## Gábor Hoványi

# About managerial decisions on capital and financial investments

When Gulliver, the hero of *Jonathan Swift's* book, arrived in Laputa, he was astonished to find that the inhabitants' heads were all reclined, either to the right, or the left; and one of their eyes turned inward, and the other directly up to the zenith... They were completely and constantly rapt in speculation. Therefore, they were no longer able to listen to or engage in a conversation with each other without their servants flapping their mouth or ears with a blown bladder, fastened to the end of a stick.

## CHANGED ENVIRONMENT

The conditions of competition have changed substantially since *Michael E. Porter* published his famous competition model in 1980. The well-known factors of that model are suppliers, buyers, potential new entrants, substitute products or services and competitors within the industry.

The competitiveness of a company, i.e. its competitive advantage or disadvantage was determined by its bargaining position to suppliers and buyers, its ability to eliminate the threat of new entrants and substitute products, plus the company's relative competitive position to competitors. Porter's model, however, appears to be too limited in scope for today's globally extending environment, as the model is considering the factors and relative powers of one single market only. Today, markets are embedded in global interdependencies and they function accordingly. Therefore, the competitiveness of companies who are on the market is increasingly determined by global factors. Consequently, it is advised to "open up" Porter's model, that is to complete it with four additional factors:

The trend of technological development, which is becoming increasingly uniform and global despite regionally different levels of development;

<sup>2</sup>Interdependent economic processes and events of the global economy which exercise an increasingly powerful impact on national economies and the markets of economic regions;

<sup>3</sup>The number of potential new entrants should be considered on a global scale which therefore represents a new magnitude in quantity;

• A set of pluralist values which derive from cultural differences. As a result of globalisation, companies will recognize these values both on their demand and supply markets.

This way, the "opening-up" of the model underlines that the following factors exercise a

decisive influence on the competitiveness of businesses:

• How are the company's development efforts and major capital investment projects aligned to the trend of technological development?

<sup>2</sup>How does the company take into account the opportunities and threats conveyed by global economic processes? How does the company exploit or avoid these?

<sup>3</sup>Can the company expect an expanding base of potential business partners and customers which it can convert into competitive advantage?

• While retaining its own identity, is the company able to adapt to different values which it inevitably faces in global business relations?

Finally, globalising business competition calls for the incorporation of new emphases, or even new elements into the fifth factor of Porter's model, the rivalry among industry competitors.<sup>1</sup>

Looking at the main categories of competitive advantage, the following elements will get more emphasis or will appear as new items:

Products and services should be convertible as much as possible, so that diverse customer needs across the global marketplace can be fulfilled in the most profitable way.

In *technology*, the new challenge is to create a technology mix which enables the moving of technologies that are already outdated in demanding markets to less demanding regions where they can remain in operation until the end of their physical lifetime.<sup>2</sup> This way, even a technology relocation chain can evolve, with outdated technologies being migrated to less and less demanding markets.

In *production*, outsourcing on a global scale can be the way of establishing increasingly profitable and flexible production processes. To this end, more and more giant businesses and large companies create consistent production networks through long-term agreements.

The new role of *logistics* is to reveal the best procurement opportunities on the global market.

Therefore, it has to compare offerings in terms of quality, price, transportation costs and readiness for delivery. Furthermore, it has to make sure that the business values and culture of eligible partners are compatible with that of the buyer.

Marketing should enable companies to adapt to local sales requirements while retaining brand identity, unique corporate image and selling style. This approach calls for the reconciliation of conflicting global and local considerations, in other words, for the implementation of the "glocal" concept.

Regarding the creation and management of a competitive *corporate organisational* structure, it is increasingly important for businesses to find the optimal ratio of centralised and decentralised organisational and governance structures, so that they can quickly and efficiently accommodate to local conditions without having to give up their integrity.

Corporate IT has the new responsibility of ensuring internal and external system compatibility (i.e. both within and outside the business) across all companies that belong to the same production or service network.

The new emphasis in *human resources man-agement* is to implement a harmonised mix which relies on and enables knowledge-based business operations, creativity, lifelong learning, further education and re-training of associates. This harmonised mix should definitely serve clearly defined, long-term business policy objectives.

• Regarding *financial and asset management*, two additional factors gain significance on top of expenditure barriers and profit targets: probability (or risk) and the sacrifice which the company has to make if forced to correct or change its course due to sudden environmental changes.<sup>3</sup>

In corporate leadership, the possession of multicultural knowledge which enables the understanding of the specialties of different markets is increasingly important and so is the ability of top management to function as a well-harmonised team, with each member displaying a uniform management style and governing the business with the same management techniques.

Regarding *corporate strategy*, key competitiveness factors will include the correct identification and timely renewal of core competences, extensive and efficient implementation of outsourcing as explained above, the flexible use of outplacement strategies and, last but not least, the employment of strategic decisions which can level diverse opportunities and threats.<sup>4</sup>

In research and development, an increasingly controversial situation will develop: As cutting-edge innovation is the single most significant prerequisite of competitiveness, companies will find that keeping their research and development up-to-date will entail a growing *capital requirement* while the time allowed for the payoff of these expenditures is becoming shorter due to the quick pace of development.

Investments targeted at *safeguarding a part* of corporate assets continue to retain a threefold objective: to establish a proper balance between the increase of investment value, the reduction of investment risk and quick accessibility of the invested capital i.e. the liquidity of the investment. A new phenomenon within this threefold objective is the higher weight of liquidity: due to the globalising economic environment and often unexpected political and social changes, it is important for companies to have very quick access to the money which they invested, so that they can sustain or increase competitiveness on an international scale.

The successful application of Porter's corporate competitiveness model as completed with the factors and elements described above is subject to management's ability to assess quickly and reliably all factors and elements which influence their decision. Management, however, must also take into consideration the fast growing number of decisive external factors and interdependencies in today's business world. Once the interdependencies of these

factors reach a certain threshold, however, theoretical calculations which suggest valid results through elegant mathematical formulas will no longer support decisions, as they are built on uncertain foundations. The reason is that these calculations observe only some of the decisioninfluencing factors and elements: the ones which fit their formulas. Therefore, analysts and decision makers who, like the Laputainhabitants rapt in speculations, force the use of calculations beyond that threshold of environmental complexity, where these calculations are nothing but elegant mathematical formulas anymore, are condemned to fail.<sup>5</sup> It is especially true of capital and financial investments whose long timeline multiplies the significance of interdependence and thus risk.

