Last Planner Production Control

Glenn Ballard
Project Production Institute
December 3, 2014

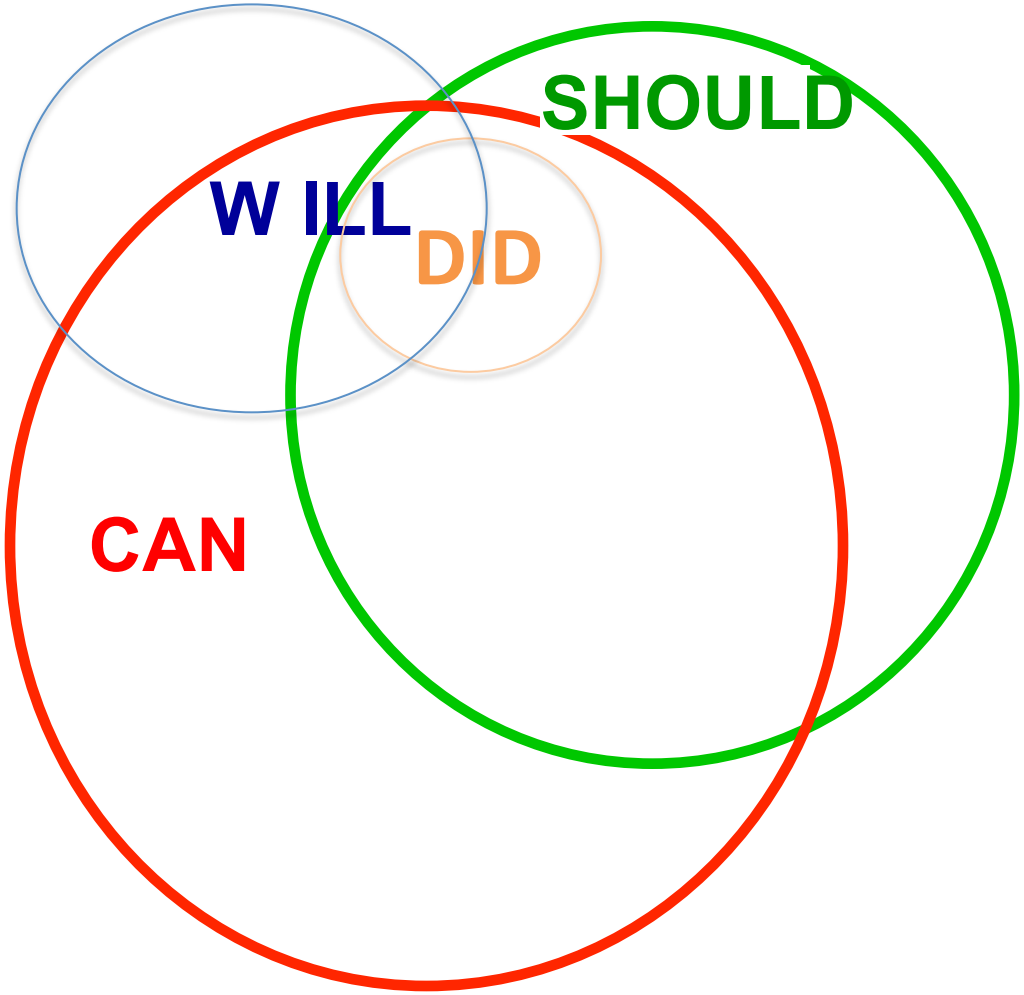
Construction Weekly Work Plan

1 WEEK PLAN

PROJECT: Pilot **FOREMAN: PHILLIP**

ACTIVITY **DATE: 9/20/96**

	Est	Act	Mon	Tu	Wed	Thurs	Fri	Sat	Sun	PPC	REASON FOR VARIANCES
Gas/F.O. hangers O/H "K" (48 hangers)			xxxx Sylvano, Modesto, Terry	xxxx						No	Owner stopped work (changing elevations)
Gas/F.O. risers to O/H "K" (3 risers)					xxxx Sylvano, Mdesto, Terry	xxxx	xxxx	xxxx		No	Same as above-worked on backlog & boiler blowdown
36" cond water "K" 42' 2-45 deg 1-90 deg			xxxx Charlie, Rick, Ben	xxxx	xxxx					Yes	
Chiller risers (2 chillers wk.)						xxxx Charlie, Rick, Ben	xxxx	xxxx		No	Matl from shop rcvd late Thurs. Grooved couplings shipped late.
Hang H/W O/H "J" (240'-14")			xxxx Mark M., Mike	xxxx	xxxx	xxxx	xxxx	xxxx		Yes	
Cooling Tower 10" tie-ins (steel) (2 towers per day)			xxxx Steve, Chris, Mark W.	xxxx	xxxx	xxxx	xxxx	xxxx		Yes	
Weld out CHW pump headers "J" mezz. (18)			xxxx Luke	xxxx	xxxx	xxxx	xxxx	xxxx		Yes	
Weld out cooling towers (12 towers)			xxxx Jeff	xxxx	xxxx	xxxx	xxxx	xxxx		No	Eye injury. Lost 2 days welding time
F.R.P. tie-in to E.T. (9 towers) 50%			xxxx Firt, Packy, Tom	xxxx	xxxx	xxxx	xxxx	xxxx		Yes	
WORKABLE BACKLOG Boiler blowdown-gas vents -rupture disks											


