagram  
    o EPC diagram  
    o Workflow diagrams |
| 3.2 | ICT-infrastructure Definition | Characterization of ICT-infrastructure/middleware to be used as intermediary interface among VBE actors’ information systems and as a support services provider. | • VBE Initiator  
• VBE Manager  
• VBE Advisor  
• Support Institutions  
• Support Service Providers | Definition of supporting information systems and repositories for VBE business processes. | Information Systems/Repositories:  
  • Membership Management Systems  
    o Member registration features  
    o Member rewarding features  
    o Member roles, rights and responsibility management features  
  • Profiling and Competency Management Systems  
    o Discovery/search of new competencies features  
  • Collaboration Opportunity Identification Systems  
  • Collaboration Opportunity Characterization and VO Rough Planning Systems  
  • Partner Search and Suggestion Systems  
  • Contract Negotiation Wizard Systems  
  • VO Information Management Systems  
    o VO registration features  
    o VO inheritance information features  
  • Trust Management Systems  
  • Performance Management Systems  
  • Bag of Assets Management Systems  
  • Support Institutions Information Management Systems  
    o Support Institutions registration features  
  • Value System Management Systems  
  • Ontology Management Systems  
  • Decision Support Management Systems  
    o Competency gap analysis features  
    o Lack of performance warning features  
    o Low trust level features |
<table>
<thead>
<tr>
<th>Nº</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>Governance Structure</td>
<td>Characterization of governance structure (see Process C3, Activity 3.3)</td>
<td>• VBE Initiator</td>
<td>Definition of corporate governance structure:</td>
<td>Procedures/Methodologies:</td>
</tr>
<tr>
<td></td>
<td>Definition</td>
<td></td>
<td>• VBE Manager</td>
<td>• Steering committee definition</td>
<td>• Guiding steps for VBE governance principles, rules, bylaws,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• VBE Advisor</td>
<td>○ VBE authorities (management board)</td>
<td>roles, rights and responsibilities definition.</td>
</tr>
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<td></td>
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<td>• Support Institutions</td>
<td>• VBE actors roles definition:</td>
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<td>○ VBE Member</td>
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<td>○ VBE Manager (Administrator)</td>
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<td>○ Opportunity Broker or simply Broker</td>
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<td>○ VO Planner or Business Integrator</td>
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<td>○ VO Coordinator</td>
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<td>○ VBE Advisor</td>
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<td>○ Support Services/Ontology Provider</td>
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<td>○ Support Institutions</td>
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<td>• Principles definition:</td>
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<td>○ Membership eligibility principles</td>
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<td>○ Leadership (authorities) role principles</td>
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<td>○ Contract enforcement policy</td>
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<td>• Rules definition:</td>
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<td>○ Behaviour (ethical code and culture)</td>
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<td>○ Functional/Operational rules</td>
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<td>• Bylaws definition:</td>
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<td>○ Membership policy</td>
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<td>○ Incentives policy</td>
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<td>○ Security policy</td>
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<td>○ ICT use policy</td>
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<td>○ Intellectual Property Rights policy</td>
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<td>○ Rights and Duties policy</td>
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<td>○ Conflict resolution policy</td>
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<td>○ Amendments to bylaw</td>
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<td>• Contracts and agreements definition:</td>
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<td>○ VBE Consortium contract</td>
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<td>○ Contracts for customer projects</td>
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<td>○ Contracts with subcontractors</td>
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<td>• Definition of rights and responsibilities according VBE actors roles.</td>
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</tbody>
</table>

**OUTPUTS:**
- Business process definition.
- ICT-infrastructure ready to be set-up and run.
- Governance structure definition.
-  

**RESOURCES:**
- Human Resources: Individual(s) or team(s) with knowledge and competency in business process management, ICT developments and governance/legal issues.
- Financial Resources: Funding mechanism to be used.
- Physical/ICT Resources: ICT-infrastructure - Hardware & Software.
- Definition of management structure, positions/roles, principles, rules, bylaws, contracts, agreements, rights and responsibilities should remain documented.
Table 8 – VBE Foundation: ICT-Infrastructure Set-up & Run and Governance Structure Establishment

<table>
<thead>
<tr>
<th>VBE Life Cycle Stage:</th>
<th>Stage B: Creation – Foundation</th>
<th>Date Issued:</th>
<th>Process ID:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process:</td>
<td>ICT-Infrastructure Set-up &amp; Run and Governance Structure Establishment</td>
<td></td>
<td>B1</td>
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</tbody>
</table>

**OBJECTIVE**

The activity focuses on implementing ICT-infrastructure and governance structure for the VBE.

<table>
<thead>
<tr>
<th>Nº</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
</tr>
</thead>
</table>
| 1.1 | ICT-infrastructure Set-up & Run | Set-up and run VBE systems and ICT-infrastructure:  
- Load existing ontology and thesaurus.  
- Parameterize domain and set-up nodes.  
- Create information repositories.  
- Enter administrative and assisting data.  
- Register founding members. | • VBE Initiator  
• VBE Manager  
• VBE Advisor  
• Support Institutions  
• Support Service Provider | All required middleware for interoperation among all VBE actors' information systems should be provided.  
All required support services for effectiveness in doing business and collaborating should be provided:  
- Security  
- Web services  
- Blog  
- Forum  
- Logging  
- Notification and Messaging  
- Yellow pages  
- Billing  
- Information exchange (get & store)  
- Other support services… | Procedures/Methodologies:  
• Mechanisms for setting-up and running the VBE systems and the ICT-infrastructure.  
• Mechanisms for parameterize and set-up links among nodes in the VBE.  
• Mechanisms for collecting and loading ontologies and thesauruses.  
• Mechanisms for transferring inheritance from previous VBEs to the new VBEs. |

| 1.2 | Governance Structure Establishment | Creation of steering committee (structure of authority).  
Publication of principles, rules, bylaws that will govern the VBE. | • VBE Initiator  
• VBE Manager  
• VBE Advisor  
• Support Institutions | All related issues about VBE governance structure should be documented and published for acknowledge of all VBE actors. | Procedures/Methodologies:  
• Guiding steps for VBE governance principles, rules, bylaws, roles, rights and responsibilities definition.  
Information Systems/Repositories:  
• Corporate Portals (e.g. bulletin boards) |

**OUTPUTS:**

- ICT-infrastructure and information systems running.
- Governance structure established.