## ISSUES OF DEVELOPMENT AND CAPITAL INVESTMENT DECISIONS

Development and capital investment projects have three key roles at companies:

- Enable the avoidance of external threats or help mitigate their impact at least;
- Enable the company to benefit from opportunities supplied by the external environment;
- Increase the efficiency of corporate operations as a result of a development or capital investment project (in other words: to improve the performance of the internal environment).

Let us review the specifics of these roles in more detail.

## Avoidance or mitigation of the impact of external threats

Some threats from the external environment may hazard the entire company, its existence as a whole. These are total threats. Other threats

may decrease or void results which the company achieved in a specific market or market segment, they may annihilate some of its operations or the performance of a functional organisation (or possibly a specific cost, profit or investment centre within the company); These are partial threats. If the decision on eliminating a partial threat is inappropriate or late, it usually opens the way for the partial threat to become a total threat.

A company may employ different strategies to address the challenges posed by external threats. When facing a partial threat, it may even choose to back off, provided the threat is not hazarding an entire corporate function.6 Naturally, the company cannot use this strategy against total threats as the consequence in that case would be the liquidation of the business. Still, management can choose from multiple alternative strategies to address total threats: they may build barriers against them, mitigate or even eliminate their impact or launch a counter-attack. Any of these three variants may possess a technological, financial and/or IT scope which involves planned action: E.g. price reduction, service development in a product sales context or an advertising campaign which informs customers of new, more favourable sales conditions. Corporate managers usually launch barrier-building and barrier-developing strategies only upon the occurrence of an external threat; A counter attack, however, can take place at an earlier point of time already, obviously to frighten away competitors ahead of time. Finally, it has to be mentioned that these three strategy variants can also be employed against partial threats.

To avoid or mitigate the impact of any total or partial threat, corporate management has to face and address seven questions:

**1** When will the threat occur?

2 How intense will it be?

<sup>3</sup>In which area of the internal environment will it impact the company (if it is a total threat,

in what sequence will it affect organisations and activities)?

• What is the probability of the threat's occurrence?

S What counter-measures can take place (which are the valid strategic alternatives), what resources do these measures require and what is their expected impact?

**6** What is the probability that countermeasures will deliver the desired outcome?

The counter-measures fail, what additional strategic steps can take place, what resources do they call for (what is the sacrifice of the change in strategy) and what is the probability of this change?

In the now global stage of technological and economic development, the management of a company can only make valid decisions which have a realistic chance to eliminate or at least mitigate the impact of external threats if they are able to find the right answers to these seven questions.

The most critical part of finding the right answers is the forecasting of threats. Formerly, corporate management had to consider simple effects only: When an event occurred in the external environment (e.g. a competitor marketed a new product), it had a quick and direct impact on the company's operation and/or results. Today, these impacts form rather long chains, networks, or even impact fields sometimes.<sup>7</sup> Management have two methods at their disposal to predict these:

The *déja vu* method can be employed to analyse impacts, impact chains, impact meshes and impact fields which the company already experienced in the past. It can be used to identify the different conditions perceived then and now, and finally to develop a forecast on that basis;

The other option is to try to model the impacts, impact chains, impact meshes and impact fields. In this case, management should be aware that as they broaden their vision from

specific impacts to impact fields, the uncertainty of modelling will grow exponentially as the number of factors increase.

Amidst today's external conditions, corporate management is recommended to use the déja vu method and the modelling method simultaneously to predict threats. With a view to the two opposite extremes of combining these methods, the correct approach is to give priority to modelling during the forecasting of impacts and shift the emphasis to the déja vu technique when attempting to predict impact fields.

In corporate efforts to eliminate or mitigate the impact of environmental threats, the assessment of probability has become one of the most delicate tasks by now. Management can take probability into consideration from two aspects: What is the likelihood  $(p_1)$  that a specific strategic variant is the right answer to a threat? And how does the success of this variant change if the company launches the counter-measures at an earlier or later point of time? In the first case, management has to find the optimum between the resource requirement of possible responses and the likelihood of their success. In other words, the company has to pick the strategy where the volume of expenditures multiplied by the probability of success as measured on a scale of  $p_1 = 0.1 - 1.0$  is the highest. The dilemma with the second case is the interdependence between the resource requirement (R) of a strategic counter-measure launched at a given point of time and the likelihood  $(p_2)$  of its success. The later the management decision on a counter measure is made, the more likely that the measure will be successful (as the timeline to the threat shortens, so increases the accuracy of the forecast). At the same time, the later a counter action is launched, the higher its resource requirement will be. Therefore, management in this case has to find the optimum in the  $R = 1/p_2$  function.

When assessing a potential corporate response to an external threat, management is advised to evaluate two likelihoods. One relates to the success of the planned reply while the other relates to the point of time when the counter-measure is made. In order to achieve maximum success with the lowest possible expenditure, corporate management should evaluate the two likelihoods ( $p_1$ and  $p_2$  above) together and in combination.

The gravest external threat is the one which emerges in the form of an impact field. It can evolve in a national economy, in an integrated economic region<sup>8</sup> or even in the whole of the world economy. For a company's management, the ability to recognise ahead of time that an impact field is taking shape is of utmost significance. One way to facilitate this recognition is to describe impact fields with twelve decisive factors and map them out in a traditional magic square. The factors are economic growth, employment ratio, inflation rate, and the equilibrium of the economy, which includes the equilibrium of public finances, state budget, foreign trade, consumption and investment, costs of social supply systems and their coverage, etc. Starting out from the centre of the magic square, the categories on the horizontal and vertical scales are as follows:

- Productivity and
- Efficiency measured by swap ratios,
- Innovation capabilities and
- The rate of outputs of networks embedded in international production processes versus total output.

The lines starting from the centre of the magic square and crossing the opposite corners will illustrate the following:

- The extent to which the economy of the impact field follows the trend of technological advancement,
- The growth rate of economies which are at the same level of development,
- The extent to which the economy of the

impact field is integrated into the international division of work and

• The rate of foreign capital influx to the GDP.

Two types of relations can develop within this twelve-factor (4+4+4) impact field: the change of a specific factor can induce an identical or opposite change of the other factors. (E.g. a significant budget deficit may hold back economic growth, but significant economic growth can also facilitate the reduction of public finance deficit.) Therefore, one great opportunity for corporate management for eliminating or mitigating external threats is to keep an eye on these twelve impact field factors; see how they change, analyse the direction and intensity of relations among them, assess these considerations and develop the company's business strategy accordingly.

