Workshop Objectives

- **Learn to use the BDF file**

- **Learn to modify the BDF file by using the Quick Reference Guide,**

- **Learn to use Nastran without PATRAN**

Preliminary Works -1-
SHORTCUT for NASTRAN AND PATRAN

Verify on the desk if there is a shortcut for PATRAN and NASTRAN

If they don't exist create them :

Create a shortcut on the desk for Nastran R2
Démarrer / programme / MSC.Software / MD Nastran / MD R2 Nastran

Create a shortcut on the desk for PATRAN R2
Démarrer / programme / MSC.Software / MD Patran R2 / MD R2 Patran

Preliminary Works -2-
Access to Public Samba

- Verify with **Poste de Travail**, for example, if you can access the data on the Public Samba Server
- If you can't you have to do the following things :
- Left Click on **Démarer** and Right Click on **Poste de Travail**
- Chose connecter un lecteur réseau
- In the box **Lecteur** select P:
- In the box **Dossier** write \\panpanisae\public
- Select the option : **se connecter à l'ouverture de session**
- Click on **Terminer**

Preliminary Works -3-
Screen Resolution

- Left Click on **Démarer** and Left Click on **Panneau de Configuration**
- Double Left Click on **Affichage**
- Select the Icon **Paramètres** with a Left Click
- Select 1280x1024 Pixels in the area **resolution de l'écran**
- Click on **OK**

Preliminary works -4-
Open the Quick Reference Guide

On each computer you can access to the Quick Reference Guide with the following path :

C:\MSC.Software\MD_Patran\R2\pdf_patran\nastran_library

In the document nastran_library open the link **Quick Reference Guide** to access the NASTRAN Commands.

REMARK : In Nastran a command is often caleld a Card

Preliminary works - 5 -
Load a *.bd file in your home directory

-Find in public samba the file Modif-BDF-01.bd in the directory Public Samba\DISTRIB\j.morlier
-Copy this file in your home directory,
-Open Patran
-Open this file
-A beam described in the following pages have been modelled with Patran
- Analyse this file in order tio create à BDF output file (the input file for Nastran)
- Read this file with **Bloc Notes** for instance

Description of the Beam

- Lenght L= 4 m
- Clamped in A (Tx=Ty=Tz=0 / Rx=Ry=Rz=0)
- Pivot axis Z in B (Tx=Ty=Tz=0 / Rx=Ry=0)
- Pivot axis Z in D and E (Tx=Ty=Tz=0 / Rx=Ry=0)
- Force of 10 000 N in C (Tx=Ty=Tz=0 / Rx=Ry=0)
- Moment of 100 mN in C
- Distributed Load of 100 N/mm between D et E
- Cross section I with a thin web
- Material : Steel
    - Young's modulus : 200 Gpa
    - Poisson's ratio : 0.3

