

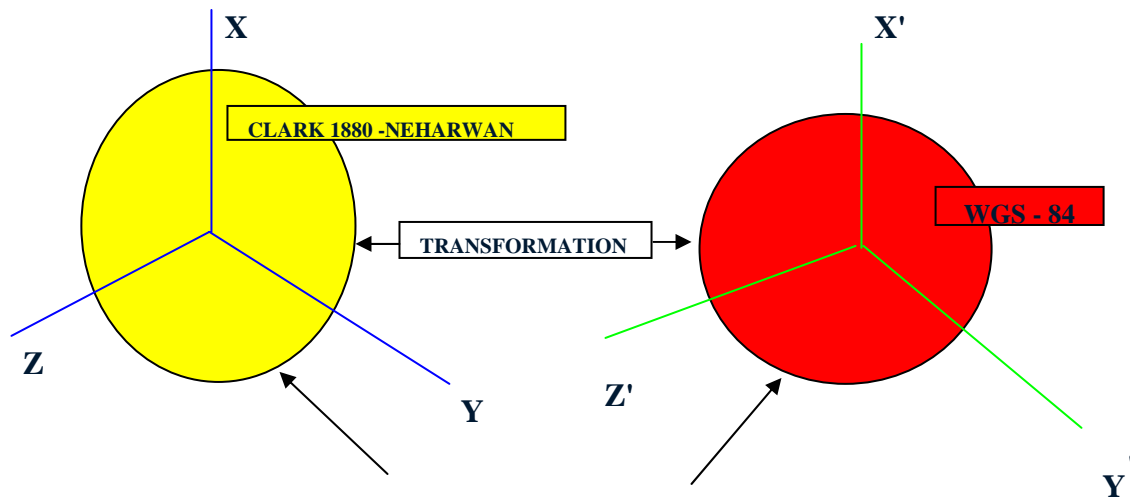


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# Dubai Local Transverse Mercator

## DLTM

# Transformation & Coordinate Conversion



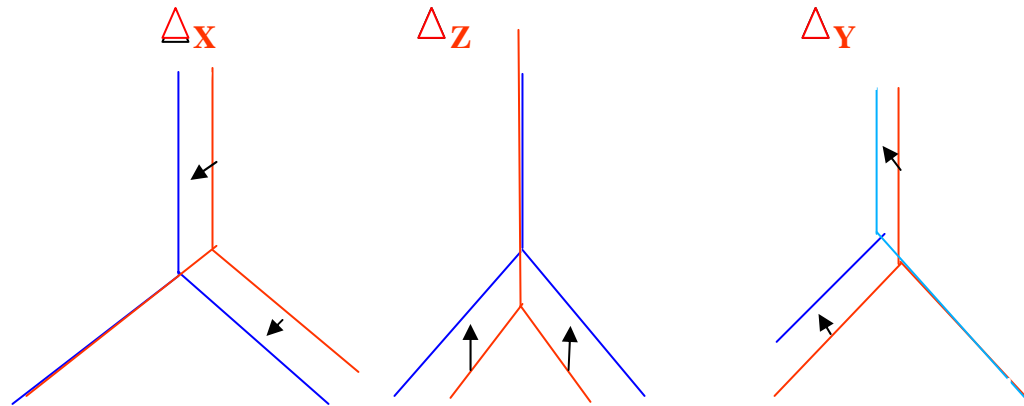
**ELLIPSOID SIZED  $a$  &  $f$**   
(Where  $a$  = is semi major axis and  $f$  is flattening)

TO TRANSLATE ONE DATUM TO ANOTHER WE MUST KNOW THE RELATIONSHIP |  
CHOSEN ELLIPSOIDS IN TERMS OF POSITION AND ORIENTATION

