

PRO 3475 – Gestão de Projetos

Aula Laboratório: **Super Decisions**



O quão racional você é ao decidir?

Versão 3.2 do Super Decisions

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The **Super Decisions** is decision support software that implements the **AHP** and **ANP**.

The **Analytic Hierarchical Process (AHP)** and the **Analytic Network Process (ANP)** make it possible to include **intangibles** in decision making.

AHP/ANP are the most powerful synthesis methodologies for combining judgment and data to effectively rank options and predict outcomes.

Super Decisions

SuperDecisions is decision making software based on the Analytic Hierarchy Process (AHP) and the Analytic Network Process (ANP). Decision making is all about setting priorities and the AHP and ANP, award-winning decision processes are the way to do that.

AHP/ANP Vision Sponsors

MM

MaestroMeetings Inc is a nonprofit organization dedicated to promoting academic and social change collaborations by supporting its partners to plan, organize, and manage high-quality



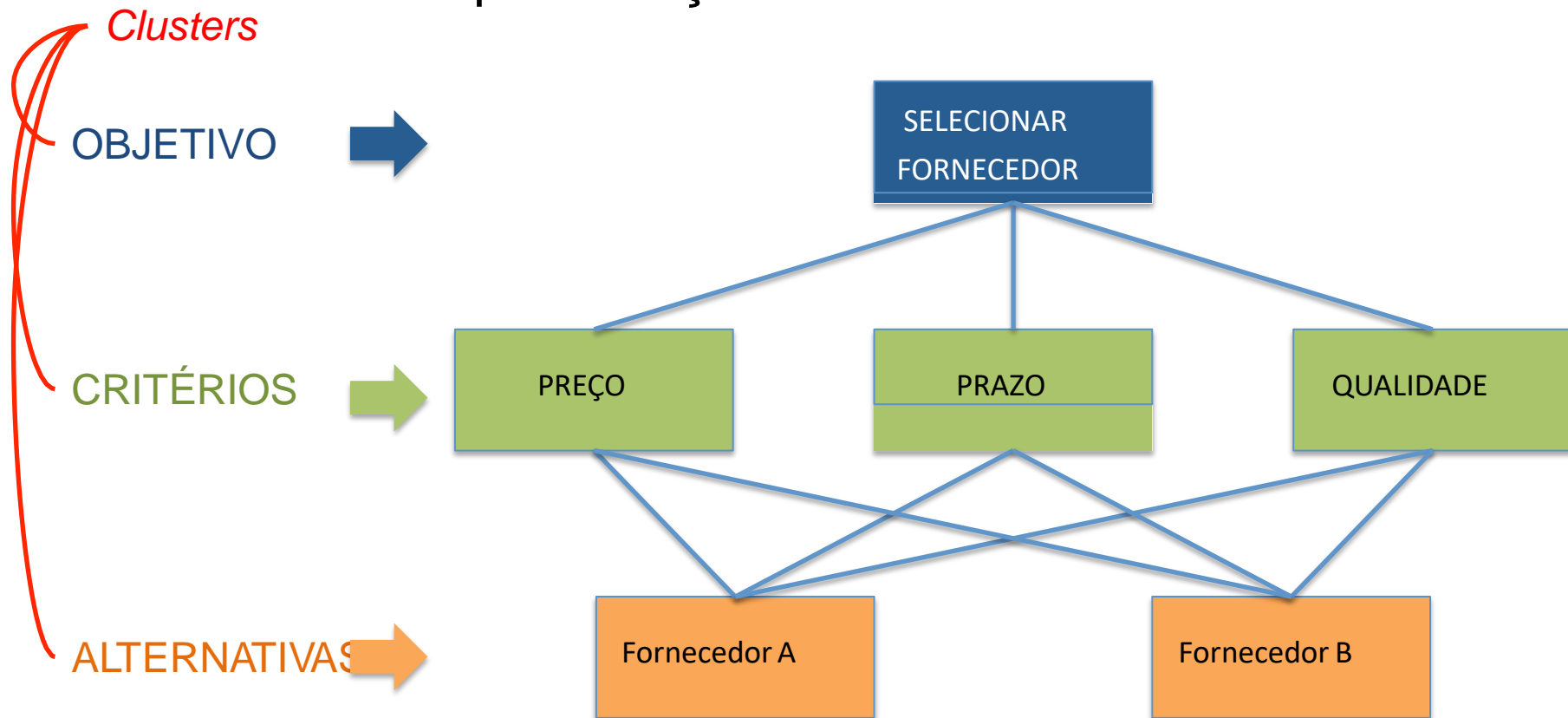
Passos do Analytic Hierarchy Process (AHP)

1. Definir o objetivo;
2. Estruturar os elementos em critérios, subcritérios, alternativas, etc.;
3. Comparar os elementos, de 2 em 2;
4. Calcular os pesos e verificar a taxa de consistência;
5. Avaliar as alternativas quanto à ponderação; e
6. Formar o ranking.

Vamos fazer isso no Super Decisions...

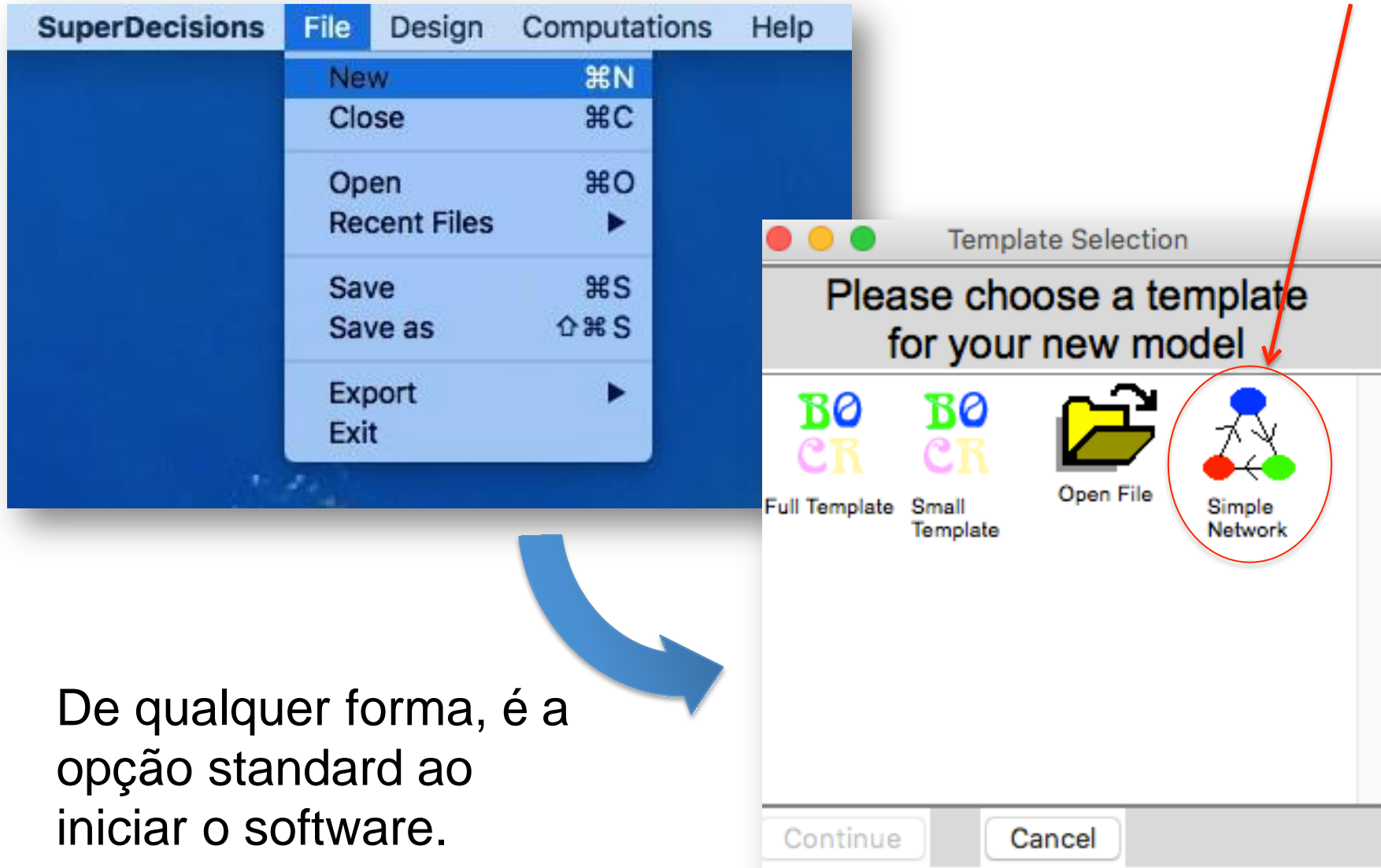
Analytic Hierarchy Process (AHP)

Exemplo: seleção de um fornecedor...