Figure of the initial beam
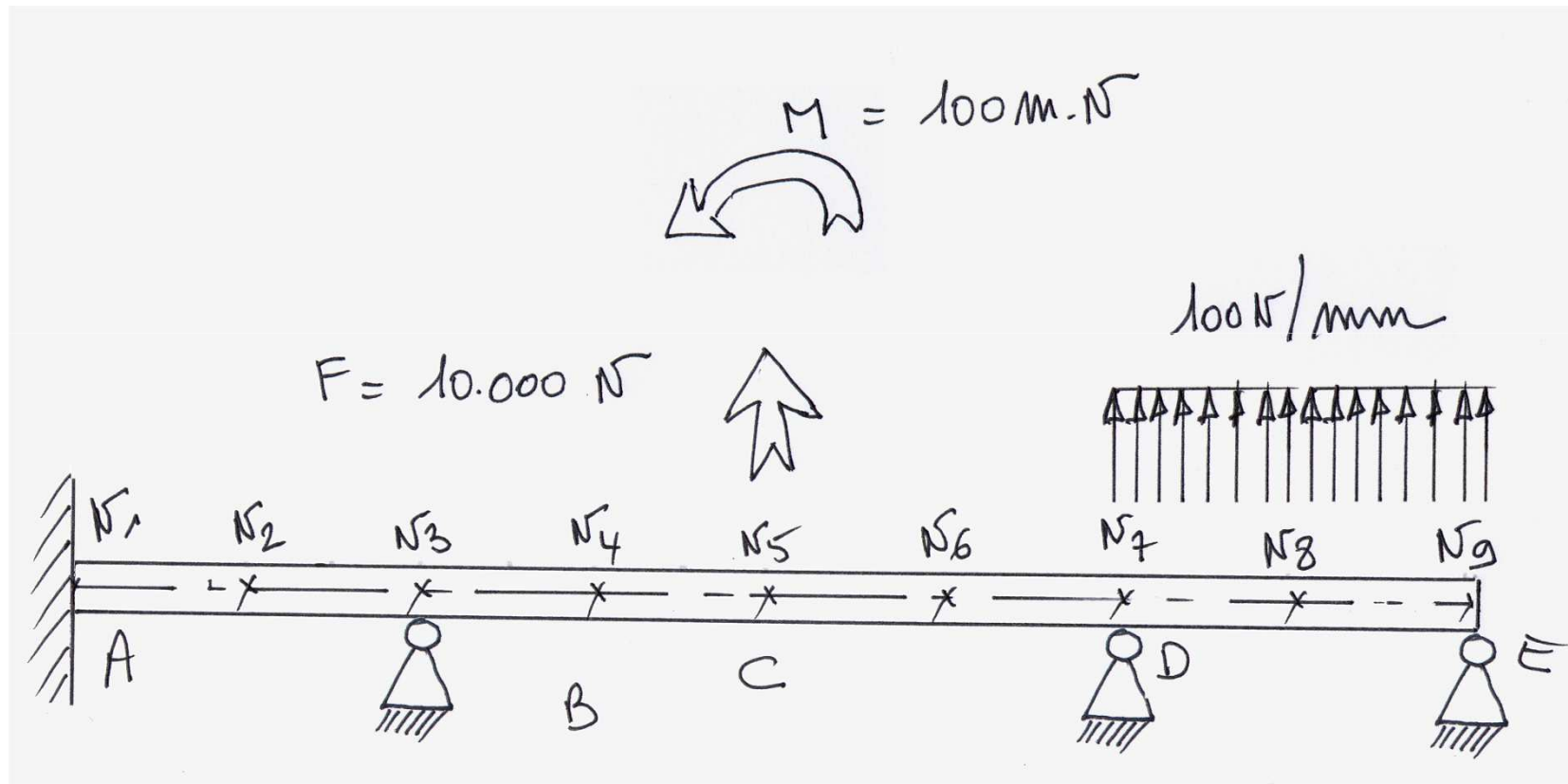
