



London innovation Strategy and Action Plan

April 2003 – March 2006

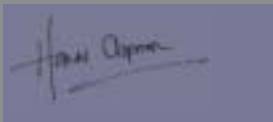
Foreword by the LDA Chair, Honor Chapman CBE

The LDA Corporate Plan, published in March 2002, makes a commitment to bring forward strategies and action plans that develop our activities and purpose in line with the Mayor's Economic Development Strategy. I am very pleased to introduce the London innovation Strategy and Action Plan, focusing on bringing together a wide range of partners across London to support innovation as a key driver in increasing productivity.

Innovation is at the heart of economic growth, providing a key to unlocking the potential for social gain that exists in our diverse communities. Science and knowledge make vital contributions to providing the raw material for innovation; the new knowledge, ideas and creativity that make individuals, businesses and communities successful. Innovation can also provide the internal flexibility and strength to make economic and social development across London more sustainable and less vulnerable to external pressures and shifts in performance.

London has significant assets when it comes to innovation but also a number of critical weaknesses. The creativity and dynamism of some of London's leading sectors and businesses is matched by its world class Universities and researchers. However, the majority of small businesses find it difficult to tap into these strengths and fragmentation of support services and London's diversity is not fully harnessed in promoting innovativeness and creativity.

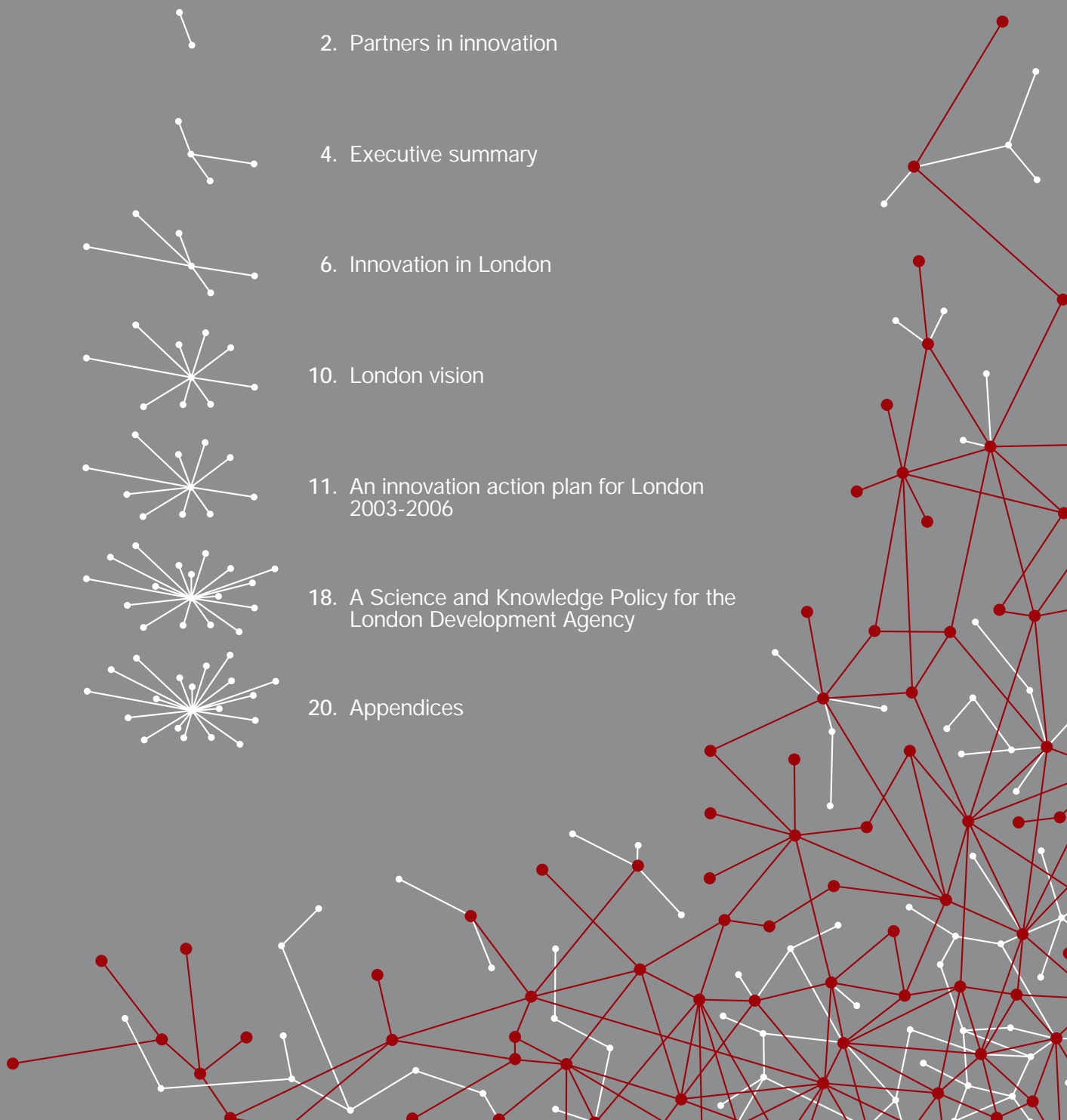
The LDA is committed to utilising the full innovative potential of London's knowledge base and therefore welcomes collaboration with all individuals, businesses and organisations with an interest in making London the world's leading knowledge economy.



Honor Chapman CBE
Chair, London Development Agency



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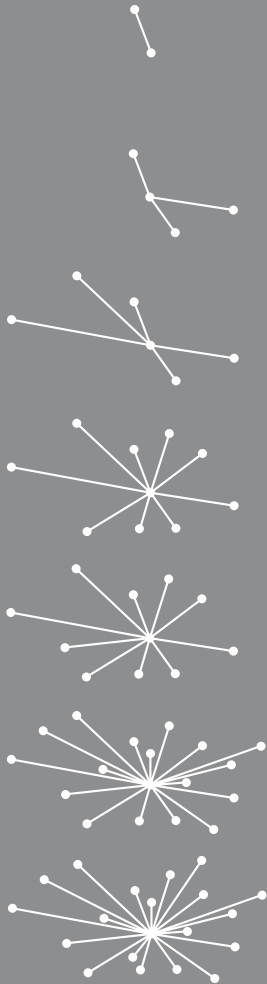
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Partners in innovation

The innovation issues facing London are complex and addressing them requires a partnership approach that brings together a range of organisations and institutions. The LDA has a leading and enabling role bringing together all the innovation components to achieve a networked and effective innovation economy. It will drive forward the innovation agenda, acting as the catalyst for action, alongside partner organisations.