> The most efficient way of eliminating threats that emerge in the impact field is incompatible regional diversification. When applying this solution, a company would build up meaningful business operations (in this sense, mainly production, services, procurement and sales) in national economies and economic regions where

- the factors of the impact field are not or not significantly influenced by the events and developments which impacted the national economy (or economic region) of the company's original headquarters location; or
- where changes in impact field factors follow the corresponding changes of the national economy (or economic region) of the company's original headquarters location with a significant delay.

In today's global and increasingly interdependent business world, however, the management of a company may be unable to eliminate an external threat and their last resort is then to beat off the consequence of the impact which they suffered. The elimination of the consequences of a partial threat usually calls for the reallocation of resources: in this case, resources of not impacted areas should be reassigned in part to the area of operation or functional organisation which suffered the impact. When implementing such reallocation, management needs to make sure that reassignment does not induce an internal chain reaction which would spread the impact suffered throughout the organisation. Therefore, under these circumstances it is recommended to employ external resources which complement the source of reallocation. One precondition to this is that a reliable plan should be at hand on how to beat off the partial impact. If a total threat occurred, however, corporate management should not at all rely on external resources in eliminating the consequence. On these instances, the most recommended approach is the overboard strategy: following the example of a sinking ship's captain, "a part of the cargo and even that of equipment should be thrown in the sea". In other words, less competitive operations of the company should be wound up and the related resources should be sold (despite the fact that such asset sales would usually entail a much lower price than the true value of the assets, as buyers would exploit the tight financial position of the seller). The reason is that the revenues of this move can be used to establish a corporate profile and new operations which are potentially competitive on the long run although they might be smaller in volume for the time being.

The two prerequisites of a successful overboard strategy are first the joint commitment of owners, owners' representatives<sup>9</sup> and management to undertake the risk of "downsizing", namely of "wasting" a part of corporate assets for the sake of resolving the crisis, and second, their creativity which enables them to identify the way out and to plan how they can run the company under new internal and external conditions.<sup>10</sup>

## Exploiting opportunities offered by the external environment

The opportunities offered by the external environment of a company are diverse. In most cases, their exploitation calls for the assessment of new interdependences in today's fast-changing, global business environment.

▶ Sales market opportunities direct management attention to two specialties: First, presence in multiple markets across the globe and the ability to implement the proper ratio of compatibility and incompatibility on these markets (in the same sense as discussed above) are increasingly significant growth factors for companies. For compatibility serves cost reduction, while incompatibility serves risk mitigation through increasing risks and costs respectively.

One special feature of the *procurement market* is that it has expanded into a nearly fully global market by today. New ways of information gathering, international shipping and payment open the way for companies to benefit from geographically faraway procurement opportunities. This cost reduction can become one of the most significant ways of retaining or increasing competitiveness.

Concerning *technologies*, one enormous external opportunity amidst accelerated technological development is to extend the market life of certain quickly outdating technologies – possibly up to the end of their physical lifetime. A company which expands its operations on a global scale will have the opportunity, as mentioned before, to relocate its still operating older equipment to a less developed economy and keep them in operation there.

New ways of cooperation in production and services enable outsourcing and the creation of production networks (clusters). First, it makes the operation of companies more flexible and profitable. Second, it enables management to concentrate available capital at a much higher degree and to utilize it in many more markets. Cooperation also creates new conditions for competition, as it can accelerate product development, reduce associated risks and costs through strategic alliances, enabling participating partners to specialize and harmonise their production, facilitating the companies' entry into new markets, etc.

The partial opening of the *labour market* before globalisation (sometimes with tough barriers though) creates two major new opportunities for businesses: if they offer favourable conditions, they get nearly unlimited access to even the best foreign specialists. They can fulfil their increasing workforce needs in professions where the availability of specialists is a bottleneck.

One favourable impact of the now global capital market and the practically unlimited flow of *capital* across borders is that companies have easier access to loans which can assist their development projects or bridge operational difficulties. True, this opportunity is also a threat, as the increasingly free flow of capital also facilitates the unexpected entry of new players into the market. Another consequence of the global capital market is that it fosters the development of global values which then reinforce free trade and thus accelerate the development of national and regional economies. Finally, it is the international flow of capital which enables the off-shoring of basic corporate functions, principally research and development, production and direction to countries which offer more favourable conditions. It does not only improve the competitiveness of the off-shoring company, but significantly accelerates the development of the host economy, thereby also contributing to the development of the world economy as a whole.<sup>11</sup>

There are many tools and ways which a manager can employ to find out which of the above opportunities, when, to what extent and under what conditions will open up for the company.

These proper tools and ways include the organised tracking of information in daily papers, in the technical press and in the electronic mass media; the collection of first-hand management experience, the assessment of information received from business partners, and the analysis of public or individually ordered studies by economic and market survey institutions, possibly with the help of external specialists. One method which is gaining importance nowadays is Total Chance Analysis. The main point of this approach is that all functional organisations of the company make an effort to reveal opportunities in their own field. To do this effectively, all organisational units (even the ones that are introspective by nature, like e.g. production control) must break away from decades-old, entrenched traditions and develop an external focus: they must see in their own field what new opportunities open up in the company's external environment.

New opportunities of the external environment, however, are often misleading: when examined thoroughly, they often prove to be illusory. Therefore, it is recommended that management should always compare the signals from diverse sources of information in order to validate an apparent new opportunity.

The aforementioned opportunities of the external environment can be exploited through various strategies. These opportunity-exploiting approaches include sales, procurement, technology developing and operating, production, cooperation, work-force development and capital market strategies.

The name of "opportunity-exploiting" strategies is only an indication of their main focus and primary objective. In fact, any strategy requires all corporate functions and organisational units to follow a single main direction and serve the achieving of the related targets.<sup>12</sup> Opportunities, however, are not only supplied by the external environment. Companies can also create opportunities for themselves. This is the role of opportunity-creating strategies. Their primary objective is to achieve a better market position than competitors. Therefore, opportunity-creating strategies are, without exception, attack strategies which can be categorised based on the nature of the action against competitors. These strategies are as follows.