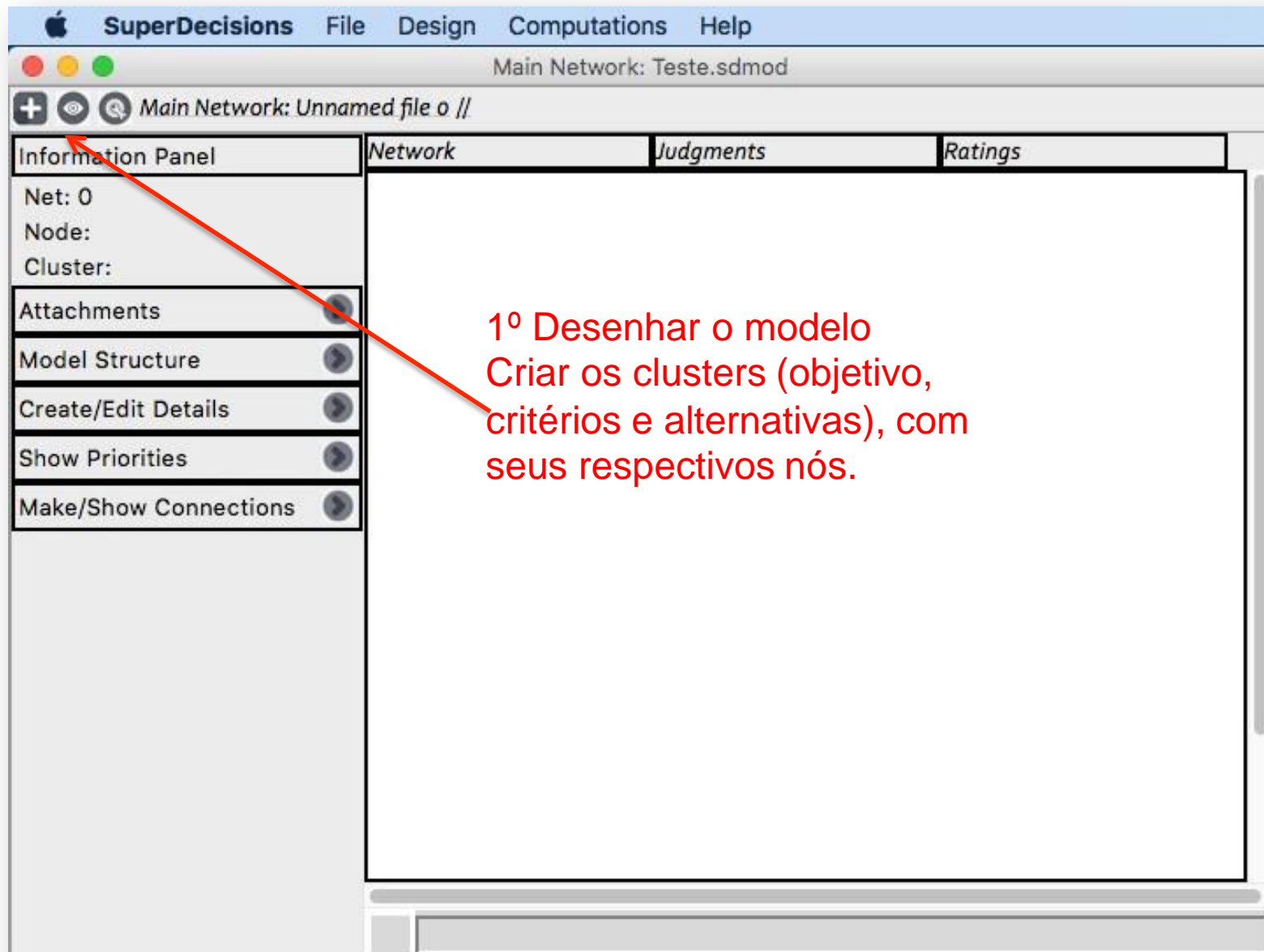
Vamos reproduzir esse modelo no software.

Versão 3.2 do Super Decisions

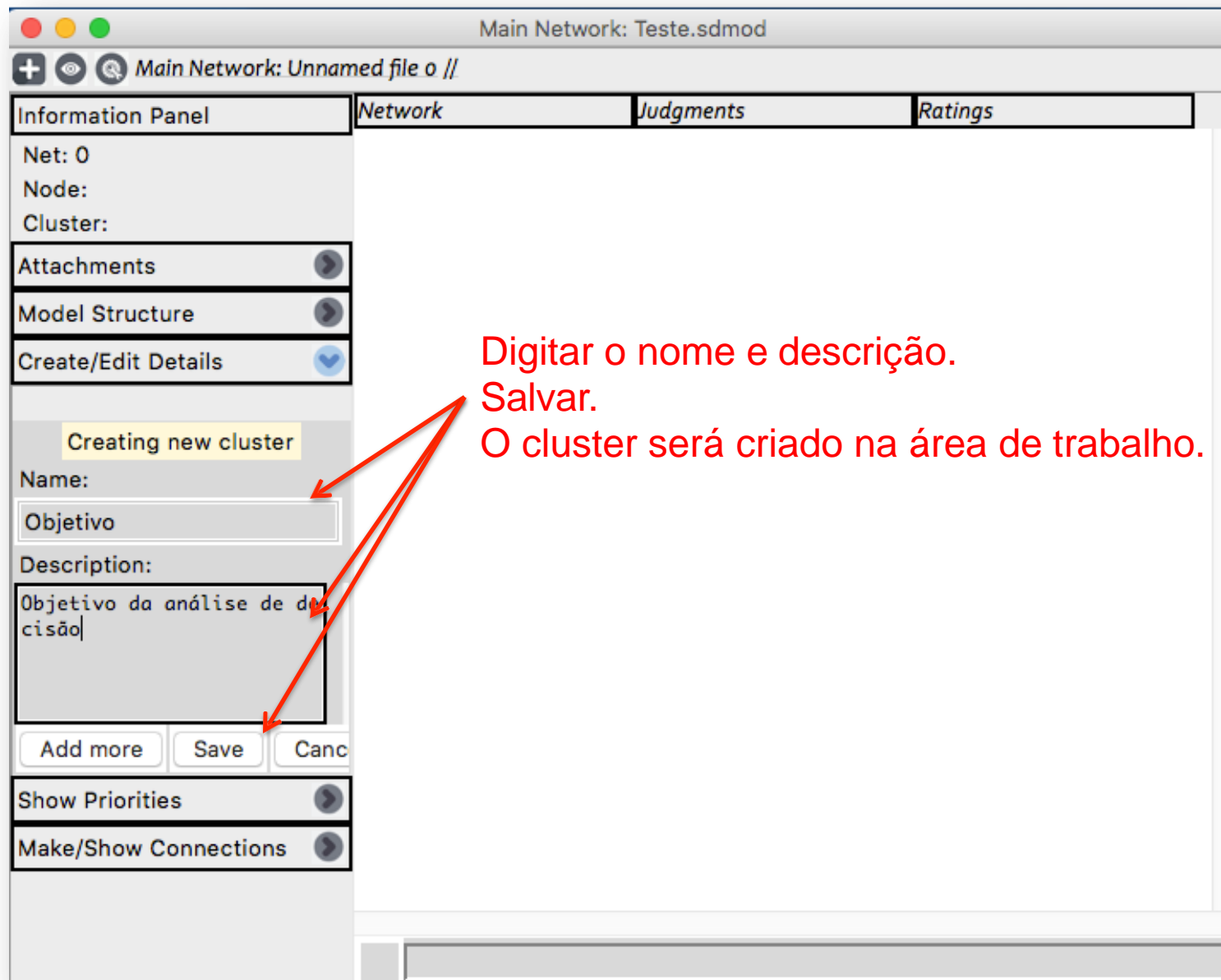


De qualquer forma, é a opção standard ao iniciar o software.

