

Changing Nature Of Software

There are seven broad categories of computer software having different forms, uses and challenges to software engineers.

1. **System Software:** It is a collection of programs written to service other programs. Some system software are compilers, editors, file management utilities. They process complex but determinate information structure. Other system applications can be operating system components, drivers, networking software. They process largely indeterminate data. In either case the system software area is characterized by heavy interaction with computer hardware, heavy usage by multiple users, concurrent operation that requires scheduling, resource sharing, and sophisticated process management, complex data structure, and multiple external interfaces.
2. **Application software:** These consist of standalone programs that solve a specific business need. Applications in this area process business or technical data in a way that facilitates business operations or management/technical decision making. These are used to control business functions in real time.
3. **Engineering/scientific software:** These software range from astronomy to volcanology, from automotive stress analysis to space shuttle orbital dynamics and from molecular biology to automated manufacturing.
4. **Embedded software:** These software resides within a product or system and is used to implement and control features and functions for the end user and for the system itself. These software can perform limited and esoteric functions or provide significant function and control capability.
5. **Product line software:** These are designed to provide a specific capability for use by many different customers. They focus on a limited and esoteric market place. These software addresses mass consumer markets.
6. **Web-applications:** Web apps or web applications are evolving into sophisticated computing environments that not only provide standalone features, computing functions and content to the end user but also integrated with corporate databases and business applications.

7. Artificial intelligence software: It makes use of non numerical algorithms to solve complex problems that are not amenable to computations or straightaway analysis. Applications within this area include robotics, expert systems pattern recognition, artificial neural networks, theorem proving and game playing.
8. Ubiquitous computing: The rapid growth of wireless networking may soon lead to true distributed computing. The challenge for software engineers will be develop systems and application software that will allow small devices, personal computers and enterprise system to communicate across vast network.
9. Netsourcing: The www is rapidly becoming a computing engine as well as content provider. The challenge for software engineers is to architect simple and sophisticated applications that provide benefit to target end user markets worldwide.
10. Open source: The challenge for software engineers to build source code that is self descriptive but more importantly to develop techniques that will enable both customers and developers to know what changes have been made and how those changes manifest themselves within the software.

In the new era the challenge for software engineers is to build applications that will facilitate mass communication and mass product distribution using the concepts that are only now forming.