Assignment 1
What is Engineering and Scientific Software

Class: E8 Name: . Tep Theavy . Sea Viseth .Me Samedy
Group: 4 . Bora Oudom . Sok Mengchhun .Heang Chanseyha
. Ron Vireak .Te Solito

1. What is Engineering and Scientific Software?

Scientific software broadly is software used for scientific purposes. Scientific software is mainly developed to better understand or make predictions about real world processes.

Scientific and engineering software satisfies the needs of a scientific or engineering user to perform enterprise-specific tasks. Such software is written for specific applications using principles, techniques, and formulae specific to that field.

2. Characteristic

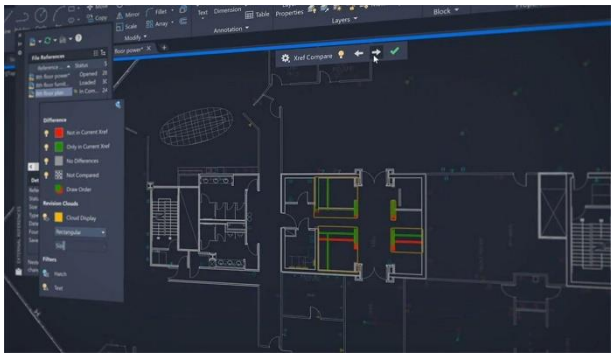
- Scientific applications often are very large computations that strain the resources of whatever computers are available.
- Clever algorithms and data structures may need to be utilized so that the computation can be done with acceptable efficiency, or even so that it can be done at all.
- Data types may include not just structures of text and numbers, but the full range of multimedia, from sound to simultaneous time series, from still images to video.
- Scientific applications typically require deep scientific and domain knowledge, and depend on subtle interplay of different approximations.
- They often implement sophisticated mathematics.
- In many cases, numerical computations need to be carefully arranged not just to avoid inaccurate results, but to avoid instability of processes.
- Scientific computations are often experiments, and must be controlled, recorded, and categorized so that they can be compared to other experimental observations.

3. Example

- Civil Engineering and Architectural Software:

Civil engineering and architectural software is the set of tools used to design, simulate and analyze civil engineering structures such as bridges, roads and buildings.

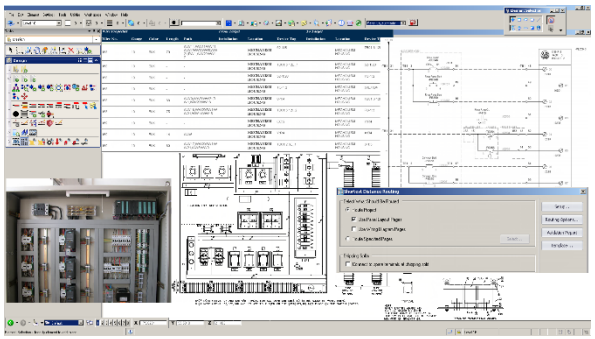
Example: Autocad

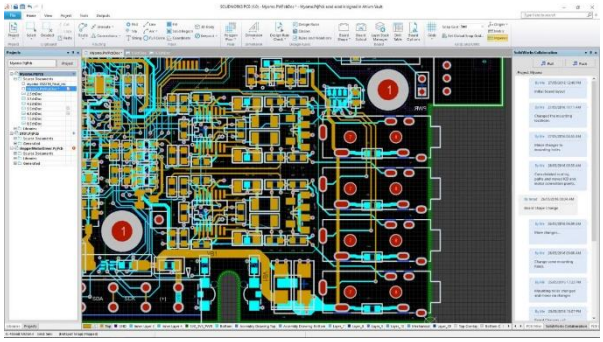


- Electronic Design Automation (EDA) and Electronic Computer-aided Design Software (ECAD)

Electronic design automation (EDA) and electronic computer-aided design software (ECAD) is used to design and develop electronic systems such as printed circuit boards (PCBs) and integrated circuits (ICs).

Ex: Ecad

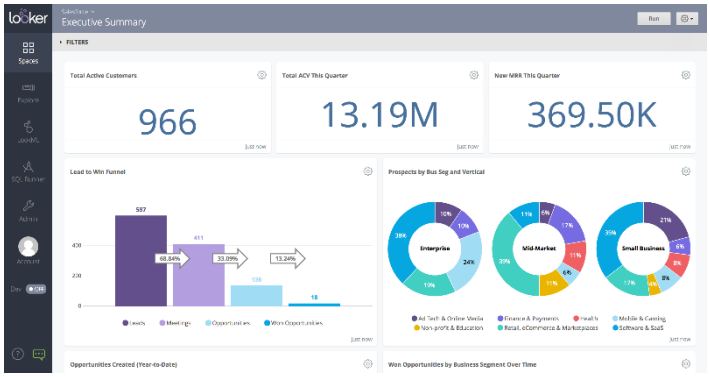


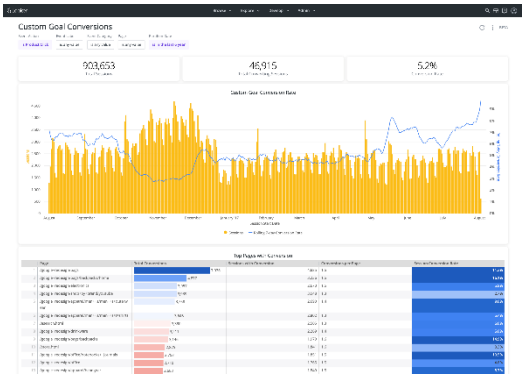


- Graphing and Visualization Software

Graphing and visualization software visually present abstract scientific data. The programs take numerical data and create (render) images for analysis.

Ex: Looker





- Laboratory Information Management Systems (LIMS)

Laboratory information management systems (LIMS) software is used to manage information and data in scientific and commercial laboratories.

Ex: Lablite