**RESOURCES:**

- Human Resources: Individual(s) or team(s) with knowledge and competency in ICT developments and governance/legal issues.
- Financial Resources: Funding mechanism to be used.
- Physical/ICT Resources: ICT-infrastructure - Hardware & Software.

**COMMENTS:**

- Future members should read and agree with principles, rules, and bylaws governing the VBE before starting the membership application registration process.
- Definition of management structure, positions/roles, principles, rules, bylaws, contracts, agreements, rights and responsibilities should remain documented and published.
VBE Life Cycle Stage: Stage B: Creation – Foundation

Date Issued: Month day, Year

Process: 2. VBE Constitution (Members Population)

<table>
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<tr>
<th>Nº</th>
<th>ACTIVITY</th>
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<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Receive Membership Applications or Invite Potential VBE Members</td>
<td>Membership applicants registration: - Organisations apply for VBE membership. - VBE sends invitations (applications) for pre-selected organisations according to competency requirements.</td>
<td>• VBE Initiator  • VBE Manager  • VBE Advisor  • VBE Applicants</td>
<td>Receive or request relevant data for membership accreditation process.</td>
<td>Procedures/Methodologies: • Guiding steps for VBE members registration: o Collection of provided information Information Systems/Repositories: • Membership Management Systems - Member registration features</td>
</tr>
<tr>
<td>2.2</td>
<td>Assessment and Accreditation of Membership Applicants</td>
<td>Assessment of membership applicants. Accreditation of information provided.</td>
<td>• VBE Initiator  • VBE Manager  • VBE Advisor  • VBE Applicants</td>
<td>Assessment of readiness for collaboration: • Profile, competency, trust, performance criteria. Accreditation documents to be reviewed: • Accreditations/Certificates • Financial rating • Recommendation letters/Awards • Licenses/Patents • Articles (Newspapers and Magazines)</td>
<td>Procedures/Methodologies: • Guiding steps for VBE members registration: o Validation of information provided o Base trust assessment Information Systems/Repositories: • Membership Management Systems - Member registration features</td>
</tr>
<tr>
<td>2.3</td>
<td>Acceptance/ Rejection of Membership Applicants</td>
<td>Acceptance/rejection of membership applicants.</td>
<td>• VBE Initiator  • VBE Manager  • VBE Advisor  • VBE Applicants</td>
<td>Basic criteria for acceptance/rejection of applicants: • Basic profile information and evidence information validation • Base trust level • Compliance with the VBE competency domain If an Applicant is accepted, it becomes a VBE member that will receive initial responsibilities and rights according to its role. If rejected, it will receive feedback for self-improvement and possibility for reapplication to the VBE membership. Different roles can be assumed by a VBE member organization, even at the same time, so roles and therefore their associated rights and responsibilities cannot be static.</td>
<td>Procedures/Methodologies: • Guiding steps for VBE members’ assignment of roles, rights and responsibilities. Information Systems/Repositories: • Membership Management Systems - Member registration features</td>
</tr>
<tr>
<td>2.4</td>
<td>VBE Members’ Roles, Profiling &amp; Competency Registration</td>
<td>Assignment of Roles, Rights and Responsibilities to VBE members. Define members’ profiles and competencies including: - General/Contact information - Competency-related information - Financial information - Evidence of information validity (competency)</td>
<td>• VBE Initiator  • VBE Manager  • VBE Advisor  • VBE Member</td>
<td>Capture profile and competency data for VBE members: • General information: o Organisation’s name o General description, o Contact information o Industry sector o Legal status o Strategy o Sales • Competency-related information: o Process(es) o Product(s)/Service(s) o Resource(s): - Human resource(s) - ICT resource(s) - Physical resource(s) o Practice(s) o Associated Partner(s)</td>
<td>Procedures/Methodologies: • Mechanisms for verification of validity of information provided by members during registration of new members and updating profiles. • Mechanisms for management of membership levels. Information Systems/Repositories: • Membership Management Systems - Member registration features • Profiling and Competency Managements System (see Process C1, Activity 1.1 and 1.2)</td>
</tr>
</tbody>
</table>

OUTPUTS: List of actual VBE members with their roles, rights and responsibilities. List of actual VBE members with their complete profile and competency description.

RESOURCES: • Human Resources: Individual(s) or team(s) with knowledge and competency in profiling and competency identification. • Financial Resources: Funding mechanism to be used. • Physical/ICT Resources: Membership Management Systems and Profiling and Competency Management Systems.

COMMENTS: • VBE applicant refers to potential VBE members in membership accreditation process. • Membership applications could be received from organisations with interest in becoming part of the VBE or could be sent to organisations that VBE manager is interest in Recruiting. • Future members should read and agree with principles, rules, and bylaws governing the VBE before start membership applicant registration process.
### Table 10 – VBE Foundation: Support Institutions Selection

<table>
<thead>
<tr>
<th>N°</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
</tr>
</thead>
</table>
| 3.1| Support Institutions Registration | Support Institutions registration will be done using a simplified member registration process (see Process B2). Support Institutions can become VBE members. | • VBE Initiator                      | Selection of supporting institutions that could provide the VBE with services to keep up with new trends and technologies. | Procedures/Methodologies:  
Mechanisms for verification of validity of information provided by members during registration of new members and updating profiles.  
Mechanisms for management of membership levels.  
Information Systems/Repositories:  
Membership Management Systems  
Profile and Competency Management System (see Process C1, Activity 1.1 and 1.2).  
Support Institutions Information Management Systems  
Support Institutions registration features |

**OUTPUTS:**  
- List of actual Support Institutions with their complete profile and competency description.

**RESOURCES:**  
- Human Resources: Individual(s) or team(s) with knowledge and competency in profiling and competency identification.
- Financial Resources: Funding mechanism to be used.
- Physical/ICT Resources: Membership Management System & Profiling and Competency Management System.

