

#### 4. Surveying in General: الاعتبارات المتسلسلة الرئيسية التي يتم أخذها في المسح

The main sequential consideration that are taken in surveying:

Surveys are conducted for many different **purposes**

أغراض مختلفة

Determine the types of **instruments** which are used

نوع الاجهزة

The **measurements** which are taken

القياسات

The subsequent processing of those measurements to produce  
the **required results**

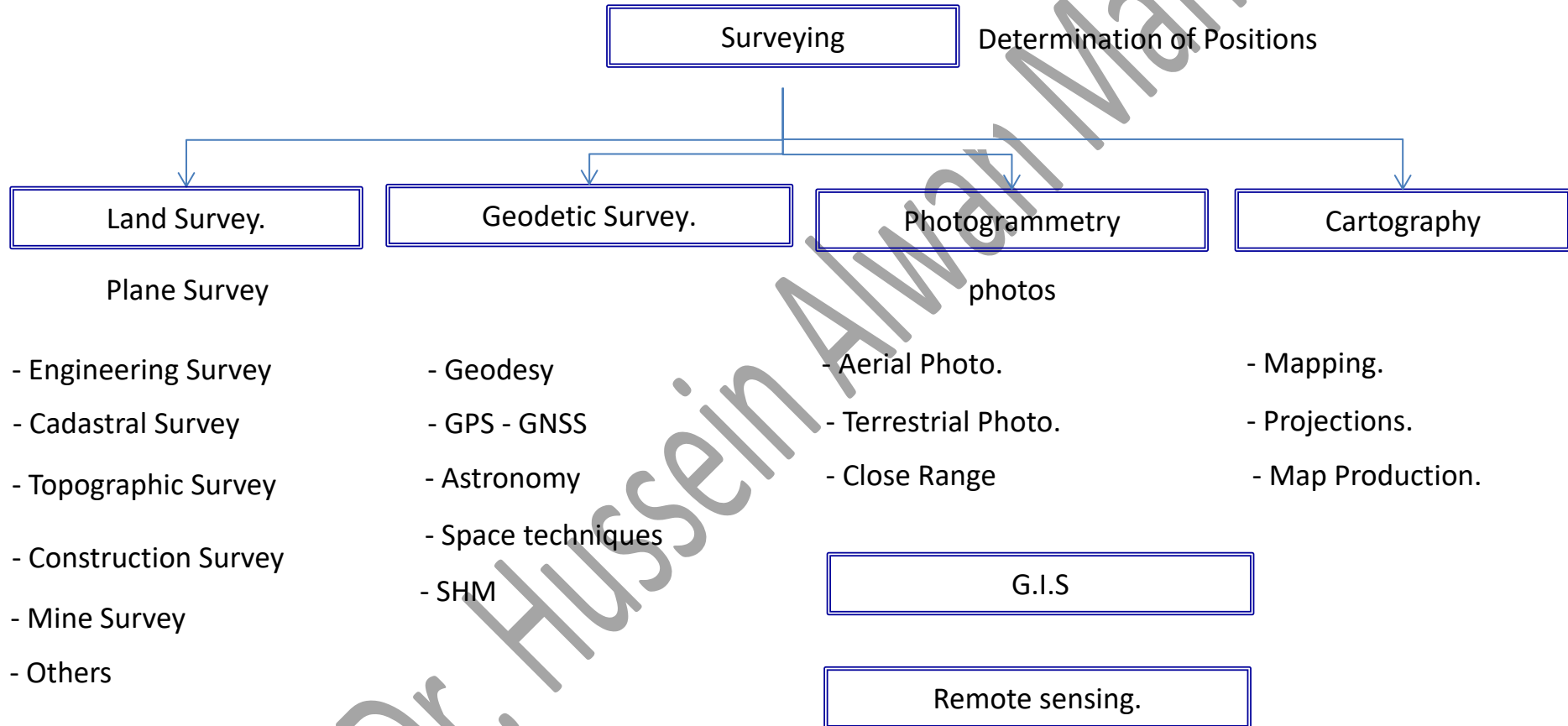
النتائج النهائية

There are several **factors** that required to achieve the nature of surveying:

1. The size of project or extension of land and the **accuracy** required. الدقة وحجم العمل
2. The available **equipment**. الاجهزة المتوفرة
3. The **country** in which the work is being carried out. البلد الذي يجرى فيه المسح

## 5. Classification of Surveying

a. Based on the main specialties:



## 5. Classification of Surveying

b. Based on the Purpose:

1. **Geodetic Surveying**: - To determine the shape and the size of the earth.
  - Geodetic surveys cover relatively large areas (e.g. a state or country) for which the effects of earth curvature must be considered.
  - To provide an accurate framework for a big survey.
2. **Topographic survey**: collecting data and preparing maps showing the locations of natural and man-made features with elevations of points.
3. **Cadastral**: To establish and record the boundaries of property or territory. Cadastral surveys are concerned only with those features of the landscape which are relevant to such boundaries.
4. **Engineering**— to choose locations for, and then set out markers for, different engineering works. Such as route – constructions – curves.

## 5. Classification of Surveying

c. Based on the Equipment Used.

1. *Tape*—for direct linear measurement. Still occasionally used for small detailed surveys, but now largely supplanted by electromagnetic distance measurement devices.
2. *Compass*—to observe bearings. It is used mainly in preliminary reconnaissance.
3. *Theodolite*—a telescopic sight pivoted horizontally and vertically, with two graduated protractors (called 'circles') for measuring angles.
4. *Electromagnetic distance measurement (EDM)* devices—typically used for measurements of lengths from, say, 5 m to 5 km, though some instruments have ranges up to about 25 km.
5. *Total Station*—essentially a theodolite with a built-in EDM. Total stations usually have facilities for recording and processing measurements electronically, and have largely replaced conventional theodolites.

## 5. Classification of Surveying

c. Based on the Equipment Used.

**5. GPS and GNSS**—using navigational satellites to fix positions on the earth. This technique has almost completely replaced terrestrial triangulation for large-scale control survey, and can also be useful on other works. The term ‘satellite surveying’ is also used for this activity.

**6. Aerial camera (photogrammetry)**—mainly used in topographic surveys, but also for recording the shapes (and subsequent deformations) of buildings.

**7. Satellite camera**—essentially, a long-range aerial camera. Satellites can be used for gathering topographic data, and also for many other remote sensing purposes related to geographic information systems (GIS).