

by Mark Lillycrop and Trevor Eddolls

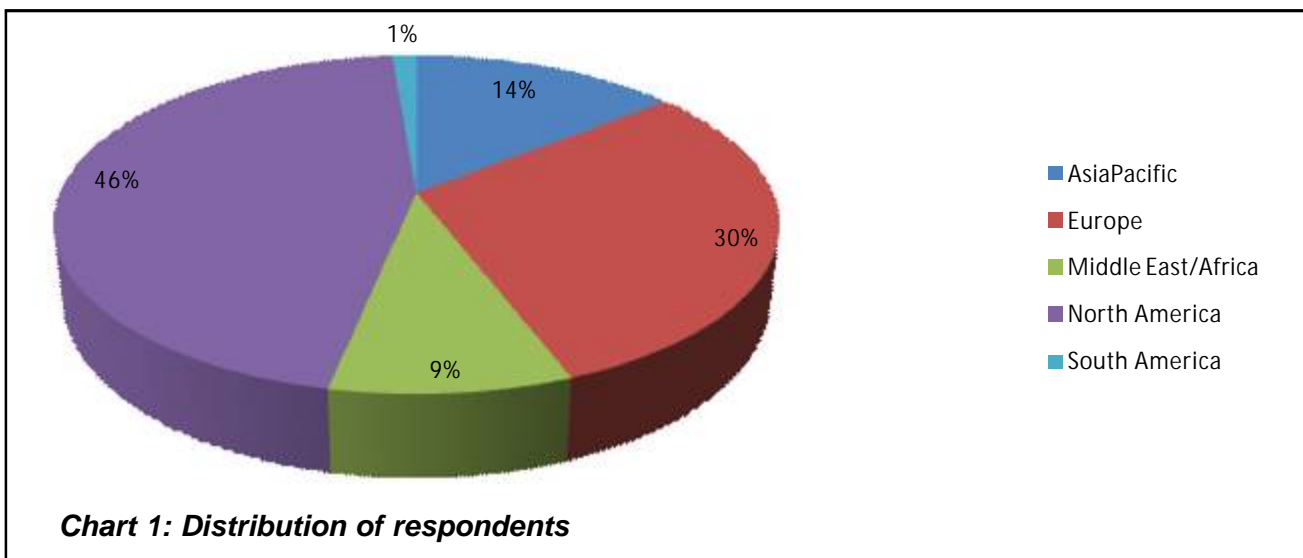
## The 2010 Mainframe User Survey

An analysis of the profile, plans, and priorities of mainframe users.

Many thanks to all those who took part.

As usual our annual mainframe survey provides a snapshot of the System z user community's existing hardware and software configuration, and also their plans and concerns for 2010.

Respondents were from all over the world and their distribution is shown in Chart 1. 46% were from North America and 30% from Europe, with 14% from the rest of the world.



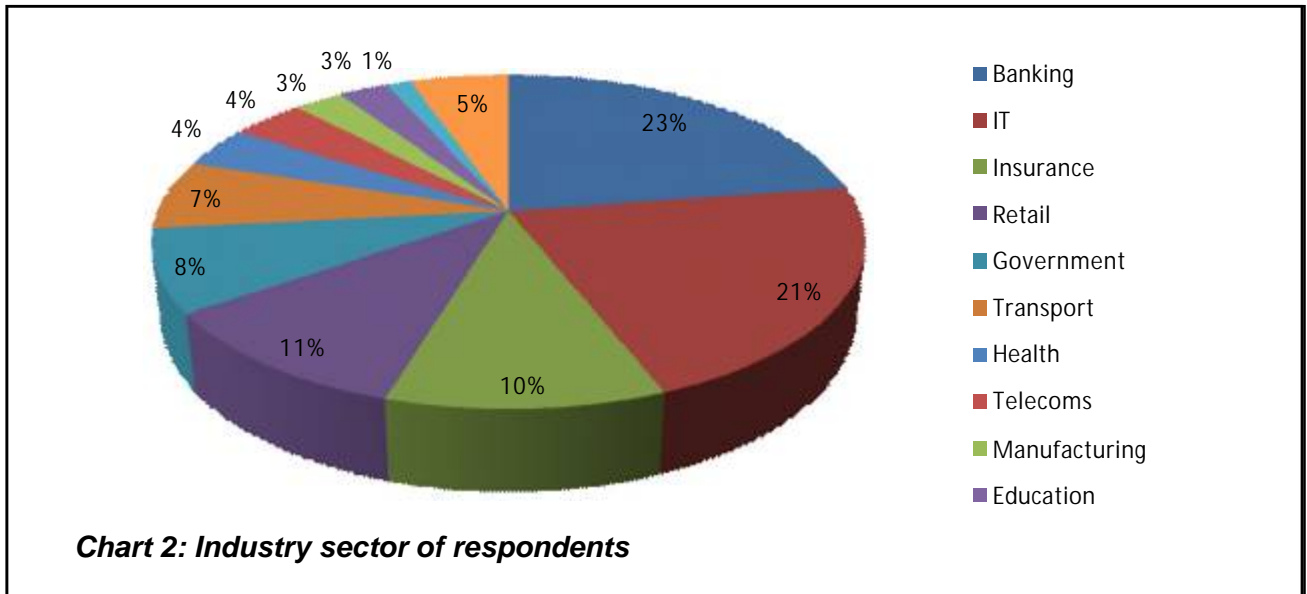
This year we have continued to track the growth of mainframe integration with Web services and other areas of new development, as well as gauging the extent to which 'specialty' engines, Linux applications, and Intel-based z/OS processors are changing the face of mainframe computing. In addition, we have continued to explore relative cost in more details, asking respondents how fast their distributed server costs are growing relative to the mainframe. And we have investigated how important "green" issues are to the mainframe community

### Profile of respondents

The mainframe user survey was completed by 75 individuals between the 2 November 2009 and the 4 December 2009. Survey respondents were either contacted directly by e-mail or other Web-based means and invited to complete the mainframe user survey on the Arcati Web site.

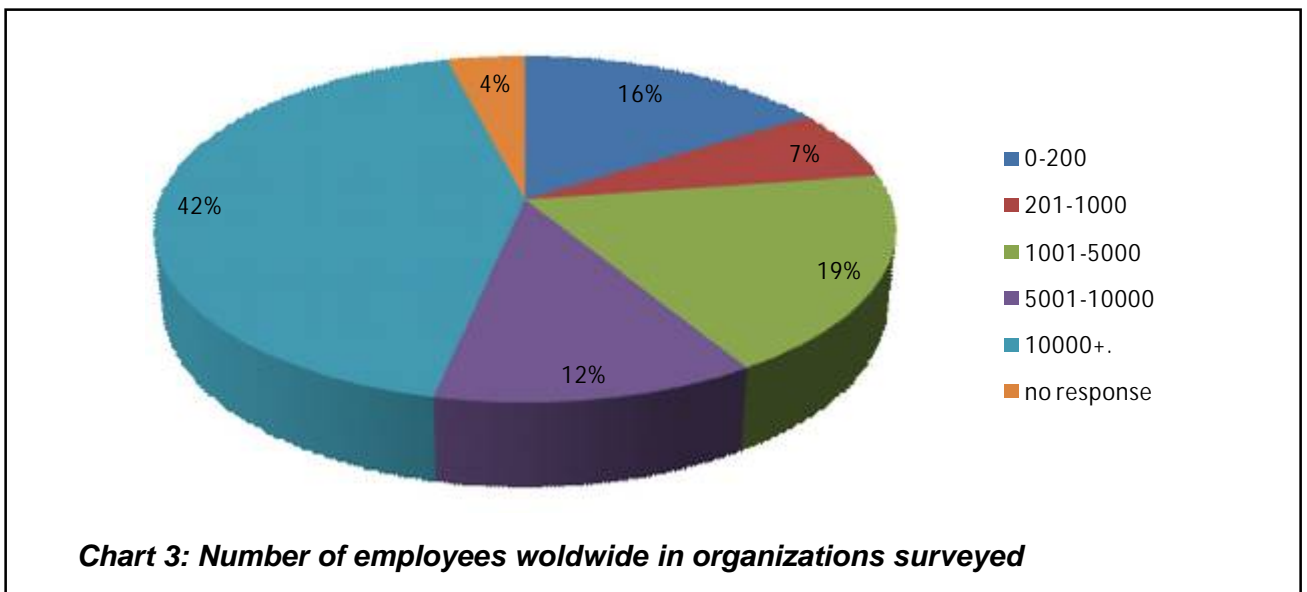
As usual, a wide range of industry types are represented in our sample (Chart 2). Not surprisingly banking and IT account for a large proportion of the organizations involved (22% and 21% respectively), with insurance and retail behind with 11% each. Government and transport had 8% and 7% respectively of the total. Health, utilities, education, manufacturing, telecoms, and 'other', account for the remaining 20% with no category having more than 5%.

A third way to categorize respondents is to look at business size. As shown in Chart 3, 42% of the companies have in excess of 10,000 employees worldwide, whereas the second largest group, with 19% of respondents, has 1001 to 5000 staff. 16% of respondents had 0-200 staff, 12% had 5001-10000, and 7% had 201-500 staff. Three respondents didn't reveal how many staff worked for their company.



76% of our respondents were involved in running in-house data centres. This figure is particularly interesting because it changes each year. In 2006 it was 85%, in 2007 it was 77%. Last year it was 83%. It is unlikely that some of our respondents outsource for a year and then return to in-house working. Perhaps the most likely explanation is that outsourcing is continuing to increase, and our survey last year was simply completed by more sites that had outsourced. 9% of respondents said they were working in an outsourced operation.

