## Hewlett-Packard Company

UK Healthcare Group,
Cain Road,
Bracknell, Berkshire RG12 1HN,
U.K.

# Special Contribution

# *Better Information for Better Healthcare*

Hewlett-Packard has a vision of how healthcare professionals might work most effectively, supported by accurate, relevant, and timely information, called Integrated Information Management (IIM). Today we are working to make this vision a reality in hospitals and healthcare institutions all across Europe, to help them improve the quality of care provided to their patients at the same time that they reduce the cost of providing that care.

## The State of Healthcare Today

While the level of healthcare spending is at record levels in most OECD countries, the highest spending countries (such as the USA) appear to be no more healthy than some of the lowest. Governments across the Western world are pressing the industry to demonstrate that money invested is being spent productively. To respond, healthcare professionals need information which they don't have today: information on both the costs and the outcomes of their procedures.

Compared with other service industries, in healthcare we have been relatively slow to exploit the direct relationship between information and effectiveness. In order to make informed decisions about resource allocation, healthcare providers and purchasers need reliable information about the cost-effectiveness of treatment and care. Doctors and nurses are doing their best with intuition and limited knowledge, but accurate and complete information would serve them much better. The long-term consequence is that hospitals have no systematic way

of lowering costs while maintaining or improving standards of care - not because they are as cost-effective as they could be today, but because they simply don't get the information they need to measure their performance.

## Hewlett-Packard's Response

At HP, we believe in an incremental approach to selecting and implementing technology solutions: understanding users requirements; contributing to process improvements; and proposing solutions that fit within an overall development framework, a long-term Information Plan. This framework rests on certain key enabling technologies, which only now have matured to a level where they can support the required solutions. These technologies include:

- Robust, reliable, site-wide networks, with gateways to remote centers;
- Multimedia workstations, which display diagnostic images, wave forms, voice annotation, and even moving images, speedily and at high resolution;
- Integrated data capture devices,

producing accurate measurements in digital formats;
- Expert systems, including voice-recognition, advisory decision support, and teaching systems;
- Integration tools which provide access to information stored in legacy systems; and,
- Object-oriented programming, supporting rapid development of applications.

So, *our Integrated Information Management vision means providing accurate, relevant and timely information to clinicians or healthcare managers, when and where they need it, and in the way that they want to work with it*. HP's contribution includes clinical products engineered to exacting specifications; high-performance Open Systems computers and networks; partnerships with the leading information system suppliers; and implementation and consultancy services to ensure that customers' information requirements are fully understood and satisfied. Our understanding of the information requirements of healthcare professionals, our understanding of how to use technology to deliver on those requirements, and our

partnerships with other medical technology developers and with our customers give us a unique platform for delivering to European healthcare organizations on our Integrated Information Management vision.

## Respected Clinical Information Products

Perhaps no other organization is so well equipped as Hewlett-Packard to help healthcare professionals to integrate and manage their information. HP clinical equipment has been providing accurate patient care information to hospitals since 1917. Today, HP is the world's largest developer of electromedical equipment. The company markets more than 900 medical products and supplies, designed to meet needs in Cardiology, Critical Care, Surgery, Obstetrics, Neonatal and other departments. These are some of our key product and technology areas:

- *Cardiovascular ultrasound imaging:* real-time visualization of the beating heart, providing information to support cardiologists treating adult and pediatric cardiac malfunctions. Capabilities include color flow, transesophageal echocardiography, wide-aperture imaging, peripheral-vascular imaging, and acoustic quantification. HP is the world's largest manufacturer of cardiac ultrasound imaging equipment.

- *Patient monitoring:* Patient's vital signs such as heart rate and blood pressure are monitored through Critical Care situations. Other patient data, from bedside device output to lab test results, can be routed to the monitor so that it is available in one place near the patient. HP is the world's largest manufacturer of patient monitoring equipment.

- *Cardiology and resuscitation:* From the world's first ECG machine to the world's fastest defibrillator, from an ECG data management system to a complete cath lab solution, HP produces a wide range of products for diagnostic and interventional cardiology.

- *Perinatal Products:* HP's fetal monitors are used around the world to assess the risk status of the fetus during labor and delivery. Neonatal monitors oversee the status of premature or at-risk infants.