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Versão 3.2 do Super Decisions



Information Panel

Network Judgments Ratings

Net: 0
Node:
Cluster:

Attachments
Model Structure
Create/Edit Details

Creating new cluster

Name:
Objetivo

Description:
Objetivo da análise de decisão

Add more Save Cancel

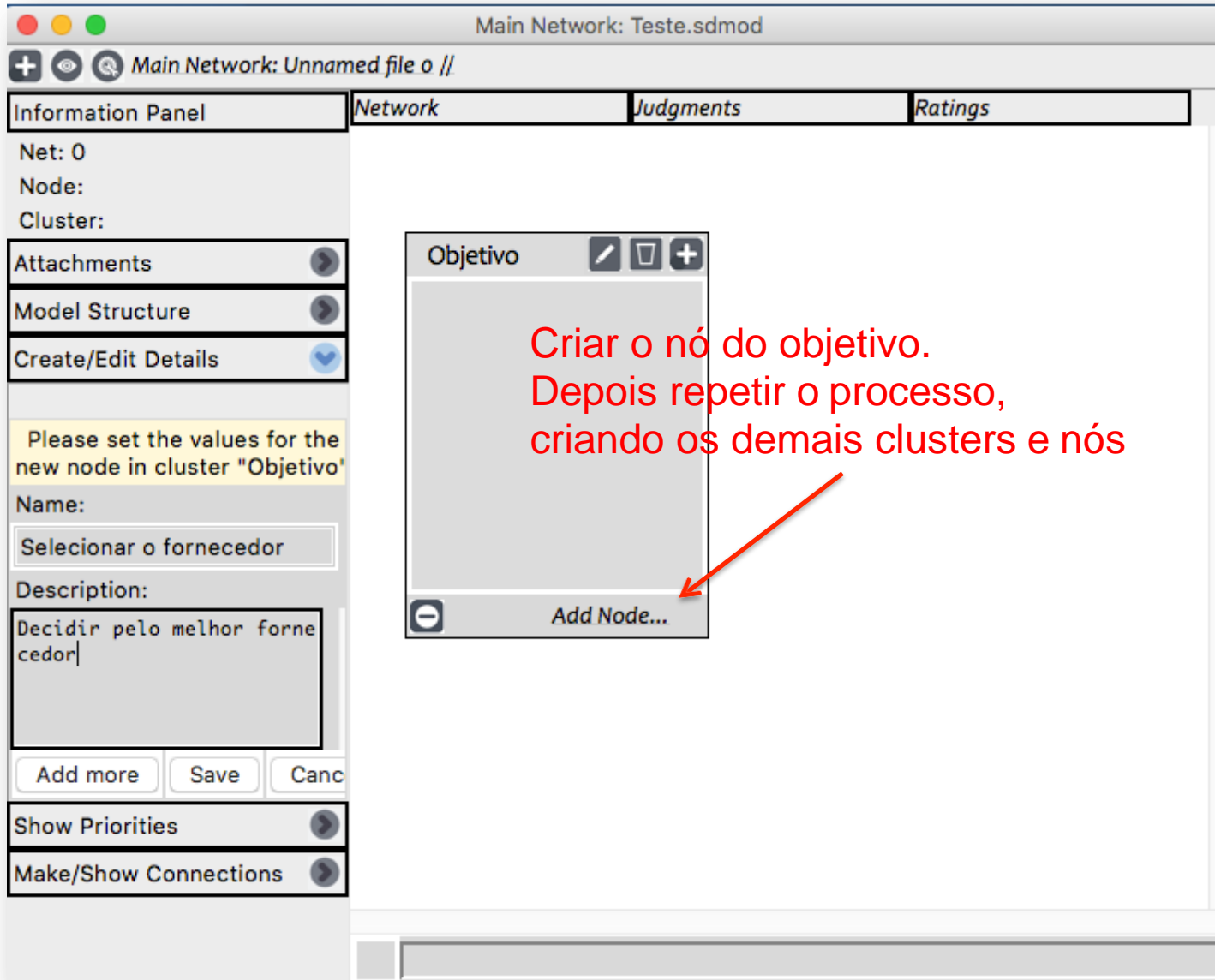
Show Priorities
Make/Show Connections

Main Network: Teste.sdmod

Main Network: Unnamed file 0 //

Digitar o nome e descrição.
Salvar.
O cluster será criado na área de trabalho.

Versão 3.2 do Super Decisions



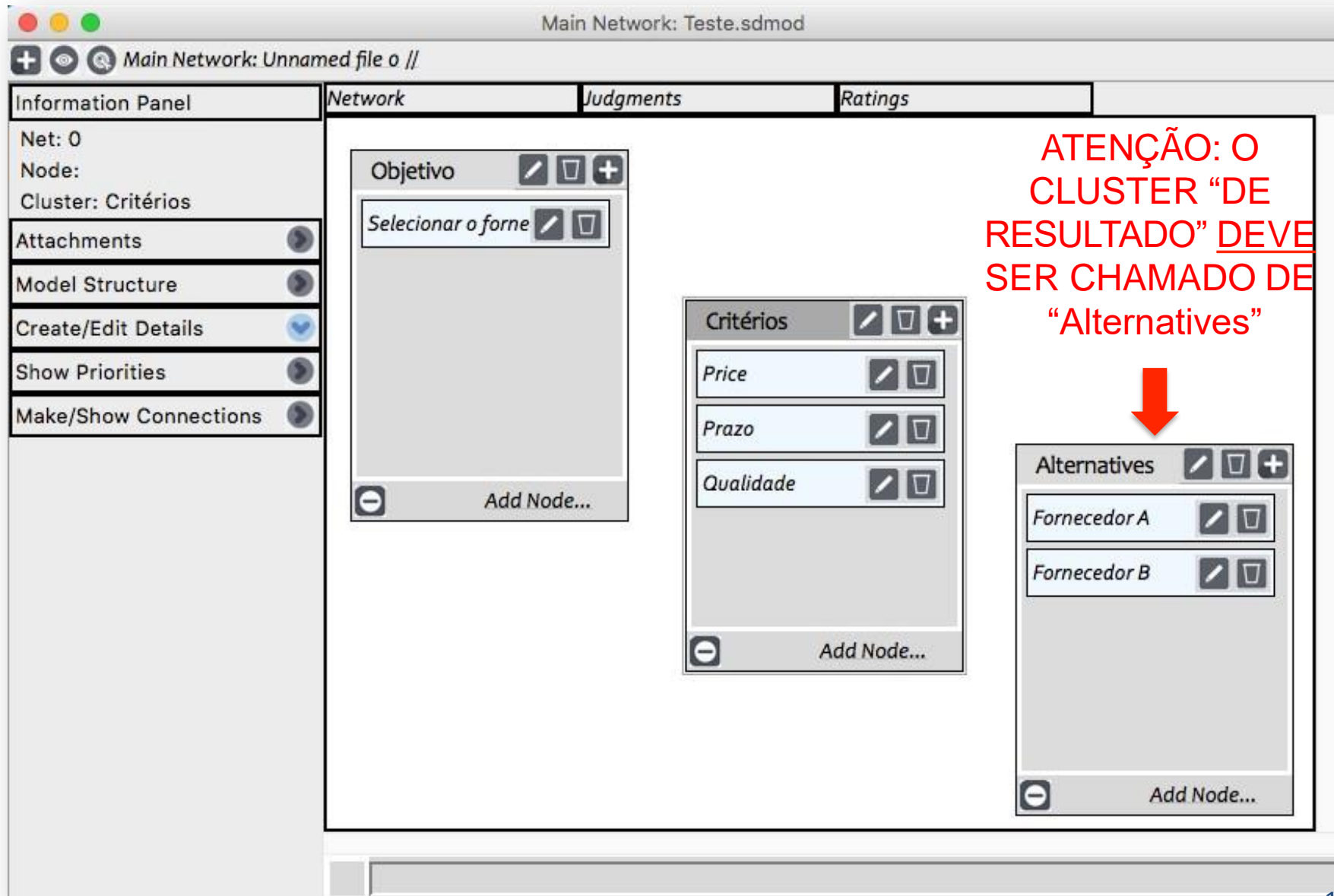
The screenshot shows the Super Decisions software interface. The main window is titled "Main Network: Teste.sdmod" and has three tabs: "Network", "Judgments", and "Ratings". The "Network" tab is active. On the left, there is an "Information Panel" with fields for "Net: 0", "Node:", and "Cluster:". Below this are sections for "Attachments", "Model Structure", and "Create/Edit Details". A yellow highlight is present in the "Create/Edit Details" section with the text "Please set the values for the new node in cluster 'Objetivo'". Below this are fields for "Name:" (containing "Selecionar o fornecedor") and "Description:" (containing "Decidir pelo melhor fornecedor"). At the bottom of the panel are "Add more", "Save", and "Cancel" buttons. The main workspace shows a cluster named "Objetivo" with a red arrow pointing to the "Add Node..." button at the bottom of the cluster window.