Again, this figure is increased slightly from last year's value of 7%, although a decrease on the 15% figure from the 2007 survey. 3% said they were partly outsourced (last year 4%), and 7% (last year 5%) were providing outsourcing services to other companies. This would further indicate that the trend towards outsourcing is still continuing slightly, but there doesn't seem to be any great urgency amongst organizations to outsource.



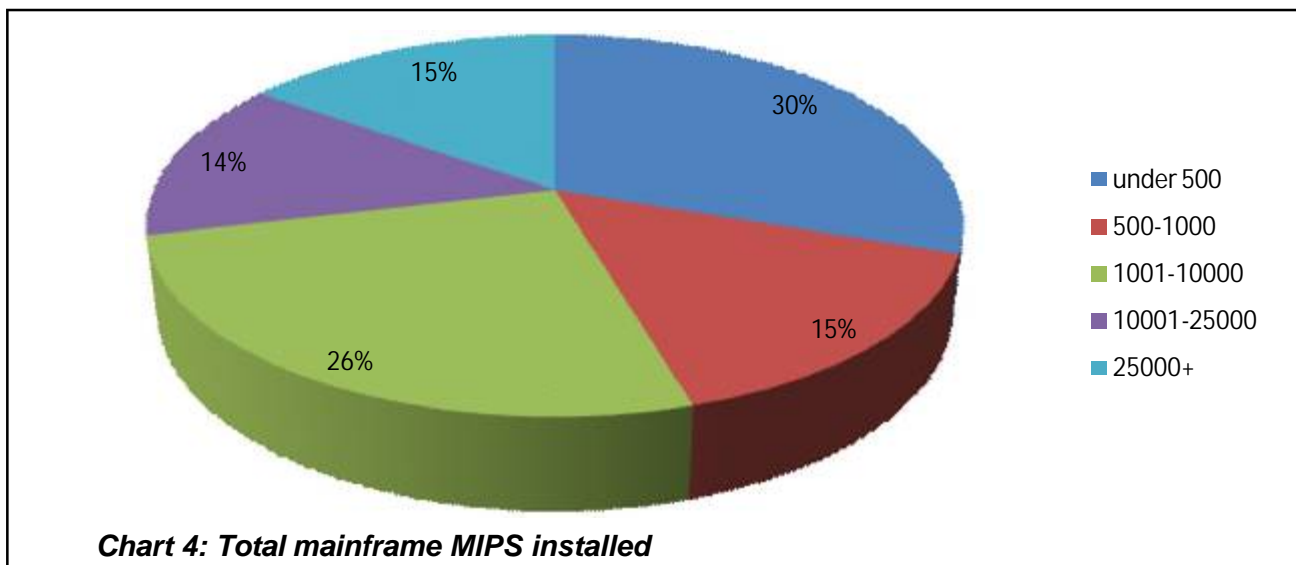


Chart 4: Total mainframe MIPS installed

**Installed MIPS and capacity growth**

As in previous surveys we have used MIPS as the principal measure of capacity size. We asked respondents to indicate the total mainframe MIPS installed on their systems, and the result is shown in Chart 4. 45% of respondents (almost identical to last year's 46%) said they had fewer than 1000 MIPS installed, 26% fell into the mid-sized category between 1000 and 10,000 MIPS (up slightly from last year's 23%), and 29% were at the high end (down from last year's 31%). As in last year's research, we use installed MIPS later in the survey

to identify differences between small, mid-sized, and larger users.

Chart 5 shows the annual MIPS growth of respondents, and clearly the majority of mainframe installations are experiencing some growth, with one site claiming growth in the region of 26-50%, and one site claiming growth in excess of 50%. 4% of sites are reporting a decline in mainframe capacity growth (down from 7% last year). Over three-quarters (77%) of sites are expecting some kind of growth. And the amounts

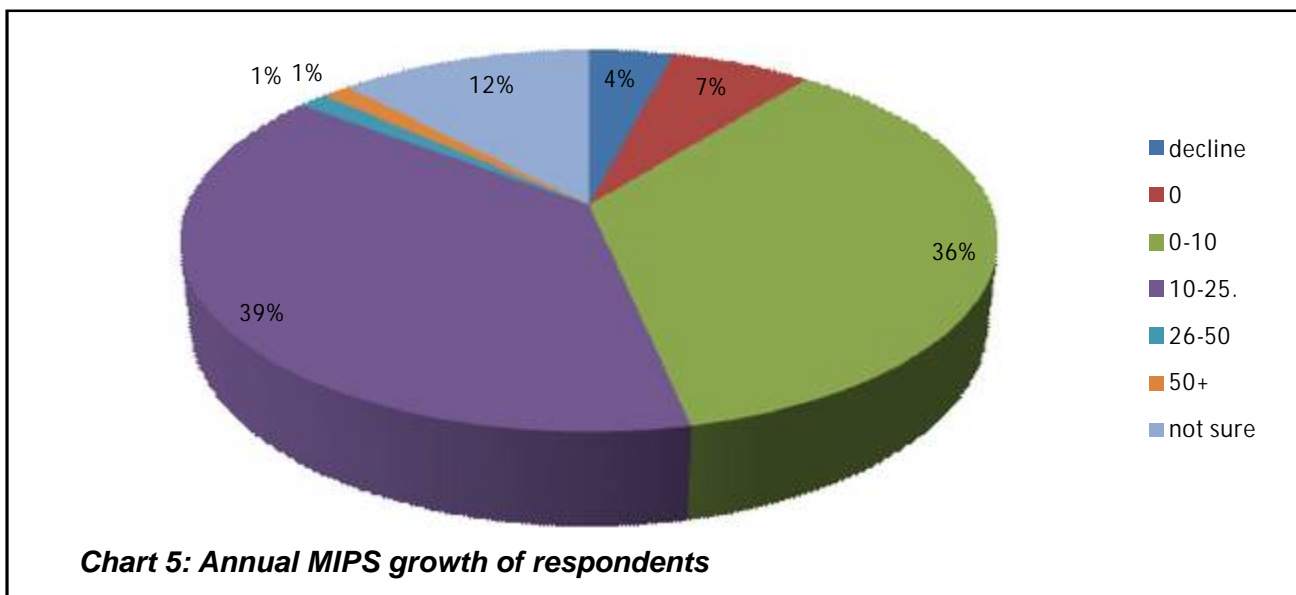
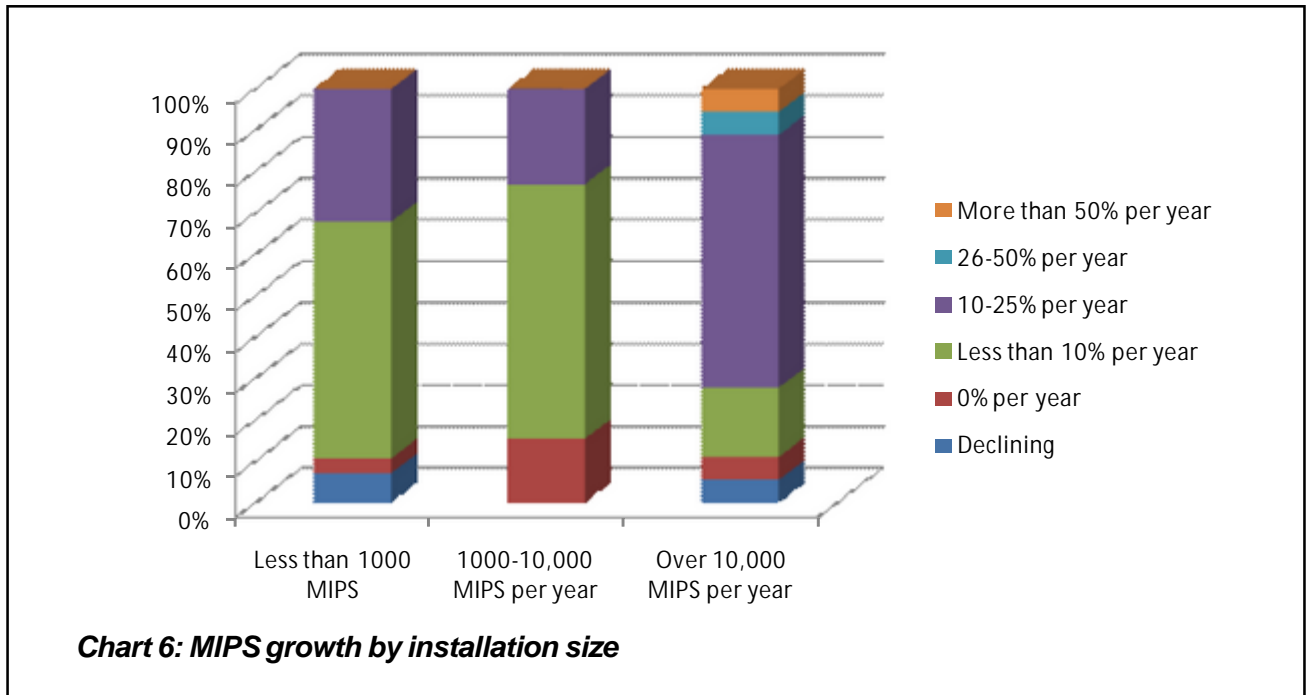
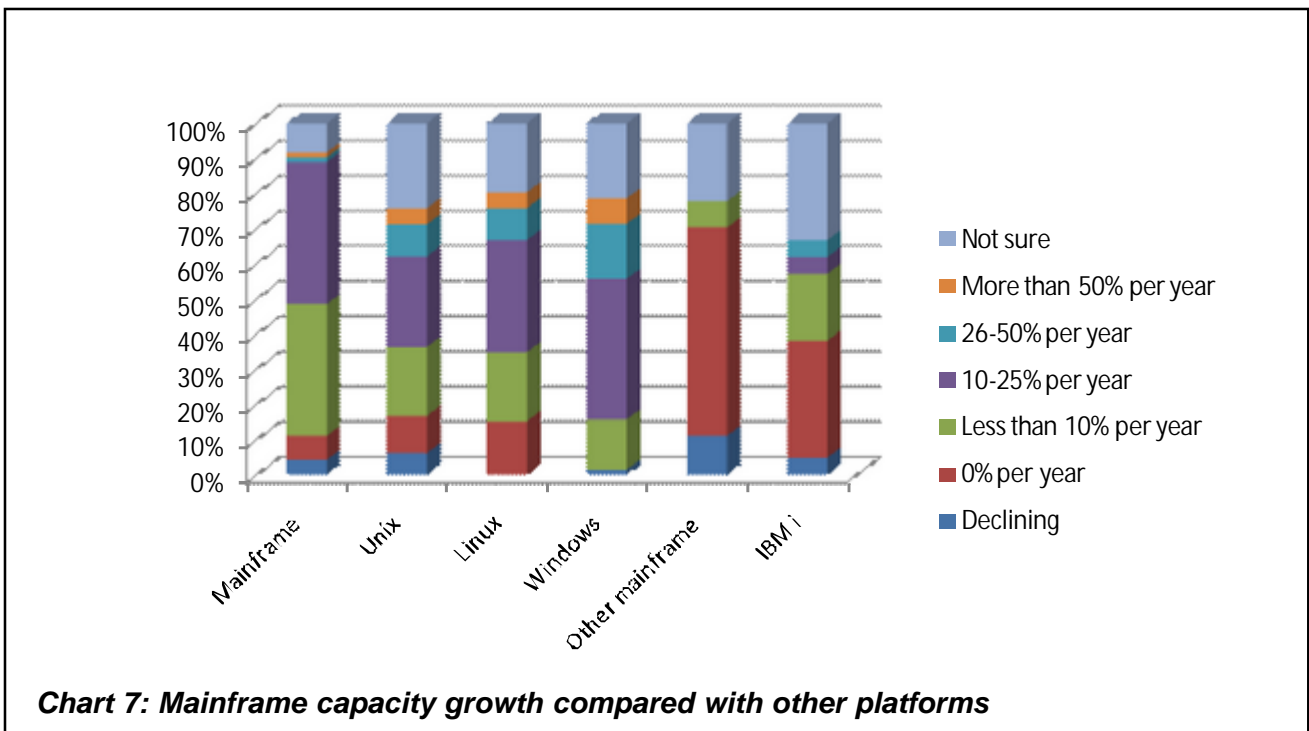