SHOULD
W ILL
DID
CAN

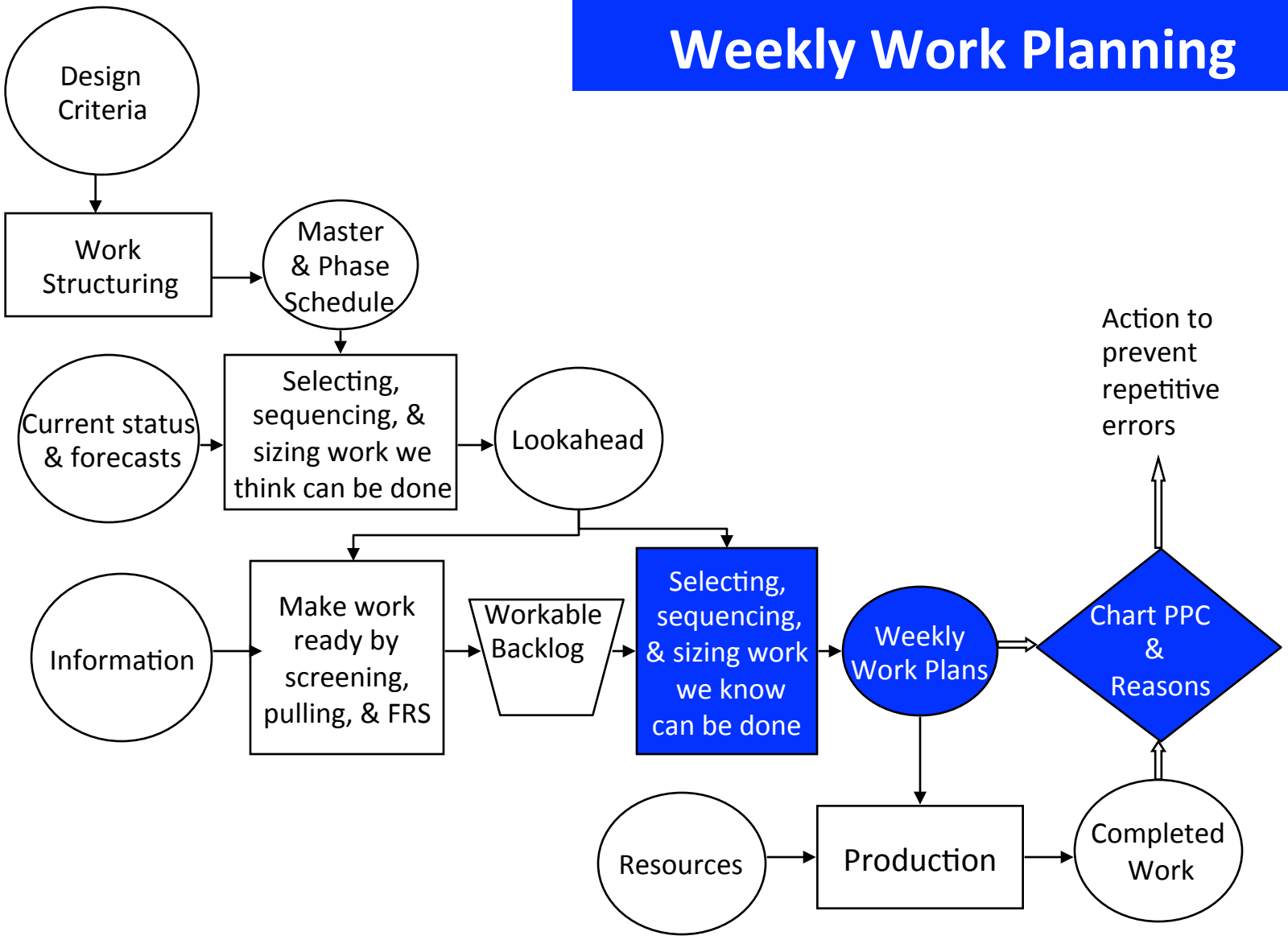
Project Control vs Production Control

- The job of project control is to determine if the project is on course to achieving its objectives. Reactive.
- The job of production control is to do what is needed in order to accomplish project objectives. Proactive.
- Both are necessary.
  - Doing project control without production control is like trying to drive while looking in the rear view mirror.
