INTRODUCTION

Scotland is home to a vibrant digital technologies industry with over fifteen hundred companies engaged in a variety of activities from software development and IT services to digital agencies, games development and telecommunications. The industry provides products and services across a wide range of end markets from public services through traditional industries such as banking and insurance to the new and innovative industries like renewables and biotechnology.

The industry has grown substantially over the last five years despite a challenging economic climate, with increasing start-up activity creating a wide range of new entrants. Over 84,000 people currently work in digital technologies roles across Scotland, generating more than £5bn in GVA.

Each year the Scottish Technology Industry Survey provides information on the health of the digital technologies industry. Once again the analysis breaks down the results by size of company; small, medium and large. Also included at the end of this report is an analysis of the employment and skills outlook for the year.

ScotlandIS would like to thank everyone for taking part in this year’s Scottish Technology Industry Survey for their invaluable input, providing feedback on performance in 2015, and their forecasts for 2016.
The 2016 survey highlights business confidence and growth expectations despite the increasingly uncertain global operating environment. There are high levels of confidence with 70% of businesses being optimistic or very optimistic about the year ahead.

Sales growth in 2015 was reported by 68% of businesses, with over a quarter reporting growth in turnover of 20% or more.

81% of businesses expect sales to increase over the next 12 months but 14% expect sales to decrease.

The survey results suggest the demand for talent has cooled slightly from the exceptional levels of 2015. Employment is expected to continue to grow with 66% of businesses expecting employment to increase though this is a decline from the high figures reported in 2015 (83%) and 2014 (75%).

In particular, graduates will be in great demand as 74% of recruiting businesses expect to require graduates in 2016, a similar figure to last year.

The recruitment of modern apprentices remains relatively low and static with 29% of companies likely to recruit and 57% unlikely to recruit.

As for previous years, 60% of businesses predict the majority of talent will come from Scotland and 20% from the rest of the UK.

Software and Web Development skills remain the biggest requirement to support business growth with 70% of businesses needing these skills, but with a wider range of specific languages being sought than in previous years.

Project Management 65%, and Commercial & Business Support 70%, are also in demand with Infrastructure Support at 48%.

In terms of commercial skills businesses expect to have the greatest demand for sales roles. All aspects of marketing are also in high demand.
Businesses reported another good year in 2015, with sales growth and profit increases.

Sales in 2015 continued to grow with 68% of business reporting an increase, with over a quarter (27%) reporting an increase in turnover of 20% or more.

Sales in 2015 compared to budget at the beginning of 2015

Results show 2015 was as good as or better than predicted at the outset of the year. 72% of businesses reported that their actual results were as good or better than budgets set at the start of the year. 28% reported outturn results were less than expected. These figures were similar to the previous year.

Profit margins performance in 2015 compared to 2014

The reported increase in sales for 2015 also contributed to profit as businesses again reported an increase in profit margins with 42% reporting increased margins and 35% stable margins over the results in 2014.

Profit margins over five years

While the number of companies reporting increased margins rose, there was also a rise in those reporting a significant decrease compared to 2014. However, that year was a historic low following on from the profit margins squeeze in 2013. The figures for 2015 are between these two extreme years and similar to previous years.
Optimism is high with 70% of businesses having a very optimistic or optimistic view (compared to 87% in 2015) and only 16% having a pessimistic or very pessimistic view. However, with turmoil in many markets, confidence is less buoyant than last year.

Businesses are even more optimistic about expected sales levels for 2016 with 81% of companies predicting an increase and only 14% expecting a decrease.

Unpacked, these figures are somewhat less buoyant than in 2015 but 34% of businesses still expect a significant increase in sales of 20% or more, compared to 40% of businesses in 2015.