Objetivo

Criar o nó do objetivo.
Depois repetir o processo,
criando os demais clusters e nós

Add Node...

Versão 3.2 do Super Decisions



The screenshot displays the Super Decisions software interface. The main window is titled "Main Network: Teste.sdmod". The interface is divided into several panels:

- Information Panel:** Located on the left, it shows "Net: 0", "Node:", and "Cluster: Critérios". It also has sections for "Attachments", "Model Structure", "Create/Edit Details", "Show Priorities", and "Make/Show Connections".
- Network Panel:** The central area, currently showing the "Network" tab. It contains three main nodes:
 - Objetivo:** Contains a sub-node "Selecionar o forne".
 - Critérios:** Contains sub-nodes "Price", "Prazo", and "Qualidade".
 - Alternatives:** Contains sub-nodes "Fornecedor A" and "Fornecedor B".

Each node has edit, delete, and add icons. There is an "Add Node..." button at the bottom of each node's container.

ATENÇÃO: O CLUSTER "DE RESULTADO" DEVE SER CHAMADO DE "Alternatives"

A red arrow points from the text above to the "Alternatives" node.

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PARA CRIAR OS RELACIONAMENTOS ENTRE VARIÁVEIS (NÓS) DO MODELO....



The screenshot shows the 'Main Network: Teste.sdmod' window with the 'Network' tab selected. The 'Information Panel' on the left shows the current node is 'Selecionar o fornecedor' under the 'Objetivo' cluster. The 'Make/Show Connections' panel is active, showing a table of nodes and their connection status.

| Nodes | Connecte |
|----------------|-------------------------------------|
| Fornecedor A | <input type="checkbox"/> |
| Fornecedor B | <input type="checkbox"/> |
| Prazo | <input checked="" type="checkbox"/> |
| Price | <input checked="" type="checkbox"/> |
| Qualidade | <input checked="" type="checkbox"/> |
| Selecionar ... | <input type="checkbox"/> |

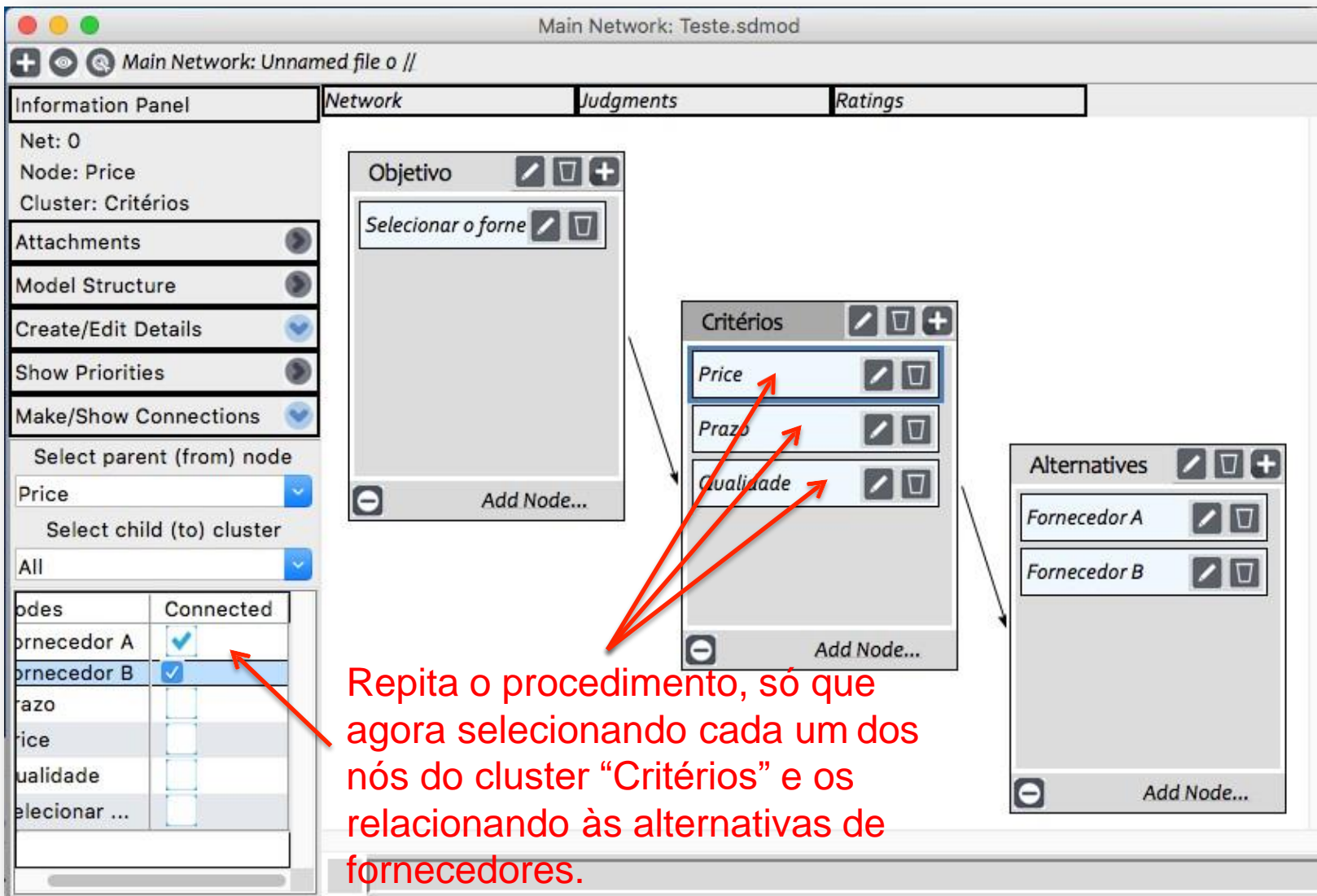
Other clusters visible include 'Objetivo' (with 'Selecionar o fornecedor'), 'Critérios' (with 'Price', 'Prazo', 'Qualidade'), and 'Alternatives' (with 'Fornecedor A', 'Fornecedor B').

1- Selecione o nó do cluster objetivo.
2 - Abra o painel "Make/Show Connections"

Selecione os nós do cluster "Critérios"

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PARA CRIAR OS RELACIONAMENTOS ENTRE VARIÁVEIS (NÓS) DO MODELO....



The screenshot shows the 'Main Network: Teste.sdmod' window. The 'Network' tab is active, displaying three clusters: 'Objetivo' (containing 'Selecionar o forne'), 'Critérios' (containing 'Price', 'Prazo', and 'Qualidade'), and 'Alternatives' (containing 'Fornecedor A' and 'Fornecedor B'). The 'Information Panel' on the left shows 'Net: 0', 'Node: Price', and 'Cluster: Critérios'. Below it, there are fields for 'Select parent (from) node' (Price) and 'Select child (to) cluster' (All). At the bottom left, a table shows the following data:

| Nodes | Connected |
|----------------|-------------------------------------|
| Fornecedor A | <input checked="" type="checkbox"/> |
| Fornecedor B | <input checked="" type="checkbox"/> |
| Prazo | <input type="checkbox"/> |
| Price | <input type="checkbox"/> |
| Qualidade | <input type="checkbox"/> |
| Selecionar ... | <input type="checkbox"/> |

Red arrows indicate the process of creating relationships: one arrow points from the 'Price' node in the 'Critérios' cluster to the 'Fornecedor A' node in the 'Alternatives' cluster, and another arrow points from the 'Fornecedor B' node in the 'Alternatives' cluster to the 'Price' node in the 'Critérios' cluster. A third arrow points from the 'Fornecedor B' row in the table to the 'Critérios' cluster.

