



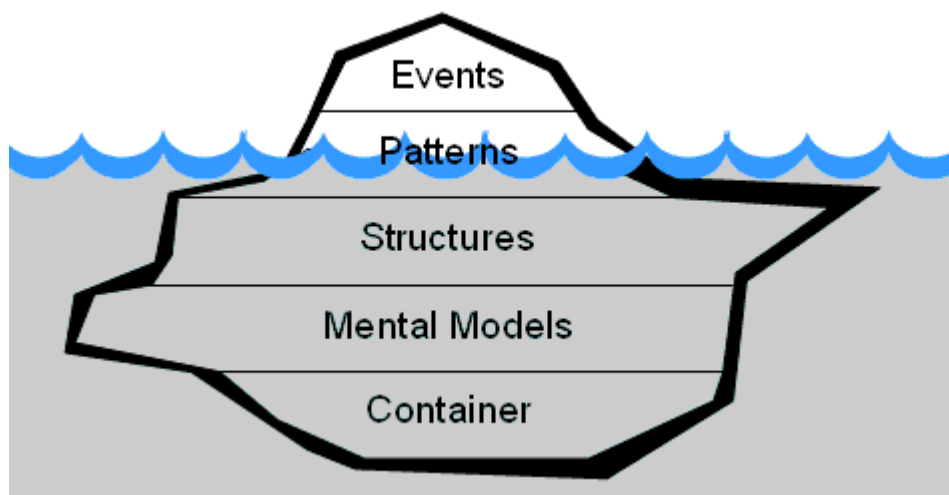
Systems Thinking, the iceberg theory of Daniel Kim explained for YEBISU by André Huigens

Introduction

An iceberg is an interesting thing. Typically, only one-tenth of its volume is above water, so most of it cannot be seen. In addition, the shape of the underwater portion can be difficult to judge by looking at the portion above the surface. These two observations are the background for the everyday expression “tip of the iceberg.” Generally, it is used to mean that what you can see is only a small part of the whole situation. In other words, there is much more below the surface and what it looks like may surprise you. Just like an iceberg, a lot of what is going on in our world is hidden from view. In order to effectively observe and understand the world we need to “surface” these deeper levels of understanding. Doing this can help us make sense of our world and formulate more effective responses to new situations.

“...a lot of what is going on in our world is hidden from view.”

The Diagram



The Systems Thinking Iceberg

The iceberg is one analogy frequently used to introduce systems thinking. Different authors present the iceberg model as having from three to six levels.

What we Learn

- There is a lot in our world that is hidden below the surface.
- The iceberg diagram (can be viewed in three ways. All of them are useful.
 - It can be viewed in terms of different entities that exist in the universe: event, patterns, structures, mental models, and containers.
 - It can be thought of as showing different ways of seeing the world. That is, you can focus on seeing the world as events, patterns, structures, mental models, or a container.
 - It can be looked at as a doorway to a new worldview — Systems Thinking. When we pass through it we encounter what we think is a new world. However, we soon realize that we are not seeing a new world, but rather our old world through new eyes.

"...we are not seeing a new world, but rather our old world through new eyes. "

First conclusions

- Systems Thinking is a useful and powerful worldview that can give us a new perspective on our world.
- The Systems Thinking Iceberg is one doorway to a different worldview.
- As you descend through the levels of the iceberg, the concepts become more abstract and subjective while the scope becomes larger. Solutions to problems generated at each lower level tend to be more innovative and have a more substantial impact.

Levels of Thinking

The Event Level

Most of us see the world as a series of “events” — things that happen. Most of these events are routine, like eating breakfast. Some pose a threat to our well-being, like that guy who almost hit you on your way to work this morning. Many that we notice present themselves as “problems” we must solve, like the leaky faucet in the kitchen. Events are markers in time where multiple variables are observed. For example, the temperature at Amsterdam airport at 11:00 am on January 3, 2011 was 2 degrees C Or my car had an oil change at Frankfurt, Germany on March 20, 2011 at a cost of Euro 48.95 with the work being done by a mechanic named Jörgen.

Most of the world spends its time at the event level. It is how we perceive the world while going about our daily business. When we view problems at this level our solutions tend to be reactive.

"Events are markers in time where multiple variables are observed. "

The Pattern Level

Patterns are the changes in variables that occur over time. Since these variables are frequently observed as parts of events, to see these patterns we start by asking ourselves the question, “Which events seem to go together?” — that is, we speculate that certain events are in some way related. Then, using the accumulated memories of the events, we view them as a series in order to see a pattern. More specifically, we look at the variables that are involved in the events and examine how they change (or stay the same) over time.