**COMMENTS:**  
- Support institutions should read and agree with principles, rules, and bylaws governing the VBE before starting any relation with it.

### Table 11 – VBE Foundation: VBE Launching

<table>
<thead>
<tr>
<th>N°</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>ACTIVITY</th>
</tr>
</thead>
</table>
| 4.1| VBE Launching     | Form and launch the VBE.                                                    | • VBE Initiator                       | Invite founding VBE members to a kick-off meeting.                        | Procedures/Methodologies:  
4P’s Marketing Strategy (Product, Price, Place, and Promotion) Tools (see Process A1, Activity 1.1 and Process C3, Activity 3.1):  
- Relationship Marketing  
- Co-branding Strategy  
- Pricing Strategy |
|     |                   |                                                                             | • VBE Manager                         | Announce the start of the VBE operations in different media channels (Internet, T.V., Newspaper, Radio, etc.). |
|     |                   |                                                                             | • VBE Advisor                         | Execute relationship marketing/co-branding strategic plan (see Process A1, Activity 1.1). |
|     |                   |                                                                             | • VBE Members                         |                                                                            |
|     |                   |                                                                             | • Support Institutions                |                                                                            |
|     |                   |                                                                             | • Support Service Providers          |                                                                            |

**OUTPUTS:**  
- VBE in operation stage.

**RESOURCES:**  
- Human Resources: All VBE actors.
- Financial Resources: Funding mechanism to be used.
- Physical/ICT Resources: ICT-infrastructure - Hardware & Software.

**COMMENTS:**  
- VBE manager should announce the start of VBE operations.  
- Strong emphasis should be put in marketing activities.
<table>
<thead>
<tr>
<th>VBE Life Cycle Stage:</th>
<th>Stage C: Operation and Evolution</th>
<th>Date Issued:</th>
<th>Month, Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process:</td>
<td>1. VBE Actors Management</td>
<td>Process ID:</td>
<td>C1</td>
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</tbody>
</table>

### OBJECTIVE
Create a full profile of VBE actors for support competency management towards VO creation.

The activity focuses on VBE actors management.

<table>
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<tr>
<th>N°</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
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</thead>
</table>
| 1.1| Membership and Structure Management| Management of VBE actors: integration, accreditation, disintegration, rewarding and categorization.  
This activity is divided into three mechanisms:  
- Member registration  
- Member rewarding  
- Members assignment of rights, roles and responsibilities | - VBE Manager  
- VBE Advisor  
- VBE Members  
- Support Service Providers | Member registration: (see Process R2):  
- Receive or Send membership applications.  
- Make assessment of readiness for collaboration.  
- Make accreditation of documents provided by applicants.  
- Accept/Reject membership applications.  
- Assign rights, roles and responsibilities to VBE members.  
Member rewarding:  
- Reward good performance of VBE members in VO involvement.  
- Reward VBE members' initiative to play multiple roles inside the VBE.  
- Reward contributions of VBE members to VBE bag of assets. | Procedures/Methodologies:  
- Mechanisms for verification of validity of information provided by members during the registration of new members and updating profiles.  
- Mechanisms for management of membership levels.  
Information Systems/Repositories:  
- Membership Management Systems  
  - Member registration features  
  - Member rewarding features  
  - Member roles, rights and responsibility management features. |
| 1.2| Profiling and Competency Management| Creation and maintenance of VBE members, VO and VBE it-self profiles.  
This activity is divided into three mechanisms:  
- Management of profiles  
- Competency-based assessment  
- Discovery of new competencies | - VBE Manager  
- VBE Advisor  
- VBE Members  
- Support Service Providers | Management of profiles:  
- Create/Update/Delete VBE members, VO and VBE it-self profiles.  
Competency-based assessment:  
- Validate VBE actors' competence conspicuous according to processes capabilities and resources capacities.  
Discovery of new competencies:  
- Collective competencies in VBE members. | Procedures/Methodologies:  
- Mechanisms for verification of validity of information provided by members during registration of new members and updating profiles.  
- Mechanisms for management of membership levels.  
Information Systems/Repositories:  
- Profiling and Competency Management Systems  
  - Discovery/search of new competencies features |

**OUTPUTS:**
- List of actual VBE members with their complete profile and competency description.

**RESOURCES:**
- Human Resources: All VBE actors.
- Financial Resources: Funding mechanism to be used.

**COMMENTS:**
- None.
<table>
<thead>
<tr>
<th>VBE Life Cycle Stage:</th>
<th>Stage C: Operation and Evolution</th>
<th>Date Issued:</th>
<th>Month day, Year</th>
<th>Process ID:</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBJECTIVE</td>
<td>Support VO creation and registration activities towards rapid configuration of dynamic VOs in respond to collaborative opportunities identified.</td>
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<td></td>
<td>The activity focuses on VO creation and registration.</td>
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<td>SCOPE</td>
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</table>

