

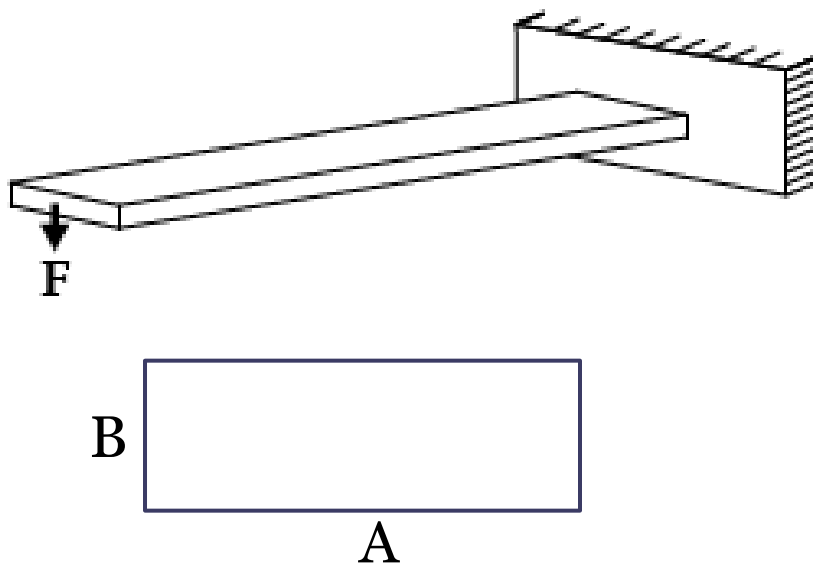


Суперкомпьютерный центр ЮУрГУ

# Подготовка задачи в пре/постпроцессоре Abaqus/CAE

**Моделирование статической линейной  
задачи для трехмерного объекта на  
примере изгиба консольно-закрепленной  
балки в пакете ABAQUS**

# Постановка задачи



Ширина  $A = 0,5$  м.

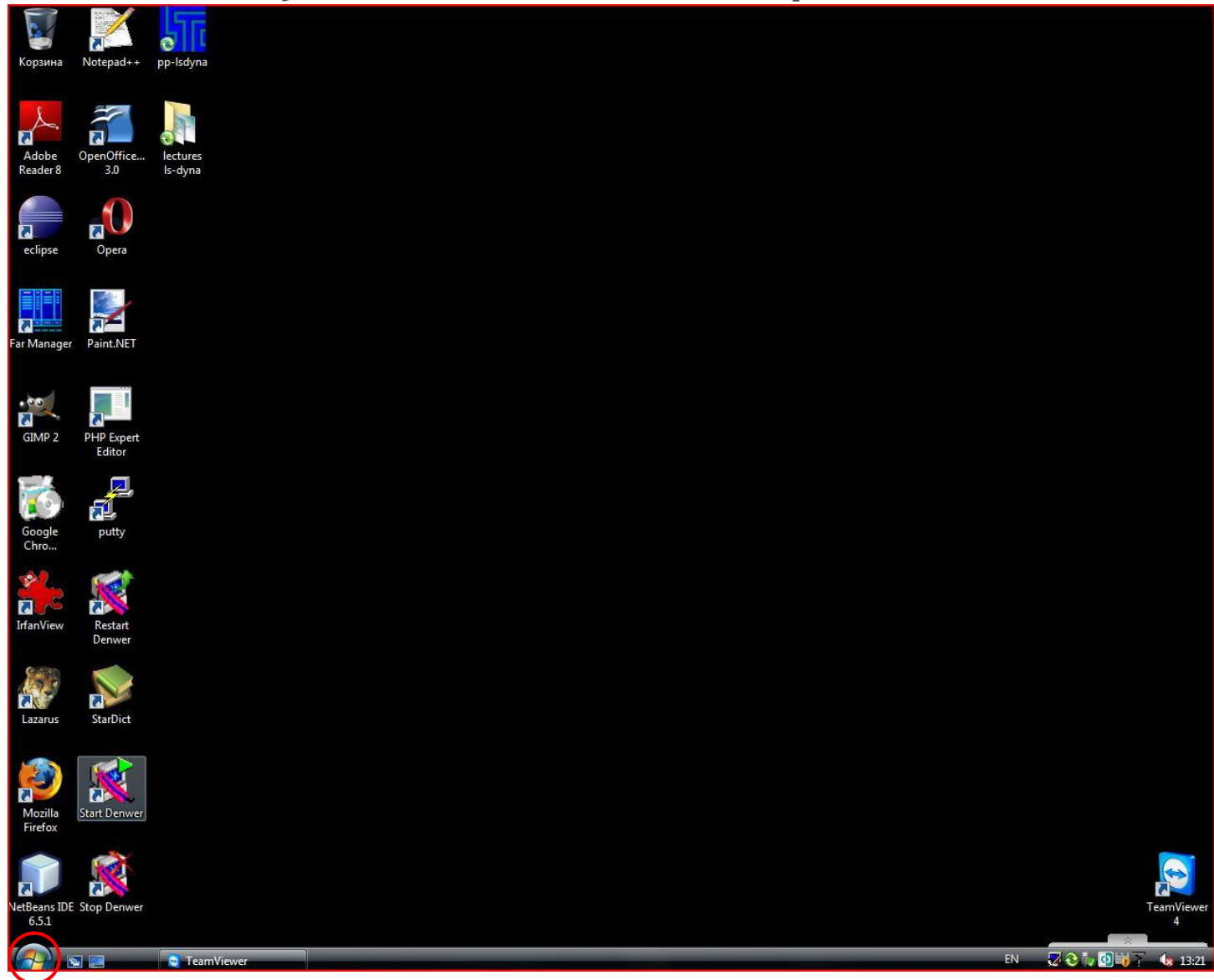
Высота  $B = 0,1$  м.

Длинна  $L = 10$  м.

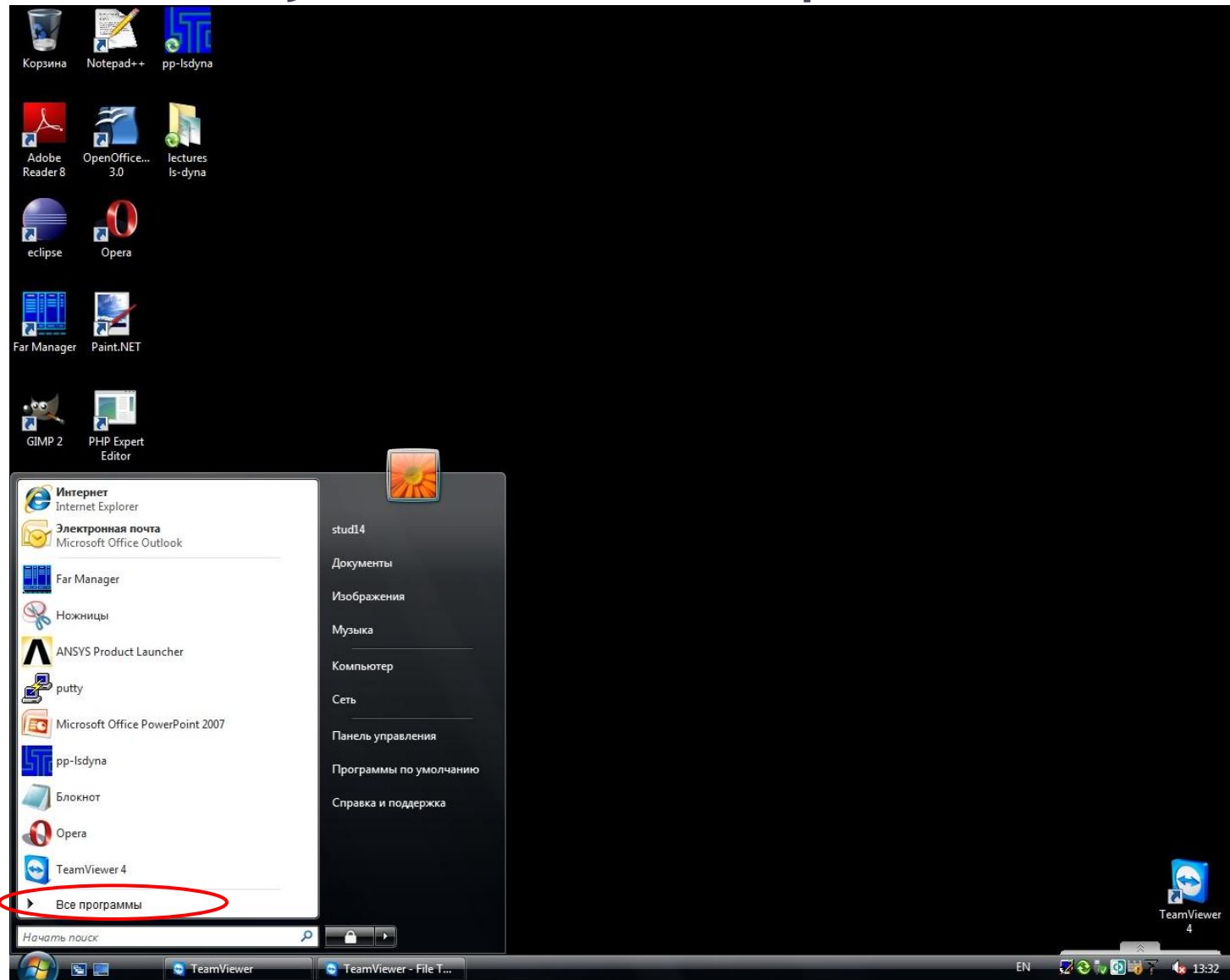
Материал:  
дюралюминий Д16Т.

Сосредоточенная сила  
 $F = 1000$  Н.