Frontal attack is targeted at the entire product and/or service portfolio of competitors, attacking each element therein. It can be successful if the company's own product and/or service mix offers lasting benefits which are appreciated by the market also on the long. The success of a frontal attack may be endangered by the competitors' ability to renew their own product and/or service mix, by the sudden appearance of unexpected results of technological development either on the part of suppliers, manufacturers or that of users<sup>13</sup>, and finally, by the unforeseen and unfavourable change of the social or economic environment.

A side attack is targeted at the market segment of a competitor where the competitor's market share is low (usually below 15 percent). Due to the minority of the market share, the attacked competitor may not have a significant interest in protecting it. Therefore, the side attack strategy is usually employed by companies which are smaller than the attacked competitor. Naturally, having a better offering than others is a prerequisite of success in these cases. The threat of this strategy is that the target market or segment may have been spotted by several smaller companies - which means new competitors should be expected, often as early as in the "conquest" phase, but surely after successful market penetration.

When a company employs the *stab in the back strategy*, it penetrates (or creates) a market segment where bigger competitors are not

present. If the attacking company performs well in this segment, however, its achievements may even hurt the position of competitors in their own segments, or even damage their entire course of business. The point of the stab-in-the-back strategy is to find a market segment where demand is strong but has not been explored by competitors yet, or where competitors considered the fulfilment of demand unprofitable. The prerequisites of this strategy are therefore creativity and the ability to produce or provide service in a more economic way than competitors. The threat is, however, that large competitors may make significant efforts to complete their offerings and to conquer a market segment which is new for them - either by improving the profitability of their production or service provision, or by cross-financing their losses from profits realised in other market segments.

With the guerrilla strategy, a company would penetrate the markets of much bigger and stronger competitors and offer products or services there which are not in the competitors' product or service mix. Therefore, the magic words of guerrilla strategy are "supplementary offering". Its success depends on e.g. the originality of the idea is which it is built on; if the market appreciates the idea and the way its implemented; if the supplementary product or service offered has certain features (e.g. high labour intensity) which keeps larger competitors uninterested in extending their offerings to this market or market segment.

The synergy strategy is employed when a company enters a market where competitors offer similar products and/or services, but the new entrant can rely on its advantage of being present with the same products and/or services on other markets as well, unlike its competitors. The new entrant can therefore benefit from the economies of scale and/or the learning curve phenomenon. Consequently, it can fulfil demand on this market more efficiently than

competitors. Success thus depends on how long the company can retain at least one of the two competitive advantages which it enjoys.

The competitive advantage of a company which implements the *adapting strategy* is that it develops a product or service which can be aligned easily and at a low cost to the various individual needs of specific markets and market segments. This alignment, however, mainly depends on the flexibility of the company's business partners. Companies employing the adapting strategy should count on extensive competition in today's globalising world, as most competitors also strive for making adaptation as easy and comprehensive as possible. This way, the success of this strategy primarily depends on whether the company manages to perfect adaptation on an ongoing basis and if it is able to roll it out to as many market needs as possible. The threat of this strategy is misrecognition: A company may strive for fully comprehensive adaptation, yet an opposite process may start in the market at the same time, leading to the homogenisation of demand.

The success of opportunity-creating strategies primarily depends on various factors of the external business environment. Namely, on competitors, buyers, business partners, technological and economic background factors. Therefore, the selection of the right opportunity-creating strategy requires that all these factors should be taken into account, both individually and in combination, and long-term forecasts should be developed concerning their characteristics and consequences.

Finally, the assessment of opportunity-creating strategies has some internal criteria as well. In former times, capital owners regarded payoff as the primary consideration when assessing a capital investment project (especially large ones). Managers, however, often considered the long-term profitability of the business

more important. In an era of globalisation, accelerated development and increasingly fierce competition, however, it is advised to assess the benefits and threats of each optional strategy using a background-factor formula. The seven factors involved are as follows:

• *Return on investment* (ROI) remains a valid consideration.

Expected profit (E) and the probability  $(p_1)$  of realizing it should equally be taken into account. The applied formula should also include expenditures (R), possibly as a limitation to the capital investment, as indicated by the  $(E - R)p_1$  factor.

**3** The expected  $(p_2)$  time (t) to realizing results should also be considered. In practice, the value range of  $tp_2$  needs to be defined and it should function as a multiplier in the formula of point 2 above.<sup>14</sup>

Amidst accelerated technological and economic changes, an implemented capital investment project may need to be set on a different course somewhere along the way, and management should be prepared for this change. This modification or change of course may entail sacrifices (A) of various magnitudes. They are equally dependent upon the implemented capital investment project and the new courses which are enabled after the modification or change. Sacrifices are predicted opportunities, thus they convey a certain degree of uncertainty  $(p_3)$ . All this is represented by the  $Ap_3$  factor.

**5** It is also advisable to see if the planned capital investment project has a cannibalising effect (K), i.e. if the resulting new product or service may adversely affect the current sales of other existing products or services of the company.

<sup>6</sup> According to recent corporate experience, it is also extremely important to assess if the result of the planned capital investment project is in line with the company's mission, values, identity and culture.<sup>15</sup> This is a controversial question though: vertical diversification is often effective, while at other times it is the very barrier to efficient outsourcing. Horizontal diversification often increases security, but sometimes it is the gravedigger of the company as it blurs business focus and inclines management to make unprofessional decisions. Therefore, the harmony of expected results with the corporate mission, etc. is always a requirement which may cut both ways  $(\pm I)$ .

Finally, it is also worth analysing the expected  $(p_4)$  extent to which the planned capital investment project is likely to assist the company in entering the global market, or in expanding its presence or role there  $(J_{\varphi})$ .

This way, the up-to-date evaluation of capital investment projects should involve a complicated function which consists of the following seven factors: ROI,  $(E-R)p_1$ ,  $tp_2$ ,  $Ap_3$ , K,  $\pm I$  and  $J_g p_4$ . Management decisions would then be based on this assessment. It should be noted, however, that four of the seven factors are probabilities, functioning as multipliers. Therefore, it is very doubtful whether complex capital investment decisions can be based purely on mathematical models in today's globalising business.

## The impact of development and capital investments on the efficiency of corporate operations

The success of development and capital investment projects has certain preconditions which relate to the internal environment (organisational structure, operation and governance) of companies. Before addressing these, it is worth reviewing the possible key objectives of investment projects, along with the characteristics of the external environment which may drive selection among them. There are five basic capital investment objectives:

<sup>1</sup>Increase of corporate output and the underlying production and/or service volume. This approach may be reasonable when a rela-

tively easy opportunity comes up to extend market share or enter an expanding market (e.g. by exploiting a significant competitive advantage).

