

The road towards a knowledge economy.

Learning how to innovate work, grow talent and increase employability

1. Market

From supply driven to demand driven business models

The old economy can be characterised as mass production. Products were designed, developed and produced in large quantities for an anonymous market. This model has changed into an economy of mass-customization. A car is today tailor made for the individual client. It is designed such that hundreds of options from which a client can choose are possible. Despite this, development- and delivery-times have been shortened drastically. The client is not any longer interested in the product but in its performance. A car must always function, and in the rare case that it breaks down it must be repaired instantly or be replaced by another.

Accordingly, industry changes from a technology-push oriented sector that competes on costs to a client centred sector that competes on value. From an organizational point of view this requires a transition from static hierarchical structures to responsive and adaptive structures in which the knowledge and capabilities of all employees are utilized.

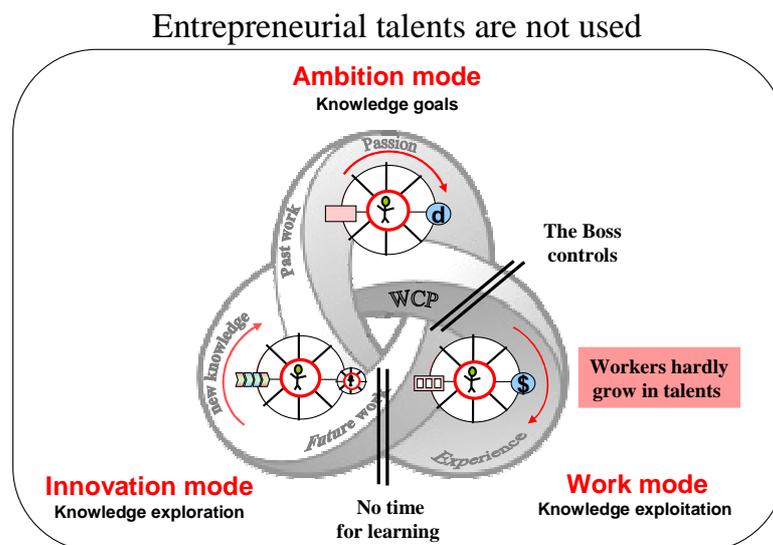


figure 1. Old learning and management attitudes prohibit an organization to improve itself.

Dynamic and responsive organizations

A client centred work approach changes the way in which processes are organised and the organization is directed. Task oriented working has to be replaced by performance oriented working, and top-down control needs to be replaced by self-control. This affects on its turn roles and responsibilities in the organization.

In the past, work was divided into islands (departments). Top-management determined the goals, sales formed the face towards clients, design developed new products, production made them according to specification. The integration of the entire process was a

responsibility of the management team, while the knowledge and entrepreneurial skills of employees was hardly utilized.

An entirely new organization comes into being if employees are empowered and are given time to think about innovation. The self confidence and motivation of employees increases when they play a role in the formulation of tactic and strategic goals. In addition they are given half a day per week for self-employment and the development of new concepts in teams. The entire enterprise will benefit because such a strategy improves its dynamic and responsive capabilities. It exploits available knowledge to its fullest.

2. Better utilization of talents

The ability to create value

The reversal from supply-driven to demand-driven business models requires that employees have to project their minds into that of the client. The understanding grows that a company earns money through its added value. A client is not interested in a car that is unreliable or unsafe. Client needs may also change so that the product/service portfolio may have to change accordingly. Changing needs should not have the consequence that the clients' investment has to be written off too early. Risks have to be understood from the clients perspective, and suppliers are expected to deliver performance above the clients expectations.

This new way of thinking has led to new business concepts such as the offering of transportation solutions in stead of cars or trucks, housing facilities in stead of buildings, and document flow solutions in stead of copiers or printers.

The ability to perform

The ability to create client value impacts the work and attitude of all employees in an organization. It calls for new skills in the form integral and lifecycle conscious design of product/service/market combinations.

