



COMPREHENSIVE HEALTH PLANNING
Preliminary Draft

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§1. The decision-making process as the essence of management

Actions are the primary output of management. Action however is preceded by a decision-making process, either implicit or explicit. Consequently the decision-making process is the corner stone of successful management (*). Therefore, one way to improve managerial practice is to focus on normative models and methods of the decision-making process.

In the health sector management at different levels, e.g. ministry of health, health center, hospital board etc. requires decisions in order to convert input resources into outputs contributing to a higher health status.

Moreover, there is no reason why normative models and methods of decision-making developed for large business corporations would be inapplicable to the managerial problems of the health sector. It is obvious that quality and content of business management will differ from public administration (**), but the process of the decision-making remains the same.

§2. Classes of decisions

I. Ansoff (***) developed a useful conceptual framework for corporate decisions which can be modified for the health sector. He distinguishes three categories of decisions viz. strategic, administrative and operating decisions. Each of these categories is related to different aspects of the resource-conversion process.

Strategic decisions are concerned with the selection of an 'activity-target group' mix for the organization, which maximizes the potential for raising the health status. Each organization in the

(*) I. ANSOFF, (1), p. 9

(**) J.L. BOWER, (3)

(***) I. ANSOFF, (1), pp. 15 sqq.

health sector should make a decision on its own purpose by defining which major groups of the population it intends to serve and by which class of activities e.g. a child health center wants to improve child health by controlling all children on a regular basis for malnutrition.

Thus the strategic problem is concerned with establishing a match between the organization and its environment or, in more usual terms, it is the problem of deciding what 'business' the organization is in, what kind of 'business' it will seek to enter and who it is going to serve.

Administrative decisions deal with structuring the organization's resources for optimum performance. In fact, this type of decisions is concerned with organization in broad sense. Where strategic decisions are essentially related to external problems of the organization, administrative decisions primarily deal with internal aspects.

Operating decisions are the vehicle to the realization of concrete objectives. Usually these decisions absorb the major part of time and energy of management. Operating decisions constitute the daily in-the-field activity of the organization.

Table 1 summarizes attributes for the principal decision classes. Some crucial decisions in each category highlight the differences more clearly.

Defining objectives and goals, a strategy of expansion and diversification of the organizations's 'activity-target group' mix, the administrative and financial framework for the organization are key strategic decisions. These decisions define a set of rules for making administrative and operating decisions.

Table 1 : Principal Decisions in the Health Sector

| | Strategic Decisions | Administrative Decisions | Operating Decisions |
|---------------------|--|---|---|
| Problem | To select an 'activity-target group' mix which maximizes the potential health status | To structure the organization's resources for most efficient performance | To optimize the realisation of concrete objectives |
| Nature of Problem | Allocations of total resources (land, labor, capital..) among activity - target group opportunities | Organization, acquisition and development of resources | Budgeting of resources among different offices Supervision and control of the use of resources |
| Key decisions | Objectives and goals Diversification strategy Administrative strategy Finance strategy | Organization : structure of information, authority and responsibility flows Structure of resource conversions : work flows, distribution system, facilities location Resource acquisition and development : finance, facilities and equipment, personnel, raw materials | Operating objectives and goals Pricing and service levels Operating levels: inventory levels, warehousing, visiting, hours schedule ... Coverage |
| Key characteristics | Centralized Partial ignorance Non-repetitive decisions Not self-regenerative dec. Conscious effort | Uncertainty Non-repetitive decisions Decisions triggered by strategic and/or operating problems Conflict between strategy and operations Conflict between individual and organization interests | Decentralized Risk Repetitive decisions Large volume of decisions Suboptimization forced by complexity |

| | Strategic Decisions | Administrative Decisions | Operating Decisions |
|----------------------------|---|---|---|
| Prediction characteristics | Long run (25 y.) Basic lines Aggregates Multiple scenario analysis | Middle long run (5 y.) Detailed Prediction ranges | Short run (max. 2 y.) Highly detailed No alternatives |

SOURCE : Adapted from I. ANSOFF (1), p. 21

Structuring resources to respond in an optimal way to objectives and goals set forward by strategy, is the object of administrative decisions. Consequently, key issues of an administrative nature are the development of a suitable organization, the structuring of the resource-conversion process and determining the methods of resource acquisition and development.