Repita o procedimento, só que agora selecionando cada um dos nós do cluster "Critérios" e os relacionando às alternativas de fornecedores.

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AGORA VAMOS COMPRAR OS ELEMENTOS AOS PARES.

Main Network: Teste.sdmod

Main Network: Unnamed file o //

Information Panel

Net: 0
Node: Selecionar o fornecedor
Cluster: Objetivo

Attachments

Model Structure

Create/Edit Details

Show Priorities

Make/Show Connections

Select parent (from) node
Selecionar o fornecedor

Select child (to) cluster
All

| Nodes | Connecte |
|----------------|-------------------------------------|
| Fornecedor A | <input type="checkbox"/> |
| Fornecedor B | <input type="checkbox"/> |
| Prazo | <input checked="" type="checkbox"/> |
| Price | <input checked="" type="checkbox"/> |
| Qualidade | <input checked="" type="checkbox"/> |
| Selecionar ... | <input type="checkbox"/> |

Network

Judgments

Ratings

Objetivo

Selecionar o fornecedor

Add Node...

Critérios

Price

Prazo

Qualidade

Add Node...

Alternatives

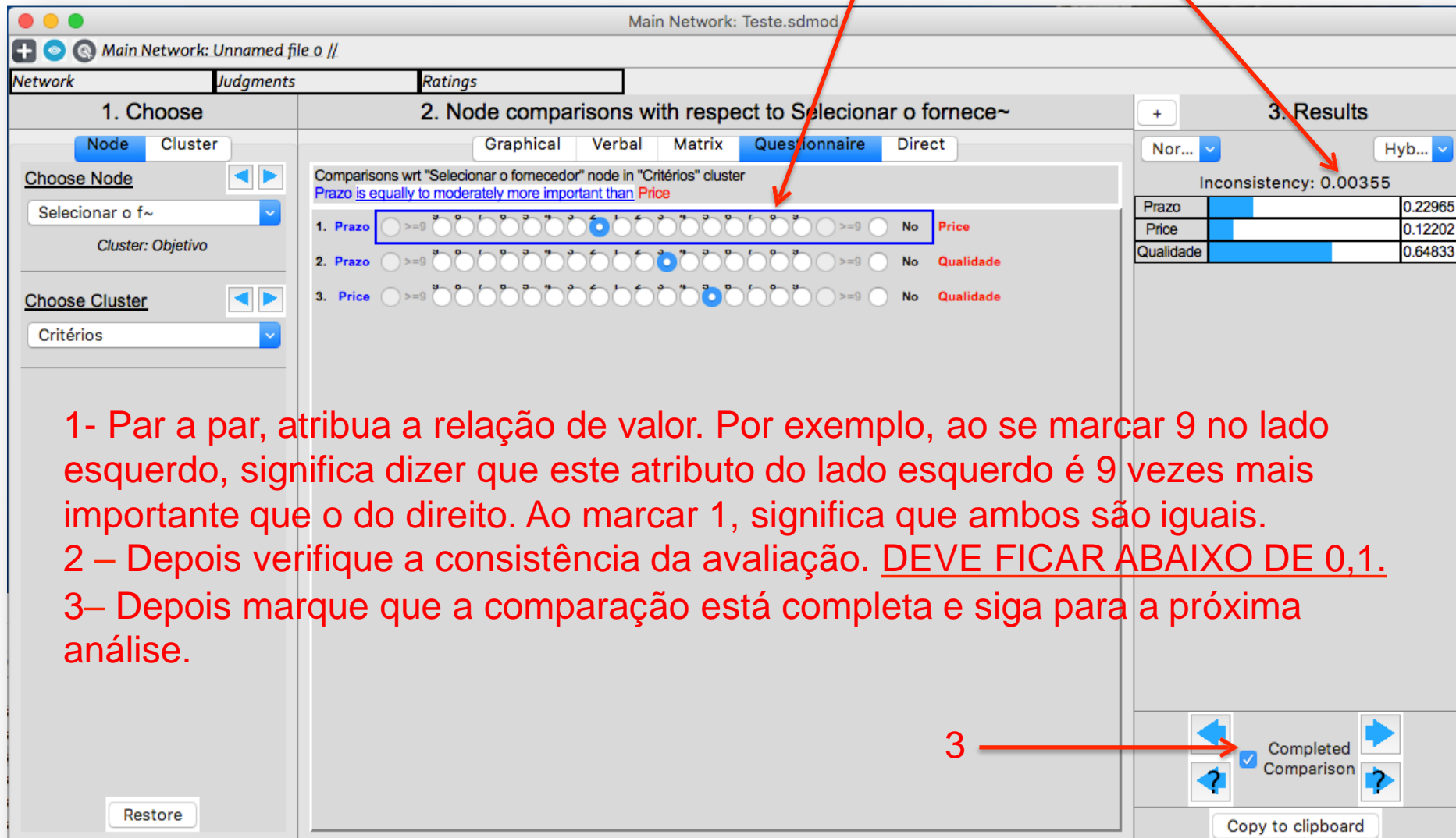
Fornecedor A

Fornecedor B

Add Node...

SELECIONE O NÓ DO OBJETIVO E DEPOIS ACESSE O PAINEL "JUDGEMENTS"

Versão 3.2 do Super Decisions



Main Network: Teste.sdmod

Main Network: Unnamed file o //

Network Judgments Ratings

1. Choose

Node Cluster

Choose Node

Selecionar o f~

Cluster: Objetivo

Choose Cluster

Critérios

2. Node comparisons with respect to Selecionar o fornece~

Graphical Verbal Matrix Questionnaire Direct

Comparisons wrt "Selecionar o fornecedor" node in "Critérios" cluster

Prazo is equally to moderately more important than Price

1. Prazo >=9 1 2 3 4 5 6 7 8 9 >=9 No Price

2. Prazo >=9 1 2 3 4 5 6 7 8 9 >=9 No Qualidade

3. Price >=9 1 2 3 4 5 6 7 8 9 >=9 No Qualidade

3. Results

Nor... Hyb...

Inconsistency: 0.00355

| | |
|-----------|---------|
| Prazo | 0.22965 |
| Price | 0.12202 |
| Qualidade | 0.64833 |