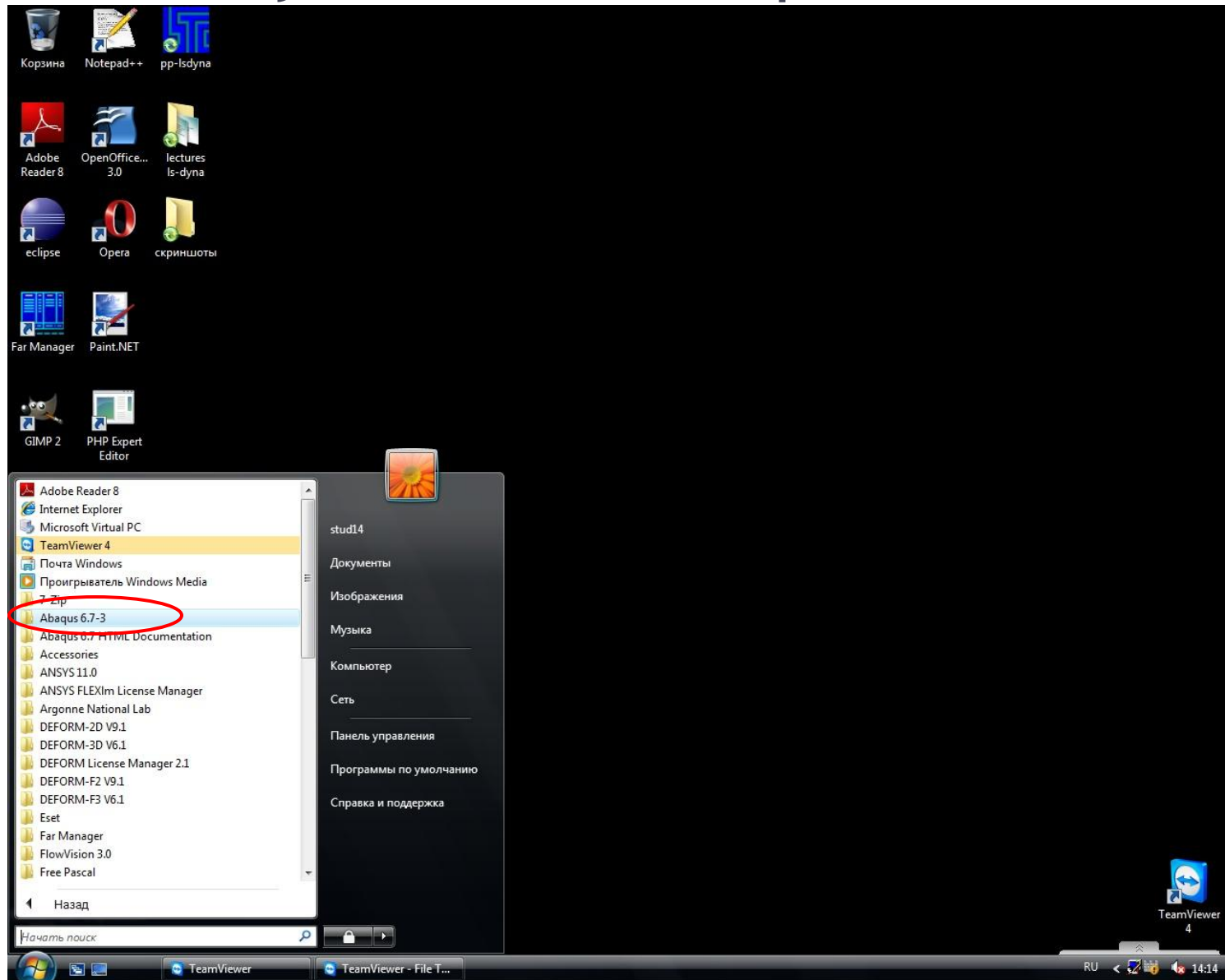
# Запуск пакета Abaqus 6.7-3



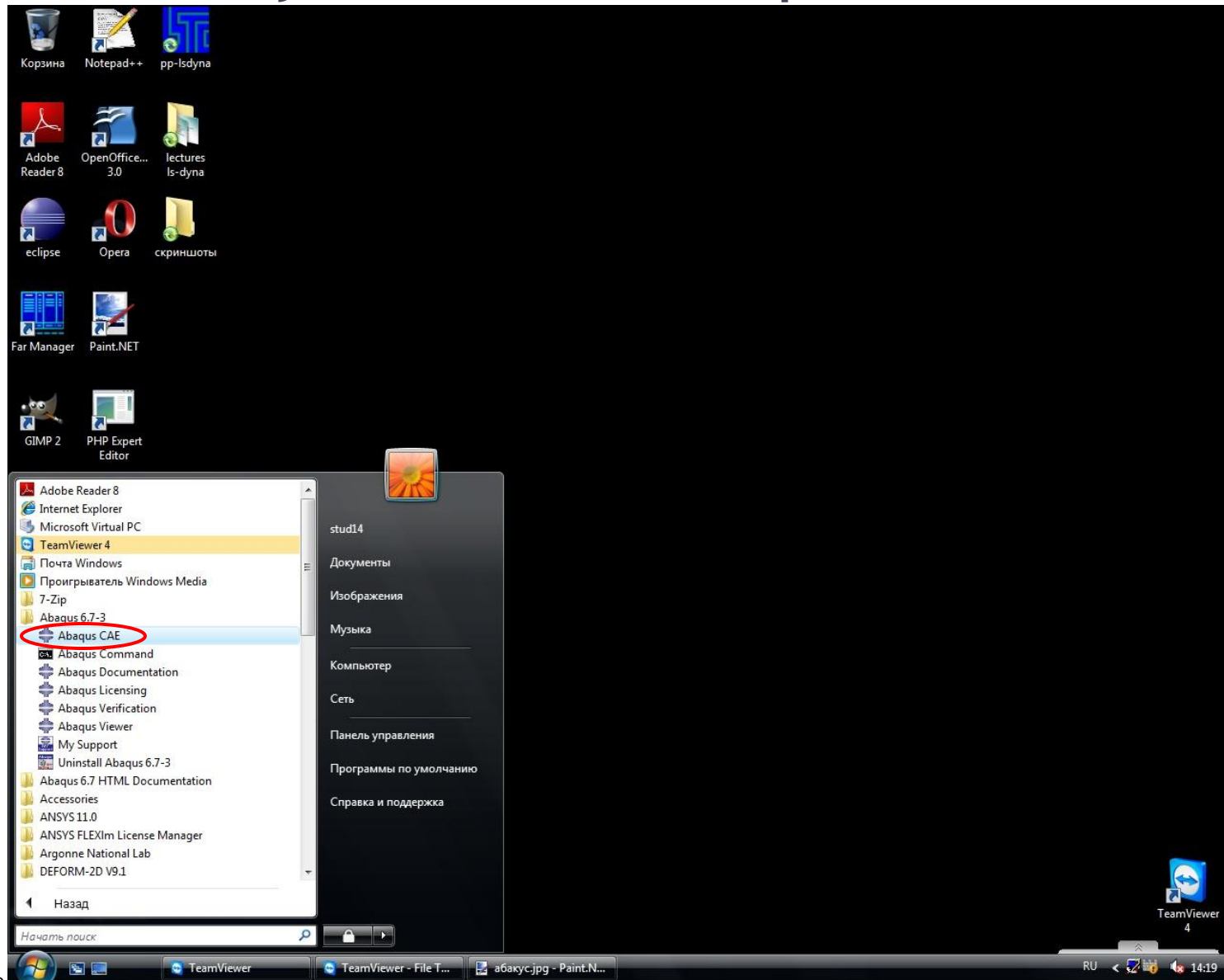
# Запуск пакета Abaqus 6.7-3



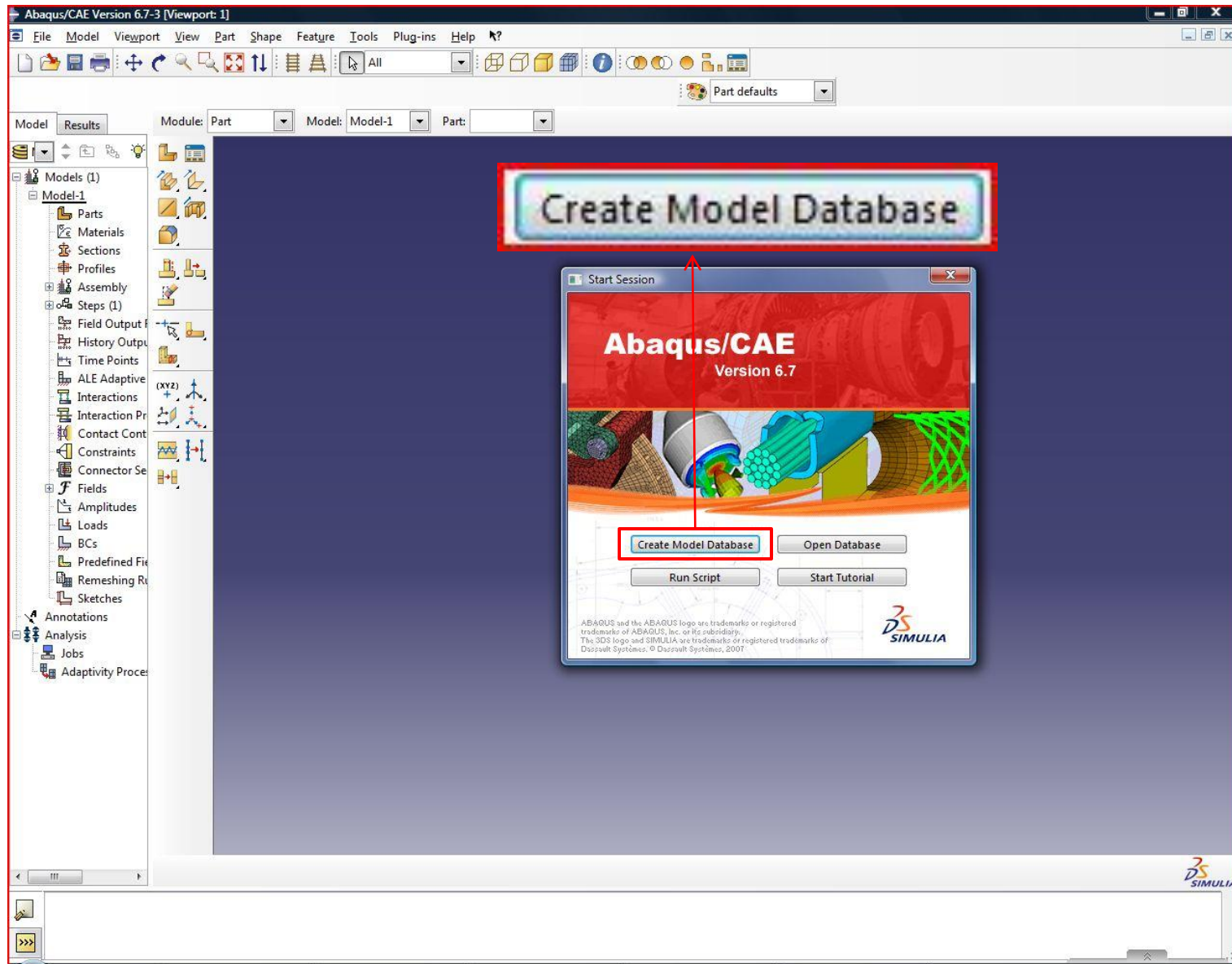
# Запуск пакета Abaqus 6.7-3



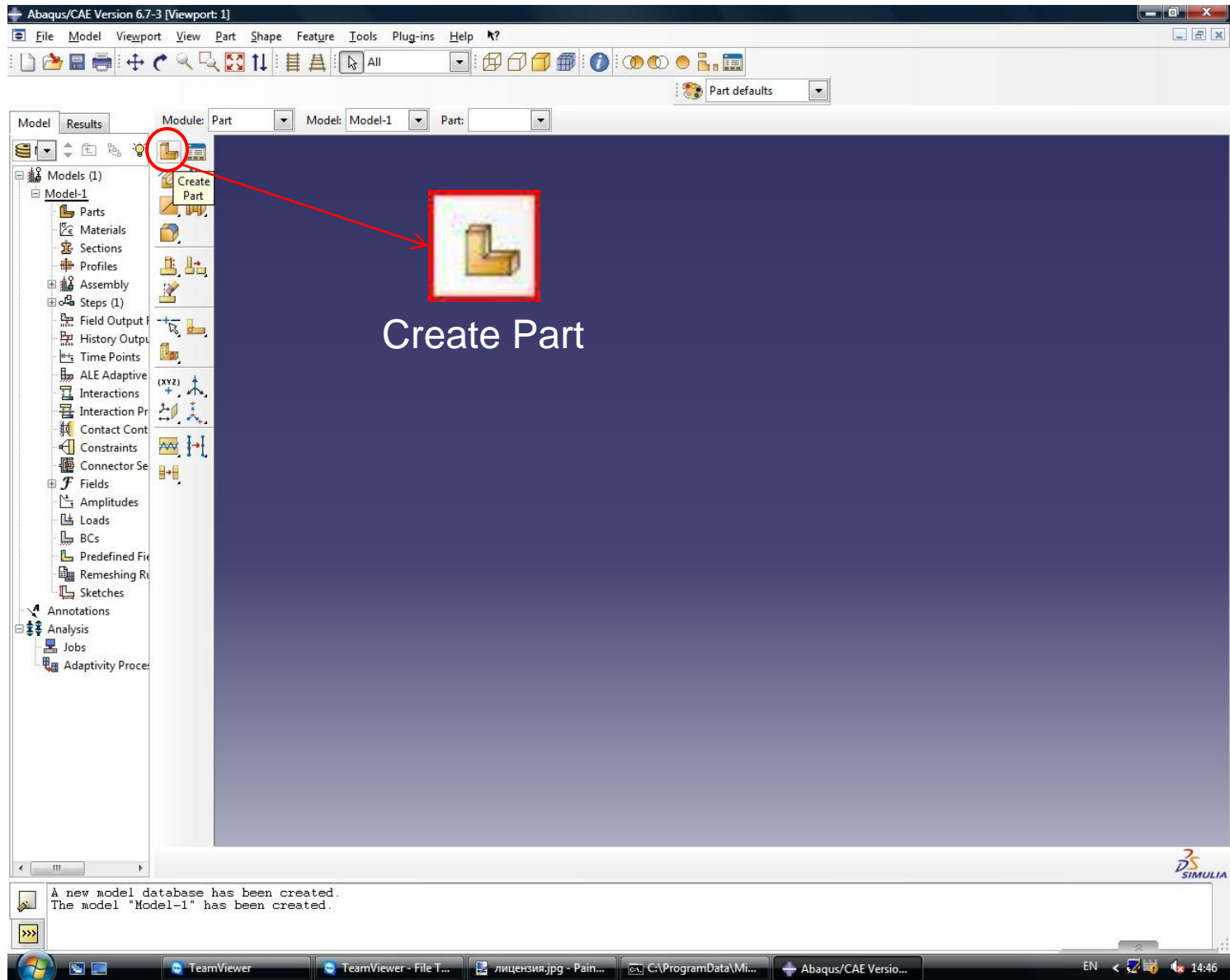
# Запуск пакета Abaqus 6.7-3



# Создание базы данных модели

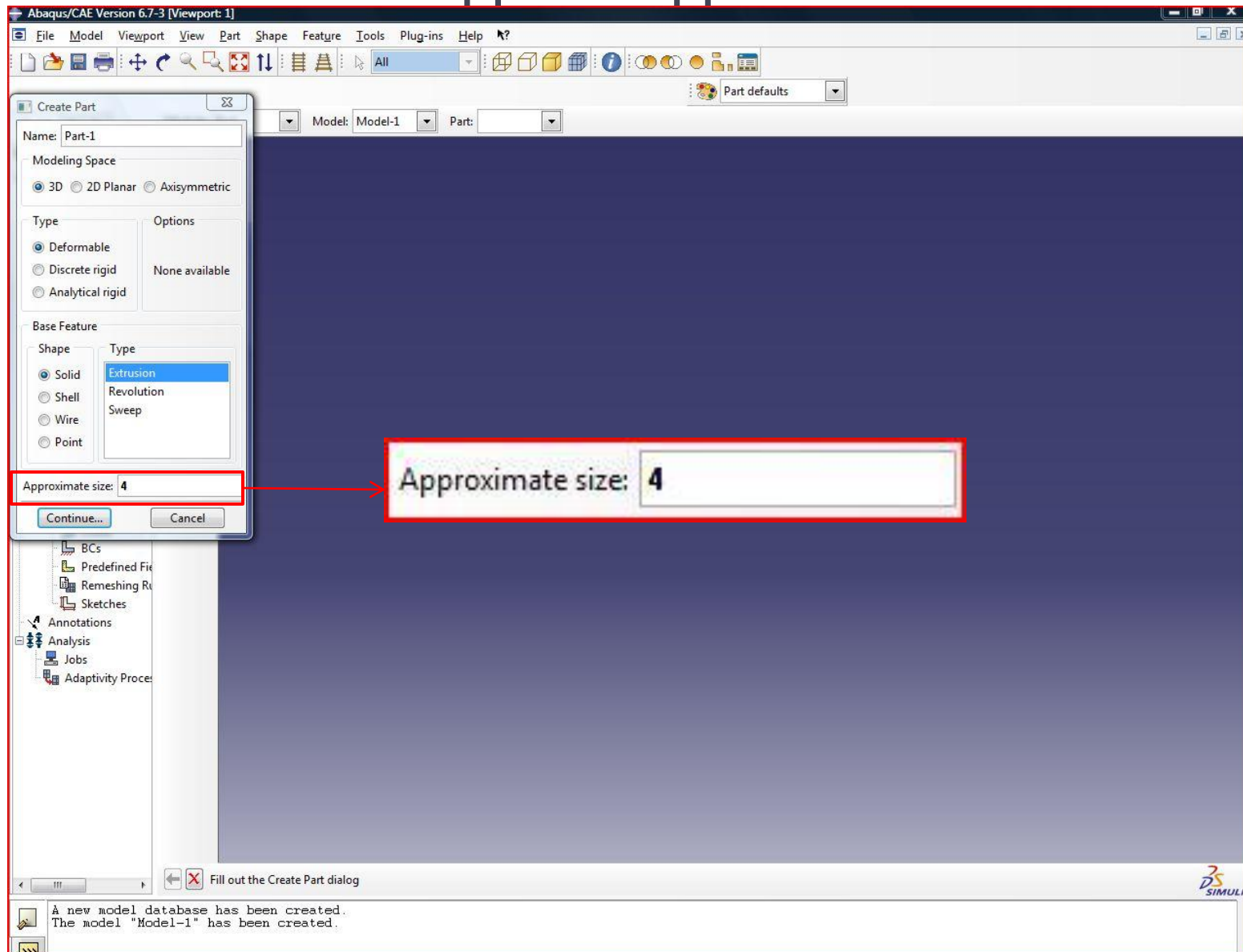


# Создание детали

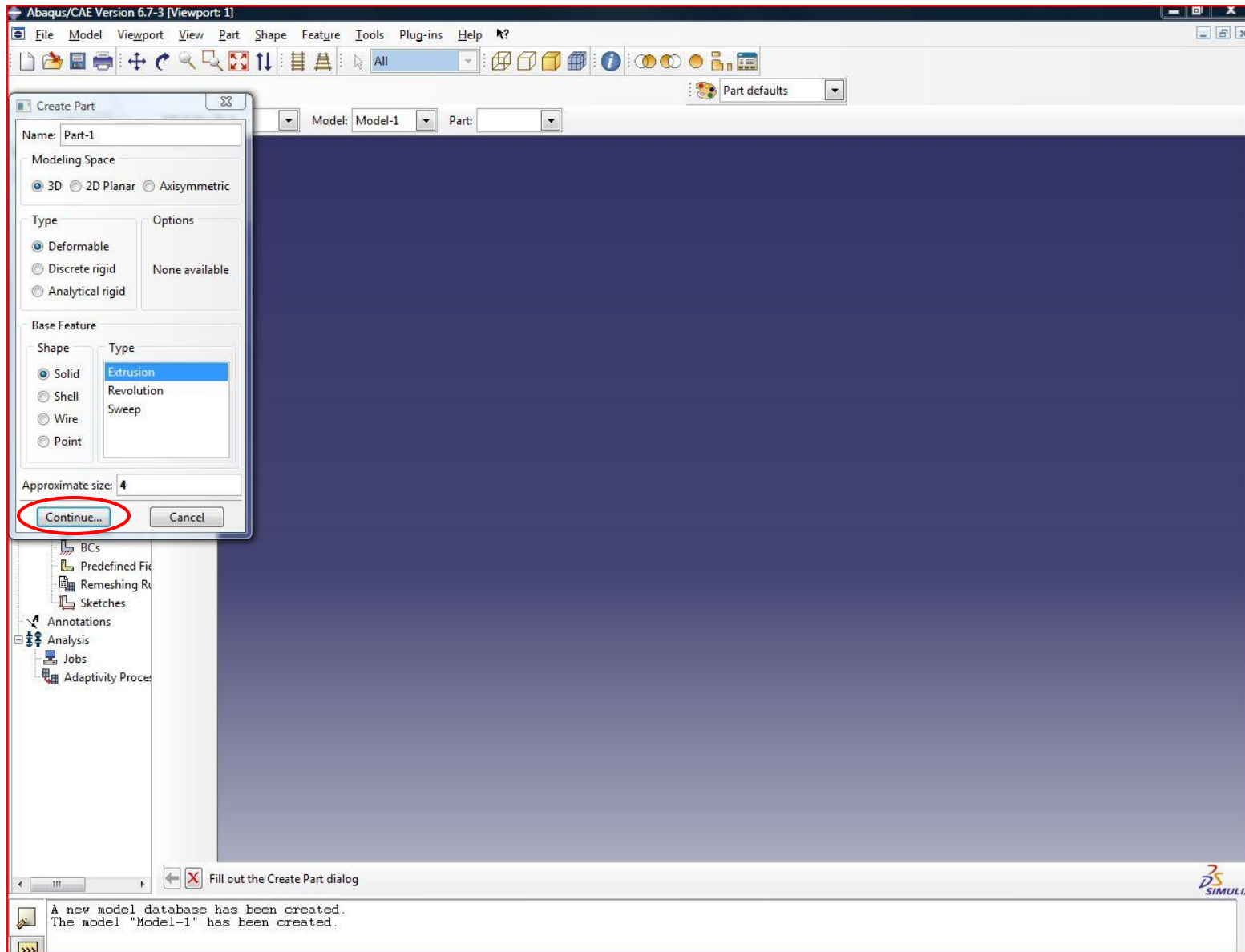




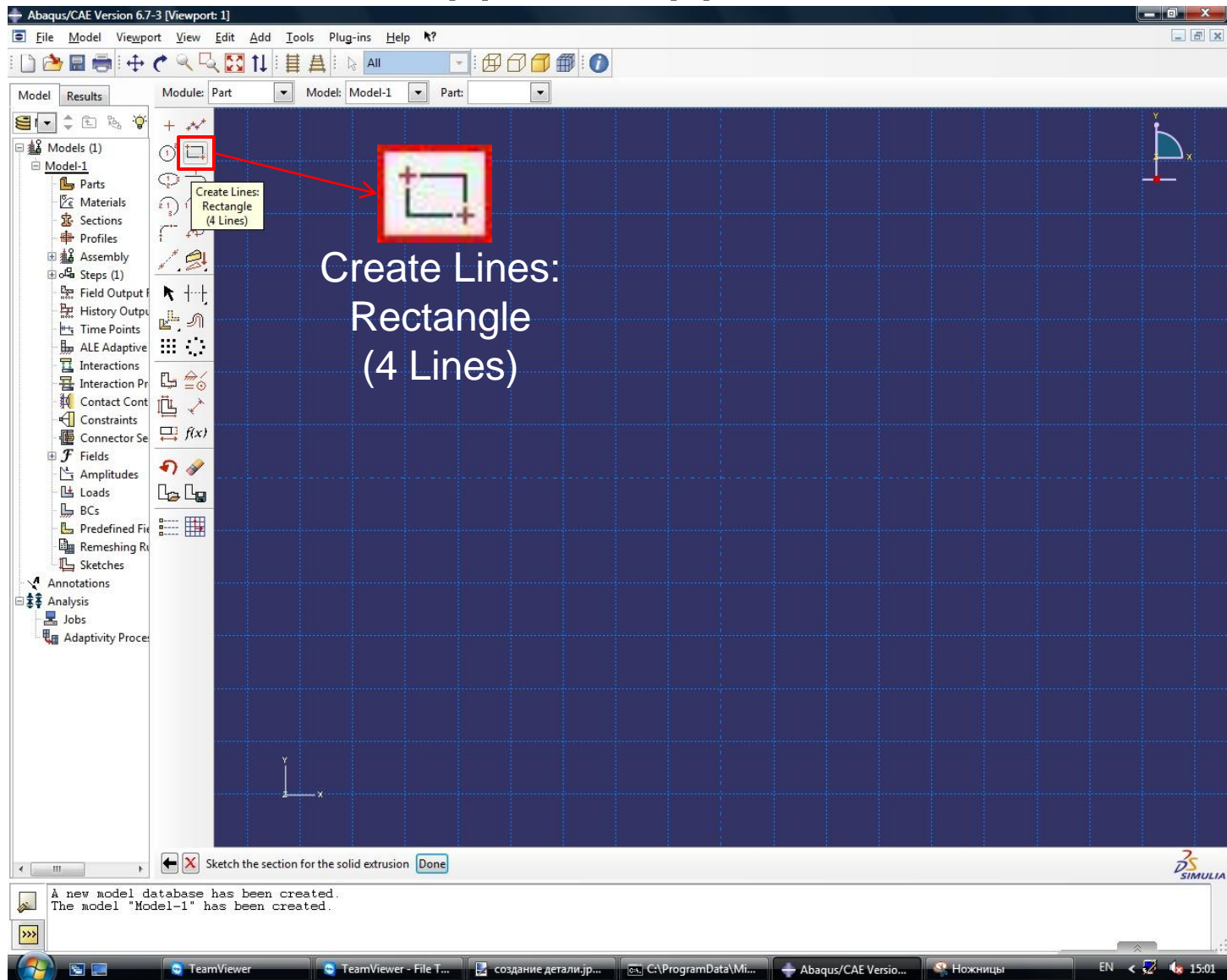
# Создание детали



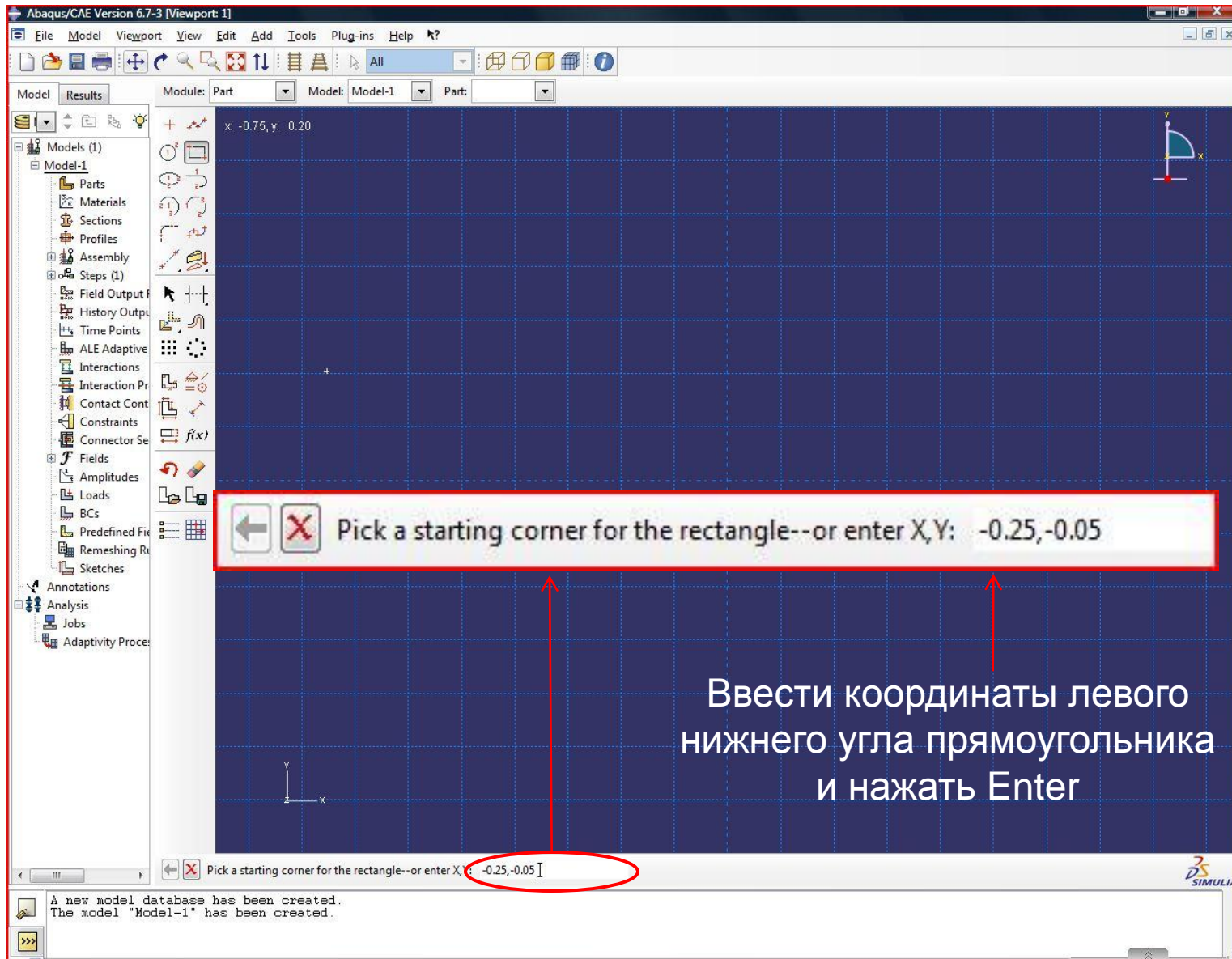
# Создание детали



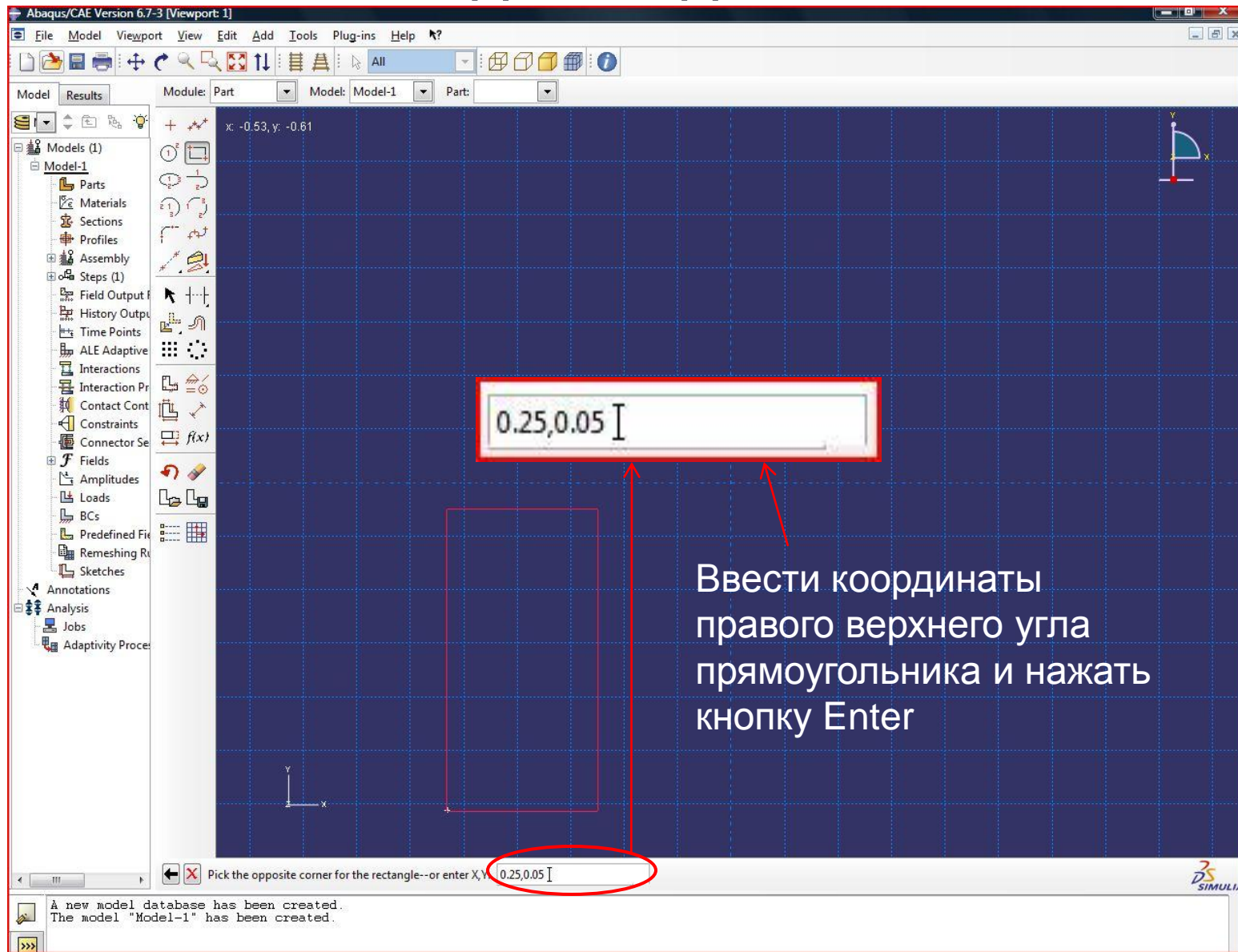
# Создание детали



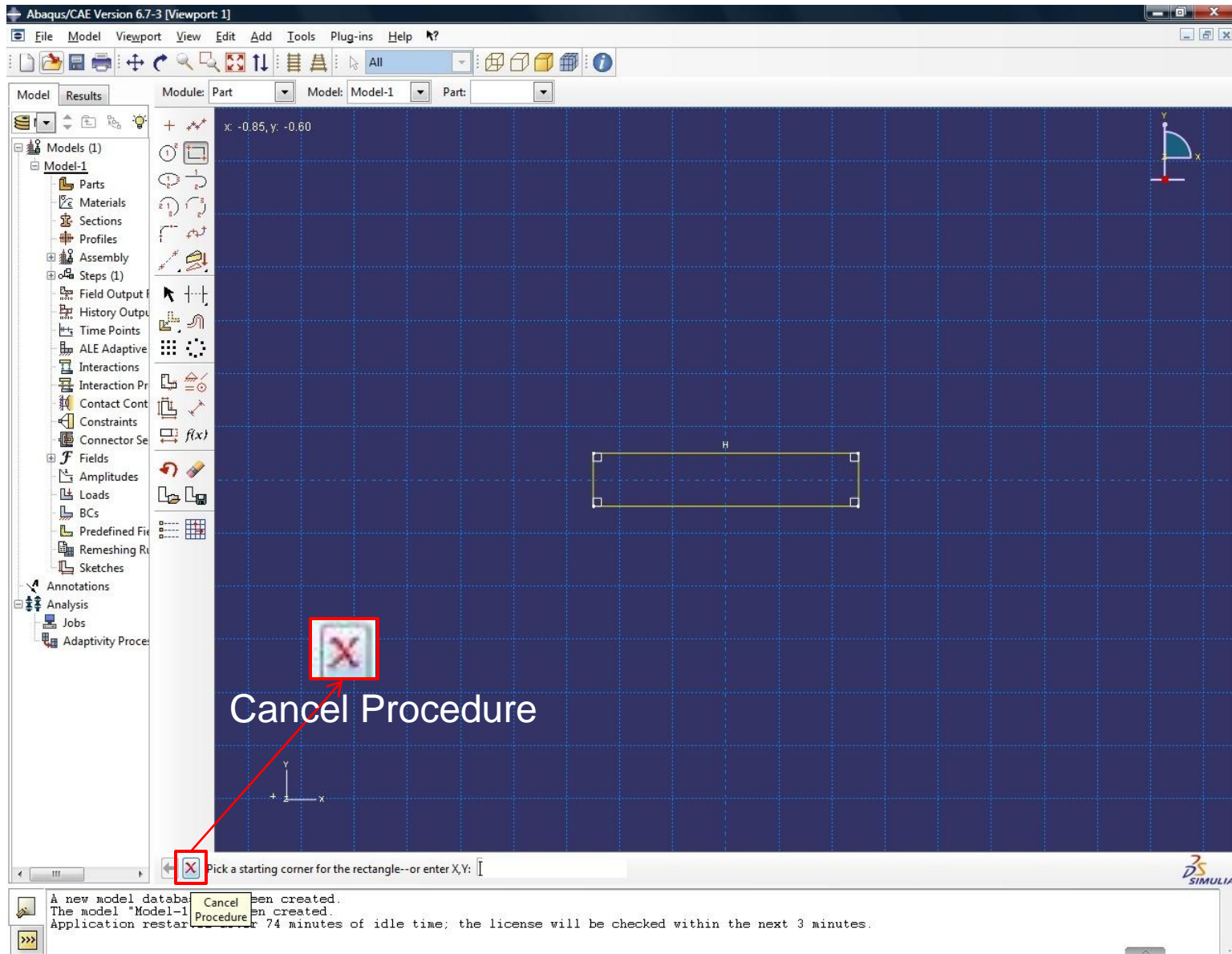
# Создание детали



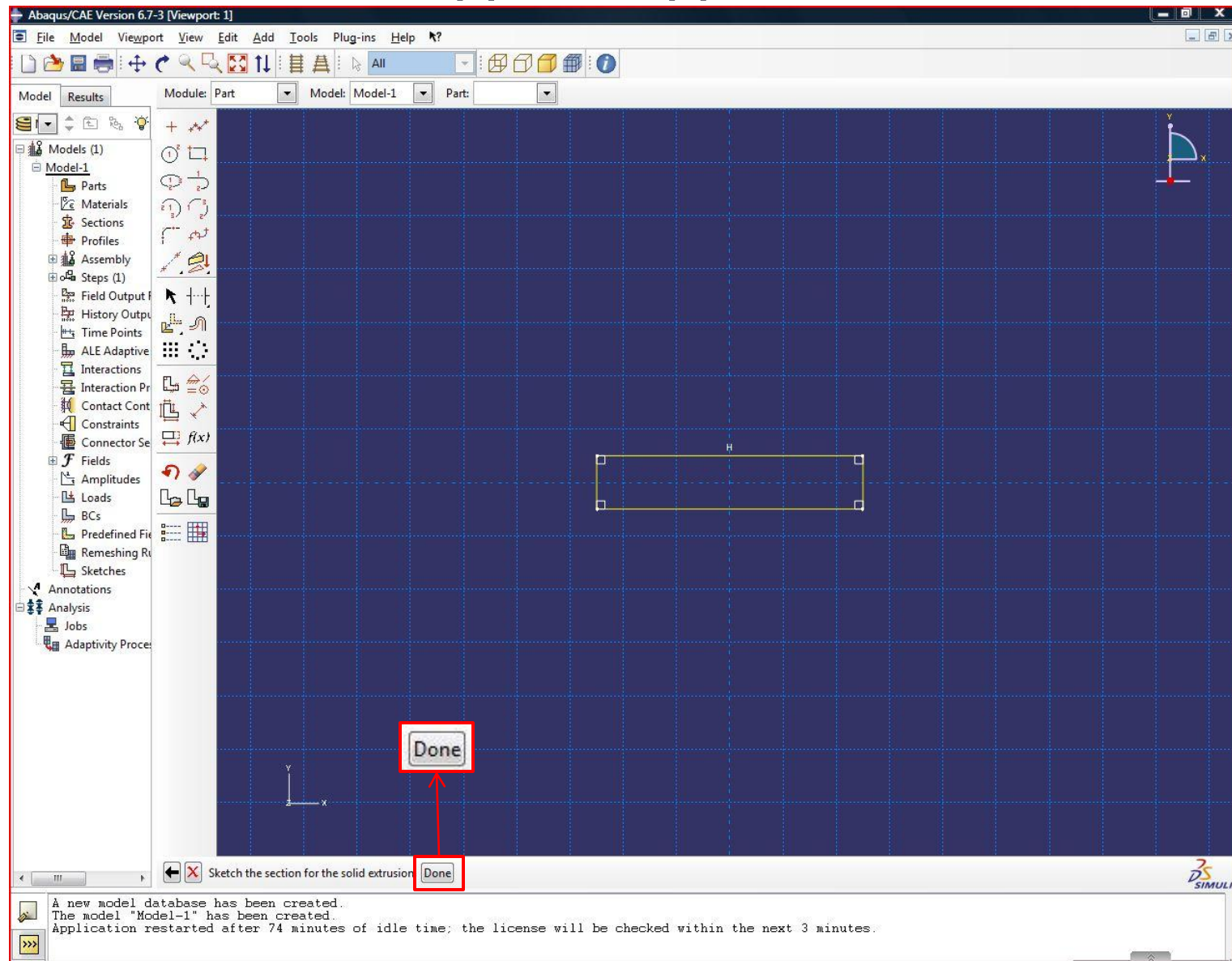
# Создание детали



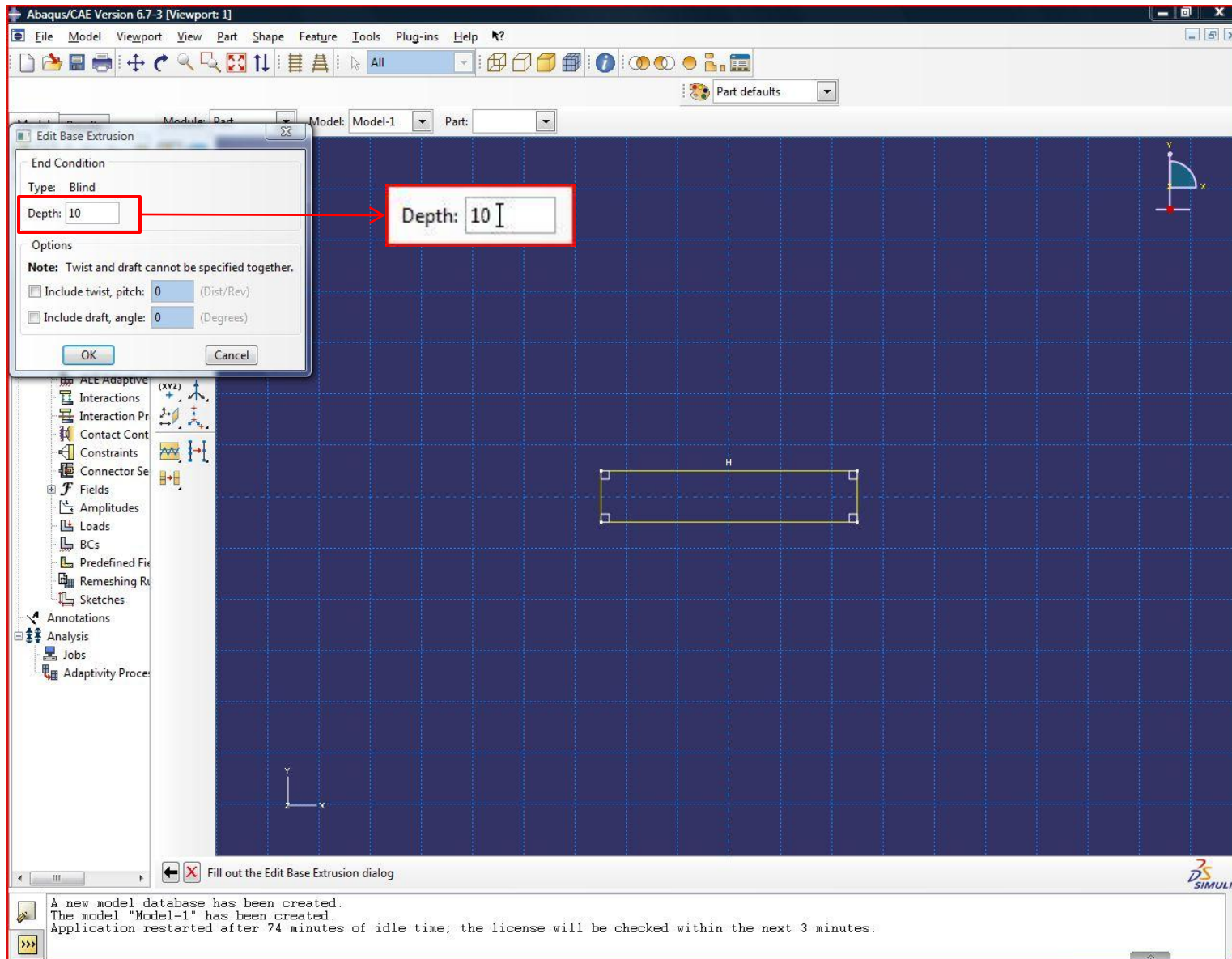
# Создание детали



# Создание детали

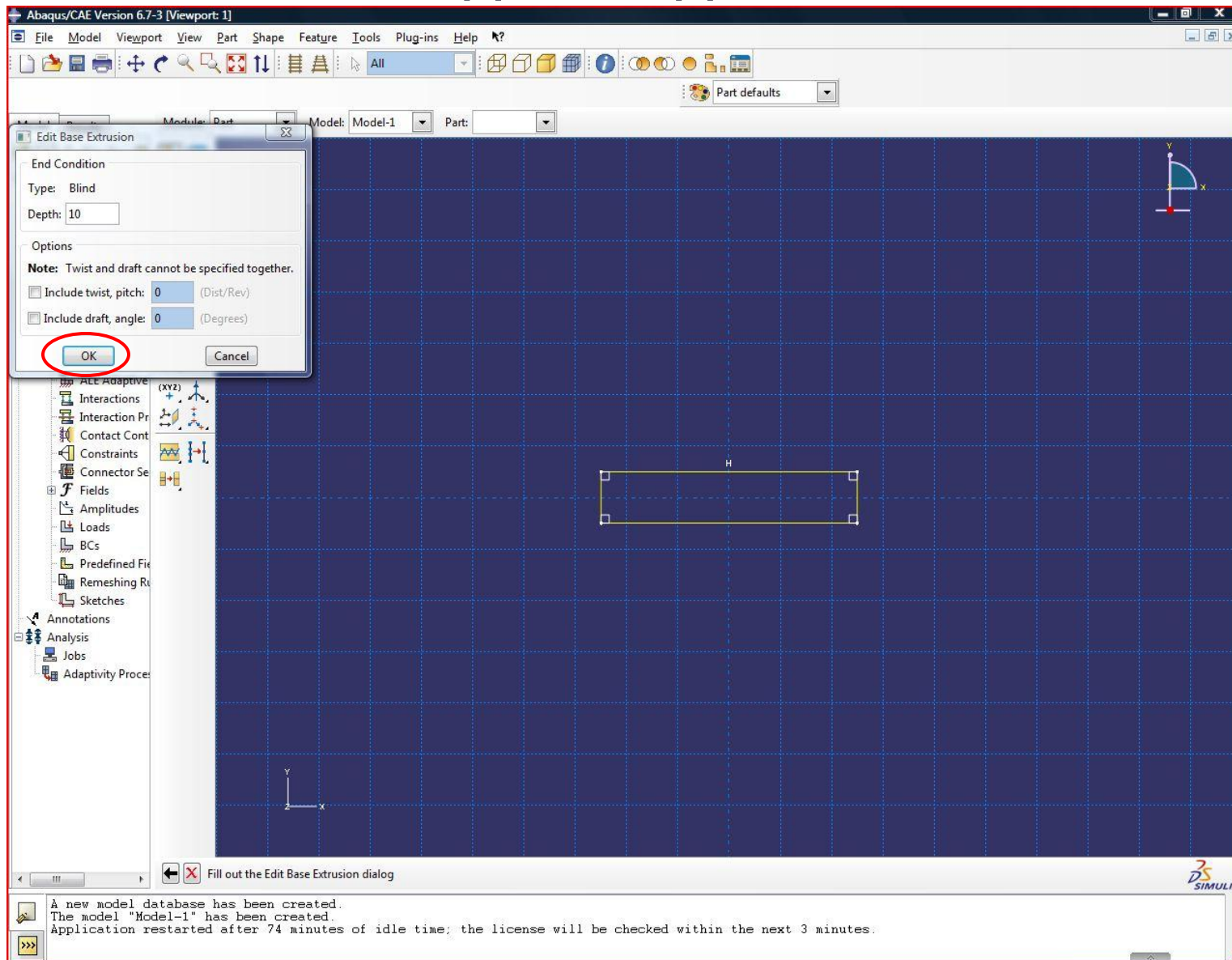


# Создание детали

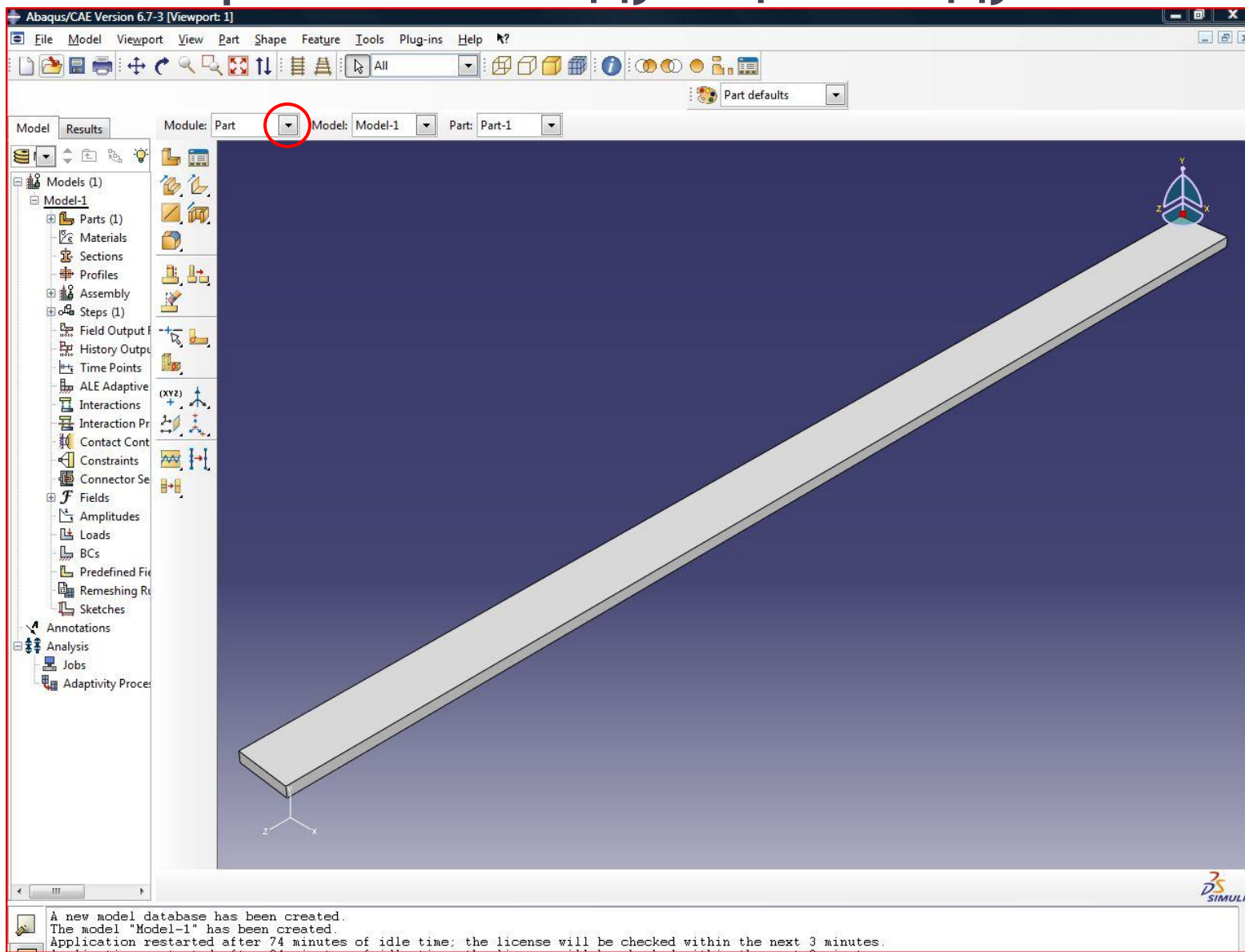




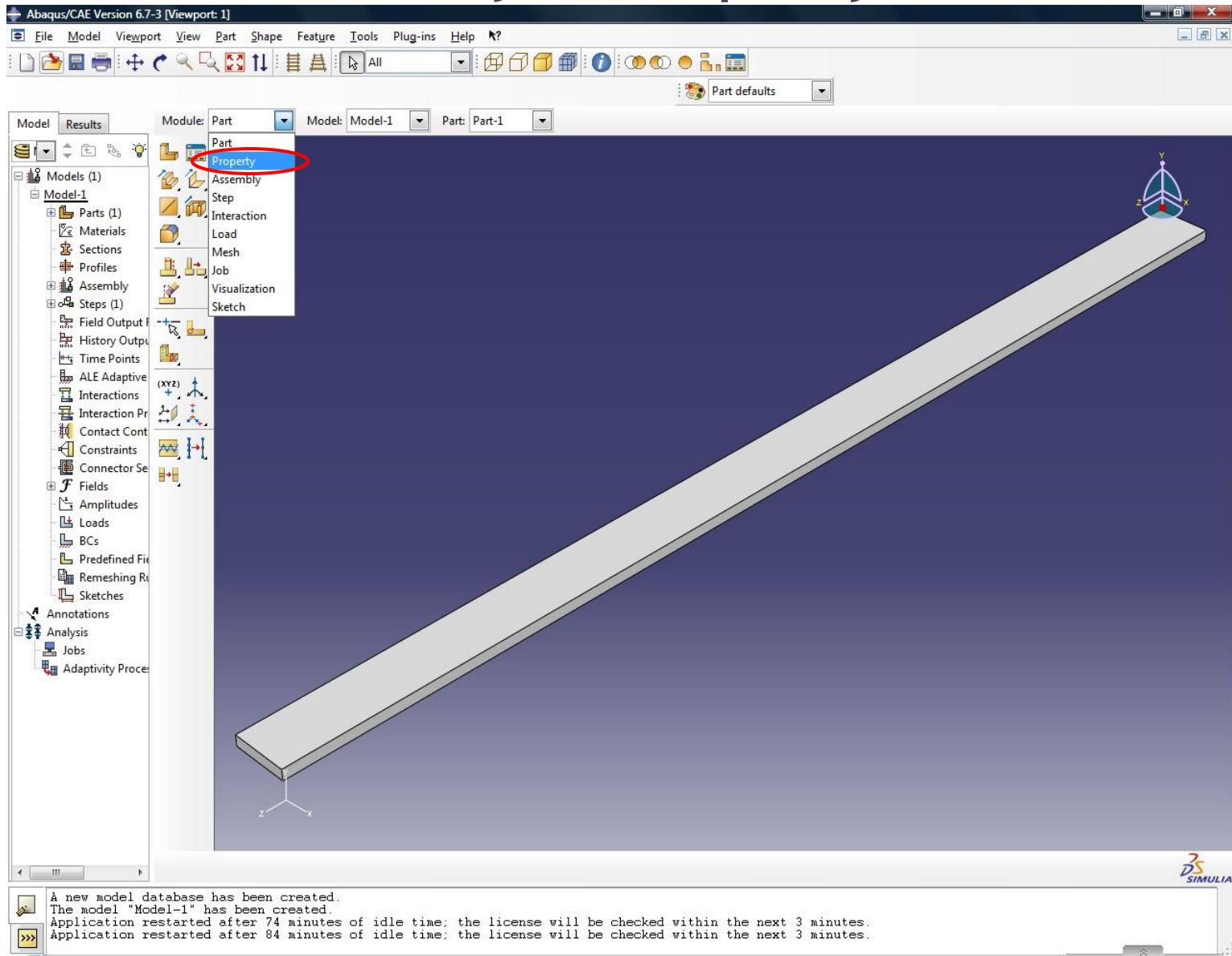
# Создание детали



# Перейти в следующий модуль



# Модуль Property



# Создание материала

The screenshot displays the Abaqus/CAE software interface. The title bar reads "Abaqus/CAE Version 6.7-3 [Viewport: 1]". The menu bar includes "File", "Model", "Viewport", "View", "Material", "Section", "Profile", "Composite", "Assign", "Special", "Feature", "Tools", "Plug-ins", and "Help". The toolbar contains various icons for file operations and modeling. The "Property" module is selected, and the "Create Material" button, represented by a  $\sigma$ - $\epsilon$  graph icon, is highlighted with a red box. A red arrow points from this button to a larger version of the same icon in the center of the viewport, with the text "Create Material" overlaid. The viewport shows a 3D model of a long, thin, rectangular plate. The left-hand side of the interface features a tree view with the following structure:

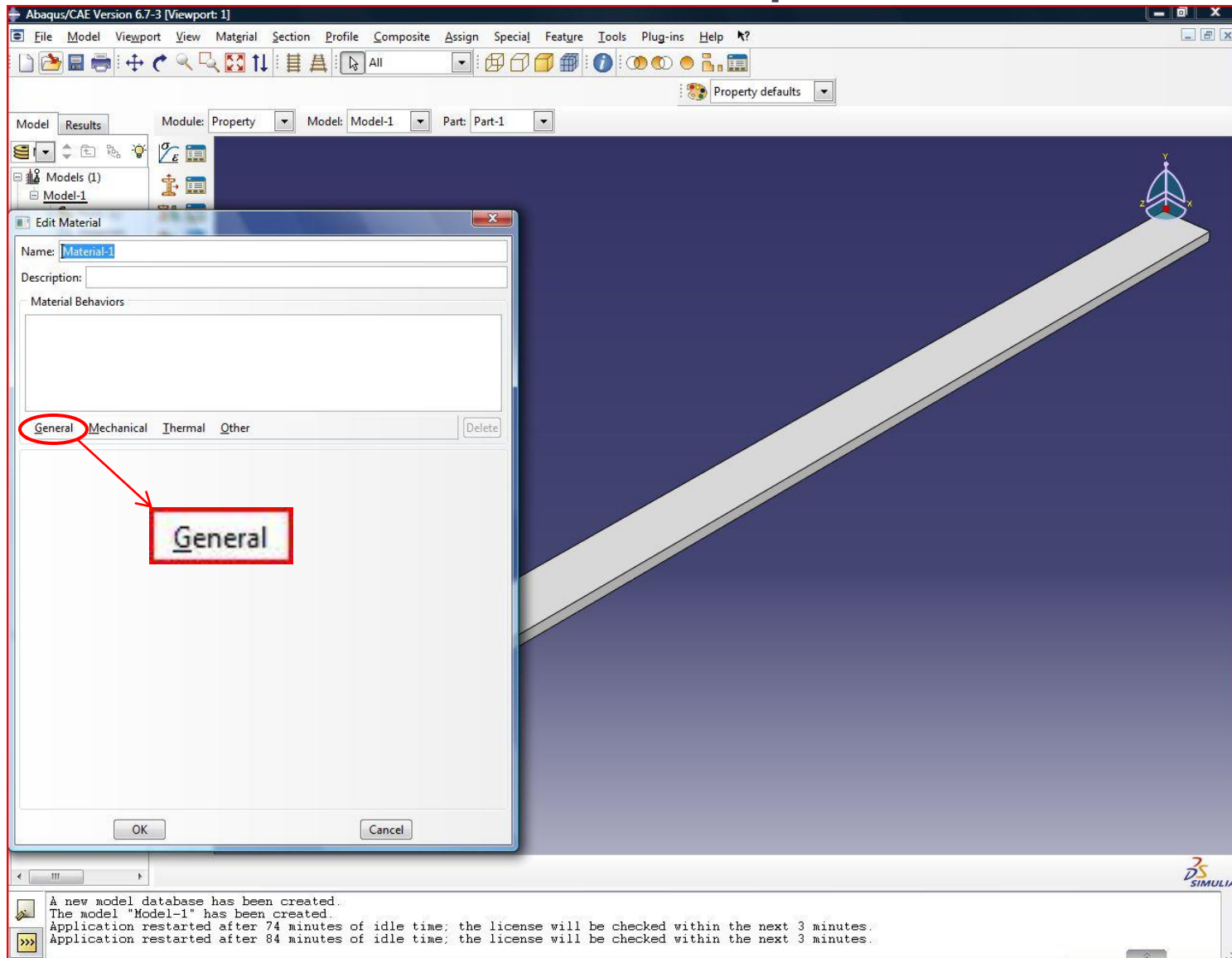
- Models (1)
  - Model-1
    - Parts (1)
    - Materials
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output F...
    - History Outpu...
    - Time Points
    - ALE Adaptive
    - Interactions
    - Interaction Pr...
    - Contact Cont...
    - Constraints
    - Connector Se...
    - Fields
      - Amplitudes
      - Loads
      - BCs
      - Predefined Fi...
    - Remeshing R...
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Proc...

At the bottom of the interface, a status bar contains the following text:

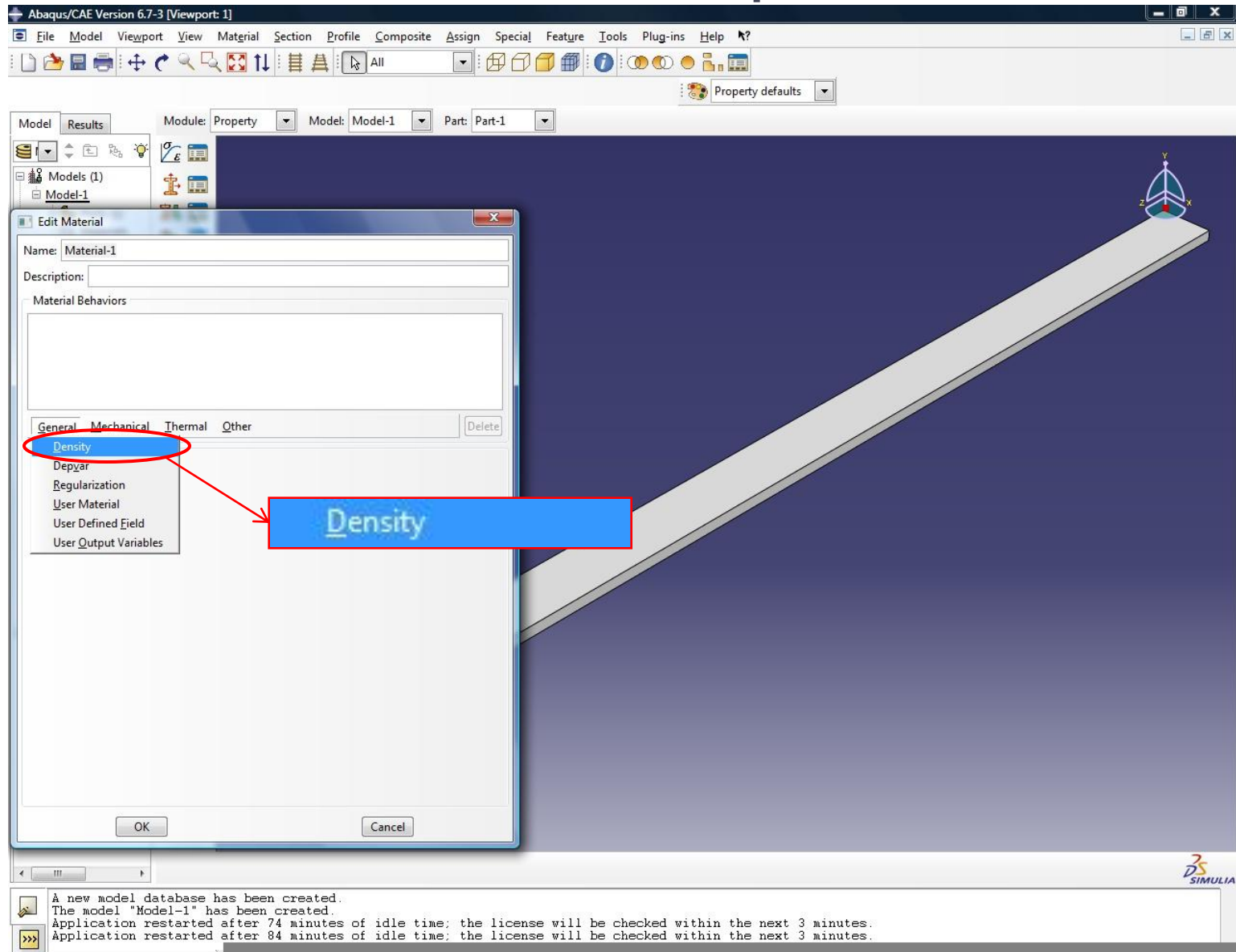
A new model database has been created.  
The model "Model-1" has been created.  
Application restarted after 74 minutes of idle time; the license will be checked within the next 3 minutes.  
Application restarted after 84 minutes of idle time; the license will be checked within the next 3 minutes.

The SIMULIA logo is visible in the bottom right corner of the software window.

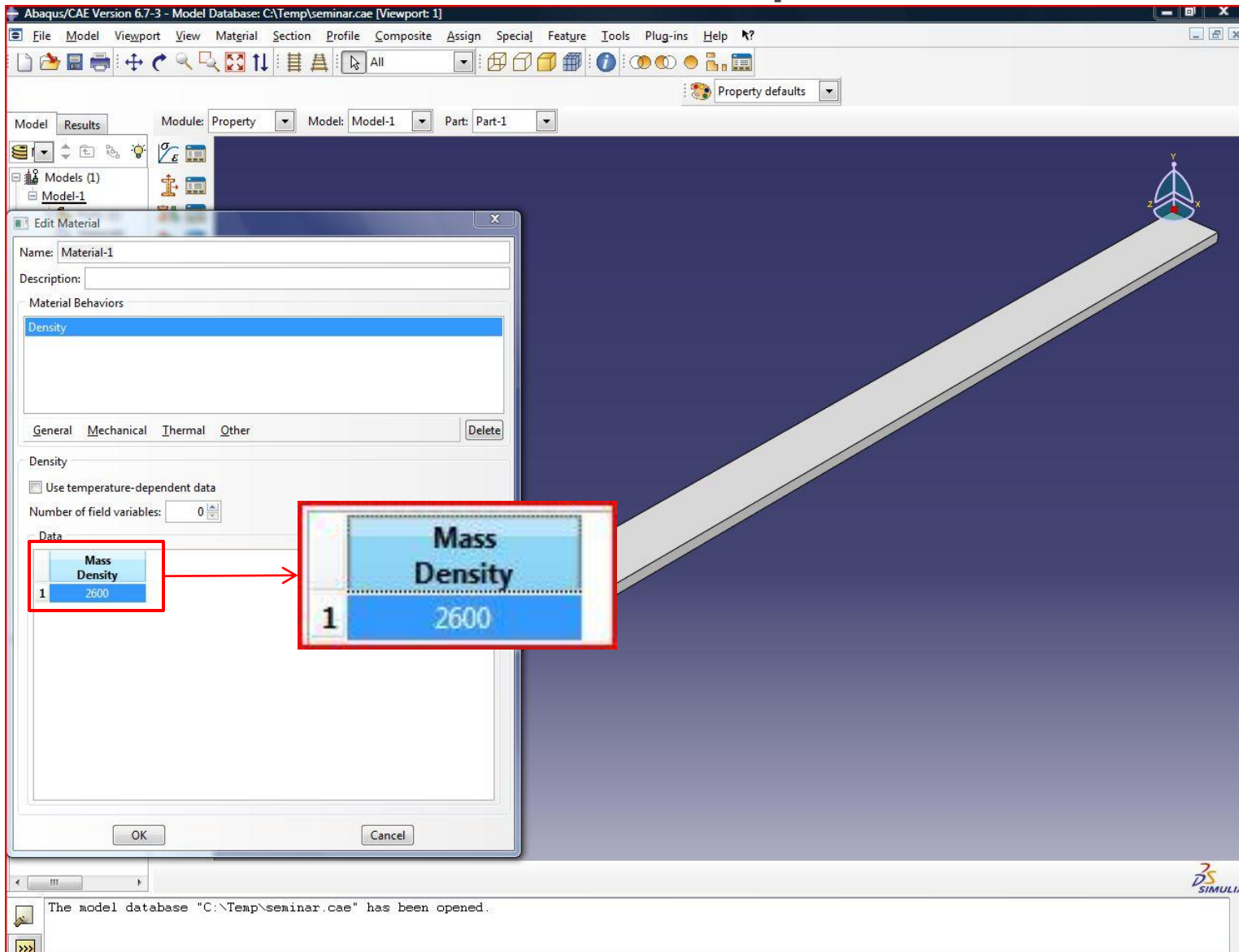
# Создание материала



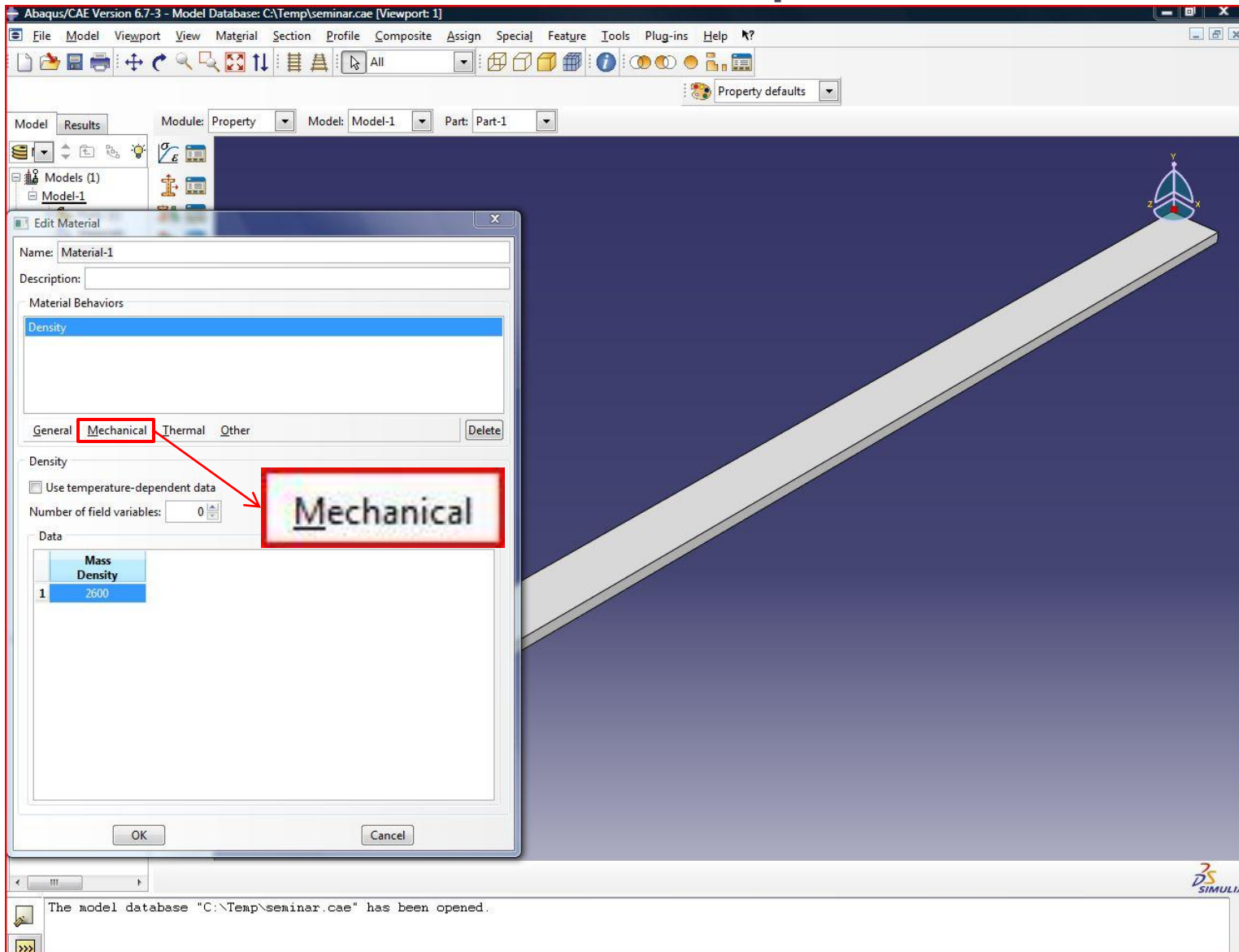
# Создание материала



# Создание материала

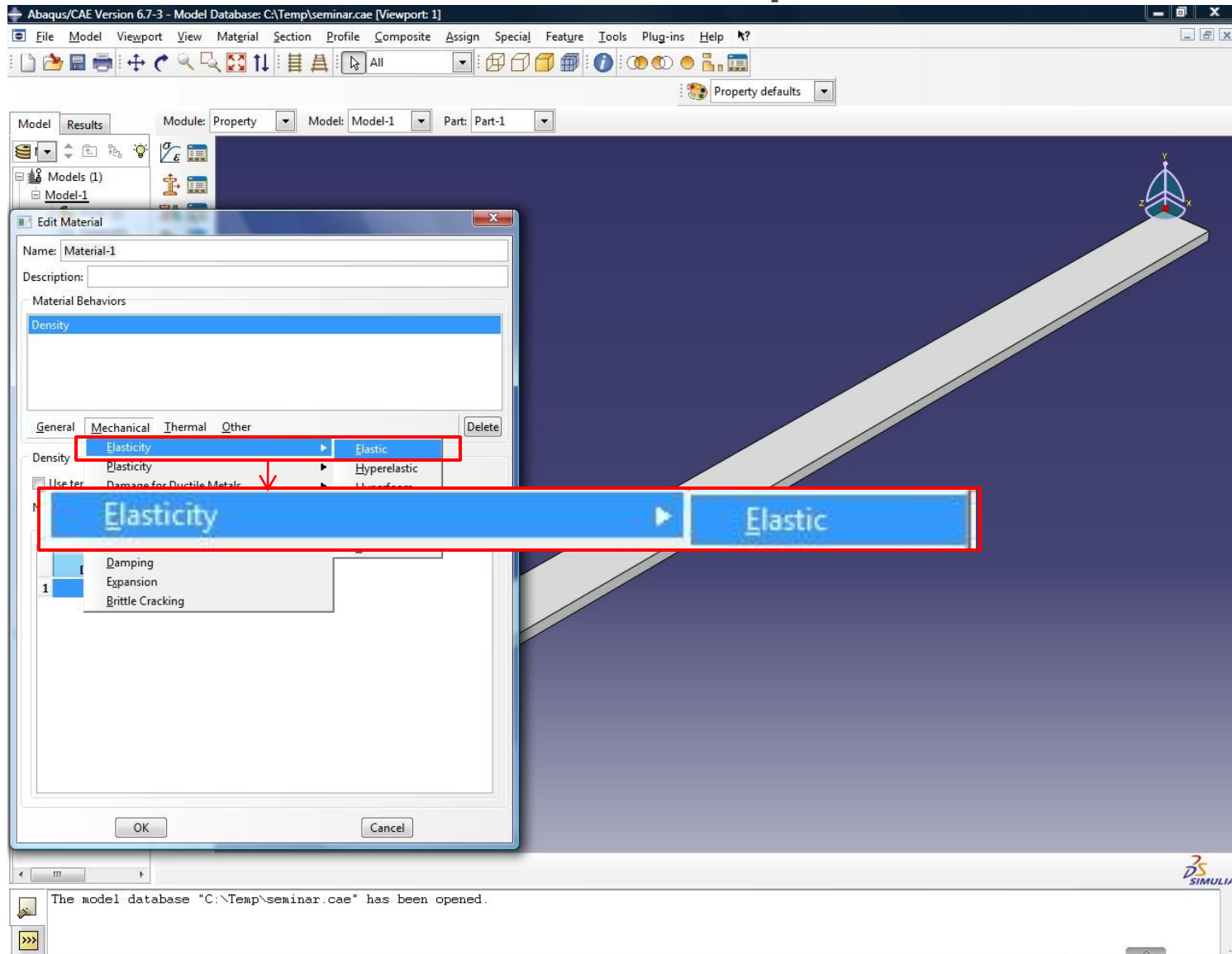


# Создание материала





# Создание материала



# Создание материала

The screenshot shows the Abaqus/CAE interface with the 'Edit Material' dialog box open. The dialog is for 'Material-1' and shows the 'Elastic' behavior selected. The 'Data' table contains the following values:

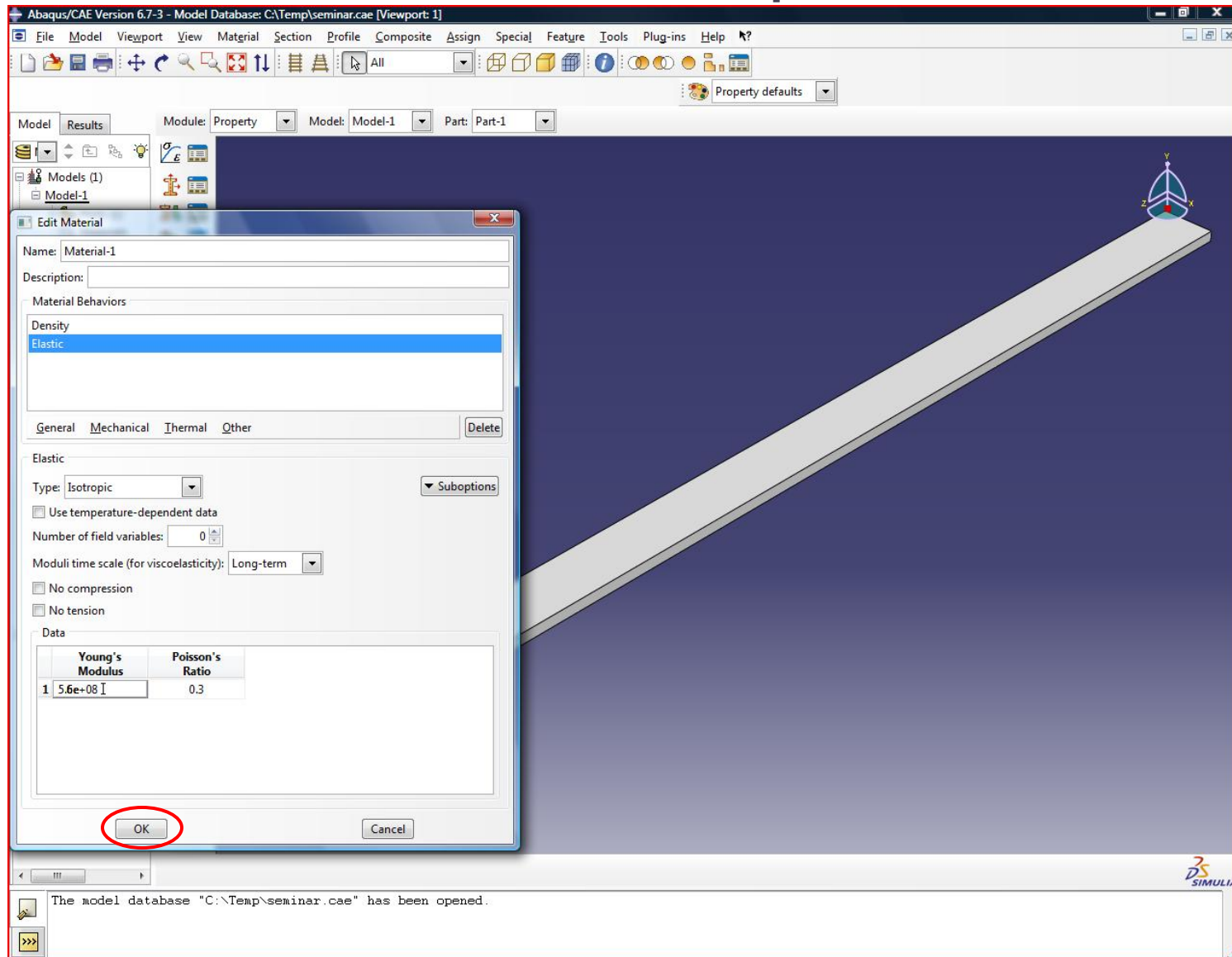
Young's Modulus	Poisson's Ratio
1 5.6e+08 I	0.3

A red box highlights the data table in the dialog, and another red box highlights a larger version of the same data table to the right.