“Have a clear defined offering that is easy to understand and easy to buy”

PETER PROUD | CORTEX
“THINK BIG & MOVE FAST”
GARETH BIGGERSAFF | BE-IT

“LEARN TO SELL PROPERLY. TOO OFTEN AN UNDERRATED SKILL AND UNDER APPRECIATED BUT ESSENTIAL TO GROW A BUSINESS.”
DAVIN LUSH | DATAVITA

“NEVER UNDERESTIMATE THE SPEED OF CHANGE IN THE MARKET”
DONALD CAMERON | LOGICALWARE

“KEEP A CLEAR VIEW OF THE FOCUS AREAS AND OBJECTIVES OF THE BUSINESS, DON’T GET DISTRACTED BY EVERY OPPORTUNITY”
ALISON MCLAUGHLIN | SOPRA STERIA

“BE BOLD BUT PRUDENT – AND DON’T FEAR FAILURE!”
CALLUM SINCLAIR | DIAPIPER

“ENCOURAGE INNOVATION WITHIN YOUR TECHNOLOGY AREA TO BENEFIT YOUR TEAMS AND ULTIMATELY YOUR BUSINESS”
SARAH AGER | SUMERIAN

“SPOT YOUR TOP TECHNOLOGISTS EARLY, NURTURE THEM, AND PROVIDE THE ENVIRONMENT IN WHICH THEY CAN SHINE”
GERRY DOCHERTY | SMARTER GRID SOLUTIONS

“TRUST YOUR JUDGEMENT – IT GOT YOU TO WHERE YOU ARE TODAY. TRUST YOUR PEOPLE – THEY’LL GET YOU WHERE YOU WANT TO BE TOMORROW”
GREG SOPER | SALESAGILITY

“BUILD TEAMS WITH PASSION BEYOND THEIR PROFESSIONAL RESPONSIBILITIES”
GARY CLARK | COOPER SOFTWARE
Many businesses have an international outlook and either sell overseas or are part of a larger company with an international presence.

**Figure 6**

**EXPORT LEVELS**

Engagement in international markets continues to increase with 67% of businesses reporting they are already exporting, and another 19% planning to do so in the future. This is an increase in the levels from previous years – last year 57% reported that they were exporting with 16% planning to export.

<table>
<thead>
<tr>
<th>EXPORTING</th>
<th>PLANNING TO</th>
<th>NO PLANS TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>2014</td>
<td>2015</td>
</tr>
<tr>
<td>57</td>
<td>53</td>
<td>33</td>
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<tr>
<td>12</td>
<td>13</td>
<td>17</td>
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<tr>
<td>27</td>
<td>34</td>
<td>25</td>
</tr>
<tr>
<td>10% USA &amp; CANADA</td>
<td>47%</td>
<td>48% USA &amp; CANADA</td>
</tr>
<tr>
<td>48% CANADA</td>
<td>48%</td>
<td>48%</td>
</tr>
<tr>
<td>44% USA &amp; CANADA</td>
<td>44%</td>
<td>44%</td>
</tr>
<tr>
<td>25% REST OF THE UK</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>10% REST OF THE WORLD</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>10% MIDDLE EAST</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>14% AFRICA</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>8% AFRICA</td>
<td>8%</td>
<td>8%</td>
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<tr>
<td>20% CENTRAL &amp; SOUTH AMERICA</td>
<td>20%</td>
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<tr>
<td>20% CENTRAL &amp; SOUTH AMERICA</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>10% REST OF THE WORLD</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>10% CENTRAL &amp; SOUTH AMERICA</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Figure 7**

**ATTRACTION MARKETS FOR EXPORTS**

When asked to highlight three geographical markets, respondents ranked Rest of the UK (48%), USA & Canada (47%) and Europe (44%) as the most attractive markets for exports.
HEADQUARTERS LOCATION

There is little significant change in survey respondents’ headquarters’ locations, which are spread across the country. The biggest cluster is in Edinburgh & Lothians. Until 2014 Edinburgh and Glasgow were very evenly matched, with about 29% of respondents being based in each city but over the last two years Edinburgh has become the leading Scottish base ahead of the Greater Glasgow area. The only other significant Scottish cluster is in Aberdeen & Grampian with all other locations at a similar level to last year.