Restore

3

Completed Comparison

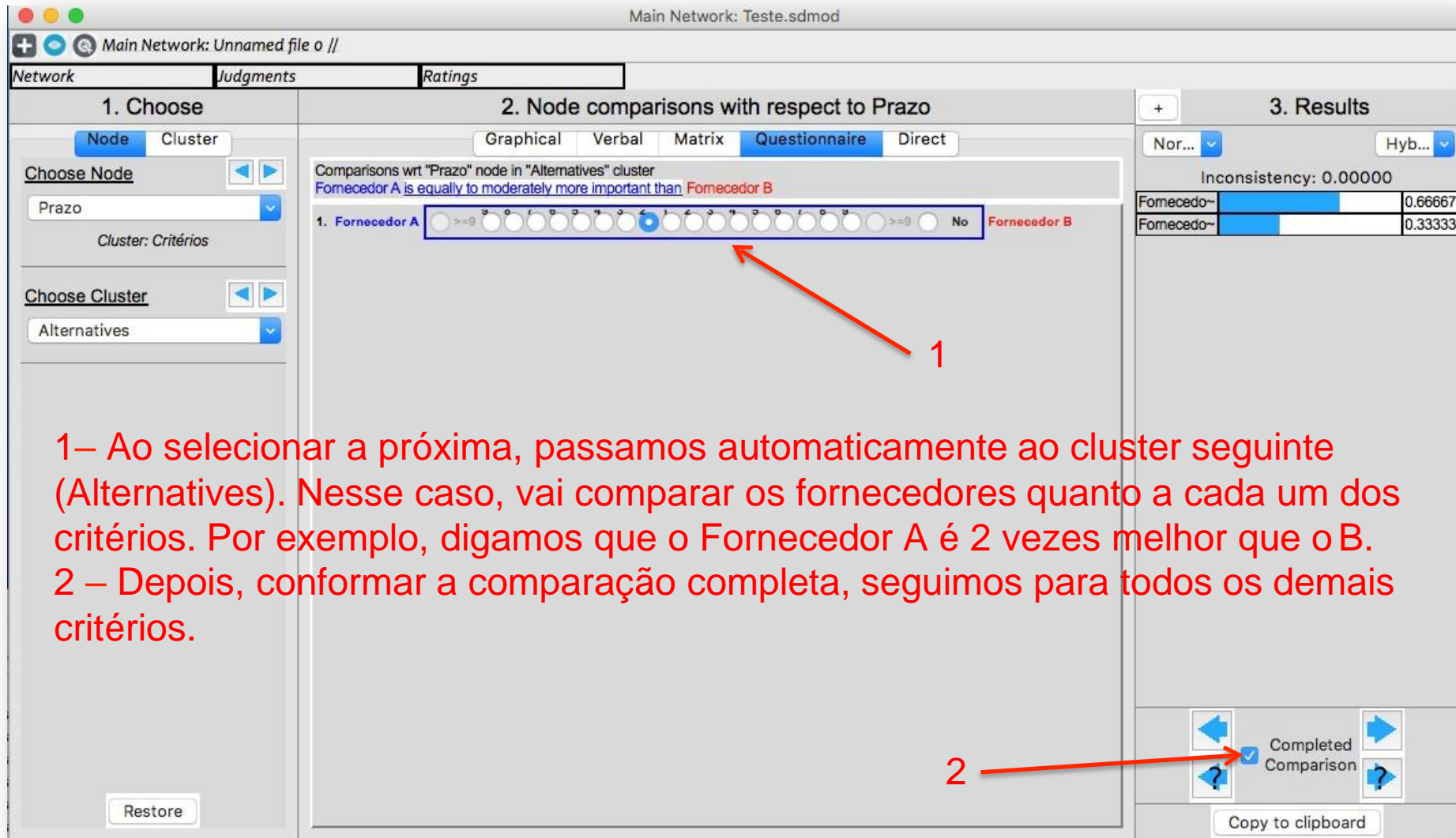
Copy to clipboard

1- Par a par, atribua a relação de valor. Por exemplo, ao se marcar 9 no lado esquerdo, significa dizer que este atributo do lado esquerdo é 9 vezes mais importante que o do direito. Ao marcar 1, significa que ambos são iguais.

2 – Depois verifique a consistência da avaliação. DEVE FICAR ABAIXO DE 0,1.

3– Depois marque que a comparação está completa e siga para a próxima análise.

Versão 3.2 do Super Decisions



The screenshot shows the Super Decisions software interface with three main panels:

- 1. Choose:** Contains 'Choose Node' (set to 'Prazo') and 'Choose Cluster' (set to 'Alternatives').
- 2. Node comparisons with respect to Prazo:** Shows a comparison between 'Fornecedor A' and 'Fornecedor B'. A scale from 1 to 9 is visible, with '1' selected. A red arrow labeled '1' points to this scale.
- 3. Results:** Shows 'Inconsistency: 0.00000' and a table of results.

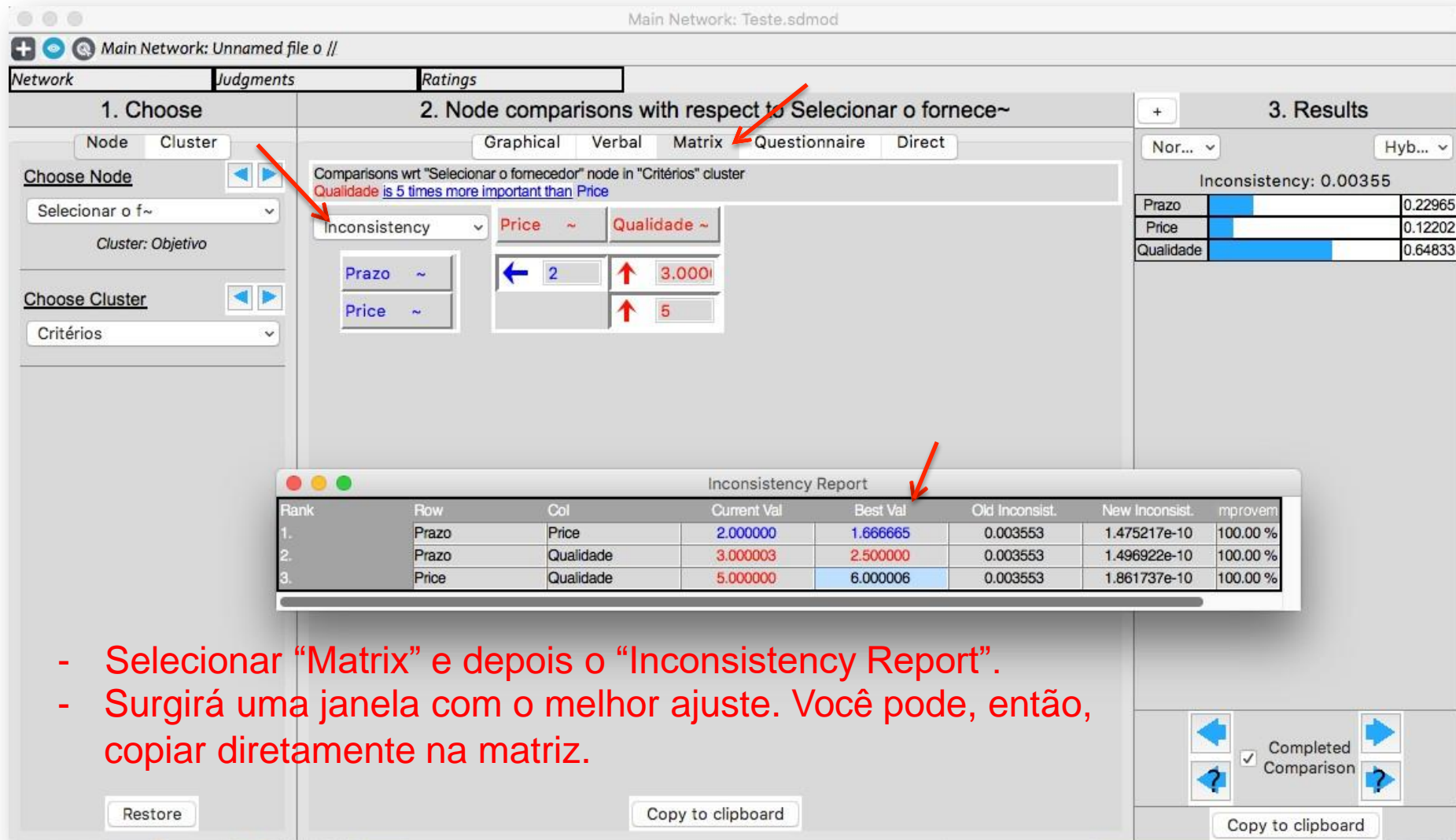
| Node | Weight |
|--------------|---------|
| Fornecedor A | 0.66667 |
| Fornecedor B | 0.33333 |

At the bottom right, a 'Completed Comparison' button is highlighted with a red arrow labeled '2'. Below it is a 'Copy to clipboard' button.

1– Ao selecionar a próxima, passamos automaticamente ao cluster seguinte (Alternatives). Nesse caso, vai comparar os fornecedores quanto a cada um dos critérios. Por exemplo, digamos que o Fornecedor A é 2 vezes melhor que o B.
2 – Depois, conformar a comparação completa, seguimos para todos os demais critérios.

Versão 3.2 do Super Decisions

AJUSTE “FINO”, SE NECESSÁRIO...



