

The Idea Mill Model

Idea generation tool for SMEs at the beginning of the innovation process



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1. Foreword

The Idea Mill model is a tool for front-end practices of SMEs at the beginning of the innovation process. The model combines product and service ideation, forecasting and utilisation of cross-sectoral networks in a systematic process. It was developed during the previous Idea Mill project and implemented in the central Häme region between 1 December 2009 and 31 December 2012. Key funding bodies were European Social Fund, the Häme Centre for Economic Development, Transport and the Environment, and the HAMK University of Applied Sciences.

The project focussed on metal industry SMEs in the Häme region. Subcontracting has traditionally been the core market for these companies, but with the decline in subcontracting, the need for developing products and services and for networking has become apparent in the effort to support and safeguard their business opportunities.

The Idea Mill model was developed through seven pilot projects implemented by the HAMK Häme University of Applied Sciences, the Finland Futures Research centre at the University of Turku, and Innosteel Factory Oy. All in all 14 metal industry companies, 25 other companies, 14 private and public organisations and students of HAMK and other educational institutions took part in the pilot projects.

The following provides insight into the objectives, foundation and processes of the Idea Mill model. We have included cases and experiences from the pilot projects implemented during the Idea Mill project. At the end there is also a list of links to websites on forecasting and developing business opportunities. It provides a platform for enhancing knowledge about innovations and business development. The Idea Mill model is also freely available online in Finnish at <http://jauhin.hamk.fi>.

2. Overview of the Idea Mill model

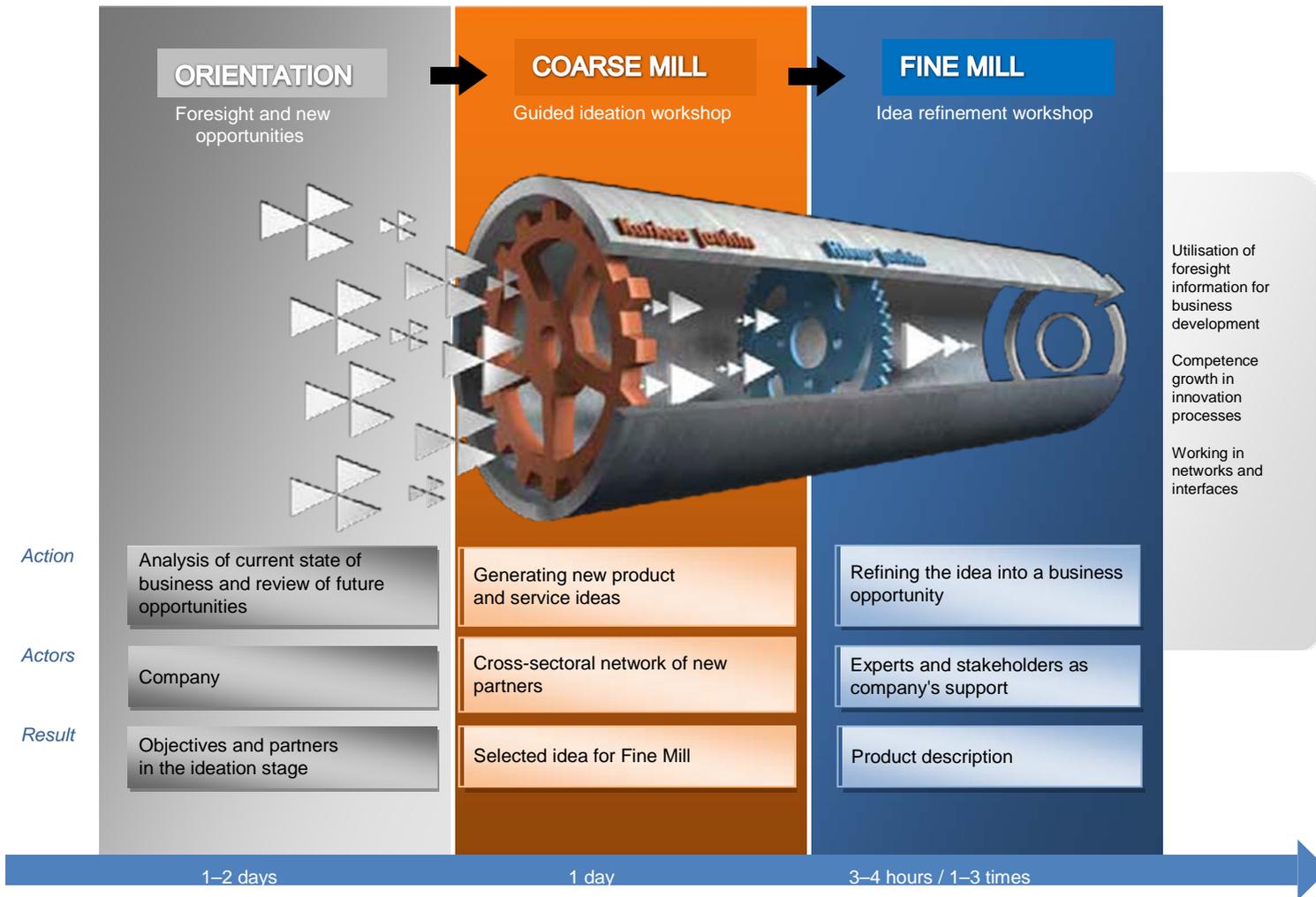
The Idea Mill model is used for generating and refining new service and product ideas that have business potential. It can also be used for developing existing products and services. The Idea Mill model is based on forecasting and cross-sectoral networking.

The aim of the model is to establish the use of forecasting and futures information in business development, to enhance knowledge about innovation processes, and to make a networks and cross-sectoral interfaces into a natural operating environment for companies.

The model is divided into three chronologically linked processes: orientation, Coarse Mill and Fine Mill. Figure 1 illustrates the progress from stage to stage.

Figure 1.

