



Repair and Maintenance

Brown Bag Lunch Series

July 24, 1995



Redesign Team

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- Dennis Baron, Project Manager, Information Systems
- John Cashins, Metalworker
- Tom Connolly, Electrician
- Joe Gifun, Manager, Building Maintenance
- Marc Jones, Administrative Officer, Chemistry
- Dave Millay, Senior Manager, Mechanical Services
- Jack Narcotta, Supervisor, Pipe Shop
- Chris Nolan, Supervisor, Housing Maintenance
- Chris Salter, Supervisor, Electrical Shop
- Alan Viens, Instrument Systems Worker
- Len Glick, CSC Index



Current System

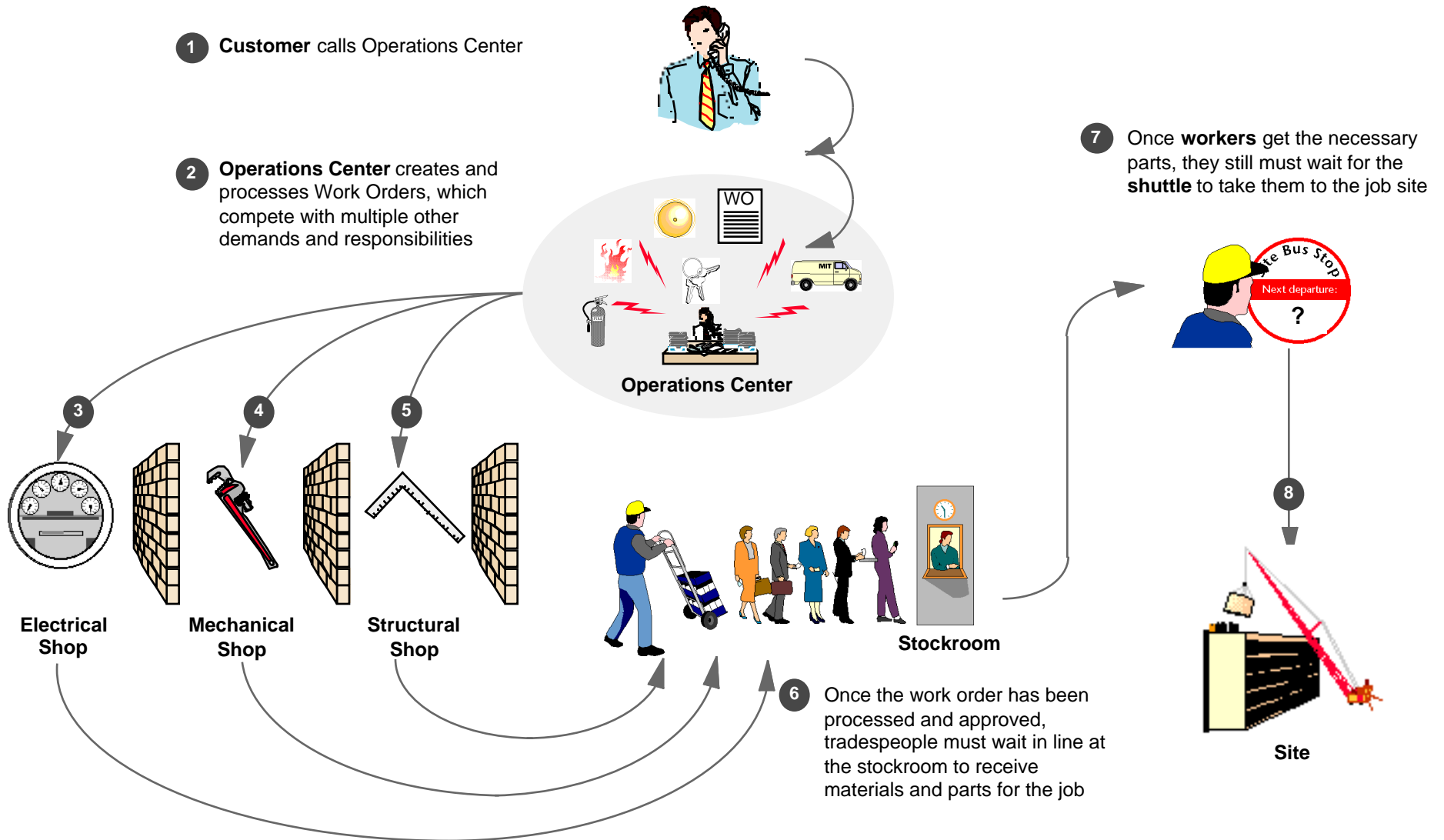


What We Did to Understand the Current System

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- Mapped the current work processes
- Interviewed customers, employees, supervisors, and managers
- Analyzed samples of work orders
- Reviewed existing reports (customer survey, strategic plan, operations center study)
- Analyzed organizational documents and data (organizational charts, attendance records, etc.)
- Interviewed members of closely linked departments (grounds, operations center, design and construction, etc.)
- Consulted with resource group (process mapping, interviews, culture, etc.)