The screenshot shows the Super Decisions software interface. The main window is titled 'Main Network: Teste.sdmod' and is divided into three panels: '1. Choose', '2. Node comparisons with respect to Selecionar o fornece~', and '3. Results'. The '2. Node comparisons' panel is active, showing a comparison between 'Price' and 'Qualidade' with a value of 5.00000. The 'Matrix' tab is selected. An 'Inconsistency Report' window is open in the foreground, showing a table with columns: Rank, Row, Col, Current Val, Best Val, Old Inconsist., New Inconsist., and Improvement. The table contains three rows of data.

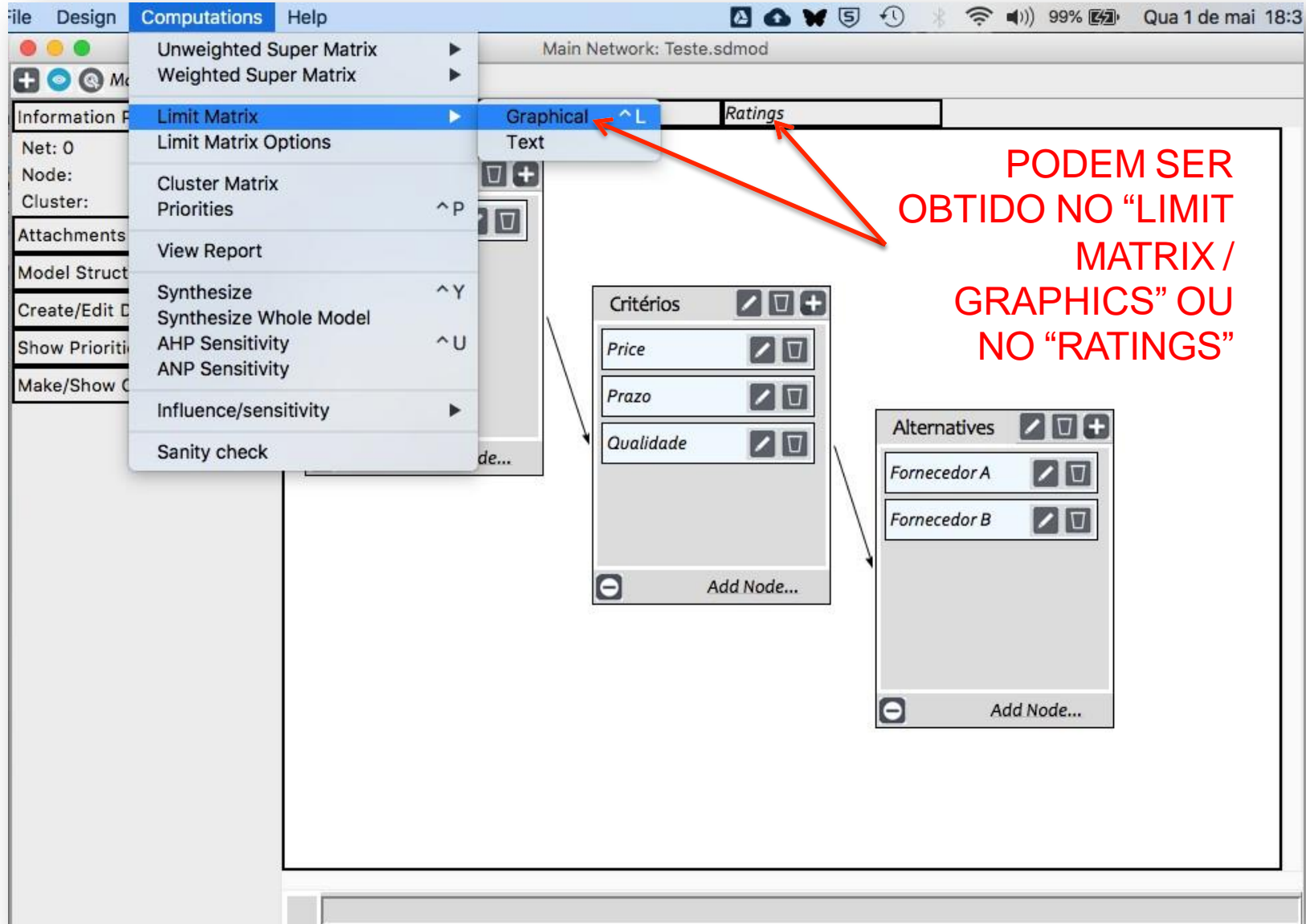
| Rank | Row | Col | Current Val | Best Val | Old Inconsist. | New Inconsist. | Improvement |
|------|-------|-----------|-------------|----------|----------------|----------------|-------------|
| 1. | Prazo | Price | 2.000000 | 1.666665 | 0.003553 | 1.475217e-10 | 100.00 % |
| 2. | Prazo | Qualidade | 3.000003 | 2.500000 | 0.003553 | 1.496922e-10 | 100.00 % |
| 3. | Price | Qualidade | 5.000000 | 6.000006 | 0.003553 | 1.861737e-10 | 100.00 % |

The '3. Results' panel shows an inconsistency of 0.00355 and a table of results for 'Prazo', 'Price', and 'Qualidade'.

Instructions:

- Selecionar “Matrix” e depois o “Inconsistency Report”.
- Surgirá uma janela com o melhor ajuste. Você pode, então, copiar diretamente na matriz.

Versão 3.2 do Super Decisions



File Design Computations Help

Main Network: Teste.sdmod

Information Panel

Net: 0
Node:
Cluster:

Attachments

Model Structure

Create/Edit D

Show Prioriti

Make/Show C

Unweighted Super Matrix
Weighted Super Matrix

Limit Matrix
Limit Matrix Options

Cluster Matrix
Priorities

View Report

Synthesize
Synthesize Whole Model

AHP Sensitivity
ANP Sensitivity

Influence/sensitivity

Sanity check

Graphical
Text

Ratings

**PODEM SER
OBTIDO NO "LIMIT
MATRIX /
GRAPHICS" OU
NO "RATINGS"**

Critérios

Price

Prazo

Qualidade

Add Node...