  - Project control feedback is needed in order to adjust production to targets.
- Measuring and managing work flow reliability is essential for production control.

Issue #1: How to increase the match between WILL and DID?

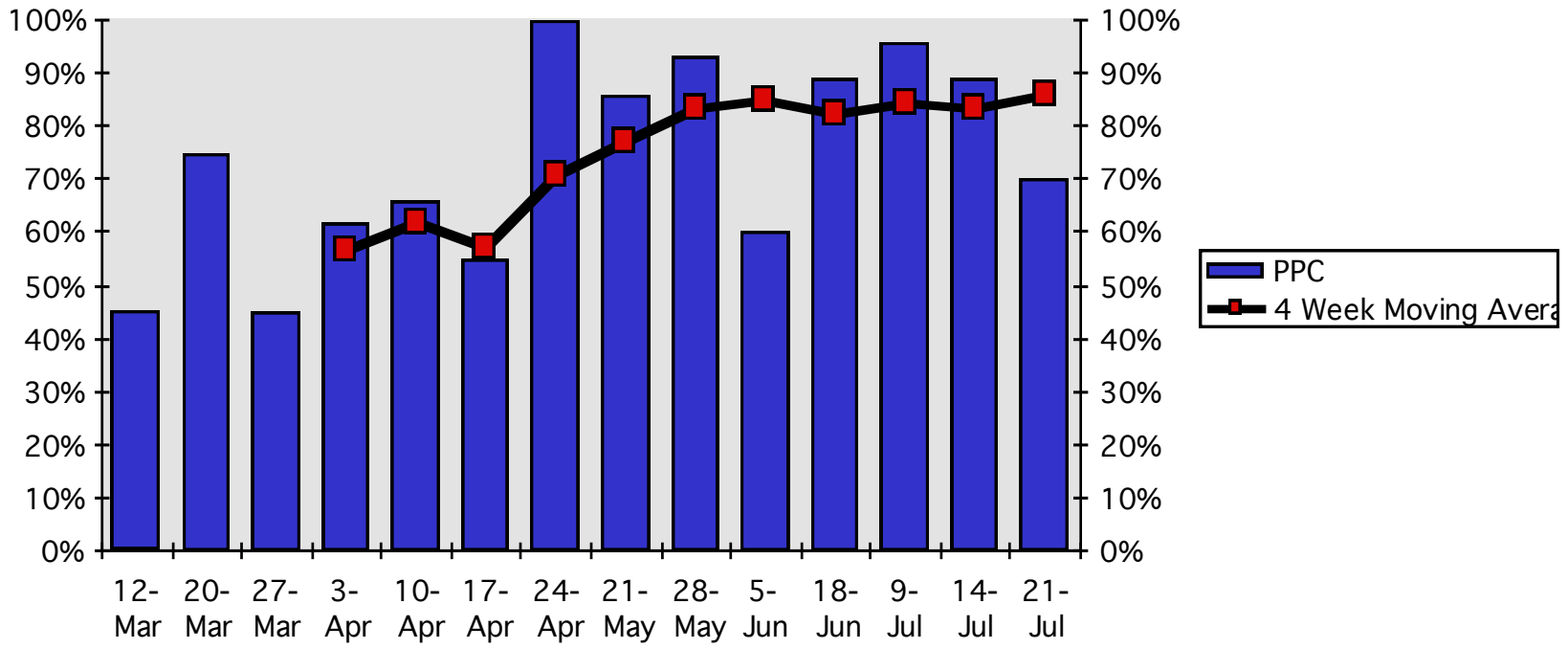
- Shielding: Only include in daily/ weekly work plans tasks that are sound, sequenced, sized, and well defined.
- Reliable promising