THE RELATIONSHIP IS DEFINED BY 7 CONSTANTS

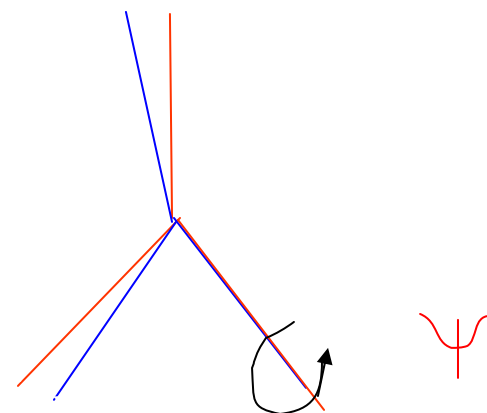
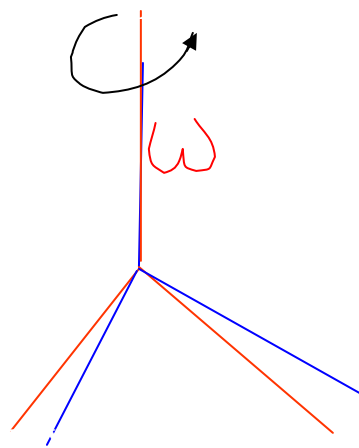
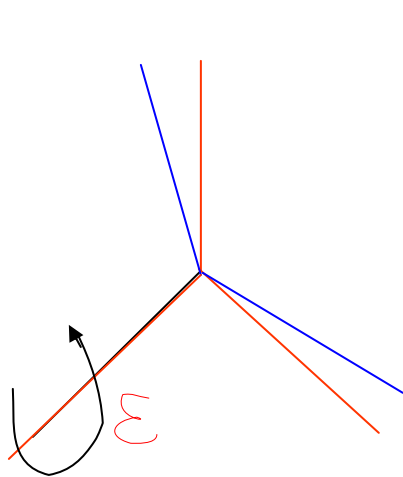
- A     **3 - TRANSLATIONS PARAMETERS ;**      $\Delta X$      $\Delta Y$      $\Delta Z$
- B     **3 - ROTATIONS PARAMETERS ;**      $\bar{\epsilon}$      $\bar{\psi}$      $\bar{\omega}$
- C     **1 - SCALE**     **S**

3 - TRANSLATIONS PARAMETERS ;  $\Delta X$   $\Delta Y$   $\Delta Z$  Movement of the points along the axis



3 - ROTATIONS PARAMETERS ;  $\epsilon$   $\psi$   $\omega$

Movement of points around the axis

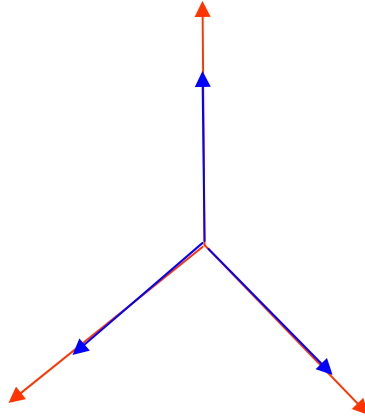


1 - SCALE

S

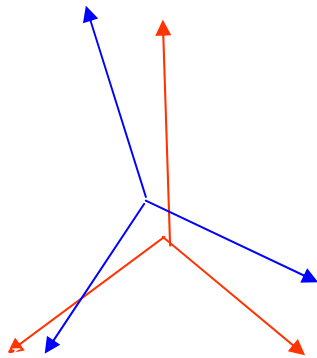
Changing the distance between points

7



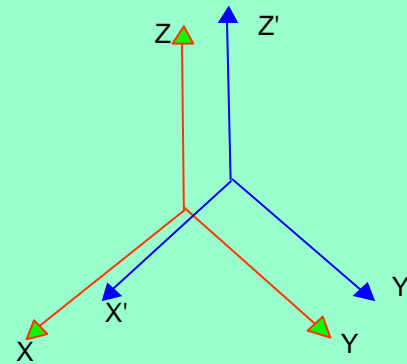
## 7 - PARAMETERS

7



$$\begin{pmatrix} X' \\ Y' \\ Z' \end{pmatrix} = \mathbf{S} \mathbf{R}_{xyz} \begin{pmatrix} X \\ Y \\ Z \end{pmatrix} + \begin{pmatrix} \Delta X \\ \Delta Y \\ \Delta Z \end{pmatrix}$$