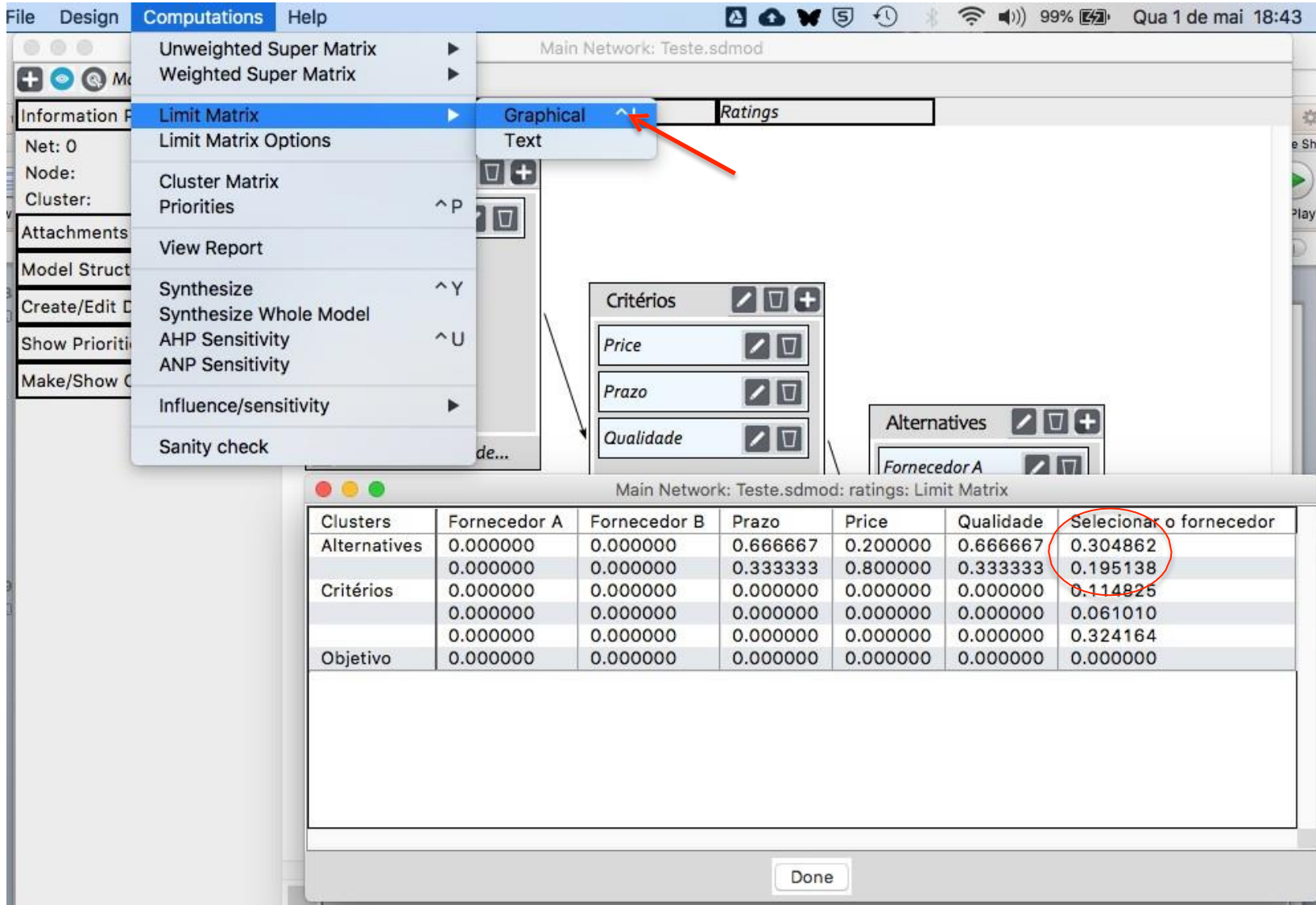
Alternatives

Fornecedor A

Fornecedor B

Add Node...

Versão 3.2 do Super Decisions

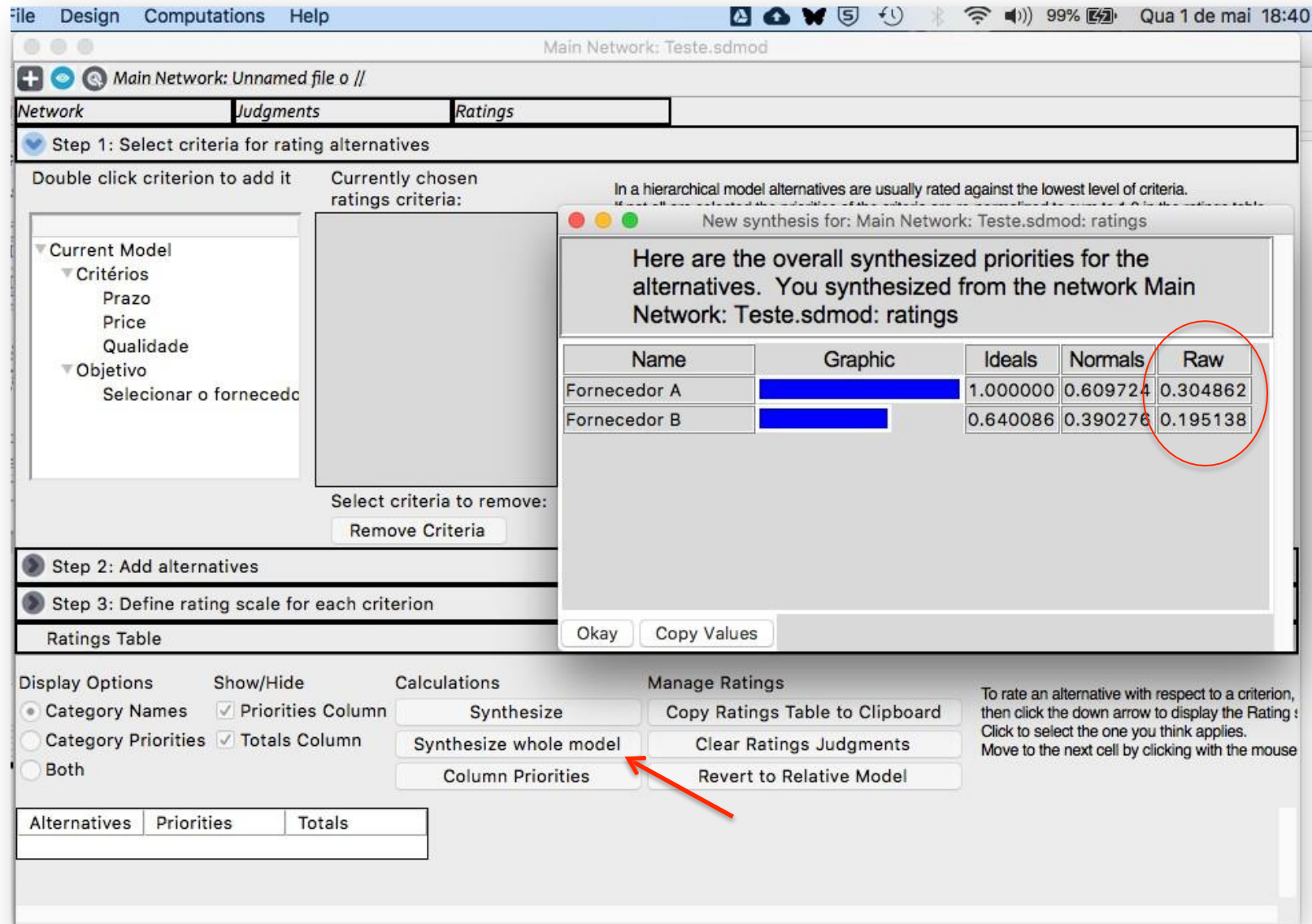


The screenshot shows the Super Decisions software interface. The 'Computations' menu is open, and the 'Limit Matrix' option is selected. A red arrow points to the 'Graphical' sub-option. Below the menu, there are panels for 'Critérios' (Price, Prazo, Qualidade) and 'Alternatives' (Fornecedor A). A dialog box titled 'Main Network: Teste.sdmod: ratings: Limit Matrix' is open, displaying a table of values. The table has columns for Clusters, Fornecedor A, Fornecedor B, Prazo, Price, Qualidade, and Seleccionar o fornecedor. The values in the 'Seleccionar o fornecedor' column are circled in red.

| Clusters | Fornecedor A | Fornecedor B | Prazo | Price | Qualidade | Seleccionar o fornecedor |
|--------------|--------------|--------------|----------|----------|-----------|--------------------------|
| Alternatives | 0.000000 | 0.000000 | 0.666667 | 0.200000 | 0.666667 | 0.304862 |
| | 0.000000 | 0.000000 | 0.333333 | 0.800000 | 0.333333 | 0.195138 |
| Critérios | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.114825 |
| | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.061010 |
| | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.324164 |
| Objetivo | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |

Versão 3.2 do Super Decisions

RESULTADOS NO “RATINGS” (MAIS CLARO)...



File Design Computations Help

Main Network: Teste.sdmod

Main Network: Unnamed file o //

Network Judgments Ratings

Step 1: Select criteria for rating alternatives



Double click criterion to add it

Currently chosen ratings criteria:

In a hierarchical model alternatives are usually rated against the lowest level of criteria.

New synthesis for: Main Network: Teste.sdmod: ratings

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Main Network: Teste.sdmod: ratings

| Name | Graphic | Ideals | Normals | Raw |
|--------------|---|----------|----------|----------|
| Fornecedor A |  | 1.000000 | 0.609724 | 0.304862 |
| Fornecedor B |  | 0.640086 | 0.390276 | 0.195138 |

Select criteria to remove:

Remove Criteria

Step 2: Add alternatives

Step 3: Define rating scale for each criterion

Ratings Table

Display Options

Show/Hide

Calculations

Manage Ratings

Category Names Priorities Column

Category Priorities Totals Column

Both

Synthesize

Synthesize whole model

Column Priorities

Copy Ratings Table to Clipboard

Clear Ratings Judgments

Revert to Relative Model

To rate an alternative with respect to a criterion, then click the down arrow to display the Rating: Click to select the one you think applies. Move to the next cell by clicking with the mouse

| Alternatives | Priorities | Totals |
|--------------|------------|--------|
| | | |

Okay Copy Values