- *Clinical Information Systems:* HP's CareVue/9000 system automatically captures and charts significant patient data. This reduces the administrative duties of nurses, allows care unit nurses and physicians to spend more time on patient care, and provides the decision-support tools to facilitate early intervention. The result? Enhanced patient care; improved teamwork; and more motivated and committed nursing staff. HP is the world's leading supplier of clinical information systems for Intensive Care Units.

## Medical Data Interchange Standards

Today we are pushing back the borders of clinical application research in several areas, most notably in partnership with the European Community and with leading European hospitals and universities. Our Standards and Technology Development Center is at work on five different EC-funded projects to establish medical data interchange standards, and to harness technology to solve healthcare information problems. These are:
- A translator for diverse, multilingual medical coding systems (GALEN);

- Care protocols, and shared care across institutions for cardiac patients (DILEMMA);
- Multivendor data interchange standards for cardiology (OeDIPE);
- Communication between radiologists and their clients, including a care-unit image server (EurIPACS);
- International transmission of lab data using X.400 and ANS1 standards (MEDiCINE).

In summary, HP understands the broad information needs of healthcare professionals, both as they are today and also as they evolve with the changes happening in each European country today. We are developing our medical technology in response to those needs.

## A Successful Information Technology Company

But medical equipment is only a part of the HP story. Information technology and computing professionals know Hewlett-Packard as the West's second largest maker of computers, as well as the most profitable one. HP is the world's largest vendor of Open Systems computers, having pioneered the universally popular RISC computing technology in systems and workstations. Likewise in evidence in most hospitals are the ubiquitous HP LaserJet and HP DeskJet printers. These computers form the basis of many hospitals' administration systems, as HP works in partnership with the leading Hospital Information Support System suppliers to provide complete solutions. Hewlett-Packard computer systems sold in Europe are made in Germany, France, Spain, Italy and the United Kingdom, making HP one of the leading European computer manufacturers.

Communications between computers, and between users, is an increas

ingly important element of a hospital's information technology infrastructure. HP makes market-leading networking hardware and software, such as its EtherTwist Rack 'n' Stack hubs and routers and its OpenView network management products, and is developing the networking technologies of the future in its Bristol, England, research facility. Products announced in the Spring of 1994 will allow hospitals to send data over a network ten times as fast as before, simply by upgrading a few elements of the network. HP is implementing the first ATM network in a European healthcare center for one Scandinavian hospital, which will be used to transfer images.

## A Reputation for Quality

Business managers and directors know HP's reputation as an exceptionally well-managed company: regularly winning citations for high quality, and regularly recognized for innovative technology and for customer satisfaction. Results of Datapro's annual survey into customer satisfaction with support organizations were recently announced: they named HP as No. 1 for the 10th consecutive year. And Fortune Magazine's annual survey of Chief Executives rated HP as the most admired computer company yet again. Practices such as Management by Objectives, Management by Walking Around, and Ten-Step Business Planning originated with HP and are still practiced here; today they are held up in management textbooks as examples of best practice.

## Making it Happen

Hewlett-Packard has teams of people distributed across Europe who provide consultancy, project management, and ongoing support services for hospitals who want to improve their effectiveness through reliable, timely and accurate information. Our Medical Project Centers in eight European countries take responsibility for all aspects of healthcare technology projects, including:

* Consulting and planning;
* Preparing a functional requirements analysis;
* Auditing existing systems;
* Managing a system or network implementation;
* Migrating to Open Systems;
* Overseeing subcontractors;
* Training users or technicians; and
* Providing operational support.

Such a partnership begins with a clear mutual understanding of a customer's operational objectives and their supporting information needs. Our consultants are skilled at interviewing doctors, nurses and managers to build up a picture of the functional requirements of a department or a whole hospital, then analyzing that detail and presenting their conclusions together with proposals for process and technology improvements. These proposals could include new ways of operating, and could equally include training and education plans; network redesign and improvement; new information systems; implementation planning; or development of an information strategy.

HP project managers are skilled at keeping healthcare information projects on time and on budget. Getting systems up and running on time may be more important in a hospital than in any other environment. The experience of working with people who have done it many times before pays off in projects that happen as they are planned.

## A Good Partner to Do Business with

Finally, Hewlett-Packard makes a good partner for hospitals who want to fulfil their own visions for Integrated Information Management, or for using information to improve care and control costs. By combining a vision for healthcare with dependable and accurate clinical products, groundbreaking work on standards for data interchange, scaleable Open Systems computers and open network products, a sound reputation for quality, and a local healthcare projects delivery organization, Hewlett-Packard can take you where you want to go.