Modelling With Patran
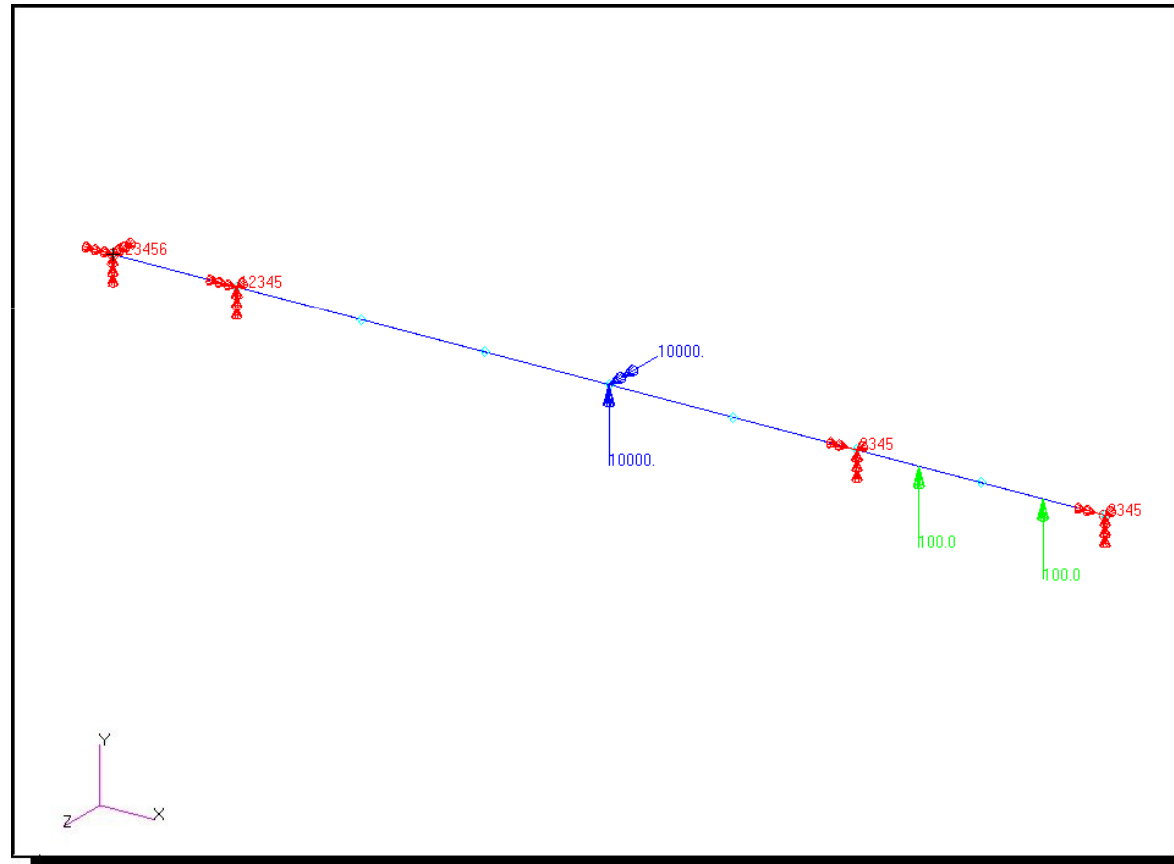
Beam to Study

