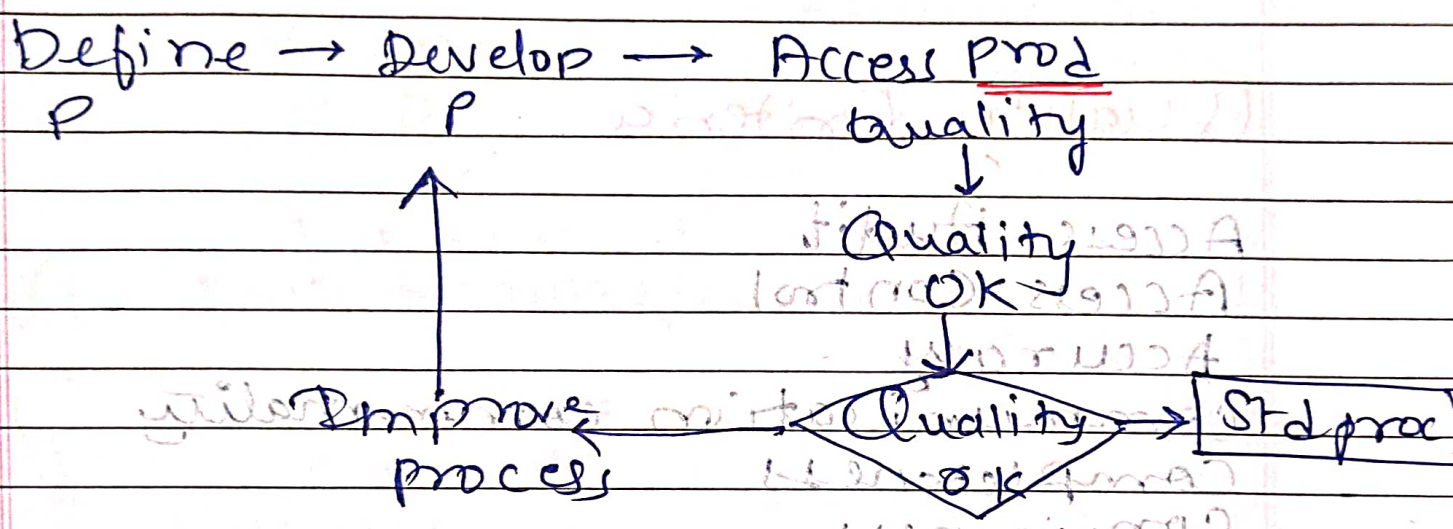


Quality → Degree of excellence.
 Life of product → Cost of product → Fitness for use → Conformance of to req
 Features.

Broadening the concept of Quality
 Product Quality Process Quality



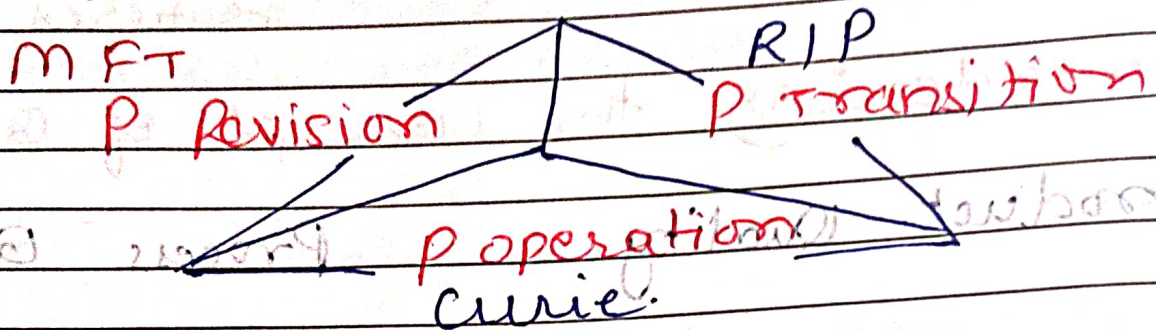
5 Views →

Transcendental View → Based on exp. easily recog.
 User V - highly personalized, expect MVPUT
 Manu V - satisfies req, Dev cost, maint intelligence cost.
 Prod V - Int good & so ext good, IP & EQ.
 Value based V. - 2 concept - excellence & worth.
 Q is measure of exce. & V is measure of worth.
 PE, VW.