Chart 5: Annual MIPS growth of respondents



that these organizations are expecting to grow by has increased on last-year's recession-locked figures. Looking at Chart 6, however, we can see that the picture varies considerably depending on the size of the system. All but two of the larger,

more mature businesses (above 10,000 MIPS) are experiencing some growth, with one site experiencing growth of more than 25% and one experiencing growth in excess of 50%. For mid-range respondents, the vast majority were looking



at growth of less than 10%, but definite growth. Three sites had grown more than that, but two sites reported zero growth. Strangely, the smaller sites are, in the main, reporting growth between zero and 15%, but again, any growth is good news.

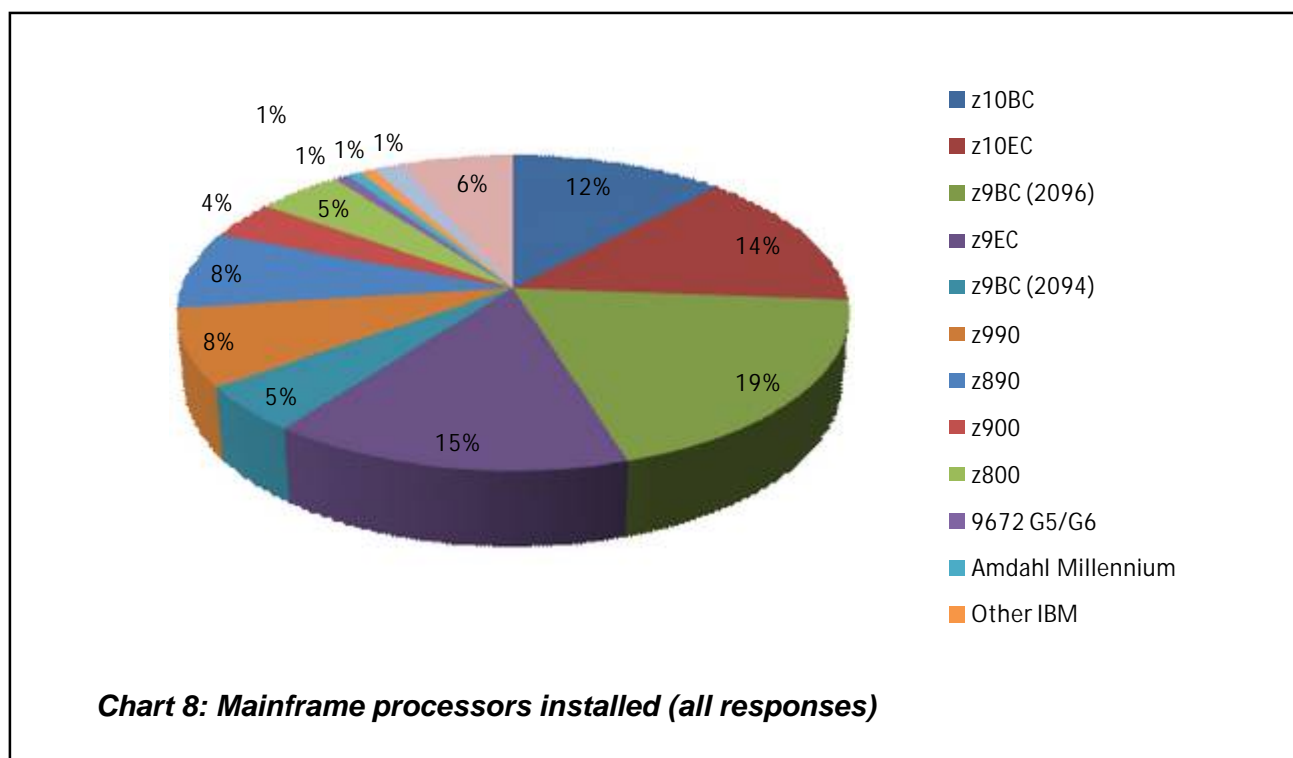
As in previous years, the mainframe market appears to be more fragmented than one might think. There are definitely competitive pressures at the lower end of the mainframe market. This, coupled with concerns about cost and the availability of skills and applications, goes some way towards explaining the mixed picture. It is worth speculating on how many sites are waiting for the newly-announced z11 processors to become available, Next year's survey will reveal how well received these new processors are by users. IBM also needs to ensure that System z users on smaller platforms are not seduced by clever marketeers and Windows-philic senior staff to migrate to other platforms and lose the obvious benefits of mainframe computing.

We also compared the rate of growth of the mainframe with that of other IT platforms within

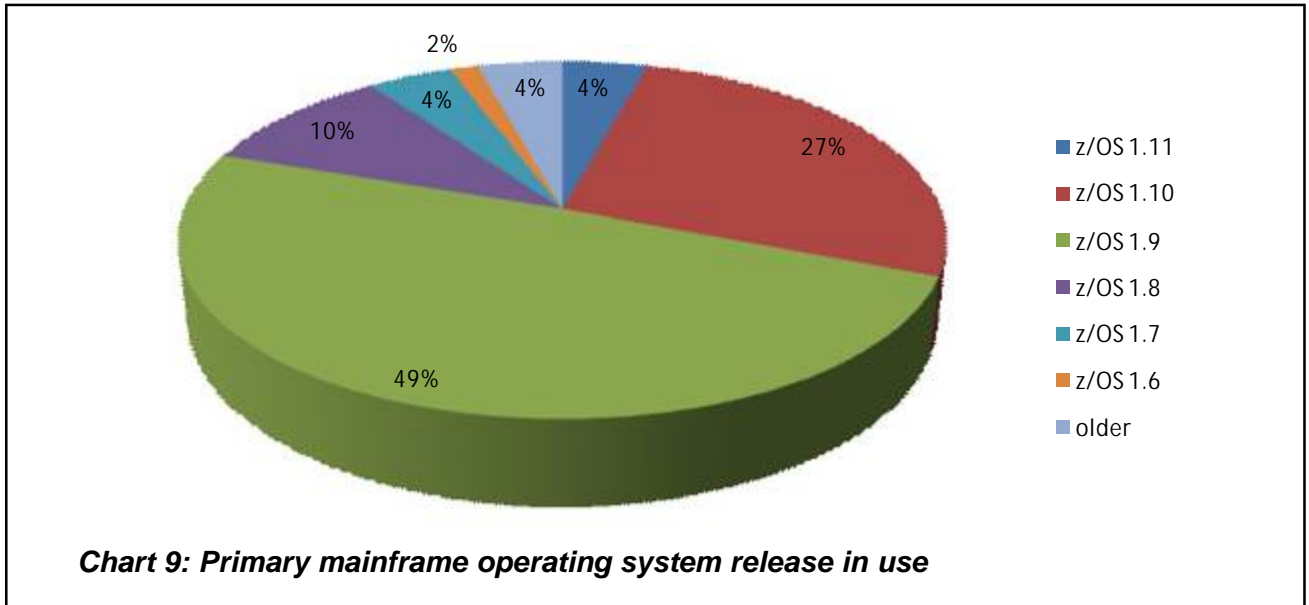
the enterprise. As shown in Chart 7, the System z looks relatively strong in the slow-to-medium growth range (up to 25%). Interestingly, again this year, no respondents suggested that Linux growth was declining. When the "don't know" results have been excluded, we find 85% of mainframes are experiencing a growth of 1-25% per year, but only 3% of sites report a growth above that figure. Windows has only one site reporting a decline, and can boast having the highest value for growth at "more than 50%", which is 9%. Growth in the 26-50% range is a 20%. It's nearest rival is Linux with only 11%. Expecting growth between 10-25%, Windows has 51%, Unix 34% and IBM i (what many people still call AS/400s) is 7%. Other mainframe shows a decline of 14% and a zero percentage growth of 76%. No site is reporting a growth for other mainframe larger than 10% per year.