The Jaumin model is a tool for SMEs at the beginning of the innovation process



The objectives for innovation work in the Idea Mill process are defined during the orientation phase. The objectives are obtained by analysing the company's current state of business and forecasting its future business opportunities. At the same time, cross-sectoral partners with the potential for business collaboration are defined. The orientation phase results in a plan for implementing the Coarse Mill stage. The Coarse Mill stage is an intensive collaborative ideation workshop with the participating company and its cross-sectoral partner networks. The result of this stage is the selection of an idea that will be further developed and refined in the next stage: the Fine Mill stage. The Fine Mill stage is an evaluation and refining workshop for the selected idea. During the Fine Mill stage, the idea is commercialised into a new product with the help of experts and specialists. The result of the Fine Mill stage is a product description for a new product family, which is then taken forwards to a product development process and a business plan is formulated.

2.1. The Idea Mill model as a tool at the beginning of the innovation process

The Idea Mill model is based on the Stage Gate model developed by Robert G. Cooper in 1988 (Figure 2). It describes the journey of a new product from a development idea to a commercially available product and final evaluation. The model defines five gates between each development phase. These gates work as check points when moving on to a new phase. The Stage Gate model aims at ensuring a successful and controlled product development process.

Ideation for new products is often inconsistent and lacks a systematic approach and process. For this reason, the pre-discovery phase is often called "the fuzzy front end". This Idea Mill model aims at systematising and clarifying the fuzzy front-end and making actions a controllable and purposeful process.

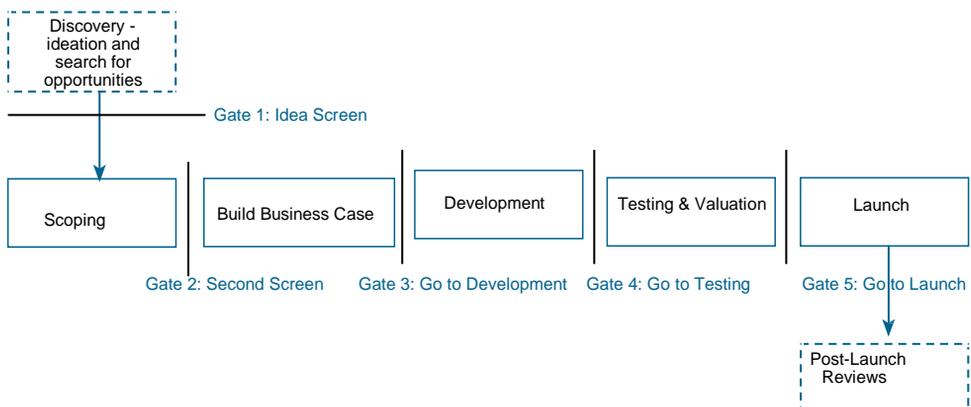


Figure 2. Stage Gate model by Robert G. Cooper. Source: <http://www.prod-dev.com/stage-gate.php>

2.2. Implementation of the innovation process with the Idea Mill model

Learning and implementing a new model requires competencies and resources that SMEs tend to lack. That is why Idea Mill's innovation process is implemented with guidance and support from business service organisations. Companies with innovation experience or product development resources can also implement the Idea Mill model independently.

An innovation process implemented with the Idea Mill model requires comprehensive business planning and understanding as well as allocating time and resources needed for the process. Before embarking on the process, the participating company has to make a conscious decision about giving the process all the attention it needs and directing the work of all its actors to the objectives and progress of the endeavour. Each phase is planned and prepared in accordance with the Idea Mill model. Success of the phases is evaluated and, if necessary, corrective measures are taken to proceed smoothly and efficiently on to the selected objective. The goal is to make the Idea Mill model a permanent and established part of the company's innovation process.

2.3. Forecasting with Idea Mill model

Forecasting or foresight consists of forward-thinking actions aimed at improving long-term re-invention abilities and the accuracy of innovations. It is also systematic information acquisition about societal, economic and technological developments and future client needs. Foresight information helps companies to steer their strategy so that their operations are planned and developed with a view to long-term prospects and global challenges. Foresight also entails a review of new opportunities, threats, challenges, trends and changes. Foresight information can help identify new or emerging customer needs and changes in the operating environment. Successful companies don't just adjust to current changes: they strive to look beyond them.

The Idea Mill model connects foresight information to the development of new products and services. Foresight information is used for ensuring future competitiveness and sustainable innovation measures. In order for the objective set in the orientation phase to lead to a new product description, it must be based on information that is as accurate as possible, as well as on a vision of technological development and changes in the operating environment. While the approach is systematic, it also leaves room for accidental discoveries. In other words, innovations are not sourced from scientific research findings. Instead, they are derived from foresight information and external challenges and impulses, such as new client and user requirements and competitors' products. The benefits of foresight information are emphasised at the beginning of a new product development process, when planning the direction to be taken.

The orientation phase of the Idea Mill model is the time for recognising and analysing the change factors that affect the company's business and product development. An eight-field SWOT analysis is used to define the company's current state of business and its future opportunities and threats. Idea generation during the Coarse Mill stage is about awakening a forward-thinking approach with the help of presentations, imaging, etc. In the Fine Mill stage, the foresight information is brought out in a more mature formulation to firmly link it with the idea selected for further refining. Information is merged, interpreted and modified to form new business opportunities and actions from the perspective of the companies involved in the process. The Idea Mill model makes foresight into reality through a continuously updated and modified process.

2.4. Benefiting from cross-sectoral network

The Idea Mill model is used for generating new ideas and innovations with a heterogeneous cross-sectoral group in which each participant makes his or her own perspective and experience available for everyone's use. A cross-sectoral network comprises potential users and clients for the new products under ideation, plus representatives from other sectors that are connected to the products and the experts. The Coarse Mill stage uses the participants' experiences and competences as a foundation for the generation of ideas. By combining them, we can find new opportunities and solutions to problems outside or on the edge of the experience of the implementing company. Deploying cross-sectoral networks makes available a wide range of expertise, synergies created at sectoral interfaces, and opportunities for new business development.