### Table 13 – VBE Operation/Evolution: VO Creation and Registration Management

<table>
<thead>
<tr>
<th>N°</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
</tr>
</thead>
</table>
| 2.1 | Collaboration Opportunity Identification (CO-Finder) | Selection of collaboration opportunities. | Broker • VO Customer • Support Service Providers | Identification and categorization of collaboration opportunities (COs):  
- Detect collaboration opportunities (e.g. call for tenders in newspapers, bulletin boards, web pages, marketplaces, etc.).  
- Find required skills to respond to COs.  
- Filter COs according to VBE domain of competencies. | Procedures/Methodologies:  
- Guiding steps for VO governance principles, rules, bylaws, roles, rights and responsibilities definition.  
  - Brokerage principles. Information Systems/Repositories:  
  - Collaboration Opportunity Identification Systems |

| 2.2 | Collaboration Opportunity Characterization and VO Rough Planning (COC-Plan) | Characterization of collaboration opportunities and definition of rough plans for future VOs. | Broker • VO Planner • Support Service Providers | Selection of type of collaboration opportunities (COs):  
- COs modality selection:  
  - Collaborative business process → distributed cross-organisational business processes and sub-processes.  
  - Collaborative project → occur at project level, where activities are only made by humans.  
  - Collaborative problem-solving → from as-is situation to a to-be (gap analysis).  
  - Ad-hoc collaboration → quick response for emerging situations.  
- COs characterization in terms of competencies:  
  - Product characterization  
  - Service characterization  
- COs rough planning:  
  - Definition of a rough VOD structure, topology, organisational form, levels and associated roles, governance rules.  
  - Definition of partnership form: contracts and cooperation agreements.  
  - Representation of a rough VO model, top-down (planning) vs. bottom-up (emerging).  
- Simulation to assess different configurations. | Procedures/Methodologies:  
- Guiding steps for VO governance principles, rules, bylaws, roles, rights and responsibilities definition.  
  - Interoperability principles  
Information Systems/Repositories:  
- Collaboration Opportunity Characterization and VO Rough Planning Systems |

| 2.3 | Partners Search and Selection (PSS) | Identification of potential partners, and their assessment and selection to become VO partners:  
- Partners' search.  
- Partners' assessment (specification of preferences).  
- Partners' selection. | Broker • VO Planner • VBE Members • Support Service Providers | Selection of most sustainable members for a VO regarding the requirements of a given collaboration opportunity. Partners could be assessed/selected based on a sort of the following criteria:  
- Price  
- Delivery date  
- Quality level  
- Performance indicators  
- Other criteria… | Procedures/Methodologies:  
- Guiding steps for VO Partners' assignment of roles, rights and responsibilities.  
  - Rights and duties policy  
- Guiding steps for VO governance principles, rules, bylaws, roles, rights and responsibilities definition.  
  - Membership policy  
  - Membership eligibility principles  
  - Leadership role principles  
Information Systems/Repositories:  
- Partners Search and Suggestion Systems |
## 2.4 Agreement/Contract Negotiation Wizard (WizAN)

**Description:** Computer-assisted support or negotiation and reaching agreements during VO creation:
- **CO-Finder and COC-Plan:** Contract type specification and general definitions according VO requirements like: structure, topology, etc.
- **PSS:** Contract under negotiation agreed and in process negotiation objects.
- **VO Registration:** Signed agreements/assembled contract.

### Responsibilities
- Broker
- VO Planner
- VO Coordinator
- VBE Members
- Support Service Providers

### Guidelines
- **Negotiation:**
  - Definition of negotiation protocols.
  - Decision making process and corresponding parameters.
  - Representation of agreements.
- **Contracting:**
  - Formulation and modelling of contracts and agreements.
  - Identification of type of contract.
  - Definition of contract enforcement mechanisms and institutions.
  - Definition of legal issues.
- **Types of Contracts:**
  - VBE contracts (with VBE actors)
  - VO contracts (with VO Partners and VO customer)

### Tools
- Procedures/Methodologies:
  - Guiding steps for VO governance principles, rules, bylaws, roles, rights and responsibilities definition.
    - Decision-making principles
    - Rewarding and sanctioning principles
    - VO governance principles
    - VO functional/operational rules
    - VO internal rules used for distribution of benefits
    - Intellectual property policy
    - Conflict resolution policy
    - Amendments to bylaw.

### Information Systems/Repositories:
- **Agreement/Contract Negotiation Wizard Systems**

## 2.5 VO Information Management

**Description:** VO information management focuses on two processes:
- **VO Registration:** focuses on VO profile creation.
- **VO Inheritance Information:** focuses on retrieving immaterial assets, facilitating VO creation and operation, back to the VBE when VO dissolution occurs.

### Responsibilities
- VBE Manager
- VO Coordinator
- VO partners
- Support Service Providers

### Guidelines
- **VO Registration:**
  - Once a VO is set up and ready to run (operate), it should manifest its creation in the VBE by creating its profile.
  - Notification of VO creation should be performed to all members involved.

### Tools
- Procedures/Methodologies:
  - Guiding steps for VO governance principles, rules, bylaws, roles, rights and responsibilities definition.
    - Intellectual property policy

### Information Systems/Repositories:
- **Profiling and Competency Management Systems**
- **VO Information Management Systems**
  - VO registration features

### VO Inheritance Management:
- Once a VO is dissolved, a lot of knowledge (e.g. lessons learned) valuable for ensuring sustainability of future VOs is out of the VBE and should be transferred back into it as a knowledge management task.

Some challenges for VO Inheritance Management will be:
- Select relevant information and lessons learned (successful and unsuccessful) for huge amount of information that can be produced.
- Interpret, analyze, filter, model, store, organize, contextualize, systematize and show information for decision-making.

### Procedures/Methodologies:
- Mechanisms for transferring VO inheritance to the VBE.
- Guiding steps for VO governance principles, rules, bylaws, roles, rights and responsibilities definition.
  - Intellectual property policy

### Information Systems/Repositories:
- **VO Information Management Systems**
- **Inheritance Management Systems**
- **Knowledge Management Systems**
- **Business Intelligence Systems**
- **Data Technology:** Warehouses, Data Marts, Data Bases
- **Mining Technology:** Data, Text, and Web Mining

### Outputs:
- **COs identification (brokerage).**
- **COs characterization and VO rough planning.**
- **Partners search and suggestions for COs (towards VO creation).**
- **Contract templates (for agility in contract negotiation and agreement reach).**
- **Registration of created VOs within the VBE.**
- **Inheritance of VOs dissolved.**

### Resources:
- **Human Resources:** Broker, VO planner, VO coordinator, VBE manager, VO Partners and Support Service Providers.
- **Financial Resources:** Funding mechanism to be used.
- **Physical/ICT Resources:** VO Creation and Registration Systems (tools): coFinder tools, COC-Plan tools, PSS tools, WizAN tools, Inheritance tools, etc.