New network mechanisms are not required in order to take the lead in this task. The LDA has already created a business-led advisory group to develop and address the innovation agenda. The London Innovation Steering Group, chaired by Sir Derek Roberts, with significant private sector membership will play an important role in the implementation of the strategy. The steering group will oversee and guide the development of a strong innovation and knowledge transfer culture, and facilitate activity that will improve the viability, growth and competitiveness of London's businesses.

The LDA has its own Innovation unit and, with its partners, it will develop and implement programmes in line with the strategy.

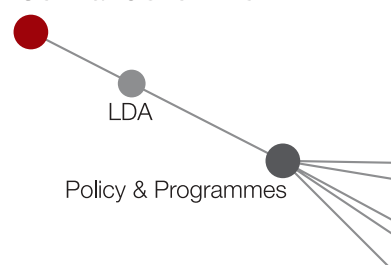
Successful implementation of the strategy will require support providers to actively contribute towards this agenda by partnering and running business facing innovation support and awareness raising programmes, as well as co-ordinating demand and supply interaction.

The private sector (SMEs, large companies and finance sector) are important components in the innovation network both as customers, and in designing programmes.

Some of the agencies involved in supporting innovation across London.

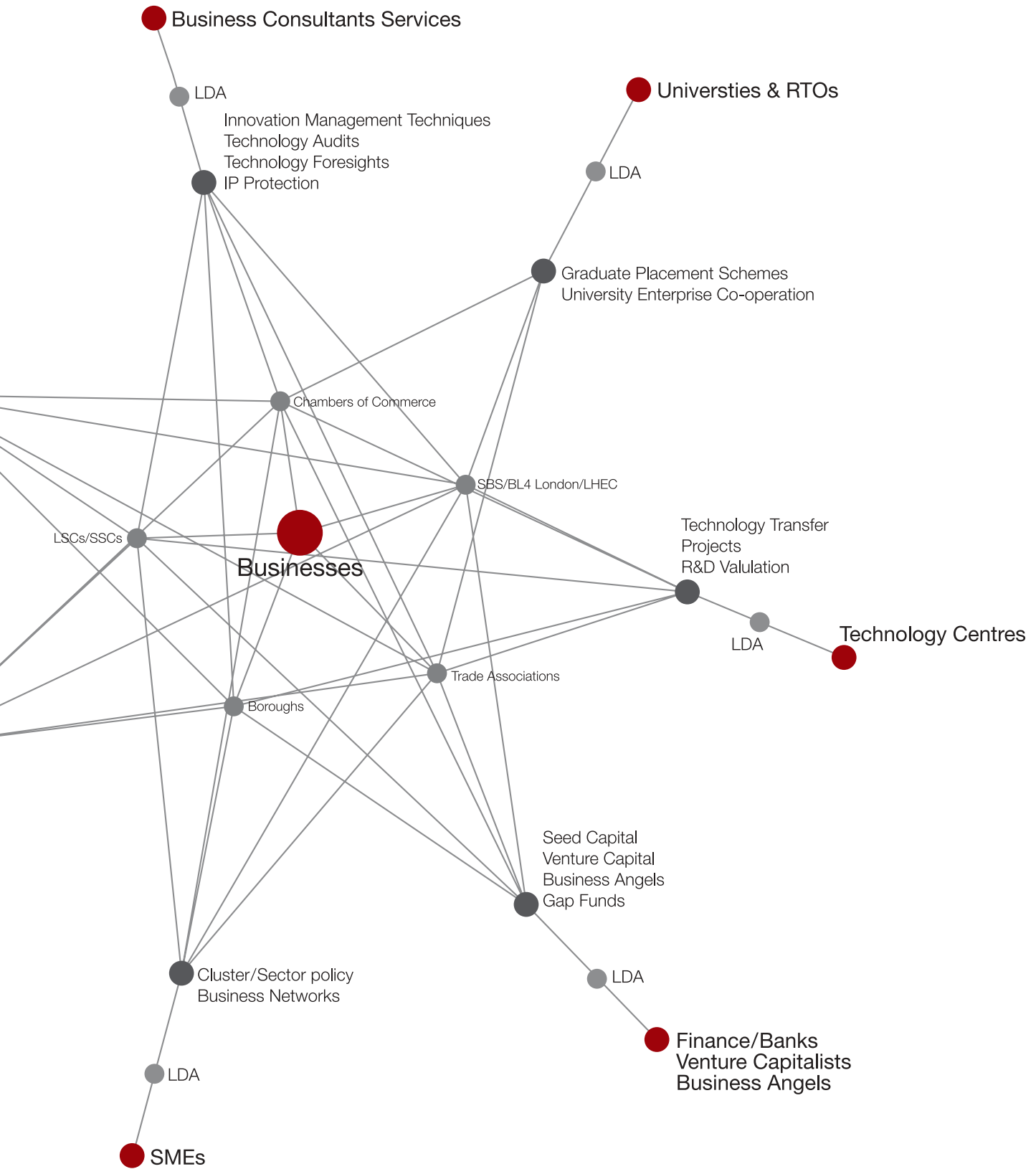
- Government Office for London
- Business Link for London
- CBI London
- LCCI
- DTI
- London First
- London Higher Education Consortium
- London Innovation Centres
- Local Authority representatives
- Individual HE & FE institutions
- Large corporates
- Sector Skills Councils
- Learning and Skills Councils
- Research and Technology Organisations

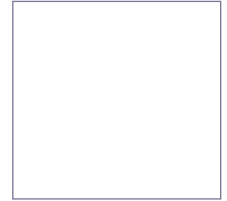
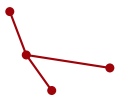
Local, Regional & Central Government



Value Chain Clusters
Mentoring Schemes
Corporate Venturing







Executive summary

Innovation is defined as the successful exploitation of new ideas and is a vital ingredient for competitiveness, productivity and social gain within businesses and organisations. If successful modern economies are based on the skills and knowledge of their people, innovation policies must be pursued that enable creativity, exploit science and knowledge and transfer new ideas and approaches between individuals, businesses and organisations. Innovation, therefore, cannot be limited to high technology products and processes but must be extended to include innovation in the value-added creative and service sectors required in a vibrant successful economy of the 21st century.

