CISC/CMPE 327 Software Quality Assurance

Queen's University, 2019-fall

Lecture #4
Software Process Evaluation

Software Process Evaluation

- How can we measure software processes?
  - Today we look at methods for evaluating and improving software processes, regardless of which process is being used
  - There are several methods and standards for software process evaluation
  - Most are aimed at improving existing development processes as they are applied, calling maturing them
  - Idea is that as a company or team gains experience with a process, they continually improve it to make it better in their use

Today's Lecture

- Defect Prevention Process (DPP)
- Quality standards:
  Maturity models and certification standards
  - Capability Maturity Model (CMM)
  - Malcolm Baldrige processes
  - ISO 9000

The Defect Prevention Process

- **DPP - Defect Prevention Process**
  - DPP is not itself a software development process, but rather a process for continually **improving** the development process
 - Modelled on quality assurance techniques used in **Japan** for decades

3 Steps of DPP

- Based on three simple steps:
  - Analyze existing defects or errors to trace their root causes in the process (how they were missed)
  - Suggest preventive actions to eliminate the defect root causes from the process
  - Implement the preventive actions to improve the process

The Defect Prevention Process

- ## Formal DPP Reviews
  - First used at IBM Communications Programming Lab (1985)
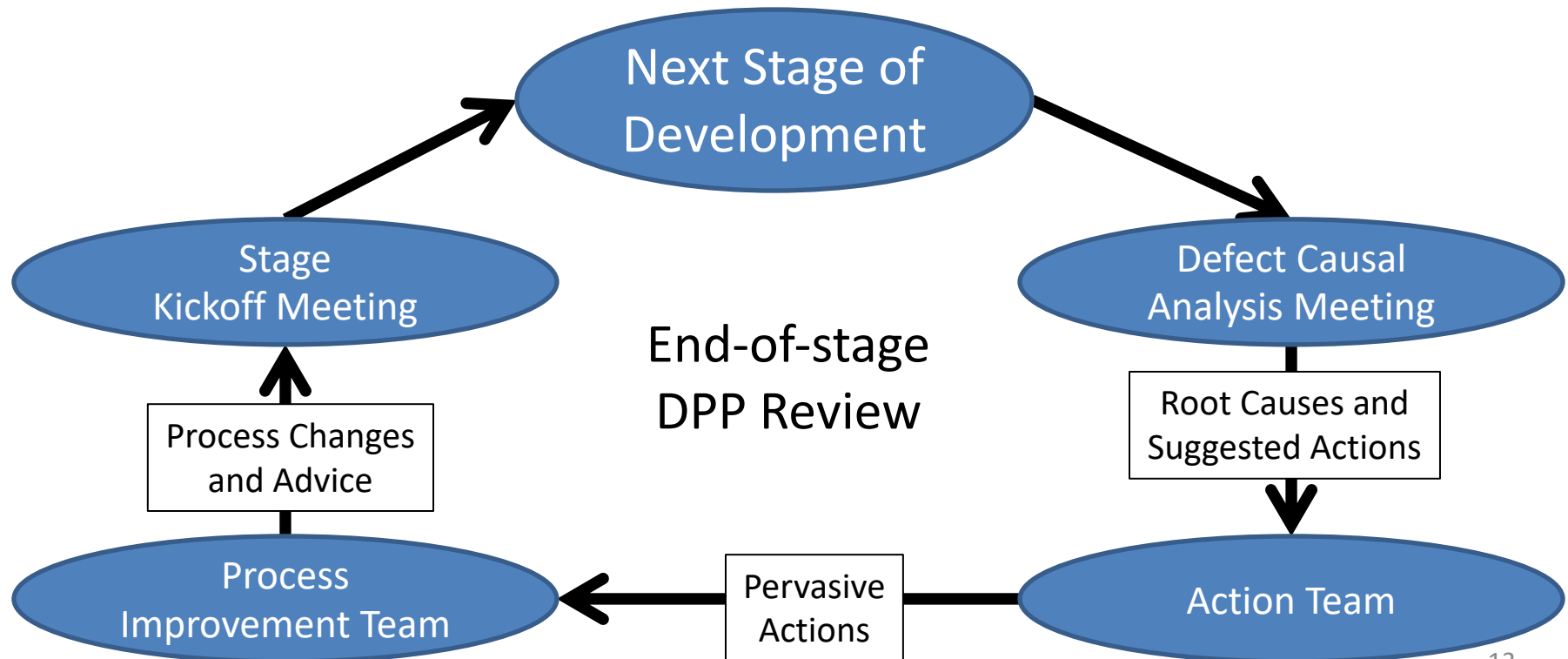
4 Components of DPP

- 1) Defect Causal Analysis Meeting
  - At end of each stage of development, review and analyze defects that occurred in that stage
  - Developers trace root causes of errors; suggest possible actions to prevent similar errors in future
- 2) Action Team
  - Action team has cross-organization members
  - Evaluates suggested actions, initiates actions across the organization, including development team actions
  - Size varies; could be just one person (Jones 1985)

4 Components of DPP

- 3) Process Improvement Team
  - Members of the development team
  - Implements process changes and provides advice for next stage of development
- 4) Stage Kickoff Meeting
  - Development teams meet to review process changes and re-emphasize focus on quality

DPP vs. Postmortem

- A traditional "postmortem analysis",
  at the end of the entire project,
  would also look at defects and their causes

- DPP happens throughout the stages, not just
  at the end...

DPP Applied to Waterfall Model