### Comments:
- VO Partners are also called VO members, and could be actual VBE members or external organisations.
Table 14 – VBE Operation/Evolution: VBE General Management

<table>
<thead>
<tr>
<th>VBE Life Cycle Stage:</th>
<th>Stage C: Operation and Evolution</th>
<th>Date Issued:</th>
<th>Month day, Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process:</td>
<td>3. VBE General Management</td>
<td>Process ID:</td>
<td>C3</td>
</tr>
</tbody>
</table>

**OBJECTIVE**
Support the VBE it-self management during its operation and evolution stage.

The activity focuses on VBE it-self management.

**SCOPE**

**N°** | **ACTIVITY** | **DESCRIPTION** | **RESPONSIBLES** | **GUIDELINES** | **TOOLS** | **PROCEDURES/METHODOLOGIES (for Strategy):**
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Strategic &amp; Marketing Management</td>
<td>Running strategic management process in a collaborative environment, in other words: “network strategic management”. Running relationship marketing strategy and VBE co-branding &amp; identity development strategy.</td>
<td>VBE Manager</td>
<td>Strategic management process:</td>
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<td></td>
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<td></td>
<td>VBE Advisor</td>
<td>Goal setting</td>
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<td></td>
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<td>VBE Members</td>
<td>Strategy formulation</td>
<td></td>
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<td>Support Service Providers</td>
<td>Strategy implementation</td>
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<td>Strategy control</td>
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</tbody>
</table>

Issues in collaborative strategy formulation:
- Frictions
- Dilemmas
- Tensions

Challenges in collaborative strategy formulation:
- Negotiation process
- Reaching common agreements
- Setting common goals (win-win relationships)

Combine brands, organisational prestige and reputation in a unique VBE/VO trademark with high market penetration and positioning in customers minds.

**PROCEDURES/METHODOLOGIES (for Marketing):**
- Marketing Mixes (4p’s)
- Advertising
- Channel Marketing
- B2B Marketing
- Corporate co-Branding and Identity
- Direct Marketing and Online Marketing
- Events and Promotions
- Public Relations
- Segmentation and Targeting
- Product Development