Problems with the Current Work Processes

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- Much time is lost **waiting** to do work
 - Waiting for parts (stockroom is a major bottleneck in the morning)
 - Waiting for transportation to and from job sites
- Much time is spent on non-trade work (**non-wrench-time**)
 - Walking to and from the job site
 - Gaining access to rooms (key, alarms, etc.)
 - Gaining access to repair (moving furniture)
- There is significant **duplication** of work
 - 20% of work orders are duplicates of the same requests, which at times results in two responses to the same job
 - Typically, two trips are needed (MOD and/or assessing problem) before repair work begins
- There are many **handoffs and approvals**
 - Supervisors need to approve everything (work assignments, stock, tools, non-standard breaks)
 - Little can be done without a work order
 - There is excessive paperwork
- The Operations Center is **overloaded** and its personnel are overstressed
- Work that requires coordination (multi-trade, shutdowns, etc.) is **inefficient** and often breaks down
- Billing is done by the trade and by the month; the total cost of the work is **hard to access** and identify by both customer and plant personnel



The Redesign



Major Features of the Redesign

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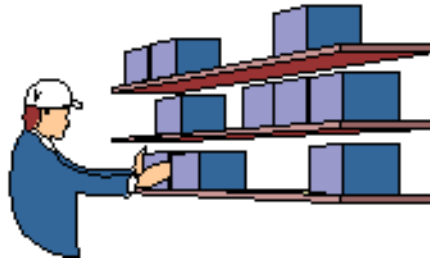
- Hybrid system:
 - Local zone teams responsible for groups of buildings
 - Central group that performs large repairs, maintains central systems, provides specialized support, and undertakes some new construction and renovation work
- Empowered multi-trade teams familiar with, and accountable for, building maintenance
- Create a new building maintenance mechanic position to perform a broad scope of non-trade-specific repair tasks
- Customer communicates directly with local zone
- Less time getting people and material to jobs
- Improved stockroom service
- Less paperwork
- Breaking down barriers between trade shops
- Greater emphasis on Preventive Maintenance
- Free up operations center to focus on environmental controls and emergency response

Future Work Process

How a Local Zone Will Work



1 Each morning, Zone Mechanics coordinate work requests (from customers and Mechanics) and PMs for the day



2 Mechanics pick up materials from zone stock area and proceed to work site



3a Mechanic goes out to a job, does what is requested, inspects space, repairs another problem, notifies customer, and then moves on to the next job



3b Mechanic goes out to perform a task, notices another problem in the area/room, but does not have time/parts. He/she reports problem back to team, and the team takes action. The customer is notified of the work completed and the work that needs to be done



4 End-of-day team meeting to discuss the day's activities, prioritize work requests, schedule PMs, order materials from central stock room, and review building costs and charges



5 Central stock room materials delivered to zone before 6:00 a.m. the next day

Future Work Process

How the Central Zone Would Work

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1 **Customer or local zone** contacts the central zone

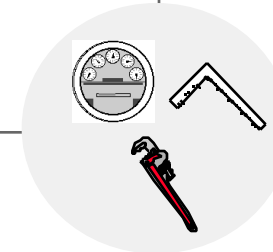
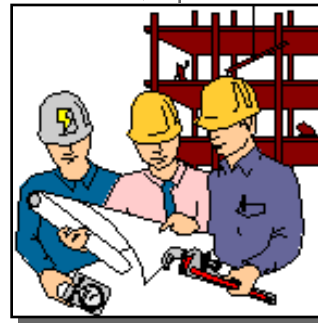


2 **A Team of Trade and Stockroom Supervisors** evaluate, plan, schedule and staff the work



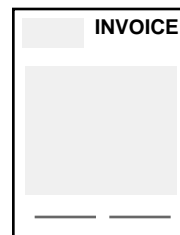
Local Zone

3 **Project Team** of tradespeople who coordinate among themselves to complete the entire job and notify the customer that the work was completed



Specialists Labor Pool contributes labor and skills to project teams as well as assisting local zones

4 **Customer** gets summary bill for the entire job





Expected Outcomes (Benefits) of the Redesign

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Quality

- Better maintained spaces and systems (fewer breakdowns)
- Reduced backlog of deferred maintenance

Service

- Hassle-free service
- Customers are familiar with tradespeople

Time

- Fast response; fast repair
- Many repairs will get done before customer notices (or reports) them

Cost

- Lower cost per repair
- Positions plant to do in-house renovations
- Some previously contracted work will be done by Repair and Maintenance
- More time spent on work (less non-productive time)



Implementation and Pilots



Implementation and Pilot Teams

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- Implementaion Team <**rep-maint@MIT.EDU**>
 - Dennis Baron
 - Joe Gifun
- Local Zone Pilot Team
 - Edward Dimond
 - Edmond Gosselin
 - David Hingston
 - Jose Magalhaes
 - Paul Motroni
 - Brian O'Keefe
 - Eupremio Piccinonno
 - Robert Zarella
- Central Zone Planning Team
- Physical Plant Focus Groups