3. Orientation

"Notice things you have never seen before."

The objective of the innovation process implemented in the Idea Mill model is set in the orientation phase. During this phase the company commits to completing the Idea Mill process and implementing in its business the changes that emerge during and as a result of this process. In the orientation phase, the company analyses its current state of business and forecasts new business opportunities. This analysis brings about a synthesis of necessary actors and actions and lays out the objective for the Coarse Mill stage. The objective is formulated as a problem for which the Coarse Mill stage seeks a solution. The orientation phase is also the time for acquiring the new partners and cross-sectoral networks necessary for the innovation process and the resulting business plan. At the end of the orientation phase, the company draws up a plan for proceeding to Coarse and Fine Mill stages. Figure 3 presents an overview of the orientation phase.



Figure 3. Orientation process.

3.1. Analysis of current state of business

The company's current state of business is mapped using 4-field SWOT analysis to review the company's internal strengths and weaknesses and external opportunities and threats. The analysis must be based on existing facts, not wishes or desirable outcomes. It starts with a review of the company's internal operative strengths and weaknesses, which are entered in Fields 1 and 2. These will form a concise summary of the company's internal status.

Fields 3 and 4 in SWOT analysis indicate external threats and opportunities, which are independent of the company, and they are analysed with using foresight methods.



Figure 4. 4-field SWOT analysis.
 Source: Koskinen, K. 2006. Johda yrityksesi osaamista – näkökulmia pk-yrityksille.
 [Manage your company's competence – perspectives for SMEs.]

3.2. Forecasting future business opportunities

To gain a picture of the company's future opportunities, there are several foresight methods available. The recommended ones are reviewing operating environment changes and the PESTE analysis. It is also possible to use both methods and produce a summary of their results. Both methods look at phenomena and matters that in one way or another can create changes that impact the company's operating environment. The timeline for the review should be moderate: between three and five years. Some phenomena may be temporary; some may entail long-term effects; and some may have indirect impacts.

Forecasting future opportunities opens your outlook not only to the company's own sector but also to other sectors and technological development. An extensive analysis of the company's own operations and observation of changes in the operating environment of other actors ensures the most likely future opportunities and new business opportunities. By observing other sectors, the company can identify the new partners with a potential for developing and implementing new business.

Future opportunities and threats that are discovered with the help of forecasting are written down in Fields 3 and 4 in SWOT analysis: these fields indicate the company's future operating landscape.

3.2.1. Forecasting by observing changes in operating environment

Reviewing the changes in the operating environment means observing and reviewing phenomena that are perceivable today and understanding future scenarios created by events, decisions and choices. This method involves tracing and identifying megatrends, trends, weak signals and driving force phenomena - illustrated in Table 1 - in the company's operating environment. The observed phenomena are defined by locating their sources and actors. Each phenomenon is evaluated in terms of the likelihood, growth and spreading of the changes. The review concludes with an identification of opportunities and threats brought on by the phenomenon or change from company's business perspective.

Table 1. Megatrend, trend, weak signal and driving force phenomena.
 Source: Futurix (2005) Toimintaympäristön muutosten tarkastelu.
 [Review of changes in the operating environment.]
http://www.futurix.fi/materiaalit/tutkimus/03_lahestymistapoina/06_toimintaympariston_muutosten_tarkastelu/01_johdanto?C:D=347610&selres=347610

Megatrend	<p>Megatrends are great forces or waves of development and uniform entities with a perceivable history and a clear direction of development. Megatrends are born out of emerging trends, bundling them into larger entities. A megatrend may, as part of the trends it entails, include confusingly opposite trends.</p>
Trend	<p>A trend is a general direction or flow of a phenomenon under observation, or a change pattern within a phenomenon. It means a change that takes place over a long period of time towards a specific, clearly observable direction. Trends direct decisions by influencing our choices, taste, preferences, etc. Trends are based on the assumption that certain phenomena will probably continue to go in the direction they have followed so far. Forecasting reviews not only trends but also potential changes to their direction and speed. Trends can be parts of larger megatrends.</p>
Weak signal	<p>A weak signal is the first indication of a change or a new phenomenon. Weak signals are often literally weak, almost imperceptible. It can be a push that changes the course of events decisively towards a different direction. At the same time, it is a beginning of a new trend.</p>
Driving force phenomena	<p>Driving force phenomena are invisible societal change instigators that are related to attitudes, values and valuations, impacting changes in these. These phenomena are related to the 'zeitgeist', and they direct our decisions, choices and work either at a conscious or an unconscious level in the reasons behind our choices. Driving force phenomena are often culture- or generation-related, and do not necessarily continue in the future. These phenomena direct our behaviour and choices without us necessarily being aware of them.</p>

3.2.2. Forecasting with PESTE analysis

PESTE analysis is a method of business futurology, which investigates the political, economic, social, technological and environmental state and future of a phenomenon or an organisation. PESTE analysis maps our changing world and the factors that impact it, as well as their interplay and impact on a company's business. The analysis is aimed at investigating and identifying various phenomena widely and defining these phenomena in relation to the PESTE change factors (Table 2). The phenomena are categorised into opportunities or threats to the business, and their respective levels of significance are evaluated and prioritised.

Table 2. PESTE change factors and phenomena they may cause.
 Source: PESTel analysis: <http://pestel-analysis.com/>

Change factor	Phenomena
Political	<ul style="list-style-type: none"> - national legislation - EU legislation - changes concerning public procurement - quality systems as precondition for operations - public business subsidies for development and training
Economic	<ul style="list-style-type: none"> - economic trends - sectoral cycles - changes in competitiveness - globalisation of the sector
Societal	<ul style="list-style-type: none"> - consumer behaviour - availability of and need for workforce - changes in attitudes towards work - demographics - migration - changes in competency needs
Technological	<ul style="list-style-type: none"> - virtual world - networking - technological changes - production technology in the sector
Environmental	<ul style="list-style-type: none"> - global natural resources - environmental problems - the EU's environmental agreements - natural disasters

3.3. Orientation phase summary

The orientation phase will conclude with a summary that expands the 4-field SWOT analysis into an 8-field one using a synthesis of internal and external fields. The synthesis serves to help select the objective to be pursued in the Coarse Mill stage. This objective is that the problem can be solved through ideation in the Coarse Mill stage. The synthesis also helps provide an overview of the partners needed to move forward. These partners will be invited to participate in the implementation of the Coarse Mill stage.