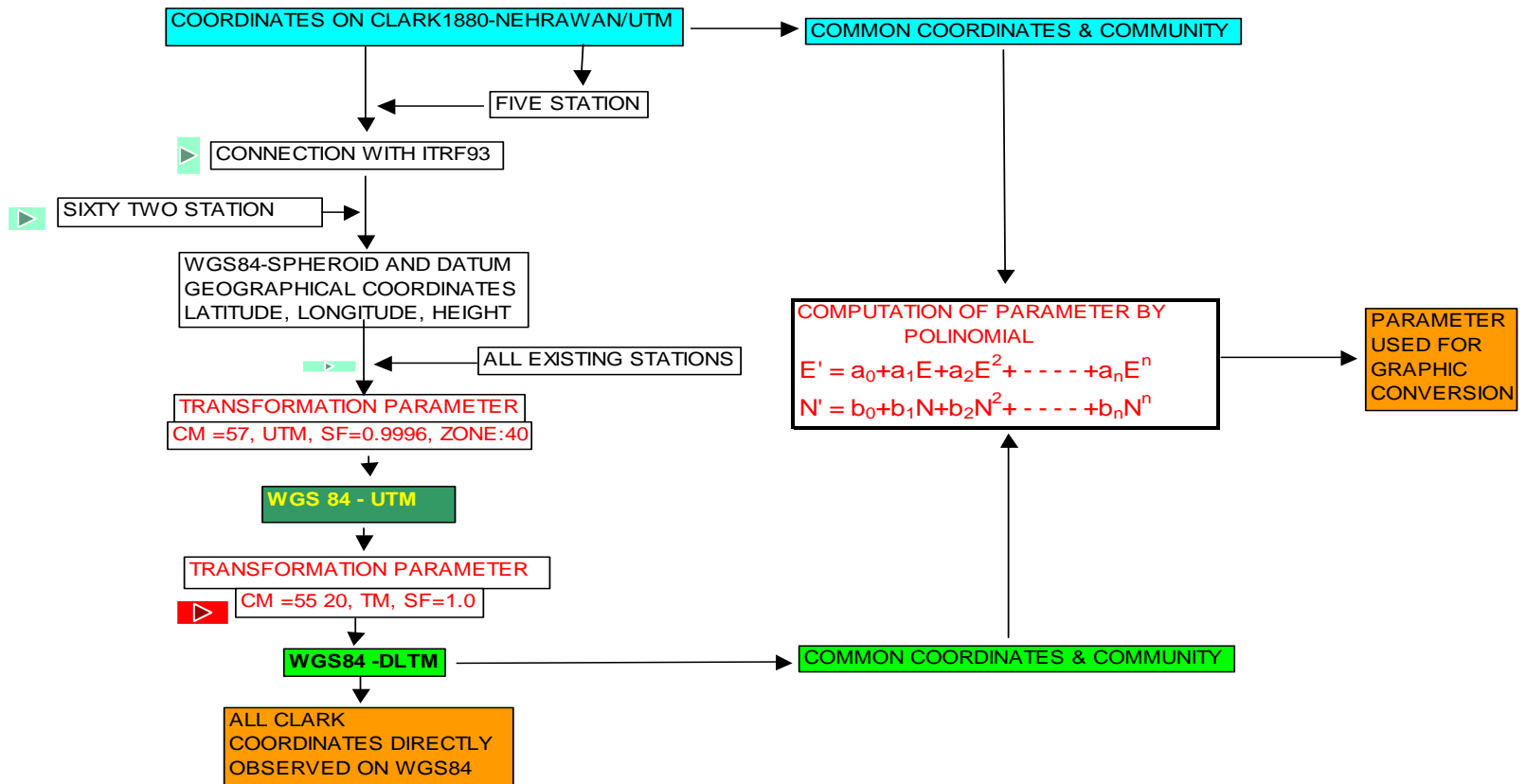
## 3 PARAMETERS



$$\begin{pmatrix} X' \\ Y' \\ Z' \end{pmatrix} = \begin{pmatrix} X \\ Y \\ Z \end{pmatrix} + \begin{pmatrix} \Delta X \\ \Delta Y \\ \Delta Z \end{pmatrix}$$