“FOCUS ON THE OUTCOME YOU’RE TRYING TO ACHIEVE, NOT THE OBSTACLES PREVENTING IT FROM HAPPENING. CLEARLY DEFINE YOUR GOALS AND DON’T LET SHORT-TERM HICCUPS HINDER YOUR ABILITY TO ACHIEVE”

— MARTIN BOWMAN | LOCKEED MARTIN

MAIN ACTIVITY OF BUSINESS

Development of software solutions and services (28%) and software products (15%) continue to be the most significant activities respondents are engaged in.

SOFTWARE PRODUCT

SOFTWARE SOLUTIONS & SERVICES

SERVICES TO TECHNOLOGY

IT BUSINESS CONSULTANCY

APPLICATION DEVELOPMENT

TELECOMMUNICATIONS

ECOMMERCE & WEB DEVELOPMENT

SYSTEMS INTEGRATION

INFRASTRUCTURE & NETWORK MANAGEMENT

DATA & STORAGE MANAGEMENT

SOFTWARE TESTING

OTHER

15
15
28
21
14
10
10
8
7
6
6
5
4
4
4
2
2
1
5
12

2015
2014

SOFTWARE TESTING

DEVELOPMENT OF SOFTWARE SOLUTIONS AND SERVICES (28%) AND SOFTWARE PRODUCTS (15%) CONTINUE TO BE THE MOST SIGNIFICANT ACTIVITIES RESPONDENTS ARE ENGAGED IN.
Respondents report that multinationals, or very large organisations with over 1000 employees, are the main customer base in 42% of cases. This is an increase from 31% in 2015. For the first time individual customers have been specifically included and for 6% of companies they are their main customer base.

Supplying the large and medium-sized firms categories has decreased in relative terms due to the reported shift to the largest companies.

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**SIZE OF CUSTOMER BASE**

Respondents report that multinationals, or very large organisations with over 1000 employees, are the main customer base in 42% of cases. This is an increase from 31% in 2015. For the first time individual customers have been specifically included and for 6% of companies they are their main customer base. Supplying the large and medium-sized firms categories has decreased in relative terms due to the reported shift to the largest companies.
2015 was a good year for smaller businesses, with 63% reporting an increase in sales, 42% increasing their profit margins and 72% have an optimistic outlook for 2016.

INCREASED SALES: 63%
PROFIT MARGINS: 42%
OPTIMISM: 72%

Most of these, 54%, expect to employ up to 5 staff. 25% expect staff numbers to stay the same, with only 7% expecting employee levels to decrease.

67% of respondents are likely to recruit graduates and 22% are likely to take on modern apprentices.

78% of smaller businesses expect their sales to increase over the next 12 months, 7% anticipate they will stay the same, while 15% forecast a decrease in sales. Similarly to last year more of the smaller businesses, 45% predict sales growth in the top two bands compared to the industry average of 34%.

81% of smaller businesses were formed in or after 2000.

Small businesses reported an increase in those who sell internationally to 58% with those who plan to export staying stable at 29% leaving only 13% who have no intention to export.

Already exporting: 58%
Planning to export: 29%
No plans to export: 13%

68% of small businesses expect to increase employee levels, fewer than in previous years. This is a considerable reduction from last year’s level of 82%. Most of these, 54%, expect to employ up to 5 staff. 25% expect staff numbers to stay the same, with only 7% expecting employee levels to decrease.

67% of respondents are likely to recruit graduates and 22% are likely to take on modern apprentices.
Turnover for 94% of smaller businesses was in the region of £0–£5M. However, there is a marked contrast with the bulk of businesses either in the lowest (£0–£250K) or highest bands (£1M–£5M).

FUNDING MODEL
Funding for nearly three-quarters of smaller businesses is generated from founders’ capital and retained profits.

CASH FLOW COMPARED TO LAST YEAR
Smaller businesses reported little change in their cashflow when compared to 2014. 40% reported improvements while just 6% reported substantial difficulties. Founders’ capital and retained profits.

2015 SALES LEVELS COMPARED WITH 2014
In 2015 63% of smaller businesses reported an increase in sales from 2014. The sales levels are slightly down from the previous year with an increase in those reporting sales staying the same. Those reporting a decrease in sales at 17% is similar to last year.