LAST PLANNER SYSTEM: Weekly Work Planning

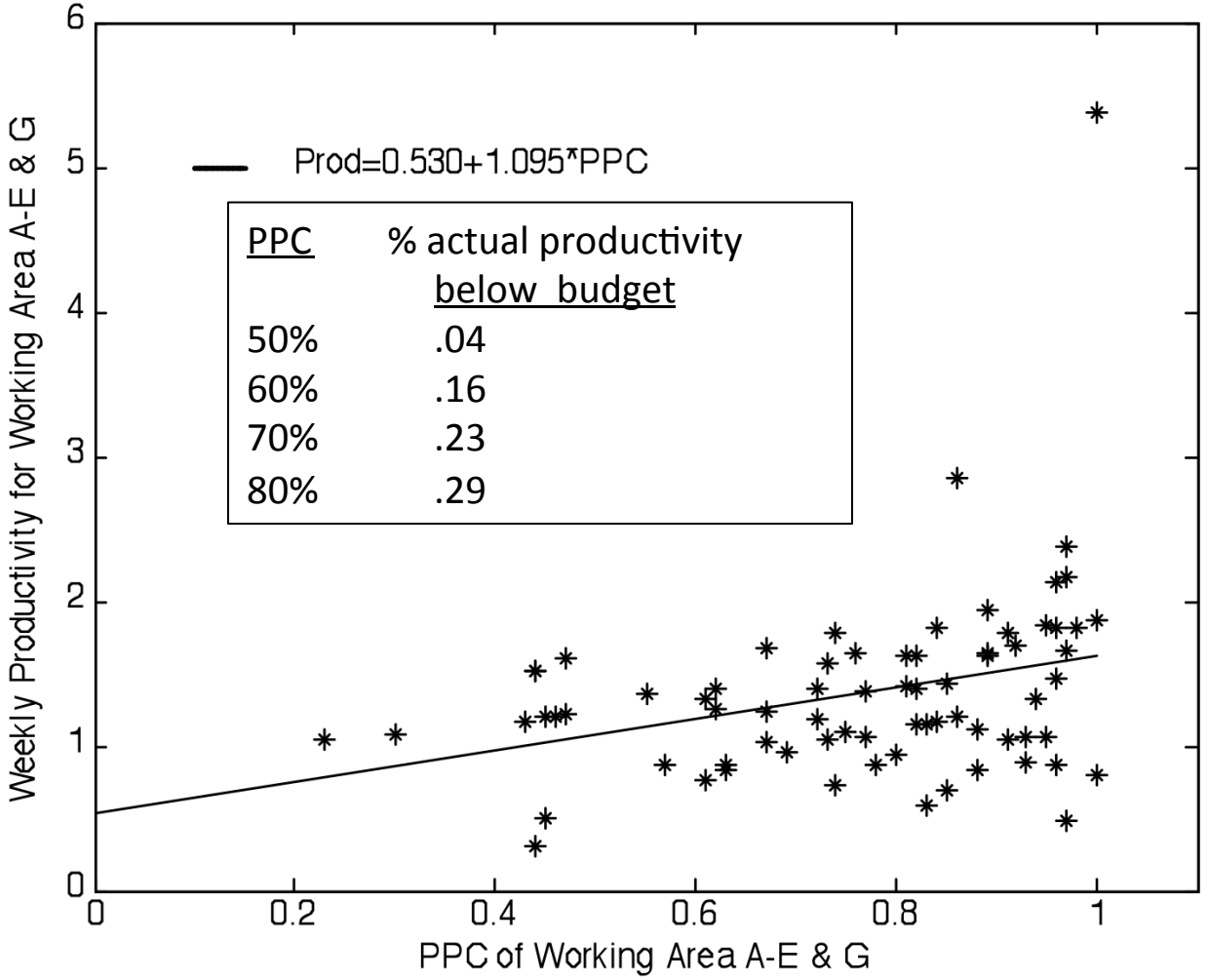


Percent Plan Complete (PPC) Chart

Rasacaven: Electrical Power Distribution