The UK Government has encouraged England's Regional Development Agencies to develop distinctive, regionally focused science policies. In London, the economic and social importance of the creative sector and the city's wider knowledge and cultural resources mean that a 'science policy' needs to encompass both technological and non-technological 'knowledge' resources. Therefore, appended to this Strategy is a separate "Science & Knowledge Policy". This policy underpins and will be delivered through, the Innovation Strategy and Action Plan.

London is one of the world's major cities and is consistently ranked as 'top city for business' in Europe with established global strengths in finance, business and professional services, entertainment, retail, media and medicine. London also has a number of emerging knowledge and creative strengths with international reputations in sectors that include fashion, art and design, creative industries, IT and biotechnology.

London has a large and successful academic sector. The city is both a global centre for scholarship and learning and a major teaching centre. Nearly a third of all UK Higher Education Institutions (HEIs) are based in London – several of which have international reputations in the fields of science, technology, business, the arts, humanities and creative industries. The diversity of London's academic sector, in the colleges as well as the universities, encompassing world class technology centres as well as leading centres of creativity and the arts provides a vital asset for innovation in the city.

The success, to date, of London's business and academic sectors is highly dependent on the knowledge assets of both. Indeed, the true commercial value of these assets will only be fully realised where London's businesses and organisations are able to draw from the wealth of London's knowledge and science base.

The overall aim of the London Innovation Strategy is to build upon these existing strengths in order, 'to make London the world's leading knowledge economy'

To realise this vision, three strategic priorities have been identified:

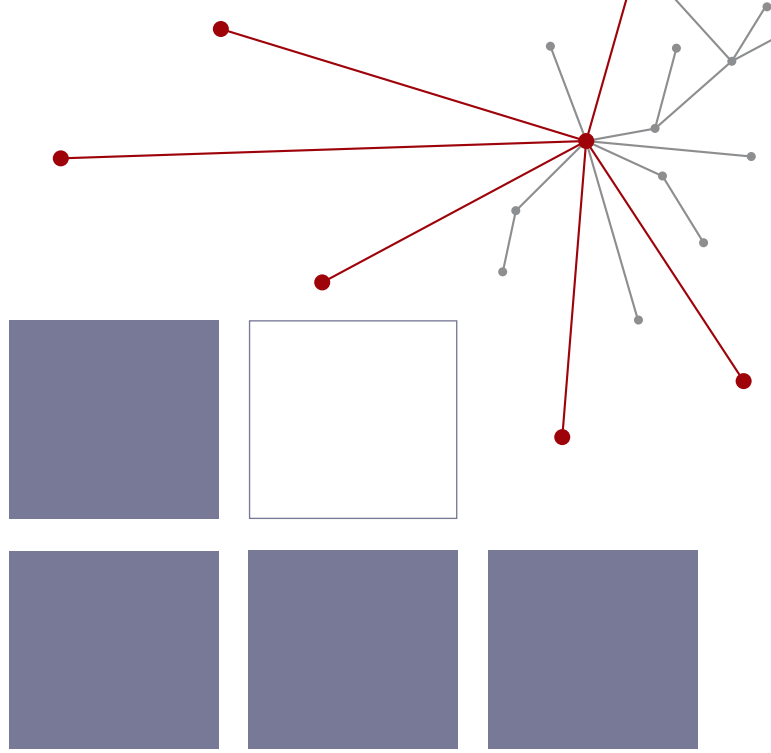
- Creating a culture of innovation in all of London's organisations.
- Harnessing London's world class knowledge base to benefit London's businesses.
- Encouraging and enabling London's businesses to innovate.

In implementing the Strategy, London's task is to capitalise on its diversities, to promote further growth but also to do so in a manner

