A BOARDROOM REPORT
ACHIEVING EXCELLENCE
IN ASSET MANAGEMENT

Will you be ready for the challenges of 2030?
“MCP provided the tools and techniques to enable our engineering teams to deliver cost savings and efficiencies without increasing staff numbers – this was paralleled by a continuing growth in the size of the asset base. MCP kept pace with this and supported a marked improvement in quality and performance. MCP’s ability to expose and challenge assumptions has built a strong partnership and created a long-term relationship that is sustainable, innovative and delivers real value.”

Chris Garton, Senior Vice President
Dubai Airports Limited
Manufacturing in 2030 will look very different from today and will be virtually unrecognisable from that of 30 years ago, when MCP was founded.

Successful firms will need to be capable of rapidly adapting their physical and intellectual infrastructures in order to exploit changes in technology as manufacturing becomes faster and more responsive to changing global markets and industry developments.

Firms will need to harness the concepts of the ‘Internet of Things’ (IoT) and the ‘single source of the truth’ to constantly adapt in all aspects of manufacturing from research and development to innovation, production processes, supplier and customer interdependencies and lifetime product maintenance and repair. Products and processes will be sustainable, with built-in reuse and re-manufacturing and recycling of products as these reach the end of their useful lives.

These developments will further emphasise the key role of physical production in unlocking innovative new revenue streams, particularly as firms embrace technology and manufacturers make use of the increasing trend of ‘Big Data’ to enhance their competitiveness.

*The ‘Internet of Things’ is shaping the way we do business and is changing the landscape of manufacturing. However, the added value and real transformation occurring today is to move towards a higher level of data integrity.

Companies that embrace the ‘single source of truth’ for all data and fuse this with benchmarking products and improvement processes gain a 360° view that drives their business improvements.
EXECUTIVE SUMMARY

Peter Gagg
CEO
MCP Consulting Group

Since 1987, MCP Consulting Group Ltd. has been conducting assessments of maintenance systems on a worldwide basis using the internationally recognised approach – AMIS*.

MCP carries out a regular survey of clients and sectors to understand what they see as the most important concerns in their organisations. Comparing this survey with that done 10 years ago, it is surprising to see that the issues are largely the same, as shown in the comparison diagrams (Fig.1 and Fig.2). What is more surprising is that, despite the growth in IT systems in the past 10 years, the application of software for the benefit of the business is still underexploited and remains a key issue.

Introduction

Over 40 years in the business services sector and with a core focus on Asset Management and Manufacturing, MCP has provided services to global organisations across a wide range of sectors and this has enabled us to monitor the trends and identify common issues. There is no doubt that companies who pay attention to how they manage their physical and production assets can benefit in terms of improved reliability, increased output, lower operating costs and reduced capital expenditure.

In this report we have set out to highlight some of the latest thinking and technology that will help businesses reduce cost, drive efficiency and improve performance.

In many instances however, the pursuit of unsupported technology in itself will not be the sole solution. Having the basics and fundamental systems in place is a prerequisite for success.

The current interest in the ‘Internet of Things’ and the ‘Fourth Industrial Revolution’ (4IR)’ is raising the importance of the need for good data and how it can be used to maximise income through optimising costs and maximising revenue.

What is the ‘Internet of Things’ or the ‘Fourth Industrial Revolution’ (4IR) and how will it impact asset management and manufacturing?

The answer: The ‘Internet of Things’ is the interconnection of a physical asset or object with embedded technology; for example, smart sensors to gather performance data or the use of intelligent systems to convert that data into information that drives performance.

How will this be seen from an asset management perspective?

The greatest areas of increased application for technology will be:

- Real-time machine monitoring
- Work management and recording
- Spare parts and stores management
- Data recording of maintenance
- Information and data analytics

Each of these applications has been highlighted in the AMIS* survey as areas of concern. The technology for addressing these concerns is becoming available and will be developed increasingly in terms of innovation and driving decision-making.