Impact of PPC on Productivity



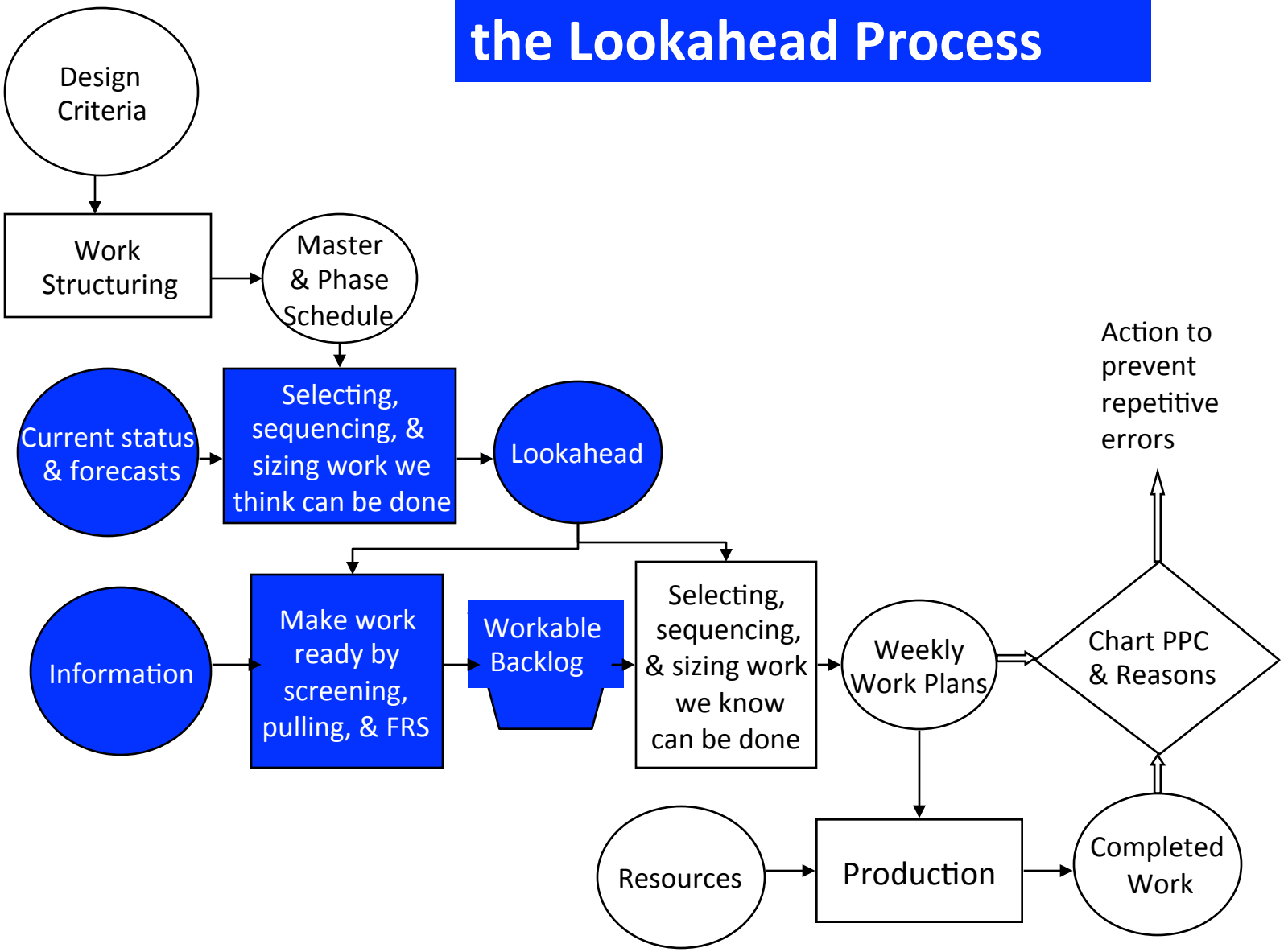
Issue #2: How to make ready what SHOULD be done so it CAN be done?