While the world does not spend as much time at the pattern level as it does at the event level, it does “take the escalator” to this level quite often. We hear it when people say, “Wow, your kids have grown,” “It takes me longer to get to work,” “The leak is getting worse,” or “I don’t go to Starbucks anymore.” On the other hand, there are many patterns that are never recognized. For this reason, pattern level is half-above and half-below the water line in the iceberg diagram.

When we get to the pattern level we can anticipate, plan, and forecast. It allows us to adapt to problems so we can react more effectively to them.

"Patterns are the changes in variables that occur over time."

The Structure Level

The next level down is the structure. Structure answers to the question, “What is causing the pattern we are observing?” Just as invisible ice below the water supports the visible tip of the iceberg, the structure supports and creates the patterns we see in the events. It may not be easy to see the structure, but the patterns we can see tell us that the structure must be there.

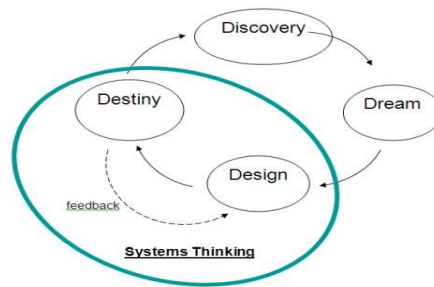
Structures are composed of cause-and-effect relationships. These are connections between patterns. For example, a farmer might say, “If I increase the number of chickens, I will get more eggs.” He is saying there is a connection between an increasing number of chickens (a pattern) and an increasing number of eggs (another pattern).

While most of the world thinks in terms of this kind of *linear* cause and effect, the patterns we observe can best be explained by circular cause-and-effect relationships called “feedback loops.” For example, that same farmer might observe, “If I get more eggs I can hatch some and get more chickens, which eventually will lay more eggs which will produce more chickens.”

Relationships are harder to see than things. As a result, the world seldom digs down to this level of thinking. That is unfortunate because there are some rewards for getting to this level. In particular, at this level it is easier to see more proactive solutions to problems.

"Structures are composed of cause-and-effect relationships."

More accurately, these are relationships where one thing influences another.



The Mental Model Level

Mental models are what keep the structure doing what it does. They are the thoughts and reasoning that must exist (or must have existed) that cause the structure to be the way it is. These thoughts exist in the minds of the structure's stakeholders — the people who set up the structure or those that play a role in the way it operates. Everything that makes up a mental model is difficult to identify. Some of its elements are attitudes, beliefs, morals, ethics, expectations, values, and experiences. For this reason, the Mental Model level is seldom explored. Mental models are well below the water line in our iceberg diagram.

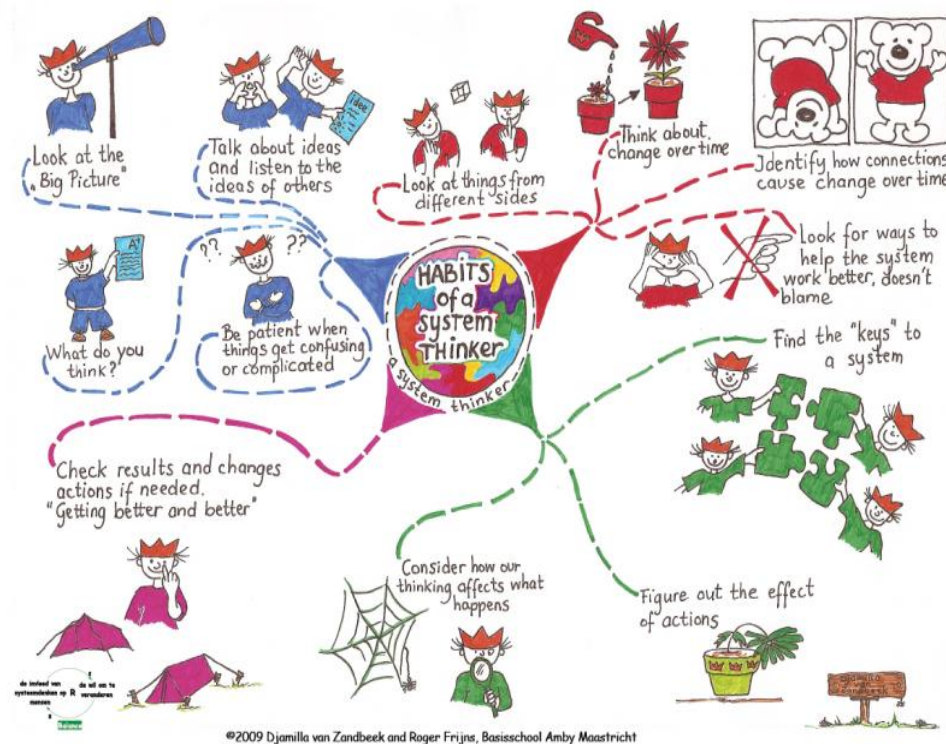
The “escalator” down to this level seems to be obvious. First, identify the stakeholders who set up the structure and determine what they were thinking, perceiving, believing, or assuming that made the structure the way it is. Then, identify the stakeholders who currently operate and influence the system and determine what they think, perceive, believe, value, or assume that keeps it operating the way it does.