INTERNAL	1. STRENGTHS S	2. WEAKNESSES W
EXTERNAL	3. OPPORTUNITIES O 5. USE S+O Future success factors	6. DEVELOP W+O React to weaknesses
	4. THREATS T 7. PREPARE O+T React to threats	8. PREVENT W+T Crisis situations

Figure 5. Applied 8-field SWOT analysis.
Source: Koskinen, K. 2006. Johda yrityksesi osaamista – näkökulmia pk-yrityksille.
[Manage your company's competence – perspectives for SMEs.]

The synthesis will be made by reviewing the internal and external factors observed during the orientation phase according to Figure 5 above. Success factors that can be achieved by utilising the company's internal strengths and external future opportunities are indicated in field 5 of the SWOT analysis. Field 6 is used for indicating the steps taken to adapt internal weaknesses to match external opportunities. Field 7 is used for indicating the internal steps that can be taken to react to future threats and possibly translate them into opportunities. Field 8 is used for indicating crisis situations generated by internal weaknesses and external threats together: these situations should be avoided at any cost.

The Coarse Mill stage can cover any factor or measure considered to be important for the company's business and indicated in Fields 5-8. The objective can best be deduced from new client and user needs that emerge in future or opportunities offered by technologies. The best alternative with the most potential for the company's future will be extracted from these options as the problem for which solutions are sought for in the Fine Mill stage. The objective and the problem are deduced as shown in Table 3.

Table 3. Possibilities in defining the objective and the problem for the Fine Mill stage.

Objective of Fine Mill stage	Problem to be solved
To generate ideas for new products and services for a new user and/or client needs.	A possible future specific client or user need that the company can solve using its strengths
To generate ideas for products and services utilising new technology.	A new product, service or production method that is based on new technology and whose applications offer opportunities for the company.
To generate ideas for improvements on current products and services.	A current service, product or production method that can be made more competitive by utilising new customers, users, technologies or collaboration networks.
To generate ideas for business change and new business.	The company's internal strength factor that supports future opportunities that can be developed into a change in business or new business.

The objective of Coarse Mill stage and the problem to be solved will define partners and participants selected for implementing the Coarse Mill stage. Partners and participants are defined loosely with a view to the problem to be solved so that all perspectives and possible solutions can be examined. Representatives of clients and users, experts and entrepreneurs from other sectors, and other experts and students can be invited as partners.

To conclude, a preliminary implementation plan for the Coarse Mill stage will be drawn up. It covers the Coarse Mill stage objective, the problem to be solved, implementers and participants, required resources and scheduling, and evaluation and documenting principles of the Coarse Mill stage.

4. The Coarse Mill process

"New ideas from people with a fresh perspective."

Coarse Mill is a one-day cross-sectoral and societal ideation workshop. Its aim is to generate as many new ideas and solutions as possible. During the day the participants develop solutions, and then refine and evaluate them. After the evaluation, they select one idea for further fine-tuning in the Fine Mill stage.

The implementing company sets the time and place for the Coarse Mill day and invites the participants. The participants are given a package of advance materials to support ideation during the workshop day. Presentations and speeches that open up the goal of ideation and stimulate the generation of ideas are also agreed upon. Ideation is planned and implemented with the appropriate ideation method. The objective achieved from ideation is used to determine evaluation criteria and select an idea for the Fine Mill stage. At the end of the Coarse Mill stage, the success of the workshop is evaluated and a plan for proceeding to the Fine Mill stage is made. Figure 6 presents an overview of the Coarse Mill stage.

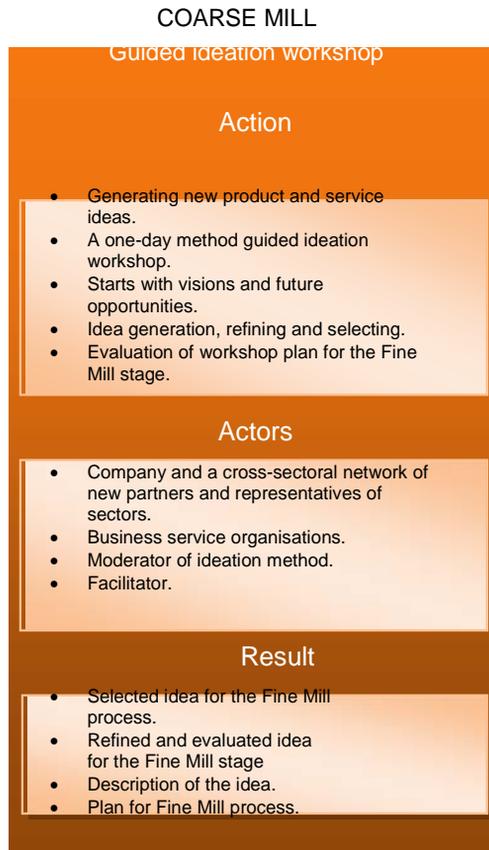


Figure 6. The Coarse Mill process.

4.1. Objective of the ideation

The prerequisite for successful ideation is a clear objective setting. The objective of the Coarse Mill stage is defined in the orientation phase by analysing the company's current state of business and forecasting its future opportunities. The process leads to an understanding of the needs of and opportunities for the company's business development. The set objective is then broken down into individual problems, and the most essential of them is identified and translated into a tangible ideation goal. The problem should be formulated loosely so that it can yield as many alternative and different solutions as possible. The more loosely the problem is formulated, the more inventive the ideas it can lead to.