**Hardware and software currency**

The IBM mainframe hardware range continues to receive a regular makeover, with new high-end and low-end systems generally being announced

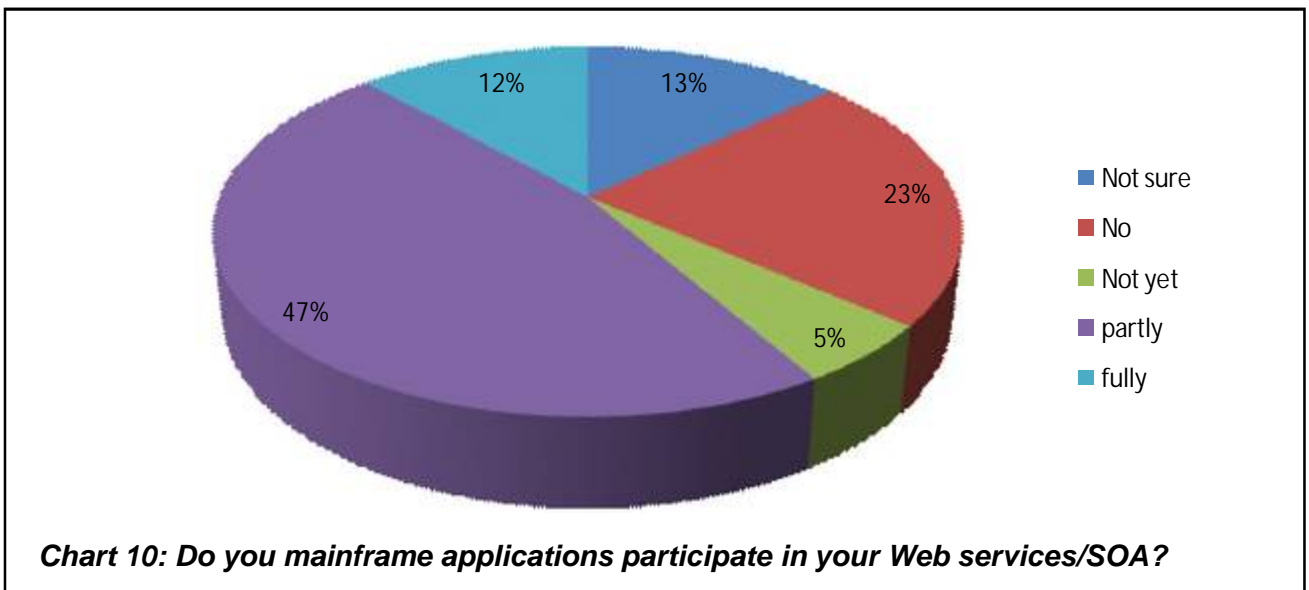


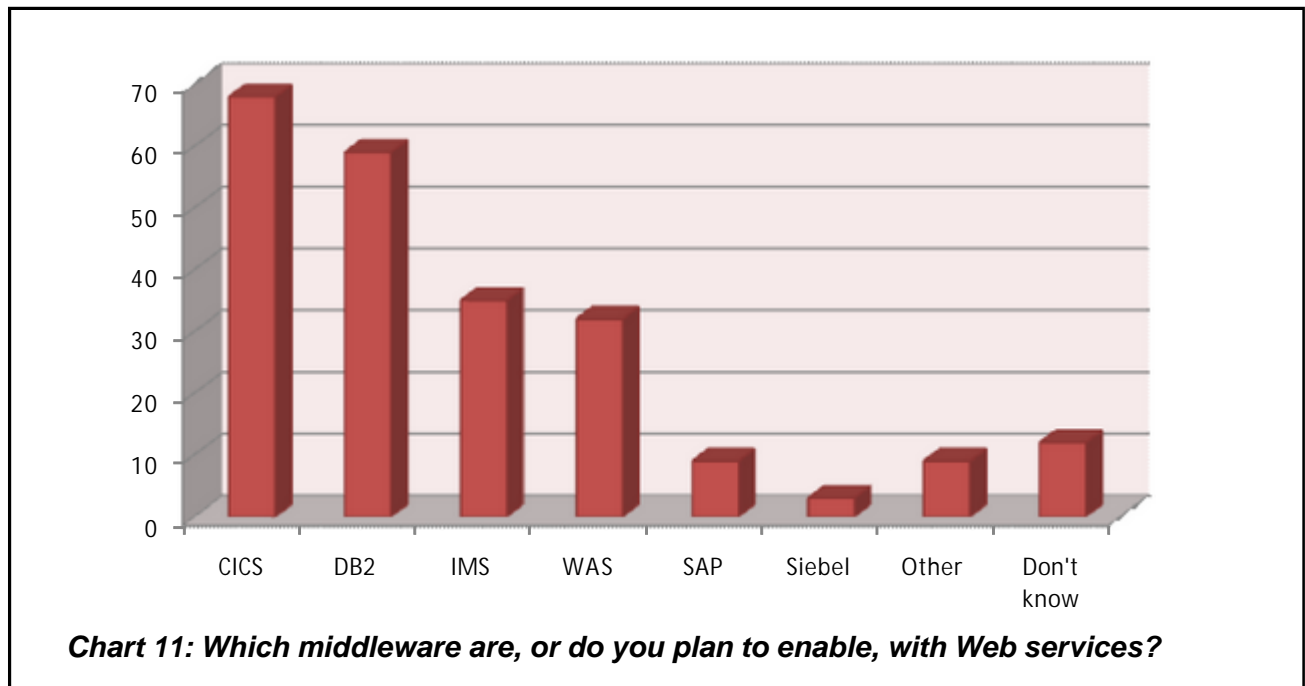
**Chart 8: Mainframe processors installed (all responses)**



on alternate years – z990 in 2003, z890 in 2004, z9 in 2005 and so on. In 2006 the existing top-end z9 range was re-badged as the z9 EC with some extra models added, and the bottom-end of the range extended to accommodate the new z9 BC offering for smaller users. 2008 saw the addition of the z10 processors. And, of course, next year sees the new z11s. Delivery dates for each range are provided in the *Technical Information* section of the Yearbook.

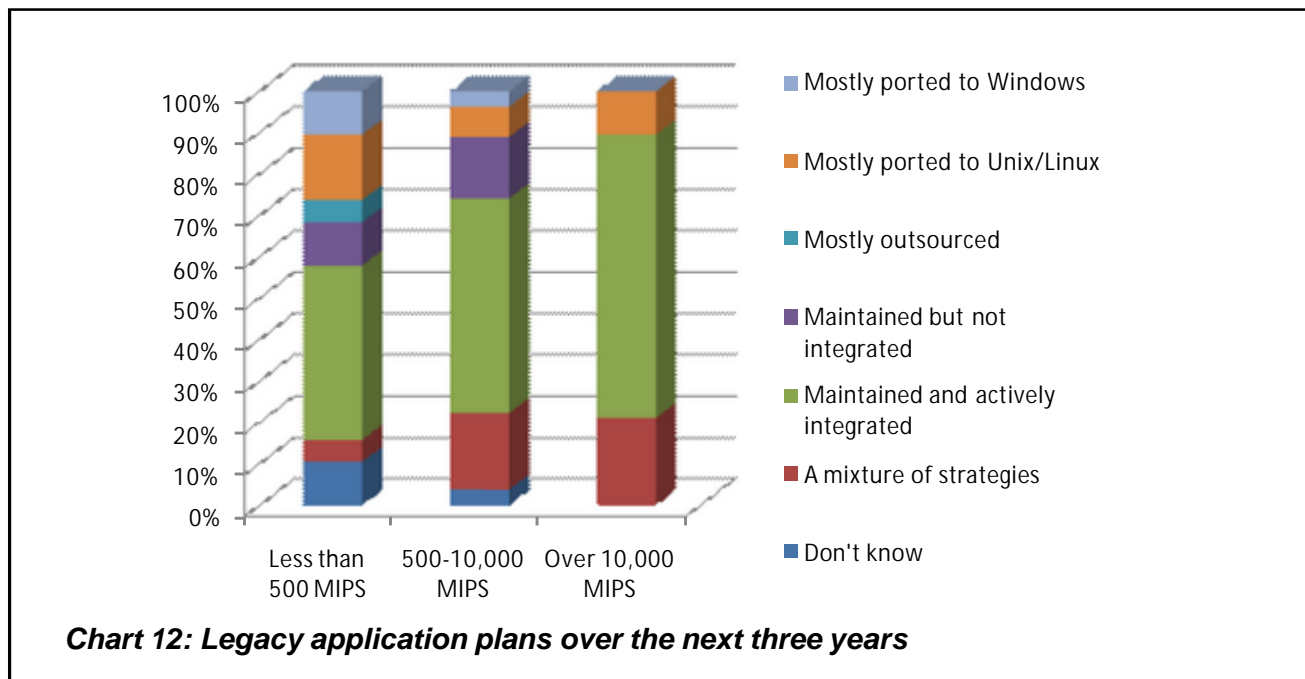
Our research suggests that, traditionally, users upgrade on a regular basis to the most recent hardware to take advantage of capacity increases and cost benefits. Chart 8 shows that just over a quarter of respondents are currently using z10s, and 39% are still on z9s – which are said to be due to be withdrawn from sale in June 2010. Older “z” mainframes accounted for a quarter of all processors in use by respondents. It is perhaps





worth pointing out here that many respondents had more than one processor in use at their site – and one site had six different processor models in use. This year’s survey found only one site using an Amdahl machine (down from two in previous years).