**INFORMATION SYSTEMS/REPOSITORIES (for Strategy):**
- Business Intelligence Knowledge Bases and Systems
- Power school (strategy formulation as a process of negotiation): Bases of Social Power, Power Distance, Stakeholder Value Perspective, Core Group Theory, Forced Filed Analysis, etc.
- Cultural school (strategy formulation as a collective process): Appreciative Inquiry, Cultural Dimensions, Cultural Intelligence, Ashridge Mission Model, etc.
- Environmental school (strategy formulation as a reactive process): Contingency Theory, Situational Leadership.
- Configuration school (strategy formulation as a process of transformation): Organisational Configurations, Chaos Theory, Catastrophe Theory, Disruptive Innovation, etc.
<table>
<thead>
<tr>
<th>No</th>
<th>Activity</th>
<th>Description</th>
<th>Responsibilities</th>
<th>Guidelines</th>
<th>Tools</th>
</tr>
</thead>
</table>
| 3.2 | Financial, Accounting and Resources Management | Management of financial affairs. Maintenance of accounting affairs. Deployment of VBE resources through supporting resources management processes. | • VBE Manager  
• VBE Advisor  
• VBE Members  
• Support Service Providers | Financial affairs:  
• Incomes  
• Expenses  
• Taxes  
• Investments  
Accounting affairs:  
• Back Accounts  
• Payroll  
• Cash Flow  
• Balance Sheet  
• Disbursements  
• Capitalization  
• Depreciation  
• Financial Ratios  
Resources affairs:  
• Bag of Assets Management (see Activity 3.6)  
• ICT Management (see Activity 3.8)  
• Value System Management (see Activity 3.9) | Procedures/Methodologies:  
• Accounting Policies and Procedures:  
  o Accrued Expenses  
  o Assets  
  o Capitalization and Depreciation of Property, Plant, and Equipment  
  o Contingencies  
  o Deferred Revenue  
  o Designation of Unrestricted Net Assets  
  o Endowments  
  o Expenses  
  o Liabilities  
  o Net Assets Activity and Balance  
  o Revenue  
  o Accounts Receivable  
  • Taxes Policies  
Information Systems/Repositories:  
• Enterprise Resource Planning Systems  
• Accounting Systems  
• Inventory Systems |
| 3.3 | Governance Management | Monitor VBE actors behaviour (rights, roles and responsibilities) and VBE performance through policy supported in fours perspectives:  
- Strategy perspective:  
  o Strategy vision  
  o Strategy alignment  
  o Strategy assurance  
- Resources perspective (proper use):  
  o Human resources  
  o Technology resources  
  o Physical resources  
  o Financial resources  
- CNO (organisational) perspective:  
  o Structure  
  o Policies  
  o Decision-making  
- Services perspective:  
  o Systems  
  o Procedures  
  o Methodologies  
  o Supported Services | • VBE Manager  
• VBE Advisor  
• VBE Members  
• Support Service Providers | VBE principles:  
• Honesty, Trust and Integrity  
• Openness  
• Performance Orientation  
• Responsibility and Accountability  
• Mutual Respect and Commitment to the VBE  
• Membership Eligibility Principles  
• Leadership Role Principles  
• Contract Enforcement Policy  
• Brokering Principles  
• Decision-Making Principles  
• Rewarding and Sanctioning Principles  
• Interoperability Principles  
• Network Governance Principles  
VBE Bylaws:  
• Membership Policy  
• Security Issues  
• Sanctions & Incentives Principles  
• Financial Policies  
• ICT Use Guidelines  
• Intellectual Property Rights Policy  
• Rights and Duties Policy  
• Conflict Resolution Policy  
• Amendments to Bylaw | Procedures/Methodologies:  
• Guiding steps for VBE governance principles, roles, bylaws, rules, rights and responsibilities definition.  
Information Systems/Repositories:  
• Corporate Portals (e.g. bulletin boards) |
<table>
<thead>
<tr>
<th>No</th>
<th>Activity</th>
<th>Description</th>
<th>Responsibilities</th>
<th>Guidelines</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4</td>
<td>Trust Management</td>
<td>Define trust actors (equal to VBE actors).</td>
<td>• VBE Manager • VBE Advisor • VBE Members • Support Service Providers</td>
<td>Base Trust Perspectives and Criteria:</td>
<td>Procedures/Methodologies: Methodology for the management of base trust.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Define trust criteria.</td>
<td></td>
<td>(Organisational) • Competencies • Expertise/Experience • Social • Financial/Economical • Financial Ratios • Technological • Availability • Standards: • Protocols and Security standards • Software &amp; Hardware standards • Managerial/Behavioural • Organisational Structure • Collaborative Behaviours (e.g. alliances)</td>
<td>Information Systems/Repositories: Trust Management Systems</td>
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<td>Define and manage trust relationships:</td>
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<td>- Trust among VBE members (or VBE actors).</td>
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<td>- Trust of a VBE member to the VBE administration.</td>
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<td>- Trust of a customer to the VBE or VOs.</td>
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<td>Perform quantitative trustworthiness assessment to support other VBE</td>
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<td>management processes.</td>
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<td>3.5</td>
<td>Performance Management</td>
<td>Execute Performance Management Cycle:</td>
<td>• VBE Manager • VBE Advisor • VBE Members • Support Service Providers</td>
<td>Fellow Performance Management Cycle:</td>
<td>Procedures/Methodologies: Balanced Scorecard Model • The Big Picture • Business Process Reengineering • Charter Mark • EFQM Excellence Model • ISO 9001 Quality System • kaizen Blitz • Perform Prism • PQASSO • Public Service Excellence Model • Six Sigma • Statistical Process Control • Value Management</td>
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<td></td>
<td></td>
<td>- Planning</td>
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<td>Planning • Performance Measurement &amp; Monitoring • Evolving • Rating • Rewarding</td>
<td>Information Systems/Repositories: Performance Management Systems • Indicator Systems • Dashboards Systems</td>
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<td>o Setting goals</td>
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<td>o Establish and communicate elements and standards</td>
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<td>o Measure performance</td>
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<td>o Provide feedback</td>
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<td>o Provide progress view</td>
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<td></td>
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<td>- Performance Measurement &amp; Monitoring</td>
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<td>- Evolving</td>
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<td>o Address poor performance</td>
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<td>o Maintain good performance</td>
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<td>- Rating</td>
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<td>o Summarize performance</td>
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<td>o Assign the rating of records</td>
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<td>o Recognize and reward good performance</td>
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</tbody>
</table>
| 3.6 | Bag of Assets Management                    | Share valuable assets property of different VBE actors that could be       | • VBE Manager • VBE Advisor • VBE Members • Support Service Providers         | Common assets of a VBE bag of assets:                                      | Procedures/Methodologies: Organisational Memory Taxonomies • Incentives Principles
<p>|     |                                             | interesting and useful to share with other VBE actors.                     |                                                                                  | Documents, books, leaflets to help, etc. • Sample contracts to speed up the contracting phase. • General legal issues related to the sector. • Information of interest, specific to the VBE sector. • Links to other sources of information. • Lessons learned. • FAQs (Frequent Asked Questions) | Information Systems/Repositories: Bag of Assets Management Systems • Content Management Systems |