4.2. Participants

During orientation phase, participants consider which partners they could invite to join the Coarse Mill stage. A suitable number of participants is between eight and 20 people: it should represent a wide range of experience and perspectives. The aim is to put together a group that is as heterogeneous as possible, involving men and women of different ages, people from different professions and sectors, amateurs, representatives of stakeholders, potential clients and students from different fields. The participants are expected to highlight real development needs and marketable solution ideas, as well as give a user perspective in the development, refining and evaluation of ideas. The participants do not need to be familiar with or have any competencies in the company's business sector.

Telephone calls and in-person meetings are the best way to invite participants to join the Coarse Mill process. Participating gives them a chance to network and share information and experiences.

4.3. Programme and advance materials

A programme and a package of necessary advance materials are put together for the participants in the Coarse Mill stage. The package includes an introduction to the implementing company, the workshop's objective and presentations, and information about the moderators and the schedule.

The purpose of the material is to support the generation of ideas during the workshop. The package includes a summary of the future outlooks and expectations that surfaced during the orientation phase, and its purpose is to open up the workshop's objective and lead the participants' thoughts into an ideation mode. The package can also include 'homework' to be completed before the workshop, if this seems useful. The 'homework' should be compiled so that the exercises are easy to complete and support the ideation method of the Coarse Mill workshop. The advance materials package could include, for example:

- foresight information about the workshop's topic (megatrends, trends, different scenarios, etc.)
- thematic or subject information about ideation
- product information
- information about services
- client information
- sectoral information
- case examples
- overview of the strengths and core competencies of the company and the partners

The programme and the materials are sent to the participants electronically or by mail well before the Coarse Mill workshop to give them enough time to peruse the materials, direct their thoughts into ideation and, if necessary, obtain additional information.

4.4. Preparations for ideation

At the beginning of the workshop, opening presentations prepare and lead thoughts into the objective of the ideation stage and lead the participants' thoughts into the visions and opportunities relevant to the objective. The company, too, presents its own business, goals and expectations to the workshop attendees.

Future outlooks and opportunities can include the development outlooks of the company and its own business sector or other sectors – e.g. technological, market and business trends – and the new client needs and opportunities observed in the orientation phase. The purpose of the presentations is to orient the participants towards ideation, which is why their perspective should be as wide as possible so it does not limit the generation of possible new ideas. Often impossible-sounding ideas can include a seed leading to a whole new opportunity, which is why it is good to leave time and room for refining the idea as the workshop proceeds.

4.5. Ideation method and guidance

The method of the Coarse Mill workshop is collaborative ideation that activates all participants to work together. The method should yield as many ideas as possible, and should therefore stimulate the generation of new ideas, encourage new solutions and inspire versatile ideation. The method must include the development and refining of ideas after their initial generation. Figure 7 describes the scheduling of the ideation method. At the end of the ideation workshop and on the basis of the selected method and agreed-upon evaluation criteria, one idea is selected for further refining in the Fine Mill stage.

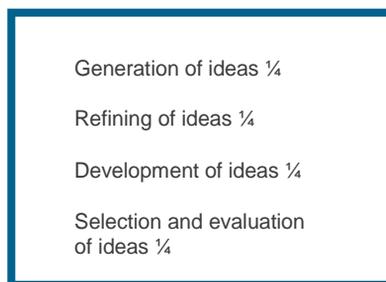


Figure 7. Allotment of time in the ideation process.

All group ideation methods are suitable for the Coarse Mill workshop, including Future Workshop, Six Thinking Hats and Brainstorming. An experienced and seasoned method guide selects the method that best suits the ideation objectives. There are consultancy companies who specialise in method guidance, and local educational institutions sometimes offer similar services. The company can also guide the ideation workshop itself, provided that it has suitable competence among its own personnel. An external method guide should be involved in the process in the orientation phase so that he or she can gain a good understanding of what the company is trying to achieve with the Idea Mill process.

The materials needed for ideation depend on the ideation method: materials that support the opening presentations or stimulate ideation, tools and/or materials required for the ideation, etc.

4.6. Evaluation of ideas and selection of an idea

At the end of the Coarse Mill workshop, the generated ideas are graded for selection to the Fine Mill stage. Ideas can be evaluated, for example, using these criteria:

- business potential
- novelty value
- client need
- technical feasibility within the selected timeframe

During the evaluation of ideas, alternative ways of implementing the idea form, and thoughts and suggestions may emerge as to possible collaboration partners for continuing the development. This will be put to use when planning the Fine Mill stage. There may be more than one fusible idea: some of them can be put to the side to wait for a better time and a new opportunity. The evaluation of ideas concludes with a selection of the idea that received the most points, which will be taken forwards to Fine Mill stage for evaluation.

4.7. Fine Mill planning

The key objective of the Fine Mill stage is to find the most appropriate ways to implement the selected idea and the necessary parties to do it with. The idea is worked into a new product description during the Fine Mill stage, which is implemented within two weeks after the Coarse Mill workshop. Figure 8 presents the definition of the idea for the Fine Mill stage.

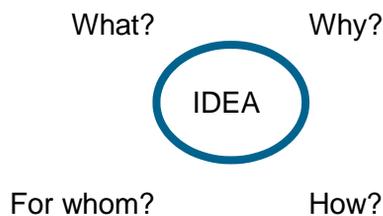


Figure 8. Specification of the idea.