- Lenght L=5 m
- Fixed pivot of axe Z in A and D (Tx=Ty=Tz=0 / Rx=Ry=0)
- Gliding Pivot of axis Z in B and E (Ty=Tz=0 / Rx=Ry=0)
- Force of 10 000 N in C and F
- Moment of 1 000 mN in C
- Distributed load of 100 N/mm between D and F
- Cross section of type **BOX1** with :
    - **DIM1 = 200 mm, DIM2 = 300 mm,**
    - **DIM6 = DIM5=5 mm, DIM3=DIM4=15 mm**
- Material : Light Alloy
    - Young's Modulus : 75 Gpa
   - Poisson's ratio : 0.33

New beam to study
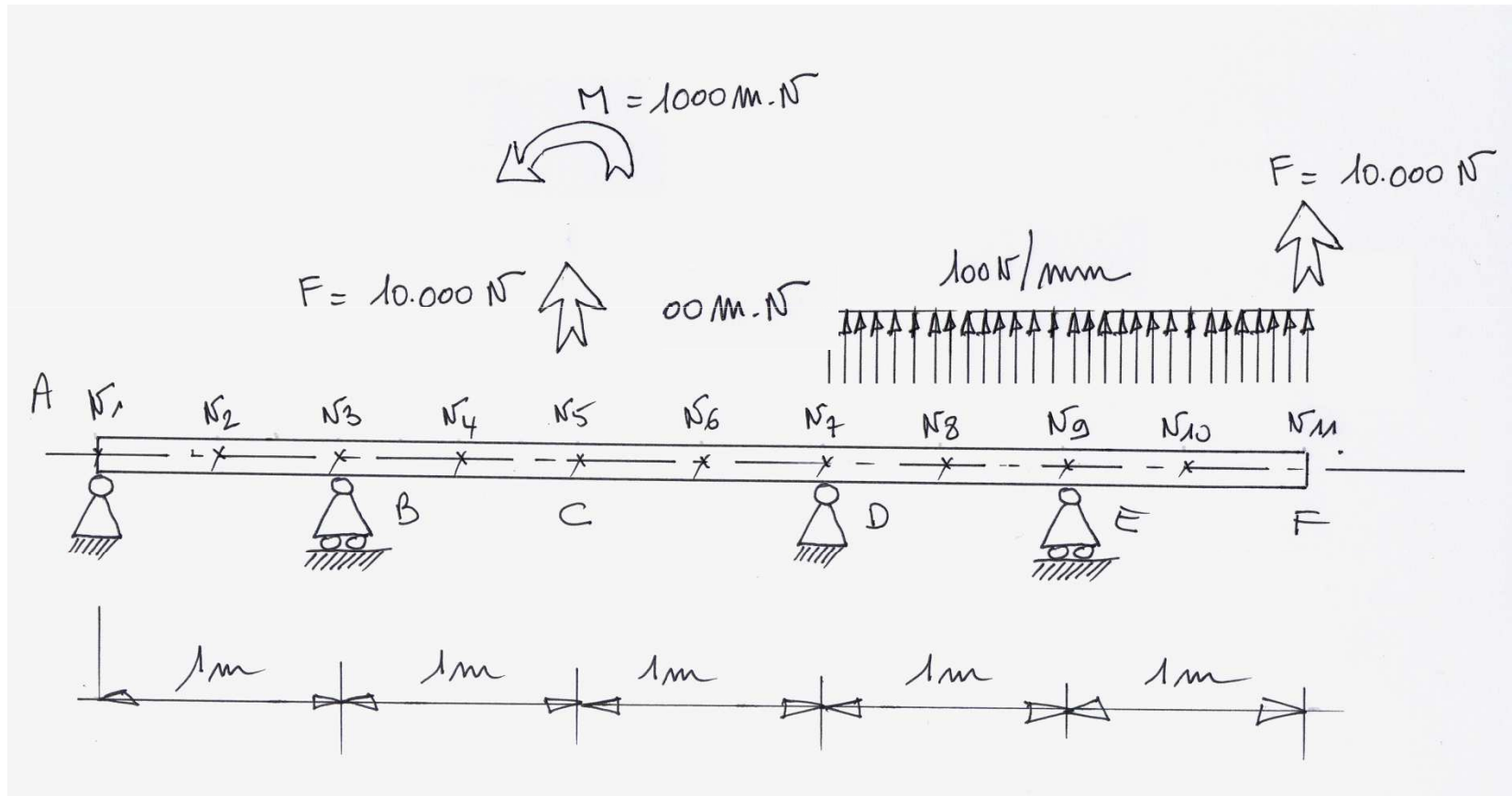
Work to do

•Run the analysis with Patran,

•Open the file job.F06 to analyse the results,

•Open the file job.bdf

•Modify the file job.bdf, rename and save it,

•Run NASTRAN with the Icon on the desk,

•Run an analysis with the file *.bdf modifed,

•Open the file job.F06 to analyse the result,

Work to do

•**Run Patran and import the file *.bdf to create a new Patran file (*.bd)**

That will alloy you to visualyse the results.