Pilot

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Why

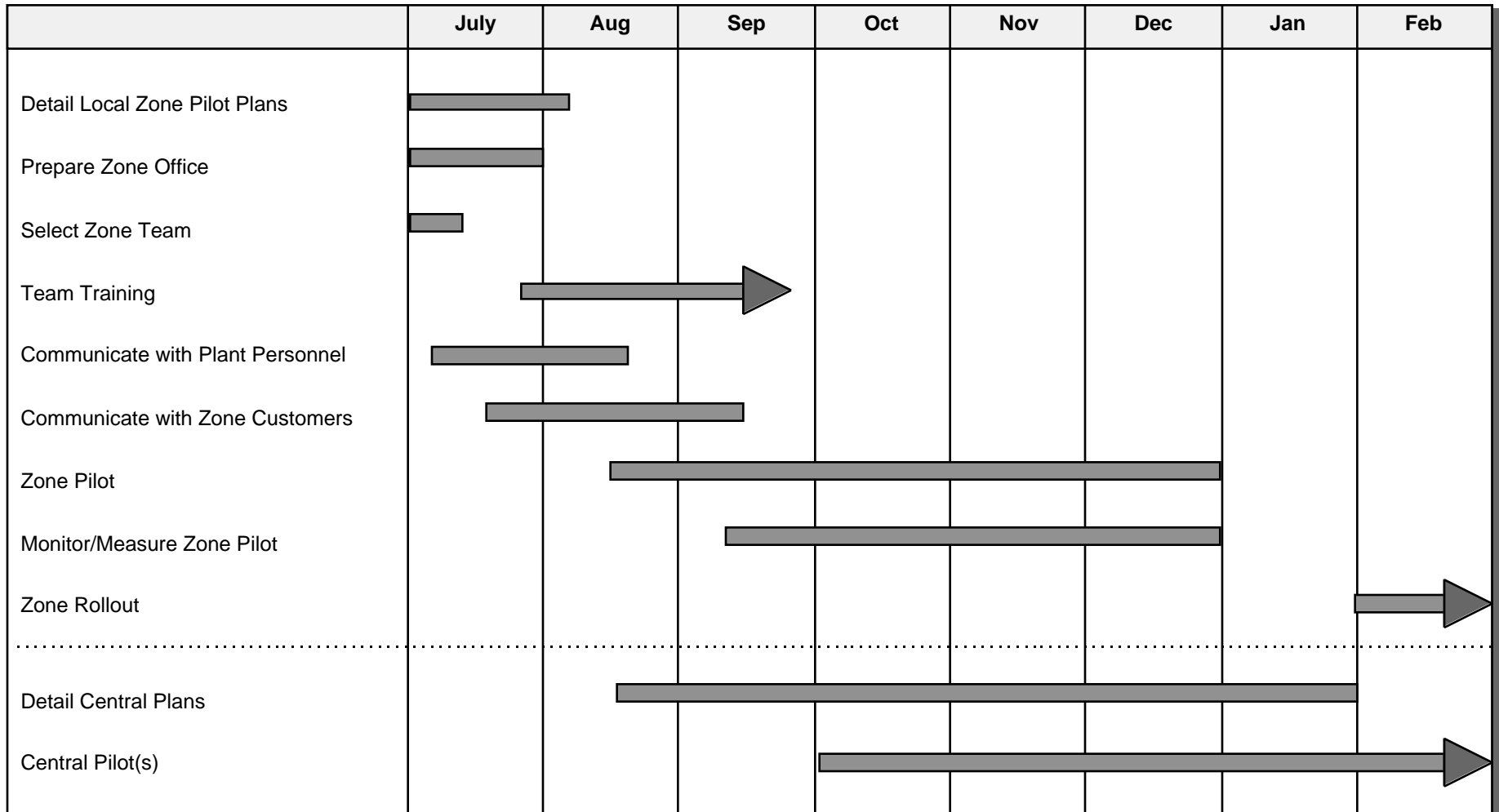
- Test and refine new procedures
 - Within Central (e.g., team development of Supervisors, multi-trade projects, parts access, and separating FCS and Operations Center)
 - Within Local zone (e.g., inspections, preventive maintenance, team huddles, local stockroom, concept of general mechanic and amount of repair work and paperwork)
 - Between Central and Local (e.g., number of types of central support, stock delivery, need for mechanic on demand (MOD), and overall coordination)
- Assess the results, such as:
 - Were customers better served?
 - Were costs reduced?
 - Were spaces better maintained?
 - Was more work being done?
 - Did response time improve?
 - Was there more ownership, coaching, and empowerment?

When

- Local Zone Pilot begins August 14, 1995
- Future Central Zone pilots - to be determined



Implementation Time Line





Zone Pilot

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- Pilot Location - Most East Campus Buildings
- Pilot Team Room - E20
 - Bench Area
 - Locker Room
 - Stockroom
 - Computer
- Pilot Team
 - Three Maintenance Mechanics
 - Two H&V Mechanics
 - One Electrician
 - One Plumber
 - Pilot Coordinator (Coach)