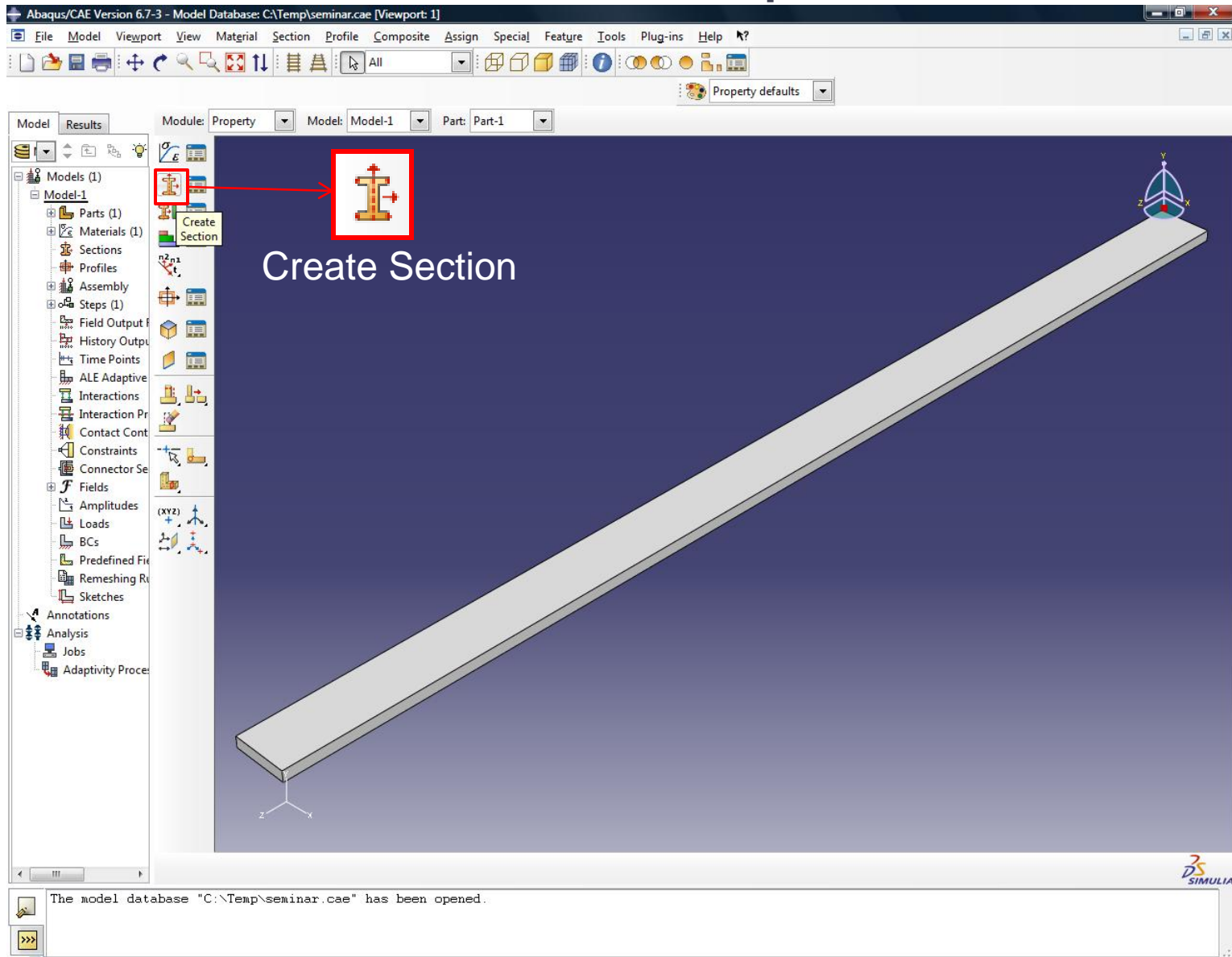
	Young's Modulus	Poisson's Ratio
1	5.6e+08 I	0.3

The status bar at the bottom indicates: "The model database "C:\Temp\seminar.cae" has been opened."

