

1. Design is a central focus of software engineering
2. Outer environment – requirements, goals and wants / Inner environment – software languages, components, tools – inner environment is ever changing
3. Design objectives have not changed in 40 years – create artifacts to obtain goals
4. Focus on design has been on the structure of software and its attributes- components, connectors, constraints. Less focus has been placed on how software design supports the needs of its users – car example – function of the car, or fit/feel of the car to its driver
5. Design focus on design principles -= modularity, planning for change, domain specific approaches
6. Design is related to the ability to innovate
7. Design notation – still have not solved that issue
8. Design based on experience – GoF patterns
9. HCI Design – design of interfaces that engage the user
10. Software engineering has ignored the aspect as “Design as Art”
11. Agile design principles – involving the user through the iterative development process, TTD – makes the design of functionality of equal importance to the system structure, design is ongoing, continuing throughout development.
12. AOP – design through separation of concerns
13. Component based design – focus on reuse
14. Software architecture – the set of principal design decisions governing a system. Focus is to transform design from a craftsman discipline to an engineering discipline
15. Design the product, design the process
16. Design as a noun implies a product – choices made by the designer
17. Each possible design decision impacts the design outcome
18. Figure 2 – separation of the design from outcome space – Desired outcomes, possible outcomes, and feasible outcomes intersection.
19. As a verb, design is focuses on the process by which a design is achieved.
20. Figure 3 – Goals, Ideas, Knowledge, Representation
21. Design process is the set of information manipulation activities through which a successful design is obtained
22. Improve design materials, languages, knowledge, activities and tools
23. Design must deal with communities of designers – most real projects are too large for one designer – thus communication of design concepts becomes important
24. The output of a design activity impacts others – so they need to be engaged – don’t contract out design. This is the “design community”
25. Design will remain challenging – design approach’s need to take advantage of new materials, tools and mechanisms.
26. Designing is about making choices, considering alternatives, providing rational, made by different stakeholders at different times
27. Decisions about frameworks are an important consideration of design
28. Architecture contributions – styles, early decisions, product lines, will a design hold up over time?
29. New and modernized technology offer opportunities to implement new designs

30. Search to support design, searching on architectural metadata
31. Design must flow smoothly into coding, architecture into design as well
32. Represent all stakeholder interests
33. Active management of design evolution
34. Learning from history, go back and learn from good, bad and failed design
35. Education, should software design be taught by practicing designers
36. Design is undervalued by many
37. Design is evolving as we master current needs, new complexities arise