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## AN AHP-BASED DECISION CONFERENCE FOR RESTRUCTURING TURKISH VOCATIONAL EDUCATION SYSTEM

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**Summary:** *Vocational education system in Turkey is very outdated and is not aligned to the needs of the labor market. This paper exhibits the details of an AHP-based decision conference which is a major stage of a participatory decision support process held to recommend a proposal to the governmental authorities for restructuring the vocational education system. The process was sponsored by TUSIAD (Turkish Industrialists' and Businessmen's Association), a NGO comprised of Turkey's leading businessmen, and executed by Arama Participatory Management Consulting company. As a result; an integrated, multidimensional policy recommendation framework for restructuring Turkish vocational education system was revealed.*

### 1. Introduction

Developing countries should execute social and economic reforms in order to improve the welfare of their societies. As social reforms; the country should be secured a rightful place in the competitive world, the income distribution should be improved, new jobs should be created and unemployment should be diminished, and last but not least all young population should be given high quality education efficiently. Especially, vocational education system (VES) should be modernized and adapted in order to make it more responsive to socio-economic needs of the country.

For Turkey, one of the most promising developing countries, a well-trained manpower became essential to support industrialization after the establishment of the Republic. Nowadays, the demand for better-qualified and trained manpower has increased as VES in Turkey is very outdated and is not aligned to the needs of the labor market. Besides, Turkey's movement toward closer ties with the European Union (EU) has made the need for a competitive, highly skilled workforce even more critical. The Strengthening the Vocational Education and Training System Program in Turkey (SVET) is one of the main programs agreed between the EU and the Turkish Government to make Turkey able to fulfill the requirements of the Acquis Communautaire in the field of education and training (<http://www.megep.meb.gov.tr/indexen.html>). The SVET program is aimed at assisting the Turkish Government, through the Ministry of Education, in the process of modernization and adaptation of the Vocational Education and Training system to the socio-economic needs of the country and to the principles of life-long learning. The total budget of the SVET Program is 58.190.000 Euros, of which 51.000.000 Euro is non reimbursable grant assistance from the EU, and the remaining 7.190.000 Euro represents the in-kind contribution by the Government of Turkey.

With the understanding that to improve the competitiveness of the Turkish economy, very high quality labor force is required, TUSIAD (Turkish Industrialists' and Businessmen's Association) has strong interest in this issue also. TUSIAD, a NGO comprised of Turkey's leading businessmen, is a very powerful lobbying group in Turkey ([www.tusiad.org.tr](http://www.tusiad.org.tr)). TUSIAD believes that industrialists and other

business people should assume a leading role in Turkish society and encourages its members to act on this conviction. TUSIAD, in accordance with its mission and in the context of its activities, initiates public debate by communicating its position on a variety of issues. It conducts professional research projects, the findings of which are submitted directly to the Parliament, the Government, the media, international organizations, and other states.

Accordingly, TUSIAD initiated a program to develop recommendations to the Ministry of Education for restructuring VES. To defend the rationale of its recommendation and to take into account different points of view, including the labor foundation, labor unions, employers, and the current governmental authorities related to vocational education; a participatory process based on group decision making was executed.

The process was managed under the consultancy of Arama Participatory Management Consulting, the leading company related to management of participative workshops such as Search Conferences, Decision Conferences, Participative Design Workshops; and participative management processes such as Participative Planning, Sectoral Collaboration and Large Scale Transformation Processes ([www.aramasearch.com](http://www.aramasearch.com)).

The process has five stages:

1. A literature review and interviews with the important stakeholder groups, including Ministry of Education, Labor Foundation, Labor Unions, and employers from six selected sectors were conducted.
2. A Situation Assessment and System Modeling Workshop was held.
3. A Decision Conference based on Analytic Hierarchy Process (AHP) was organized.
4. The results of the conference were sent to a wider group of stakeholders and feedbacks were collected back.
5. Process outcomes were presented to the governmental authorities.

This paper focuses on the stage of AHP-based decision conference. The general background of decision conferencing is highlighted in the second section. The third section shows the application of the AHP-based decision conference for restructuring Turkish VES. At the final section, conclusions and further suggestions are given.