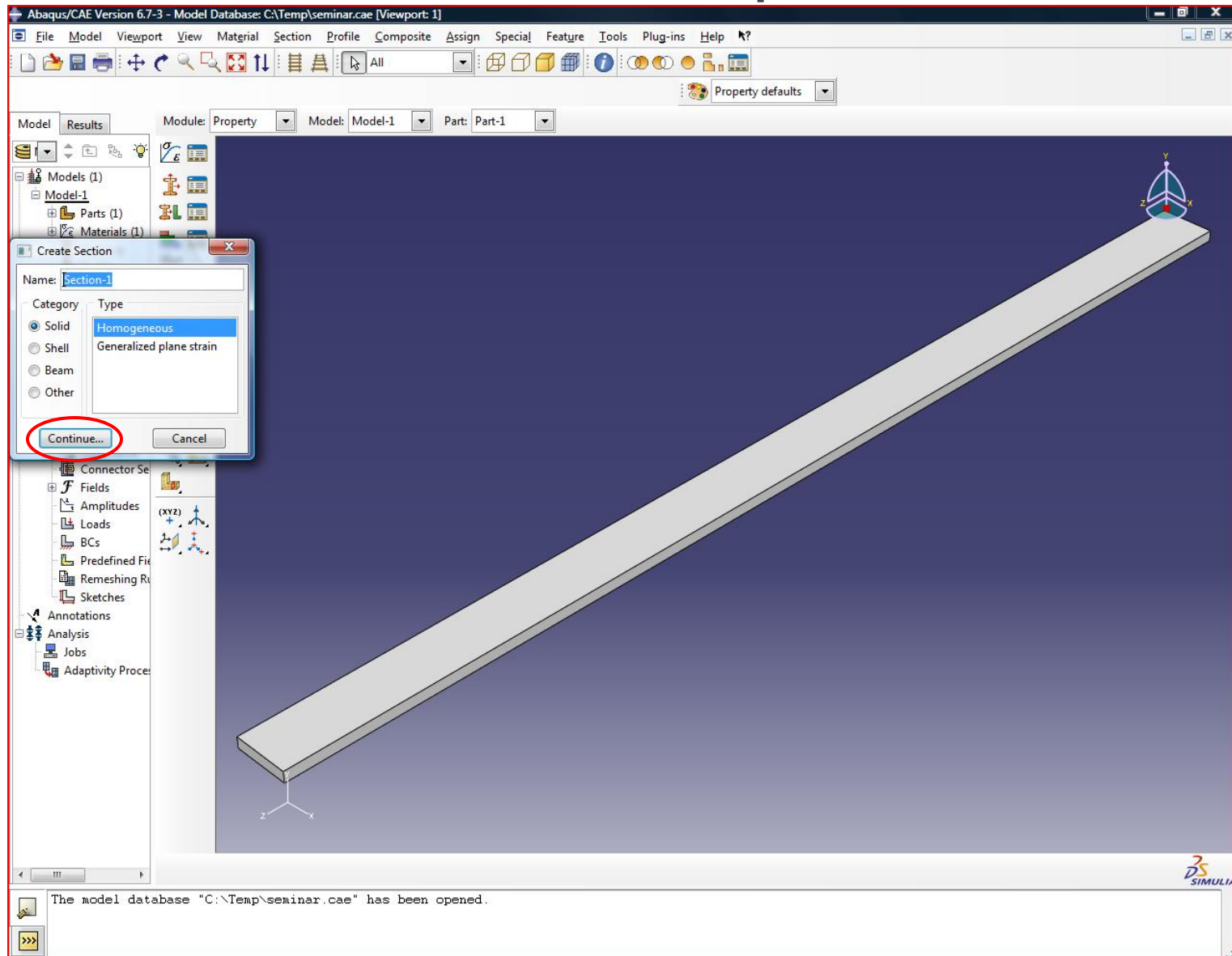
# Создание материала



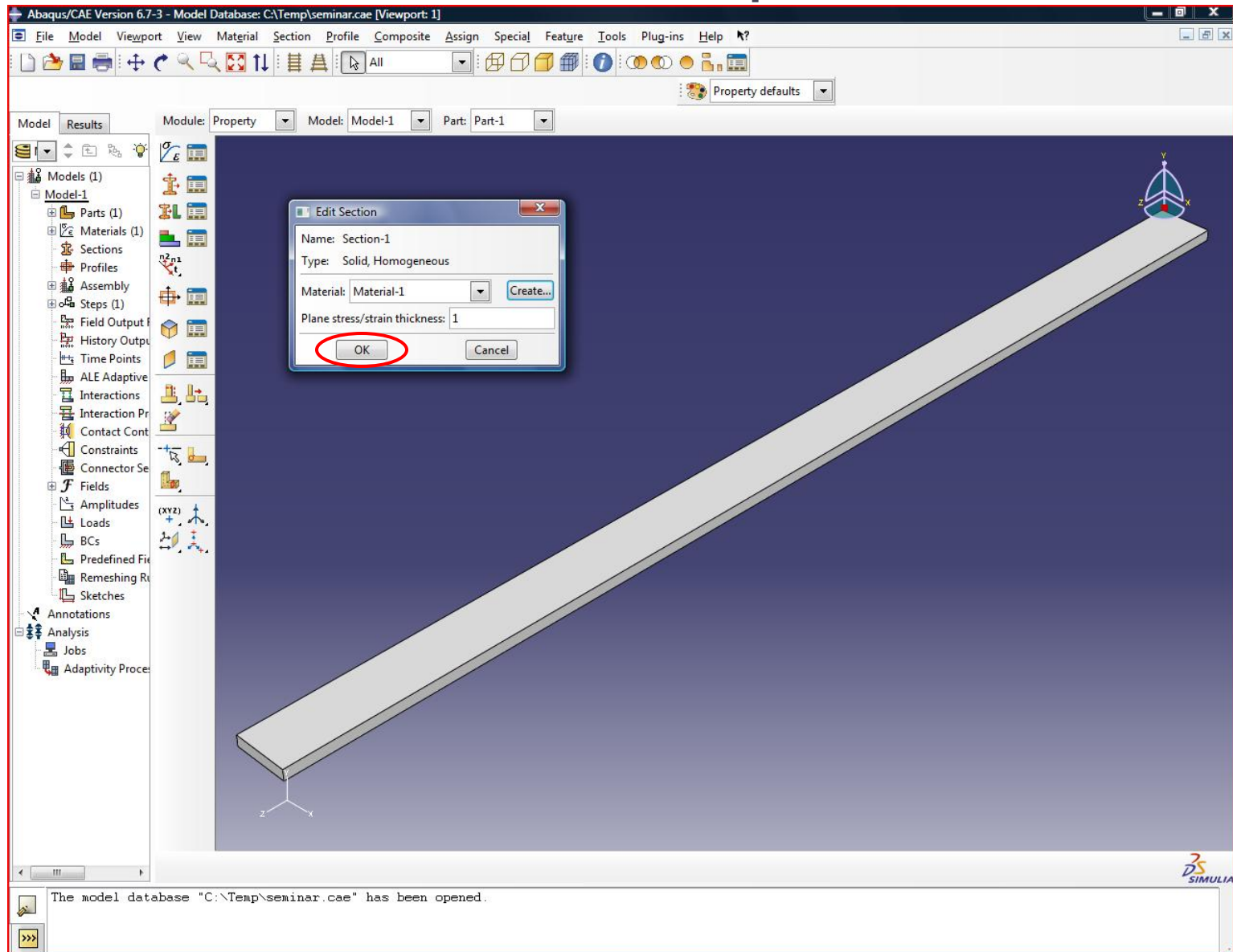
# Создание материала



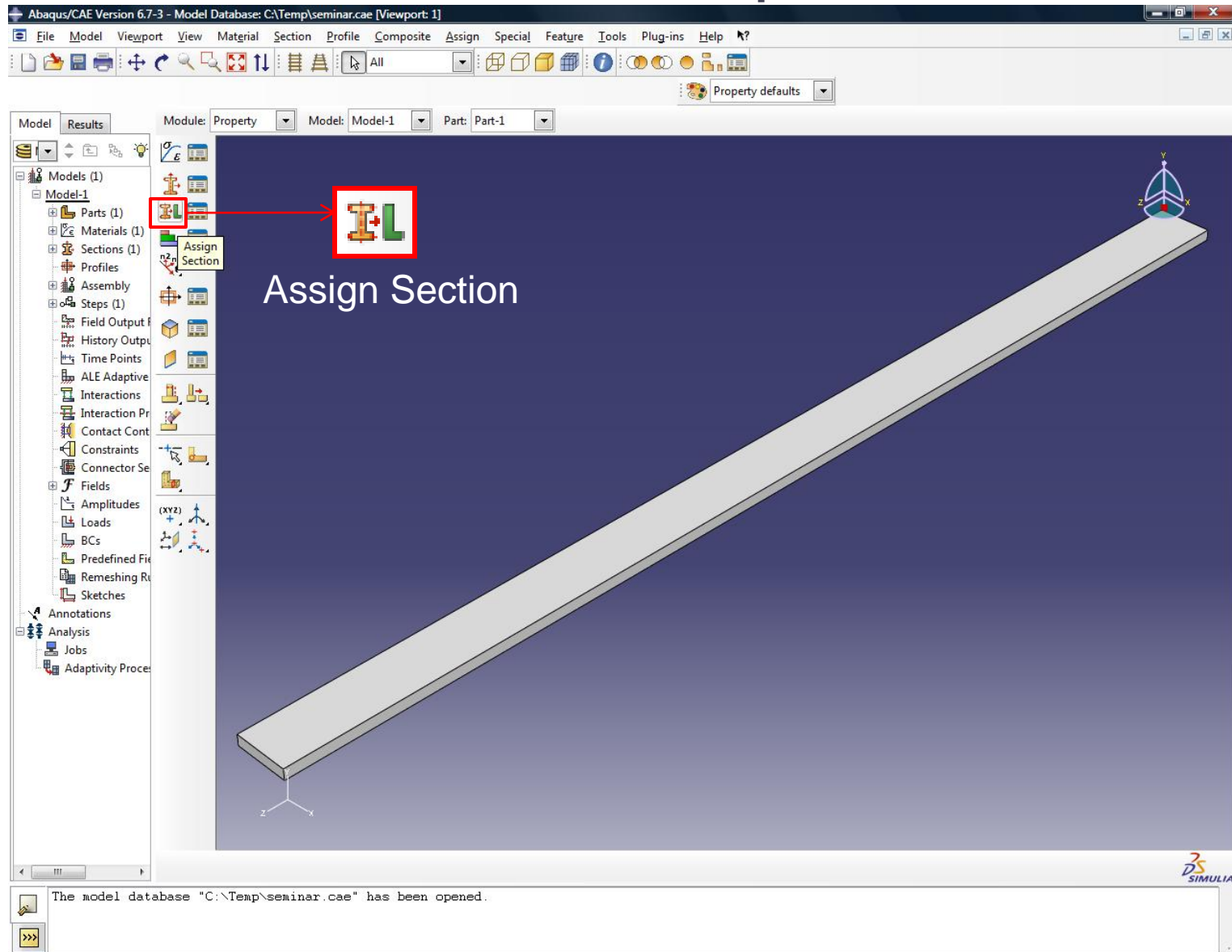
# Создание материала



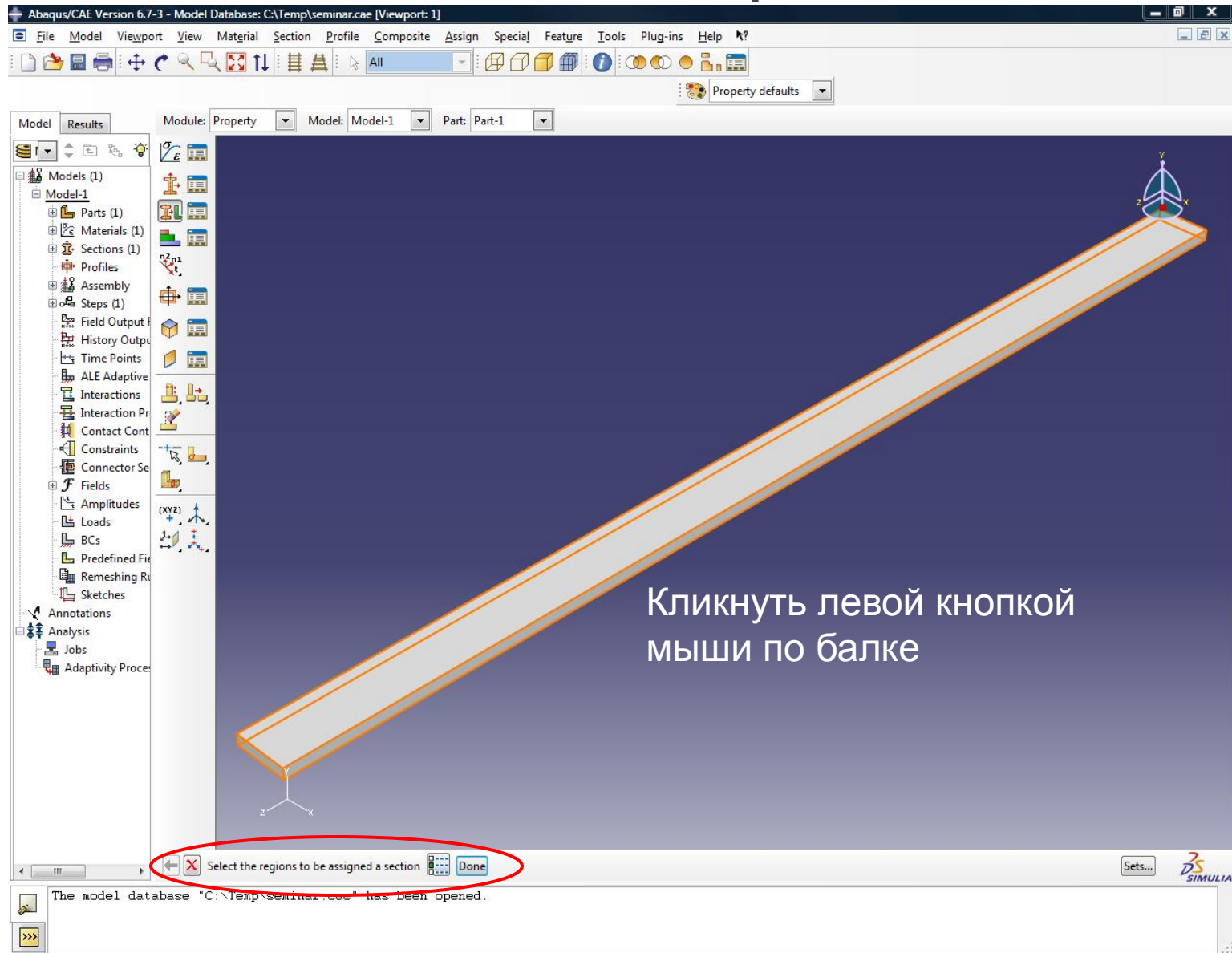
# Создание материала



# Создание материала

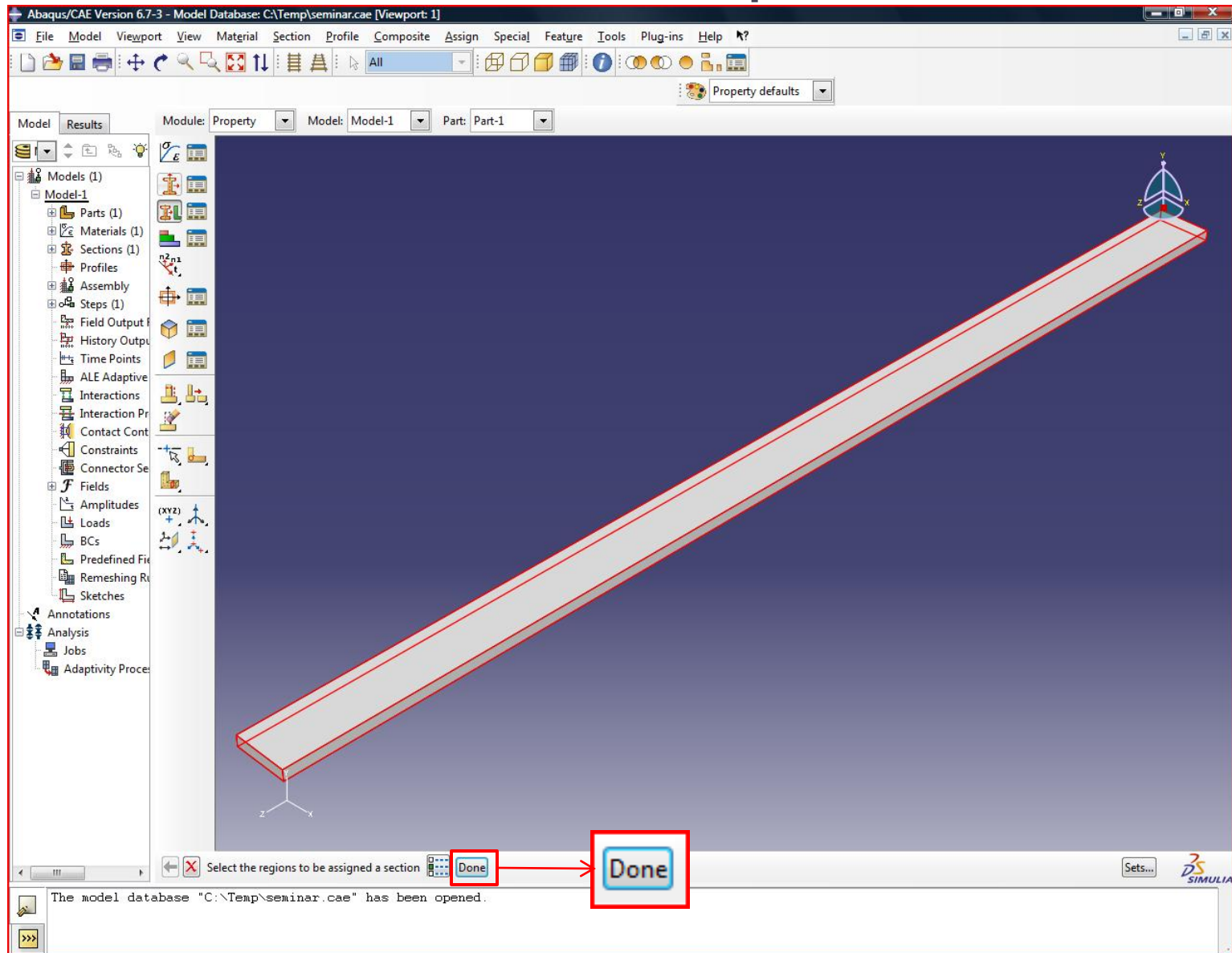


# Создание материала

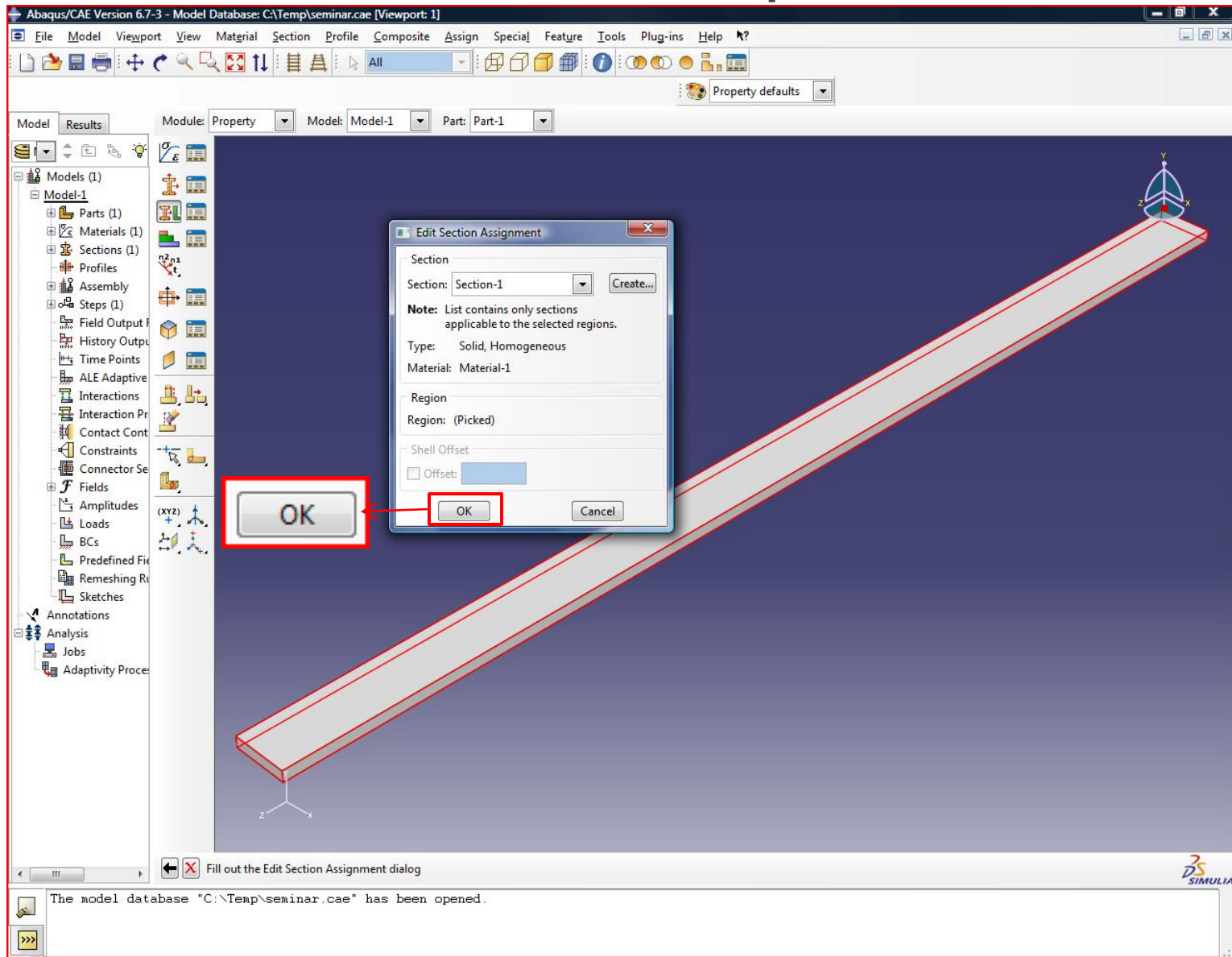




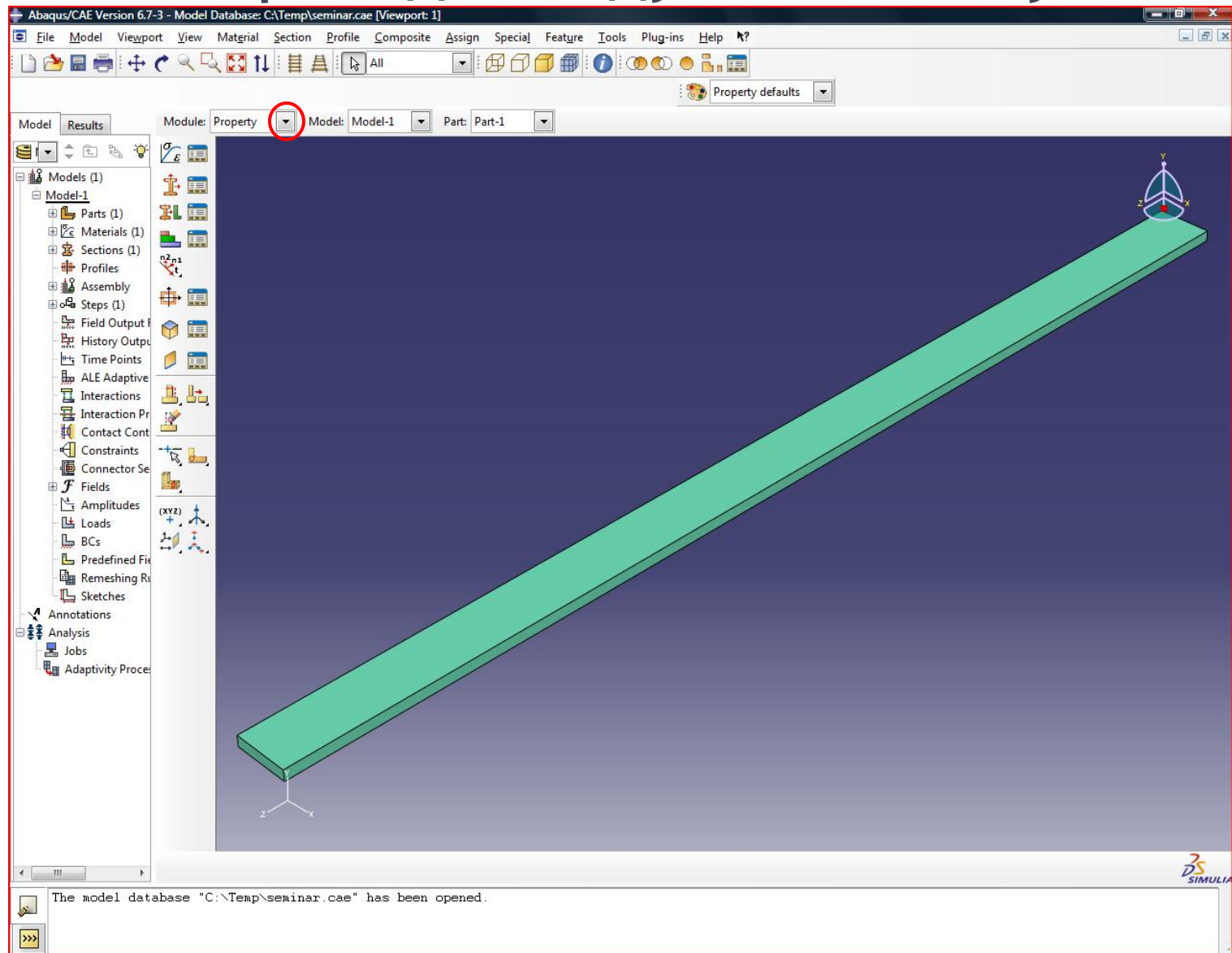
# Создание материала



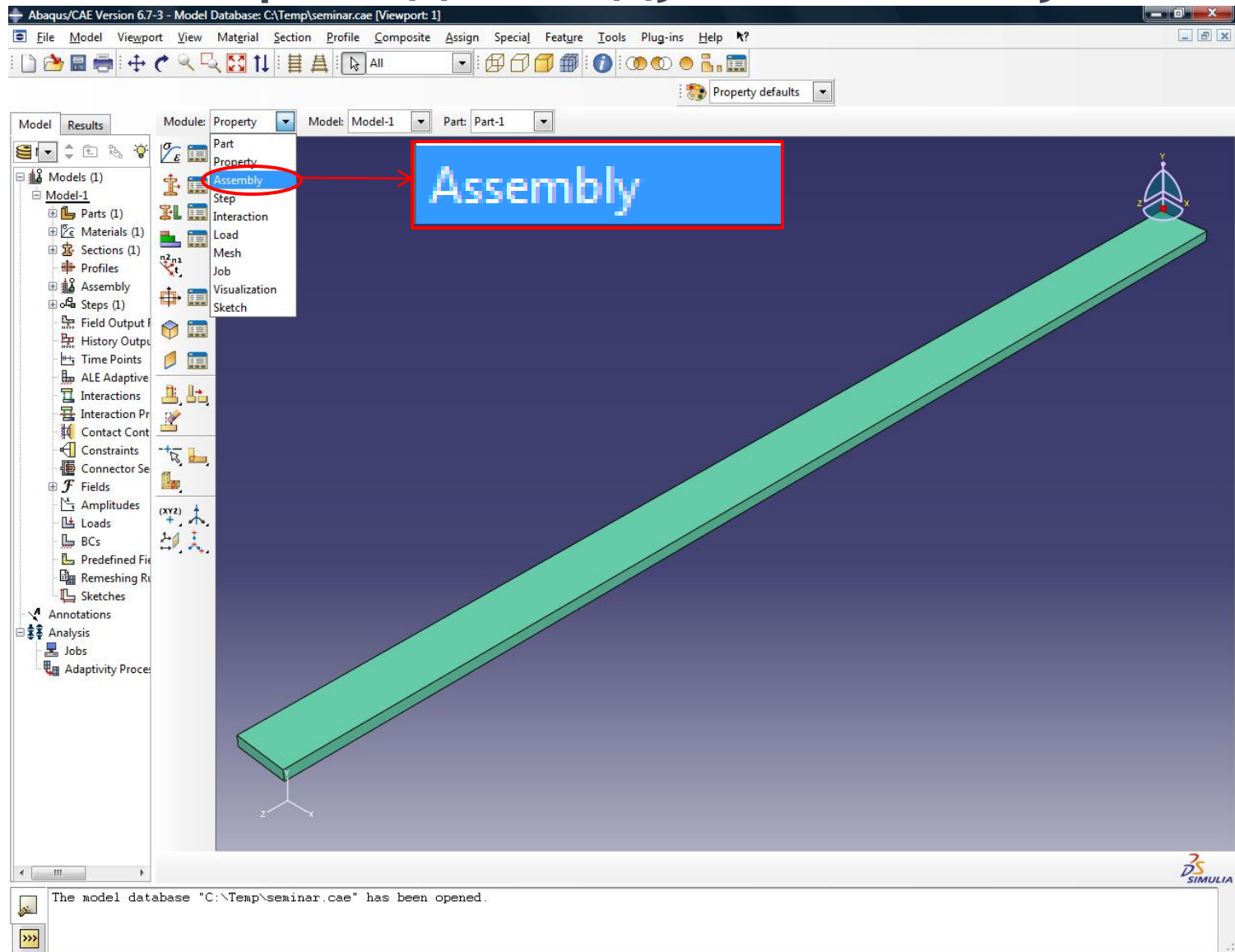
# Создание материала



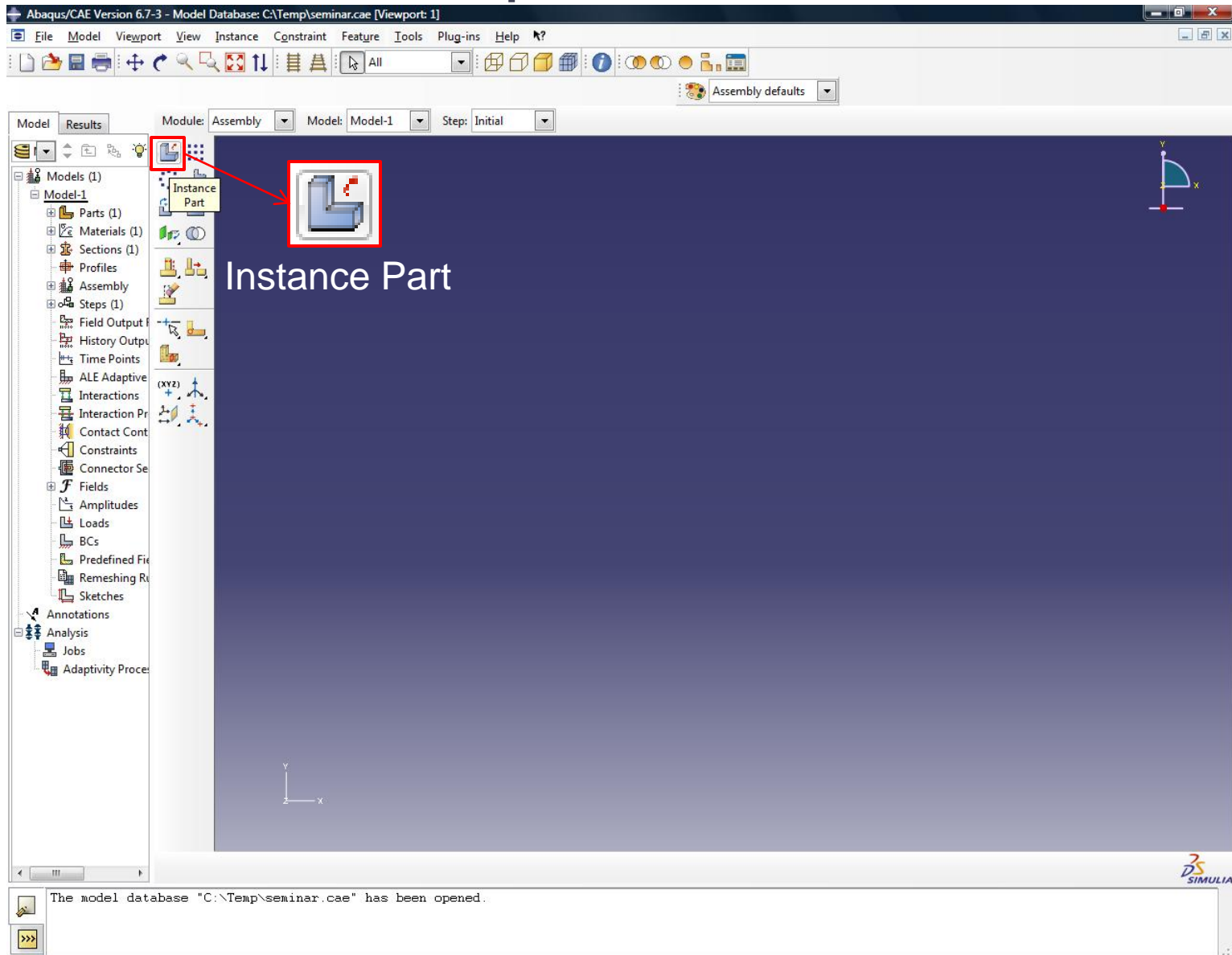
# Переход в модуль Assembly



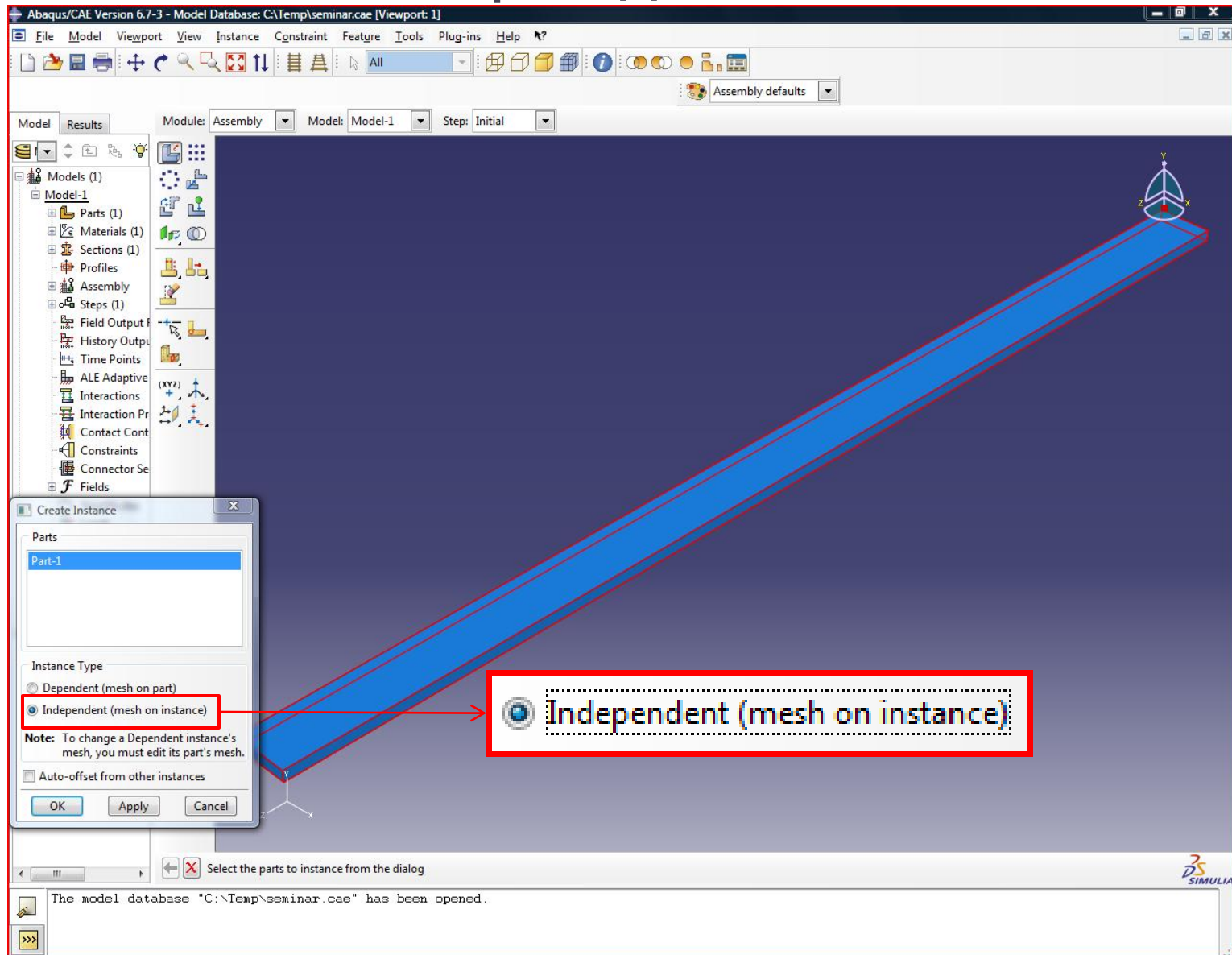
# Переход в модуль Assembly



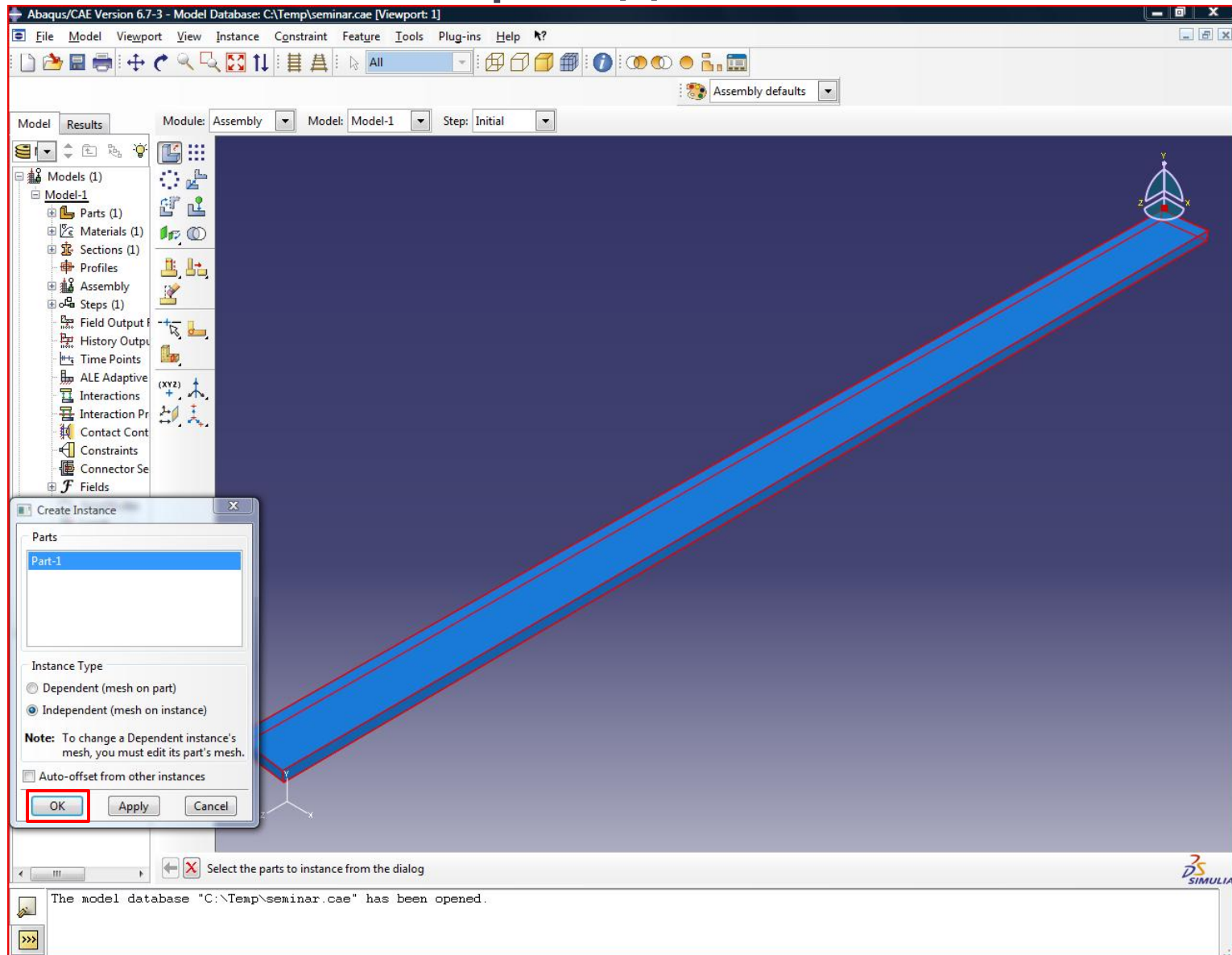
# Сборка детали



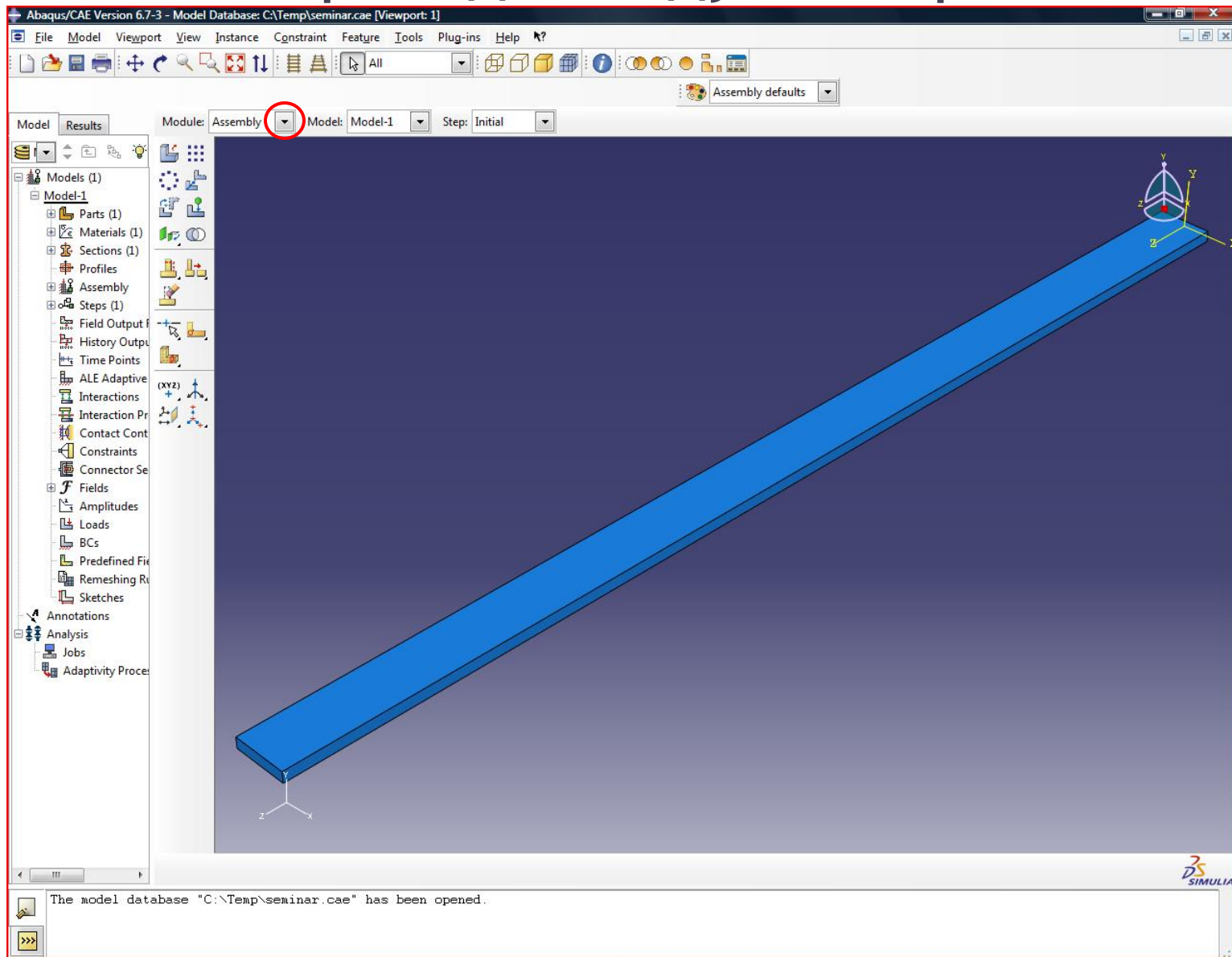
# Сборка детали



# Сборка детали

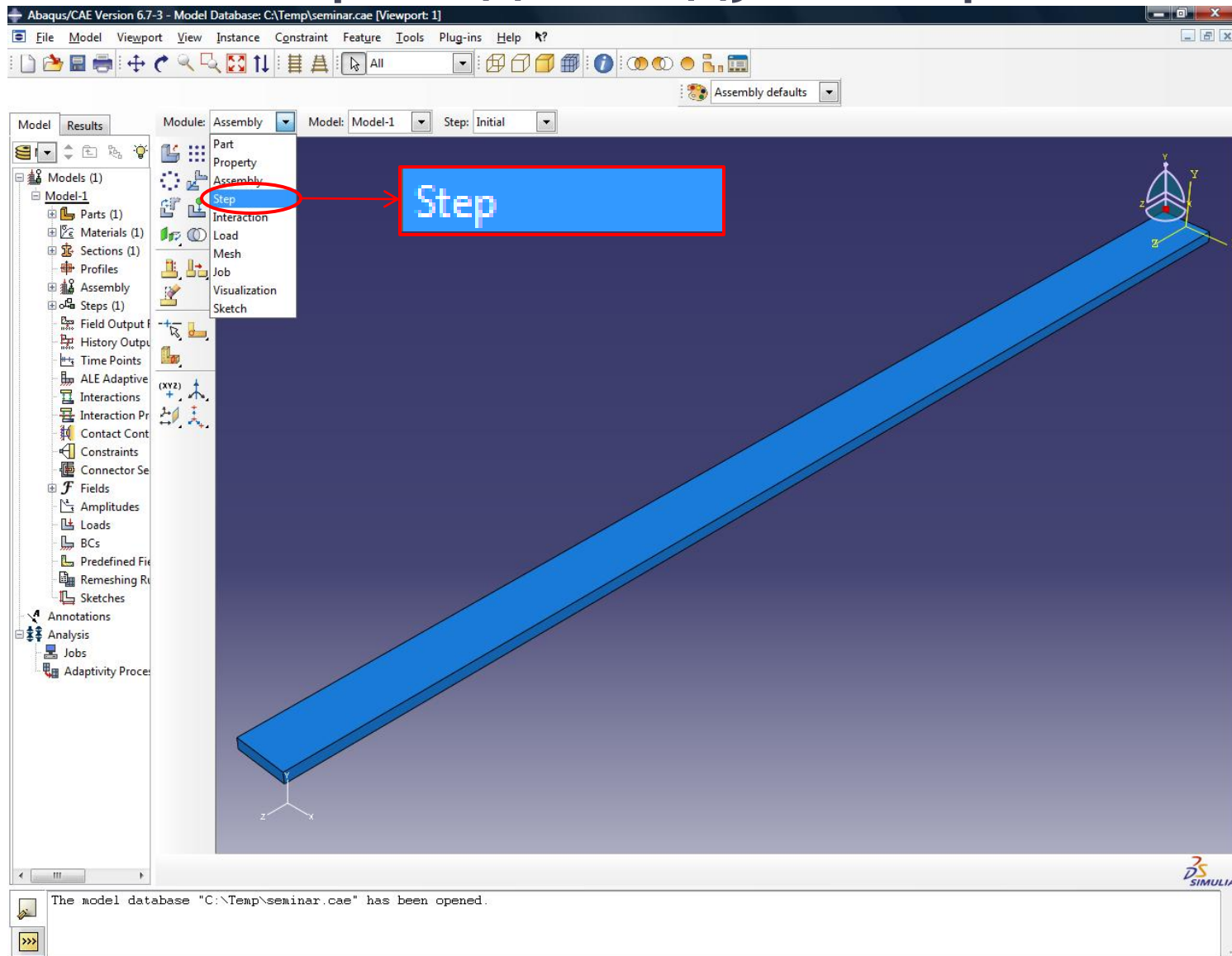


# Переход в модуль Step

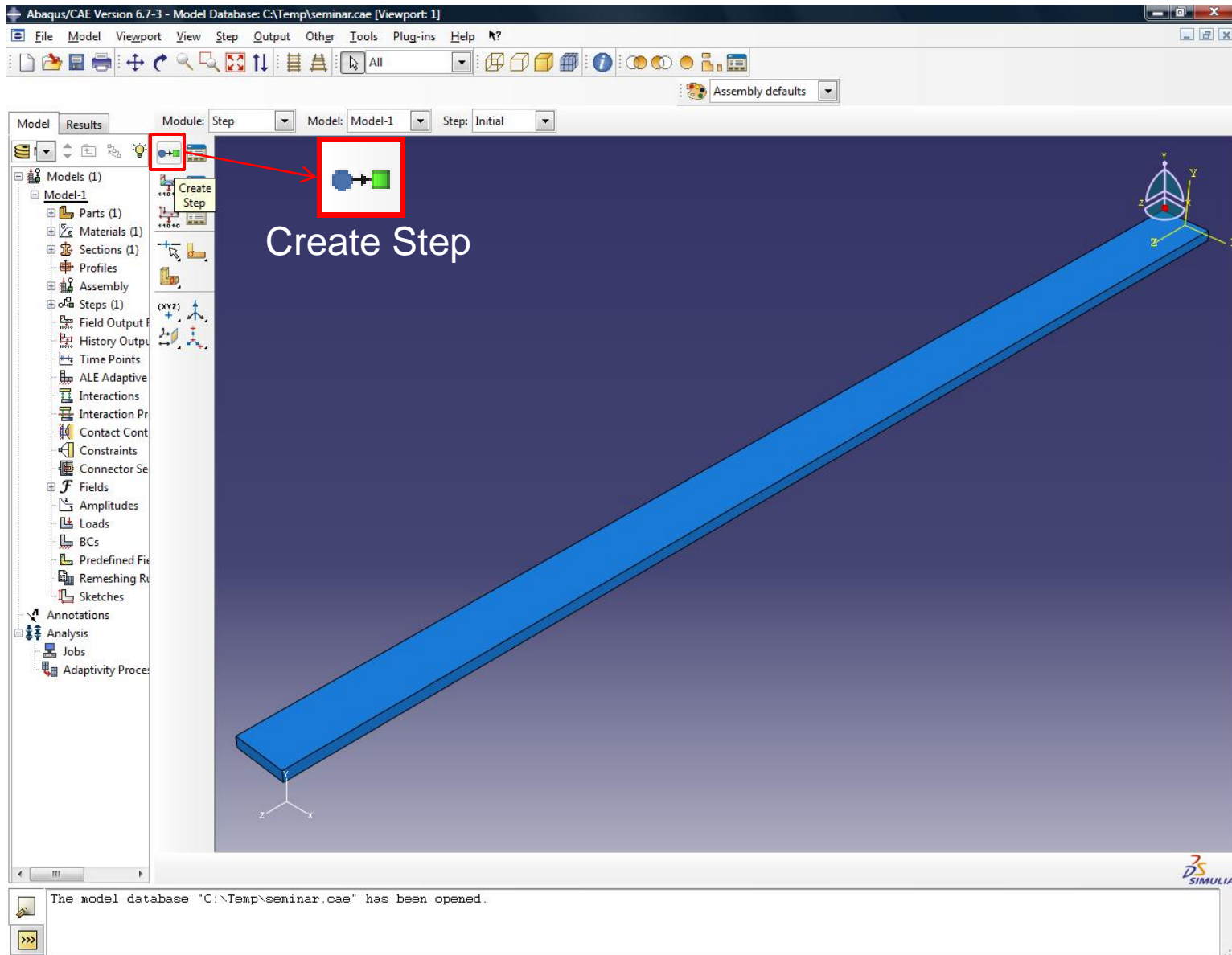




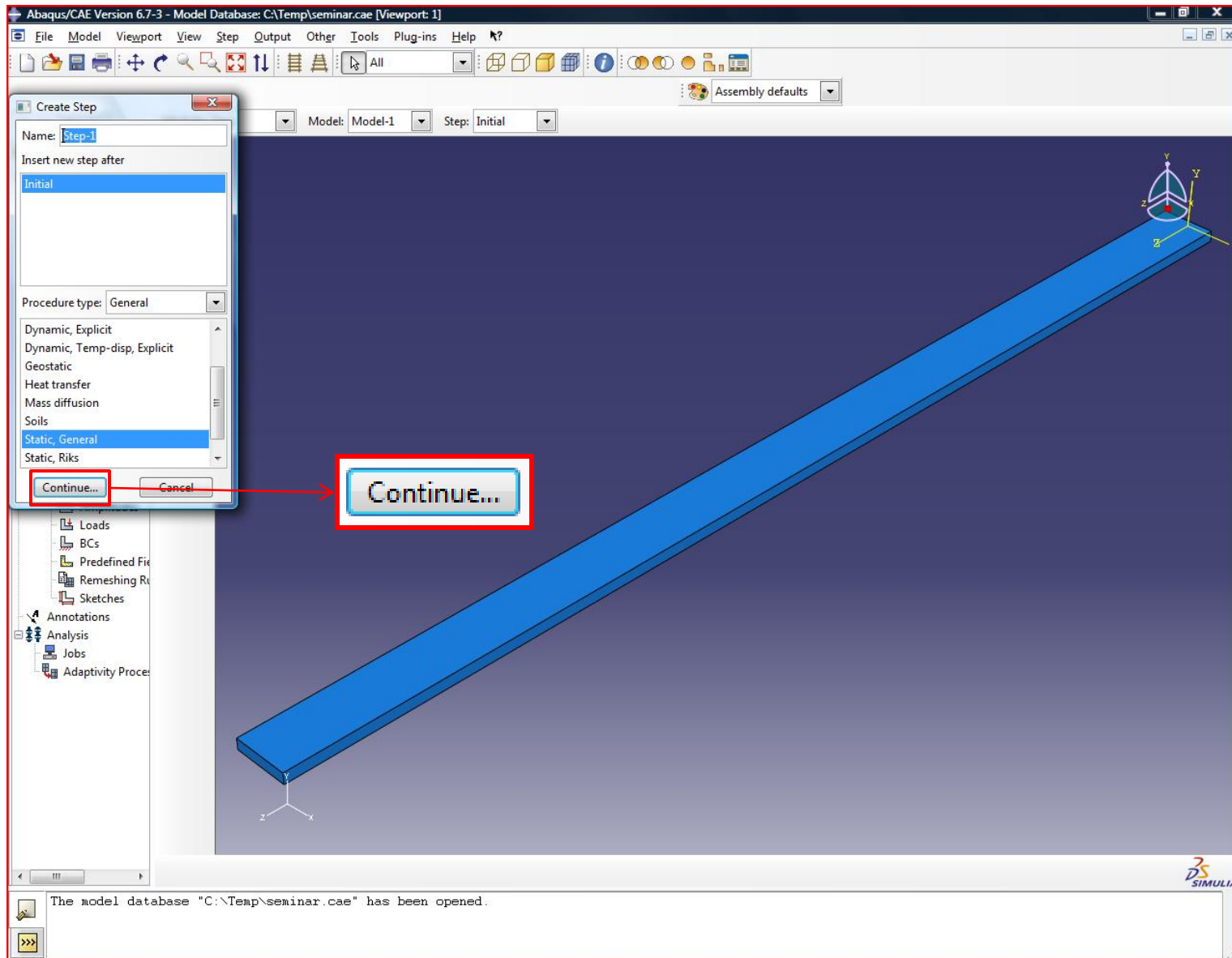
# Переход в модуль Step



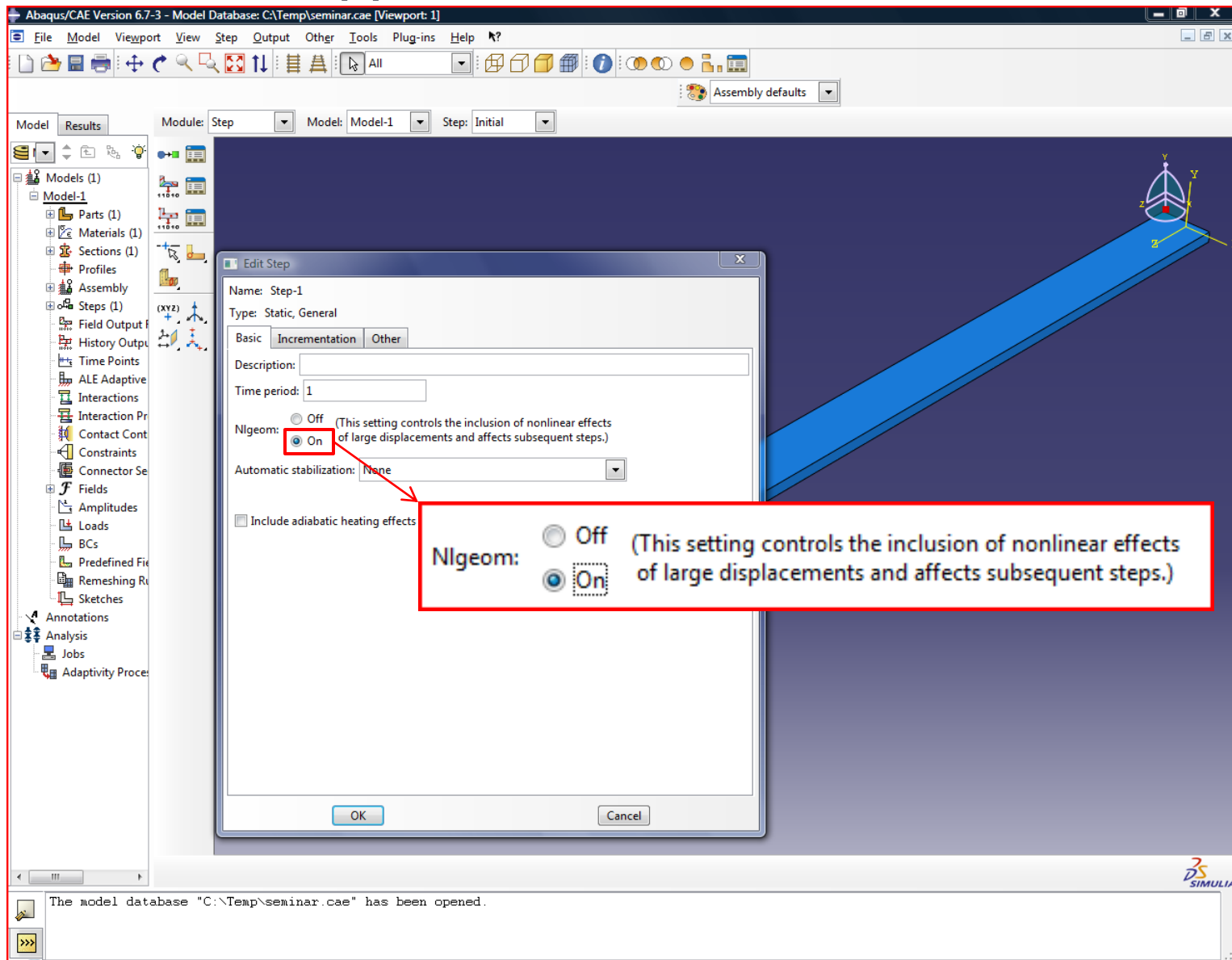
# Создание шагов анализа



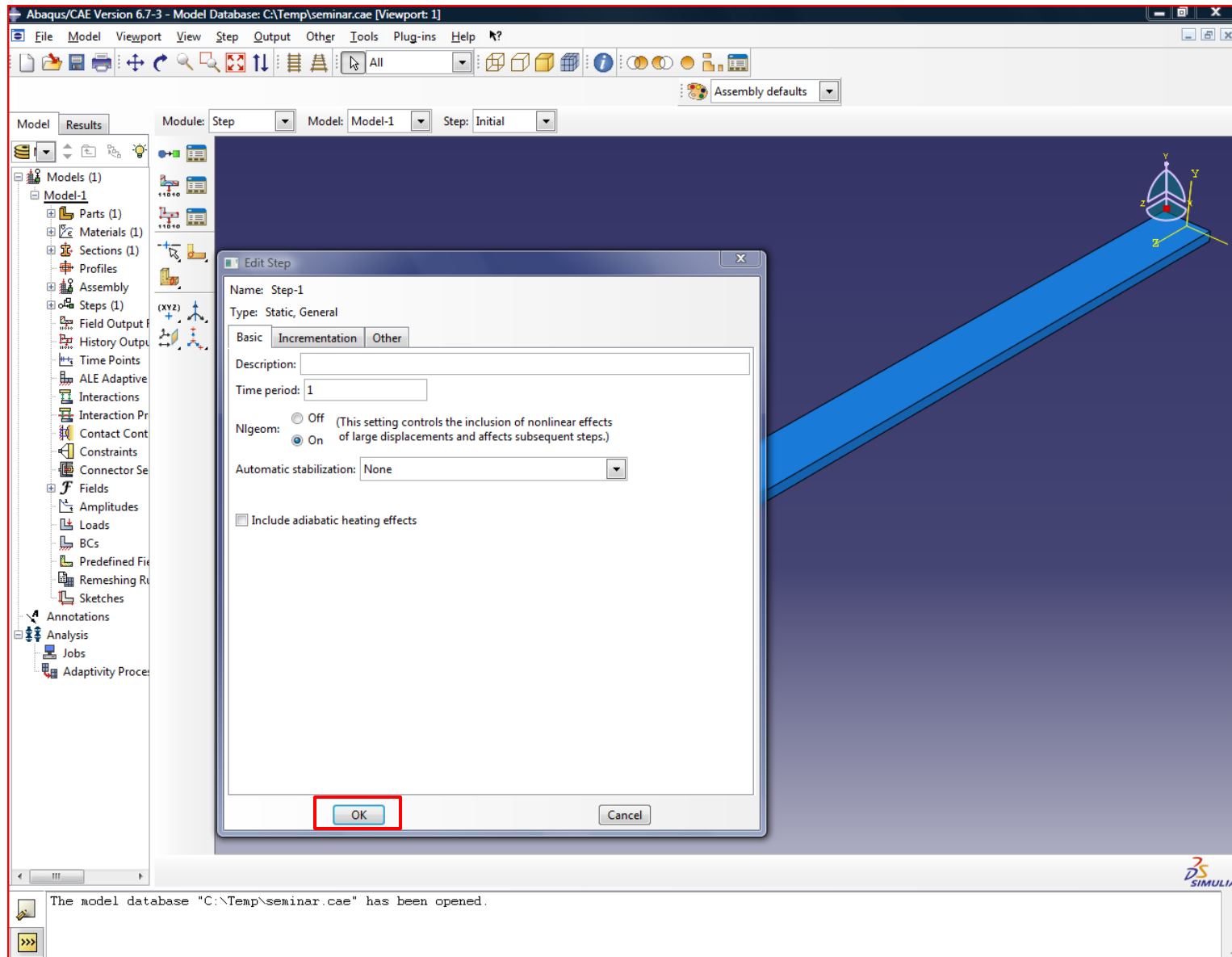
# Создание шагов анализа



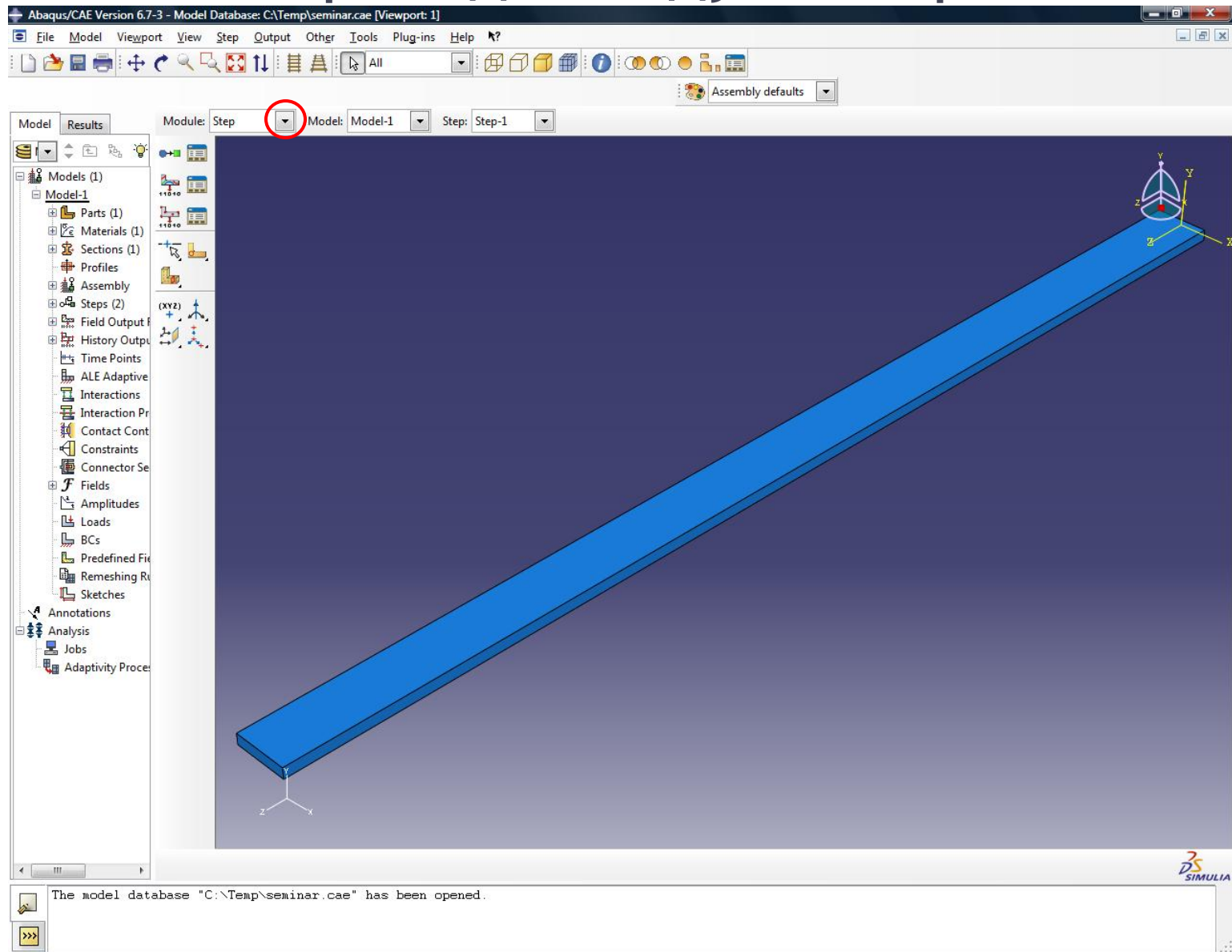
# Создание шагов анализа



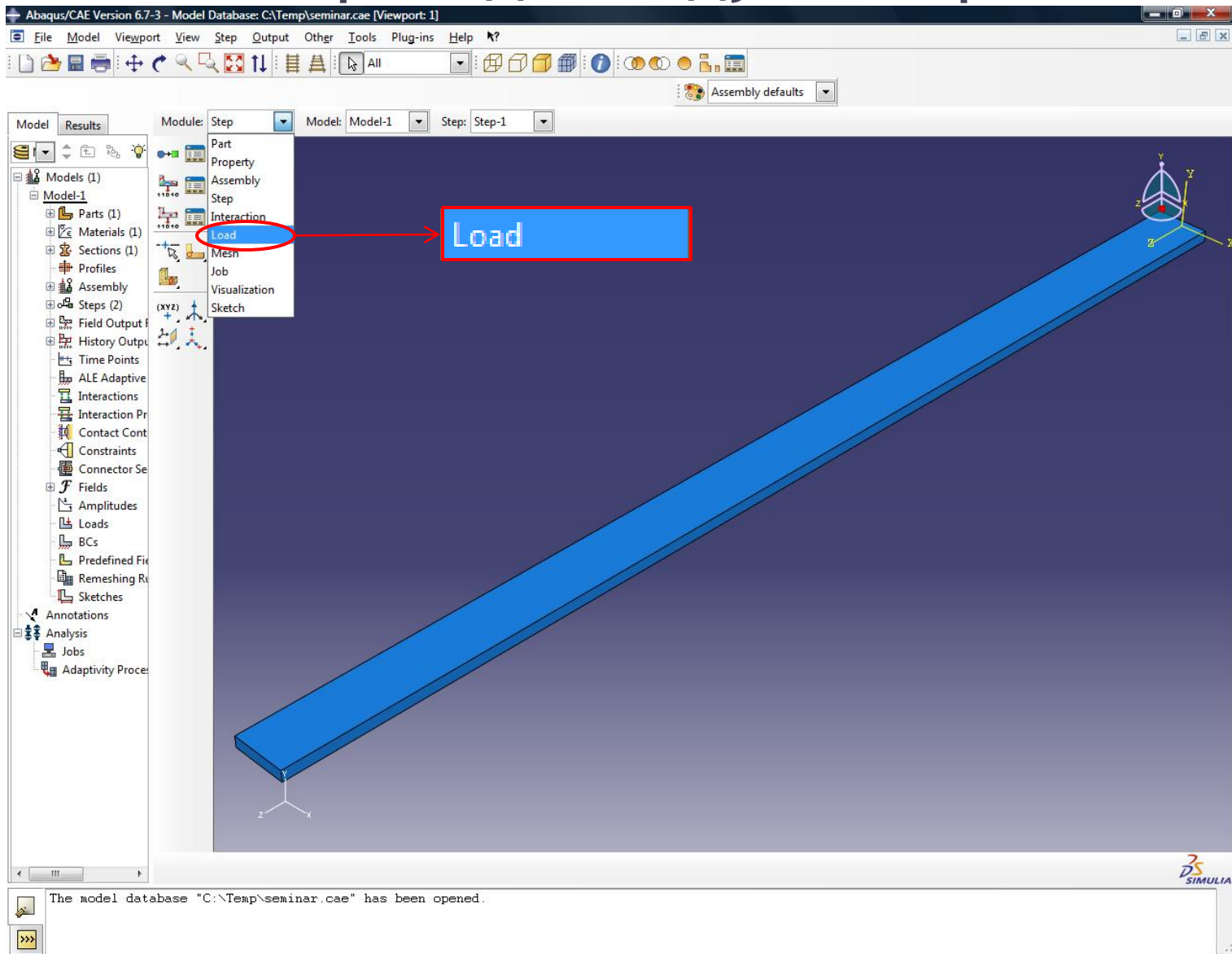