|     |                                             |                                                                           |                                                                                  |                                                                            |                                                                                             |
| 3.7 | Support Institutions Information Management| Support Institutions registration will be done using a simplified          | • VBE Manager • VBE Advisor • Support Institutions • Support Service Providers | Selection of supporting institutions that could provide the VBE with services | Procedures/Methodologies: Mechanisms for verification of validity of information provided by members during registration of new members and updating profiles • Mechanisms for management of membership levels. Information Systems/Repositories: Membership Management Systems • Support Institutions Information Management Systems • Support Institutions registration features |
|     |                                             | member registration process (see Process B2).                              |                                                                                  | to keep up with new trends and technologies.                               |                                                                                             |
|     |                                             | Support Institutions can become VBE members.                               |                                                                                  | If a support institution becomes a VBE member, it will change its role and  |                                                                                             |
|     |                                             |                                                                           |                                                                                  | receive new rights and duties (see Process B2).                           |                                                                                             |</p>
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<tr>
<th>N°</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
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<tbody>
<tr>
<td>3.8</td>
<td>ICT Management</td>
<td>Management of ICT-infrastructure based upon ITIL® best practice guidance:</td>
<td>• VBE Manager&lt;br&gt;• VBE Advisor&lt;br&gt;• VBE Members&lt;br&gt;• Support Service Providers</td>
<td>ITIL® (IT Infrastructure Library) guidelines for planning, delivery and</td>
<td>Procedures/Methodologies:&lt;br&gt;• Information Systems Architectures&lt;br&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Identification of business requirements.&lt;br&gt;- Planning, Deployment, Design,</td>
<td></td>
<td>management of quality IT services.&lt;br&gt;ICT Management Services:&lt;br&gt;•</td>
<td>• Information Architectures&lt;br&gt;• Application Architectures&lt;br&gt;</td>
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<tr>
<td></td>
<td></td>
<td>Testing, Operation, Technical support and management of ICT services and</td>
<td></td>
<td>Network service management&lt;br&gt;• Operations management&lt;br&gt;Local&lt;br&gt;</td>
<td>Information Systems/Repositories:&lt;br&gt;• Security&lt;br&gt;• Networks and Applications&lt;br&gt;• Data Bases</td>
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<tr>
<td></td>
<td></td>
<td>components.</td>
<td></td>
<td>processors management&lt;br&gt;Computer installation&lt;br&gt;Acceptance and systems management.</td>
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</tr>
<tr>
<td>3.9</td>
<td>Value System Information</td>
<td>Management of material and immaterial values/assets within the VBE for the</td>
<td>• VBE Manager&lt;br&gt;• VBE Advisor&lt;br&gt;• VBE Members&lt;br&gt;• Support Service Providers</td>
<td>Use taxonomies for handling and classifying assets (e.g. capital systems):</td>
<td>Procedures/Methodologies:&lt;br&gt;• Tangible and Intangible Valuation Methods and Models&lt;br&gt;• Methods:&lt;br&gt;• Calculated Intangible Value&lt;br&gt;• Value Added Intellectual Coefficient&lt;br&gt;• Intellectual Capital Measurement&lt;br&gt;• Q of Tobin&lt;br&gt;• Models:&lt;br&gt;• Business Navigator (Skandia Navigator)&lt;br&gt;• Intellectual Assets Monitor&lt;br&gt;• Intellectual Capital Index&lt;br&gt;• Technology Broker&lt;br&gt;• Balanced Scorecard&lt;br&gt;• EFQM Excellence Model&lt;br&gt;Information Systems/Repositories:&lt;br&gt;• Knowledge Management Systems</td>
</tr>
<tr>
<td></td>
<td>Management</td>
<td>purpose of modelling and assessing their use towards co-producing value for</td>
<td></td>
<td>Financial capitals (tangibles assets)&lt;br&gt;Intellectual capitals (intangibles</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>VBE/VO customers.</td>
<td></td>
<td>assets)&lt;br&gt;Social capitals (intangibles assets)</td>
<td></td>
</tr>
<tr>
<td>3.10</td>
<td>Ontology Management</td>
<td>Management of Ontology levels:</td>
<td>• VBE Manager&lt;br&gt;• VBE Advisor&lt;br&gt;• VBE Members&lt;br&gt;• Support Service Providers</td>
<td>Steps to build an ontology:&lt;br&gt;Ontology Learning&lt;br&gt;Ontology Conceptualization&lt;br&gt;Ontology Reengineering&lt;br&gt;Ontology Merge (Collaborative Construction)&lt;br&gt;Ontology Evolution&lt;br&gt;Ontology Evaluation</td>
<td>Procedures/Methodologies:&lt;br&gt;• Ontology Design Patterns&lt;br&gt;Information Systems/Repositories:&lt;br&gt;• Ontology Discovery and Management Systems&lt;br&gt;• Models:&lt;br&gt;• XML&lt;br&gt;• RDF&lt;br&gt;• DAML+OIL&lt;br&gt;• OWL Lite, DL and Full&lt;br&gt;• Dictionary, Glossaries, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Top level and Core level&lt;br&gt;- Domain level and Application level</td>
<td></td>
<td>WSC recommended for ontologies standards.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Management of Ontology relationships:&lt;br&gt;- subclassOf or superclassOf&lt;br&gt;-</td>
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<tr>
<td></td>
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<td>partOf&lt;br&gt;- hasPart&lt;br&gt;- equivalentTo&lt;br&gt;- siblingOf&lt;br&gt;- siblingOf</td>
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<tr>
<td>3.11</td>
<td>Decision Support Management</td>
<td>Decision making as a process leading to the selection of a course of action</td>
<td>• VBE Manager&lt;br&gt;• VBE Advisor&lt;br&gt;• VBE Members&lt;br&gt;• Support Service Providers</td>
<td>Some guidelines for decision-making:&lt;br&gt;Recognizing that a decision needs to be made.&lt;br&gt;Determining who needs to be involved in the decision.&lt;br&gt;Identifying options available to the decision maker.&lt;br&gt;Identifying the factors that will influence the decision.&lt;br&gt;Gathering information about the factors that influence stakeholders.&lt;br&gt;Reaching agreed-upon decisions based on the information.&lt;br&gt;Communicating and implementing decisions.</td>
<td>Procedures/Methodologies:&lt;br&gt;• What-If Analysis&lt;br&gt;• Goal-Seek Analysis&lt;br&gt;• Pareto Analysis&lt;br&gt;• Paired Comparison Analysis&lt;br&gt;• Grid Analysis&lt;br&gt;• Decision Tress&lt;br&gt;• PMI&lt;br&gt;• Force Field Analysis&lt;br&gt;• Six Thinking Hats&lt;br&gt;• Cost/Benefit Analysis&lt;br&gt;• Monte Carlo Simulation&lt;br&gt;Information Systems/Repositories:&lt;br&gt;• Decision Support Management Systems&lt;br&gt;• Models:&lt;br&gt;• Competency gap analysis features&lt;br&gt;• Lack of performance warning features&lt;br&gt;• Low trust level features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>among alternatives.</td>
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</tbody>
</table>