Software currency (Chart 9) presents a more mixed picture and tends to lag somewhat behind hardware. This year’s survey finds 4% of sites using the new Version 1.11, 27% using V1.10, but the majority of sites (50%) are using V1.9, with 10% using 1.8. V1.11 wasn’t available for last



year's survey, but the survey found only 3% of sites were using V1.10 – so this figure has increased hugely in the space of a year. The number of sites using Version 1.9 has increased from 45%, and sites on V1.8, has dropped from 24%. This year, only 9% of sites are using V1.7 or older - last year 18% of sites were using V1.7 with 41% using it the year before. Clearly, in the intervening year, most sites have migrated up at least one Release level of z/OS.

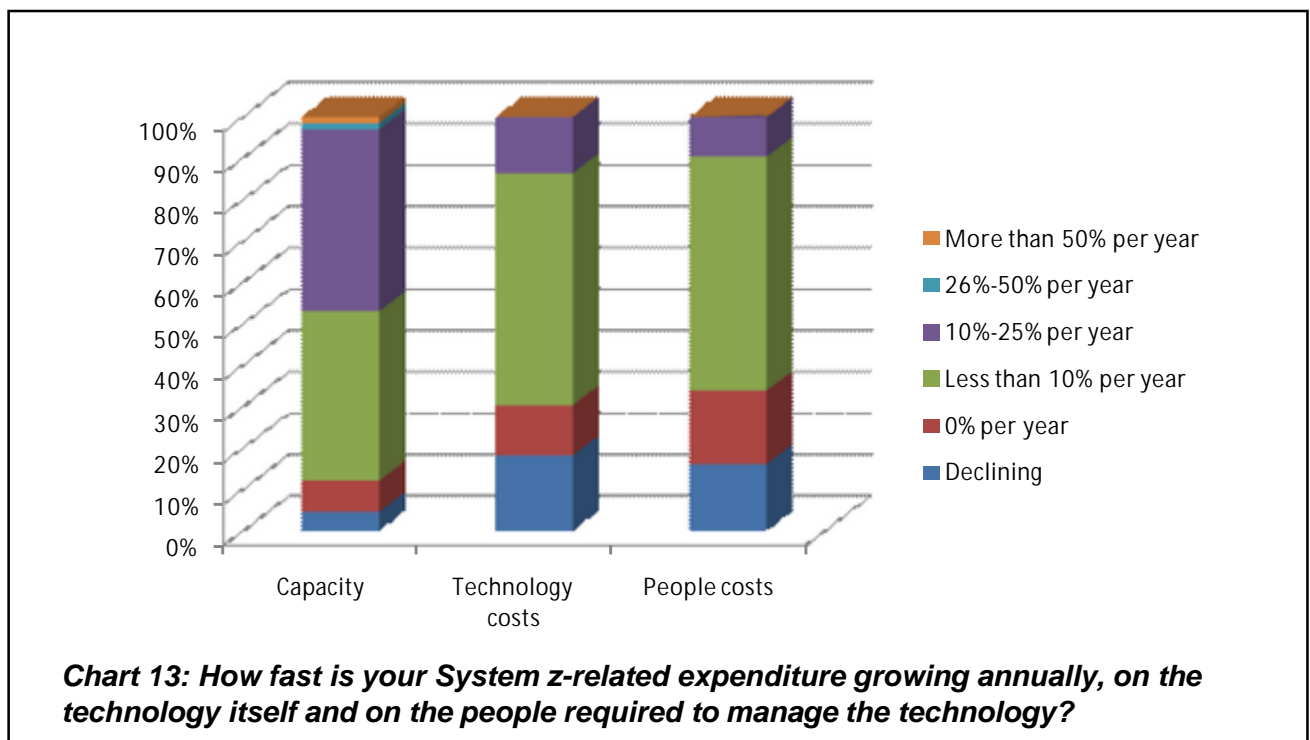
**Mainframe strategy**

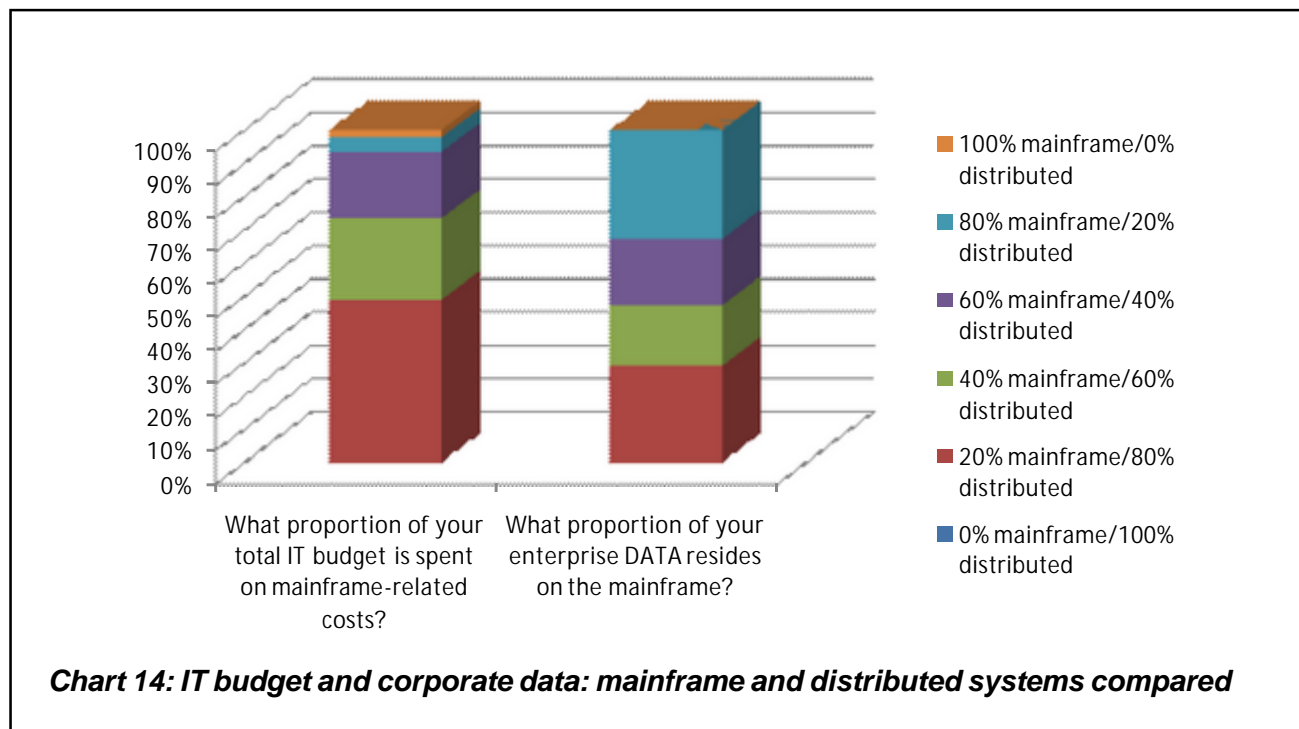
Within the industry as a whole, opinion is clearly divided over the role of the mainframe in new applications. For some companies the mainframe remains a separate legacy environment while others are leveraging the strengths of large systems by using them to deploy new workloads and technologies.

We asked respondents whether their z/OS systems participate in Web services and SOA environments, and the results are shown in Chart 10. 59% of organizations said that their mainframes participate partly or fully in Web

services. This figure has been steadily increasing. It was 53% last year and 48% in 2007. It may well be that SOA and Web services has now reached maturity because the number of sites planning to integrate them in the future has dropped this year to 5% (down from 11% last year).

31% (almost the same as last year's 30%) went on to say that they run Java-based applications on the mainframe, with a further 9% planning to do so in the future. This value has been dropping over the years. It was 12% last year and 15% the year before. Again a sign of maturity in the technology. 39% of respondents (well up last year's 28%) said that they run Linux on the System z (with another 7% – down from last year's 14% – at the planning stage). There are considerable cost and management benefits of consolidating distributed Linux workloads onto the mainframe, and IBM made the IFL (Integrated Facility for Linux) specialty processor available in 2001. Running Linux on a mainframe seems well on its way to becoming a mainstream technology. 68% of organizations said that they are Web-enabling their CICS subsystems (Chart 11), with DB2 at 59%





**Chart 14: IT budget and corporate data: mainframe and distributed systems compared**

(down from last year's 67%), IMS at 35%, and WebSphere Application Server at 32% (again dropping from last year's 44%. [Bear in mind that the small percentages attached to SAP and Siebel probably reflect the smaller number of sites using these products on the mainframe rather than a reluctance to consider Web-service enabling.]