## **2. The Decision Conferencing General Background**

Our lives are the sum of our decisions whether in business or in personal spheres (Saaty, 2001). Making effective decisions about a complex issue involving conflicting criteria and several alternatives necessitates a systematic and comprehensive approach such as decision conference. Decision conferencing makes use of Multi-Criteria Decision Analysis (Aid) techniques to quantify and analyze the different strategic and investment alternatives ([www.catalyze.co.uk](http://www.catalyze.co.uk)). Decision conference is designed to bring together stakeholders related to an issue to work together to make a complex decision in a participatory environment. Often these stakeholder groups will include individuals responsible for addressing operational, planning, or strategic matters, but with different functional responsibilities, different measures, and different personalities. The Decision Conferencing process aims to assist these groups in creating an agreed way forward, shared understanding and a sense of common purpose. It can be applied to most major issues faced by private and governmental organizations, as well as issues of public administration, socio-economic systems, and national and international policies.

The Analytic Hierarchy Process (AHP) is one of the most widely used multi criteria decision making method utilized during decision conferences ([www.expertchoice.com](http://www.expertchoice.com); [www.creativedecisions.net](http://www.creativedecisions.net)). AHP captures priorities from paired comparison judgments of the elements of the decision with respect to each of their parent criteria (Saaty, 1980). Paired comparison judgments can be arranged in a matrix. Priorities are derived from this matrix as its principal eigenvector. Thus, the eigenvector is an intrinsic concept of a correct prioritization process. AHP allows the decision-maker to include intangibles along with tangible

numerical data from many sources to make a decision. It also helps decision maker to deal with many factors at the same time as it breaks the problem into parts and then synthesizes the parts together in a valid way. AHP provides a transparent framework of analysis leading to rational results and recommendations. On the other hand, stakeholder participation is necessary for large scale problems treated in decision conferences and AHP allows group decision making in a convenient way.

Arama Participatory Management Consulting has expertise of using AHP-based decision conferences in participative management processes over the last 15 years ([www.aramasearch.com](http://www.aramasearch.com)). In these decision conferences; issues related to corporate, sectoral, and large-scale systems as well as social and national policies are addressed for public, governmental, and non-governmental organizations and associations. The clients of Arama have used decision conferencing to prioritize projects and create added value, to develop corporate plans and strategies, to evaluate alternative visions for the future, to allocate funds across investment categories, to create a new policy for health care issues, etc.

Three steps characterize most AHP-based decision conference process: structuring, assessment, and synthesis.

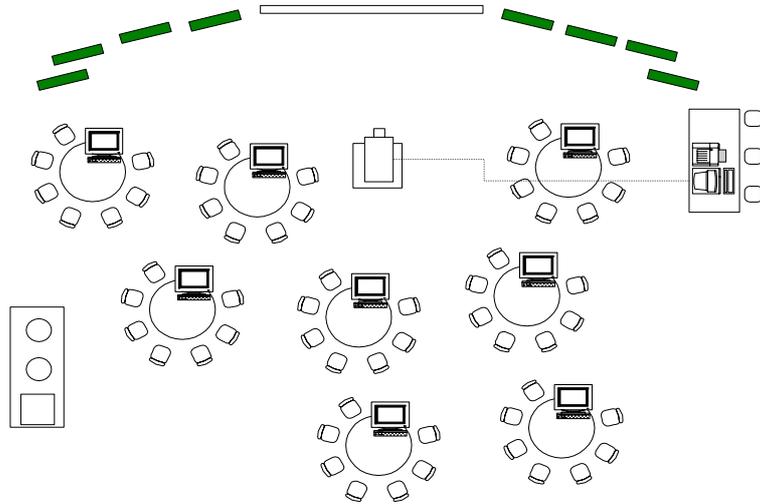
The structuring step, a broad exploration of issues, is executed before the decision conference. Depending on the data received from literature review, interviews with stakeholder groups, a search conference and/or a situation assessment and system modeling workshop; values and objectives are specified, relevant criteria and alternatives are identified and generated. All these concepts are used for constructing an AHP model. Meetings are held between client project owners and Arama consultants for model validation and verification. Revisions, if any, are made and the finalized AHP model is entered into the Team Expert Choice software ([www.expertchoice.com](http://www.expertchoice.com)).