<sup>2</sup> Improvement of the efficiency of corporate operations, as it is a key element in retaining or increasing a company's competitive edge. It may become a matter of life or death for companies in times of fierce competition.

<sup>3</sup>Increase of business security. It may be a significant consideration in an external environment which is characterised by fast-paced technological advancement, quick and profound economic changes (mainly periods of stagnation and setback).

Increase of the flexibility of the organisation, operations and governance. The setting of this objective is usually enforced by a series of quick changes in the external environment. These changes are challenges for the company which it has to find the right answer for within a short time.

5 Finally, "future-building" is also a valid capital investment objective: in this case, the project fulfils a precondition of a strategic objective - e.g. it involves the correction or change of course, or a paradigm change which lays the foundation for it. These capital investments, however, only generate expenditures, i.e. losses on the short run. (A capital investment of this kind is e.g. when a company chooses to retrain employees during work hours or on a part-time basis, with purpose of fulfilling carefully selected professional targets.) Naturally, each of these objectives can be set for the whole of the company or for one or more organisational units only. In the latter case (i.e. when a capital investment target is not company-wide), management has to ensure that the achievement of targets is also assisted by organisations that are not directly involved with the project and that no organisation is counter-motivated.

This way, management has to be aware that any significant capital investment at a single unit or at certain organisations of the company will still impact the entire organisation, operation and governance of the company. When multiple capital investment targets are pursued simultaneously, management should know that any increase in the number of objectives entails an exponential growth of organisational and governance chores in implementation.

The success of development and capital investment projects also has some typical preconditions in the internal environment of companies. In particular, the following prerequisites should be mentioned:

Capital investments targeted at process development should be preceded by the endto-end streamlining of the process concerned: in other words, all bottlenecks and surplus capacities should be eliminated from it.

A forward-looking capital investment, however, may be reasonable, even when it is first implemented only for a certain part of the process due to budget constraints, provided management has a clear-cut plan for the entire modernisation effort. (One major hazard of this approach is quick technological development: if the scope of the capital investment project involves this risk, it can easily happen that an initially forward-looking project becomes obsolete by the time the next phase of implementation is enabled.)

In the case of capital investments into production equipment, one new factor of profitability calculations is the opportunity to relocated equipment from developed economies to less developed locations, as discussed above. Such relocation may extend the useful lifetime of assets to the end of their physical lifetime. This opportunity may substantially transform the market strategy of companies, as it inclines businesses to establish an incompatible global structure of markets which in turn reduces the financial benefits of relocation in most cases.

With company-wide capital investment projects, it is inappropriate to make a constant effort to level development across all organisational functions, i.e. to balance the investment between the organisational units. If kept within certain tolerance limits, the imbalance of capital investment distribution can accelerate the development of the company. Yet it is only true if individual functions are developed one after the other in a dedicated manner, and if the fostering of the remaining functions is not slipping out of control in the meantime (i.e. it does not cross tolerance limits). This way, the contribution of the remaining functions to the overall success of the capital investment project is not decreasing.

A fundamental requirement for development projects which encompass the entire organisation, operation or governing structure of a company is that they should focus on accurately specified market targets. That is how consistency evolves between development, capital investment and the serviced market (segment), which is also a basic concept of total quality management (TQM). Today, however, the term *quality* is often substituted with *core competence:* this is why TCCM has become the new slogan.

Amidst today's increasingly fierce competition, fast changes and vast supply of new, emerging competitors, company-wide development often involves capital investment projects which are built on a paradigm change. When implementing such projects, corporate leaders frequently realize that human resources management is becoming a strategic role where the key factor of long-term success is properly set professional training targets and the effective motivation of associates to implement the paradigm change.

• One recognition which belongs here is that unique solutions play are increasingly important in enabling development and capital investment projects to enhance competitiveness. The core competences of a company are established by these very development projects, thus they should at least contribute to the building of such competences as much as possible. Therefore, when assessing capital investment alternatives, management should pay attention not only to the project's potential to cater the requirements of a unique solution and the related extra cost, but also to the new ideas which the project can add to that unique solution.<sup>16</sup>

Traditional criteria (like performance and price, overall quality and total cost, purchase price and commitment to comprehensive service, etc,) are not the exclusive considerations anymore in the assessment of capital investment offerings. An increasingly significant consideration is the offered project's ability to help the investor's appearance in the global market.

The project organisation is an effective organisational form for implementing a development or capital investment project. Its effectiveness principally lies in the following: all of its activities are focused on a single and clearly defined goal, namely to ensure the full and ongoing availability of specialists from functional organisations whose contribution is indispensable for achieving project objectives; the information channels between specialists are rather short (i.e. communication among them is practically unhindered); project teams work close to execution levels, thus they have a more direct knowledge of internal and external conditions and they can make decisions on that basis. Finally, project organisations have more direct control over implementation which improves the effectiveness of project direction and control. This way, management should first and foremost observe these five criteria if they plan to set up an efficient project organisation and wish to enjoy its benefits - an accelerated

capital investment process, reduced costs, and, through the focusing of expenditures, more accurate budgeting and profitability.

All development and capital investments projects, thus not company-wide projects, too, are complex systems. Therefore, the key consideration in the related management decision should not be the maximisation of project profits, but to find the optimum between the capital investment effort and the related side effects and partial results which appear at other areas of the company. This is the way to prevent that a function-specific development project has a cannibalising impact on other corporate areas.

The new requirements concerning development and capital investment projects are not only making the related management decisions more difficult by bringing new criteria to the table. At the same time, they also facilitate decisions by setting a clear direction for the assessment of decision alternatives: They definitely supply a standard for measuring the company's international competitiveness, its potential performance on the global market or at least furnish them with a tool for calibrating their organisation, operation and governance on the basis of global market criteria.

The thoughts outlined so far probably highlight that the approach and actions of corporate leaders play a decisive role in the shaping of the internal environment favourably for development and capital investment. Technological advancement and the new conditions of the globalising economy pose new and new challenges to management. Yesterday only the leaders of multinational giants were exposed to these challenges. Today most large companies have to face them, and tomorrow even the managers of small and medium enterprises (SME's) will have to tackle them.

