Low Cost Recording Schemes
Using High Tec Systems

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1. Introduction

2. Where are the costs?

Typical recording organisation

<table>
<thead>
<tr>
<th>Cost</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Recorders</td>
<td>35</td>
</tr>
<tr>
<td>Office and Laboratory Staff</td>
<td>35</td>
</tr>
<tr>
<td>Information proceeding</td>
<td>12</td>
</tr>
<tr>
<td>Plant and equipment</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Recorders
- Maximise animals recorded per recorder day.
- Validate data at the point of data collection.
- Provide reports at point of data capture.

Staff
- Maximise samples tested per staff day.
- Maximise records updated per staff day.
- Maximise reports produced per staff day.

Information processing
- PC based client server systems.
- Remote data entry, file transfers.
- PC based processing and report generation.
- Multi lingual systems and reports.

Plant and equipment
- >10,000 milk samples /machine/day

3. Can technology reduce costs?
4. What can be achieved?

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<th>% var</th>
</tr>
</thead>
<tbody>
<tr>
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<td>35</td>
<td>100</td>
</tr>
<tr>
<td>Office/laboratory</td>
<td>35</td>
<td>75</td>
</tr>
<tr>
<td>Information processing</td>
<td>12</td>
<td>75</td>
</tr>
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Impact of technology on cost

5. Can it be done?

- The multi function recorder.
- Farmer and co-operative records.
- PC based data entry and file transfer.

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- Laboratory.
- Multi shift staffing of expensive facilities.
- Electronic data transfer to database
- Office.
- Exception based processing.
- Desk top report printing.

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- Client server - distributed processing power.
- Relational databases - data held once only.
- Lean system - simple function.

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- Re-usable sample boxes and pots
- Low cost PC’s for basic data entry/reports
- Centralised database
- Distributed processing and printing
- Data files and software for data users
6. NMR’s own experiences?

<table>
<thead>
<tr>
<th>Started</th>
<th>Moved to</th>
<th>Now on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm register</td>
<td>Mainframe</td>
<td>Micro</td>
</tr>
<tr>
<td>11 offices</td>
<td>7 offices</td>
<td>2 offices</td>
</tr>
<tr>
<td>11 labs</td>
<td>7 labs</td>
<td>2 labs</td>
</tr>
<tr>
<td>750 staff</td>
<td>450 staff</td>
<td>250 staff</td>
</tr>
<tr>
<td>60,000 cows</td>
<td>1 m cows</td>
<td>2 m animals</td>
</tr>
<tr>
<td>35 days</td>
<td>15 days</td>
<td>1-5 days</td>
</tr>
</tbody>
</table>

In the field
- Automatic milking machines
- Lap tops and portable phones

In the laboratory
- 7 seconds per sample analysed
- Fat, protein, lactose, Urea, Somatic cells

In the data centre
- Pentium II and >20 gigabytes of data on line

In the processing office
- Multilingual user PC interfaces
- Universal application functions
- Language independent databases
- Multilingual dictionary/report generators
- PC software for analysis and reporting
- Internet and Intranet based services

The Impact of PC Power
- Significantly reduced development costs
- Significantly reduced operations costs
- Wide area networks offer low cost structure
- Low entry cost for starting new operations
- Standardisation through shared technology
- Flexibility and scaleability of core systems
- International and International recording

Technology based rapid change
Technology driven standards creation
Information explosion
Breed improvement and development
Improved quantity/quality of production
Improved dairy income

7. The power of the new technology!

8. The future
9. The challenges

To avoid re-inventing the wheel:
- To rent or buy what does not need to be built.
- To learn from the experiences of others.

To use the technology to meet the needs:
- Languages and symbolic presentation.
- Using networks to overcome distances.

To help the farmers to achieve the benefits:
- R&D, Communications and Extension work.

10. What was the question?

The question was:
How to provide the greatest benefit.
To the greatest number of people.
At the least cost to people and Government.
In the shortest possible timescale.
- By improving the efficient of production.
- By increasing the amount of milk produced.
- By improving the quality of the product.

11. The conclusion

The tools are available.
The technology is available.
The skills are available.
The standards are available.
The Guidelines need more development.
ICAR provides a focus for development.
The difficult bit is actually doing it!