While this sounds simple, getting to this level can take a lot of work and commitment. The reasons for this are:

- Most people don't know their own mental models.
- Most people don't want to be told what their mental models are by others.
- Some people may tell you what their mental models are but act in a way that reveals that the models they are using are completely different.
- The people who set up the structure may no longer be available.
- The structure may have evolved. No one person or group of people set it up to operate the way it does.

The Mental Model level is a powerful level at which to think and work. Solutions to problems that are created at this level are hard to implement, but when successful can be generative in their impact — they can bring something into being that did not exist before.

"Mental models are what keep the structure doing what it does."



The Container Level

The last or lowest level is the Container Level. A container is the framework of thought that shapes and constrains our mental models. At its foundation are a set of beliefs, goals, and values that are so "core" to the individual or society in question that they are seldom brought to the surface or challenged. These values and beliefs are instilled in us by traditions, teachings, training, images, and stories. They are promoted and defended by our scientific, social, religious, economic, educational, or governmental institutions.

Most of the Western world stores its mental models in similar containers. We share a common set of assumptions about the nature of reality, our role in it, how we experience it, how it should be explored, how we should think, how we should act, etc. This is the basic framework that allows us to make sense of the world. It is how we believe the universe works. In the true sense of the word this is a "worldview." It allows us to recognize patterns and ignore unimportant information. Without it we would be unable to survive.

To identify a worldview we need to identify what is limiting or shaping our thinking, reasoning, and actions. One way to approach this task is to consider all the things these institutions have taught you that are limiting your thinking on a particular subject. This will be difficult. Many limits will be hard to detect. At first you will only get fleeting glimpses of some of them. After a while they will become more visible. You will probably not want to change them. However, just being aware of what they are and how they limit what you think will be helpful.

One thing that helps you see your container is to study other containers. Two ways come to mind.

- Study cultures of the past. Try to understand their beliefs, values, and goals and how they were reinforced and reflected in their institutions,

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- A more dramatic way to see your container is to immerse yourself in a non-Western one. Observing it up close and in depth will reveal many of your values and beliefs. We call this “culture shock.”

As you pursue the concept of escalated thinking you will catch glimpses of the container that shapes your mental models. This is something most people never see. You will also learn how to step inside another container or two — alternative worldviews. None of these are “right” or “wrong,” although some may be more or less appropriate when looking at a particular issue or living in a particular age. Solutions to problems that are successfully addressed at this level are “explosive.” They change and disrupt everything. Problems aren’t really “solved” at this level, they are “dissolved.” The changes made at this level change what we are concerned about. Old “problems” are no longer important or have obvious solutions.

"A container is the framework of thought that shapes and constrains our mental models."

Discussion or dialogue

This diagram of levels is useful because it helps us “take the escalator” from one level of thinking to another. Because it follows a nice, orderly, rational progression to get from level to level, most people are comfortable using it. It fits well into the container of Western thought. This makes it convenient doorway into the worldview of systems thinking.

When you are successful in using the diagram or the learning circle, you will be able to see your problem or situation at five different levels and see it at all five levels simultaneously. When you compare this five-tier perspective on your situation with the singular perspective with which you started, you will realize that using the diagram has given you a different worldview — a new container — which is the deepest level.

