DOING THE RIGHT THINGS RIGHT
Engineering Manifesto

10 Core Engineering Principles

Engineering

Engineering is the discipline, skill, and profession of acquiring and applying scientific, economic, social, and practical knowledge, in order to design and build structures, machines, devices, systems, materials and processes to solve practical problems.

Principles

1. Get it right – at the first time
Changes afterwards are always expensive.

2. Top-down requirements for innovation
Visionary ideas are developed top-down and without constraints, but realized bottom-up using existing solutions.

3. Bottom-up composition of solutions
Solutions are composed from proven components (possibly from multiple alternative sources), using common technologies, techniques and processes.

4. Established Standards
Established standards for interfaces, components, and processes foster reuse and reduce duplication of efforts.

5. Useful and dependable models
Precise models are used for predictions, prescriptions, and descriptions – before and after realizing a system.

6. Automation through engineering tools
Engineering tools are used for analysis, simulation and transformation of information described by models.

7. Limited testing
By reusing well specified and proven components, testing may be reduced to non-functional properties and acceptance tests.

8. Separation of concerns and specialization by profession
Highly specialized communities develop deep specific know-how in their core competencies and apply this know-how purposefully when designing solutions.

9. Usable, feasible, and acceptable solutions
Most important goals are practical applicability and appropriate safety of an engineering solution.

10. Learning from failures
Causes for failures are actively investigated in order to avoid them in future and foster continuous improvement.

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