# Создание шагов анализа



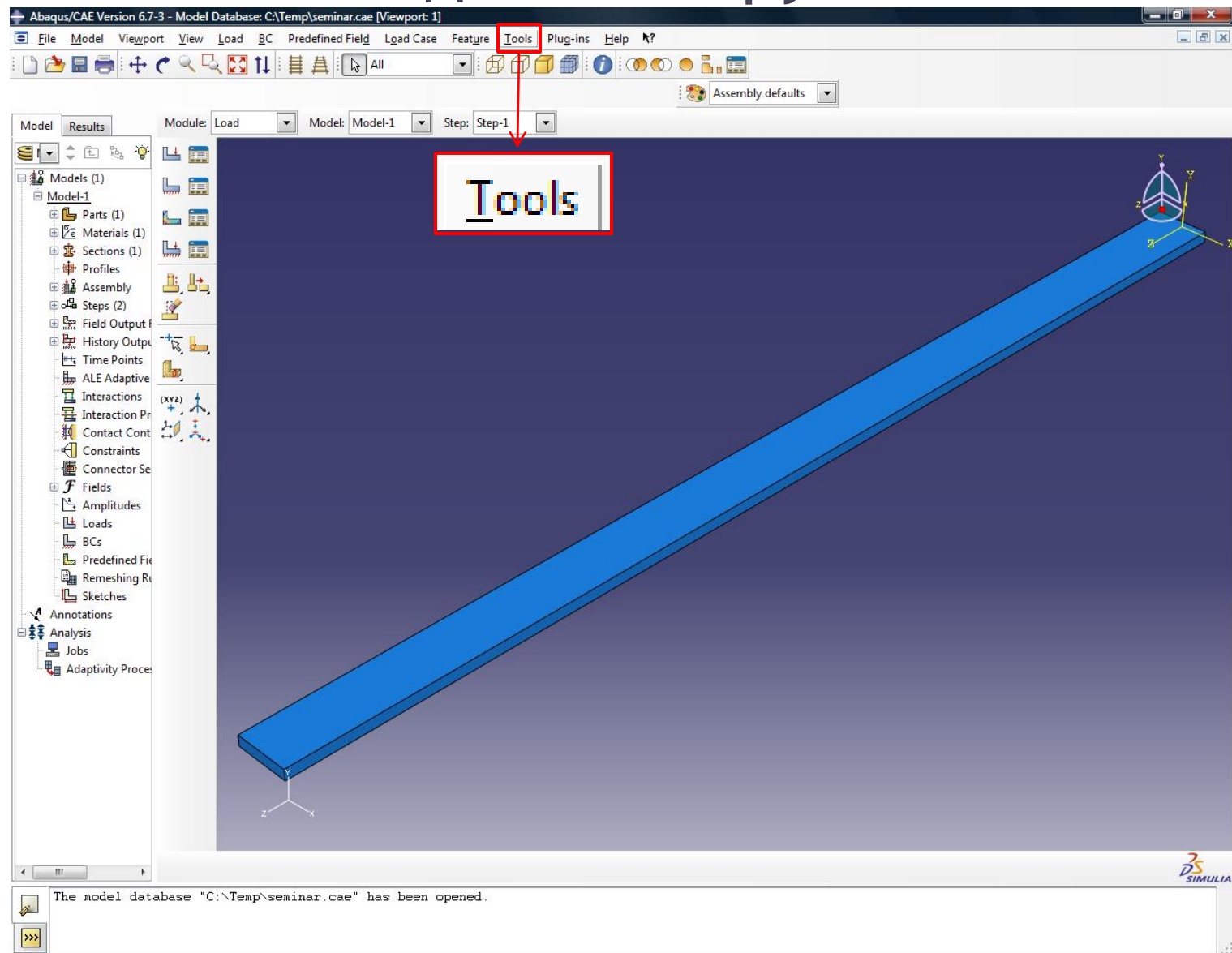
# Переход в модуль Step



# Переход в модуль Step

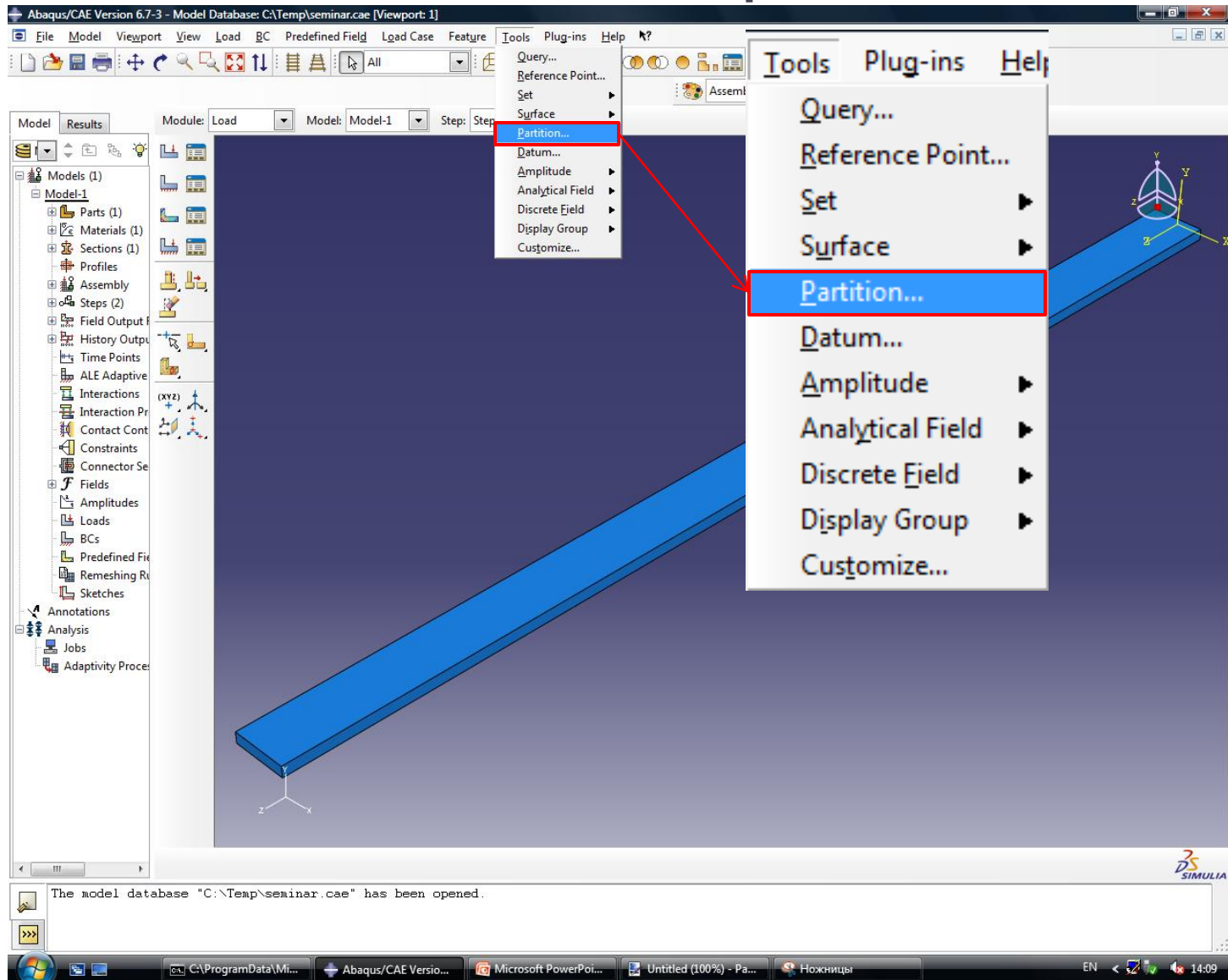


# Создание нагрузки

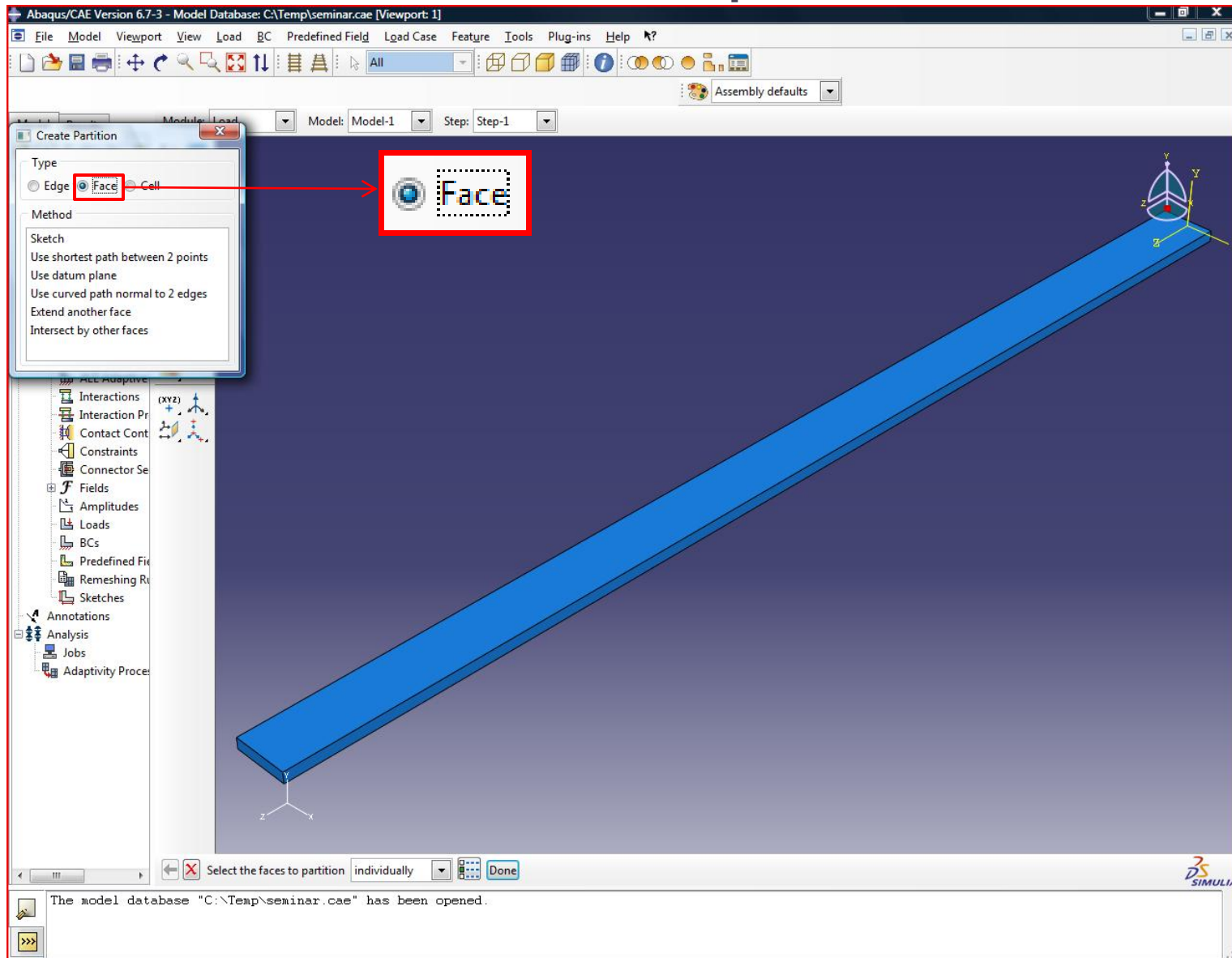




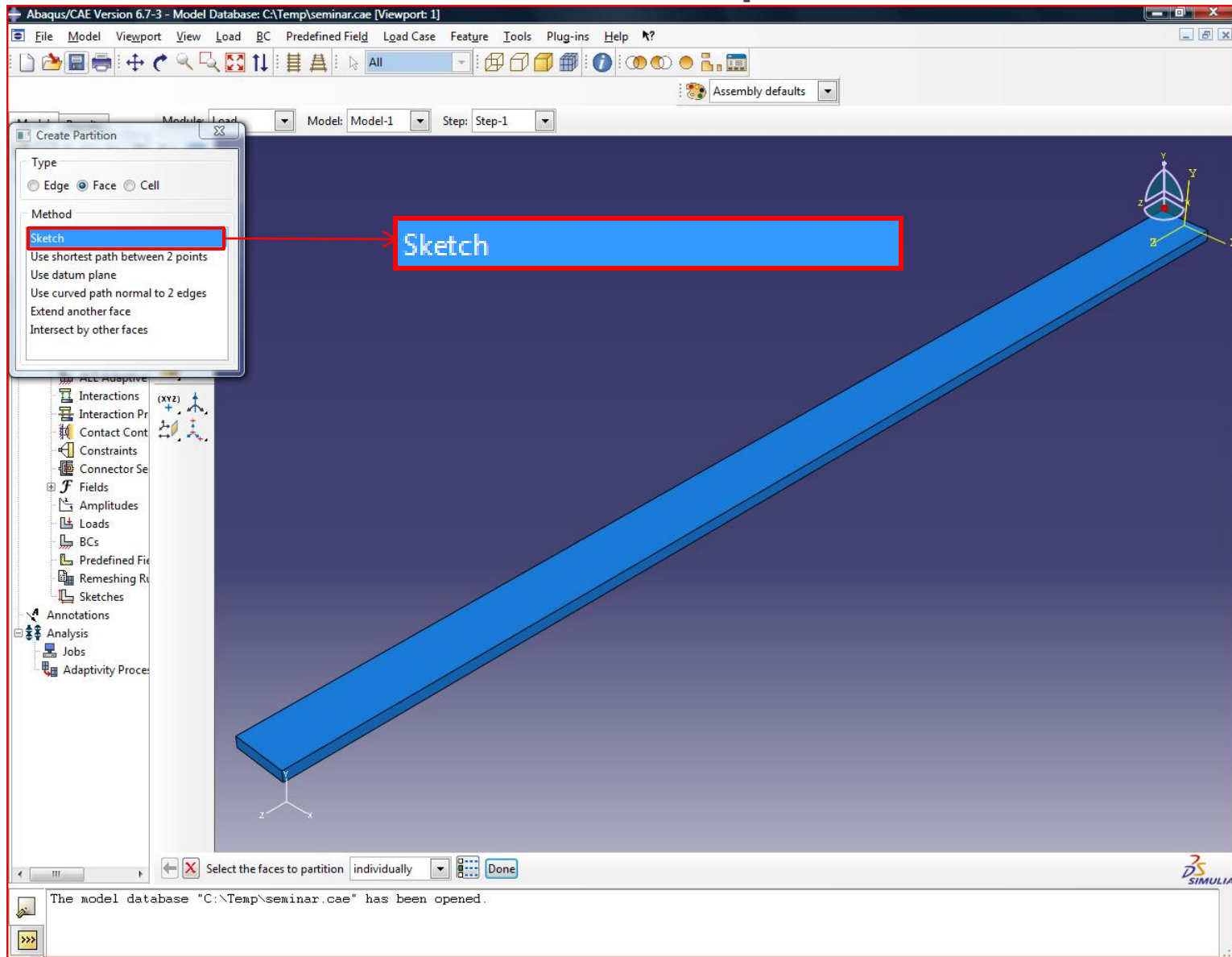
# Разбиение грани



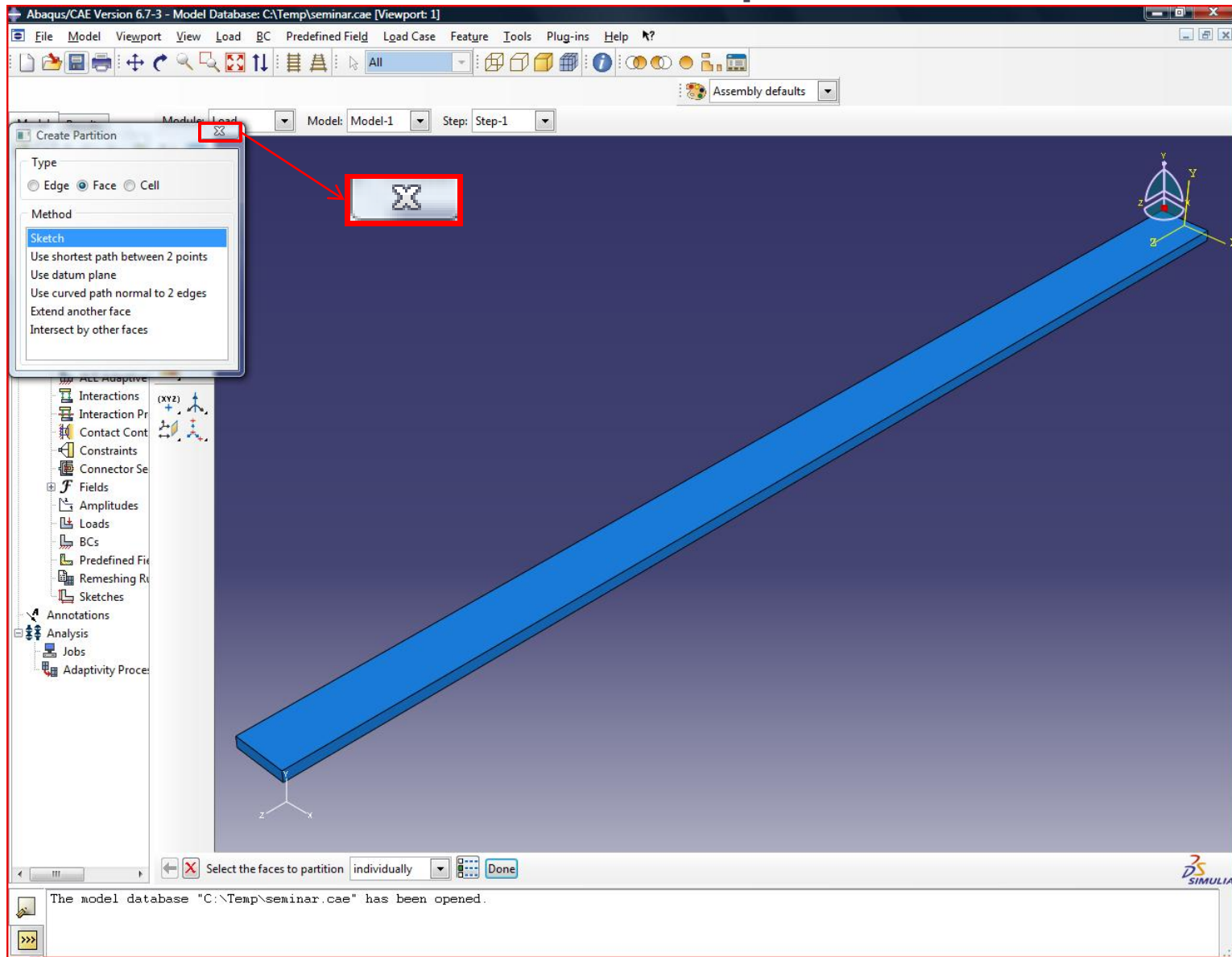
# Разбиение грани



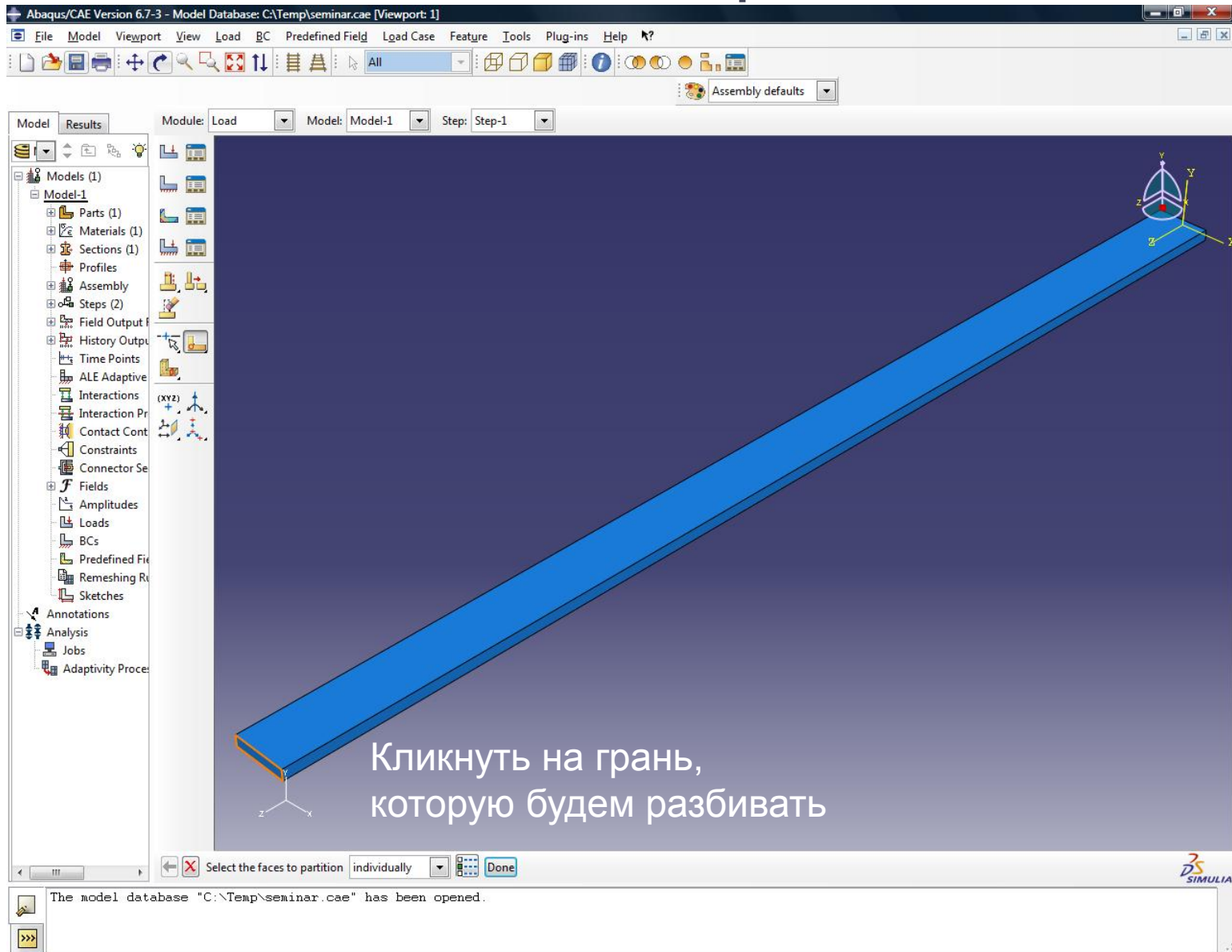
# Разбиение грани



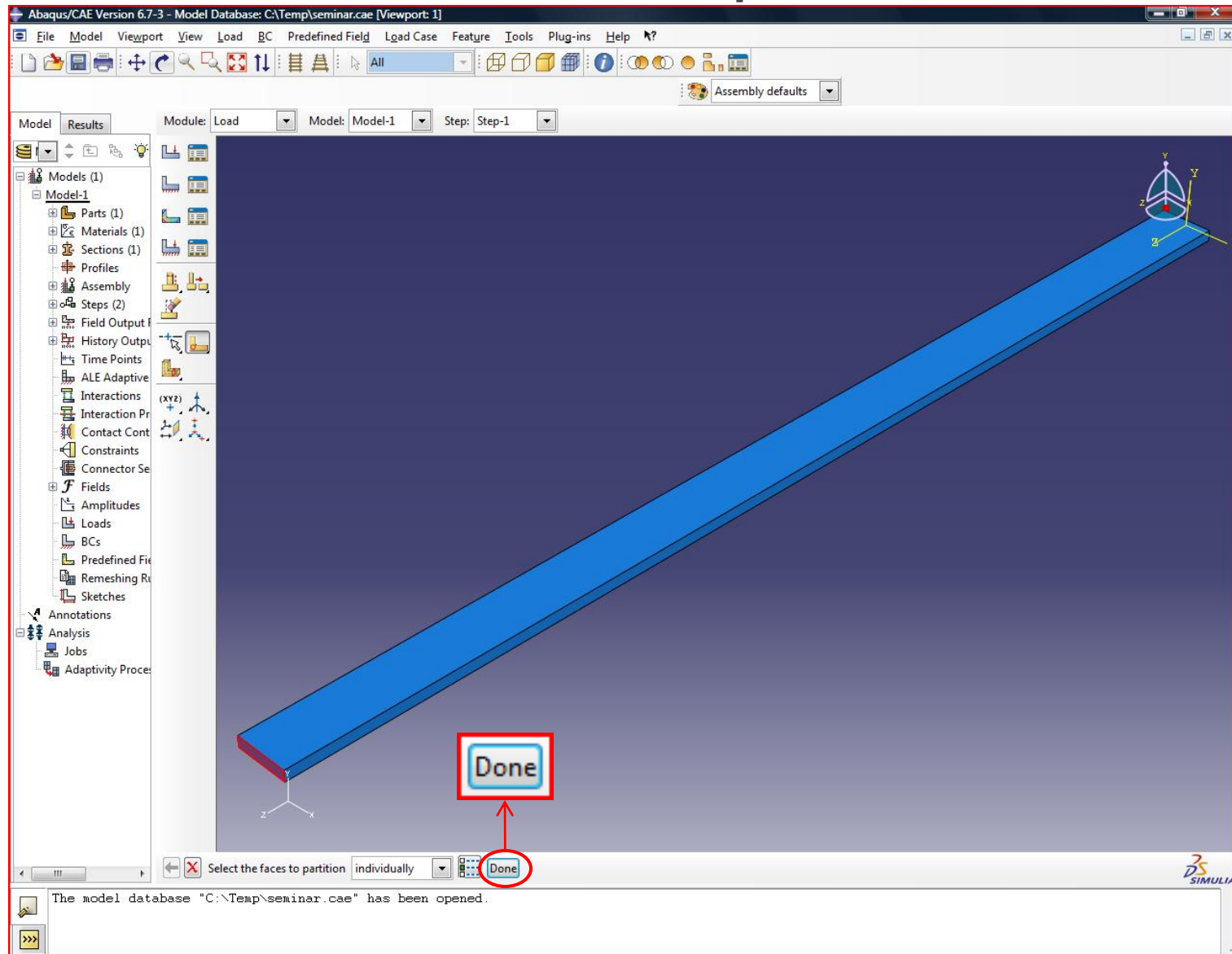
# Разбиение грани



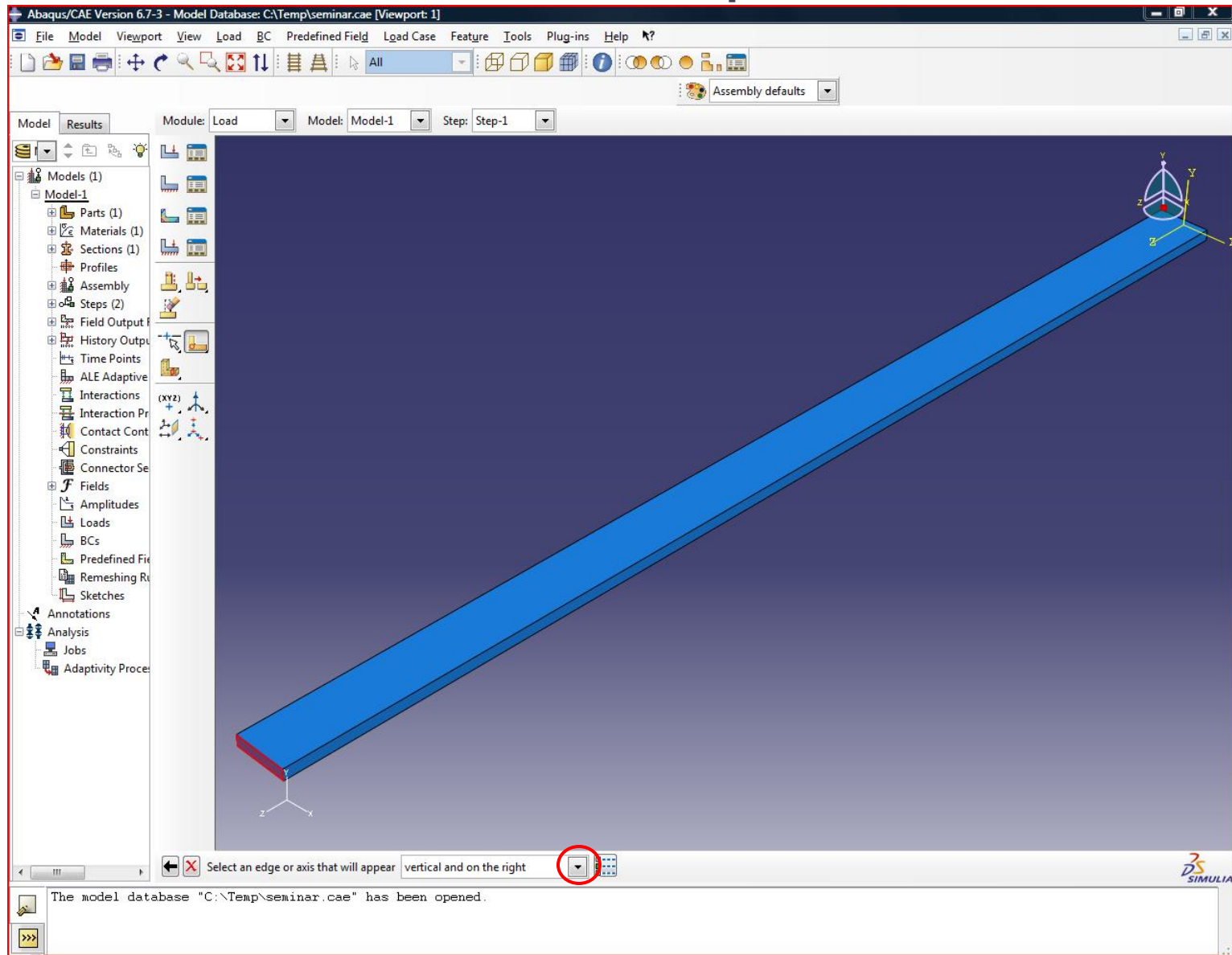
# Разбиение грани



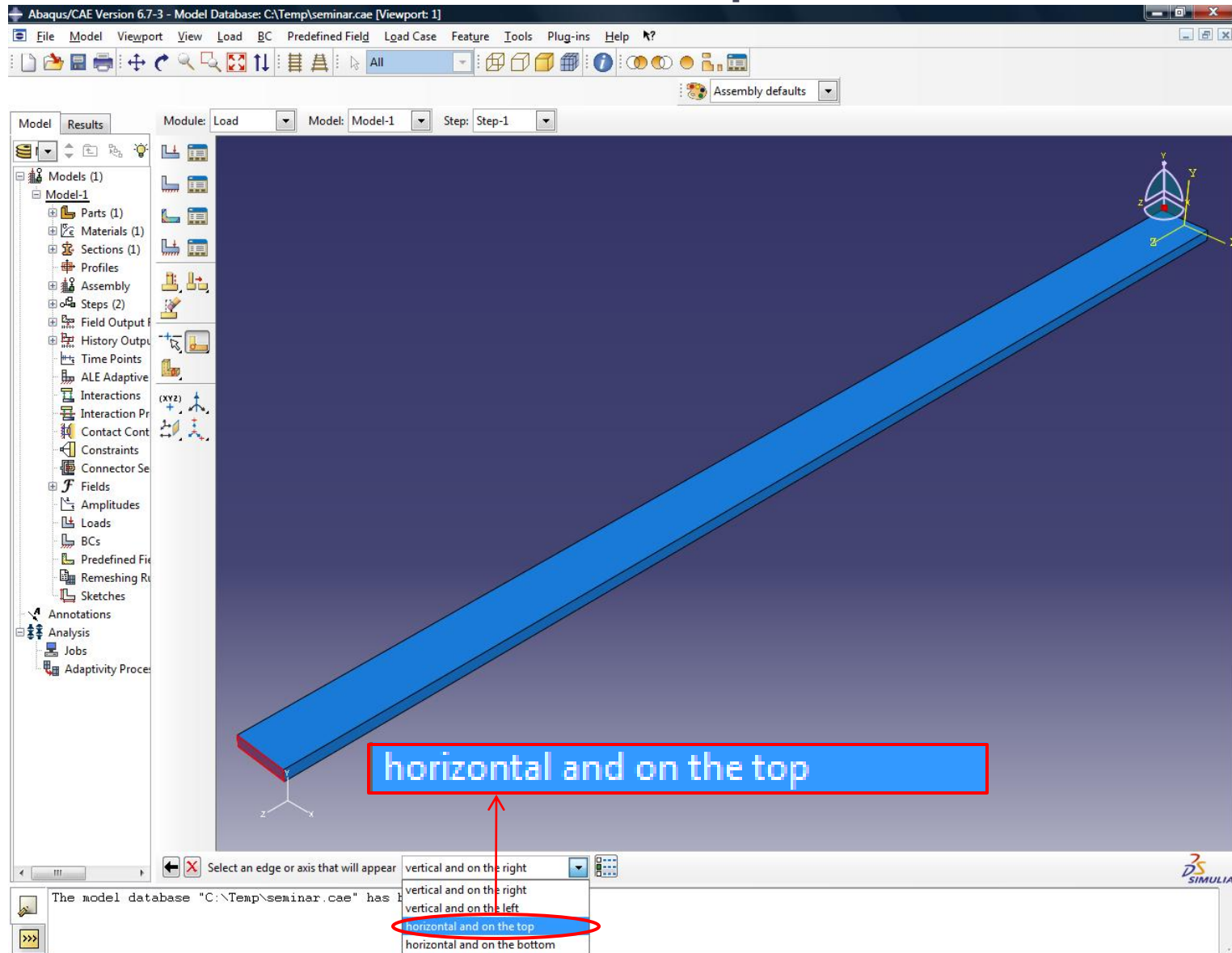
# Разбиение грани



# Разбиение грани

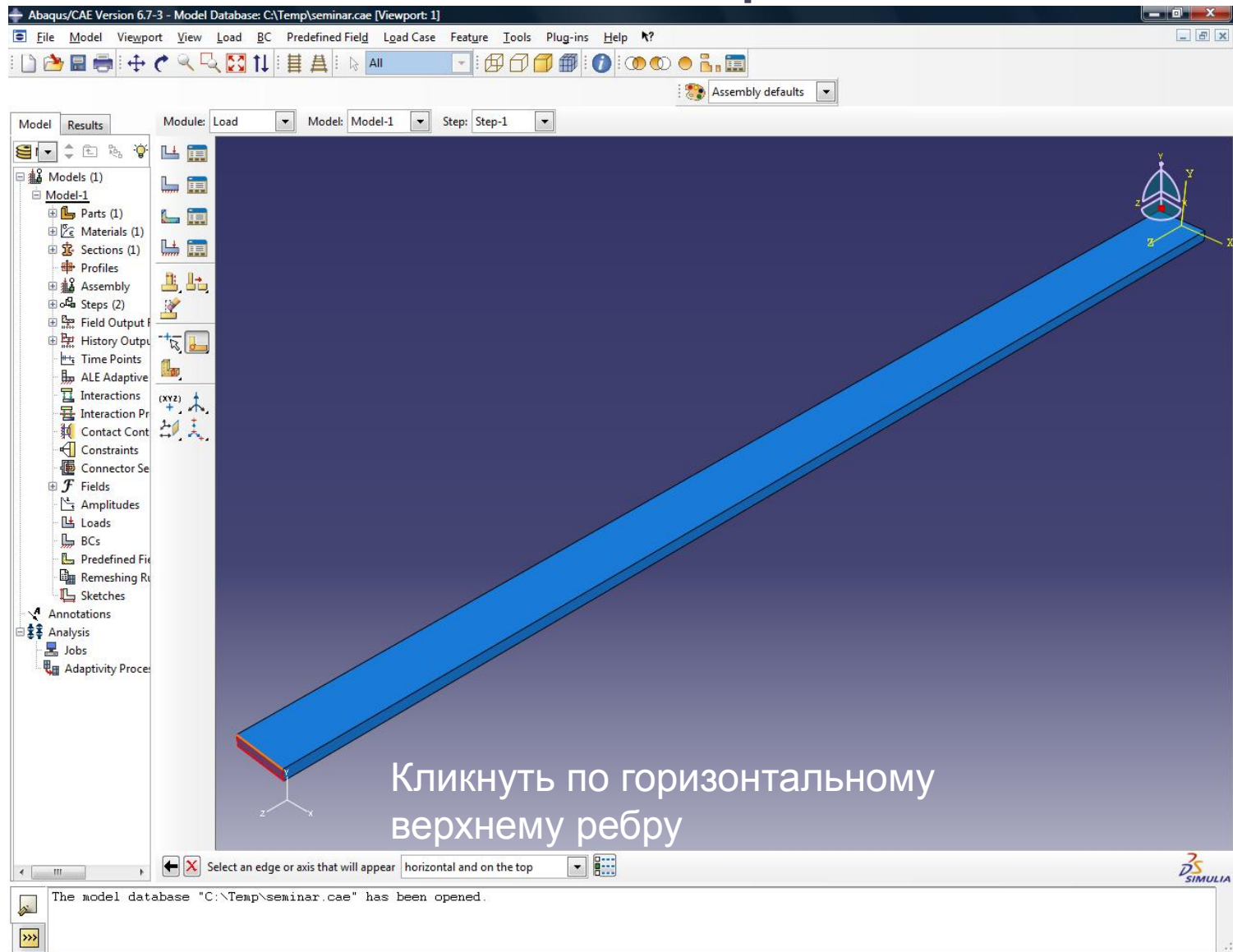


# Разбиение грани

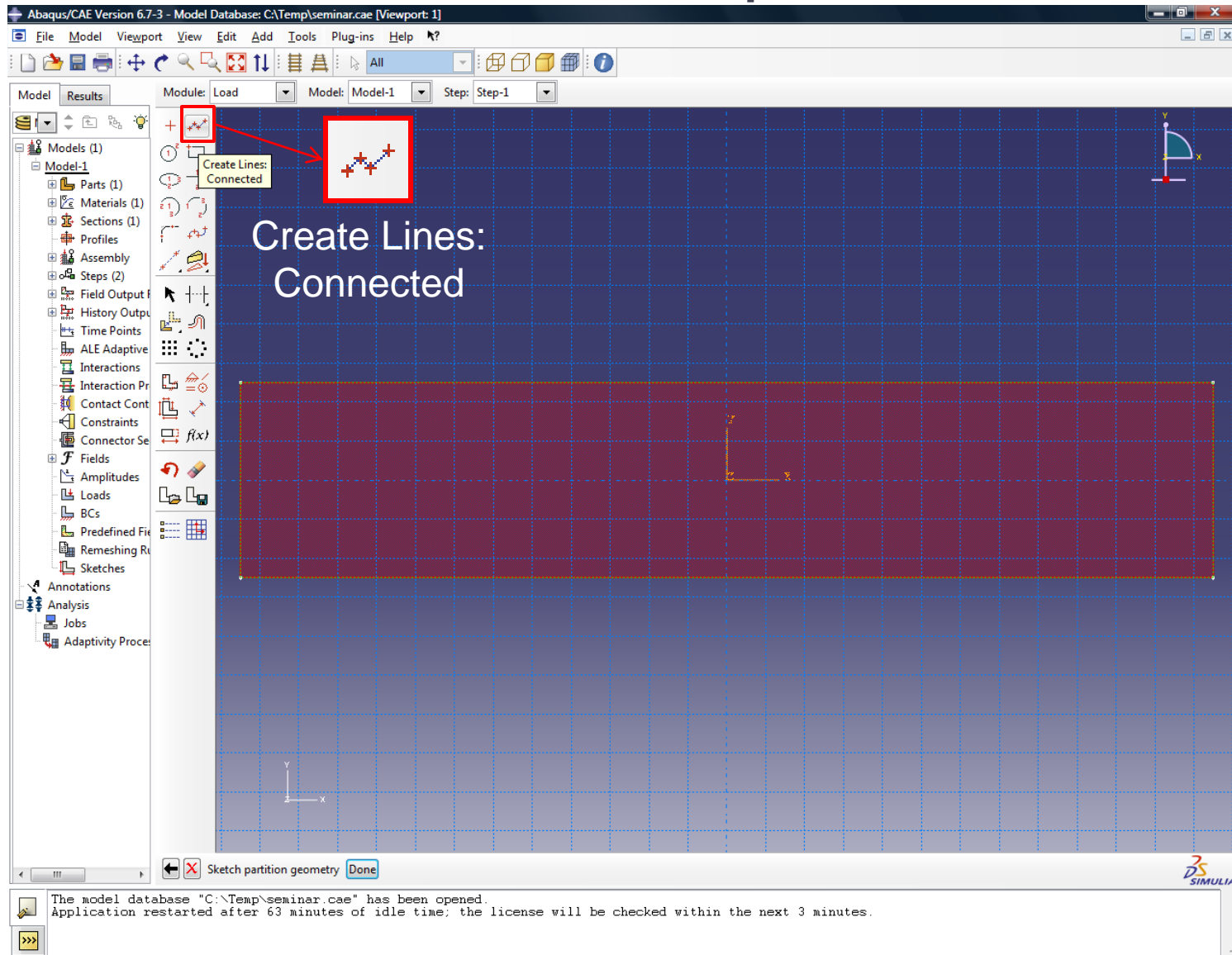




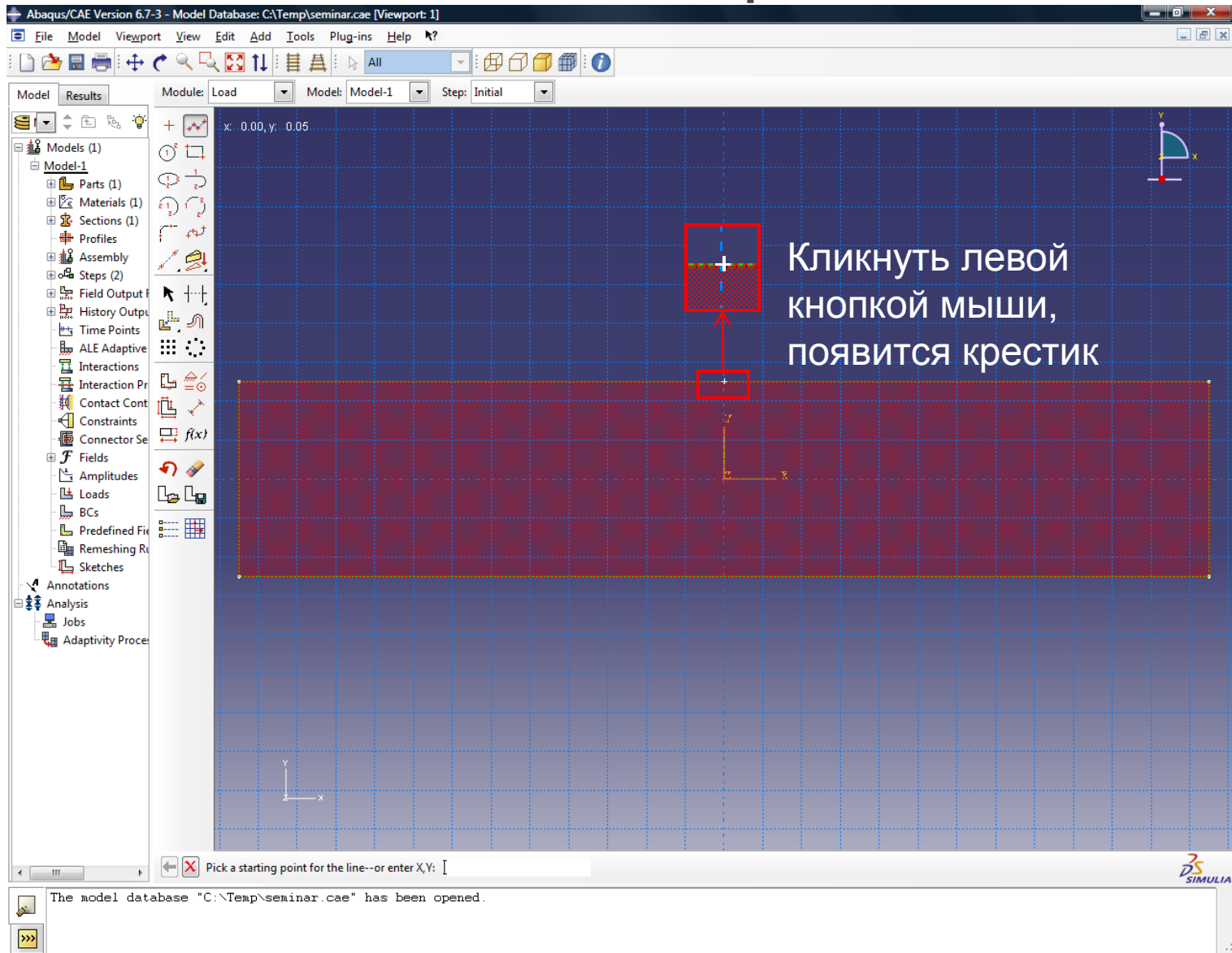
# Разбиение грани



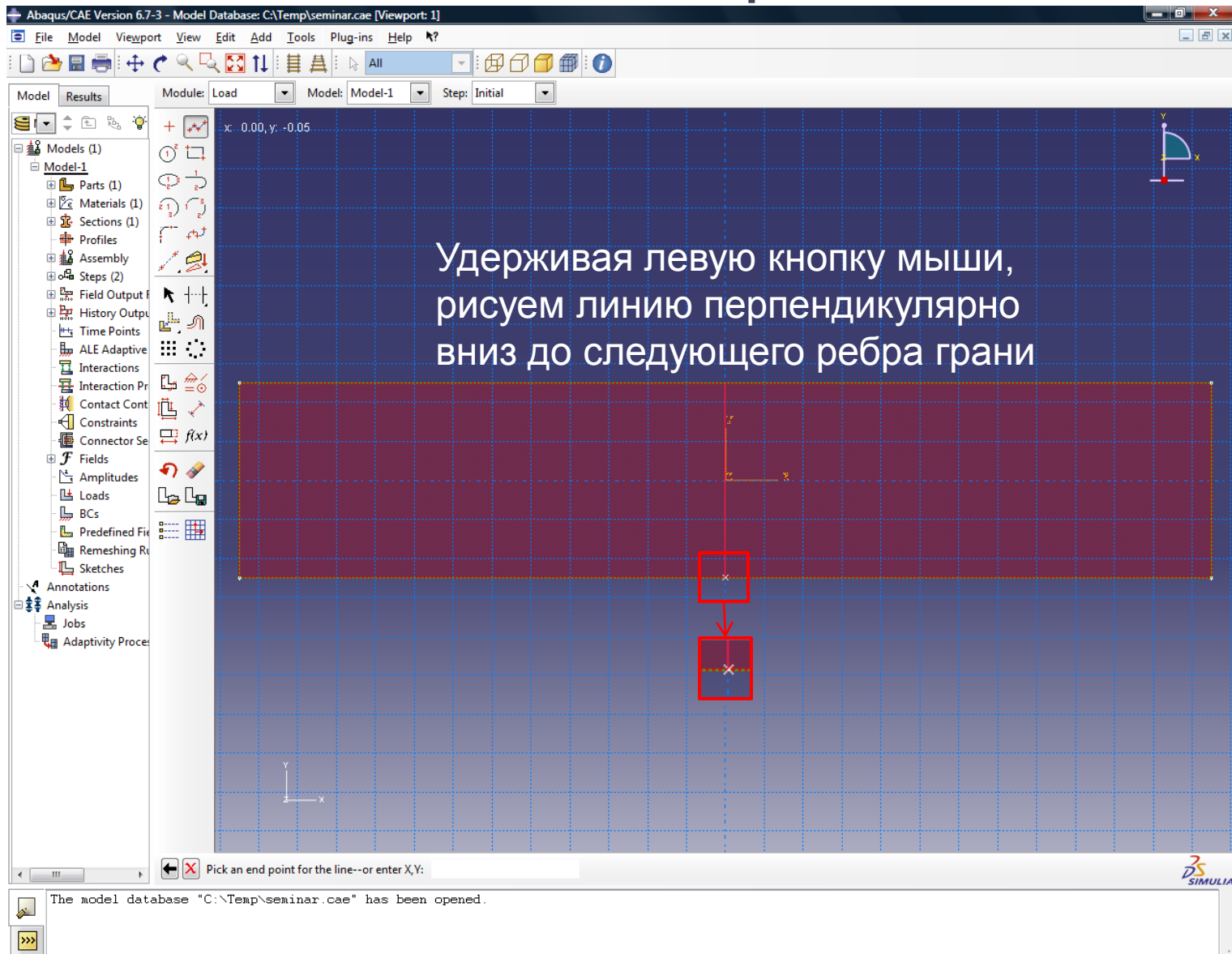
# Разбиение грани



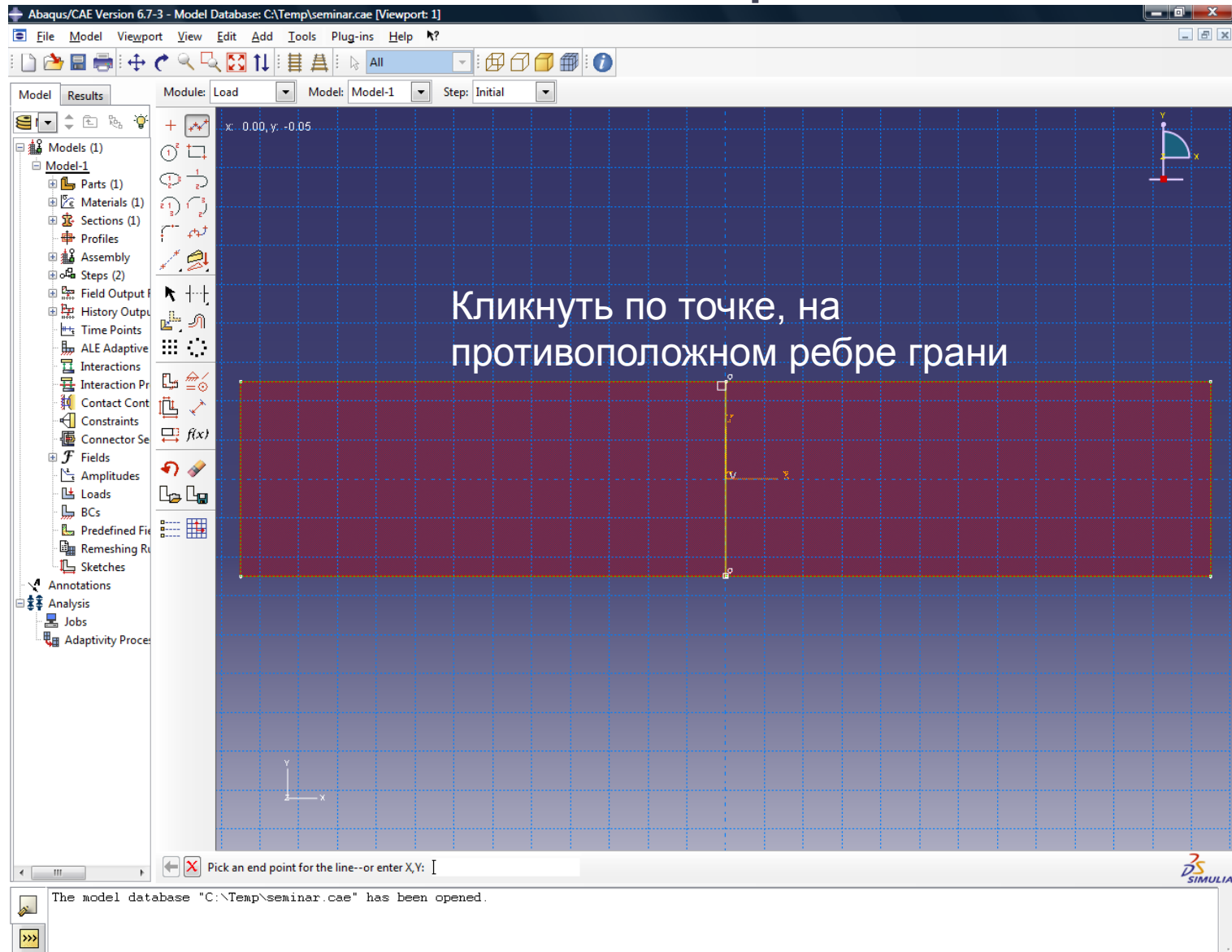
# Разбиение грани



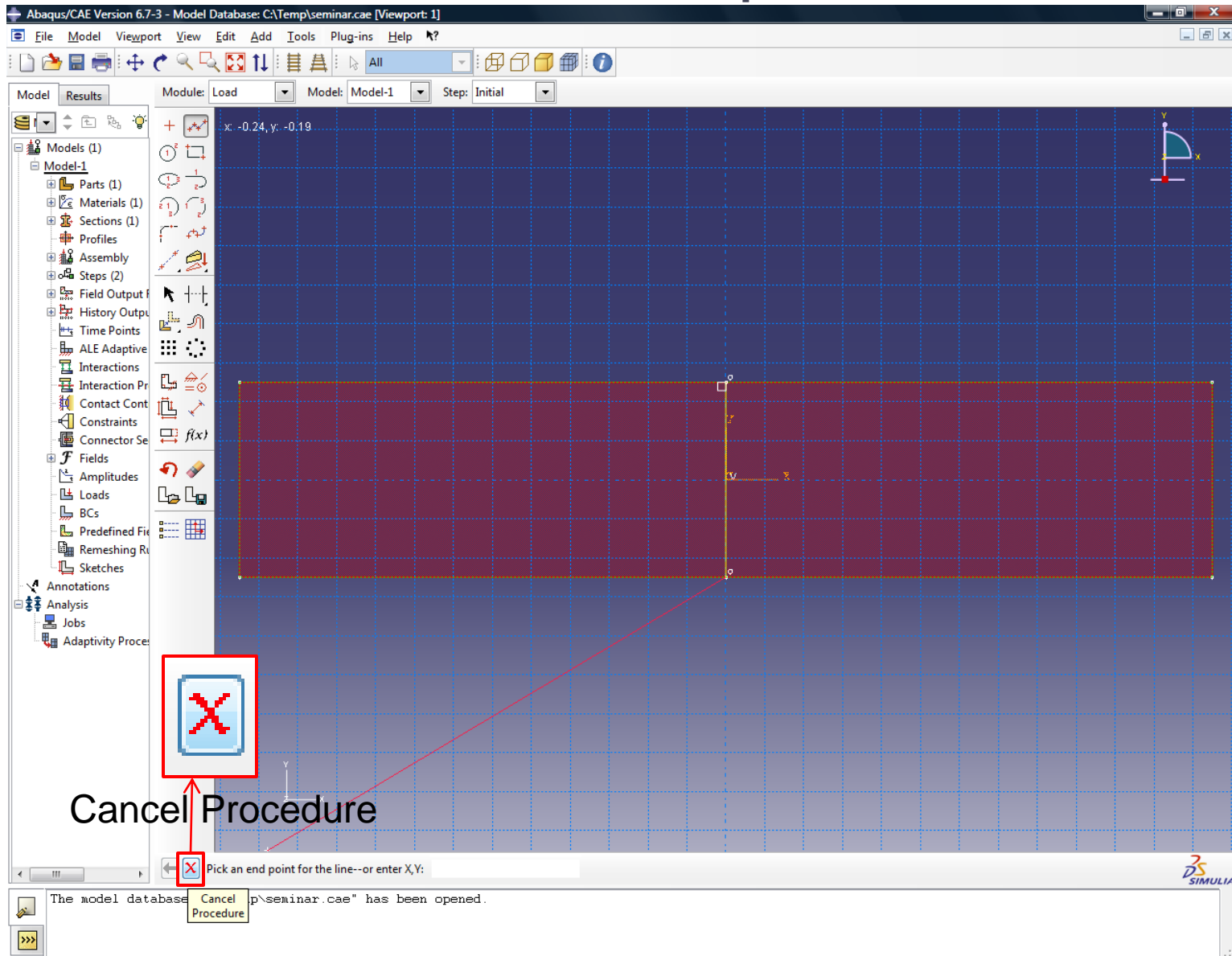
# Разбиение грани



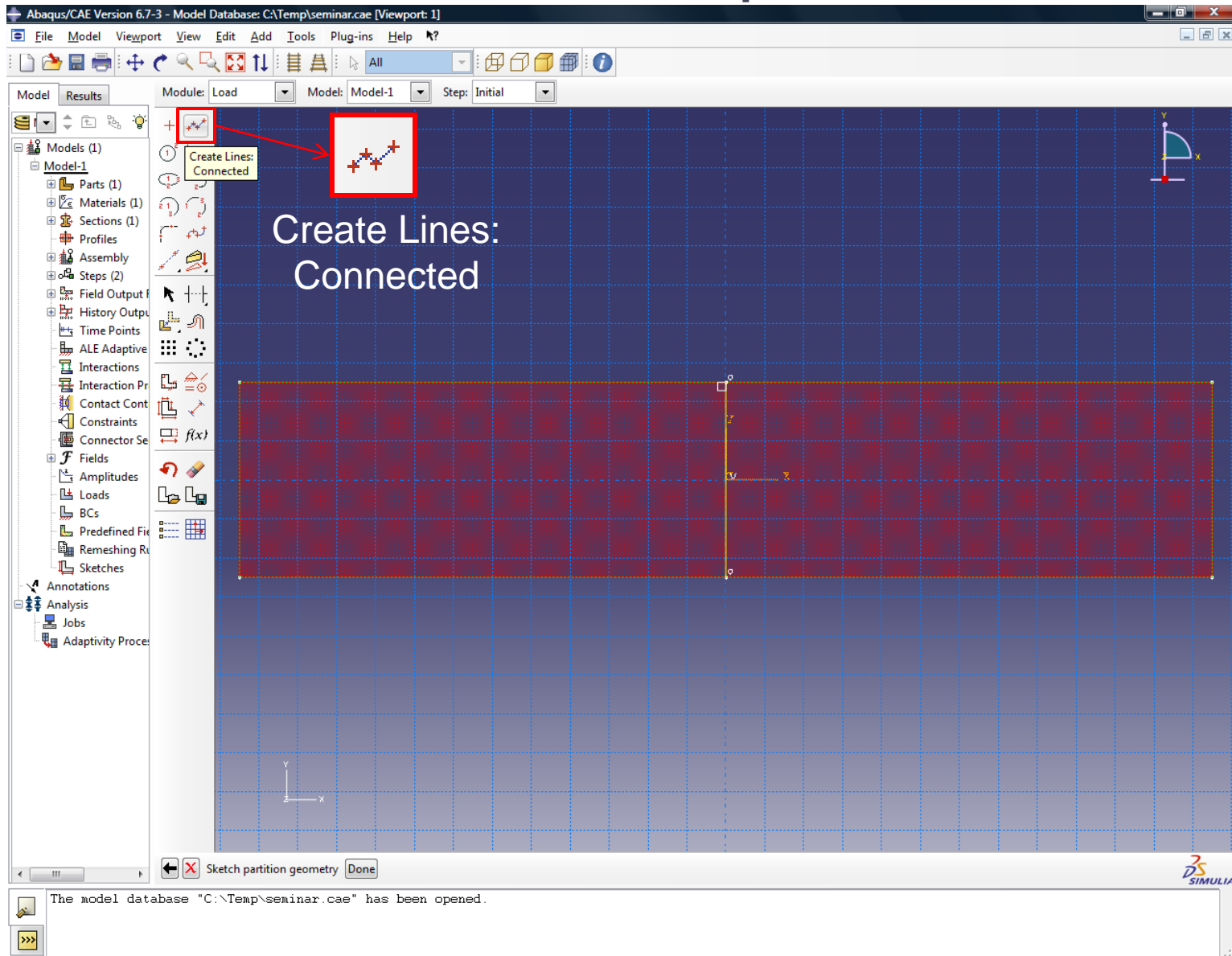
# Разбиение грани



# Разбиение грани



# Разбиение грани



# Разбиение грани

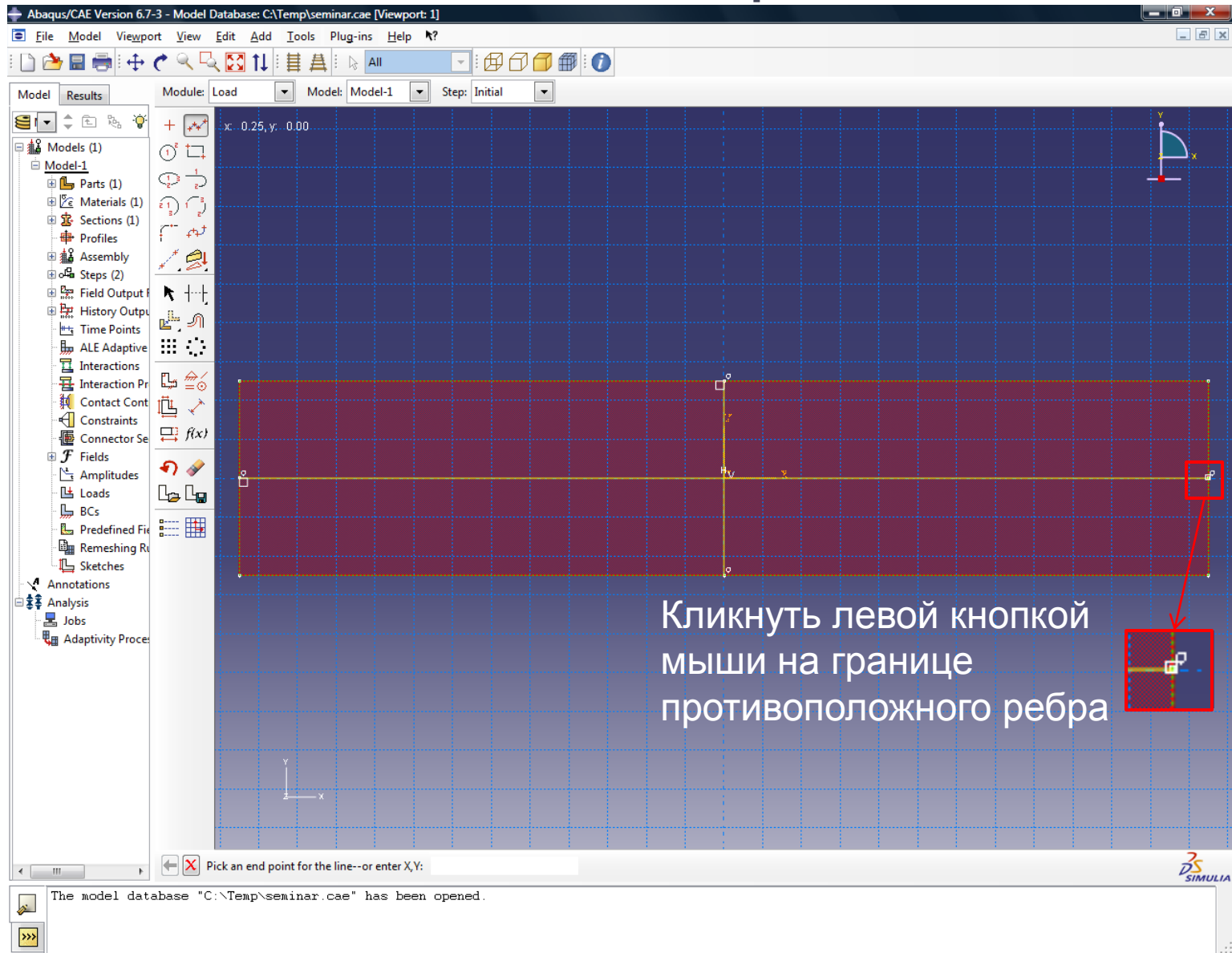
Кликнуть левой кнопкой мыши, удерживая ее тянуть до границы с противоположным ребром грани

Pick a starting point for the line--or enter X,Y: [ ]