*AMIS is the Asset Management Information Service established in 1987 and now used worldwide to benchmark maintenance and facilities management.
MCP is positioned to help you break through the barriers to improvement by using the latest technologies through its abilities to provide:

- Technology-enabled products
- Management systems and CMMS
- Asset management and manufacturing strategies
- Training and skills enhancement

How will this work in practice?

Machine monitoring and predictive maintenance has been available for many years in various forms – for example, infrared thermography and hard-wired monitoring systems. However, cost and the need to interpret the outputs have often been used as barriers to wider implementation. Now, costs have reduced significantly and the technology has improved to the point where data outputs require minimal knowledge for the technology or information from the Computerised Maintenance Management System (CMMS) to be understood.

The cost-effective option for any business is the use of embedded software sensors and analytics which can be utilised to predict equipment or component failures and hence predict possible maintenance needs.

Dynamic platforms and stock management systems are now available and use the latest smart sensors linked to data collection systems, thus removing the need for paper documentation whilst manned stores will save time and money. Introduction of these systems has demonstrated savings in the range of 20–40% of stores and stock management costs.

At the maintenance activity level, the use of work orders to control the maintenance process is now becoming more common through the use of handhelds, mobile phone apps, and tablets. Linking the maintenance management system via the internet will reduce the need for paper work orders and remove the potential for duplicate entry of data – this, again, achieving cost savings and increasing productivity.

In any asset intensive organisation, a wide range of documentation is required for control, management and compliance. As these demands have grown so has the number of document management systems. Often these are not linked – causing delays in obtaining the required document and resulting in poor quality control.

The latest developments in cloud-based solutions enable an organisation to bring all its information into one central system that is constantly available and easily accessible.

The companies that take full advantage of the latest technologies and adapt to industry changes will be the most successful in the future.

But technological advantages will not be the only answer. Continually investing in education, training and skills will be a mandatory requirement for competitive advantage and success.
Some organisations have already adopted new ways of working and, as a result, have achieved ‘World-Class’ status.

However, many are not positioned to succeed in the future due to the following 11 reasons:

1) Limited use and lack of integration of software systems
2) Ample data but no information or information overload
3) Inability to understand how to use the information for improvement
4) Shortage of trained technical staff
5) Inability to identify the full cost of maintenance of assets
6) Work planning and recording systems not installed or fully used
7) Lack of maintenance strategy or poor alignment with the goals of the business
8) Limited spare parts information and poor data quality
9) Lack of control of contractors and outsourced service providers, resulting in higher cost
10) Unacceptable plant downtime due to lack of parts and tools
11) Cost of equipment downtime or failure is not quantified

Periodic surveys of maintenance, researched by MCP across all sectors, have shown that many of the common issues and concerns from 30 years ago are still relevant today.

**Survey results**

**(3 Years)**

**CONCERNS**
There is no immediate route to success; however, with immediate action, companies can refocus and rebalance their maintenance activity by:

1) Increasing involvement of production staff to deliver equipment performance and reliability and bridge the gap in available technical skills through Operator Asset Care

2) Rationalising information and reports to provide the data to drive business improvement

3) Adopting a risk-based approach to maintenance programmes with the emphasis on predictive – rather than preventive – maintenance using smart technology

4) Smart technology for documents, data, parts and online diagnostics. Combining all documentation into a single repository/database – the ‘single source of truth’

5) Understanding asset condition and life expectancy, maintenance requirements, cost of maintenance and using this information to determine future capital expenditure

6) Adopting a through-life approach to management of assets, moving away from maintenance management and towards asset management

Survey results
(3 Years)
SURVEY HIGHLIGHTS

Using the data on the key findings and high level performance measures from the AMIS* database of maintenance and facilities management audits provides the following insights.

A key measure is the cost of Capital Asset Replacement Value (CARV), which ranges from 2–21% with a mean value of 6%.

Classifications for the score ranges from the MCP AMIS Audit.