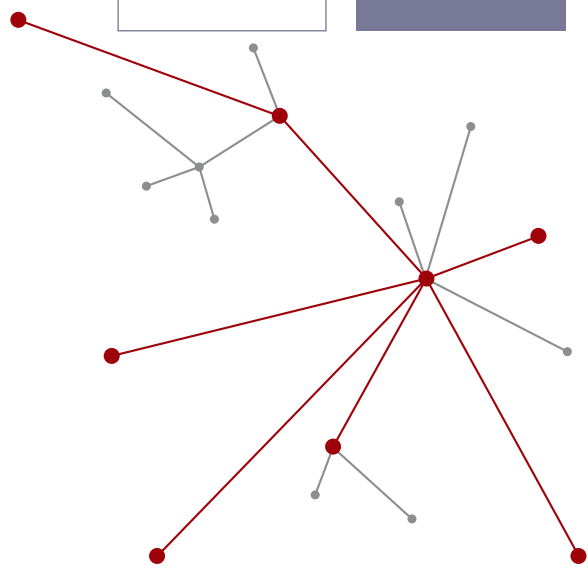
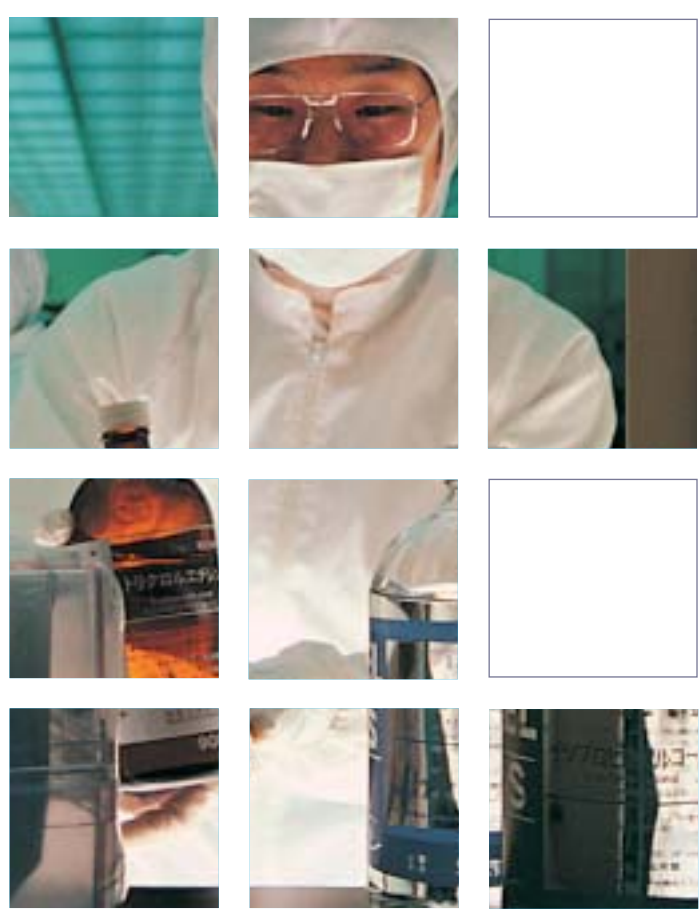
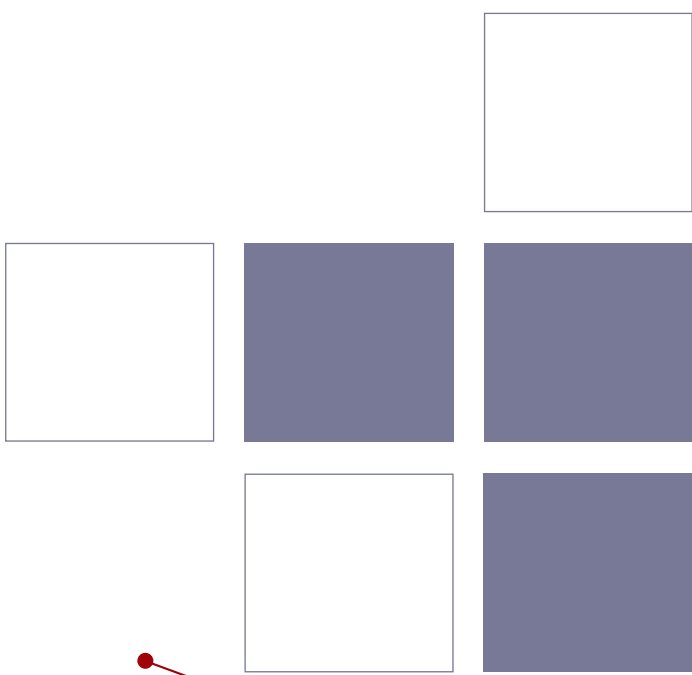
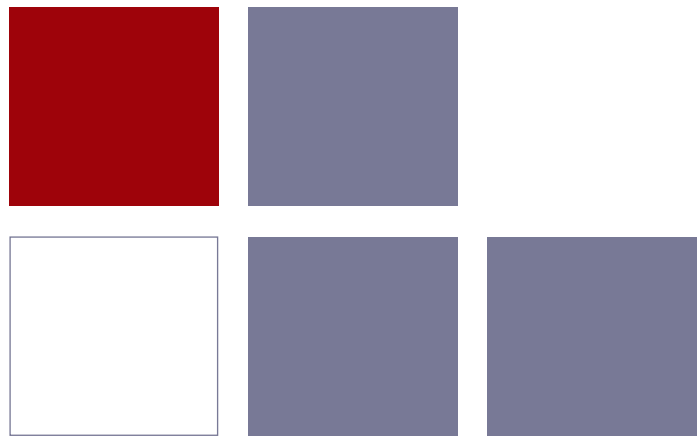
that tackles, rather than exacerbates, the deprivation and social exclusion that persists within its communities. In addition it is essential that the Strategy is implemented in such a way as to ensure that developments are sustainable. The LDA is committed to the principle of using innovation as a tool for sustainable regeneration and ensuring that innovation, science and knowledge become integral to the success of London's strategic locations.

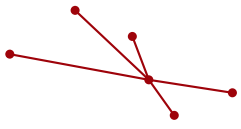
The LDA is further committed to enabling universities, colleges, businesses, organisations and individuals to realise, utilise and commercialise the full innovative potential of London's knowledge base. However, the design and delivery of an Innovation Strategy is dependent on the support and contributions of these key stakeholders. The London Innovation Strategy focuses attention on bringing together a wide range of partners for innovation, science and knowledge from across London in a coherent way to work together to constitute a sustainable innovation support system.

This document builds on work that has gone before, including the 'London Innovation Knowledge Transfer Strategy' prepared by the London Development Partnership and London Innovation Framework developed by the London Development Agency. The LDA has commissioned extensive research reports and strategy papers that have contributed to the document and provide the rationale behind the Strategy and Action Plan suggested. A month long consultation period has resulted in a wide range of responses. These have been supplemented by interviews with key organisations and individuals.



Science and knowledge fuel the practice of **innovation** with new ideas, processes, products and services.





Innovation in London

Policy Context

The importance of innovation, science and knowledge are well documented in policy statements and strategies at all levels of government.

These documents set out a clear mandate for Regional Development Agencies (RDAs) to develop strategies in support of innovation, knowledge and science.