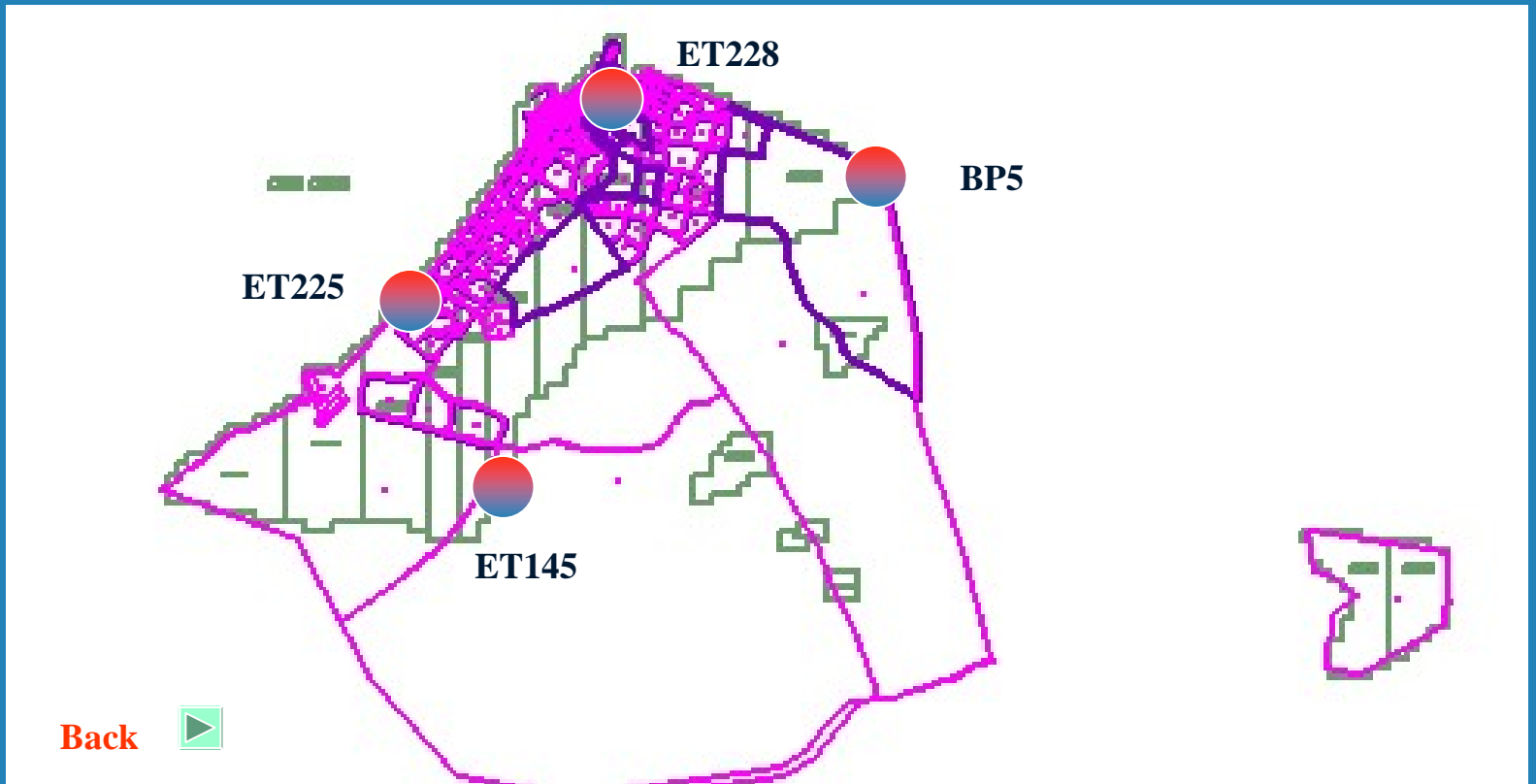
## PROCEDURE FOLLOWED IN DUBAI MUNICIPALITY FOR DATUM TRANSFORMATION

- \* COORDINATE TRANSFORMATION
- \* GRAPHIC CONVERSION

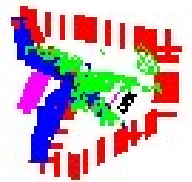