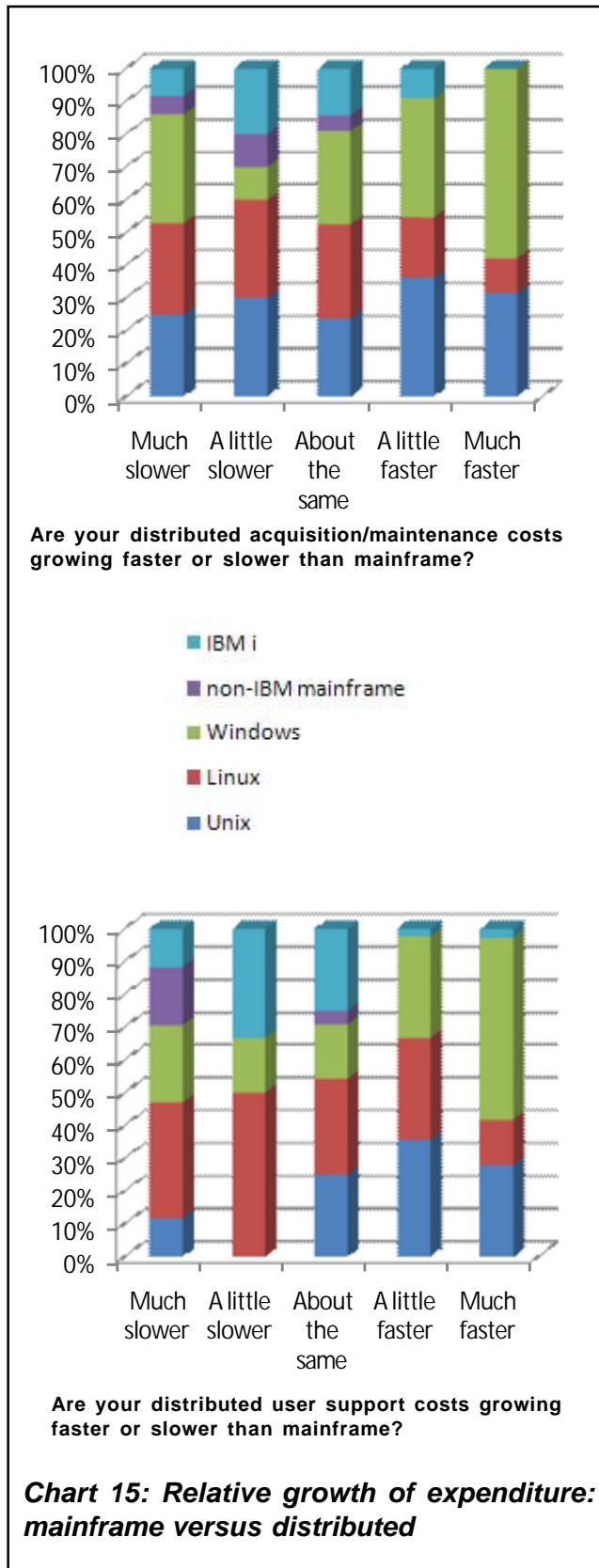
As for the future of legacy systems, once again the answer depends to a degree on the size and maturity of the installation. As shown in Chart 12, 68% of the largest sites see integration as the way forward and predict a positive strategic direction. In the mid-range (between 500 and 10,000 MIPS), the pro-integration contingent drops a little to 54 (down from 64% last year) with 8% considering porting to Unix or Linux. Below 500 MIPS, the picture is similar, with 47% planning to integrate and a mixture of other strategies, with slightly more porting to Unix/Linux than Windows.

**Relative cost**

There are many ways of comparing the costs of mainframe systems with those of other platforms, but none of them are straightforward and few are

meaningful. CIOs and finance directors all too often have little experience of the factors that contribute to mainframe total cost of ownership and there is still little published data available to help them make informed comparisons. It is beyond the scope of this short survey to go into detail on cost, but the following questions explore some areas where financial comparisons can be made between large centralized systems and distributed servers.

We asked respondents how fast their System z-related expenditure is increasing, in terms of the technology itself and the people needed to support it. In Chart 13, we compare these results with the growth in mainframe capacity. The vast majority of respondents said that their people and technology costs were seeing single-digit growth at the most (with 18% of sites seeing a decline in technology costs and 16% of sites seeing a decline in people costs). 47% (up from 39%) of respondents reported capacity growth higher than 10%, whereas only 14% reported technology costs increasing by that amount, and only 10% reported people costs increasing above 10%.

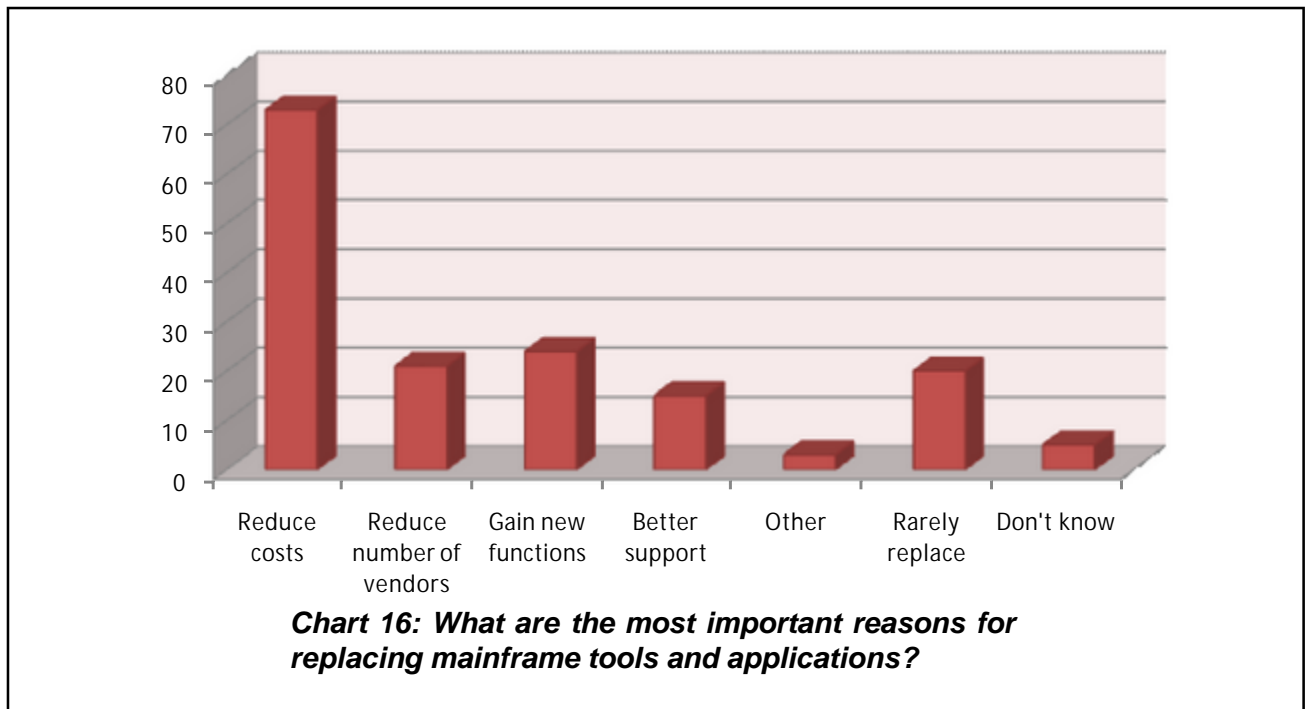


Perhaps these sites are expecting to make savings on head count through the use of more modern technology.

We went on to ask what proportion of the total IT budget is absorbed by mainframe-related costs, and what proportion of enterprise data resides on the mainframe (Chart 14). The result was that, while more than half of our respondents use the mainframe to manage the lion's share of the corporate data, only around one in four spends more on the mainframe than on its distributed systems. So the popular perception that the System z is soaking up financial resources without providing a good return on investment would, yet again this year, seem to be firmly dismissed by these figures.