CMM & ISO are based on Manu V.
 Shouldn't be any deviation from req.
 right the first time.

McCall Q & F.

Fricturtemp



Quality Criteria

- Access: Audit
- Access Control
- Accuracy
- Communication commonality
- Completeness
- Consistency
- Communicative.
- Consistency.
- Error Tolerate
- Executive eff
- Expandability
- Generality.
- Operability
- Simplicity
- Self - doc
- Training
- Traceability.
- modularity

Quality management

Qm to plan QC QA

defines procedures & stds during dev. & verify if followed.

properly exec & control activities.

Q. Revolution

A P
C D

- ① Setting goals.
- ② Assigning them milestones
- ③ Assessing prog.
- ④ Take action to improve

Q. Cost & Benefits

- ① Prevention cost
- ② Appraisal cost
- ③ Failure cost: ① Int. ② Ext.

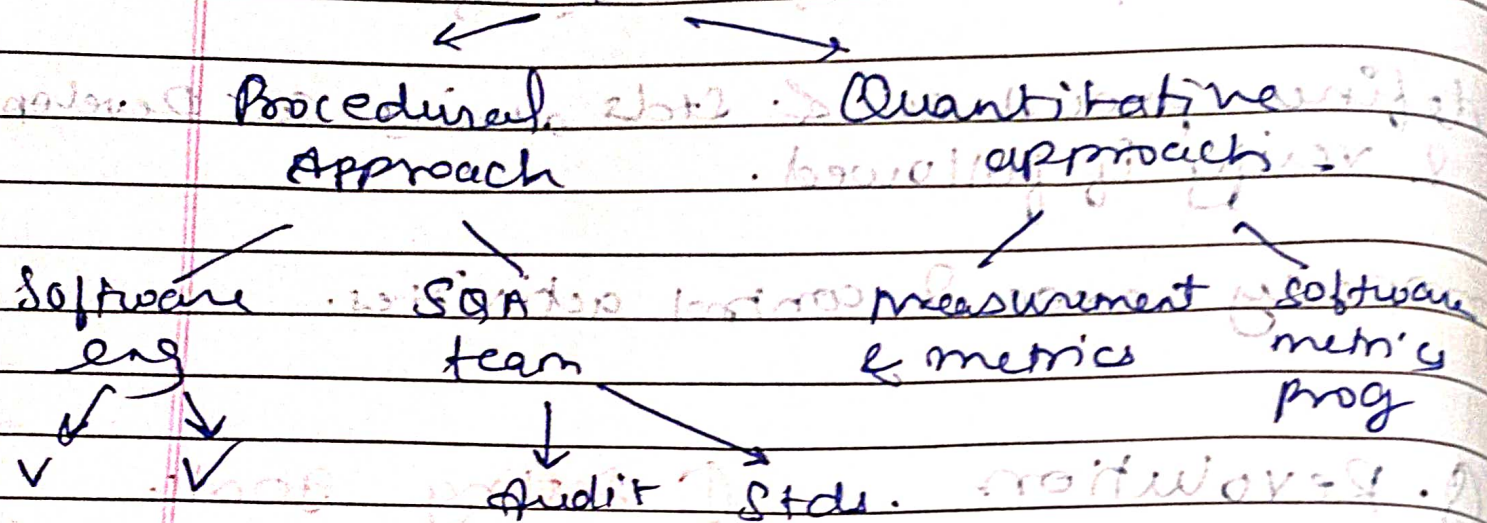
QC & QA.

- min. variation acc to desired specs.
- each step v/f
- Reviews, Testing using manual Tech.
- or V & V

QA

- Process related
- in management zone.
- auditing & reporting

QM : 2 models of QM



Procedural App

- ① SQA activities
- ② SQA relⁿ with other A A
- ③ Config management monitoring
- ④ V & V moni.
- ⑤ Formal test moni
- ⑥ SQA during SDLC

Q Approach to QM.

Setting Q Goal

Est. for defects (P) current proj =

Defects \times effort est
actual eff.

Paul GOODMAN. metro prog

SQ metrics.

Prod Quality metrics.