As you descend through the levels some patterns emerge:

- **The scope gets bigger.** Systems thinking is based on seeing how the piece you are looking at fits into a bigger whole. Traditional analysis techniques assume you are starting with the whole and the goal is to take it apart and understand the pieces.
- **What you are looking for becomes more abstract.** An individual event is easier to understand than a pattern of events. A pattern of events is easier to understand than the underlying structure that causes that pattern. The structure underlying a pattern of events is easier to understand than the beliefs, thinking, and moral judgments that set it up, etc.

Solutions to problems generated at each lower level tend to be:

- **More innovative.** The reactive solutions found at the event level are replaced by creative and generative solutions at the mental model level.
- **More difficult to implement.** At each lower level more people will be impacted and the reasoning behind the change will be less understood. There will be more resistance to change.

- **Bigger in impact.** They will produce more dramatic results for longer periods of time.

"...see your problem or situation at five different levels, and see it at all five levels simultaneously."

Hints

- While working your way through this diagram of levels and connecting it in a cycle feel free to move back and forth between levels. In fact, it is almost impossible to move through these levels without moving around in this way. As your understanding of a deeper level improves it may bring new insight and detail to the levels above it. Sometimes new events or seeing new patterns of events will cause you to change the structures. It can also challenge whether a belief is really part of our mental model.
- The basic message of the Iceberg diagram is that every situation can be addressed at a variety of levels. The challenge is to choose the appropriate response at the appropriate level. Not every level needs to be explored in every situation.

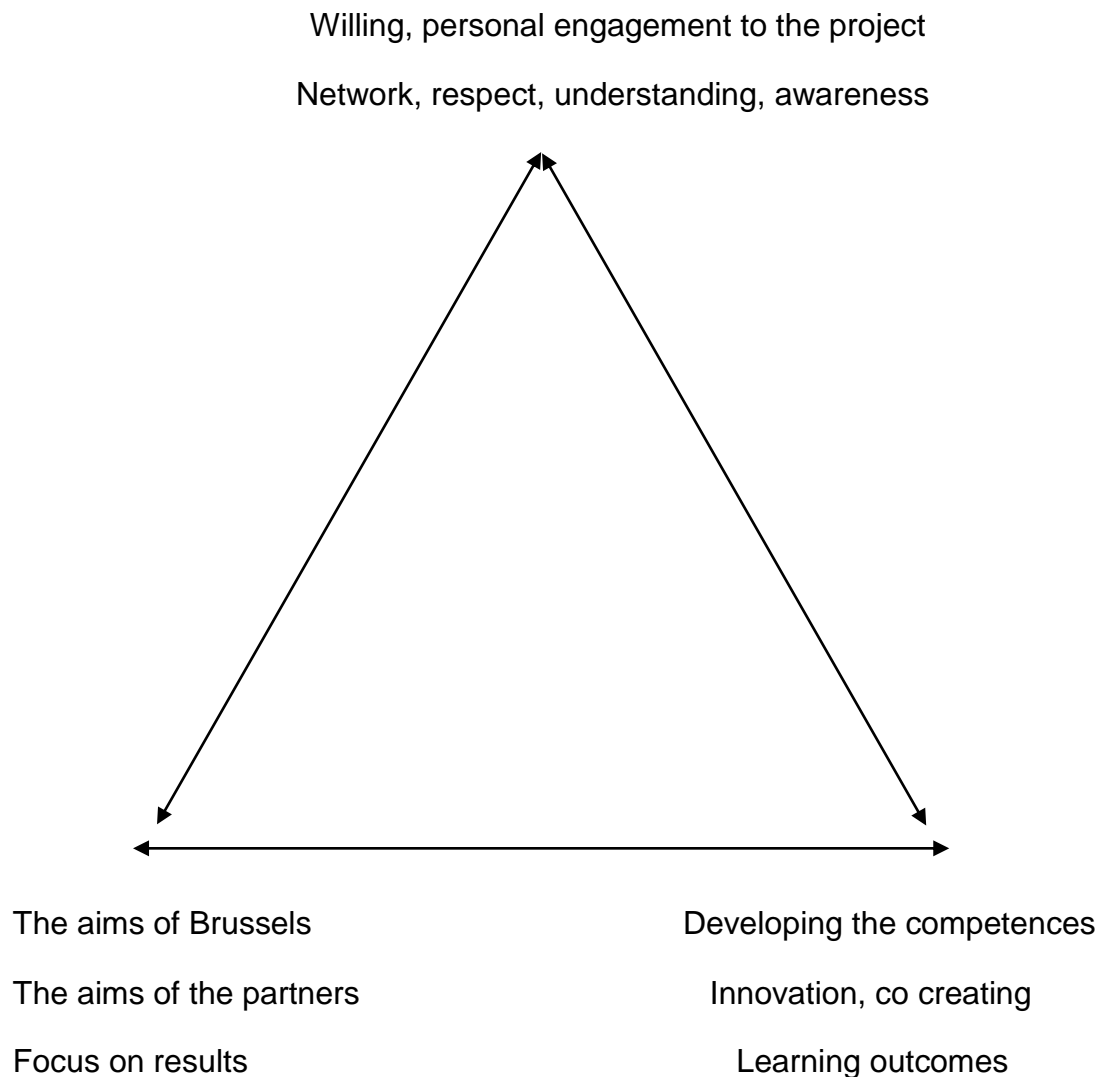
"...every situation can be addressed at a variety of levels."