Innovation strengths of London's businesses

It is widely accepted that businesses, both large and small, are the nation's primary generators of wealth, jobs and innovation. The London economy contains over a quarter of a million VAT registered businesses, representing 16% of the UK total.¹ Over 100 of Europe's top 500 companies have their headquarters in London while the majority of its businesses are small or even 'micro' businesses. The openness and diversity of London's business base provides significant strength and opportunity but also poses threats from global competition. Since London's economic success is based on its position and reputation as a leading world city, the challenge is for London's businesses to compete through innovation that provides real competitive advantage and opportunity.

The City of London contains the oldest and most successful cluster of businesses in the world in the financial and business services sector. These businesses are at the forefront of the knowledge economy. Across London there exist important new clusters of activity with international reputations in sectors including life sciences, pharmaceuticals (closely linked to some of the world's best teaching hospitals and medical

schools), and creative industries such as art and design, media and software development. Within manufacturing, printing, publishing and clothing remain strong in key areas.

However, employment in London is dominated by the high value added service sector. Here, London ranks second among UK regions for employment in technology services.

Innovation weaknesses in London's businesses

While London has obvious strengths, it tends to under perform on key indicators of innovation and technology. Businesses, for example, spend comparatively little on R&D as a percentage of regional GDP, at half the UK/EU average of approximately 1.2%.² Patent applications are similarly below the UK average.

Only 18% of all London enterprises, both large companies and small to medium-sized enterprises (SMEs), introduced new products between 1998-2000.³ A similar picture emerges in process innovations. Additionally, London has failed to maximise the available knowledge transfer mechanisms to widely benefit its businesses. This is emphasised by the low number of London companies that participate in the highly regarded Teaching Company Scheme (TCS) that promotes collaboration between universities, graduates and business.⁴

Despite the existence of strong innovative 'pockets' in key industry sectors, such as biotechnology, the creative industries and financial and business services, the majority of London's businesses require greater support, and will need to introduce signifi-

cant cultural change if they are to improve their own, and London's, innovation performance. The predominance, in the London economy, of small companies typically possessing only limited ambition or capacity to innovate tends to exacerbate these weaknesses.

Contribution of London's universities and colleges to innovation in London

London is a European centre of knowledge. As well as its 40 universities and colleges, 55 further education colleges and 9 Research and Technology Organisations (RTOs). London hosts hundreds of think-tanks, research and scientific institutes and professional bodies.

In terms of innovation, science and knowledge, the role of universities and colleges is crucial. Centres of excellence in higher and further education can be powerful drivers of innovation and change through the impact of the arts, humanities, design and other creative disciplines, as well as in science and technology. In addition to research and teaching, universities and colleges also have a third mission, which is to contribute to the economic and social development of the communities, cities and regions in which they are located. Universities and colleges are, therefore, not only a seedbed for new industries; they also have the potential to be at the hub of networks and clusters of businesses working in the knowledge economy and creating effective partnerships between academia and industry.

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In order for universities and colleges to realise their full potential there needs to be improved collaboration within the sector, more effective engagement with business sectors and the communities that they serve, and a stronger role as specialist service providers of science and knowledge to business, both large and small.

The challenge for this sector is compounded by the number of universities and colleges in London and the fact they tend to view each other on a competitive basis. A key role for the Innovation Strategy, therefore, is to find mechanisms for improving this engagement and the impact of the university and college sector on the London economy. The Government has recognised the importance of enabling mechanisms through 'third mission' funding streams (HEROBC and HEIF) and has proposed the establishment, in England, of a network of 'Knowledge Exchanges' to exemplify good practice in promoting interaction between less research-intensive institutions and businesses.⁵

Enabling mechanisms for innovation, science and knowledge

London has a complex, diverse and extensive framework of universities and colleges; research based institutions as well as less research intensive, but no less important, institutions. This complexity and diversity requires the Innovation Strategy to offer a range of enabling mechanisms that will act as a catalyst for focusing attention on innovation and knowledge transfer. Examples of knowledge and technology transfer mechanisms include approaches such as the promotion of research infrastructures; improving skills and training for innovation; and building networks of collaboration and partnership between business, communities and the education and research base of London.

Supporting science and knowledge in London's sectors and strategic locations

Sectors

An Innovation Strategy for London must take into account the policy emphasis and priorities set by the Mayor. These include the priority around social inclusion, sustainable development and strategic locations for action. In particular the LDA has identified a range of business sectors, based on research, for action. The rationale for support varies as to whether the sector is embryonic or mature in nature.

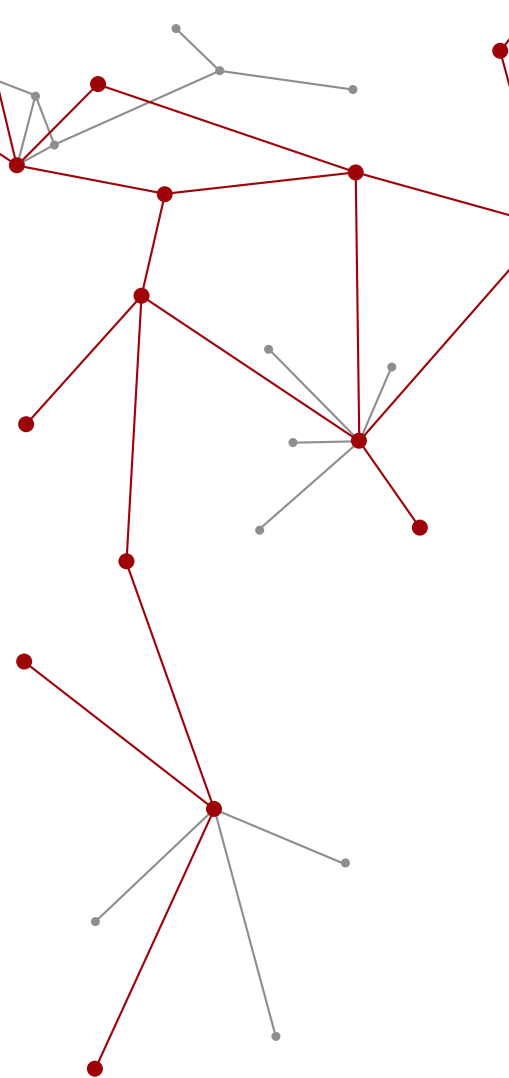
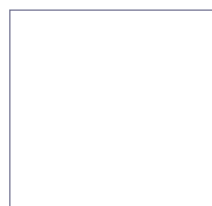
These include:

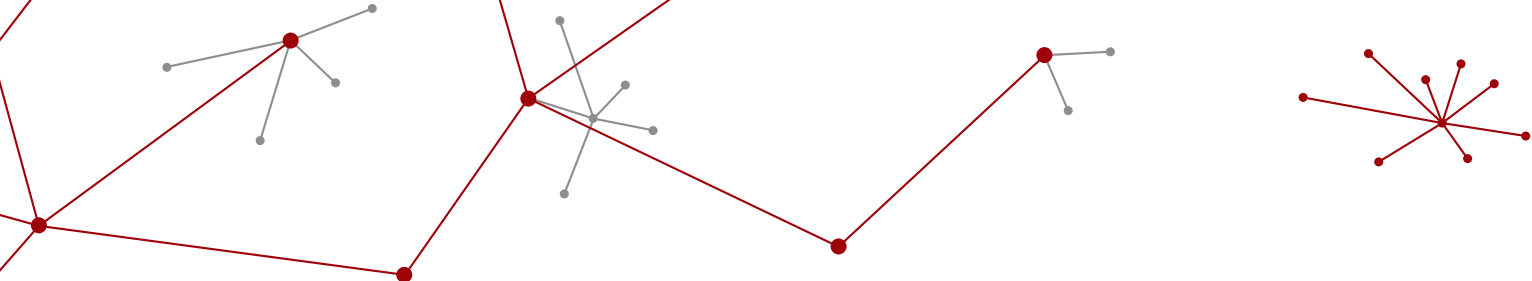
- Creative and cultural industries
- Tourism
- Production industries
- Environmental services and products
- ICT
- Life sciences (including biotechnology)
- Public sector

The sector intervention is aimed at targeted support for industries and innovation is an important priority in achieving this aim. There is also a recognition to focus activities around some key areas of excellence that exist in London's universities and colleges and indeed businesses. For example, stronger linkages and collaboration between sectors and relevant London centres of excellence.

Area based intervention

As well as engaging with targeted sectors, London faces significant challenges in ensuring that its development is balanced and that deprived or disadvantaged communities and areas are fully supported. The Innovation Strategy can make a major contribution to this through mechanisms to apply and transfer innovation, science and knowledge from London's knowledge base into its businesses. This will create jobs and prosperity through innovation in the strategic locations. The innovation unit is closely working with the area teams within the LDA to prioritise innovation projects in strategic locations.





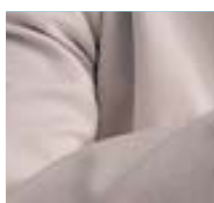
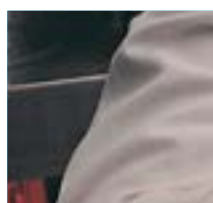
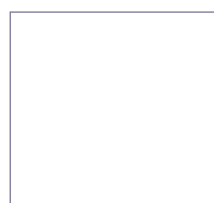
Removing fragmentation amongst support service providers

Although efforts and initiatives have been, and continue to be, undertaken London currently lacks the intermediary structures capable of acting as an effective 'bridge' between higher education institutions, further education colleges, research establishments and London's business sectors and companies. The innovation support system in London is characterised by a plethora of local agencies operating at a scale that is often inefficient and which has little clear focus on innovation and knowledge. As a result, London fails to fully benefit from the potential added value that could be gained from the innovative activities and interactions of its universities, public sector agencies and businesses.

Achieving critical mass and partnership

Delivering a strong pan-London innovation agenda that will overcome fragmentation and capitalise on London's critical mass of activities is both a significant opportunity and a significant challenge. In pursuing this agenda, the Innovation Strategy will focus on significant activities that will have a pan-London impact and address those cultural factors that underlie poor achievement in many of London's businesses and its more economically deprived inner city boroughs.

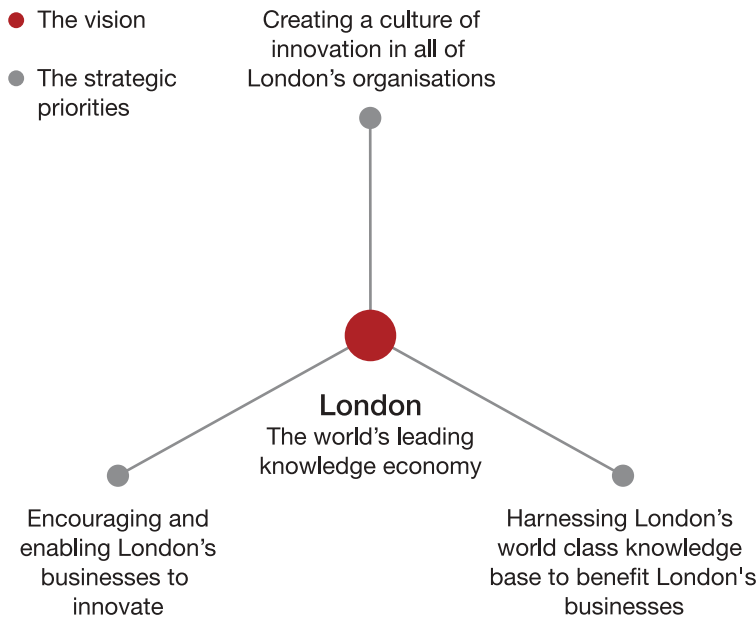
In a city with a strong market ethos and tradition, the role of the LDA is to identify market failures and lever others into action alongside them. In addition to the LDA's role as funder and strategic enabler, the LDA must encourage and resource other partners and stakeholders at an operational level to ensure that the strategy is effectively delivered.