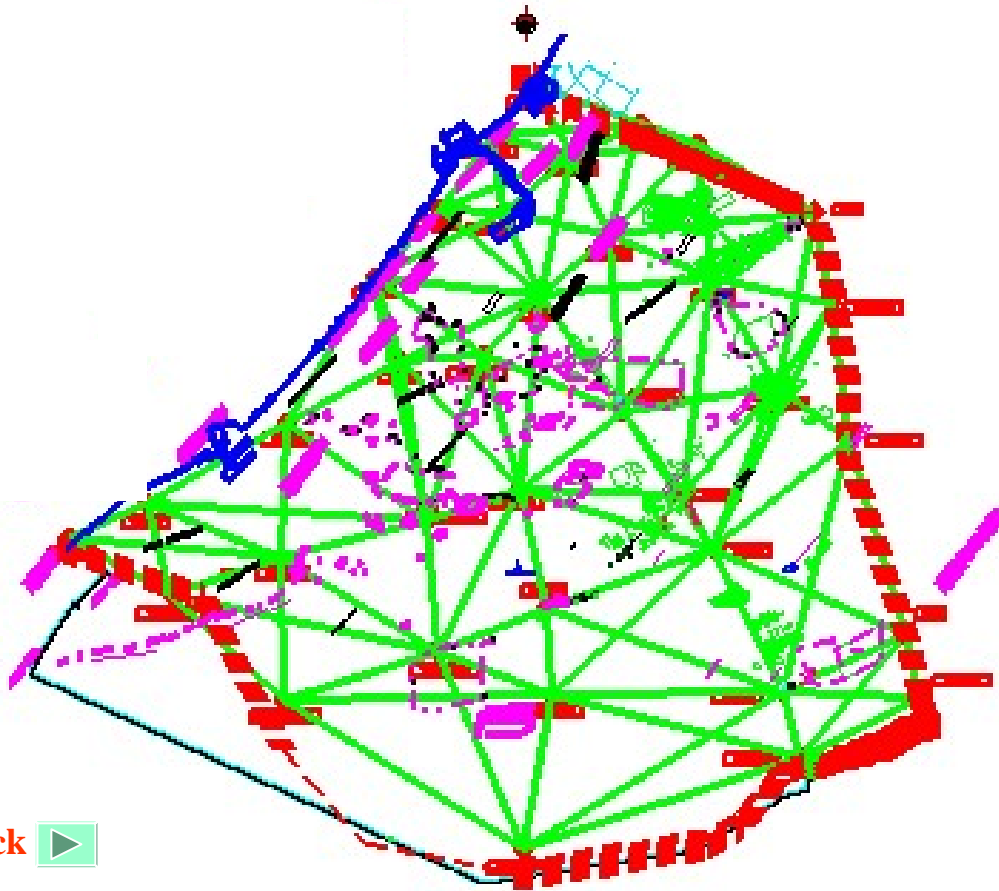




# ITRF-93



# 62 STATION



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# GPS FAST-STATIC FOR GRAPHICAL CONVERSION



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# DLTM Parameters