The model database "C:\Temp\seminar.cae" has been opened.



# Разбиение грани



Abaqus/CAE Version 6.7-3 - Model Database: C:\Temp\seminar.cae [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Module: Load Model: Model-1 Step: Initial

x: 0.25, y: 0.00

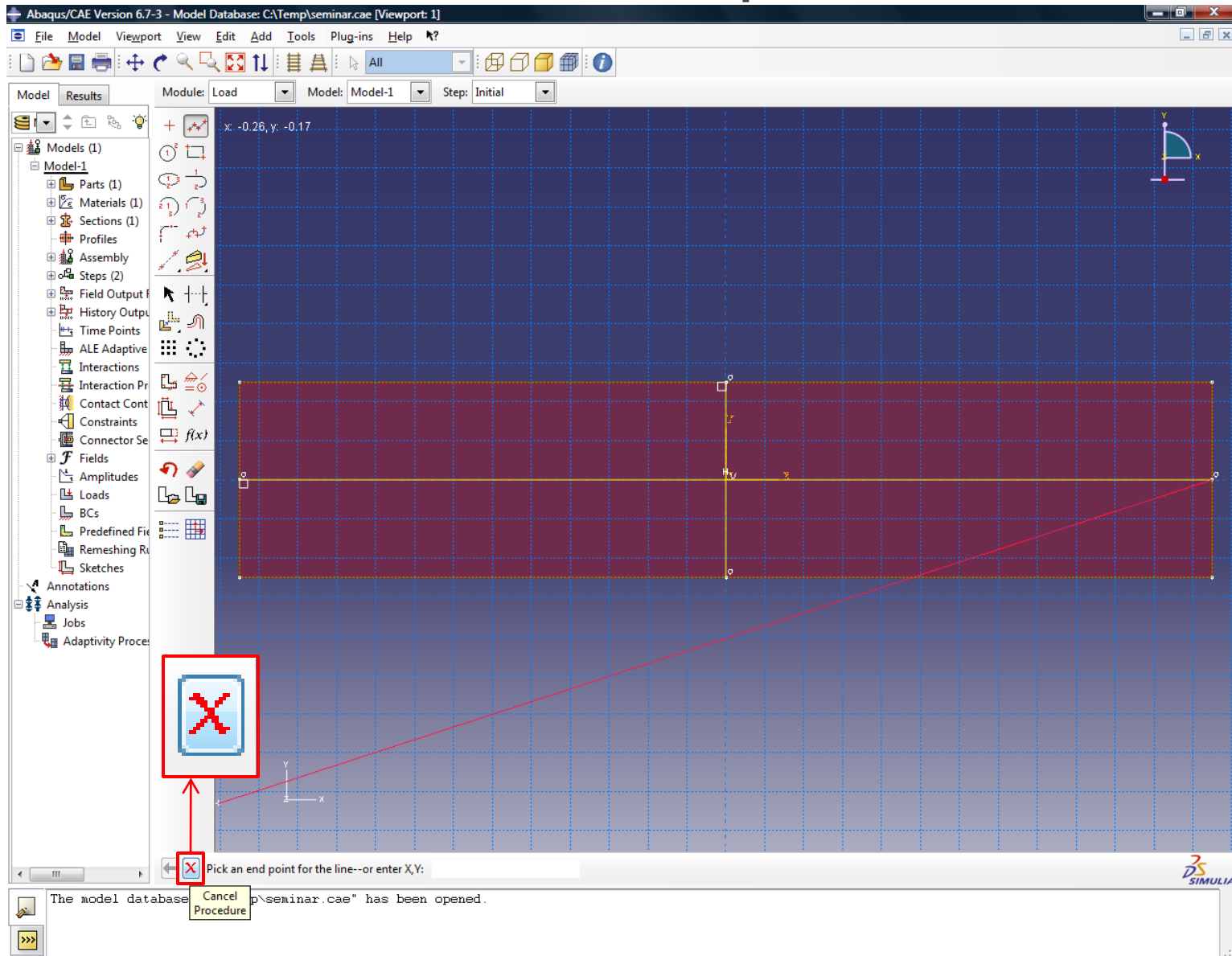
Кликнуть левой кнопкой мыши на границе противоположного ребра

Pick an end point for the line--or enter X,Y:

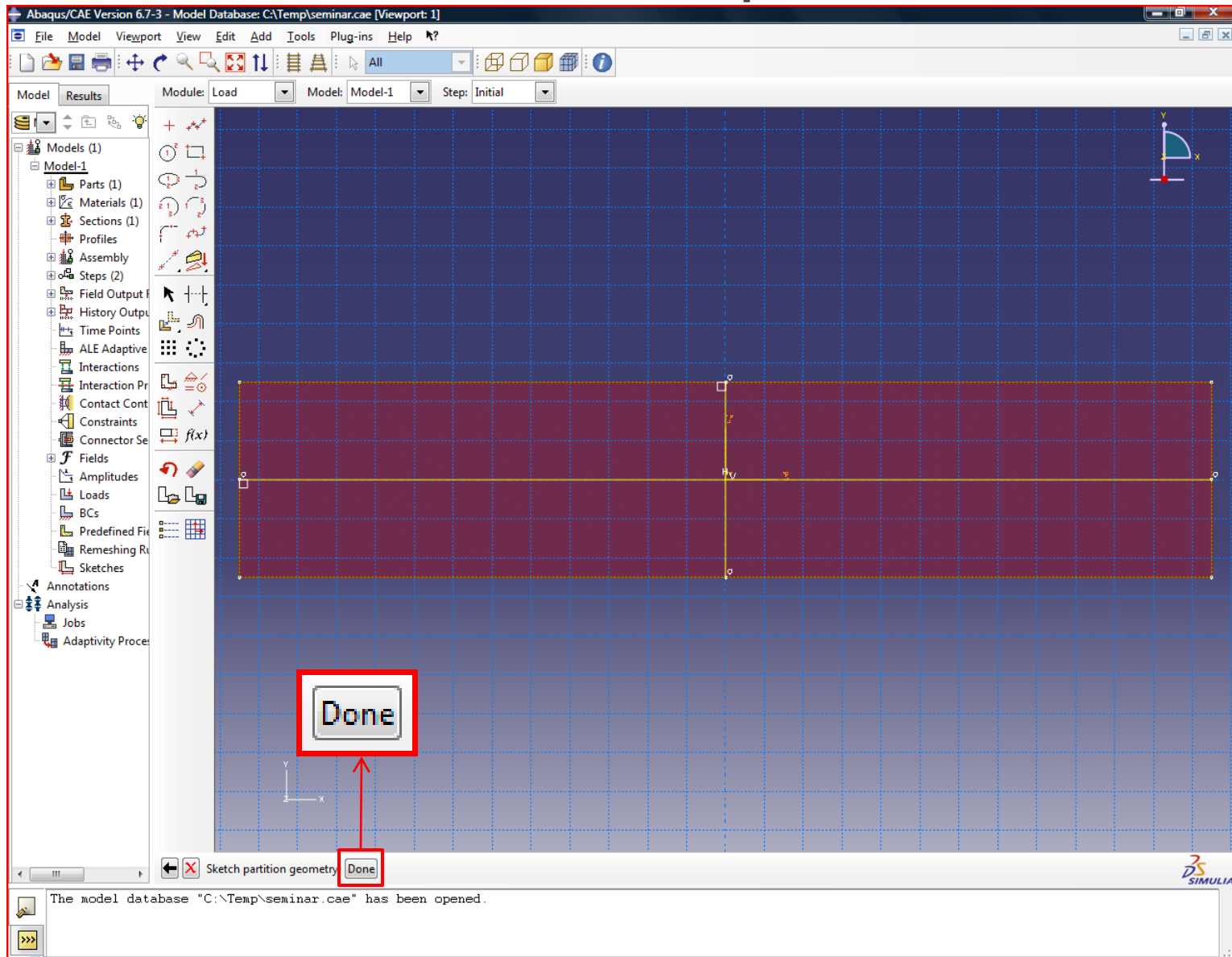
The model database "C:\Temp\seminar.cae" has been opened.

SIMULIA

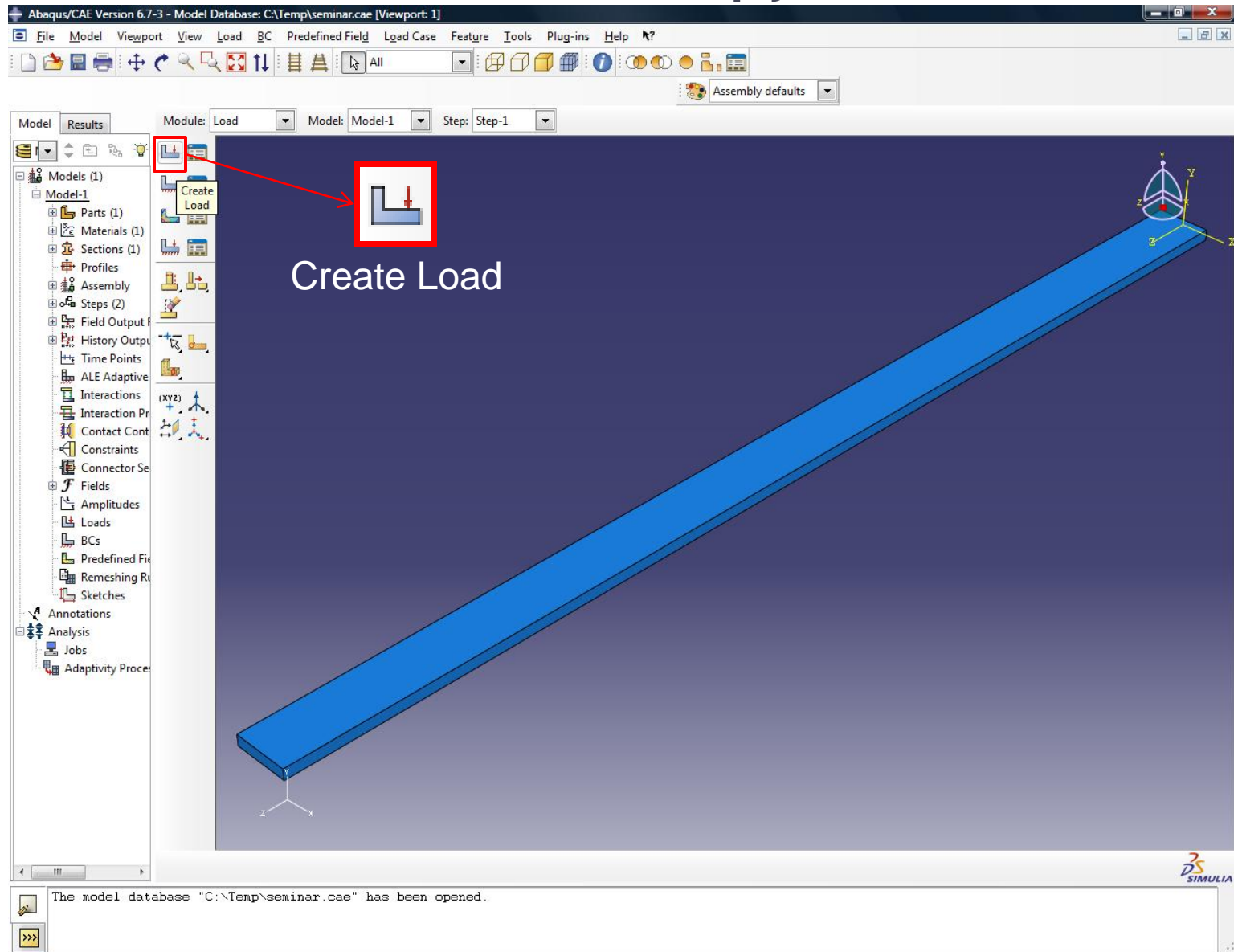
# Разбиение грани



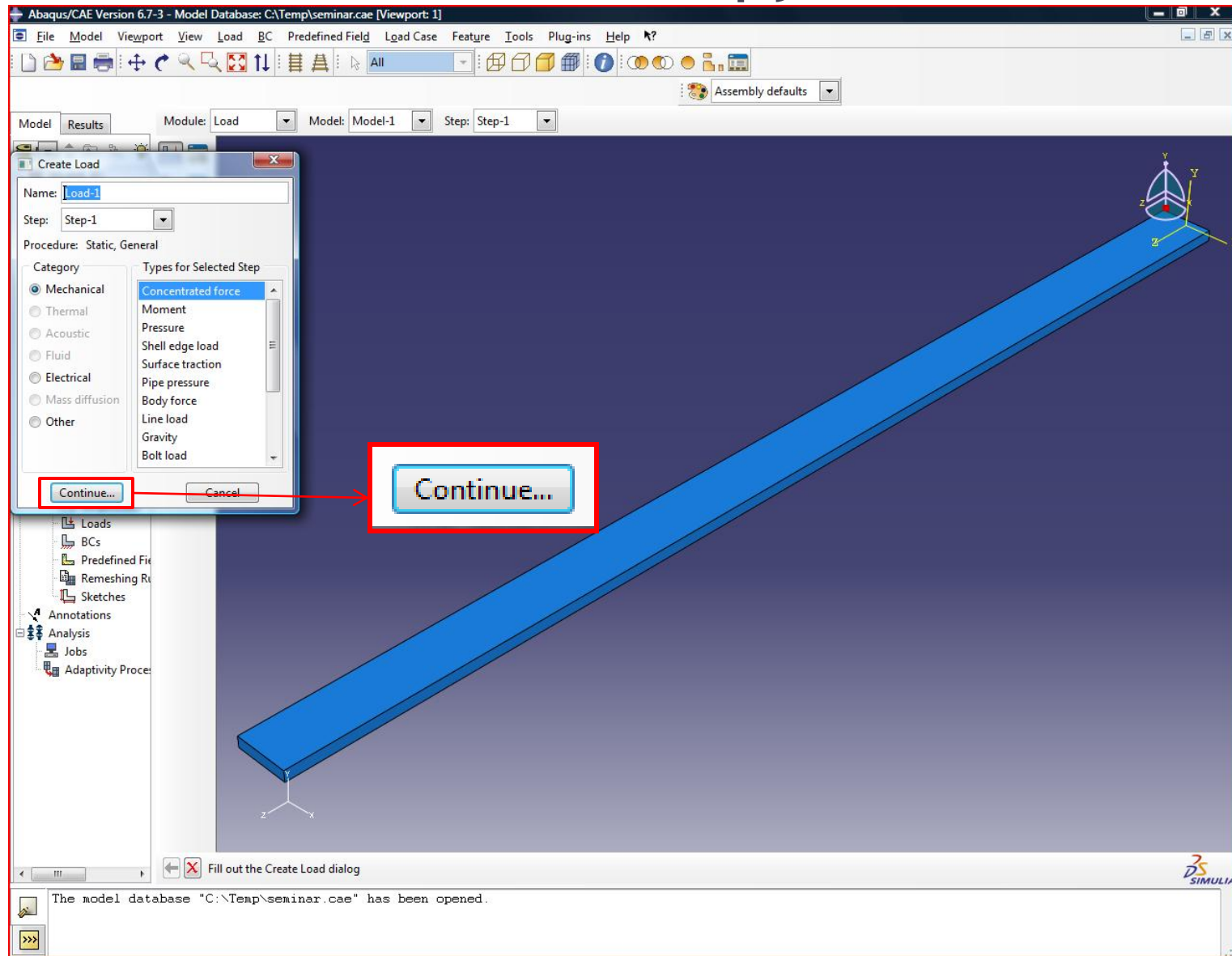
# Разбиение грани



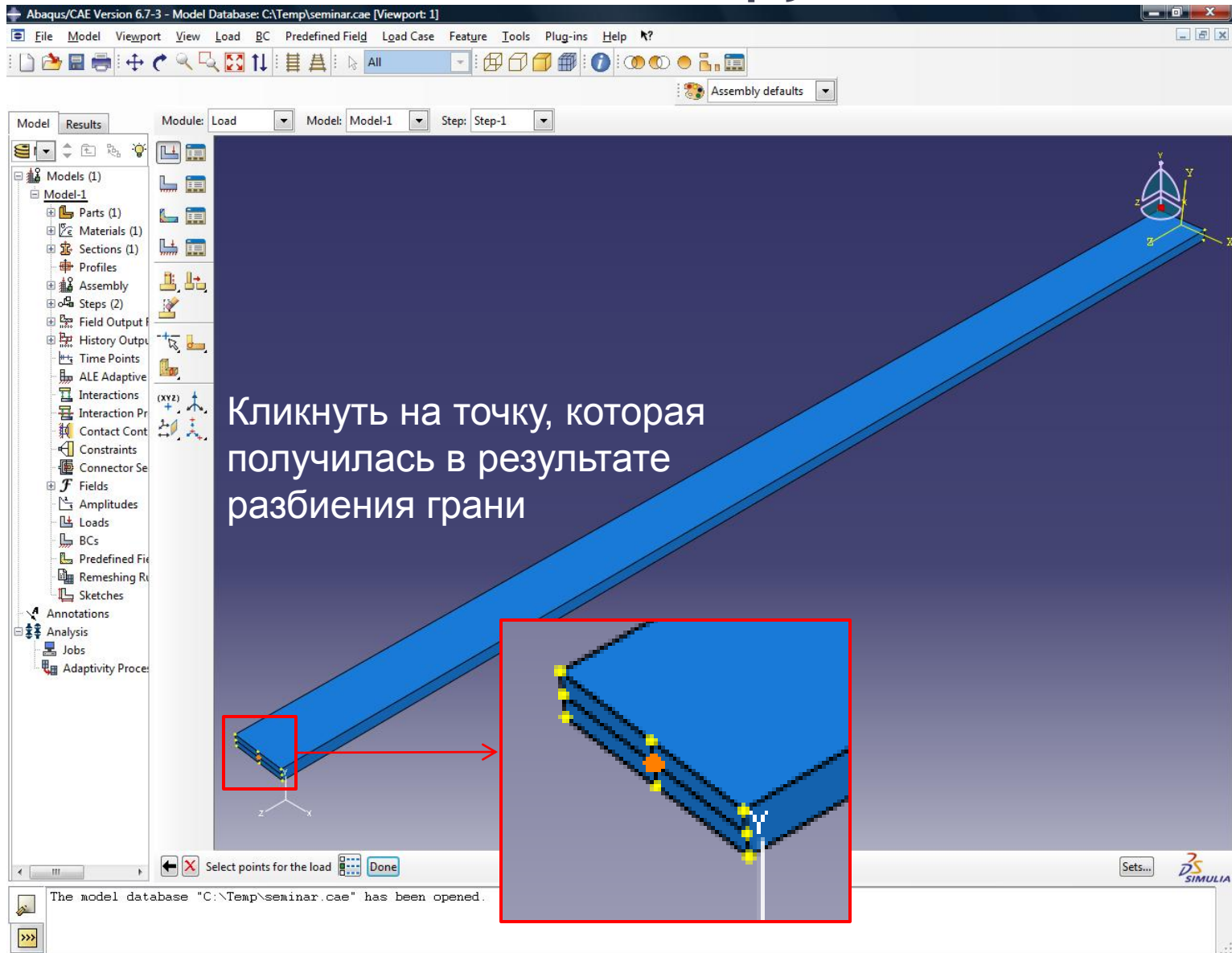
# Создание нагрузки



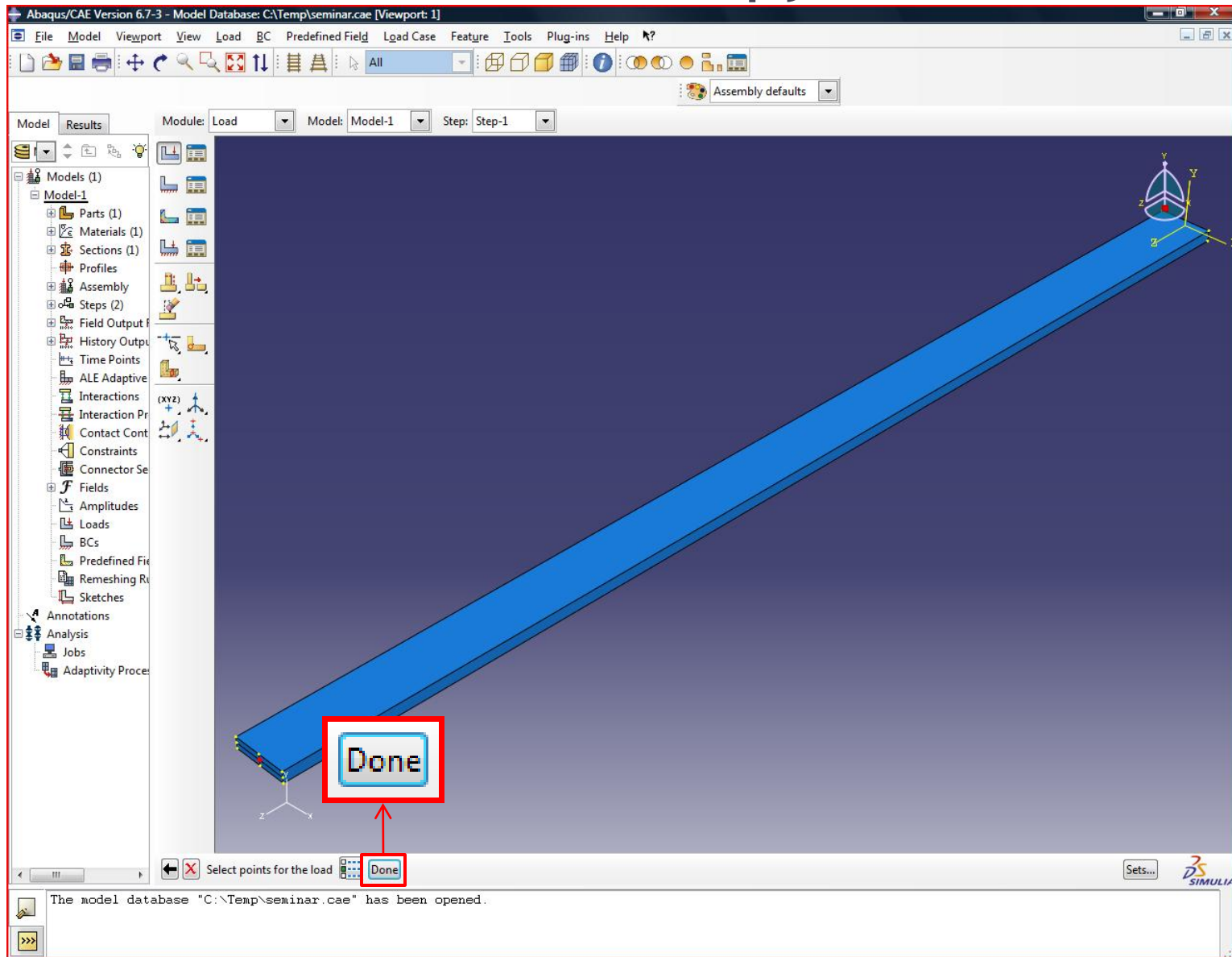
# Создание нагрузки



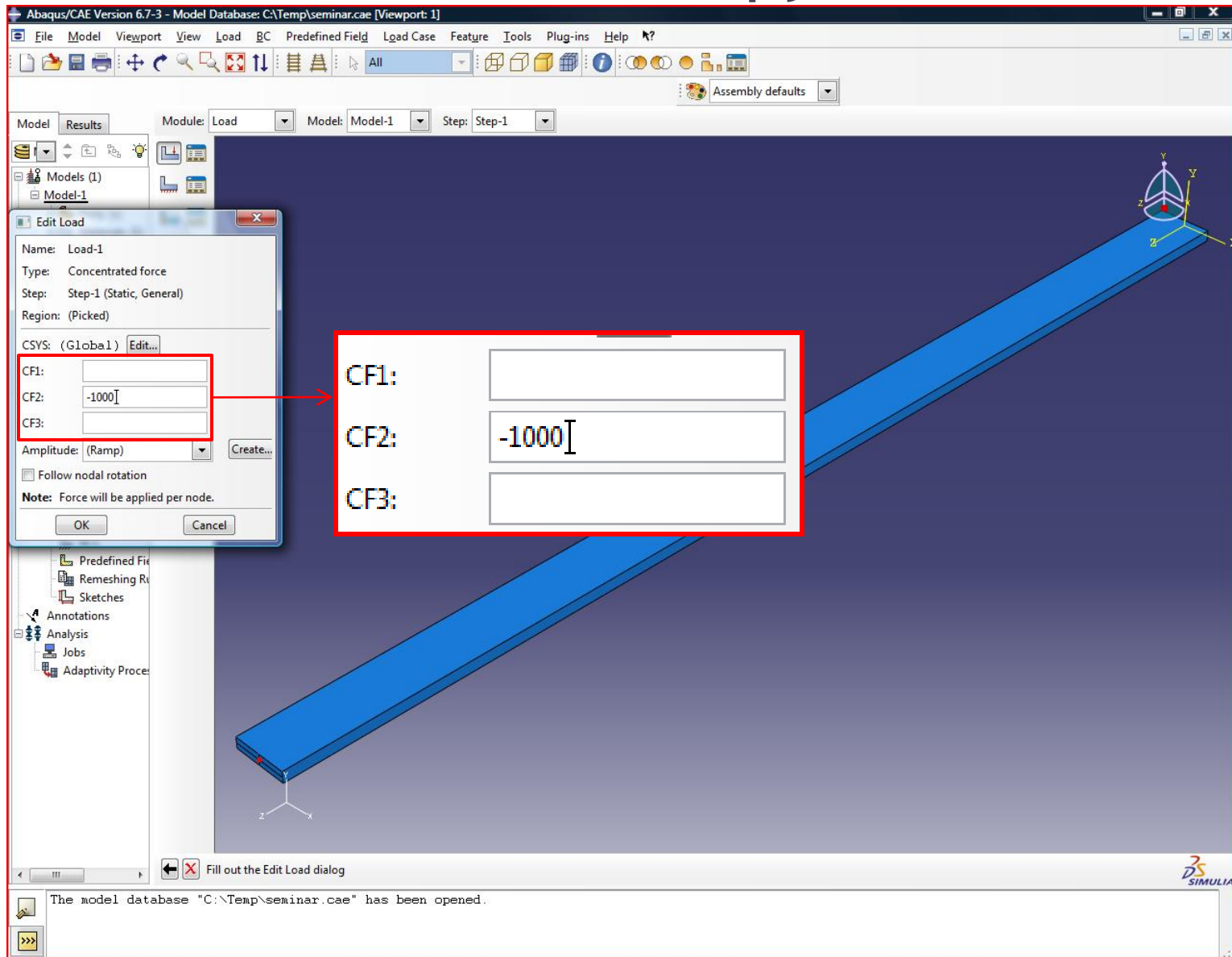
# Создание нагрузки



# Создание нагрузки

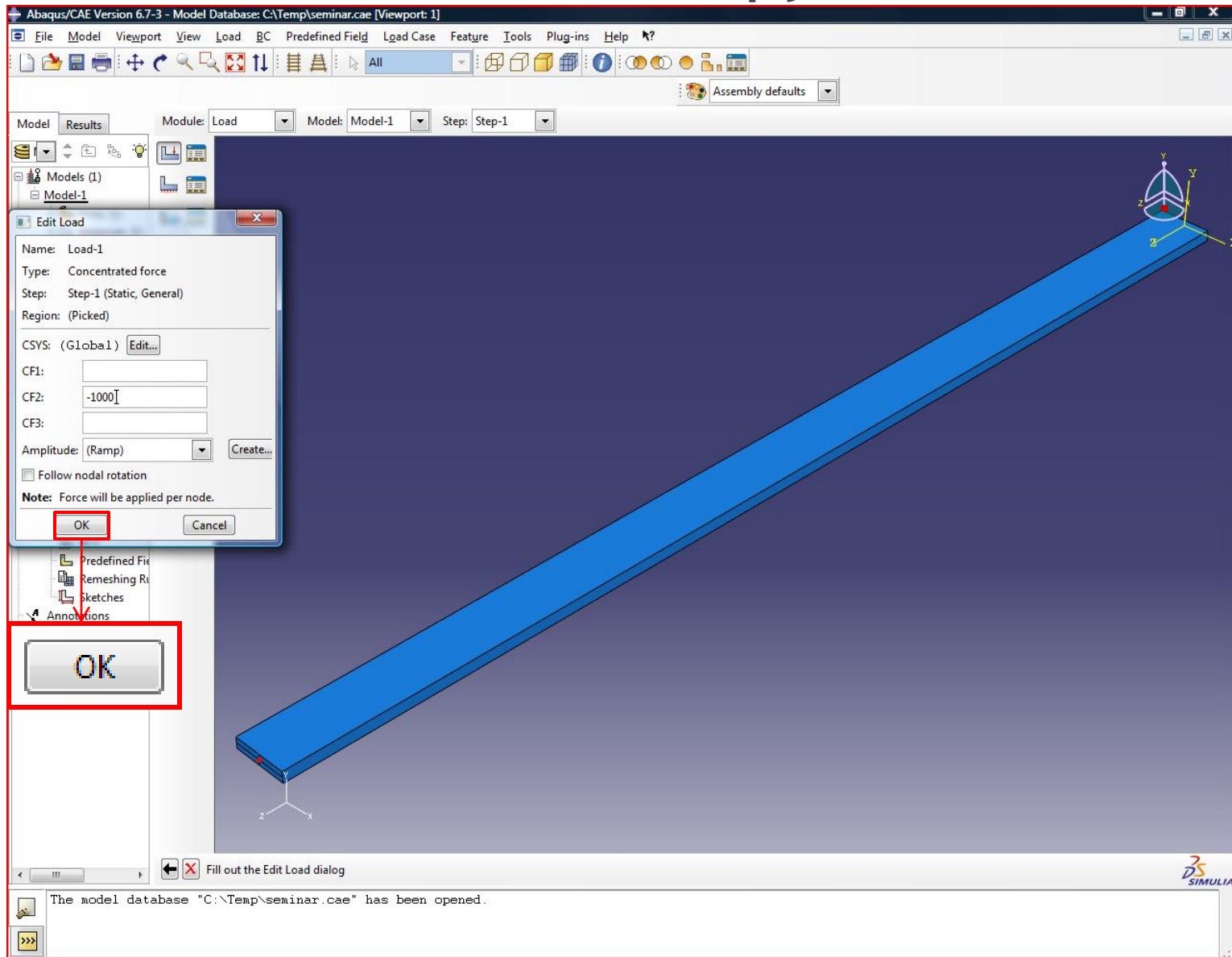


# Создание нагрузки

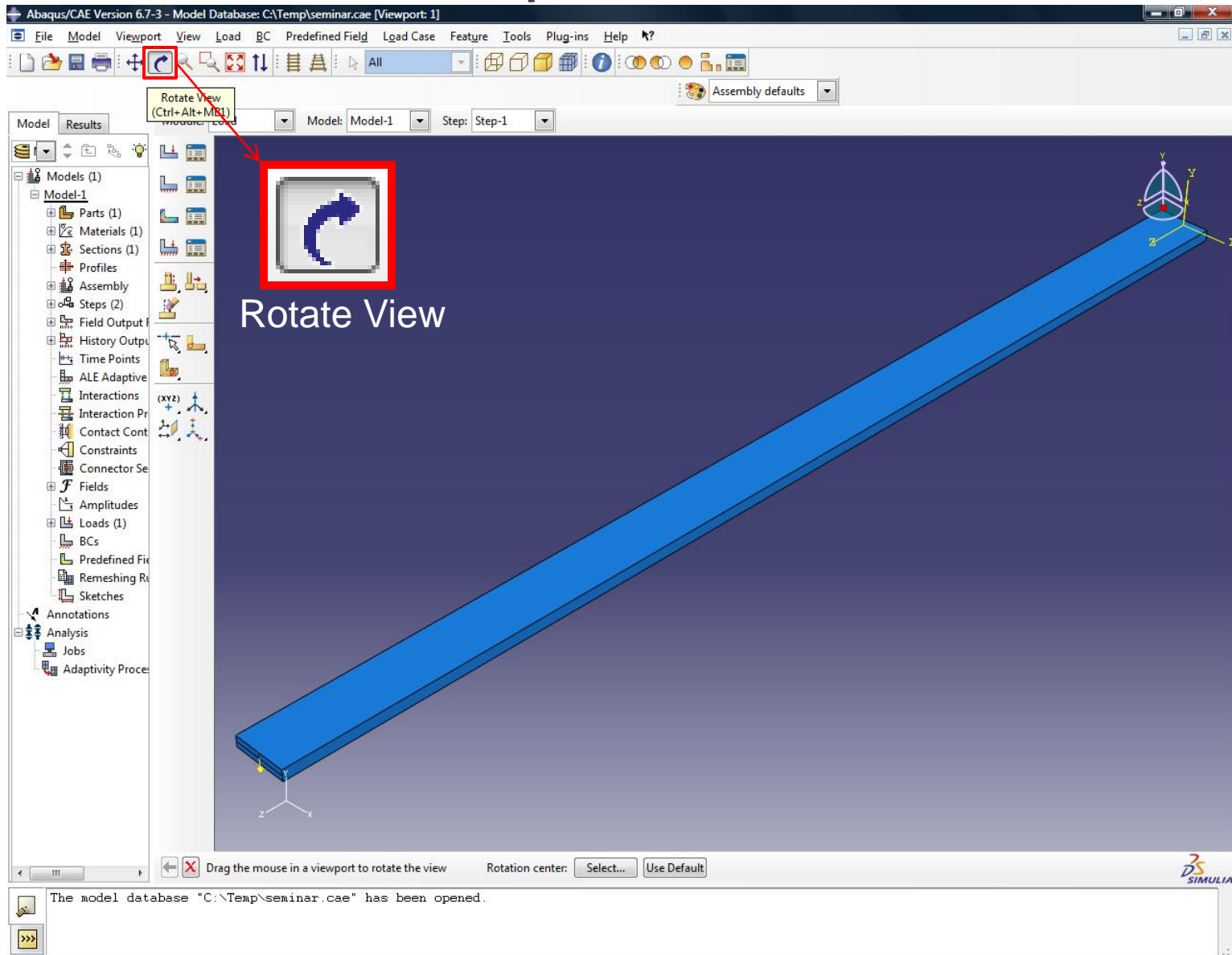




# Создание нагрузки



# Поворот детали



# Повороты детали

Удерживая левую кнопку мыши, деталь можно поворачивать

Module: Load Model: Model-1 Step: Step-1

Drag the mouse in a viewport to rotate the view Rotation center:

The model database "C:\Temp\seminar.cae" has been opened.