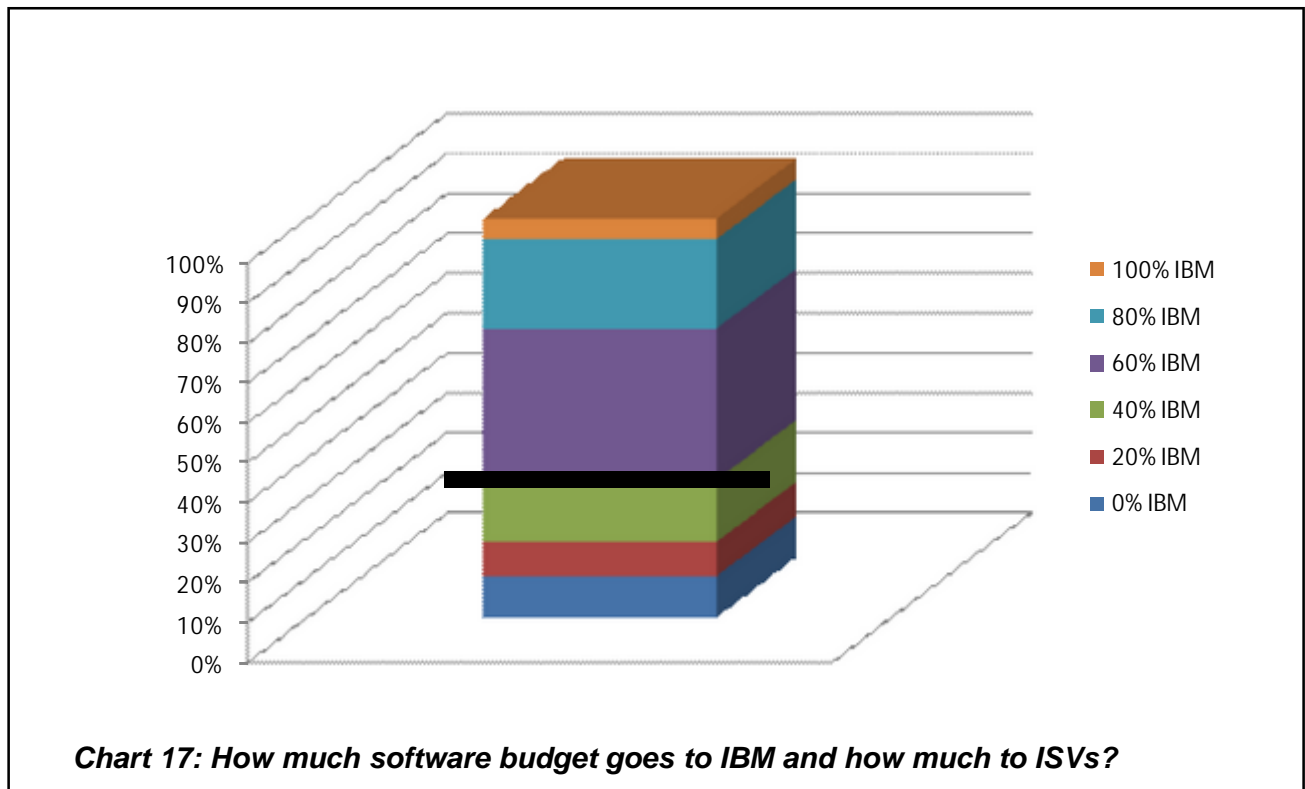
Again this year, we asked how fast respondents believed their acquisition/maintenance and support costs for distributed platforms were growing relative to the mainframe, for an equivalent amount of capacity or size of user population respectively (Chart 15). In other words, did they think that their mainframe costs were increasing faster or more slowly than their Unix, Linux, Windows, and IBM i costs. Of course, these numbers have to be treated with great caution as we are asking respondents to make direct comparisons, which, as we have just stated, are very complex. Once again, this chart can be used only as an indication of a general trend, but it's a very interesting trend nevertheless! Anything above the yellow bar in each column suggests higher costs for alternative platforms. Again this year, a substantial number of respondents felt that their Unix, Linux, and Windows user-support costs were increasing faster than the mainframe for an equivalent amount of capacity or support, but in contrast, the maintenance and acquisition costs for Windows and Linux were about the same as for a mainframe.

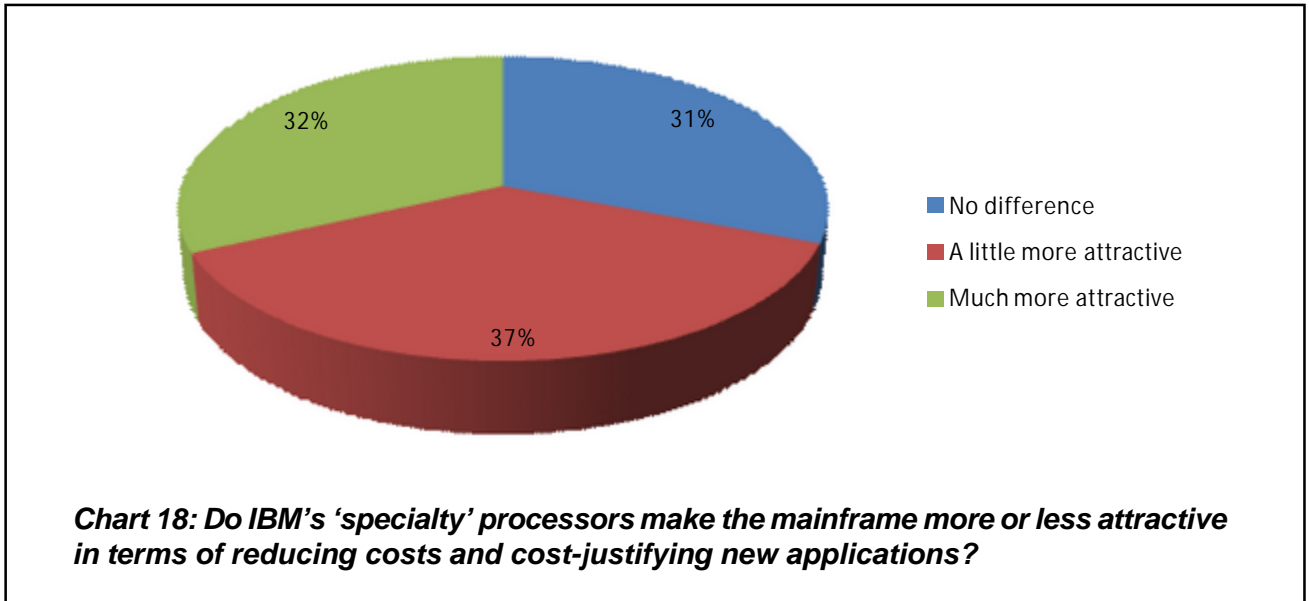
With the environment and environmental issues getting so much coverage in the media these days, we wanted to know whether IBM's recent



green initiatives on things like power consumption and cooling had made the mainframe more or less attractive to our respondents. Nearly three-

quarters (72% – up from last year’s 62%) said that IBM’s green initiatives made no difference at all. This year, one site said that the initiative made

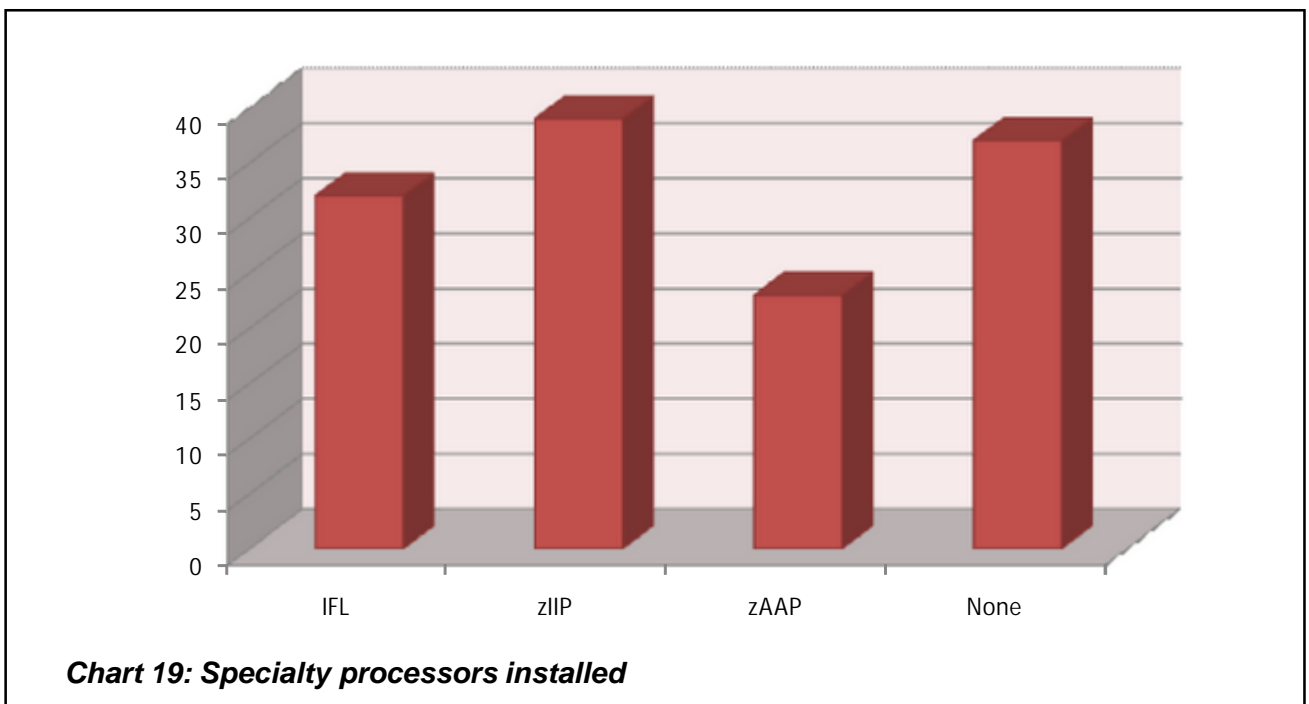




the mainframe less attractive. 19% felt it made the mainframe a little more attractive, and 7% felt it made the mainframe a lot more attractive. Clearly "greenness" isn't much of a selling point for mainframes.

**IBM versus the ISVs**

The mainframe independent software vendor (ISV) business is continually evolving. Many of the better-known names, particularly those that provide system/data management tools and utilities, are merging or being acquired by larger companies.



Others are simply disappearing from what had become a very crowded market, although a small stream of new entrants helps to redress the balance.