Assessment and synthesis steps take place during the decision conference. These steps involve a one day workshop with all the appropriate stakeholder representatives. The invited participants are seated as seen in Figure 1. First of all, the previous stages of the process and the finalized AHP model are presented to the participants. Secondly, they are grouped based on the perspectives they are representing. At each table, there is a facilitator assessing the judgments of 6-9 participants and entering these judgments into the software. The facilitator asks pairwise comparison questions, the participants discuss the comparison and they either reach to a common judgment or if their evaluations differ, the average of their independent judgments is calculated by the software. The assessed judgments are synthesized by the software. The combined model from average of each table's judgment is created as the main model. As a result, overall priorities for all participants and group priorities for different perspectives are revealed. During the first session of the workshop, assessment and synthesis are made for relative importance of the criteria. At the end of the session, for each group, a volunteering member presents his or her group's priorities and examines the discrepancies between their results and overall results. After lunch, a second session is held to assess and synthesize the evaluation of alternatives. Similar presentations are also made at the end of this session. General discussion concludes the workshop.

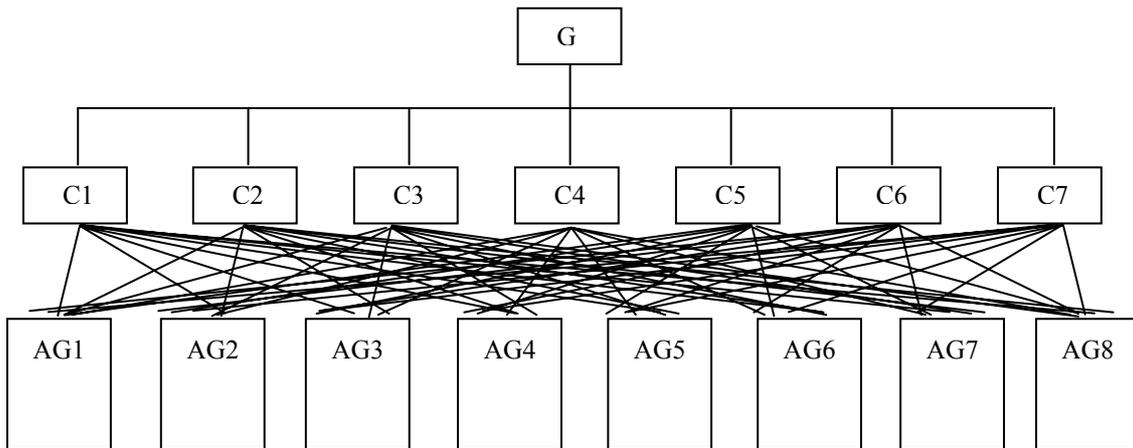
### **3. Application of the Decision Conference Method for Restructuring Turkish VES**

An AHP-based decision conference was also held for restructuring Turkish VES. In the structuring step, using the information from literature review, interviews with stakeholder groups, and the situation assessment and system modeling workshop, a hierarchical decision model was constructed. The model was not a standard AHP model in the sense that instead of having all alternatives in the bottom level; alternative groups representing policy dimensions were formed and selection among policies were made within each group (Figure 2). The independently selected policy decisions were integrated to describe a multidimensional framework for restructuring Turkish VES. The details of the decision model, namely the goal (G), the criteria ( $C_i$ ), alternative groups ( $AG_j$ ), and alternatives, were as follows:

**Figure 1. Setup for Decision Conference Meeting Room**



**Figure 2. The Decision Model**



**Goal**

**G:** “Satisfying the qualified intermediate level labor force requirements of the Turkish economy to improve overall social welfare and to ensure economic competitiveness.”

**Criteria**

**C1:** Improving the attractiveness of VES

Eliminating the perception that university education is the only attractive path for receiving occupational training and that vocational education is a second class alternative.