When the Fine Mill workshop will be held is agreed upon at the end of the Coarse Mill workshop. At the same time, the organisations and parties with whom the idea will be refined and developed into business are selected. The actors who took part in the Coarse Mill stage

also participate in the Fine Mill stage. Any additional necessary actors can be invited as well, for example:

- potential users and clients related to the idea
- partners and bodies related to the commercialisation of the idea
- representatives of funding bodies
- product manufacturers, service providers, etc.
- business service organisations
- associations and educational institutions

4.8. Coarse Mill evaluation

At the end of the Coarse Mill workshop, the success of ideation and the results are evaluated against the objectives. If appropriate, written feedback from participants can also be used, or evaluation can take place in the form of a non-moderated discussion. These are some of the questions that can be used for the evaluation:

- How successful was the presentation of the Coarse Mill objective to participants?
- Did the opening presentations support ideation and the objective?
- Did the selected ideation method result in a sufficient number of ideas?
- Was the utilisation of advance information successful?
- How did the participants experience the ideation workshop?
- Was the quality of the ideas as expected and can the company use them?
- Did anything emerge during the day that could be significant for the company's business?
- Was time management optimal?

5. The Fine Mill process

"Identify business opportunities."

In the Fine Mill stage, the idea selected is refined into a new product and a written product description (Figure 9). Refining is done by the company and versatile actors who possess the skill and expertise to refine and develop the idea. Short presentations pertaining to the idea and its possibilities are also part of this workshop. The idea is refined by looking at it from different perspectives and defining its characteristics comprehensively, thus formulating a new product description. The product description enables the company to proceed in the product development and business plan process. The Fine Mill workshop concludes with an evaluation of refining workshop(s) and a plan for going forward.



Figure 9. The Fine Mill process.

5.1. Timing and schedule

The Fine Mill process generally begins two or three weeks after the Coarse Mill workshop so that the idea's novelty value can be utilised to its fullest and the idea can be developed as quickly as possible. The Fine Mill workshop lasts three to four hours and includes short presentations, refining the idea into a product description, planning of further actions, and evaluation of the workshop. If needed, more than one workshop can be organised, but they should all be organised quickly, for example within two weeks' time.

5.2. Implementer and actors

Participants and partners should be experts with competence in the opportunities related to the idea, for example in customer orientation and usability, in technologies and production, or in business and marketing. The participants' wide range of expertise promotes a definition and reinforcement of key characteristics of the idea into the characteristics or features of the new product. The company then invites the participants, preferably not more than ten people. Participants can include representatives of

- user and client needs
- product development and commercialisation
- technology competence
- sales and marketing
- entrepreneurs and other business sectors
- business developers
- other relevant groups

5.3. Preparation of the idea

The idea selected for the Fine Mill workshop is specified at the end of the Coarse Mill workshop. Before the Fine Mill workshop(s), the company continues to specify the idea further: gives it a name and defines any characteristics or features that are known about it, thus creating a description of the idea. Before the workshop(s), the participants are given this description and the objectives set by the company for the innovation process. Confidentiality can also be emphasised. The participants are asked to carefully read the description and note down the ideas and views it gives them with respect to opportunities. The participants report these ideas and views to the others in the form of opening presentations to the Fine Mill workshop(s).

The company maps out future phenomena related to the idea before attending the Fine Mill workshop(s). These phenomena can include products that support the idea and their markets, factors or reasons that support the realisation of the idea, or competitors and threats to be aware of implementing the idea. This helps to understand the development needs and success opportunities of the new product. The results are also presented in the Fine Mill workshop(s)

5.4. Refining the idea

The idea is refined through an informal discussion, but the purpose of the discussion is nonetheless to achieve a specific end result. The work rests on the idea description, which is refined into a new product. Alternatively, the Fine Mill process can be done using product concept design methods.

Table 4 presents a number of perspectives and characteristics of new products that have been accumulated during the Idea Mill process. Refining the idea into a new product takes place by defining perspectives and features or characteristics of the product. It is challenging to define the characteristics or features and their interdependencies before actual experience of the product, but having a versatile group of people from different sectors helps.

Characteristics pertaining to the product are selected from Table 4, and the group then look for solutions and possible implementations by looking at the idea from different angles. For example, when looking at the client perspective, we can take the need characteristic and then define it by evaluating the need for the product, ascertaining how the new product could fulfil that need, determining whether the need has already been fulfilled by another product, etc.

The perspectives and characteristics defined for the new product and their solutions form the new product description. The description is normally in writing, but it is also possible to put together a visual presentation or a model of the product. What is essential is that the product description can present the new product comprehensively, clearly and understandably enough to allow a decision to be made whether or not to proceed to the product development process.

Table 4. Perspectives and characteristics of new products.

Perspective	Characteristics
Client	Product client, user Need Usability Customer expectations and habits Message and status Environmental factors in the use and production
Need	Values; mission and vision Benefits Characteristics Legislation applicable to the product
Technology	Operating principle Design Technological implementation Functionality? Characteristics and performance Lifecycle
Production	Research and development Processes and equipment Outsourcing, partnerships Raw materials Logistics
Markets	Price and costs Target markets Business objective Demand Commercialisation Competition; competing products and differentiation Marketing measures
Business	Core competence Competency need Competence generated by the product and future opportunities Side products and spin-offs, product families Business renewal, growth, change

5.5. Evaluation of the Fine Mill process

The Fine Mill stage ends with an evaluation of the process and its results. The evaluation focuses on the success of the refining and development work and on achievement of the workshop's objective. It is carried out through a discussion of questions derived from the objectives set for the Fine Mill stage. These are some of the questions that can be used:

- How successfully were the objectives of the Fine Mill stage presented to the participants?
- Was the description of the idea and quality of opening presentations relevant to the theme?
- Were participants' views and experiences useful in developing the idea?
- Was foresight information utilised in an optimal manner?
- Was the idea developed into a product with new business potential?
- Was the product description comprehensive?
- Is the new product feasible enough to take it forward in the R&D process?
- Is there a need for more than one Fine Mill workshop?

The evaluation of the Fine Mill workshop may highlight issues that affect the new product, including a need for further investigation, specifications, expert opinions, etc. These issues are settled and solved by organising the necessary number of Fine Mill workshops within a short period of time before moving any further in the process.