ACTUALS COMPARED TO BUDGET
In 2015 actuals compared to budget stayed close to the predicted levels for 38% of smaller companies with increases reported by 37% and a decrease by 25%.
Medium-sized businesses enjoyed an exceptional 2015 reporting better sales and profit figures than either large or small businesses with improved figures on 2014. 82% reported an increase in sales, 47% increased their profit margins and 85% have an optimistic outlook for 2016.

85% of medium-sized businesses expect to increase employee levels, slightly down from the 97% in 2015. Most of these companies, 74%, expect to take on up to 20 additional staff with only 9% expecting employee levels to decrease.

85% of respondents are likely to recruit graduates and 29% are likely to take on modern apprentices.

91% of medium-sized businesses expect their sales to increase over the next 12 months, with 9% forecasting a decrease in sales. This is slightly down on last year but greater than the industry average of 80%.

Most larger business (83%) reported that they are already selling internationally and only 11% have no intention to export.
All medium-sized businesses have a turnover greater than £1M and 36% have a turnover of £20M or more.

### Funding Model

Funding for medium-sized businesses is largely generated from founders capital and retained profits (41%) followed by venture capital at 17%.

<table>
<thead>
<tr>
<th>Funding Model</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founders Capital</td>
<td>41%</td>
</tr>
<tr>
<td>Retained profits</td>
<td>17%</td>
</tr>
<tr>
<td>Venture capital</td>
<td>14%</td>
</tr>
<tr>
<td>Business angels / B2B</td>
<td>10%</td>
</tr>
<tr>
<td>Loans / bank funding</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
</tr>
</tbody>
</table>

### Cash Flow Compared to Last Year

Medium-sized businesses also reported little change in their cashflow when compared to 2014. 27% reported improvements while just 2% reported substantial difficulties.

<table>
<thead>
<tr>
<th>Cash Flow Improve</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substantially better</td>
<td>27%</td>
</tr>
<tr>
<td>Slightly better</td>
<td>17%</td>
</tr>
<tr>
<td>Stay much the same</td>
<td>46%</td>
</tr>
<tr>
<td>Slightly more difficult</td>
<td>10%</td>
</tr>
<tr>
<td>Substantially more difficult</td>
<td>2%</td>
</tr>
</tbody>
</table>

### 2015 Sales Levels Compared with 2014

In 2015 82% of medium-sized businesses reported an increase in sales from 2014 with only 9% reporting a decrease in sales. For medium-sized business the figures are better than last year and much better than the industry as a whole.

### Actuals Compared to Budget

In 2015 actuals compared to budget increased for 33% of medium-sized companies with sales on target reported by 29% and a decrease for 38%.
Larger businesses reported another good year in 2015. 64% reported an increase in sales and only 18% reported a decrease. 42% reported their actual 2015 performance was better than forecast budget, 36% increased their profit margins. Though only 47% have an optimistic outlook for 2016, 76% expect sales to increase.

There is a mixed message on employee levels with 20% likely to decrease staff by at least 50 and 15% increasing by staff by at least 50 with an even spread between the two extremes. Of those expecting to decrease staff, over 10% were in the oil and gas sector. Overall 39% of larger business expect to increase employment levels and 43% expect them to decrease.

Large businesses are more likely than other businesses to take on modern apprentices with 50% of respondents reporting they are likely to take them on, though 78% are likely to recruit graduates.

76% of larger businesses expect their sales to increase over the next 12 months, whilst 7% anticipate they will stay the same and 17% forecast a decrease in sales. These figures are slightly down on the figures reported last year.

Larger companies are steady in their outlook with the majority, 45%, predicting a modest increase in sales.
90% of larger businesses have a turnover of £100M or more and 36% have a turnover of £20M or more. 61% are typically funded as an established quoted company.

FUNDING MODEL
Larger businesses (61%) are typically funded as an established quoted company.

CASH FLOW COMPARED TO LAST YEAR
46% of larger businesses reported that cash flow was more difficult last year when compared to 2014 while only 18% reported an improvement.

