Culture

- Culture is a set of shared set of values and principles
- Values and principles guide:
  - Behaviors
  - Activities
  - Priorities
  - Decisions of a group of people
- Shared Culture
  - When coworkers align along common values
  - A shared culture improves effectiveness of workers
- A culture cannot be bought, it has to be developed, with time and investments
Customer Involvement and Software Quality

- Doing the “right things” requires an understanding of what customer expects
- Customers could be external or internal to the company
- Mechanism to involve the customer “Project Champion” *

Customer Involvement and Software Quality

- **Mechanism to involve the customer “Project Champion”**
  - Primary interface to the customer groups (e.g. users)
  - Champion gains insight into development process
  - Champion participates in creating the Software Requirements Specifications (SRS)
    - Responsible for resolving ambiguities and conflicts with users
    - Agrees on quality attributes (e.g. maintainability, reliability)
    - Participates to formal reviews (e.g. inspections)
  - Champion becomes advocate of the development process
  - May help smooth adversarial issues
Quality is Top Priority

- **Productivity is a natural consequence** of high quality
- **Group’s Belief**
  - The time invested in building quality product is repaid over the lifetime through lower maintenance costs
- **Metrics are used to monitor product quality**
  - e.g. corrective maintenance declining to a level of 1%-2%
- **Building the customer mindset**
  - Consider that each step of the development process is the **customer** of the previous step.

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**Software Development Customer/Supplier Process Model**

Quality of an output of any step is a function of quality of inputs of that step
Continual Improvement is Essential

- Every organization has opportunities for improvement
- Culture which foster sharing of ideas and practices has better environment for improvement
- Belief that improvement is evolutionary, not revolutionary
- Annual improvement goals are set
  1. Identified and set collectively as a team
  2. Goals are quantitative and tracked
  3. Metrics are not used against developers, data belongs to team members and not team leader
  4. Success of metrics depends on mutual trust and commitment to quality improvements

Ongoing Education

- Education is every team member’s responsibility
- Formal training in relevant activities is provided at company expense
- Informal Training
  - Culture may foster sharing of ideas, practices, tricks of the trade
  - Competitive environment where members are reluctant to share knowledge is not conductive to improvement and learning
It is Better to Have a Peer Find an Error

- Culture is such that it is better to suffer a slight embarrassment of having a team member find a flaw rather than a customer
- Formal reviews (inspection) are used to detect errors
  - All types of document undergo inspections
  - Organization’s culture is important for the success of inspections
    - It is not easy to put work on table for team members to see and chew up (discuss)
    - Trust and mutual respect is needed

Written Process Helps Improve Quality

- A Process is a set of procedures
- Used as guidelines not laws
  - If there is a good reason for doing something different, it is OK
- “Not Invented Here” syndrome
  - Use existing material, e.g. IEEE standards
- Utilization of process helps build a shared culture as well as team performance
A Quality Culture

- **Quality Culture Resists Crisis**
  - i.e. pressures from management or customer
- **Culture Recognizes Performance**
  - When people perform, rewards are always appreciated
  - Simple recognition, e.g. “Thank you” to express congratulations or thanks
- **Culture that Permits Experimentation**
  - It is OK to back out of a failed experiment

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