Employees should get the time, space and facilities to respond to changing client- and market needs as well as to technological advances that offer new opportunities. As new processes usually do not run smoothly in the beginning, disruptions may occur. Disruptions of the primary process that occur frequently can be solved by routine-learning (1st order learning). But certain disruptions require extra effort and call for the human capability to (re)design a product or process. Design is an activity that happens more or less automatically in the working memory of people: if something doesn't work one way, it may work another way. Based on experiences, people can reuse solutions that were stored in their memory as a replacement of solutions that cause disruption. A design is practically always a new configuration of existing solutions.

If a boss stops controlling (i.e. stops telling people how they must do their work) employees are motivated to develop their own design skills. This can be reinforced by improving the quality of information and of the 'corporate memory' along with the development of competences for self-control. As a consequence, people's abilities to perform within an organization will grow.

The ability to innovate

Existing design solutions may be insufficient for certain problems. A need for new solutions and new knowledge emerges. People have to step out of their daily routines and think 'out-of-the-box' about innovations. This requires the ability of people to switch from the short term working mode (right lower corner of the triangle in figure 1) to a long term oriented development mode (left lower corner). Switching between these two modes calls for a person's ability to control.

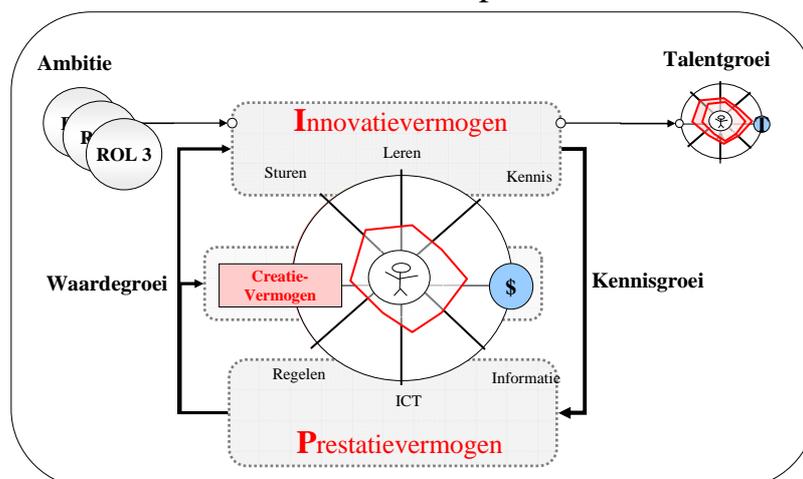
Regular production work has to be stopped for a while so that people can work in teams on new solutions. Based on goals and ambition existing knowledge is made explicit, shared and combined into new knowledge. But this time the pool of knowledge and skills is extended to that of the entire team. The creation of a corporate memory and a corporate innovation force expands the space in which solutions can be found drastically.

New (semantic) ICT tools which mimic human thinking enable the connection of new explicit knowledge. This is an evolutionary breakthrough in organizational development that copies the natural learning process of the bio-system. Also in this system one-cellular organisms have increased their chances of survival by developing into multi-cellular organisms in which different cells have different task allocations under the pressure of complexity (Heylighen).

World Class Performance

Meta-talents reinforce each other and lead to World Class Performance (the highest level according to the CMMI standard which was developed by Carnegie Mellon University). The ability to innovate ensures that old roles and tasks are redesigned into new, more valuable roles and tasks with the accompanying new knowledge. This new knowledge is input for the common corporate knowledge base which feeds the company's growing ability to perform. The new roles are input for the improvement of the value creation process. Only an integrated approach for learning how to Innovate, Perform and Create (the IPC skills) will ultimately lead to world class performance. The most critical factor for success and survival is increased learning speed – and with that a steep learning curve.

Nieuwe meta-competenties



3. How to improve employability?

Make talents debatable (the compass)

In order to facilitate talent growth, a compass has been developed. It depicts the main natural talents as a logical whole and mimics the working of the brain. A key factor for performance is the quality and speed of execution. Learning speed, for example, will grow if information from the long term memory can easily be retrieved. This requires (multi-entry) classification of knowledge. The design process in the working memory will be executed faster if functions are separated from symbols. These efficiency principles are made measurable on each of the eight axes of the compass. People can thus make a map of their talents in a particular working role and choose in which areas they'd like to improve. This instrument enables people to develop themselves autonomously or together with others.