The setting up and developing of an organization requires decisions on the distribution and structure of authority and responsibility and on the information system. Structuring the resource-conversion process implies decisions on work flows, methods of delivery and facilities location. Decisions on resource acquisition and development should cover the methods of financing, administration of facilities and equipment, personnel management and development.

Day-to-day activities are governed by operating decisions such as the establishment of performance levels, their realization, supervision and control.

Each decision category has distinct characteristics with regard to the administrative level of decision-making, the degree of automatic triggering and frequency, the informational conditions.

Strategic decisions, due to their wide scope and effect, are typically made at a centralized level. On the other hand administrative decisions can be decentralized to a certain extent. It is clear that the possibilities and needs for decentralization are greatest for operating decisions.

Operating decisions are triggered by concrete situations. A particular problem situation forces the decision-making agent into decision and action.

Administrative decisions are triggered either by conflict between strategic objectives and the operational reality and constraints, or by discrepancies between objectives of individuals within the organization and institutional aims.

Strategic decisions however, do not have such automatic triggers. They require a conscious, self-induced effort of management.

This explains why many organizations lack a clear and consequent strategic plan, and develop in a rather erratic way.

The frequency of decisions obviously varies. Operating decisions are usually repetitive in nature. Consequently, the decision-making process itself is subject to standardisation so that routine procedures and programs are applicable.

In contrast, administrative decisions and certainly strategic decisions are essentially non-repetitive. Long time intervals between decision-making efforts are evident.

The informational conditions widely vary over the decision categories. Operating decisions often are made in conditions of quasi-certainty or risk, i.e. all consequences of various actions can be anticipated and even their probability of occurrence is known.

In arriving at administrative decisions, usually having medium-term impact, one faces uncertainty rather than risk. Still it is possible to anticipate most alternative consequences of a decision, but their likelihood of occurrence is far less accurate.

Strategic decisions have to be taken in conditions of 'partial ignorance'. Their scope and impact is often of a long-run nature so that it is impossible to foresee all alternative consequences.

Consequently, the methods of analysis for each decision category will differ. Where e.g. statistical decision theory is suitable for administrative and operating decisions, one has to recur to less rigorous methods such as multiple scenario analysis in strategic decision-making. A simplified version of the latter will be discussed in next paragraph.

§3. Strategic Decision Making

R.E. Linneman and Kennell J.D. (*) reject the approach of coming up with a best guess - a most probable scenario - for future en-

(*) R.E. LINNEMAN and KENNELL J.D. (6)

vironmental conditions by extrapolating past trends, making few assumptions and then suggesting a plan as if the best guess were the future. Rather they are hedging their bets by developing several widely varying scenarios and urging management to develop a strategy that may allow survival under any of them.

From looking at past and present a description of political, socio-economical and environmental conditions can be derived, as well as major factors that may change or happen during the planning period. Based on an estimate value for key variables the possible future environment for the program can be described.

For each scenario than alternative strategies will be developed to achieve the program's objectives taking into account priorities as well.

Out of these alternatives an 'optimum' strategy will be chosen.

A ten step procedure has been established (*) for small companies whose time and capacity for planning does not allow a full time effort. It will be discussed further in this paragraph, and adjusted for application in the health sector.

Step 1 : Make explicit mission, goals and objectives

Strategic decisions are concerned with the selection an 'activity-target group' mix for the organization in view of its goals and priorities, taking into account limits and constraints. A key aspect of planning thus is the indentification and explicitation of the mission, goals and objectives of the organization. Other terms may be used, but the notions inherent in them can be found in any rational planning process.

An organization's mission describes its reason for existence, the general function or services it performs, and the limits of its jurisdiction and authority. The mission of a state or local health department might be the protection and advancement of public health of the population of that state or community within legally specified limitations. It remains the same unless changed by law or other official action. E.g. in the 5-year health plan

(*) R.E. LINNEMAN and KENNELL J.D. (6)

of Papua, New Guinea (1974-1978) the environmental health program is concerned with protection, preservation and enjoyment of the environment so as to 'ensure the maintenance of good health and to enhance one's social and mental well-being'(*).

