MMIS
(Manufacturing Management Information System)

Department of Industrial Engineering
Sharif University of Technology

Session# 5

Course Description

- **Instructor**
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  - Website: http://sharif.edu/~fvalilai

- **Class time**
  - Saturday 15:30~18:00

- **Course evaluation**
  - Mid-term (30%)
  - Final exam (40%)
  - Quiz (10%)
  - Exercise (20%)
Course Description (Continued ...)

- Mid-term session:
  - N/A
- Final session:
  - N/A
- Reference:
  - Steve Bell; “Lean Enterprise Systems: Using IT for Continuous Improvement”, 2005, Wiley

Course Description (Continued ...)

- Reference:
  - William S. Davis, David C. Yen, “The information system consultant’s handbook: system analysis and design”, 2010, Taylor and Francis
  - Gabriele Piccoli; “Information systems for managers: texts & cases ”, 2007, John Wiley & Sons Inc
**Shop-floor Data Collection Systems**

- *In a manufacturing environment, a large amount of data is generated on the shop floor itself,*

- *Shop-floor data collection represents the way this data is to be collected in order to improve shop-floor performance.*

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**Shop-floor Data Collection Systems**

- **SFDC:**
  - *Collecting data from the factory floor*
  
  - *Collecting and presenting information on machine status, staff attendance, quality losses, scrap, ...*

  - *Networked information system available to management and operators and providing real-time and historical process data*
Shop-floor Data Collection Systems

- **SFDC:**
  - Finding out exactly what is happening on the factory floor as a starting point for improving manufacturing performance.
  - Process yield and scrap;
  - Machine performance and usage parameters;
  - Operations time;
  - Order status;
  - Inventory and product traceability;
  - Quality data;
  - Personnel.

**Rationale for SFDC:**
- focus on the manufacturing process, in order to improve utilization, throughput and scheduling
- focus may be on the product in order to provide traceability and ensure high quality.

<table>
<thead>
<tr>
<th>Users</th>
<th>Typical Needs</th>
<th>Timeliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator</td>
<td>Machine data</td>
<td>Seconds</td>
</tr>
<tr>
<td>Team leader</td>
<td>Work tracing</td>
<td>Minutes</td>
</tr>
<tr>
<td>Line manager</td>
<td>Throughput, shift reports</td>
<td>Hours</td>
</tr>
<tr>
<td>Engineering</td>
<td>Yield, machine performance</td>
<td>Days</td>
</tr>
<tr>
<td>Production planning</td>
<td>Inventory, work tracing</td>
<td>Days/weeks</td>
</tr>
<tr>
<td>Finance</td>
<td>Usage</td>
<td>Weeks/months</td>
</tr>
<tr>
<td>Senior management</td>
<td>Management data</td>
<td>Months</td>
</tr>
</tbody>
</table>
Shop-floor Data Collection Systems

- **Methods of SFDC:**
  - The simplest, and cheapest, is paper recording and manual storage.
  - The second method is paper recording and input into an MRP system.
    - Although this is cheap to perform, it is labor intensive, resulting in a time lag, low accuracy and is also difficult to analyze.
  - The next option is to use shop-floor terminals linked to an MRP system.
    - Although this can only be used for manpower and material tracking and also has a time lag, it has better accuracy than the previous method.
  - Finally, dedicated shop-floor data collection systems can be implemented that are very flexible, very accurate, and allow the possibility of providing information in real time.

- **Computerized SFDC:**
  - A computerized data collector is defined as an independent entity that captures, stores, processes and forwards data to a host computer.
Shop-floor Data Collection Systems

* Computerized SFDC:
  * A computerized data collector is defined as an independent entity that captures, stores, processes and forwards data to a host computer

* There are four basic features of a computerized data system:
  * Means of inputting data;
  * Memory capacity for storing data;
  * Independent processing capability;
  * Data communication to a host system

<table>
<thead>
<tr>
<th>Function</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection</td>
<td>Keyboard input, bar code, cards, PLC links, device controllers links</td>
</tr>
<tr>
<td>Storage</td>
<td>RAM, bubble memory at source, floppy/hard disk, centralized storage</td>
</tr>
<tr>
<td>Processing</td>
<td>At terminals level, PCs, client/server, mainframes</td>
</tr>
<tr>
<td>Distribution</td>
<td>RS232, local area networks, radio link</td>
</tr>
</tbody>
</table>
Shop-floor Data Collection Systems

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