Make work debatable (the map)

A second critical success factor is that work itself becomes debatable. Work is complex and its effectiveness is first of all determined by the end result, which is in many cases a physical object (a product or artefact). According to the SE standard, this work has seven stages with seven uniform roles for people. Each role requires the execution of sub-tasks, process control tasks and norm control tasks. This defines all the work needed to create a product. This working model mimics the way in which living organisms survive in changing environments.

Prof. in 't Veld made this model applicable in the form of a map that identifies all tasks in a generic way. This map enables teams and team-members to discuss the (re)distribution of work. In particular it covers the sequence of sub-tasks (horizontal), which may have to be extended with client oriented tasks, but also the (re)distribution of control tasks (vertical) that give people the freedom to make decisions autonomously.

Autonomous learning (the measuring device)

Now that talents are unlocked via the compass and work is made debatable via the map, employees are equipped with tools that support autonomous growth of their talents. They are not any longer dependent of third parties, such as employers or teachers. Employees can develop from role to role and from work type to work type. Their employability increases drastically. Measurement of their capabilities in the compass relates to their current role which can be identified on the map. By doing this for all roles, a total picture emerges of the organization. This forms the basis for a programme for improvement. In particular roles that are critical for success and have a low score should be addressed first (low hanging fruit). A decision about the strategy of growth is taken jointly by all levels: bottom-up (shopfloor level), from the perspective of daily pressure points, and top-down (management team), from the perspective of strategic company goals. By putting together the right people in the right roles in teams, it becomes possible to align sales, design, production and servicing optimally.

Teacher is on the critical path.

Methodical innovation enables the improvement of roles or the substitution of old roles by new ones. The innovation talents of participants grow. These talents are of a meta-cognitive

nature: knowledge about knowledge, knowledge about learning, and knowledge about changing. These new kinds of knowledge require the involvement of education in the form of an innovative curriculum. This implies that also in education old roles of teachers have to be redeveloped into new roles including the development of teaching material for talent growth. They also have to develop meta-cognitive skills, and help enterprises with the coaching of innovation projects. Their focus will shift from teaching of what they know to the acceleration of the self-learning and knowledge acquisition processes of students. This is the transition process that education has to undergo so that it can grow further in co-operation with industry.

4. Guideline Mi; On the Job training of Innovation Directors

Phase 1. Determine goal and direction

- Step 1: Make a map of the environment and the business process at organisational level. Shows context.
- Step 2: Describe opportunities and threats in a Cause and Effect analysis. Shows goal and function.
- Step 3: Make a scan of the organization. Shows current status and aspect of improvement.
- Step 4: Choose a pair of roles and define the required improvement.

Phase 2. Design the role

- Step 1. Make a model of the roles using system theory and measure current performance.
- Step 2. Identify gaps and select principal solutions for improvement.
- Step 3. Make integral design of the new or improved role including the work place.
- Step 4. Formulate the approach on organizational, team and work place level.

Phase 3. Create new knowledge in learning teams

- Step 1. Form team, externalize knowledge and create new knowledge.
- Step 2. Modularise new knowledge and reduce redundancy.
- Step 3. Express new knowledge in tools and make it accessible for reuse (as-defined)
- Step 4. Describe the new role and measure the growth of talent, productivity and/or value.

Phase 4. Secure improvements in the organisation

- Step 1. Secure the new role and knowledge within the organization and adjust goals.
- Step 2. Explore with management team alternative innovation strategies for follow-up.
- Step 3. Make plan for implementation and cost/benefit analysis for roll out in the organization.
- Step 4. Communicate results and plan of action to the organization.

Duration is 6 to 9 months in which every three weeks a workshop session is held in which innovation directors are coached to implement an innovation project, on the job, within an enterprise. On average 5 employees will be involved, jointly with the management team for concurrent growth. Methodical Innovation is a cyclic process that repeats itself frequently and results in a learning enterprise.