5.6. Further actions

The process of formulating a new product description proceeds according to Cooper's Gate Stage development process, and the business plan is drafted in a manner decided by the company. After the Fine Mill workshop(s), the company analyses what more the new product needs before taking the next step towards production. The new product and the company's operations can be evaluated and developed with the company's own resources or with the help of external organisations.

First Round Center (www.firstroundcenter.fi), the Finnish R&D association (www.sytky.com), the Foundation for Finnish Inventions (www.keksintosaatio.fi) and several independent and private R&D and business consultants and consultancy companies operate in the central Häme region. They can offer services in the evaluation and development of new ideas, products and businesses. Other service providers in the area include Innopark Oy, Häme Development Centre Ltd, Forssa Region Development Centre Ltd, the Regional Organisation of Enterprises in Häme of the Federation of Finnish Enterprises, Häme Chamber of Commerce, *Uusyrittyskeskus* (Centre for new business), HAMK University of Applied Sciences, and *Suomen yrittäjäopisto* (Finnish entrepreneurs' college).

6. Piloting of the Idea Mill model

6.1. Pilots

The Idea Mill model was tested with seven different pilot projects in metal industry SMEs in the central Häme region. The pilot projects were planned and implemented by the project's main administrator – the HAMK University of Applied Sciences – in collaboration with Innosteel Factory Oy and the Finland Futures Research Centre at the University of Turku. The pilot projects were themed after topics that could provide ways to finding new feasible product and service ideas for metal industry SMEs.

The pilot projects of the Idea Mill model consisted of five stages. The planning stage covered the planning of the objective, the implementation of the pilot project, the planning for the Coarse Mill stage, and pitching the idea to potential participants. The orientation phase covered the production of advance materials for the Coarse Mill stage and their delivery to the participants. The advance materials included foresight, innovations and ideation information about each pilot project's theme. The Coarse Mill stage was a one-day ideation workshop, which resulted in an idea to be further refined in the Fine Mill stage. At the end of the Coarse Mill stage, a metal industry SME made a commitment to continue refining the selected idea and proceeding to the Fine Mill stage with the project implementers. The idea was then refined into a preliminary product in the Fine Mill stage. In the follow-up phase, the product concept was further developed and a preliminary business plan was written for it.

Pilot and theme	Coarse Mill	Fine Mill
Turning urban waste streams into business opportunities	27 May 2010	24 August 2010
	A comprehensive collection of metal industry and environmental SMEs and other interested bodies were invited to attend ideation. The aim was to generate ideas for new products and services in waste management.	Refining in the Fine Mill stage did not develop the idea into a clear business concept, and it was eventually dropped.
Turning metal into wellness products	15 September 2010	30 September 2010
	Metal, wellness and creative industry entrepreneurs and other organisations came together in the Coarse Mill workshop to select the theme. The workshop generated ideas for wellness products and services for senior citizens and people with mobility issues. The aim was for wellness and creative companies to draw attention to new product and service needs which the metal industry companies could then implement.	Two ideas were taken forward to the Fine Mill stage. One of them was developed into a marketable product as a thesis demonstration at the University of Applied Sciences. The other was further refined with the help of upper secondary school students. After this, the metal industry company re-evaluated the idea and decided to proceed with it.
Christmas Party Magic: Making wishes come true	10 November 2010	10 December 2010
	Metal industry companies, trading companies and people working in trade were invited to participate the Coarse Mill workshop. The workshop generated ideas for metal product innovations to be used in the trading sector.	The idea that was taken forward to Fine Mill stage generated multiple ideas for new products and services that were developed further by several trading sector organisations.
Cover the motorway: Making the city centre into a living space for everyone	09 February 2011	05 April 2011
	Metal industry SMEs in the central Häme region and companies and organisations interested in the shopping centre under construction were invited to the ideation workshop.	The Fine Mill workshop discussed a new metal product idea that concerns public space.

Pilot and theme	Coarse Mill	Fine Mill
Innovation workshop on safety: Metal makes it possible	16 March 2011	
	Metal industry and safety companies and organisations were invited to the Coarse Mill workshop. This workshop differed from the previous ones in that it was planned and facilitated by the Finland Futures Research Centre of the University of Turku. The workshop was implemented using the Futures Workshop method.	Ideas for further development did not emerge in the Fine Mill stage.
Energy-efficient steel construction, from raw materials to end products	13 April 2011	26 May 2011
	Metal industry and building companies and contractors, and other building sector organisations were invited to the Coarse Mill workshop.	The Fine Mill stage resulted in a further education product for universities of applied sciences in the field of energy efficiency in construction industry.
Service business from metal	07 September 2011	14 November 2011
	In addition to metal industry companies, businesses from other sectors, service businesses and other organisations participated in the Coarse Mill workshop. The workshop was implemented as a client and needs-driven ideation workshop about metal industry companies.	The Fine Mill workshop refined the service idea as a collaboration of two metal industry companies.

6.2. Experiences from the Coarse Mill process

A thematic register of metal industry companies and companies, organisations and stakeholders in other sectors was put together for each pilot. Registered organisations were first invited to attend the Coarse Mill workshop by e-mail, after which they were contacted by telephone. The telephone discussions revealed that metal industry companies were interested in ideation, foresight information and business development. However, they considered their participation carefully, because it takes an entire working day and the usefulness of the workshop could not be guaranteed in advance.

Theme and objective

In some pilot projects, the theme and objective of Coarse Mill workshop was felt to be unclear, which meant that the participants did not perceive them as distinct customer needs. The participants did consider finding customer needs and perspectives to be important, and expressed a desire for Coarse Mill workshops to include actual end users for each theme.

Foresight information

Foresight information was included in the Coarse Mill advance materials and presented at the beginning of ideation in the form of trends and megatrends. The aim was to inspire the participants to be adventurous in the generation of ideas by questioning everyday thinking, opening up new perspectives into the pilot's theme, and looking for surprising opportunities in sectoral interfaces.