**C2:** Effective utilization of resources allocated to VES

Efficient and effective utilization of resources allocated to vocational education from the Ministry of Education budget as well as from other sources

**C3:** Providing flexibility to the graduates of vocational education

Providing the vocational education graduates, fundamental scales that will help them adapt to fast changes in their occupations because of reasons like fast technological developments and globalization; or change their occupations. Such skills include easy adaptation, communication, being able to reach correct information, being able to make decision and take initiative, creativity, team work, and continuous self development

**C4: Improving the quality of VES**

Improving the quality of trainers, curriculum, the hardware and the equipment used in vocational education

**C5: Internationally acceptable certification of vocational education graduates**

Ensuring that the certifications of Turkish VES are internationally acceptable therefore the labor force has international mobility

**C6: The VES being compatible with contemporary standards and renewable**

Ensuring that the vocational education system is up-to-date and in line with the development in the business environment and is renewable

**C7: Providing equal opportunity to all that wants to receive vocational education**

Ensuring that all citizens regardless of their gender, socio-economic situation, and their background have equal opportunity to receive vocational education

**Alternative groups and alternatives**

**AG1: Mode of financing for vocational schools**

- Financed by the government
- Financed by the private sector
- Financed by NGO's, including charity foundations, sectoral associations or chambers

**AG2: Planning and preparation of the curriculum and the examinations**

- Planning and preparation of the curriculum and the examinations by the related units in the Ministry of Education; thereby, standardization and central planning and the control of the curriculum and the examinations by the Ministry of Education
- Planning and preparation of the curriculum and the examinations by a central commission working in connection with the Ministry of Education; thereby, standardization and central planning and the control of the curriculum and the examinations not fully by the Ministry of Education but by an independent commission including stakeholders related to the issue.
- Determination of the norms and general principles related to the curriculum and the examinations by the Ministry of Education but final preparation of them to be accomplished by schools; thereby partial autonomy given to schools according to a general framework.
- Full preparation of the curriculum and the examinations by the schools; thereby full autonomy given to schools.

**AG3: Planning the numbers of vocational schools in each occupational area and the number of students that will attend these schools**

- Central planning
- Regional / local planning
- Determination of the numbers of schools and the students according to labor market conditions without a central planning mechanism

**AG4: Age of starting vocational education**

- Starting orientation during primary education
- Starting after 8-year primary education
- Starting after high school (11-year general education)
- Life long learning

**AG5: Weight of educational content**

- General theoretical content (history, geography, mathematics, grammar, etc.)
- Vocational theoretical background (fundamental theoretic vocational information including laws and regulations, working principles of machinery and equipment, etc.)
- Fundamental skills (communication, teamwork, interpersonal skills, accessing and using the right information, etc.)
- Foreign languages
- Applied vocational training in workshops in the schools
- Applied training in the companies in the form of part-time employment or internships

**AG6: Program structure**

- Granting a diploma upon completion of a fixed program by all of the students
- Designing programs in a modular system, granting a certificate to the students for completion of every module. The certificates will be turned into diplomas upon accumulation to a certain credit or they can be used for recruitment by themselves without a diploma.

**AG7: Focus of the schools**

- Occupational focus; the students will receive training mainly related to their future professions
- Sectoral focus; the students will receive sectoral lessons as a basis later focus on their specific professions

**AG8: Level of support for continuation to university education**

- Supporting the vocational school graduates for continuing to university education in related areas; for example a machinery department graduate will continue to mechanical engineering education in university
- Supporting the vocational school graduates to enter professional life as intermediate level workforce without having a university education
- Enabling the vocational school graduates to have university education in every area, having the same opportunities as regular high school graduates have.

The assessment and synthesis steps were made in the decision conference workshop with the participation of 28 stakeholder representatives. The participants were distributed to the groups according to five perspectives representing five strategically important sectors for the Turkish economy: information and communications technologies, textiles and clothing, tourism, energy and industry, and logistics.

The workshop was held in two sessions: in the morning session, the criteria were prioritized; in the afternoon session, the policy alternatives were evaluated with respect to these criteria. The outcomes of the workshop, including overall and perspective results, are presented in Table 1 and 2.