One such challenge is the restructuring of the corporate organisation. The structure and operation of a business must increasingly fulfil a threefold requirement: it has to retain the integrity of the company's values and operation, it needs to enable adaptation to local conditions in the global business environment and it has to increase the effectiveness of both decision-making and implementation. At large multinational corporations, this was best enabled by a structure where integrity was ensured by the central staff, adaptation was achieved by organisational units (subsidiaries) that operate in specific geographical regions and effectiveness was realized by project organizations that mainly specialize in new tasks. This organisational structure enabled the clear division of responsibilities also in development and capital investment projects. E.g. in research and development, the central staff was made responsible for launching and financing basic research and development oriented research projects which the long-term business strategy called for (they also had to take into account the opinion of functional and regional leaders). Short-term development research could equally be launched by the central staff or a subsidiary, and then financed jointly. If the central staff did not agree to a certain project though, the subsidiary had to finance all research costs. If the result of a development project required applied research, i.e. when the result had to be further developed in line with local requirements, such additional development could take place on the subsidiary's initiative and was financed by it.<sup>17</sup> Both the central staff and the individual subsidiaries were allowed to set up project organisations, but the founding organisation was responsible for financing the project organisation and directing all activities, lest complicacies of double direction should occur.

This new, threefold requirement regarding company structure and operations is becoming an increasingly decisive factor of competitiveness for both large companies and SME's. Albeit at a lower scale, large companies can still employ the organisational development approach of multinational giants. The leaders of SME's, however, need to find new solutions in the future which enable the fulfilment of the three requirements at a magnitude corresponding with the size of their companies.<sup>18</sup> One such new form of organisations is e.g. the network or cluster of small and medium enterprises which stretch out to several countries.

Corporate governance is facing new challenges as well. Multinational corporations have pioneered in this area, too. They were the first to say that the ability to establish core competences is a pivotal factor of competitiveness. Core competences, however, do not last forever: They have to be renewed time to time in line with the competitive environment and with new technological, economic and social circumstances. The holder of a new top management position, the Chief Core Competence Officer (CCCO) has been assigned to monitor and ensure the continued validity of core competences. The CCCO is also responsible for proposing new or renewed core competence scopes on a regular basis. If a company's operation is focused on core competences, however, certain activities have to be outsourced. That is how the already mentioned production and service networks, clusters evolve. Their plans and operations must be coordinated by the company who outsourced the function concerned. This integrator role is a permanent activity which encompasses diverse harmonisation chores across technologies, services, finances, etc. This responsibility has been assigned to yet another new top manager, the Chief Network Coordination Officer (CNCO). Finally, the operations of the regional subsidiaries of a multinational firm also need to be harmonised for the sake of companywide efficiency. What is more, this harmonisation should take place both between subsidiaries and with the concepts and objectives of the corporate centre. This regional harmonisation role has been assigned to a new top manager, the Chief Regional Coordination Officer (CRCO). At today's multinational giants, competitiveness increasingly depends on whether these companies established a governance structure that equally ensures the renewal of core competences and harmonisation across networks and regions.

Large companies and SME's in particular are unlikely to create such top management positions without making the organisation front-loaded, and thereby deteriorating the profitability of their operations. Therefore, these companies are recommended to assign these duties to the CEO. In exchange, he will have to delegate more and more functions of operational direction to lower management levels. This way, globalisation will induce the decentralisation of management decisions at these businesses as well.

New requirements are also perceivable in the communication of managers. In the era of fullfledged globalisation, multicultural competence will be a fundamental prerequisite of business success for managers and certain special work functions (like marketing specialists). In other words, associates in these positions will have to know and understand the values, way of thinking, lifestyle and basic customs of people who they want to build and maintain business relations with. It is an especially important consideration in developed economies whose companies not only sell in the markets of different cultures (usually in less developed countries), but also outplace an increasing part of their activities and/or services to those regions due to local operational advantages. Formerly, these business relations were built on the approach that once a capital investment project is completed in those regions, local inhabitants should only be

taught, paid and instructed on how to keep the assets in operation. In former times, this approach was mostly successful in providing for the human resources that were needed to make a capital expenditure project profitable there. In the future, however, this approach will become less and less suitable for serving as a basis for operating capital investment projects. The local appearance of multicultural knowledge increasingly calls for the implementation of the LBW concept, of the Do Learn! Do Bring up! Do Win over! slogan: management and employees should first learn the culture of a certain country or region. Then they can present their business ideas to the local staff in order to win their support instead of giving instructions to them. The LBW concept sets a radically new target for the "further training" of employees and management: the objective of personality development.

> In the future, continuous and lifelong learning, the retraining of management and employees, i.e. the elements of the  $3L^{19}$  approach are expected to gain further importance in the shaping of the internal environment of businesses. Even more so: this approach may lay the foundation of knowledge-based operations at business organisations which will be a competitive advantage for them. Still a new trend is expected to take shape within further training and retraining: as globalisation extends, so will personality development become an immediate requirement, along with the overlaying international communication skills. This trend will equally be valid at multinational corporations, large companies and SME's.

## SOME NEW CONSIDERATIONS FOR FINANCIAL INVESTMENTS

Production and service companies usually engage into financial investments if they do not intend to spend their free financial resources on capital expenditure projects (expansion of operations, upgrading of equipment, etc.). Instead, they wish to deposit their funds at a specialized financial institution (or using the intermediation of a financial institution or organisation) in a way which allows the growth of the funds' value (i.e. they should produce a yield) while keeping the funds accessible in times when the course of business requires such access.

When judging various financial investment opportunities, however, investors also look at a third factor besides yield and access: the risk of the investment. Companies assess these three criteria in combination, while keeping in mind the following:

- usually there is a strong interdependence between yield and risk: as it is widely known, lower risk usually goes with modest yield, while the willingness to take a larger risk may equally lead to significant profits or to a substantial loss;
- the time limit to access, in other words the tying up of the invested capital in a longterm deposit usually increases yield (as the interest on the invested amount is usually higher in these cases).

The management of a company usually assesses these three factors with a view to external conditions in particular, to the specialities of the internal environment and on the basis of business targets.