- 1 MTTF.
- 2 Defect Density = no. of D / size of prod.
- 3 Cust. prob matrix
- 4 Cust. Satisfaction matrix

In process & m.

- ① DD during T.
 - ② D Arrival pattern during T
 - ③ D. Removal eff.
- $$DRE = \frac{DR \text{ in month}}{DA \text{ in month}} \times 100$$

Fix

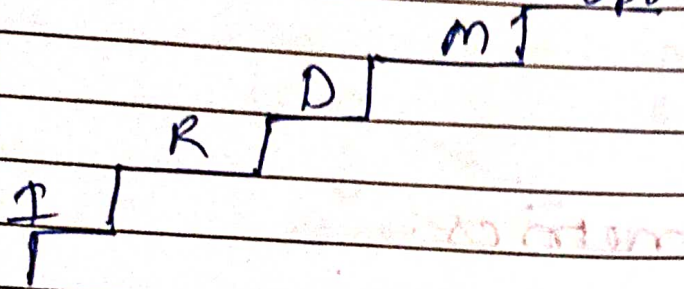
Backlog. M. Index = $\frac{\text{prob closed} \times 100}{\text{Arrived}}$

fix response time & fix responsiveness

% Delinquent fixes = $\frac{\text{fixes}}{\text{total}} \times 100$

Fix Quality = D. fix %.

maturity^{cont.} level → Key Pr areas^{org by} → Common features^{cont.} → Key prac^{Opt.}



G Sigma

D M A I C

Roles & Resp

- ① Master Black
- ② Black
- ③ Green
- ④ Champions

ST&M.

CF

Q. centered

cust. focused

fact based

Team driven

Senior manager lead

cont. p. improvement

P, tech & dev cl
 Human side
 Measurement & Analysis

ISO 9000.

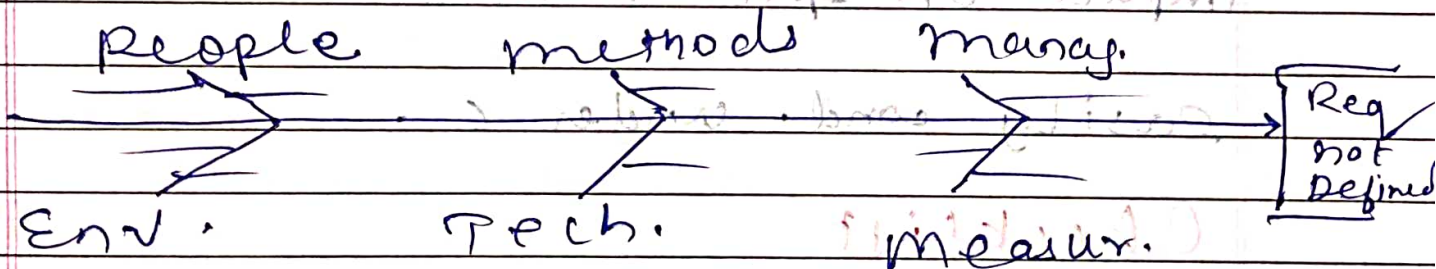
Principles
C L E P I E R.

C - Customer Focus
L - Leadership
E - Engagement of ppl
P - Process approach
I - Improvement
E - Evidence Based Decision making
R - Risk management

5Q tools

- ① Ishikawa
- ② Checklist
- ③ Control Chart
- ④ Flow Chart
- ⑤ Pareto
- ⑥ Histogram

Ishikawa divided management into two parts



Control chart →

Upper QC
2SD
1SD
mean
1SD
Lower QC

Shift focus away from inspection & more towards prevention of probs.

Common causes

Spcl. Causes

Inap. poor measurement of C
proc. design error
poor material

faulty controllers
machine mal fun.
Comp. least
poor batch of raw material.

Purpose.

predict expected prod. outcome

Benefit - ① predict p. out of control & out of spec limits

② Dist. b/n specific, identifiable causes of variations

③ can be used for stat p.c.

Pareto Chart

set of priorities.

fig out params having highest impact on spec. concern.

easily cond. under c.

Checklist

Gathering & org data

Excel graph.

Paper based

Histogram

chart with columns that

illustrate freq & the extent

in context of 2's