**OUTPUTS:**<br>- Issuance of notifications, warnings and reports about VBE management performance.

**RESOURCES:**<br>- Human Resources: All VBE actors.<br>- Financial Resources: Funding mechanism to be used.<br>- Physical/ICT Resources: All VBE Management Systems.

**COMMENTS:**<br>- VBE management process and their corresponding procedures, methodologies and information systems/repositories should be adapted to each VBE management structure and policies.
Table 15 – VBE Dissolution: Shared Assets Dissolution

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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>D1</td>
<td>1. Shared Assets Dissolution</td>
<td></td>
</tr>
</tbody>
</table>

**OBJECTIVE**
Return belongings on the VBE bag of assets to their owners.

The activity focuses on the dissolution of VBE bag of assets.

**N°** | **ACTIVITY** | **DESCRIPTION** | **RESPONSIBLES** | **GUIDELINES** | **TOOLS** |
|-------|--------------|-----------------|-----------------|----------------|-----------|
| 1.1   | Shared Assets Dissolution | Executive VBE bag of assets dissolution by returning belongings to the VBE members. | • VBE Manager  
• VBE Advisor  
• VBE Members | Identify ownership of VBE members' belongings that were shared to create the VBE bag of assets. | |

**TOOLS**
- Procedure/Methodologies:
  - Methodology for appointing or selecting members to be responsible for taking care of inheritance in post-VBE existence.
  - Methodology for defining new rights and roles in post-VBE existence.

**OUTPUTS:**

**RESOURCES:**
- Human Resources: VBE manager, VBE advisor, VBE members.
- Financial Resources: Funding mechanism to be used.
- Physical/ICT Resources: Bag of Assets Management System.

**COMMENTS:**
- In shared assets dissolution all VBE actors are involved, although the main responsible of this process is the VBE manager.

Table 16 – VBE Dissolution: VBE Inheritance

<table>
<thead>
<tr>
<th>VBE Life Cycle Stage:</th>
<th>Stage D: Dissolution</th>
<th>Date Issued:</th>
<th>Process ID:</th>
<th>Process:</th>
<th>VBE Inheritance (Knowledge Transfer)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>D2</td>
<td>2. VBE Inheritance (Knowledge Transfer)</td>
<td></td>
</tr>
</tbody>
</table>

**OBJECTIVE**
Capture and transfer knowledge collected during the VBE life cycle. Transfer trademarks and other brand assets managed during the VBE life cycle.

The activity focuses on the creation of VBE knowledge base legacy. The activity focuses on the transfer of trademarks and other brand assets.

**N°** | **ACTIVITY** | **DESCRIPTION** | **RESPONSIBLES** | **GUIDELINES** | **TOOLS** |
|-------|--------------|-----------------|-----------------|----------------|-----------|
| 2.1   | VBE inheritance (Knowledge Transfer) | Perform knowledge elicitation to all VBE actors to build a knowledge base of the experiences (best practices) collected during VBE life cycle. Inheritance of trademarks and other brands assets. | • VBE Manager  
• VBE Advisor  
• VBE Members | Identify proper knowledge elicitation and transfer techniques to be used with each VBE actor. Identify a proper mechanism for transferring intellectual property rights of trademarks and other brand assets. | |

**TOOLS**
- Procedure/Methodologies:
  - Methodology for appointing or selecting members to be responsible for taking care of inheritance in post-VBE existence.
  - Methodology for defining new rights and roles in post-VBE existence.
  - Knowledge elicitation techniques: Interviews, Protocol Analysis, Concept sorting, Goal Decomposition Techniques, Limited Information Tasks, Machine Learning, Usage of KE Techniques, Applicability of KE Techniques, etc.
  - Knowledge transfer techniques: Patrons method, Storytelling, ORDIT-XP, etc.

**OUTPUTS:**

**RESOURCES:**
- VBE knowledge base legacy.
- Trademarks and other brand assets legacy.
- Human Resources: VBE manager, VBE advisor, VBE members.
- Financial Resources: Funding mechanism to be used.

**COMMENTS:**
- In knowledge transfer process all VBE actors are involved, although the main responsible of this process is the VBE manager.
- Knowledge transfer process support future documentation of VBE closing.
Table 17 – VBE Dissolution: VBE Closing

<table>
<thead>
<tr>
<th>NO</th>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>RESPONSIBLES</th>
<th>GUIDELINES</th>
<th>TOOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Plan and Documentation of VBE Closing</td>
<td>Plan the ending of contracts with all VBE actors and customers. Plan the shutdown of VBE information systems and repositories. Document any valuable information for VBE inheritance (see Process D2).</td>
<td>VBE Manager, VBE Advisor, VBE Members</td>
<td>Plan end of contracts with customers, support institutions, support service providers, VBE advisor, brokers and VBE members. Backup data in VBE information systems and repositories or perform VBE inheritance information (see Process D2). Backup Devices: • From CD/DVD to Tape to Removable Hard Drives • Storage Area Networks (SAN) Support VBE inheritance by documenting VBE closing process or any other valuable information.</td>
<td>Procedures/Methodologies: • Methodology for appointing or selecting members to be responsible for taking care of inheritance in post-VBE existence. • Methodology for defining new rights and roles in post-VBE existence. • Backup Strategies: o Complete System Backup o Incremental Backup Information Systems/Repositories: • Data Backup Systems</td>
</tr>
<tr>
<td>3.2</td>
<td>Communicate VBE Closing</td>
<td>Public announcement of the VBE closing to all actors involved and market.</td>
<td>VBE Manager, VBE Advisor, VBE Members</td>
<td>Announce and manage VBE closing leaving a good name behind.</td>
<td>Procedures/Methodologies: • Ending Contracts • Announce VBE Closing Information Systems/Repositories: • Media such as: Internet, Television, Newspapers, Radio, etc.</td>
</tr>
<tr>
<td>3.3</td>
<td>Shutdown VBE</td>
<td>Shutdown of ICT-infrastructure.</td>
<td>VBE Manager, Support Service Providers</td>
<td>Final check to Backup of VBE information systems and repositories (see Process D3, Activity 3.1). Shutdown VBE information systems and repositories.</td>
<td>Procedures/Methodologies: • Methodology for appointing or selecting members to be responsible for taking care of inheritance in post-VBE existence.</td>
</tr>
</tbody>
</table>

**OUTPUTS:**
- The VBE cease to exist.
- Human Resources: VBE manager, VBE advisor, VBE members.
- Financial Resources: Funding mechanism to be used.
- Physical/ICT Resources: Inheritance, Knowledge and Content Management Systems.

**RESOURCES:**
- All VBE actors are involved, although the main responsible of this process is the VBE manager.