The participants considered the foresight information to be interesting and thought-provoking, for the most part. They sometimes felt that using the information was challenging because of its generic nature and large volume. Seeing the big picture and applying the information to idea generation could become difficult if several future phenomena were highlighted at the same time. Sometimes the trends and megatrends seemed too distant and elitist from the everyday perspective of the participants, and occasionally they felt that there was not enough time to process all the information. The main problem probably was that the participants did not always succeed in applying the foresight information to their own operations or thinking.

The difficulty using the foresight information was also occasionally reflected in the compatibility of presentations and idea-generation work. The perspectives and materials of foresight information did not always correspond with and support the Coarse Mill process. Correspondingly, the moderator of ideation could not always utilise the given foresight information systematically in ideation.

Idea generation

The participants thought that the Coarse Mill workshop was an excellent opportunity for product ideation and networking. Group work methods were also commended. Participants were able to gain insights on and from other sectors and new ways of seeing and thinking. Some participants did feel that the work was challenging because there were several views and ways of working present, as well as differences in the conceptual levels. A small number of participants did not fully understand the principles of idea generation or what they were supposed to do, which hindered their work. Guiding the ideation was also challenging at times. Some pilot projects involved a great many participants, which reduced individual support. The moderator's own activity level, motivation and sensitivity in understanding situations could at best

reflect on the participants' and groups' work as a source of inspiration and motivation. This was also reflected in the quantity and quality of ideas.



Figure 1. Idea generation with futures workshop method in the Coarse Mill workshop on 16 March 2011.

Ideas

The ideas selected from Coarse Mill workshops were product and service ideas that had business potential and were feasible for implementation in metal industry companies. Ideas with an unusually high novelty value or ideas that were extremely radical were not selected because the companies did not engage in their further development. It could take years for the business benefits of these ideas to materialise, which is why the companies did not want to or did not have the courage to develop and implement them.

6.3. Experiences from the Fine Mill process

Refining needs for the ideas

The ideas from the pilot projects that were taken on to Fine Mill workshops varied and required various refining and further development actions. The Fine Mill workshops were tailored according to the idea, the metal industry company, experts participating in the refining, and the wishes and needs from the representatives of other sectors. All the ideas needed further refining and identification of their business potential. The ideas were viewed and observed critically based on client needs, novelty value, feasibility of implementation, and strategy of the company implementing the idea.

Some idea required more than one Fine Mill workshops because further clarification and expertise needs were perceived during the refining session.

Participation

Experts and participants invited to the Fine Mill workshops were selected together with the metal industry company that committed to the idea. All invited participants were keen to develop the idea further. End-user representatives were particularly interested in developing the idea and a new product driven by user needs. The participants were also surprisingly open about sharing their competencies, expertise and experiences during the refining process.

Refining

The participants felt that an informal and interactive method suited the refining work well. Often the new product refined from the idea was still quite unformed, and a strictly pre-planned refining process would have prevented an open and free development. The participants also hoped that they could be activated and engaged to the Fine Mill process more closely with individual assignments, etc.

7. Closing words

The aim of the Idea Mill model was to build a sturdy and usable innovation and ideation tool for SMEs. The model is freely available for use as a phase-by-phase process at <http://jauhin.hamk.fi>. Below is a list of links that can provide more information about innovation and business activities.

- **Manual for strategic planning in SMEs (in Finnish)**
http://www.pirkanmaanhelmet.fi/attachments/etu_kasikirja.pdf
- **Indicator:** <http://www.findikaattori.fi/>
Up-to-date information on key social indicators. Each indicator provides information in the form of statistical pictures, tables and analyses.
- **Foresight.fi:** <http://www.foresight.fi/>
The Foresight.fi website provides information and discussion on trends that affect Finnish society. The website features trend maps, interesting blogs, etc. It is maintained by Sitra, the Finnish Innovation Fund, and is mainly available in Finnish.
- **INNORISK – high quality SWOT**, a tool for securing innovation-driven success for SMEs (in Finnish)
http://virtual.vtt.fi/virtual/proj3/innorisk/LAADUKAS_SWOT.pdf
- **INNORISK interim report 2006**, managing uncertainty in business-driven innovation process (in Finnish)
<http://virtual.vtt.fi/virtual/proj3/innorisk/innorisk.pdf>
- **INNORISK interim report 2008**, innovations as a source for business renewal (in Finnish)
http://virtual.vtt.fi/virtual/proj3/innorisk/INNORISK_valiraportti2.pdf

- **Innovation month**, workbook (in Finnish)
kronos.pkamk.fi/tietopalvelut/pdf/B30_verkkoversio.pdf
- **Project manual**, from an idea to business (in Finnish)
www.tekes.fi/fi/document/42791/projektiopas2004.pdf
- **Stage-Gate Systems: A New Tool for Managing New Products**
http://www.carlosmello.unifei.edu.br/Disciplinas/Mestrado/POM-21/Textos%20para%20leitura/Texto_1_stage-gate_Cooper_1990.pdf
- **The Federation of Finnish Technology Industries:**
<http://www.teknologiateollisuus.fi/> Website features reports, statistics, development insights and reviews, and future outlooks and needs. It also features news, press releases and other relevant and interesting information.
- **Statistics Finland:** <http://www.tilastokeskus.fi/>
This website features approximately 200 sets of statistics, databases, thematic pages, portals, publications and numerous other products and services.
- **Business Sector Services (Ministry of Employment and the Economy):** <http://www.temtoimialapalvelu.fi/index.php?s=22>
Sectoral reports, regional economic and funding outlooks. Sector Online and online statistics about regional development offer an extensive and up-to-date statistics package on the development of business and the economy.
- **VOITTO, managing innovations (in Finnish)**
<http://www.vtt.fi/inf/pdf/tiedotteet/2006/T2330.pdf>
- **World Future Society:** <http://www.wfs.org/>
Topical information about the impacts of social, economic and technological development on the future. The website features expert blogs and interviews and articles from the Futurist periodical.