A goal is a long-range specified accomplishment toward which programs are directed. It does not establish a time period for its realization. It may be idealistic or ambitious, but it must be consistent with the mission of the organization. A health goal usually is stated in terms of eliminating a health problem or of reducing it to a predetermined level. A goal need not be limited by available resources, scientific and technical knowledge. E.g. the environmental health program of the Papua, New Guinea health plan is concerned with the protection, preservation and enjoyment of the environment, and more particularly with inspecting and advising on :

1. prevention of air and land pollution
2. provision of safe water supply
3. proper waste disposal facilities
4. adequate housing.

Objectives are stated in terms of accomplishing, during a particular time period, a measured amount of progress toward a goal via a specific program activity. It usually includes the specification of :

what : situation to be attained

extent : measured quantity of situation to be attained

when : time by which situation is intended to be attained

who : particular group who is intended to benefit, previously called the 'target group'

where : geographical area to be included in the program

how : activity by which situation is intended to be achieved.

A planning unit may want to reduce mortality from typhoid fever throughout the country to 50 per 100.000 population within 2 years. To achieve this objective, the provision of safe water supply for 80 % of the villages in a particular region by that time may be envisaged.

(*) A.L. SORKIN, (7), pp. 95 sqq.

Decisions on mission, goals and objectives imply value judgements. Therefore they must be taken by politicians. The health planner should not impose his predilections; instead 'skill can be developed in gauging and mobilizing political opinions'. By taking time at the beginning to get policy makers to arrive at explicit statements much time will be saved later when the details of planning and implementation are being worked out (*).

The following example illustrates the difference between mission, goals and objectives.

The new primary health care strategy in Ghana has been described as follows : "It will strive to place basic health services within walking distance (5 a 8 km) for 80 % of Ghanaians by 1990 as a way of effectively attacking disease problems that cause premature deaths and disability in our country"(**).

From this comprehensive statement the mission of the new primary health care plan can be derived as 'attacking disease problems that cause premature death and disability in the country'. The goal to 'provide primary health service to all people' is translated into a more concrete objective of bringing basic health services within walking distance by 1990 for 80 % of Ghanaians.

Step 2 : Determine time horizon

It is important to determine how far into the future you wish to plan. Time and planning facilities may prevent from extending the horizon too far; often management has little confidence in its ability to plan far in advance. On the other hand evaluation and depreciation of capital investments e.g. are based on a 20-years economic life, indicating that resources have been committed for up to 20 years in the future.

The importance of the time horizon can not be neglected; three aspects will be discussed briefly :

1. For continuity in the working of health programs not only in-

(*) C.E. TAYLOR, (8)

(**) O. ASANTE, (2)

- vestment costs should be taken into account but also recurring costs. Aid organizations often can be found willing to finance hospital buildings or water supply installations.
- It is left to local authorities themselves however to look for maintenance, trained personnel, revenue to buy supplies etc.
2. Instability of the political regime brings instability in budget size and allocation. Moreover, the desire to stay in power often leads to impressive conspicuous programs which not always are the most effective ones. It is easy to treat a child in a hospital for diarrhea for a few days, and remunerative in terms of political power also, but when malnutrition was the ultimate cause, the child will become sick again in a few days after dismissal. For this reason, often the time horizon will be observed too short.
 3. The horizon may be determined by the technicality of the health problem itself. It is known that an effective way to eliminate onchocerciasis is destroying the larvae by spraying breeding sites. Since parasites however live in their host for 15-18 years, reinfection remains possible during this period and spraying can't be stopped if eradication is envisaged.

Step 3 : Model the environment, the organization and their interaction

To develop a good understanding of the organization's points of leverage and vulnerability a clear idea is needed of the environmental conditions in which the organization will be working, of the working of the organization itself and their interaction. For instance, a program for parasitic disease control should include a model of the vector/host transmission and infection system, a model that describes environmental conditions, economic and social life, and a model of the impact of human intervention on environment and disease.

The models can be mathematical or verbal. In both cases extensive data gathering can not be neglected. Even if planning had no other reason to exist, it would not be hard to justify it on the basis of improvements made in the information systems within the health services. Some planning units serve primarily as

statistical units; by making information available to appropriate decision-makers they have a major impact.

In health planning data customarily include demographic information : number of people served and their distribution, as well as population projections. A second category of information is epidemiologic : frequency and distribution of major health problems.