Warnings

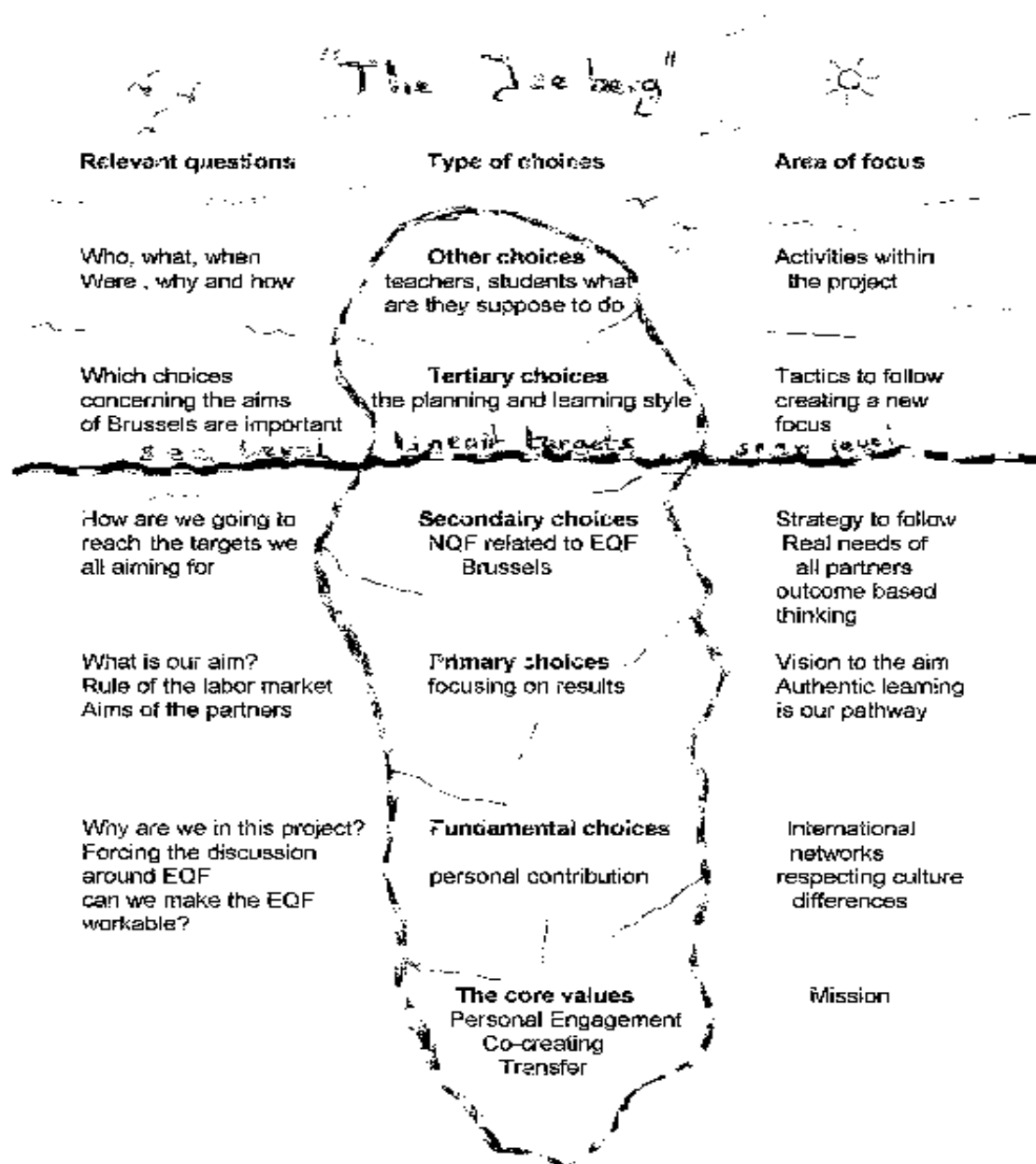
- **You will be out of step with your peers.** With a little practice in riding the systems thinking escalator, you will be able to access a worldview that those around you do not have. This will give you insight into problems and circumstances that others do not have. You will have a multi-tier view of a world while others only see events and perhaps patterns. You will see feedback loops and structure where others look for root causes. You will bring mental models to the surface. You will be frustrated.
- **It is addictive.** Once you get a taste of this new worldview with its multiple tiers and feedback loops you will want to revisit it more often. Soon, you will be uncomfortable with the linear, event-based worldview where you started.