3 SIMULIA

# Повороты детали

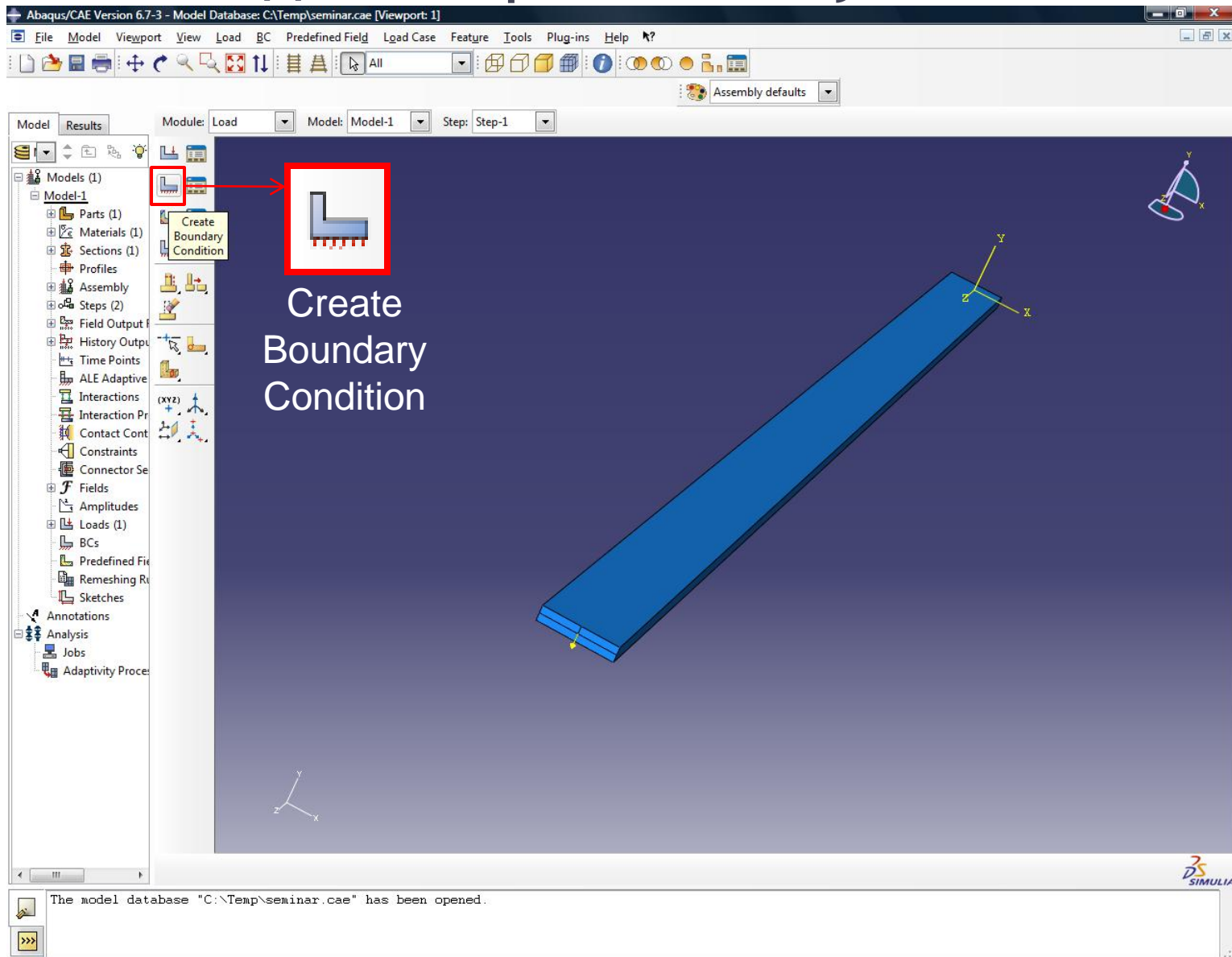
Для возврата к работе необходимо отжать кнопку поворота

Rotate View

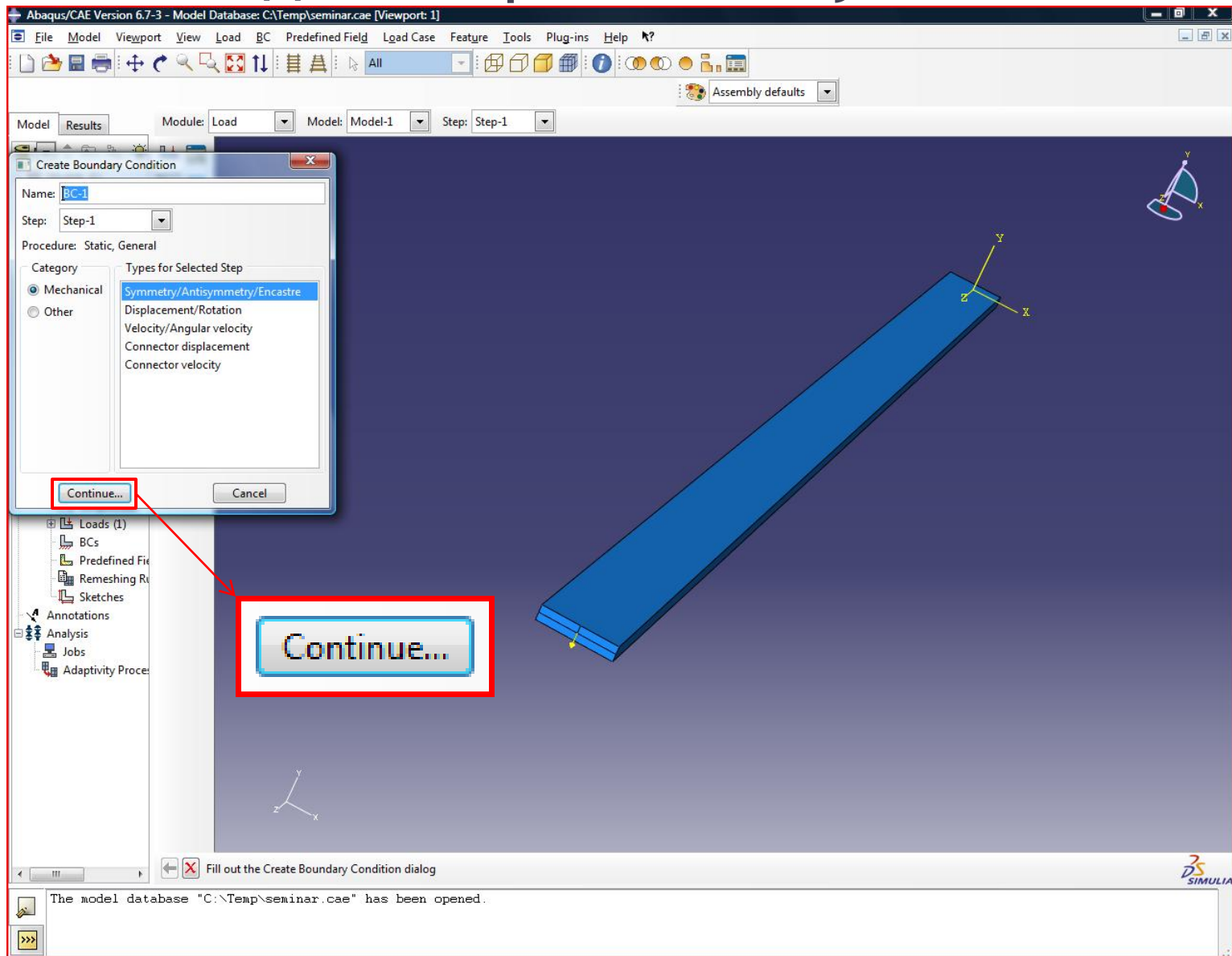
Drag the mouse in a viewport to rotate the view    Rotation center:

The model database "C:\Temp\seminar.cae" has been opened.

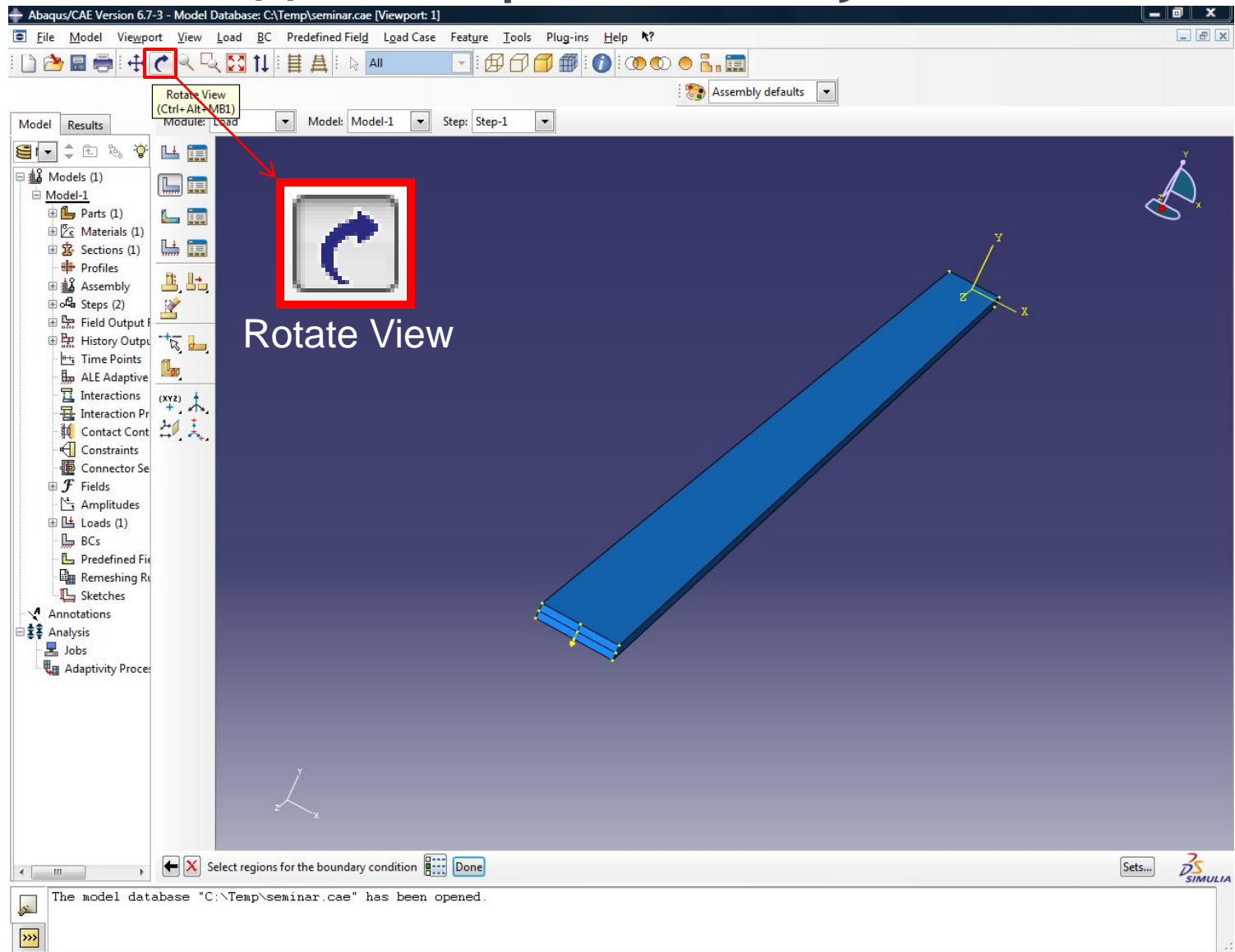
# Создание граничных условий



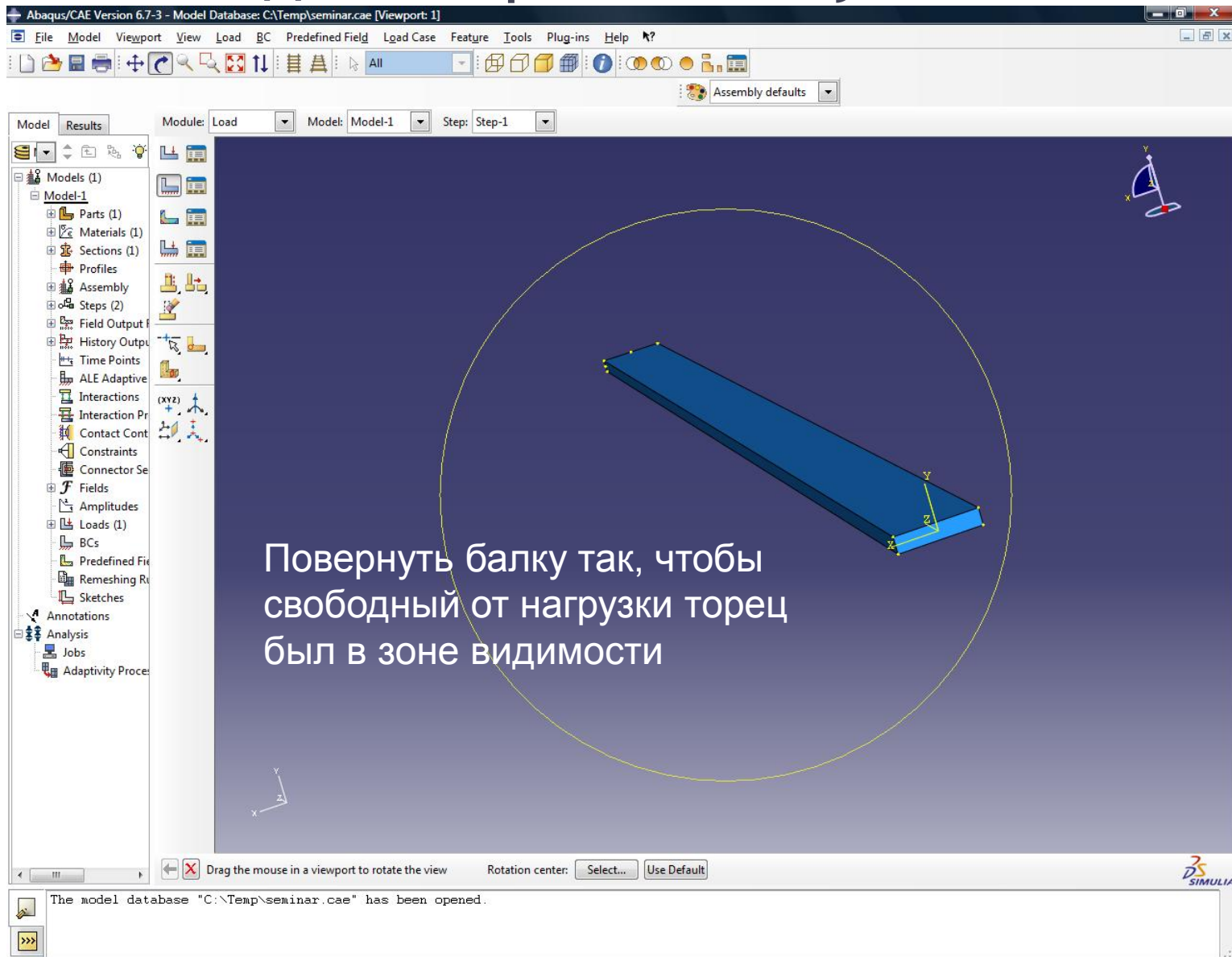
# Создание граничных условий



# Создание граничных условий

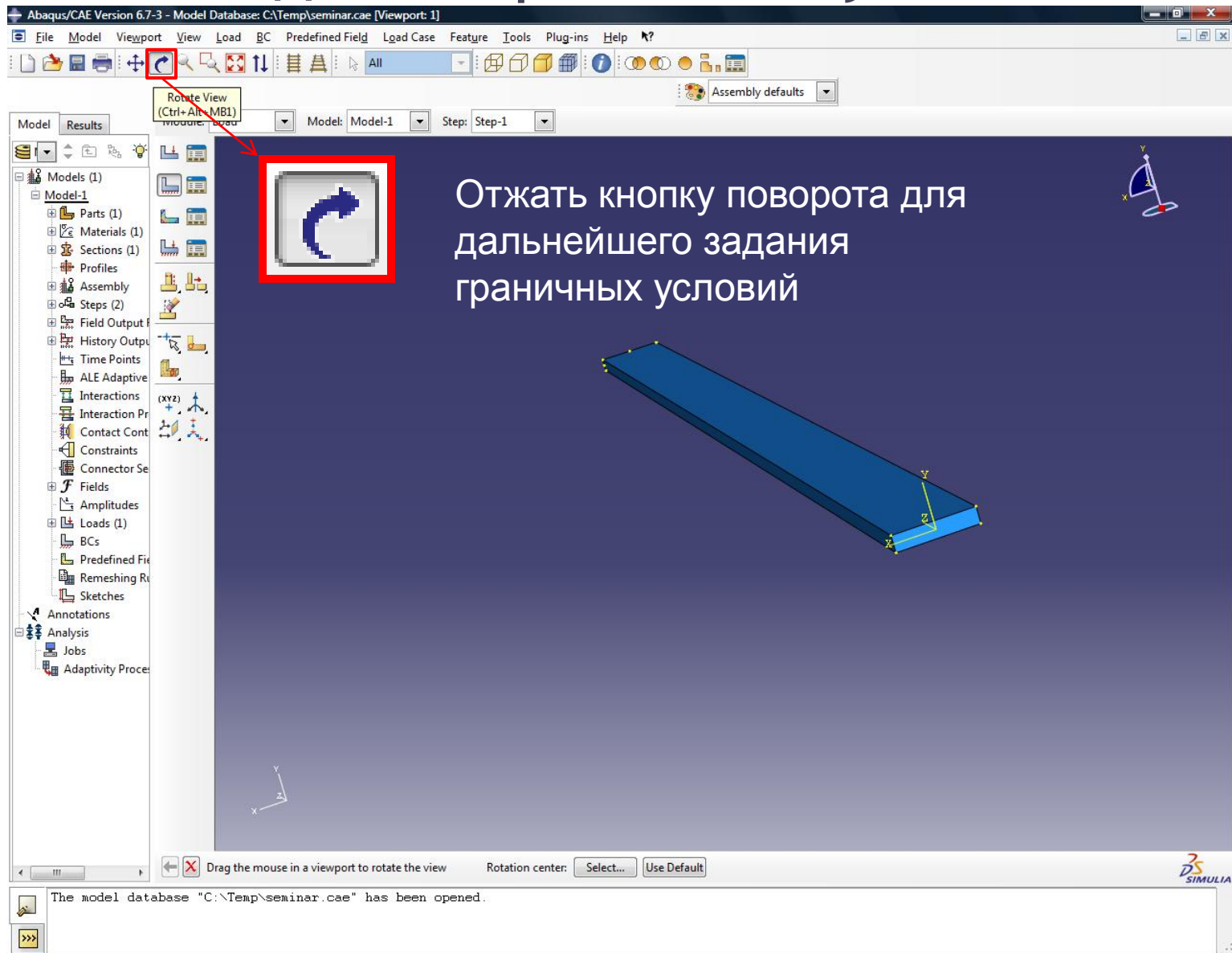


# Создание граничных условий

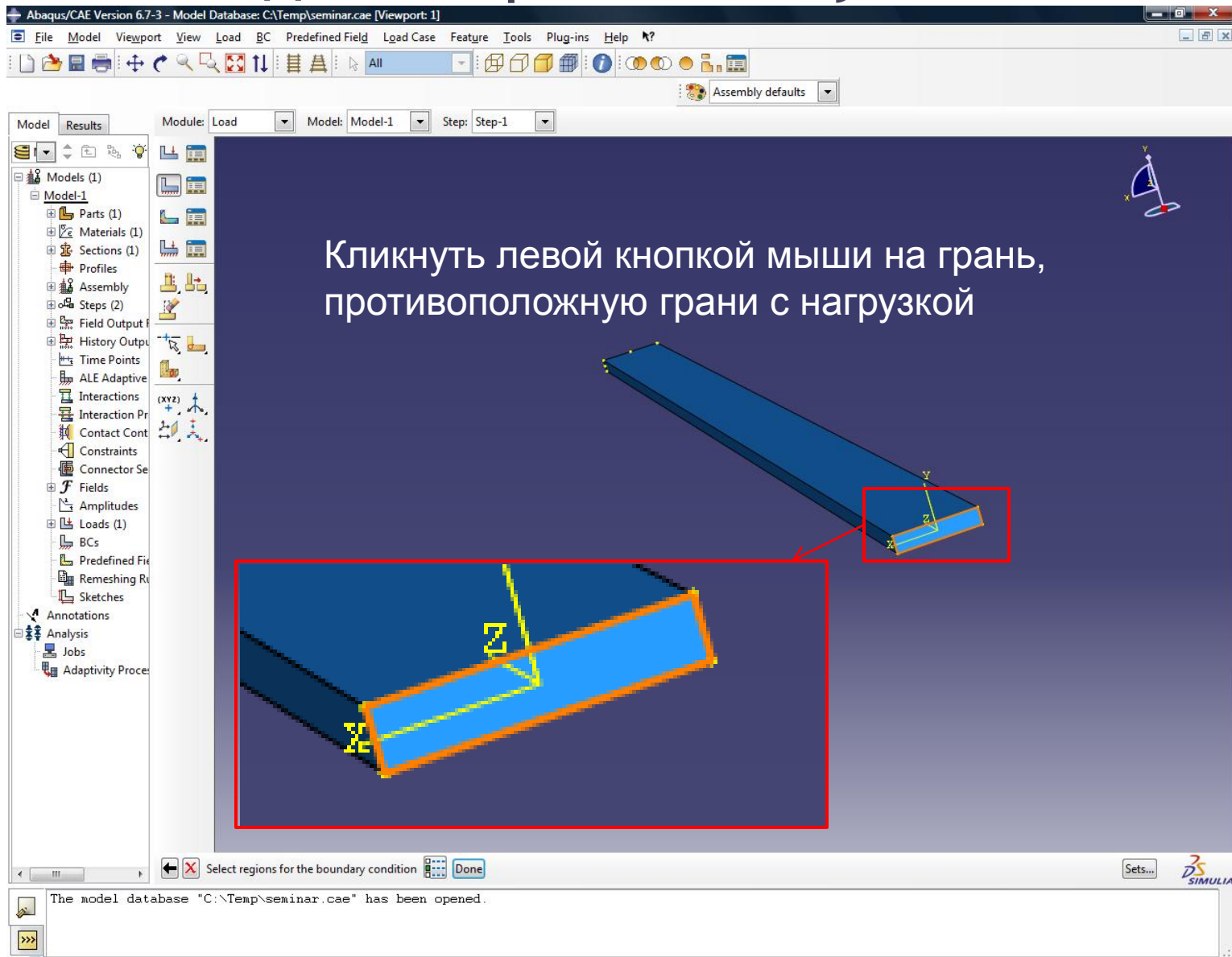




# Создание граничных условий



# Создание граничных условий



# Создание граничных условий

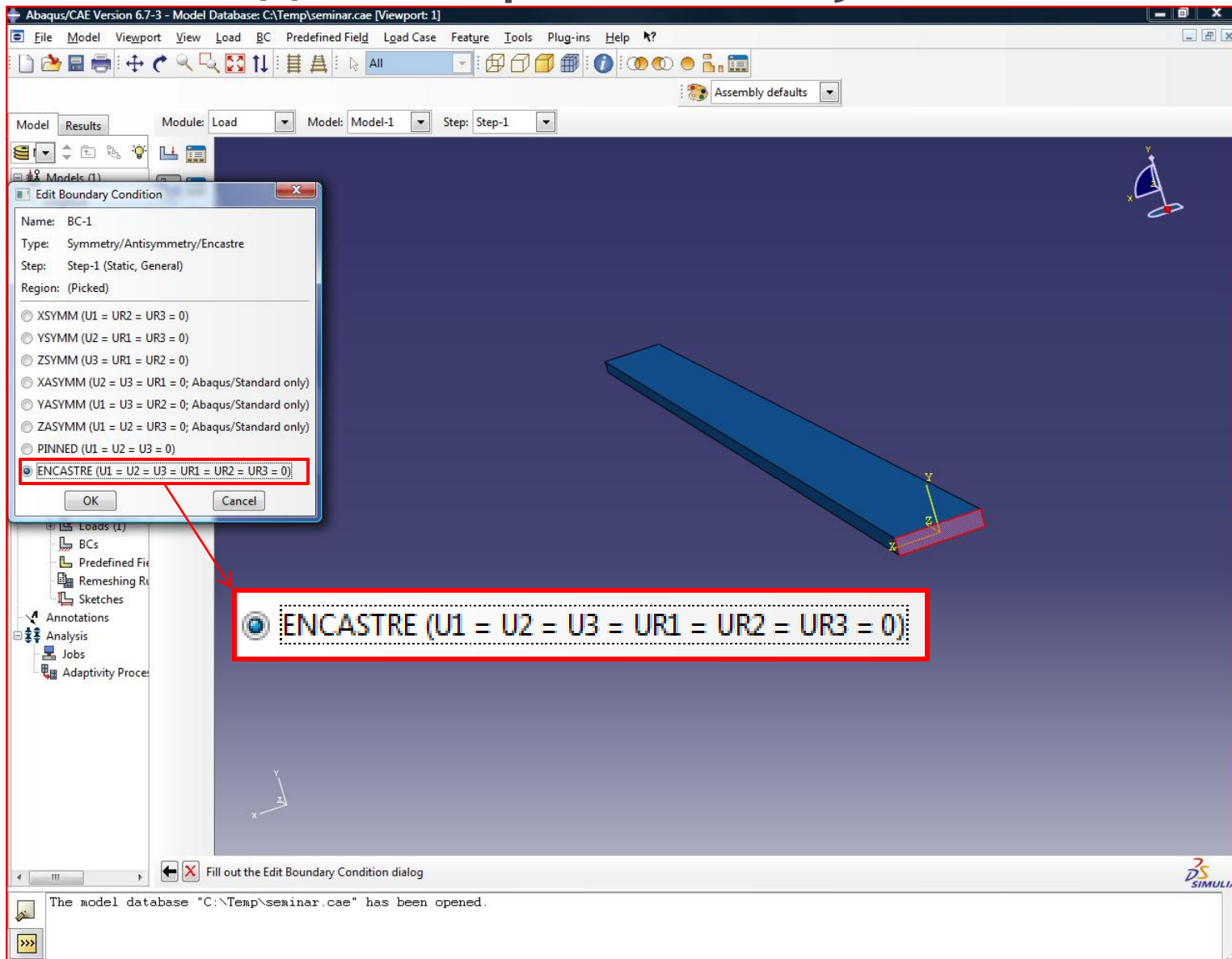
Кликнуть левой кнопкой мыши на грань, противоположную грани с нагрузкой

Done

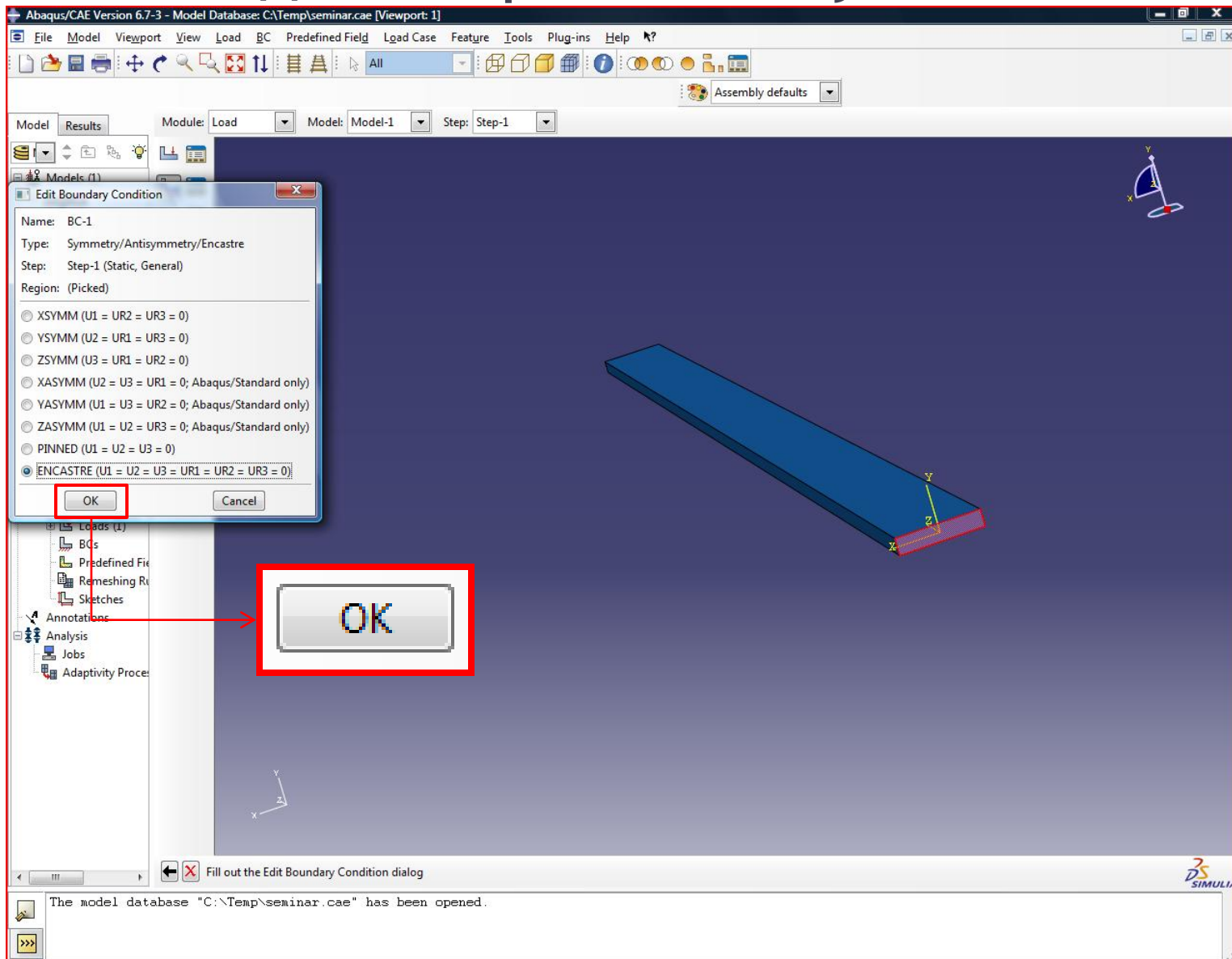
Select regions for the boundary condition Done

The model database "C:\Temp\seminar.cae" has been opened.