When the external environment, i.e. the competitive market and/or its technological, economic, social or political background involves a great degree of uncertainty, the risk appetite of management usually decreases; In other words, they are satisfied with a modest investment yield. Another factor which may decrease yields under such circumstances is that management is advised to go for the shortest possible access time due to external uncertainties. (The risks deriving from the external environment of the investment also have a very

## EXAMPLES OF ASSESSING VARIOUS FINANCIAL INVESTMENT ALTERNATIVES USING THE THREE CRITERIA

Investment alternative	Yield	Risk	Accesibilitiy
Bank deposit	+	+	+ + + + +
Time deposit	+ +	+	+ + +
Government and sovereign bonds	+ + +	+	+
Real estate	+ + + +	+ +	+
Stocks	+ + + + +	+ + + + +	+ + + +

\* The purpose of assessment with the +++++ (maximum) and + (minimum) values is only to illustrate with magnitudes that real values differ with each financial investment.

special element: the stability, or credit rating of the financial institution(s) which function(s) as the investment partner(s) of the production or service firm. A moderately stable partner would usually try to offset its less favourable credit rating by offering higher yields.) If the competitive and background environment are solid, opposite trends prevail.

The internal corporate environment may affect the observation of the three criteria in investment decisions in various ways. E.g. the management of companies which has a solid capital and market position and low operational risks is probably more likely to go for a higher investment risk, hoping for higher yields; A similar decision may be made by management at a company where the security of operations is high and thus there is no real need to retain substantial capital for bridging e.g. production outages (material shortages, machinery failures, strikes), long-term receivables, etc. A calculated investment may determine the time when the invested assets can be accessed and thereby it may limit the profitability<sup>20</sup> of the investment as well. Obviously, management's willingness to take risks will be lower if the internal environment of their company is just the opposite. In this case, they will prefer longterm depositing and higher yields.

Yield (profitability), risk and access time are three criteria which various investment opportunities fulfil differently. This is illustrated by the example in *Table 1* below.

The significantly different values in the table show that management can decide relatively easily which investment opportunity is the best for their company. Of course, when making this decision, they should observe external and internal conditions, the characteristics of the different investment opportunities and that of the financial organisations who offer them, along with the specific financial offers they get from partners. E.g. a bank deposit has a low yield and a low risk, but the funds can be accessed anytime. Investing in stocks, however, can produce a high yield but also entails a high risk, while the invested capital can be accessed relatively easily (yet the sale of stock may involve a significant price sacrifice which again increases risk).

Based on all that, it is fair to conclude that four factors need to be assessed and analyzed for the identification of the optimal corporate investment alternative: the conditions of the internal and external environment, the characteristics of investment opportunities and the stability of partner organisations.

Management, however, can further refine the relation between yield (profitability), risk and accessibility and thereby implement a financial

Investment alternatives		Investor risk tolerance				
	Cautious	Conservative	<b>Risk-hungry</b>	Bold		
Bank deposit	25	10	5	-		
Time deposit	30	30	10	10		
Government and sovereign bon	ds 30	30	20	10		
Real estate	10	20	25	30		
Stocks	5	10	40	50		
Total	100	100	100	100		

#### EXAMPLE OF INVESTMENT PORTFOLIOS Percentage ratio of investment alternatives within the portfolio based on the risk appetite of investors

investment that is more effective than the one that was originally considered optimal. The way to do this is to distribute the investment across diverse investment opportunities: i.e. to create an investment portfolio where the advantages and disadvantages of individual investment alternatives are levelled.

Portfolios can be balanced using various criteria, thus different types of portfolios can be created. The best approach is to differentiate between portfolio types based on the investor's risk appetite, as his willingness to take risks is strongly linked to his yield expectations and is usually not independent from his access time preference either. Based on the investor's risk appetite, four distinct portfolio types can be identified: the portfolio of a cautious, a conservative, a risk-hungry and a bold investor.<sup>21</sup> One typical combination of portfolios is presented in *Table 2* below. The volume of individual investment opportunities is symbolised by their percentage ratios.

Financial institutions who serve investors usually offer clients ready-made portfolios similar to this one.

Therefore, when planning a financial investment, corporate managers are recommended to establish an investment portfolio in the first step which they consider optimal; then they should obtain information on the portfolio offerings of financial institutions; then about the business stability of institutions which offer the portfolios; only after that, i.e. in the fourth step should managers make their investment decisions.

In the context of a corporate financial investment, this is the approach which best suits the triple criteria of profitability, risk and access time to invested capital.

Finally, it must be pointed out that the internal risk of individual investment opportunities may also change considerably depending on environmental elements like the national, regional and/or world economy and competition. E.g. it is well known that a high inflation rate may reduce the purchasing power of a bank account balance, even if the capital is topped off with interest. Poor economic policy or a political-social crisis may profoundly reduce the real value of government and sovereign bonds. In an economy on the verge of crisis, property prices are dropping and so is the stock value of companies which have been unable to meet the increasingly serious challenges of the world market. These businesses usually fall out, first from international, then from domestic competition.

This way, when composing their investment portfolio, managers should not neglect the events and processes of national economies, regions and even

that of the world economy<sup>22</sup> which may impact the yield and risk of individual investment opportunities. In some cases, these events and processes may even disrupt the order of investment opportunities which would apply in a more or less stable technological and economic environment, simply by aligning the order to the fundamental characteristics of these events.

## MANAGERIAL APPROACH TO INCREASING THE EFFECTIVENESS OF CAPITAL AND FINANCIAL INVESTMENTS

Based on the thoughts outlined so far, it is fair to say that a new decision-making approach and new decision-preparation mechanism are recommended for management to improve the effectiveness of their capital and financial investment decisions while observing the criteria listed above. This approach entails three levels. The first and highest level includes two decisive sets of factors: technological development trends and processes, and world economy events, processes and trends (including the interworkings among these factors). The second level represents the company's competitive procurement and sales markets. All market players have to be taken into consideration here, along with their power position, plans, actions, relations, established networks and strategic or operational alliances. The third level includes planned corporate capital and financial investments (the latter in the same sense as in the introduction) which are based on the characteristics of the company, i.e. its competitive market position and the strengths and weaknesses it has in international competition. All factors at each level are closely interrelated. Therefore, the approach of corporate leaders should reflect these interworkings, too: i.e. managers should understand not only the processes and trends of each group of factors, but also the complex effects and interworkings which shape them.23

This evaluation, however, does not require corporate managers to possess an in depth knowledge of all factors at each of the three levels, which is otherwise needed for making optimal capital and financial investment decisions. It would be rather futile an attempt today to require anyone to have such in depth, all-around knowledge. The purpose of the evaluation is to ensure that managers do use the apt, specialist information which external firms (expert institutions) and own employees supply. This approach can be fostered by the following decision preparation mechanism:

Concerning level one factors, the responsibility of obtaining and providing information mainly rests with external specialists and/or technical institutions. These firms publish comprehensive compilations, but they are also available for preparing dedicated analyses and forecasts that focus on the company's specific considerations (SME's with modest financial means may order these studies together or via their professional alliances. In this case, however, they have to expect a certain degree of generality in the papers as those are probably intended for entire industries).