London vision

Making London the world's leading knowledge economy



A framework for the strategy

The key priorities that underpin the strategy are:

Creating a culture of innovation in all of London's organisations

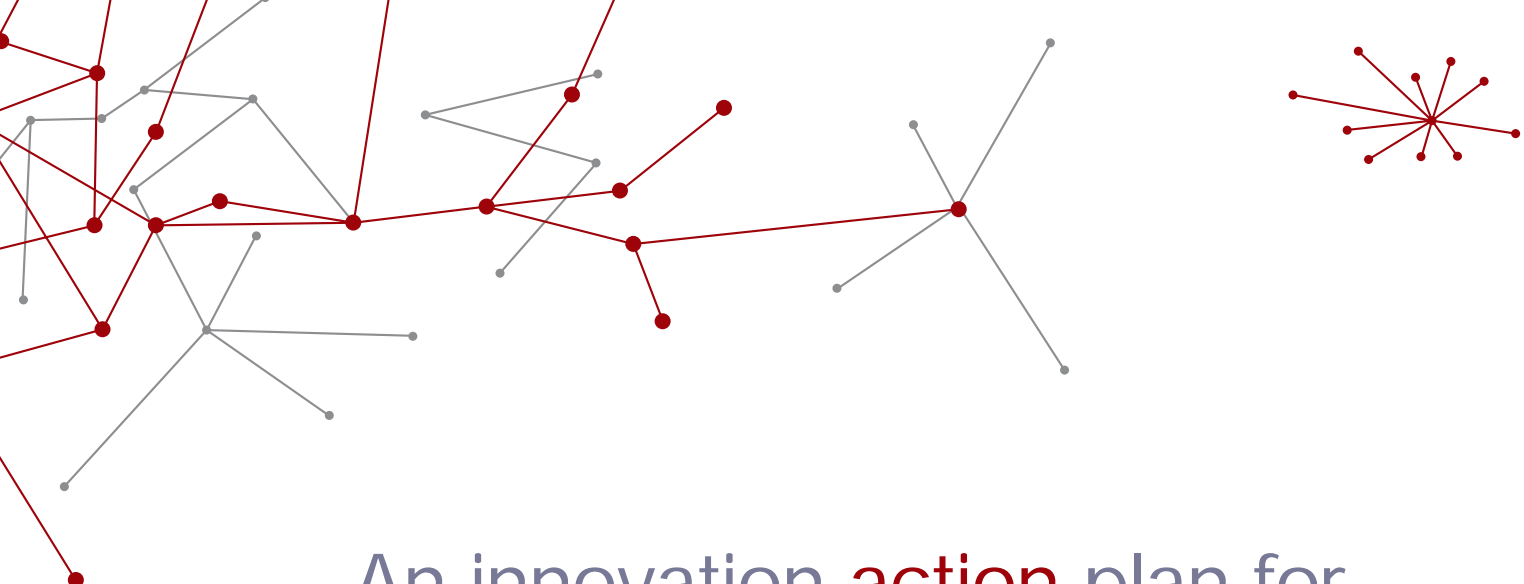
In order to achieve the vision, it is vital that London's businesses and both public and private organisations embrace and develop their own innovation capabilities. The strategy will take significant high profile actions, using the London Innovation 'brand', to create and embed in all of London's organisations, a culture where innovation is understood, valued and rewarded.

Encouraging and enabling London's businesses to innovate

Achieving this vision for London requires action to encourage London's businesses to innovate and exploit their new ideas, products, processes and services. The Strategy will play a pivotal role in addressing problems such as fragmentation, confusion, the lack of a critical mass amongst support providers and the uncertainty that surrounds access to expertise and resources. In some instances, delivery providers will need to collaborate to create a coherent delivery network, while in others it may be necessary for direct intervention and delivery to be undertaken in order to achieve critical mass and efficient delivery.

Harnessing London's world class knowledge base to benefit London's businesses

In order to realise the vision, the Strategy must harness the knowledge base in London that exists not only in its universities, colleges and research institutes but also in its companies and public and voluntary sector organisations. The assets of the knowledge base must be accessible as an essential source of the innovative ideas, products, processes, services and knowledge that will enhance the performance, competitiveness and sustainability of London's businesses and communities.



An innovation **action** plan for London 2003-2006

Key principles for the implementation of the Action Plan

The time frame for implementation of the Action Plan is 2003-2006, in line with the LDA Corporate plan framework.

The LDA will take the lead in providing resources for the implementation of the Actions, leveraging in resources and support from the other partners in innovation, including the private sector, as appropriate. EU and other funding will be exploited wherever feasible.

Prioritisation of the Actions contained in the Innovation Strategy will follow simple principles. Action will be given priority:-

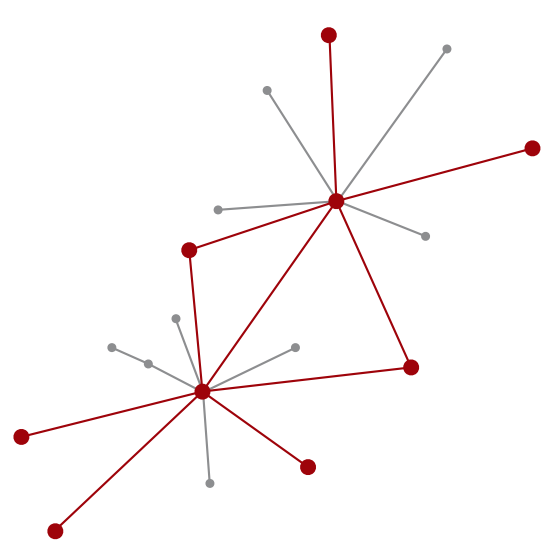
1. Where there is clear and compelling need to act.
2. Where the action addresses a market failure and helps to encourage firms to innovate (i.e. addresses a real blockage to innovation).
3. Where the partners involved are well established and rooted in existing business networks and display the capacity and willingness to move.
4. Where the action can work at an efficient scale.

The Innovation Strategy is aimed at achieving action on an all-London basis. However it is acknowledged that London's diversity demands flexibility so that sub-regional activities are responsive and geared to local needs. The Innovation Steering Group will work to ensure that the appropriate balance is achieved in order to ensure a critical impact of activity and to avoid fragmentation.