The link with YEBISU project and the theory U:

Basically in all actions within your company everything is depending on the balance within The triangle of the values concerning any work process. An example is our own YEBISU project, see figure on next page:



This triangle has to be in balance, and we have to be aware of this. That is why we are using the U theory in this process. It is the practical approach of the combined theory of Daniel Kim and Otto Scharmer. I used for this the ice berg process we went through in EQUFAS project with all my partners and it shows the relevant questions need to solve the deeper problems as described in the escalator theory of Daniel Kim in the ICE berg theory.



The outcomes of a *presencing* process within the daily work of a company:

1. The core values:

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- Transfer: we have to take our procedures through all levels within our work, make it understandable for all levels, so transfer!
- Clear responsibilities of all employees in a high transparency also relate to clear results!
- Co-create in a network of national and International partners.
- Talk freely and be flexible within your own team.
- Commitment and personal engagement to the company aims.
- International experience for all partners in all levels!
- Clear learning methods, a practical approach complexities, authentic learning way!
- Work with and in different cultures, be aware of the consequences and respect these.

Discuss the background of these core values with your employees and give feedback from your personal view on these subjects. These core values can be compromised into three or four but you have to keep them like this and use them as our mirror in the progress of your work/communication with your employees. The question will be: Are we able to make decisions and handling from these core values?

2. The fundamental choices:

- Force the discussion about the company aims and how to reach them.
- Every decision will be related on trust in each other, help, honesty and coherence in team thinking and team learning.
- Focus on personal mastery and ask for personal development.
- Rely on personal contribution to the success of their work.
- Work with EQF as a tool for life long learning within your company, that is a paradigm shift. It's a 'learning by doing' experience!
- Respect differences in cultures, and it must be a goal for companies to participate in networks.
- Search for new opportunities for International contacts between entrepreneurs, employees, and the labor market. Feel the spirit of Europe as it is more than the financial crisis.

3. The primary choices:

- Authentic learning will be your pathway.
- Enterprises, your employees and representatives of the labor market, students and teachers will work together towards the same goals.
- The labor market/ enterprises will be playing a key part in the development of new employees, be sure to be partner in this. The sooner the better!
- Use the theory of Hofstede as the basis for facing the culture differences while working with employees from different cultures:

The five culture differences related to Hofstede's theory.

- ✚ Is the society within a country Masculine or Feminine
- ✚ What is the Power distance within the society of the country?
- ✚ Is the society within the country Team thinking or Individualistic?
- ✚ Is the society within the country Risk avoiding or Risk taking.
- ✚ Is the society within the country Long term- or Short term thinking?

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4. The secondary choices:

- Develop your own view to translate your own vision to a workable system and will use helpers/ specialists on your pathway.
- Go for SMART formulated competences related to levels of the EQF and expected behavior of your employees.
- There will be a direct line between Strategic, Tactical and Operational Levels within your company.
- Be aware of the real needs of your employees, your customers and will relate them to your concerted actions.

5. The tertiary choices:

- Make a planning in time for what you want to reach and use mile stones.
- Work for the development of individual employees with an assessment tool, portfolios and look for the use of ECVET.
- Communication between all employees within is number one but do not forget to communicate with your customers! Clear decisions have to be made concerning this and communication is something you have to organize!
- The learning style have to be based on authentic learning, related to outcome based competences.

6. Operational choices like:

7.

When	What	Where	Who
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Or:

What	Answer	Action
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Credits

References using the Systems Thinking Iceberg:

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