- **2%** of companies are **World-Class**
- **40%** are classed as **Innovators**
- **36%** are classed as **In Control**
- **28%** are classed as **Reactive**

WORLD-CLASS PERFORMANCE BUSINESS TARGETS

Cost of maintenance against replacement value by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Cost of CARV</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMCG Pharmaceutical companies</td>
<td>2–3%</td>
</tr>
<tr>
<td>Chemical companies</td>
<td>3–5%</td>
</tr>
<tr>
<td>Heavy Industry</td>
<td>5–7%</td>
</tr>
<tr>
<td>FM (banks, offices etc.)</td>
<td>2%</td>
</tr>
</tbody>
</table>

Other measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance Labour Utilisation</td>
<td>75%</td>
</tr>
<tr>
<td>Parts and materials stock turnover average</td>
<td>1 Year</td>
</tr>
<tr>
<td>Plant Performance measured by OEE†</td>
<td>10–20% increase</td>
</tr>
<tr>
<td>Reduction in contract costs opportunity</td>
<td>10–25%</td>
</tr>
<tr>
<td>Savings in preventive maintenance hours</td>
<td>25–35%</td>
</tr>
</tbody>
</table>

Average benchmark scores for effectiveness are in the range 42%–48% depending on industry type. The highest scoring sectors are:

- Pharmaceuticals
- Medical Devices
- Breweries
- Food
- Chemical

*AMIS is the Asset Management Information Service established in 1987 and now used worldwide to benchmark maintenance and facilities management.

Benchmarks are available for all sectors of business supported by improvement activities to deliver cost savings and increased plant performance and reliability.

†Overall Equipment Effectiveness (OEE) takes into account the various sub components of the manufacturing process – Availability, Performance and Quality.
DO YOU KNOW?

- your asset strategy and information needs?
- how to interpret them?
- how technology and data collection can help drive down costs?

Striking the right balance for any business relies on the availability and interpretation of the relevant data.

Adopting an holistic approach to how existing assets are managed, new assets are introduced and support services are streamlined is the key to driving down costs.

The ‘Fourth Industrial Revolution’ can be the enabling force for achieving the desired costs savings.

What does BAD performance look like?

- Low availability
- Frequent failures and breakdowns
- Many accidents and incidents
- High costs
- Unpredictability

What does GOOD performance look like?

- High availability
- Few failures and breakdowns
- High value
- Predictability

ASSET INTEGRITY MANAGEMENT

The Balance – Optimisation

Key

- Direct Cost
- Risk Cost
- Total Business Impact

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WHAT DOES THE FUTURE LOOK LIKE?

The asset management industry is on the edge of a fundamental shift that will shape the future of the industry.

Most asset managers have little time to adapt to the future and the way in which they do will make a difference to how they will operate in 2030, compared with today.

The Boardroom Report has set out how the operating landscape for asset managers will change in the future and explains how asset managers can prepare for the challenges ahead and turn them into competitive advantages.

The report’s key messages for the future are highlighted. They are presented as a series of predictions for 2030, providing guidelines for asset management industry participants to help them prepare operating models, people and processes for the challenges ahead.

MANAGING ASSETS
Consideration of through-life management of assets

UNDERSTANDING OF EQUIPMENT
Understanding asset condition, life expectancy and maintenance requirements

EQUIPMENT PERFORMANCE
Capital requirements justified on the basis of risk to business and equipment performance

PREDICTIVE MAINTENANCE TOOLS
Increase in the use of predictive maintenance tools

SMART TECHNOLOGY
For documents, data, parts and online diagnostics

SOFTWARE TECHNOLOGIES
Effective use of software applications and data analytics

SKILLED WORKFORCE
Maximised skills of workforce

FOCUS ON SAFETY
Increased focus on safety, reliability and human factors

EFFECTIVE MANAGEMENT
Asset management (ISO 55000)

The partner network
In today’s competitive markets, successful companies anticipate their customers’ needs and develop innovative products in response to their requirements.