**Table 1. Overall and Perspective Importance for Criteria**

Criteria	Overall	IT & Comm.	Textiles & Cloth	Tourism	Energy & Ind.	Logistics
<b>C4:</b> Improving the quality of VES	<b>19.90%</b>	12.60%	<b>28.00%</b>	15.50%	17.60%	20.10%
<b>C6:</b> The VES being compatible with contemporary standards & renewable	17.90%	16.40%	9.70%	19.00%	19.30%	19.30%
<b>C1:</b> Improving the attractiveness of VES	15.50%	11.30%	24.50%	9.00%	10.60%	<b>20.30%</b>
<b>C5:</b> Internationally acceptable certification of VE graduates	14.50%	<b>32.30%</b>	4.70%	13.30%	11.10%	17.30%
<b>C2:</b> Effective utilization of resources allocated to VES	14.50%	7.70%	12.10%	<b>33.40%</b>	<b>21.40%</b>	5.80%
<b>C3:</b> Providing flexibility to the VE graduates	12.90%	11.60%	18.60%	8.10%	12.90%	10.00%
<b>C7:</b> Providing equal opportunity to all that wants to receive VES	4.80%	8.10%	2.40%	1.70%	7.00%	7.20%

As can be seen from Table 1, the most important criterion was improving the quality of VES, followed by having VES being compatible with contemporary standards and renewable. Textile perspective had the same criterion as the most important one. On the other hand, perspectives other than textile did not find improving the quality of VES as the most important one. Only logistics perspective launched this criterion as the second important criterion. According to information and communications technology perspective, the most important criterion was internationally acceptable certification of vocational

education graduates. Effective utilization of resources allocated to VES criterion was found as the most important one by both energy and industry perspective and tourism perspective. Finally, improving the attractiveness of VES criterion was the most important criterion for logistics perspective.

**Table 2. Overall and Perspective Preference for Policy Alternatives**

<b>Policy Alternatives</b>	<b>Overall</b>	<b>IT &amp; Comm.</b>	<b>Textiles &amp; Cloth</b>	<b>Tourism</b>	<b>Energy &amp; Ind.</b>	<b>Logistics</b>
<b>AG1: Mode of financing for vocational schools</b>						
• Financed by NGO's	<b>40.92%</b>	<b>48.54%</b>	<b>42.05%</b>	<b>46.67%</b>	34.78%	<b>37.09%</b>
• Financed by the private sector	38.10%	36.17%	40.48%	39.15%	<b>38.25%</b>	<b>37.01%</b>
• Financed by the government	20.98%	15.30%	17.47%	14.19%	26.97%	25.90%
<b>AG2: Planning and preparation of the curriculum and the examinations</b>						
• M. of Ed.: Determination of principles; Schools: preparation	<b>34.10%</b>	33.33%	<b>60.00%</b>	<b>35.88%</b>	<b>27.24%</b>	<b>32.34%</b>
• Schools	31.01%	<b>55.56%</b>	20.00%	33.45%	24.12%	28.94%
• A central commission in connection with the M. of Ed.	22.46%	11.11%	20.00%	17.84%	25.90%	27.71%
• The related units in the M. of Ed.	12.43%	0.00%	0.00%	12.83%	22.74%	11.01%
<b>AG3: Planning # of vocational schools and # of students</b>						
• According to labor market conditions	<b>52.05%</b>	<b>83.33%</b>	<b>57.14%</b>	<b>48.35%</b>	<b>40.67%</b>	<b>52.58%</b>
• Regional / local planning	32.61%	16.67%	28.57%	40.91%	32.54%	36.91%
• Central planning	15.35%	0.00%	14.29%	10.74%	26.79%	10.52%
<b>AG4: Age of starting vocational education</b>						
• Starting orientation during primary education	<b>31.42%</b>	33.33%	<b>39.02%</b>	<b>54.87%</b>	16.44%	<b>29.87%</b>
• Starting after 8-year primary education	27.87%	16.67%	30.96%	45.13%	25.15%	28.40%
• Life long learning	25.08%	<b>41.67%</b>	23.33%	0.00%	27.91%	22.59%
• Starting after high school (11-year general education)	15.62%	8.33%	6.70%	0.00%	<b>30.51%</b>	19.15%