   •**File / New / Give_a_Name.db**

   •**File / Import / Souce = MD Nastran Input**

   •**Select the input file modified *.bdf**

   •**Click Apply**
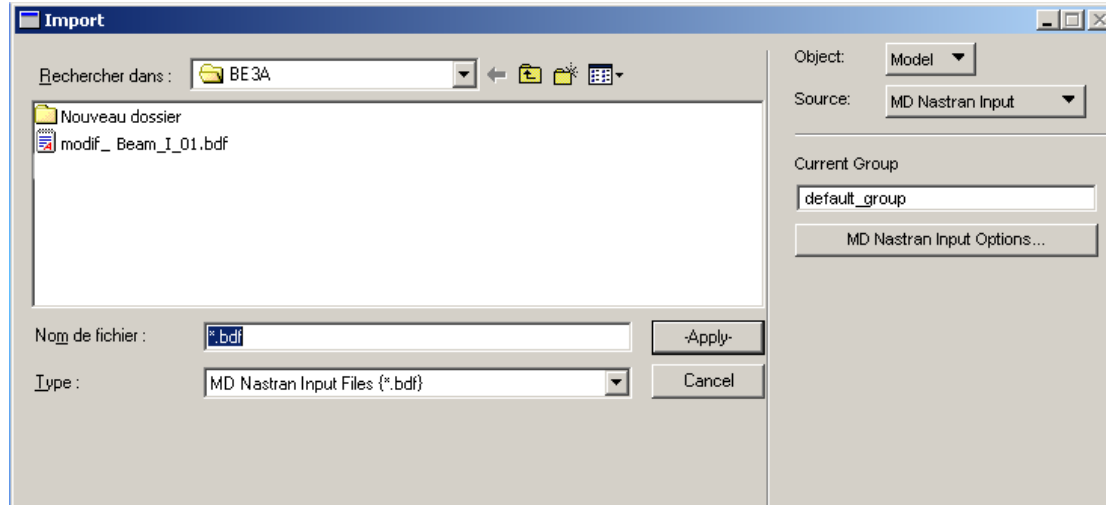
Format of the Nastran Cards

1	2	3	4	5	6	7	8	9	10
SPC1	100	12456	1	2	3	4	5	6	+SPC-A
+SPC-A	7	8	9	10					

```
SPC1,100,12456,1,2,3,4,5,6,7,8,9,10
```

1	2	3	4	5	6	7	8	9	10
SPC1	100	12456	1	2	3	4	5	6	
	7	8	9	10					

Card for the Boundary Conditions

```
SUBCASE 1
  SUBTITLE=Default
  SPC = 2
  LOAD = 2
  DISPLACEMENT(SORT1,REAL)=ALL
  SPCFORCES(SORT1,REAL)=ALL
  STRESS(SORT1,REAL,VONMISES,BILIN)=ALL
BEGIN BULK
SPCADD    2              1       3       4       5
$ Displacement Constraints of Load Set : BC_Point_A
SPC1      1       123456  1
$ Displacement Constraints of Load Set : BC_Point_B
SPC1      3       12345   2
$ Displacement Constraints of Load Set : BC_Point_E
SPC1      4       2345    9
$ Displacement Constraints of Load Set : BC_Point_D
SPC1      5       2345    7
```

Card for the Load

```
SUBCASE 1
   SUBTITLE=Default
   SPC = 2
   LOAD = 2
   DISPLACEMENT(SORT1,REAL)=ALL
   SPCFORCES(SORT1,REAL)=ALL
   STRESS(SORT1,REAL,VONMISES,BILIN)=ALL
BEGIN BULK

LOAD      2        1.       1.        1       1.       3       1.       4
$ Nodal Forces of Load Set : Ponct_Force
FORCE     1        5        0       10000.  0.      1.       0.
$ Nodal Forces of Load Set : Ponct_Moment
MOMENT    3        5        0       10000.  0.       0.      1.
$ Distributed Loads of Load Set : Load_Distributed
PLOAD1    4        7        FYE     FR      0.      100.    1.      100.
PLOAD1    4        8        FYE     FR      0.      100.    1.      100.
```

Modification of the BDF File

With a text editor open the file Modif_BDF_01.bdf

Modify the bdf file to :
- Change the boundary conditions,
- Correct the error(s),
- Modify the load applied,
- Add 2 nodes and 2 elements on the right side,
- Modify the cross section of the beam,
- Add a new material

Directly run the new bdf file with NASTRAN