Our rapidly expanding global partnership network and core technology partners offer clients a wide range of technical expertise and complementary software products.

The following pages shows how MCP works with its technical partners to devlier end-to-end solutions for clients.
By 2030 there will be 50 billion connected devices in our buildings, compared to 7 billion people living on the planet. Connected – or remote monitoring devices – can enable processes to be monitored, measured, controlled and optimised as never before. Adopting remote monitoring technology in businesses large and small can increase efficiency and profitability.

The question is…

“How do we do it and how do we ensure it is profitable?”

Remote monitoring is usually 1/10th the cost of legacy systems or even human intervention. Companies know they should be using connected devices; after all, who would not want to prevent a server farm, communal heating system or production line from failing? Yet very few organisations understand how to successfully adopt and benefit from remote monitoring. Asking questions such as: Should we monitor 1 item or 1000 items? How do we know if we are monitoring the correct items? Is remote monitoring a cost effective solution and can we prove it?

Clients have many questions about how they can use connected devices in their business. The recommended approach is to first understand the needs, the underlying business case and the potential positive impact to the business.

The next steps are: to decide what to monitor; to select the right connected device for the business requirement; to understand the information that has been gathered and finally, to develop a plan and act upon it.

The illustration (right) indicates the main reasons why organisations adopt a connected device solution.

**WHAT INDUSTRIAL AND PROPERTY CEOs* WANT**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Operational efficiencies or cost reduction</td>
<td>68%</td>
</tr>
<tr>
<td>Supply chain responsiveness</td>
<td>53%</td>
</tr>
<tr>
<td>Asset optimisation</td>
<td>45%</td>
</tr>
<tr>
<td>Customer experience and relationships</td>
<td>44%</td>
</tr>
<tr>
<td>Safety and security of operations</td>
<td>41%</td>
</tr>
<tr>
<td>Risk mitigation</td>
<td>37%</td>
</tr>
<tr>
<td>Employee performance</td>
<td>36%</td>
</tr>
<tr>
<td>Speed and sophistication in investment decisions</td>
<td>35%</td>
</tr>
<tr>
<td>New revenue from products</td>
<td>29%</td>
</tr>
<tr>
<td>New revenue from services</td>
<td>28%</td>
</tr>
<tr>
<td>Improved compliance</td>
<td>28%</td>
</tr>
</tbody>
</table>

*CEOs = Chief Operating Officers
Smarter asset life-cycle replacement

One of the biggest capital investment questions for any organisation is ‘When should I replace these assets?’ By replacing the assets too soon you could overspend the budget. Yet, replacing too late and the business could fail!

In analysing the reactive maintenance requests on a capital-intensive asset for a client, it was found that after 14,000 run hours, the maintenance costs increased dramatically. Further analysis offered the business the evidence to prove how to predict when the asset would need unscheduled maintenance and accurately pinpoint when the asset should be replaced.

### PREDICTED GROWTH of remote monitoring device (in billions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth (in billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>8.7</td>
</tr>
<tr>
<td>2013</td>
<td>11.2</td>
</tr>
<tr>
<td>2014</td>
<td>14.4</td>
</tr>
<tr>
<td>2015</td>
<td>18.2</td>
</tr>
<tr>
<td>2016</td>
<td>22.9</td>
</tr>
<tr>
<td>2017</td>
<td>28.4</td>
</tr>
<tr>
<td>2018</td>
<td>34.8</td>
</tr>
<tr>
<td>2019</td>
<td>42.1</td>
</tr>
<tr>
<td>2020</td>
<td>50.1</td>
</tr>
</tbody>
</table>

### USING CONNECTED DEVICES to make smarter investment decisions

![Graph showing cumulative repair costs versus run hours](chart.png)
Providing stock and asset information to business offers them control to increase efficiency and reduce costs.