Serious deficiencies in planning information often exist with respect to economic data. Health people have little idea of what sort of information might be useful for economic analysis, such as accurate cost accounting of specific health activities. Planning can make its most dramatic contributions in short time by increasing efficiency of utilization : it requires concern for the utilization of facilities and functional patterns of work for various types of personnel with careful attention for work standards and performance budgetting. A related type of information is basic administrative data on availability and projection of manpower and facility resources.

More sophisticated research is necessary to develop ways of measuring demand for various categories of services.

Data on environment and organization in past and present form a basis for the analysis of interrelations. We could ask the question whether they reinforce or contradict a-priori thoughts based on past trends and intuition before using them to make predictions for the future.

Step 4 : State assumptions

To have an idea about the organization's position in its environment in the future it is necessary to determine factors that will definitely occur within the planning timeframe. Some assumptions might stem from factors that can be forecasted with almost complete

certainty such as death rate, available manpower in the near future. Some information may be considered as accurate and conclusive e.g. calculated natural resources, agricultural production. Often these assumptions concern constraints within which the organization is forced to work.

Other projections such as government policies and technology can be made at best with a high probability of occurrence. They can not be considered as assumption, but rather they are variables.

Step 5 : List key variables

A list of key variables can be made that will have make - or - break consequences for the program. The main consideration at this step is to identify without going into a lot of detail, those variables that have been crucial to the organization in the past and those that will be important to it in the future.

The planning task can be kept on a "shirt-sleeve" basis by limiting key variables to four or five. Therefore :

- Delete variables with low probability and low potential impact
- It is more important to include an event that is likely to happen or have an impact in the next few years
- Delete disaster events
- Aggregate when possible
- Remove dependent variables.

Step 6 : Determine plausible ranges for key variables

For each variable a reasonable range of values over which the former may vary can be chosen and divided into 3 sets : a 'middle ground' and the extremes. To maintain objectivity, you may want to seek the opinion of people in the field.

For instance, prices of imported medical equipment are expected to rise with 5 to 12 % yearly, with a most probable rate of 7 %. Costs of schistosomiasis control through drug treatment will depend on the distribution of the infective worm populations which on its turn will depend on the prevalence rate of the disease in the community. In a comparative study of different control methods

the prevalence rate at best can be considered variable e.g. it can be assumed to range between 10 and 40 %. But to limit the size of the analysis, cost-benefit computations will be performed for 10 and 40 % only.

For dependent variables their relationship to independent variables should be taken into account. Thus when determining ranges for independent quantities, they should be consistent with the corresponding expectations for dependent variables.

Step 7 : Build scenarios

Scenarios describe possible future operating environments for the organization. They are built by 1) selecting a value for each key variable, 2) estimating interactions between key variables, dependent variables and assumptions, and 3) developing a narration describing the future under this set of conditions.

Following suggestions may be helpful :

- Develop at least three, but no more than four, scenarios
- Select values of key variables so that scenarios are distinct from each other
- Keep scenarios plausible
- State variables and assumptions in abbreviated form. Write from viewpoint of someone standing in the future
- Limit length of each scenario
- Keep themes of each scenario neutral.

In 1974 WHO started long-term planning of its program. Questions on demographic evolution, socio-economic and environmental conditions arose.

One possibility was to adapt a best guess - a most propable scenario - approach for future environmental conditions by extrapolating past trends, making few assumptions and then suggesting a plan to achieve objectives within a set of conditions as if the best guess certainly would become the future.

Today an alternative approach is suggested by Multiple Scenario Analysis. Planners are hedging their bets by developing several widely varying scenarios and urging WHO to develop a strategy that may allow survival under any of them.

Based on the regionalized world model of the club of Rome, a number of possible scenarios have been derived describing the socio-economic conditions in which to plan for health in the long-run. Considering aid from and cooperation with developed countries as key variable the world situation has been analysed for the gap between rich and poor people. An analogous analysis has been performed of the world's demographic and nutritional status, depending on population control and food provision.

Long term perspectives on socio-economic development constitute a reference cadre within which health programs have to be planned. The interaction between socio-economic conditions and health programs can not be neglected when considering different alternative programs and evaluating possible outcomes.

Step 8 : Develop alternative strategies for each scenario

As suggested above, only when scenarios of environmental conditions have been built up, alternative strategies for each scenario to achieve the organization's goals and objectives can be evaluated.