- Analyse & Remove Constraints
- Breakdown tasks into operations
- Design new operations collaboratively

Typical Constraints on Construction Tasks

- Drawings
- Submittals
- Requests for Information
- Materials
- Labor
- Construction Equipment
- Tools
- Work Space
- Permits
- Safety plan

LAST PLANNER SYSTEM: the Lookahead Process



Issue #3: How to set goals and sequence tasks? How to decide what SHOULD be done when?

Master Scheduling

Master schedules should be at milestone level because *Forecast error increases with the length of the forecast period and the level of detail.*

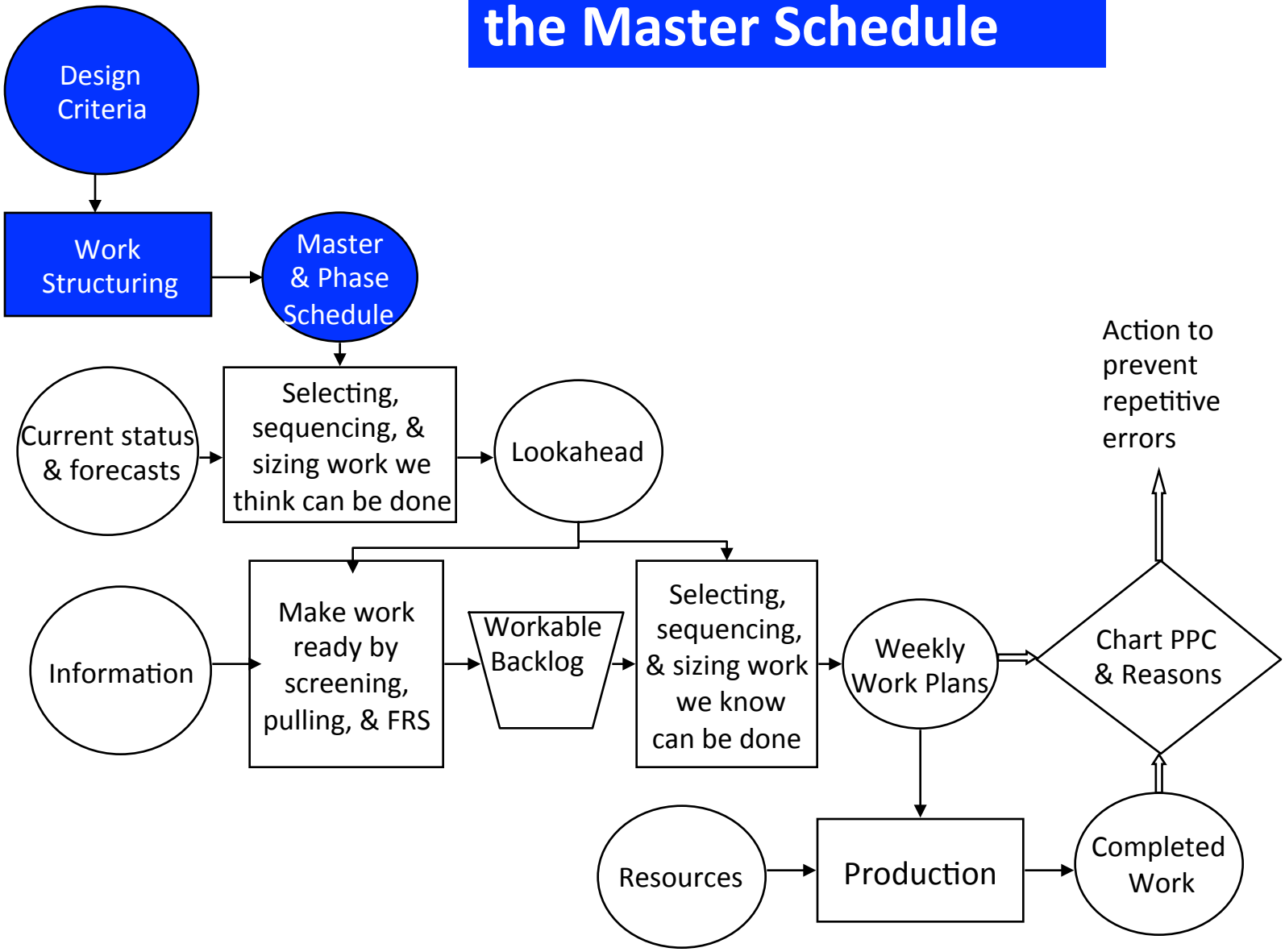
Countermeasures for poor quality of work plans and schedules

1. Master schedules were kept at milestone level of detail
2. Phase schedules were developed by those with direct responsibility for doing the work being scheduled, filling in the gaps between milestones in the master schedule, phase by phase, and
3. Scheduling was done at more detailed levels nearer in time to scheduled execution—the rolling wave approach: project-phase-process-operation-step.

Pull Planning

Courtesy of Alan Mossman

LAST PLANNER SYSTEM: the Master Schedule



Last Planner Functions & Methods

WHAT	HOW
A. Detailing the phases between master schedule milestones	A. Pull planning
B. Making scheduled tasks ready in lookahead planning	B. Constraints analysis B. Task breakdown B. Operations design
C. Selecting tasks for daily and weekly work plans	C. Commit only to tasks that are well defined, sound, sequenced and properly sized

Last Planner Functions & Methods

WHAT	HOW
D. Making handoffs reliable	D. Reliable Promising
E. Learning from broken promises	E. 5 Whys E. Prevent-Detect-Correct-Analyze E. Plan-Do-Check-Act
F. Measuring planning system performance	F. Percent Plan Complete F. Tasks Made Ready F. Tasks Anticipated F. Repetitive Errors Avoided

Different Behavioral Rules

Last Planner

- Commit only to tasks that are defined, sound, sequenced and sized
- Raise your hand the moment you lose confidence that you can remove a constraint in time
- Plan collaboratively with those who are to do the work being planned
- When promises are not kept, analyze the reasons to find countermeasures that prevent reoccurrence

Common Practice

- Work around problems
- Raise your hand when you know you cannot remove a constraint in time
- Planners produce plans and workers execute those plans
- When an employee does not do their job, replace them

Did I achieve my objective?

- "…to clearly differentiate the Last Planner system of production planning and control from the approach and methods of conventional project management."

I look forward to hearing your comments and questions.