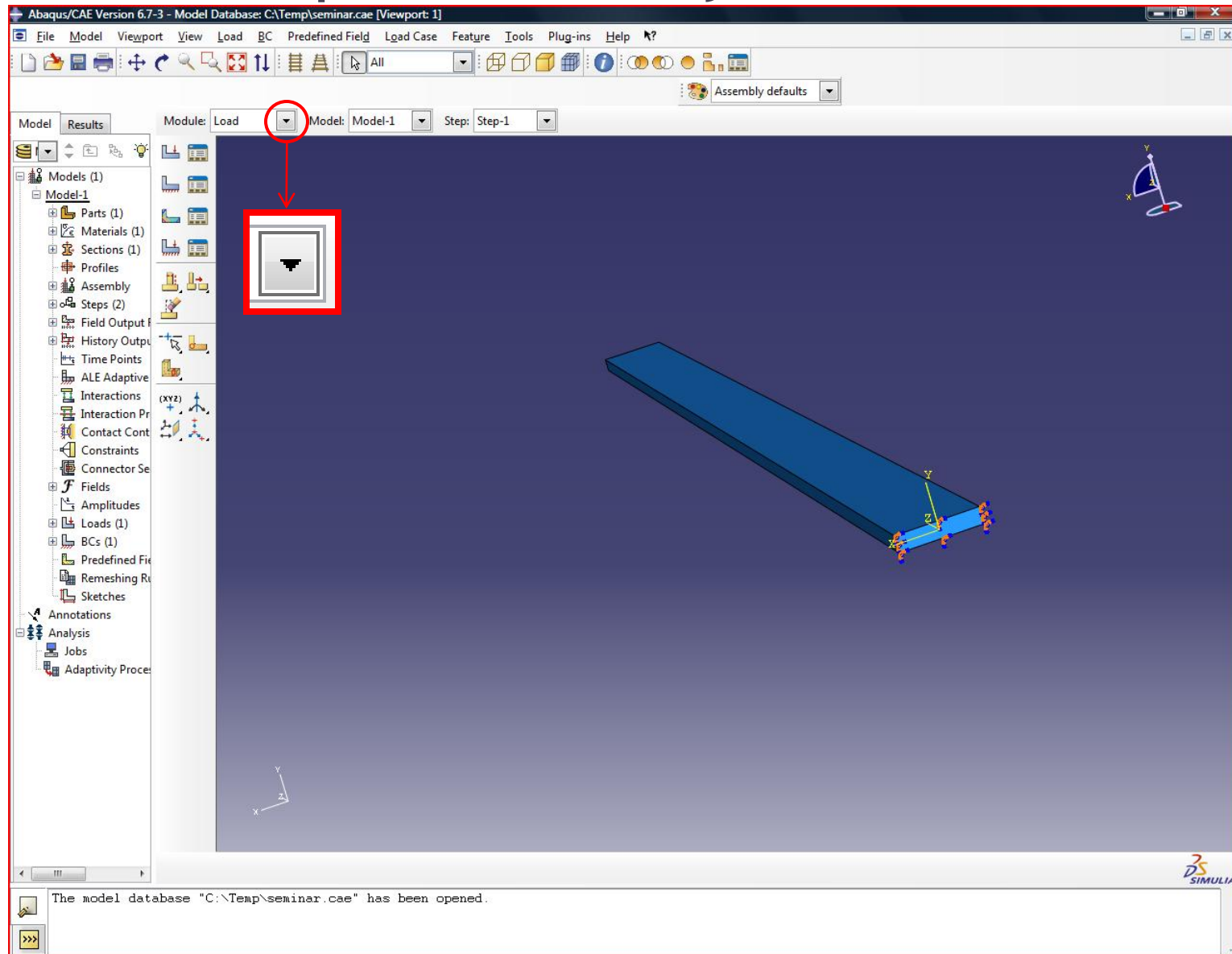
# Создание граничных условий



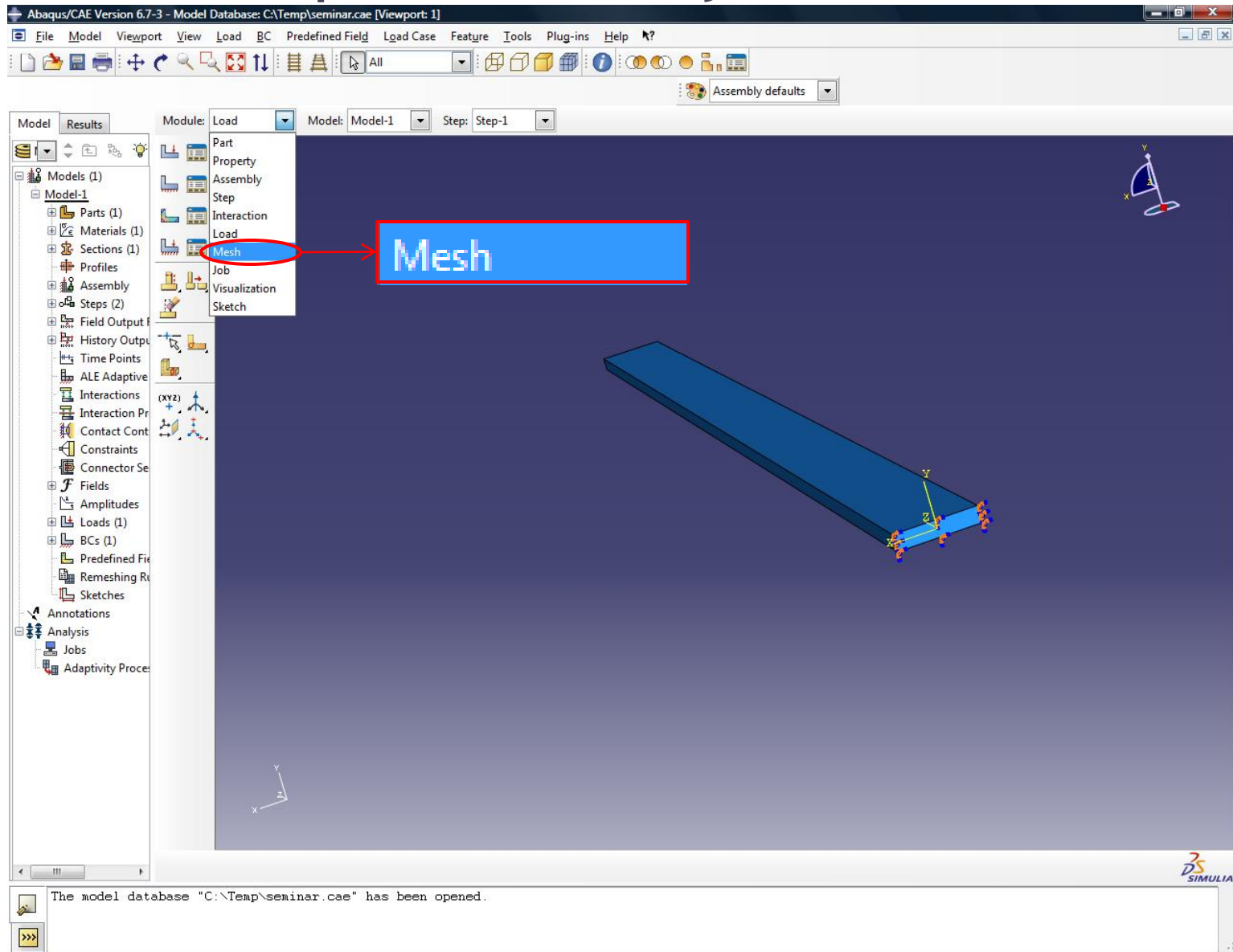
# Создание граничных условий



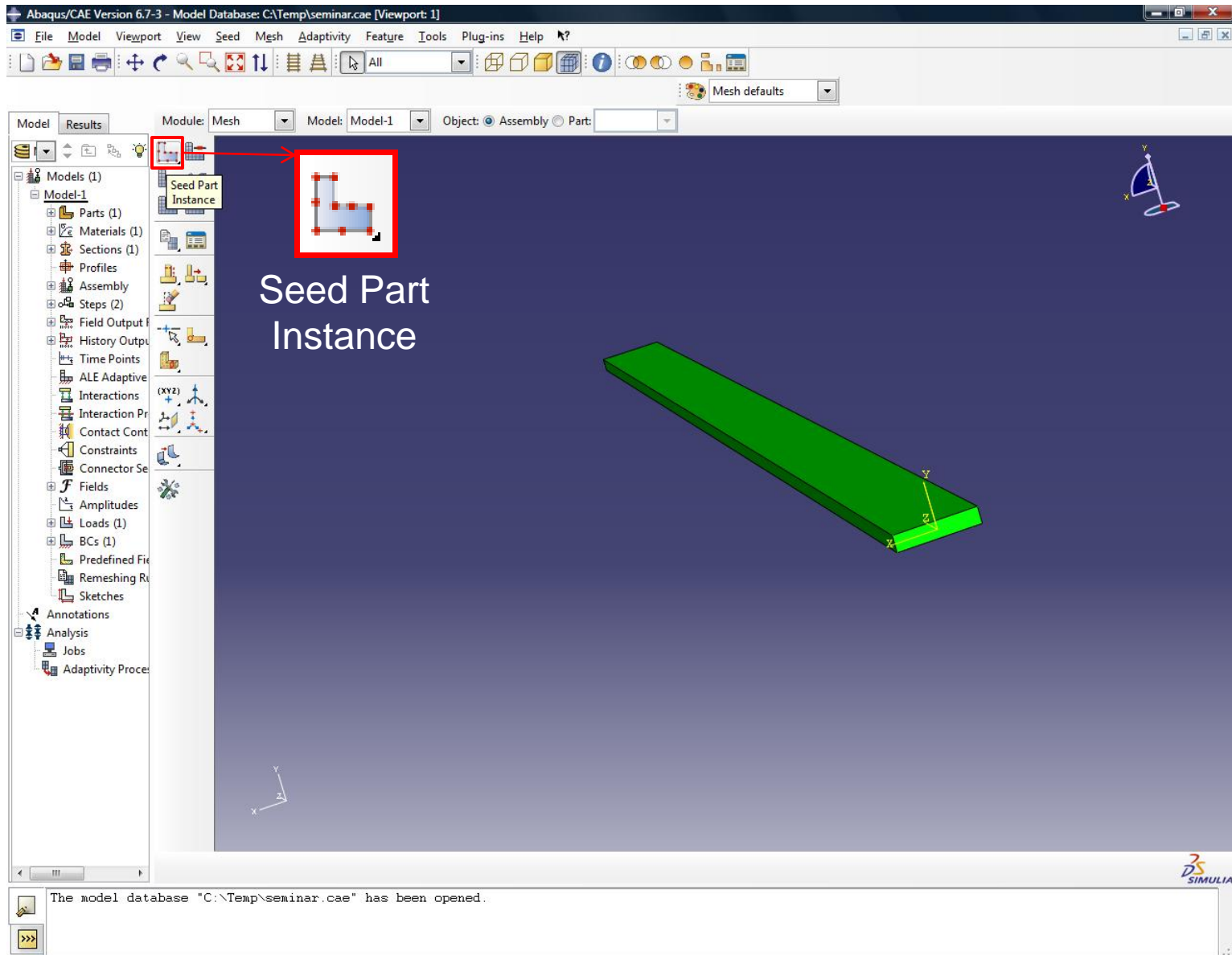
# Переход в модуль Mesh



# Переход в модуль Mesh

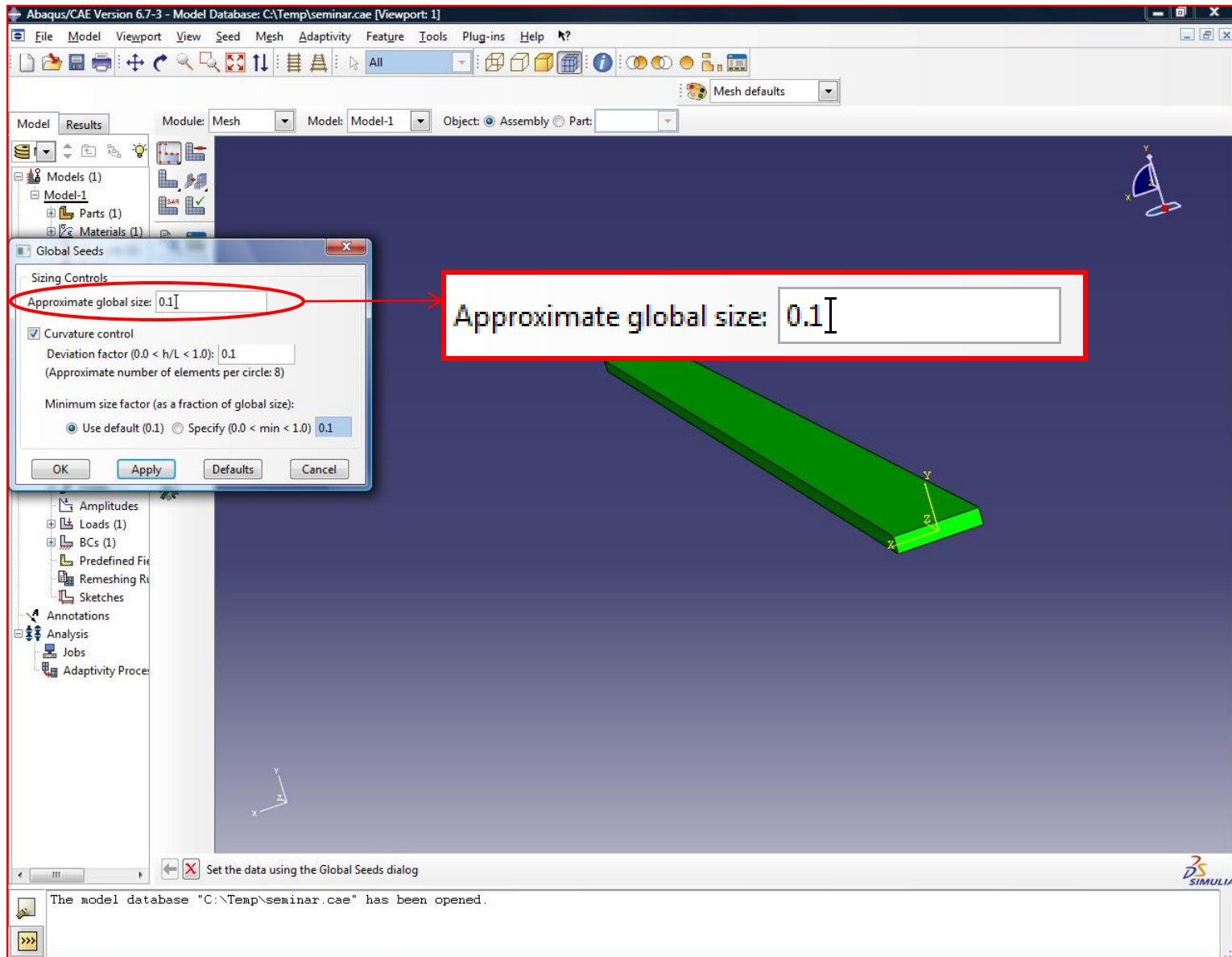


# Создание сетки

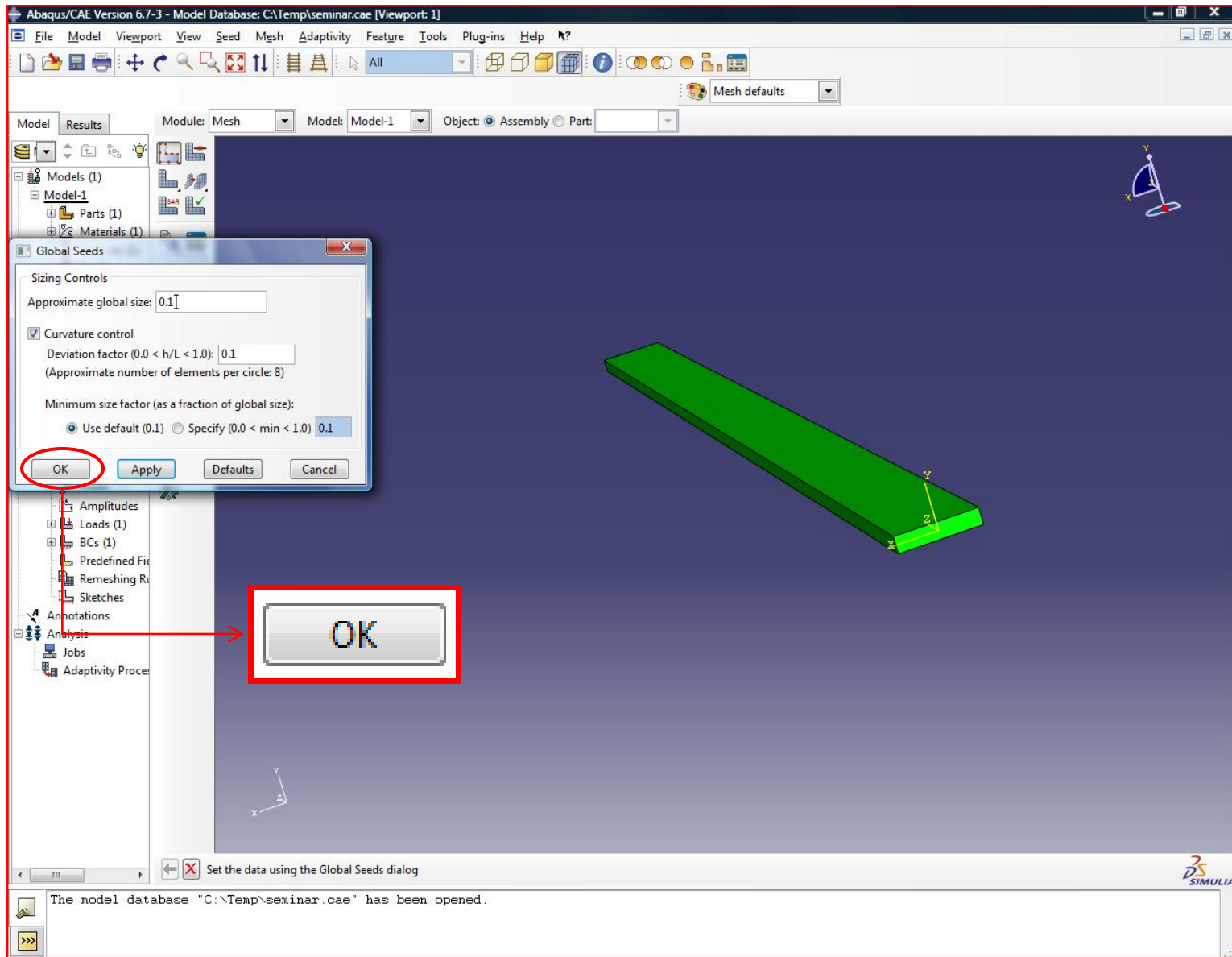




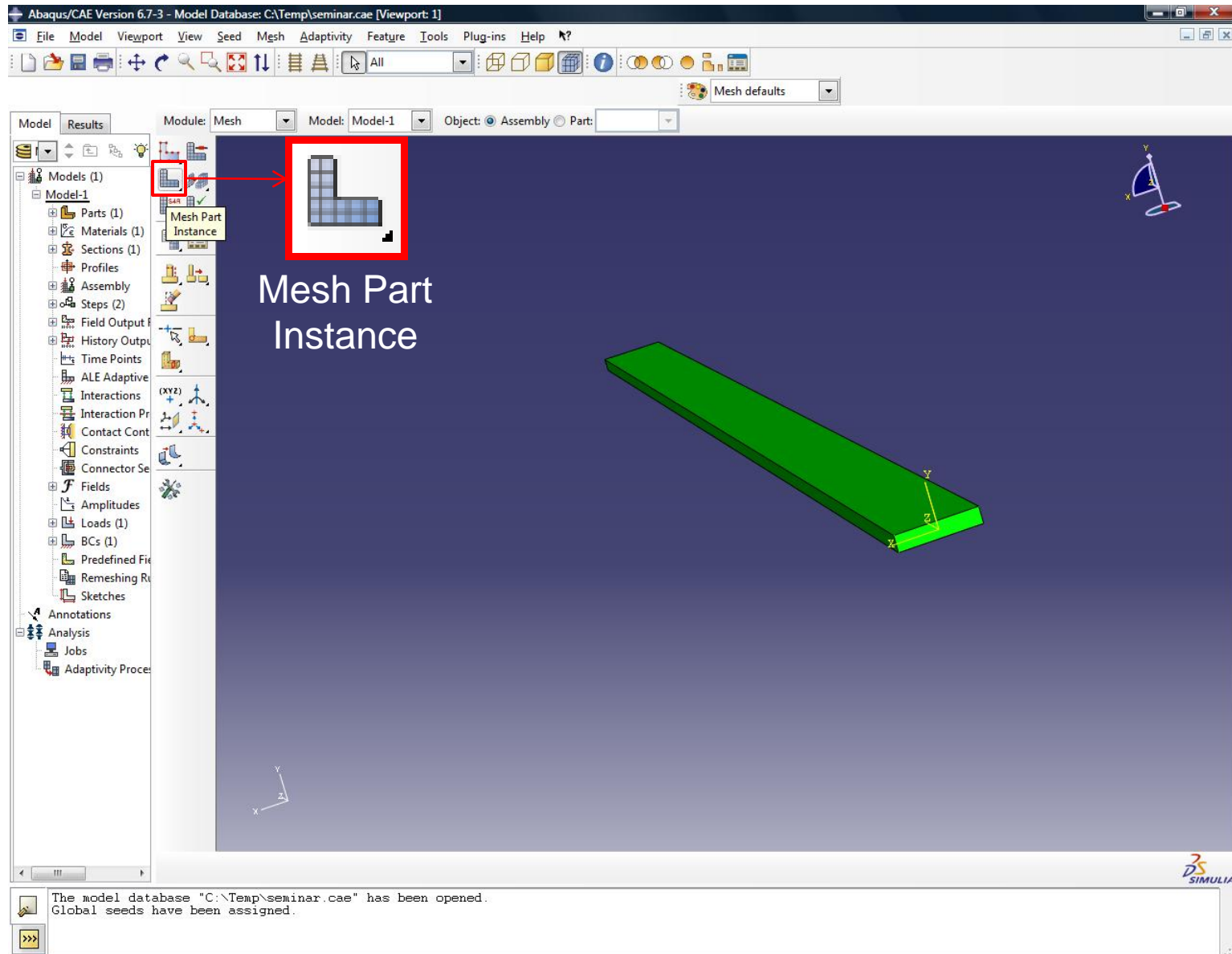
# Создание сетки



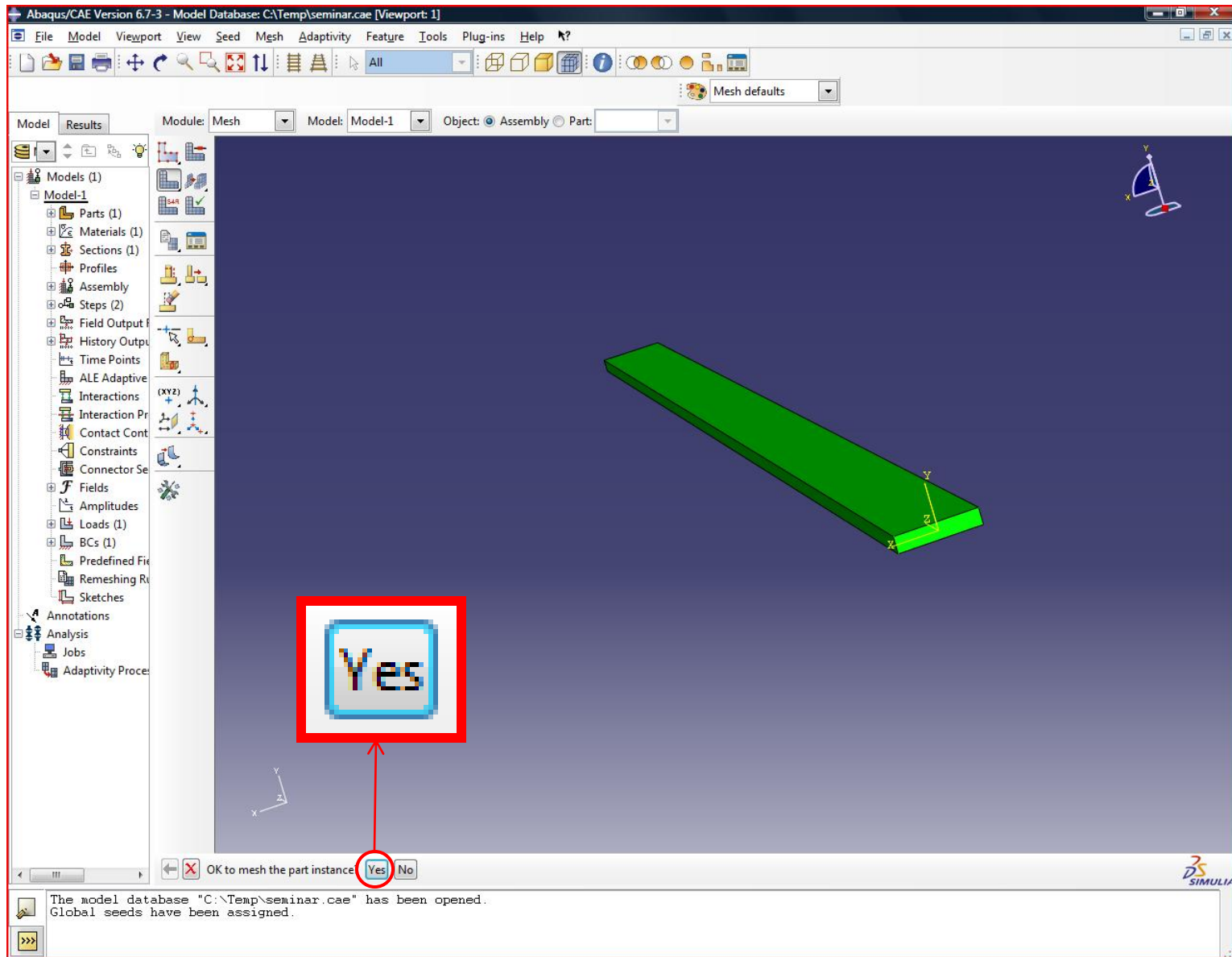
# Создание сетки



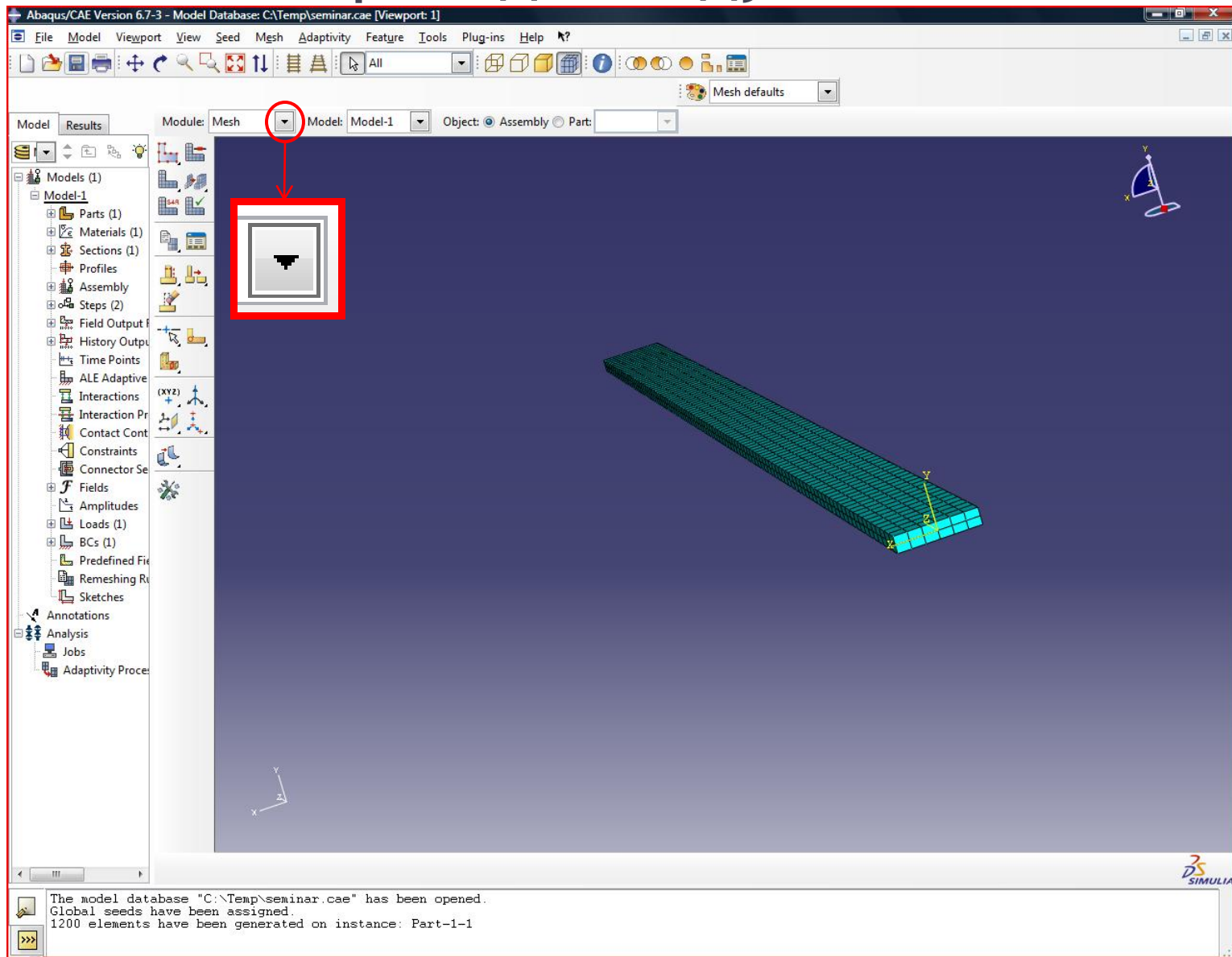
# Создание сетки



# Создание сетки



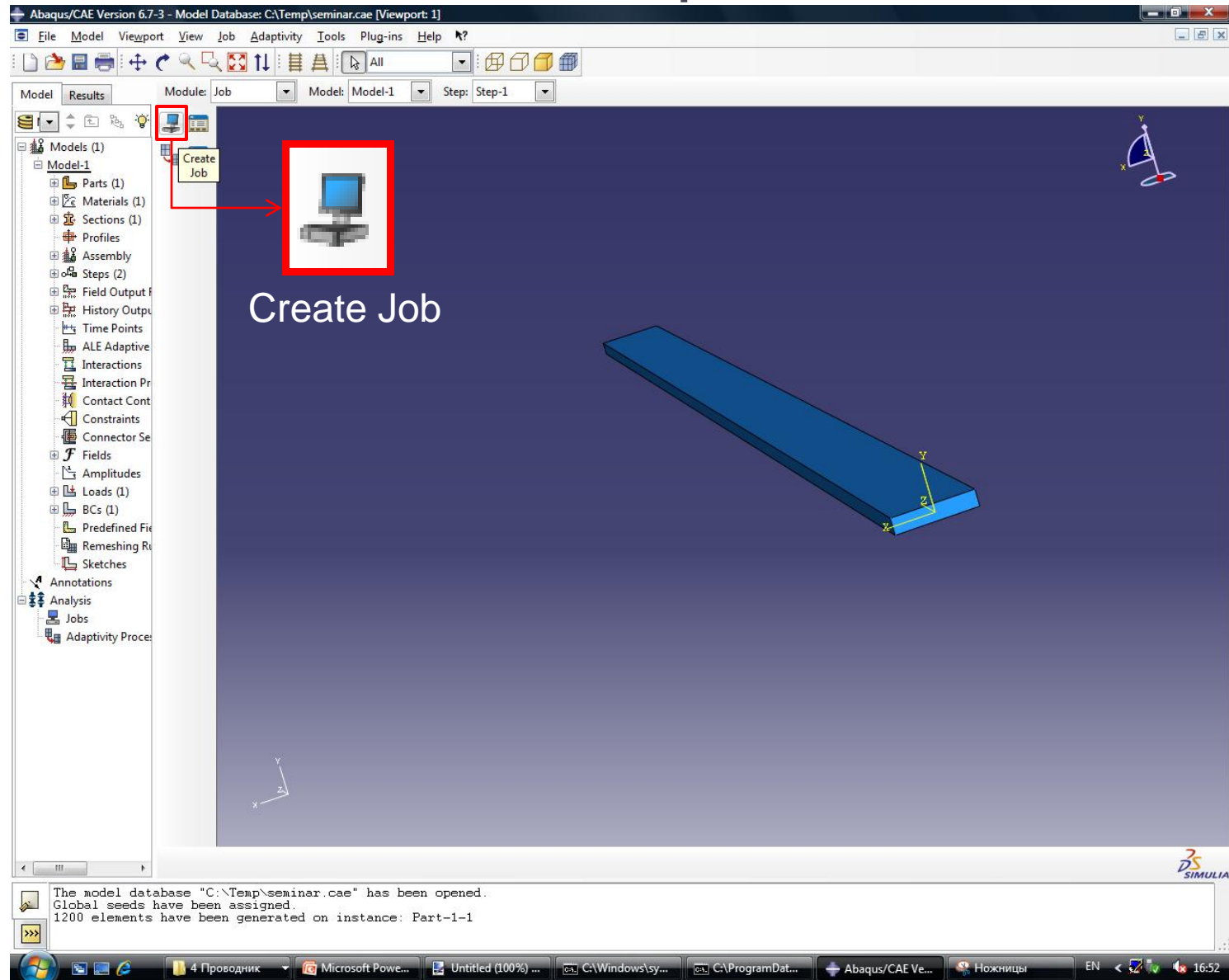
# Переход в модуль Job



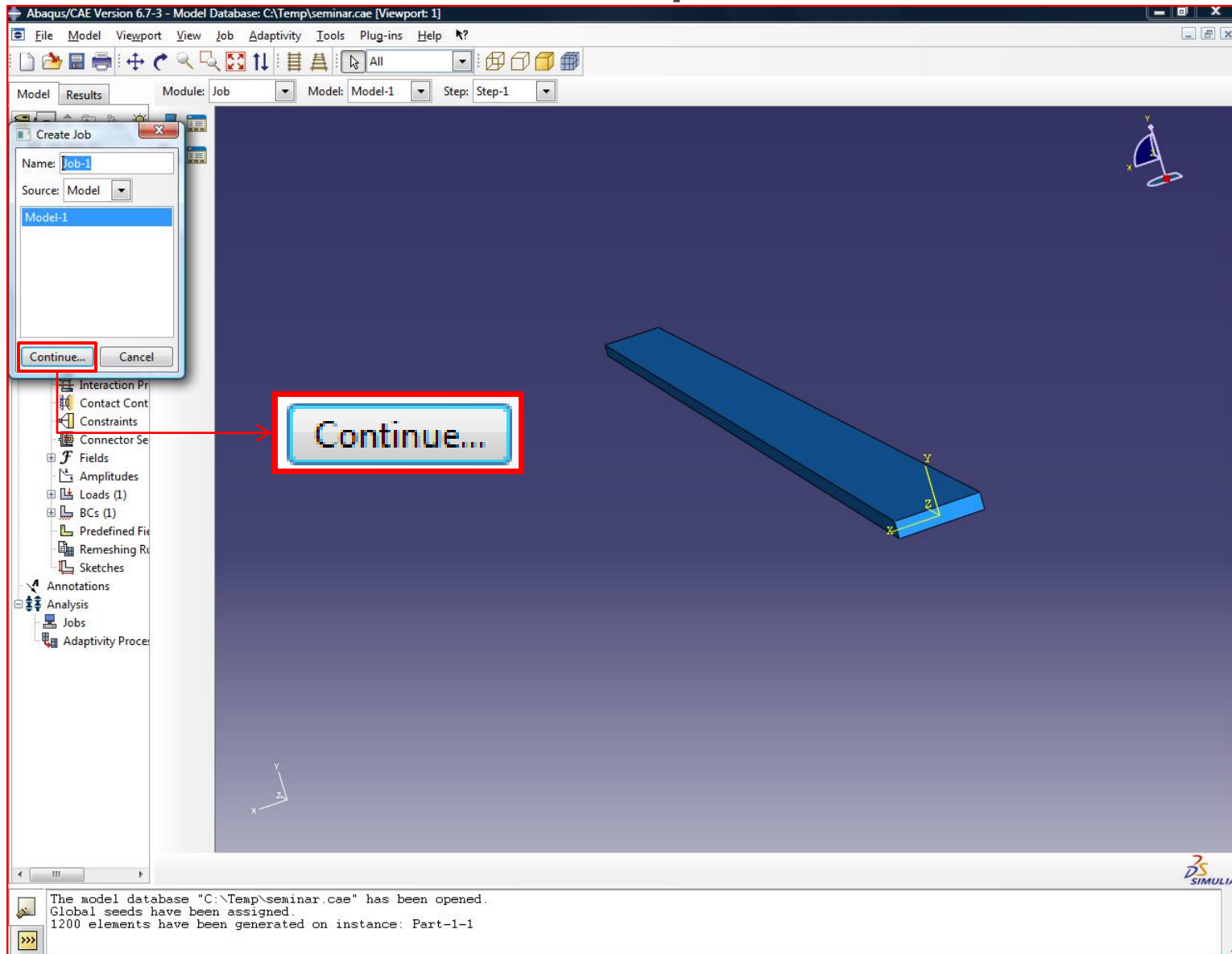
# Переход в модуль Job

The screenshot displays the Abaqus/CAE software interface. The title bar reads "Abaqus/CAE Version 6.7-3 - Model Database: C:\Temp\seminar.cae [Viewport: 1]". The menu bar includes "File", "Model", "Viewport", "View", "Seed", "Mesh", "Adaptivity", "Feature", "Tools", "Plug-ins", and "Help". The toolbar contains various icons for file operations and modeling. The "Mesh defaults" dropdown is visible. The "Model" and "Results" tabs are active. The "Module: Mesh" dropdown is open, showing a list of modules: Part, Property, Assembly, Step, Interaction, Load, Mesh, Job, Visualization, and Sketch. The "Job" module is highlighted with a red circle and a red arrow pointing to a blue box labeled "Job". The "Model: Model-1" and "Object: Assembly" dropdowns are also visible. The main viewport shows a 3D model of a rectangular plate with a green mesh. The coordinate system (X, Y, Z) is visible. The bottom status bar displays the following text: "The model database 'C:\Temp\seminar.cae' has been opened. Global seeds have been assigned. 1200 elements have been generated on instance: Part-1-1". The Abaqus logo is in the bottom right corner.

# Создание работы

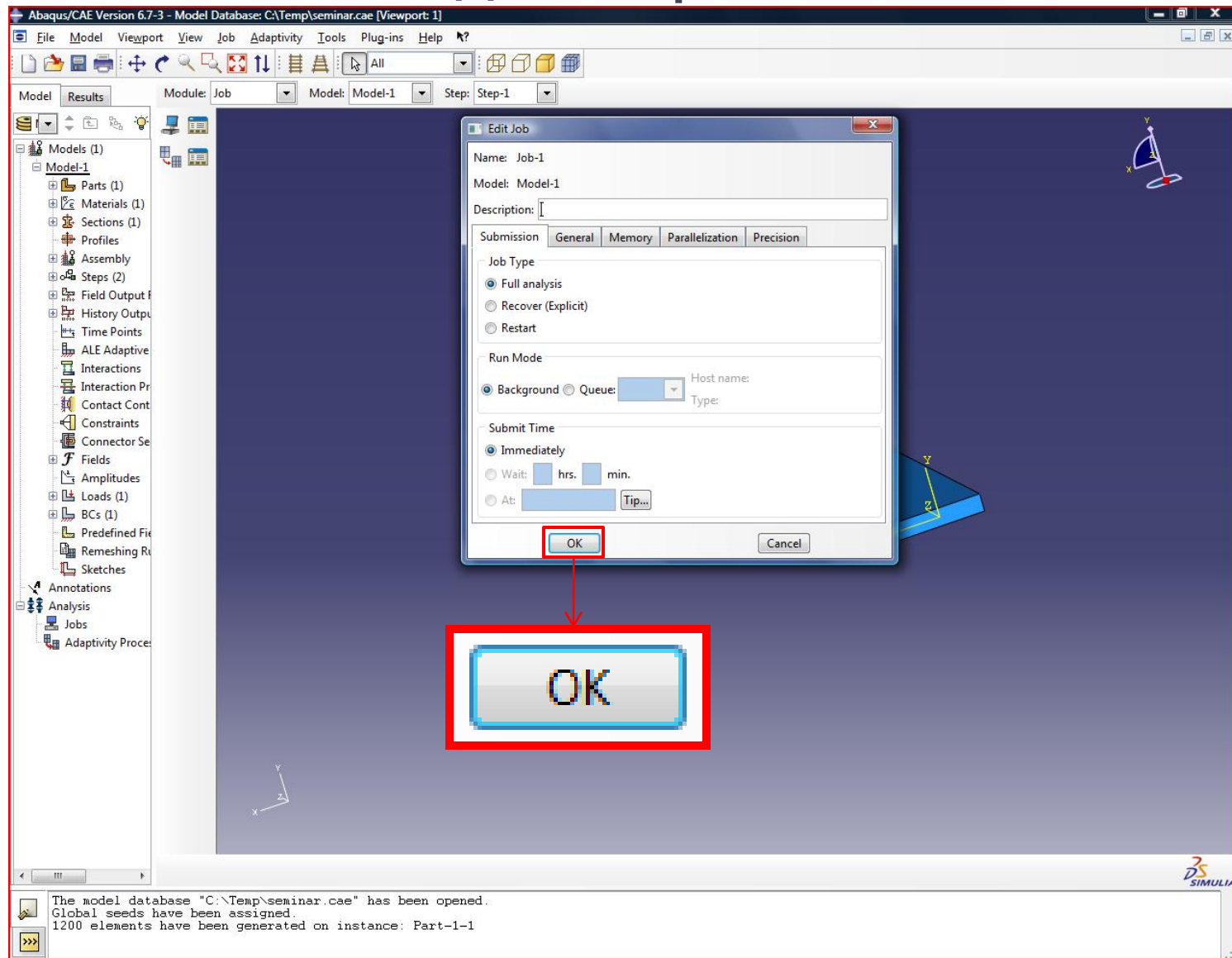


# Создание работы

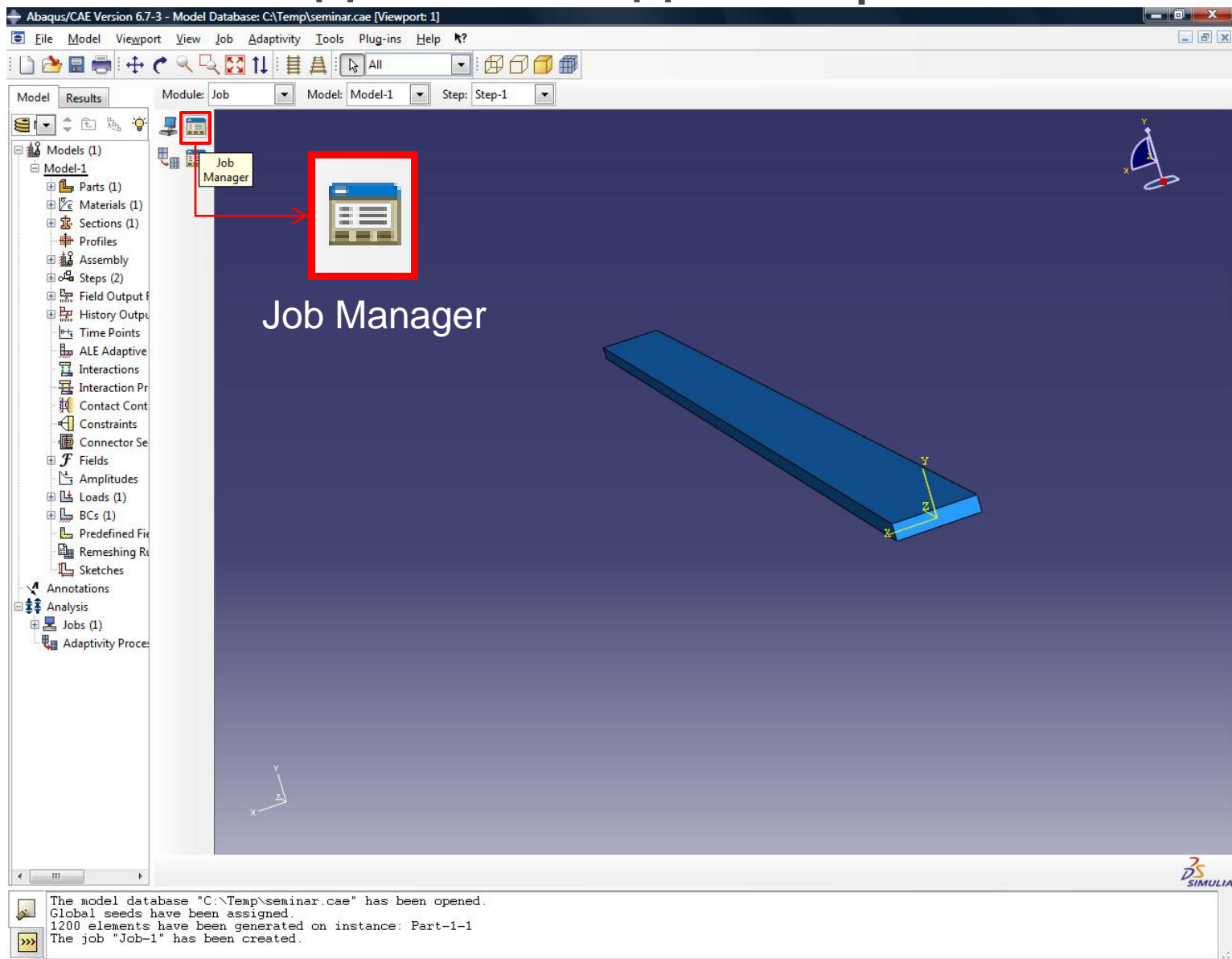




# Создание работы

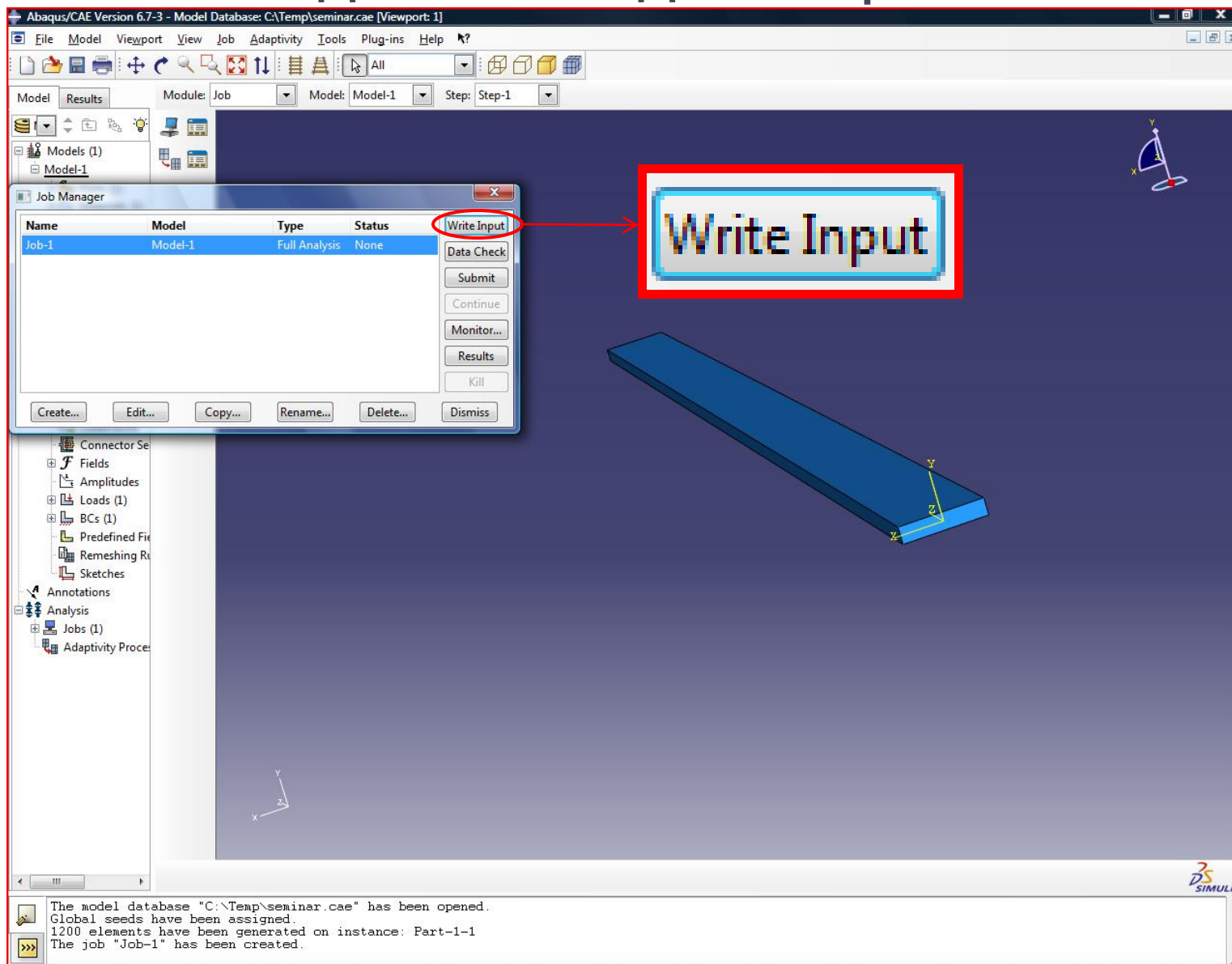


# Создание входного файла



The screenshot displays the Abaqus/CAE software interface. The title bar indicates the model database is 'C:\Temp\seminar.cae'. The menu bar includes File, Model, Viewport, View, Job, Adaptivity, Tools, Plug-ins, and Help. The toolbar contains various icons for file operations and model manipulation. The left-hand side features a tree view of the model hierarchy, including Models (1), Model-1, Parts (1), Materials (1), Sections (1), Profiles, Assembly, Steps (2), Field Output, History Output, Time Points, ALE Adaptive, Interactions, Interaction Pr, Contact Cont, Constraints, Connector Se, Fields, Amplitudes, Loads (1), BCs (1), Predefined Fi, Remeshing R, and Sketches. The main viewport shows a 3D model of a blue rectangular plate with a coordinate system (X, Y, Z). The Job Manager icon in the toolbar is highlighted with a red box, and a red arrow points to the Job Manager window, which is also highlighted with a red box. The text 'Job Manager' is overlaid on the viewport. The status bar at the bottom contains the following message: 'The model database "C:\Temp\seminar.cae" has been opened. Global seeds have been assigned. 1200 elements have been generated on instance: Part-1-1. The job "Job-1" has been created.'

# Создание входного файла



# Свернуть окно Abaqus/CAE