A strategy can be defined as a set of decision rules to be followed by the decision-maker when faced with choice on an action variable. Strategies will depend upon alternatives perceived and the assessment (valuation and likelihood) of various outcomes.

Particular points which deserve discussion for each alternative proposal are :

- definition of technical aspects
- organizational frame required
- personnel and facilities needs
- costs in financial terms
- approximate benefits

Three alternative strategies for control of typhoid are illustrated in fig. 1 below : vaccination only, privy construction, and vaccination and privy construction. Curve A represents the incidence of cases of typhoid per 10.000 population, curve B cumulative benefits and curve C cumulative costs. Environmental conditions are assumed constant relative to the choice of the control program.

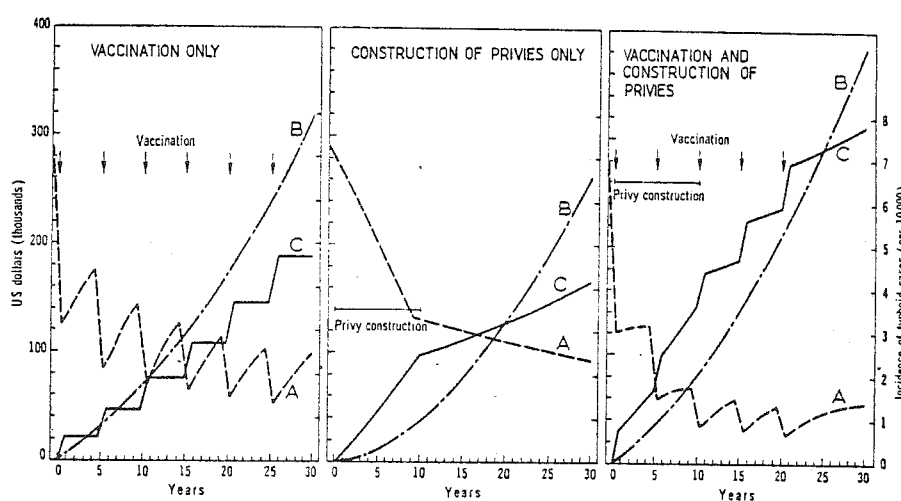


Fig. 1 The impact of 3 control programs on the incidence of typhoid, cumulative costs and benefits

SOURCE : B. CVJETANOVIC, (4), p.194

In fig. 2 below per capita costs for two fixious strategies namely e.g. drug treatment of infected persons and water treatment of breeding places for vectors in vector born disease control are illustrated for two scenario's : a 10 % prevalence rate of the disease and 40 % prevalence.