2015 SALES LEVELS COMPARED WITH 2014
Sales in larger businesses are holding steady with 64% reporting an increase in sales from 2014 but 18% reported a decrease in sales. For larger businesses the detailed figures reveal that the increases were mainly marginal and hence not as good as last year.

ACTUALS COMPARED TO BUDGET
In 2015 actuals compared to budget increased slightly for 42% of larger companies with the status quo reported by 33% and a decrease by 24%.
Predictions on the location for new talent show that companies expect 60% of new staff to come from Scotland, 19% the rest of the UK with 21% from either Europe or the rest of the world.

Demand for the recruitment of graduates remains strong with 74% of all businesses reporting they are definitely or quite likely to recruit graduates in 2016. When businesses were asked what level of experience their business needs to aid growth, ‘graduates’ was the most popular response with 67% reporting there was some or a high requirement. This is down slightly on 2015 but the need for graduates from Scottish universities remains a priority.

There is less demand for the recruitment of modern apprentices with 29% reporting they are definitely or quite likely to recruit them in 2016. 57% said they were unlikely or very unlikely to recruit modern apprentices. Larger companies are more likely to recruit a modern apprentice.
Most In Demand Skillsets

Software and web development remain the most in demand skills with 70% of respondents indicating they will have a requirement for people with software and web development experience in 2016.

There is also strong demand for commercial and business support skills, required by 69% of businesses. The key skill here is sales with two thirds of all respondents highlighting demand, and 23% seeking a range of marketing expertise. Project management is a close third with 65% of respondents seeking these skills.

Amongst larger companies the greatest demand is for project management skills (75%) followed by software & web development (66%) and infrastructure support & management (60%) and commercial & business support skills (62%).

Medium-sized businesses report very strong demand for software & web development skills (88%) followed by project management skills (77%) and commercial and business support skills (65%).

For smaller businesses commercial and business support at 75% is the most in demand skillset with software and web development second at 68%, and both project management and executive management skills at 54%.

Technical Skills

Breaking down the technical skills requirements software developers and web designers, both front and back-end, continue to be the key roles mentioned, but there is increasing specific mention of mobile, security, and data analysis and data management skills.

As regards technical skills there is a wider range of specific languages being sought than in previous years ranging from staples such as .net, Java and c# to python, JavaScript and SharePoint. There is strong demand for java and .net skills, and increasing demand, compared to previous years, for JavaScript/Angular, iOS and android expertise.

Commercial Skills

Businesses report that the most in demand commercial skill is sales (65%). All aspects of marketing (including social media and digital marketing) is also in high demand (23%) along with Business and Project management skills (19%).
GENERAL OVERVIEW

- Results from this survey are positive and 2016 looks set to be another good year for the technology industry as 81% of businesses expect an increase in sales over the next 12 months. This level of positivity is translated into a forecast increase in employee numbers. 66% expect to increase the number of employees they recruit over the next 12 months and of these 74% likely to recruit graduates.

- Businesses are again reporting barriers to recruiting and retaining staff as the main impact on their business. Also mentioned were concerns for the year ahead including the downturn in oil prices and the lack of stability in the political sphere, with elections, the EU referendum and legislative changes.

ADVICE FROM FELLOW BUSINESSES

To conclude we asked respondents to give advice to fellow members. Popular themes included:

- **NETWORKS**
  - “Act in concert with others, work **collaboratively** as a sector.”
  - “Develop a healthy network of supporters, people with **energy** and **positive** attitudes and reach out to keep yourself going.”
  - “Talk to those who have **already** been there.”

- **TAKE RISKS**
  - “Be **bold** & embrace the more **agile** way our industry wants to operate.”
  - “Move **fast** and take risks, technology is **changing** quicker than ever.”
  - “Don’t be afraid to **experiment** and try out new things.”

- **SKILLS**
  - “Use a **mix** of graduates, experience and apprenticeships – spend **quality** time recruiting.”
  - “Invest in **training** – stay **ahead** of the game.”

- **FOCUS**
  - “Work **hard** and **smart**; don’t chase everything but focus on areas where you can make a **difference** and deliver real **value**.”
  - “Don’t be frightened to **specialise**.”