The future will see industry continue to connect and control the supply chain. This will offer a range of solutions to collect, provide and interpret data and provide companies with far greater visibility of their assets than has ever been possible.

Inventor-e believes that providing information to businesses about the stock and assets they manage, together with control and accountability, increases efficiency and reduces costs.

The portfolio comprises a range of automated dispensing cabinets (iVendM, iVendC and iVend LID) that cater for different scopes of inventory supply, all of which can be tailored to suit the client’s individual needs.

Most industries use some type of indirect material. These indirect materials are defined as: ‘anything that is used during a production process that does not become part of the end product’; in most cases, supplies.

For example, in an office you use toner cartridges, pens, highlighters… in a lab you use hairnets, safety glasses, booties, lab coats… in an ambulance you use medication, bandages, equipment, shots, needles… in a distribution centre you need to track gloves, pick by voice headsets, batteries… all of this is indirect material and all of this can be effectively managed using an Inventor-e solution.

### Your Problem, Our Solution

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor stores management</td>
<td>SmartStores</td>
</tr>
<tr>
<td>Squirrel stocks</td>
<td>iVend Solutions — places repetitive stock e.g. Maintenance, Repair and Operations (MRO) consumables such as Personal Protective Equipment (PPE) and critical spares at the Point-of-Use. The centralisation of stock in stores on large sites with lots of people is not cost effective. Placing iVend solutions around a site cuts walk around time and reduces consumption (20–40%) through control and accountability.</td>
</tr>
<tr>
<td>Better asset management</td>
<td>iVendNFC, Lockers, iVendRFID, iSite and Smartie asset tags with SmartSafe (in development).</td>
</tr>
<tr>
<td>Poor data</td>
<td>Our Sourcerer solution aggregates all MRO and asset data onto one indirect materials management platform. Managing multiple suppliers and aggregates inventory and asset information across multiple customer sites. This provides an holistic solution for business. Sourcerer can also interface with Enterprise Resource Planning (ERP) systems.</td>
</tr>
</tbody>
</table>
SOURCERER™

Sourcerer is a collaborative supply chain solution that gives you control of all your inventory and assets worldwide. Sourcerer is a multi-site, multi-supplier cloud-based platform that provides information on usage, user accountability, stock quantities, trends and KPIs. Sourcerer together with our patented solutions reduces consumption by 20–40%, automates processes and increases compliance.

IVEND™

iVend is our flagship weight sensing solution for MRO and PPE consumables. It is also the easiest and quickest vending solution to use for issuance, returns and replenishment.

SMARTSTORES™

SmartStores and SmartAsset are unique NFC (Near Field Communications) stores management and asset management solutions that provide the accuracy your business demands. Unlike traditional bar code systems, SmartStores and SmartAsset are easier to use, require less maintenance and are globally scalable.

IVEND SECURE™

iVend Secure provides a cost effective solution for the secure management of consumables and critical spares. It can hold up to 468 different items.

ISITE™

iSite enables you to identify and locate assets in and around your building by reading an intelligent area or item. iSite tiles can read RFID and Smartie (iBeacon) tags.
CASE STUDY: WHAT GETS MEASURED GETS IMPROVED?

The approach

We recommended the installation of several low cost retrofit remote monitoring sensors to collect temperature readings and door open and close activities across their chiller rooms to identify areas that may affect the product quality.

The devices required no cabling, no electricians or expensive consultants, no mains power and no permit systems to install with the total installation time being less than 20 minutes per chiller room.

THE RESULTS

Data from the sensors dispersed through the market channel was collected and analysed to ensure that temperatures did not exceed predefined limits set by the product guidelines.

- All refrigeration units are set to idle during planned non-peak times resulting in a noticeable temperature fluctuation over a short amount of time
- No recorded incidents of chillers left open
- No unusual ‘out of hours’ activity detected
- No power failures were noted on the chillers
Carillion was awarded the contract to provide FM services to the Queen Alexandra Hospital, Portsmouth – one of the largest acute teaching trusts in the UK. Carillion’s remit was to ensure that the maintenance and operation of the site runs smoothly for the clinical staff and patients.