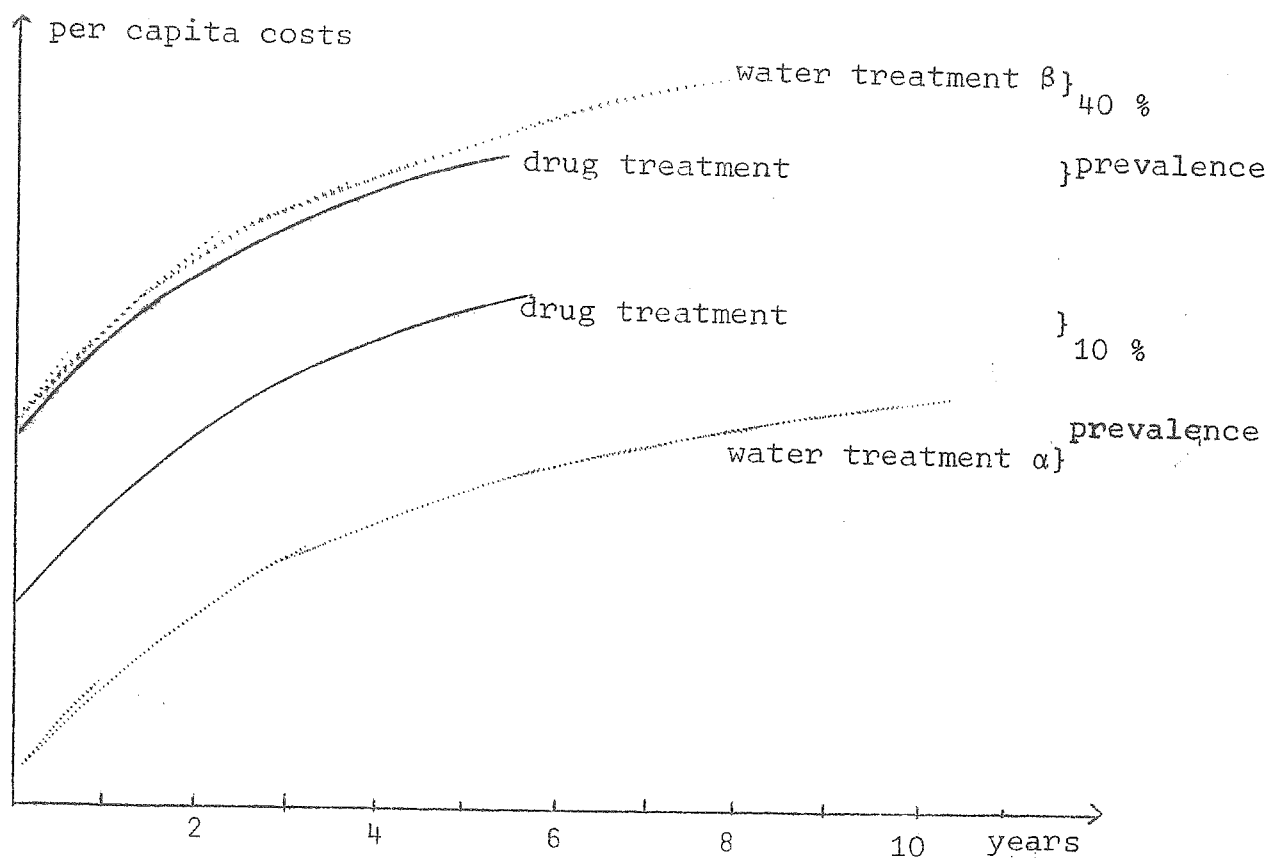


fig. 2

Final strategies within their respective scenarios should enable the organization to come close to its objectives taking into account priorities and constraints as well.

Because of the 'unpredictable future' greater emphasis should be placed on flexible strategies that have relatively high payoffs in short and intermediate time spans.

Step 9 : Check flexibility of strategies

To check the flexibility of each strategy in each scenario their effectiveness in other scenarios than those for which they have been conceived should be analysed.

For instance : let us assume that the prevalence rate in the considered region was assumed 10 %. Due to cost/benefit and/or incidence considerations in fig. 2 policy choice is made on a 10 year water treatment of intensity α .

Assume however that the prevalence rate does not show to be 10 % but 40 %. With the allocated budget therefore and the chosen strategy of watertreatment α only insufficient effectiveness can be obtained.

The question can be asked whether it would not have been more appropriate to consider the possibility of a 40 % prevalence rate when choosing the strategy instead of assuming the prevalence to be 10 % for sure.

Step 10 : Select an 'optimum' strategy

Once a strategy has been developed for each scenario one of them or a compromise can be chosen.

Because of personal and company attitudes toward risk, there can be no fixed rules to apply to make the ultimate choice. In general following factors should be taken into account :

1. maximum adaptability to several scenarios
2. favorable consequences in scenarios with high probability of occurrence
3. attractiveness in near future
4. provide maximum delay of expenditures, accounting for the impact of inflation.

At first sight ⁱⁿ the example of step 9 the choice of a strategy should take into account the possibility of a prevalence rate higher than 10 %. However increased costs of water treatment and an eventual decision for drug treatment may exceed the evaluated risk of still making the decision under the hypothesis that the prevalence rate in considered area will be 10 %.

§4. Conclusion

In this paper the decision-making process in the health sector has been discussed. Primary attention has been paid to strategic decisions on the 'activity-target group' mix for an health organization independent of its size or administrative level.

A simplified version of multiple scenario analysis is proposed for concrete policy making. It is not intended to be a method to predict future environmental conditions for a program, neither does it replace judgement on alternative proposals to face future events which might change today's environment. Instead it is a method for analysis that clearly takes into account two aspects of strategic decision-making : planning should be flexible enough to push the organization to the achievement of goals and objectives as the outcome of chosen action in an environment about which only little was known or could be predicted.

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