In the factor group of the competitive market level, the company itself can develop an analysis and a forecast. Yet these have to be complex, benchmarking-type efforts which involve the participation of all functional organisations and, for control purposes, the participation of all independent organisational units (i.e. project organisation, profit centre, division, etc.).

The third level, the level of capital and financial investments definitely includes requirements which relate to the professional knowledge, expertise, former experiences and decision-making skills of the manager: as now he has to make decisions which are both strategic and operational in nature and may determine the success or failure of a capital or financial investment project, and thereby the fate of the company itself. In this context, it is probably fair to say that there is no bigger hurdle to successful investment decisions today than what Gulliver experienced in Laputa. For when a company becomes introverted, either in theory or in its business practices, it will soon find itself in the company of theoretical speculations and art for art's sake, delusive models. Instead, *global openness* is needed: corporate leaders should be receptive to signals from all three levels and possess combination and communication skills which encompass these levels. They should be able to make decisions which distribute risks by enabling the compensation of global threats with opportunities and the use of benefits to offset drawbacks which threaten the company.

This three-level decision-making concept and decision-preparation mechanism can guarantee that corporate management does not only select the optimal capital or financial investment alternative but also makes the right decision about it.

#### NOTES

- <sup>1</sup> The values for the first four elements in the Porter model can be determined by market research. The fifth factor can be taken into account by way of benchmarking. The values of elements which best characterise the company are then compared to the corresponding values of "best in class" companies or the industry average to determine the company's competitiveness.
- <sup>2</sup> BAT followed this relocation strategy when high US wages forced them to install new production lines there which enabled a higher level of automation. Once they made this step, they relocated the dismounted machinery to countries where BAT already had plants and where wages were lower.
- <sup>3</sup> This is expressed by the (E-R)p1-A.p2 section of the formula, where E stands for result, *R* for expenditure, A for change or correction of course and *p* for the probability of occurrence. (The topic is discussed in more detail below.)
- <sup>4</sup> A compensating decision of this kind would e.g. pair up the mass production, low unit profit and low-risk sale of an established product with the small-scale production, high unit profit and high-risk sale of a newly launched (and obviously innovative) product.
- <sup>5</sup> Consequently, relying on the ceteris paribus ("all other things being equal") assumption is becoming increasingly dangerous today.
- <sup>6</sup> Some examples of partial threats to corporate functions: The loss of market share in one of the company's markets due to the increased market share of a

competitor; Production becomes uncompetitive in a non-decisive production segment; Research and development are lagging behind in creating a part or unit which is already available in a more modern version from an external source, etc.

- <sup>7</sup> In impact chains, impacts are passed on linearly, i.e. a single cause only generates a single result; in impact meshes, a single cause may generate multiple results while in an impact field a single cause can lead to changes in economic regions, in the technological development of entire industries and sometimes in social structures.
- <sup>8</sup> In this sense, the EU, the NAFTA, the APEC, etc. are all economic regions.
- <sup>9</sup> If the company is a joint stock corporation, it is the members of the board of directors who can most consistently represent owners' interest.
- <sup>10</sup> This is assisted e.g. by the new requirement of "sound corporate governance" which not only assigns the approval of the corporate strategy to the board but also encourages it to oversee and influence the day-to-day operations of the company.
- <sup>11</sup> True, these opportunities have a price and often a high one. Still, their aggregate positive impacts prevail.
- <sup>12</sup> It is the well-known basic requirement of total quality management or TQM. It is quite indicative, however, that the latest TQM concept also involves the environmental factor: The acronym is extended

to ITQEM, where "I" stands for "integrated" and "E" for "environment". This new approach requires the observation of the environmental management aspect.

- <sup>13</sup> It is a typical shortcoming that production firms monitor technological development trends only in the context and scope of their production (i.e. regarding procured materials and spares, applied technologies and products).
- <sup>14</sup> As discussed already, the "t" factor is highly dependent upon the potential success of relocating obsolete production facilities from developed markets to less developed ones.
- <sup>15</sup> The decisive role of corporate values, self-identity and corporate culture is evidenced by examples like the bumpy roads of the recent mergers of Hewlett-Packard and Compaq, or Chrysler and Daimler.
- <sup>16</sup> It means a radically new challenge for companies which engage in major capital investment projects: they not only have to create products that are more competitive than that of competitors, they not only have to customise products to the individual needs of customers: they also have to think together with customers about how they can help the customer's competitiveness.
- <sup>17</sup> This structure was implemented e.g. at *AT T* when the company stepped out to the world market, distributing responsibilities between the corporate centre staff, newly created regional organisations and Bell Laboratories.
- <sup>18</sup> The decentralisation of operational direction has macro-economical prerequisites as well: First and foremost, permanent and balanced economic growth, which saves the CEO from having to make life-or-death decisions to eliminate the impact of

unexpected and recurring threats from the macroeconomic environment.

- <sup>19</sup> The three critical elements of the 3L or *Life-Long Learning* concept are as follows: First, the leader of the company should be able to identify and set the right professional targets for retraining, and these targets should harmonise with development trends; Second, he should be able to motivate associates effectively to achieve the set targets; Third, the leader should be able to establish widespread knowledge transfer within the company.
- <sup>20</sup> When evaluating multiple investment opportunities, (a) if the amount of invested capital is identical, it is sufficient to compare yields only; (b) if, however, management wishes to analyze investments involving different capital amounts, they need to compare the profitability of alternatives.
- <sup>21</sup> Some financial institutions elaborated more detailed categories. What is more, they use test questions to determine the risk appetite of investors and thereby make it easier for them to select the portfolio which is best for them.
- <sup>22</sup> The extension of investment portfolio opportunities to regions or even the entire global market not only requires the recognition of new risks. It also enables the better leveling and more effective compensation of exposures. When assessing these opportunities, however, the supportive or austerity measures of the national government must always be taken into consideration as these measures may magnify but also eradicate the opportunities conveyed by international economic realities.
- <sup>23</sup> This is what the formerly mentioned impacts, impact chains, impact meshes and impact fields were about.

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