Table 2. *continues*

Policy Alternatives	Overall	IT & Comm.	Textiles & Cloth	Tourism	Energy & Ind.	Logistics
<b>AG5: Weight of vocational educational content</b>						
• Applied training in the companies	20.85%	19.04%	23.68%	21.73%	21.83%	21.12%
• Fundamental skills	18.73%	18.43%	21.83%	17.40%	19.55%	17.48%
• Foreign languages	18.46%	19.04%	12.38%	21.73%	15.30%	23.11%
• Applied vocational training in workshops in the schools	18.30%	15.23%	23.68%	21.73%	14.94%	16.99%
• Vocational theoretical background	16.41%	16.76%	18.44%	13.04%	19.38%	14.37%
• General theoretical content	7.26%	11.50%	0.00%	4.36%	8.99%	6.92%
<b>AG6: Vocational education program structure</b>						
• Designing programs in a modular system	70.63%	100%	62.30%	83.33%	65.15%	60.89%
• Granting a diploma upon completion of a fixed program	29.37%	0.00%	37.70%	16.67%	34.85%	39.11%
<b>AG7: Focus of the vocational education schools</b>						
• Sectoral focus	52.28%	53.69%	42.56%	67.61%	45.38%	55.54%
• Occupational focus	47.72%	46.31%	57.44%	32.39%	54.62%	44.46%
<b>AG8: Level of support for continuation to university education</b>						
• Supporting graduates to enter professional life as intermediate level workforce	44.36%	55.46%	50.82%	52.73%	34.40%	44.25%
• Supporting graduates for continuing to university education in related areas	38.95%	44.54%	39.22%	32.47%	44.07%	29.65%
• Enabling graduates for continuing to university education in every area	16.69%	0.00%	9.95%	14.80%	21.53%	26.10%

#### 4. Conclusions and Further Suggestions

The decision conference outcomes represent an integrated, multidimensional policy recommendation framework as follows:

- Financed primarily by the NGOs or by the private sector
- Full or partial autonomy given to schools in planning and preparation of the curriculum and the examinations

- Determination of the number of schools and the students according to labor market conditions without a central planning mechanism
- Starting vocational orientation during primary education and starting vocational education after 8-year primary education, emphasizing lifelong learning
- Giving the highest weight in educational content to applied training in companies in the form of part time employment or internship and supporting it with applied training in workshops in the schools and fundamental skills like communication, teamwork, interpersonal skills, accessing and using the right information, etc.
- Designing programs in the modular system, granting a certificate to the students for completion of every module. The certificates will be turned into diplomas upon accumulation to a certain credit or they can be used for recruitment by themselves without a diploma.
- Having sectoral focus; the students will receive sectoral lessons as a basis later focus on their specific professions
- Supporting the vocational school graduates to enter professional life as intermediate level workforce without having a university education or supporting the vocational school graduates for continuing to university education only in related areas.

This framework has radically different dimensions compared to the current situation. It represents a major shift from government financed and controlled vocational education to a private sector or NGO financed and controlled model. In line with this perspective, it recommends that the numbers of schools and the students should be determined by the labor market conditions. In other words, it stresses the importance of training students only in areas where there is a need for employment; contrary to the current situation where students receive training in very outdated professions like carpentry, handcrafts, etc. As a result of the current system, according to the Ministry of Education statistics, only 12% of vocational school graduates work in the area where they are trained in.

It also underlines the importance of directing the vocational school graduates to enter professional life as intermediate level workforce instead of the current situation in which majority of the vocational school graduates aim to enter university. This is also very much related to improving the attractiveness of vocational schools by transforming them to give training demanded by the employers, as stated above. Only this way, students can be confident that they can earn a living that with their vocational school diplomas and might prefer to enter professional life without making a further four-year investment in university education.

Another very major shift is in the focus and application of the educational content. The framework emphasizes the application of modular certification system in accordance with the European applications; currently only very minor efforts are being realized in Turkey in this direction. Another very critical area of change is in the skills that are aimed to be provided to the students. In the recommended framework, the major skill is determined to be “flexibility” and “adoptability to change” contrary to the current application in which the schools are very narrowly focused on specific professions. Flexibility and adoptability are very critical given the current rapid pace of change in the business environment resulting from intensifying competition as a result of globalization and fast technological development. These skills are underlined in three dimensions of the framework: providing a sectoral focus thereby facilitating change of profession within each sector, giving a higher weight in educational curriculum to basic skills and emphasizing the importance of lifelong learning.

This framework outlines the directions in the fundamental dimensions of VES; in other words it presents a vision to the Turkish VES. However, it does not present a roadmap to implement this vision. Very large scale change efforts should be put in action in every dimension. For example, shift of focus from government-financed schools to privately financed schools is a very major change and the transmission phase should be handled very carefully. Also determination of the numbers of schools and students by labor market conditions is very hard to implement and the application mechanisms should be designed.

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