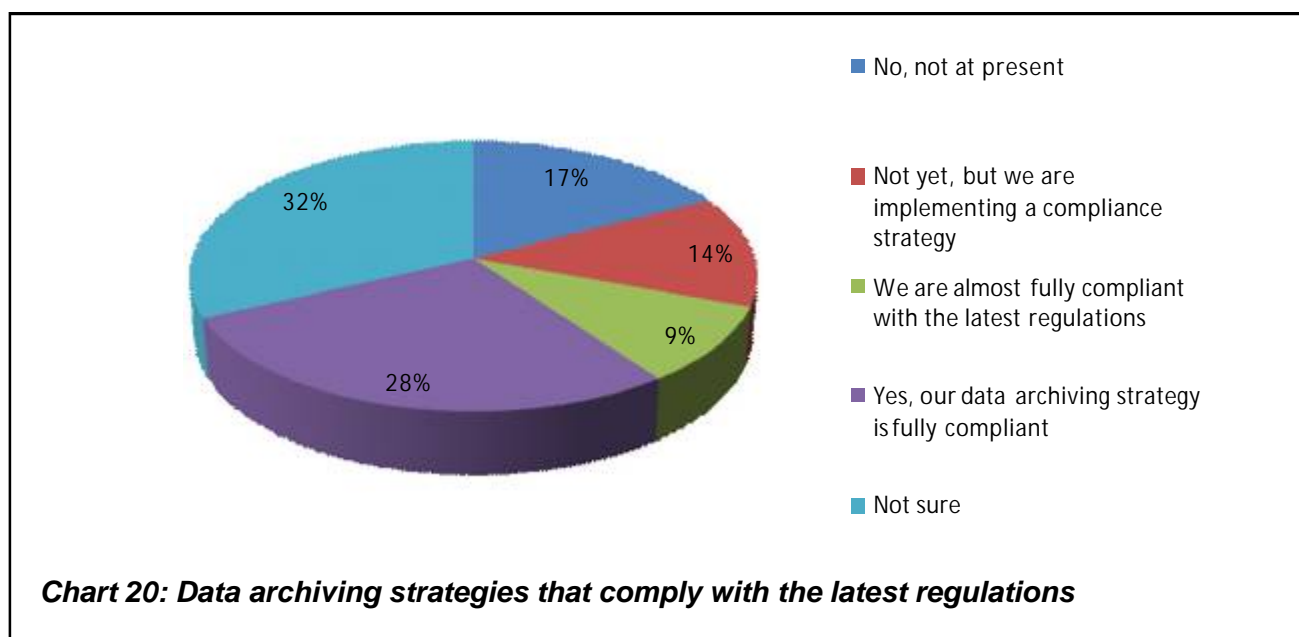
IBM regularly argues that some ISVs are too inflexible and need to change their software pricing strategies, while the third-party suppliers respond that IBM is placing excessive pressure on them by using its size and influence to win over their customers. Mainframe management is now sold as a way of allowing customers to maintain the quality of the service they get from the mainframe without the reliance on experienced mainframers. In other words, the software will identify a problem and, as well as informing a less-qualified human, will take the necessary steps to negate the problem.

We asked respondents what makes them consider a change of vendor for their mainframe tools and utilities. It's clear from Chart 16 that cost is by far the biggest driver, even though cheaper tools often offer limited functionality. Disappointingly for ISVs, this year 20% of respondent (up from 16%) claimed they rarely consider changing mainframe software.

We also asked how much of users' mainframe software budget is spent on IBM/Tivoli software, and how much on products from other vendors. The thick black line in Chart 17 is moving closer to the 30% mark this year (down from around 40% in previous years), which means that a third of respondents pay more to IBM for their software than to other suppliers. Clearly, despite IBM's product developments and its acquisitions in recent years, sites are still using third-party software – and with software giants like CA and Platinum, this isn't too big a surprise.

**Other issues**

Two other matters have again been addressed in this year's survey. Firstly, we asked whether IBM's 'specialty' processors – such as the Integrated Facility for Linux (IFL), the Application Assist Processor (zAAP) intended for Java applications, and the Integrated Information Processor (zIIP) intended primarily for DB2 – make the mainframe more attractive in terms of reducing costs and cost-justifying new applications. Nearly a third of sites (31%) weren't sure whether it made any difference at all. 37% thought it made mainframes a little more attractive, and, again, just under a third (32%) thought it made mainframes much



more attractive – see Chart 18. Interestingly, that figure for no difference or unsure has gone up from 20% last year, despite the increased publicity and proof-testing that the zAAP and zIIP have received in the intervening months.

We went on to ask respondents which specialty processors they had. 12% of sites had all three and a further 12% of sites had two of the three specialty processors. More sites had zIIP processors (39%) than any other. 37% of respondents had not yet activated or installed a specialty processor yet. The full results are shown in Chart 19.

In the USA, regulations such as Sarbanes-Oxley Act (SOX), HIPAA (Health Insurance Portability and Accountability Act), and BASEL II, plus what's estimated to be over 150 state and federal laws dictate the length of time that Electronically-Stored Information (ESI) needs to be retained. These regulations – and they do depend on the industry – have greatly increased data retention periods. Similarly, outside the USA there has been a growth in regulation affecting the length of time that data needs to be archived. Just over 60% of sites were compliant or nearly compliant with these new regulations (very slightly lower than last year's 63%). The figure for sites not having an archiving strategy is 17% – a fairly large drop from last year's 25% indicating the importance sites are putting on compliance. The full results are shown in Figure 20.

### Survey comments

At the end of the survey, respondents were invited to leave comments or other information. Many of these related to the survey itself or respondents pleasure at having the opportunity to share their opinions. However, some of the comments were very informative about mainframe usage and mainframe futures.

As usual, respondents were unhappy with costs. One said: "The mainframe is too expensive (and perceived as being even more so). Costs for legacy

applications must come down, and third-party software must support the mainframe."

Another respondent commented: "The other platform costs may be increasing faster than mainframes but the starting point is drastically lower."

It may perhaps be a consequence of the deep recession that sites experienced in 2009, but a number of people commented on the forthcoming end of days for mainframes at their sites. For example, one respondent complained: "Our architects and senior management do not believe in the mainframe as a viable platform for the future in spite of all the benefits. There is a general lack of mainframe knowledge at the higher levels. The perception persists that it is a dinosaur, expensive, and cannot be supported."

Another site is closing due to outsourcing. They said: "This site is likely to vanish in future years (1-2 years) due to outsourcing of our application to another vendor."

Another site sees migration of its applications to SAP as the main threat to the mainframe. Their comment was: "We are deploying SAP and it will replace most of the mainframe functionality. The project has encountered various issues that have extended the final implementation date. Not all mainframe applications will be rehosted to SAP and the final hosts for these applications have not been determined at this time."

The majority of sites were perfectly happy with their mainframes, but continuing lack of management understanding of what a mainframe can do and migration onto other platforms should give IBM pause for thought.

### CONCLUSIONS

Despite 2009 being a year of recession following the crisis in the banking and financial sector, our survey still found that users are experiencing steady growth in the mainframe environment. As is so often the case, this pattern of growth and

commitment is more sustained among the largest sites (where investments are huge and experience is plentiful) than lower down the scale where the System z is exposed to more direct competition.

Having said that, there are clearly many reasons to opt for the mainframe to support new development. Despite the complexity of mainframe pricing, the majority of respondents believe that their Unix and Windows user-support costs were increasing faster than the mainframe. However many sites felt their maintenance and acquisition costs were on a par with those of the System z, and they continue to use the mainframe as their principal repository for corporate data.

Overall the future looks very positive, with an increasing proportion of users integrating their mainframe applications with Web services and service-oriented architecture. Around two-thirds of sites surveyed felt specialty processors made mainframes more attractive, but just over half (56 percent) actually had them installed and were making use of the obvious benefits associated with them.

For sites with smaller mainframes, particularly below 500 MIPS, there is always the option – or perhaps threat – of migrating off the mainframe to some other platform. Again this year, our survey showed this to be a strong possibility and respondents comments confirmed this.

The bottom line is that the mainframe continues to offer a cost-effective, secure, and powerful platform for organizations with the necessary background and expertise in place to support it.

Moreover, there are strong indications that mainframe and non-mainframe professionals are still culturally divided within the enterprise. For the System z to thrive long-term within the broader IT context, it is essential that businesses – in particular CEOs and CIOs – understand where the system's real strengths lie, and how it can be integrated most effectively with other IT resources. There is also a need for non-mainframe staff to be trained on the mainframe to appreciate its many advantages.

## Virtual IMS CONNECTION:

Virtual IMS *CONNECTION* at [www.virtualims.com](http://www.virtualims.com) is an independently-operated vendor-neutral site run by and for the IMS user community. It was established as a way for individuals using IBM's IMS hierarchical database and transaction processing systems to exchange information, learn new techniques, and advance their skills with the product.

The Web site at [www.virtualims.com](http://www.virtualims.com) provides a central point for coordinating periodic meetings (which are technically-oriented topics presented in a webinar format), and will provide articles, discussions, links, and other resources of interest to IBM IMS practitioners. Anyone with an interest in IMS is welcome to join Virtual IMS *CONNECTION* and share in the knowledge exchange. Become a fan on Facebook and follow the tweets at [twitter.com/VirtualIMS](https://twitter.com/VirtualIMS).

To share ideas, and for further information, contact [trevor@itech-ed.com](mailto:trevor@itech-ed.com).

The Virtual IMS *CONNECTION* user group is free to its members. Various sponsorship opportunities are available to vendors of IMS-related products. Full details of these opportunities and can be found *here*.