Since the implementation of our SmartStores Solution, Carillion, Queen Alexandra Hospital has seen the following benefits:

1. COST SAVINGS
As a result of stock being more identifiable and easy to find, significant cost savings were made. Better stock management prevented tasks from failing due to engineers not knowing if materials were in stock.

2. STOCK MANAGEMENT
Better stock replenishment was achieved due to the availability of ‘easy to read’ reports that showed stock levels and replenishment requirements. This prevented materials running out and items not being available when required. This historically would have resulted in significant cost to the client.

3. STOCK REPORTS
SmartStores offered a stock usage report for all materials which allowed users to better plan and defend against stock piling faults and other outcomes such as depleted stock levels and order delays. This information helped the client to become more contract compliant.

4. TIME SAVINGS
Due to on-site 24/7 cover being required, the SmartSearch function assisted the engineers to locate and book out materials during silent hours. This resulted in significant time savings, as previously, it would have been difficult to locate goods using the old system.

5. DATA CAPTURE
The solution offered all the necessary information required in depth for each task and every issue. For example: time of issue, what item was issued and to whom and the associated cost. Previously, the system did not allow this level of detail to be captured.

6. 360° VIEW
End of month accounts provided a stock report showing complete stock value, levels and monthly spend. This could then be used to feed in to further reports and provide an holistic view of the client’s facility.
CASE STUDY: HOW TO DRIVE IMPROVEMENT

Using data to drive improvements in manufacturing output.

A multinational food company with sites across Europe, faced capacity issues due to equipment stoppages.

Its main manufacturing facility was particularly under pressure from major customers to supply more product. However, output remained fairly constant – around 1100 tonnes per week.

Some two years earlier they had installed a maintenance software system (CMMS) but this was not being used to its fullest extent.

A Reliability Engineer was recruited and, working with MCP, generated a set of standard reports from the CMMS. These were used to identify equipment issues and drive improvements.

Within two months the failures and source of losses had been solved by analysing the data in the CMMS. The result was an increase in production output to 1400 tonnes per week, with significant benefit to the business.

BASELINE WEEK 1
10 LINES
Plant filling capacity

1,100 TONNES
Average weekly output

£1,170
Sales value per tonne

35,000 TONNES
Lost output per year

£40,000,000
Value of lost output per year

AFTER WEEK 8
10 LINES
Plant filling capacity

1,400 TONNES
Average weekly output

£1,170
Sales value per tonne

£351,000,000
Value of increased output

£17.55 MILLION
Annualised value of increased output
DRAMATIC IMPROVEMENT IS WITHIN YOUR GRASP

MCP delivers improvement programmes worldwide, with typical ROI of 200% within the first year, delivering the highest possible levels of efficiency and reliability.

MCP has grown into a successful consulting business operating on a worldwide basis through a network of offices and associates.

Our vast experience enables us to deliver high-quality efficient and effective support services. Our consulting portfolio is cross-platform and cross-industry, including sizable and complex projects within the mining, oil & gas, utilities and infrastructure sectors.

As your strategic partner, we can mobilise a skilled and motivated team to meet your needs – either as a full-service provider or part of an integrated team.

Together we have successfully offered customers the broadest range of support, responding to them professionally and in the quickest timescale to produce outstanding results.

MCP provides specialist services in:
- Asset Management and Maintenance
- Business Improvement
- Change Management
- Technical and Management Training

TYPICAL RESULTS

Reduction of
35–50% in unplanned breakdown maintenance

Removal of
25–50% wasted preventive maintenance hours

Productivity step changes
40–80% achieved in months rather than years

To find out more about MCP’s Asset Management Improvement and Cost Reduction consultancy services, which support all Operational Improvement and Reliability programmes, contact us on:

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