New initiatives will not be instigated unless the need can be clearly established and, while efforts will be made to ensure that existing initiatives are built on, the initiatives will need to be reviewed and assessed as appropriate.

It is important to recognise that the actions suggested are based on researched market needs today. Given the rapidly changing environment, intervention may have to be altered to remain responsive to changing economic needs.

Implementation will require London's partners in innovation to look outward for new ideas, impulses and experience; to develop an understanding of what has worked elsewhere and may be applicable to London. Benchmarking of actions will be vital.





Strategic priority: Creating a culture of innovation in all of London's organisations:

The promotion of innovation and innovators

Rationale:

It is essential to market the Strategy and communicate its aims and objectives to SMEs, the media and opinion formers of all kinds, intermediaries and partner organisations. Communicating with London's thousands of SMEs is a particular challenge. However, a greater challenge is to encourage a culture of innovation amongst ordinary citizens. The willingness to innovate would, ideally, be engrained in all of us. However, for a range of complex reasons, many people are reluctant to take the career or financial risks that innovation often implies. It is therefore necessary to seek ways of encouraging innovation and demonstrating that the risks can be managed and that success brings personal, career and financial rewards. Quality and consistency of the innovation message is required.

Objectives:

- Develop and promote the existing London Innovation 'brand'.
- Market the Strategy and communicate its aims and objectives to SMEs, the media and opinion formers of all kinds, intermediaries and partner organisations.
- Encourage a culture of innovation amongst ordinary citizens.

Actions:

1. The existing London Innovation brand will be further developed and disseminated and used to encourage and incentivise partners in the promotion of innovation in London.
2. A programme of multiple but complementary programmes of innovation competitions and awards targeted at schools, colleges, universities and SMEs will be established. This will include building on the London Innovation Awards alongside continuous promotion activity. These will operate on a local, sectoral and pan-London basis coming together to attract maximum publicity and profile for London's successful innovators.

3. A nucleus of innovation role models will be created, drawn from local communities, and recognisable as 'ordinary people' who have been both willing to innovate and successful. The innovation role models will be identified and promoted in their own communities, localities and business sectors. Role models will be supported to visit schools, colleges and community groups to talk of their own experiences in innovation.

A network of innovation mentors 'Knowledge Angels'

Rationale:

Traditional business support organisations do not focus on the special needs of innovators and innovative SMEs in the provision of advice and support. Evidence for many UK and EU regions demonstrates that the demands of innovators require appropriate special provision and that a well-networked advice and mentoring model is most likely to be successful in improving innovation performance in London.

Objectives:

Provide effective and appropriate innovation support and advice to small businesses.

Action:

A network of individuals (Knowledge Angels) with extensive SME experience, particularly in new product, process and service development introduction, will be formed. They will provide 1-2-1 support including mentoring and signposting for individuals and SMEs with innovation product, process and service ideas. In many cases, Knowledge Angels will introduce clients to other innovators for collaboration and/or to more detailed and specific sources of advice and support. Knowledge Angels may, when appropriate, encourage innovators to participate or form networks and will assist in the preparation of applications for innovation funds including SMART.

A London 'Young Foresight' programme

Rationale:

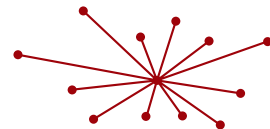
Engaging young people in the processes associated with innovation will be a demanding task. Successful approaches to this task, such as the DTI Foresight programme, have involved challenging young people to think about and 'design' the future to which they would like to aspire. Material and approaches have been developed and tested that can assist in the task.

Objectives:

Encourage young people in London to become aware of the future opportunities that innovation will provide for them.

Action:

A 'Young Foresight' exercise will be launched, in conjunction with schools, colleges and other appropriate partners in London and will be delivered through the support of a team of trained advisers working in conjunction with the LDA and London's schools and colleges. The DTI Young Foresight material will be examined and adapted to ensure that the particular characteristics and needs of London's diverse communities are taken into account.



Transfer of skills and people

Rationale:

London's knowledge base needs to be made more accessible to Londoners at all levels. It is widely accepted that knowledge must be released and exploited by transferring it between organisations and individuals in order that it may be exposed to the process of innovation. London's relatively poor performance in this respect is illustrated by the low number of London companies that participate in the highly regarded Teaching Company Scheme that promotes collaboration between universities, graduates and business with only fifty-eight participating companies.

Objectives:

Promote the transfer of knowledge through the transfer of people and their skills.

Action:

A London wide graduate and under graduate placement programme will be established to promote technology and knowledge transfer between universities and SMEs. The projects will be flexible in length and meet the needs of those SMEs requiring project support for shorter periods than is traditionally provided by programmes such as TCS. The emphasis will therefore be on supporting placements as a mechanism to stimulate SME competitiveness through product, process and service development. The placement projects will also help to expose graduates and undergraduates to the SME environment and associated innovation and technology activity.

Development of innovation plans for strategic locations and sectors

Rationale:

The Mayor's Economic Development Strategy focuses attention on both strategic locations and important sectors for development. The LDA is required to develop targeted actions for these locations and sectors that will maximise their potential for development. The Innovation Strategy can make a significant contribution to this action by ensuring that innovation, science and knowledge is effectively delivered alongside targeted actions.

Objective:

Place innovation, science and knowledge actions at the heart of targeted actions developed for the strategic locations identified by the Mayor's Economic Development Strategy and the LDA's Corporate Plan.

Action:

Working with local partners and sector bodies, develop innovation action plans for each strategic location and sector.





Strategic Priority: Encouraging and enabling London's businesses to innovate:

Advice and support

Rationale:

Most of London's businesses are small independent firms with little experience of innovation projects. These firms generally have a poor understanding, and take-up, of advice and support services, particularly in respect of innovation, science and knowledge. This is compounded by the problems caused by a plethora of local agencies operating at a scale that is often inefficient and which has little clear focus on innovation and knowledge. London's small firms therefore fail to fully benefit from the added value available from innovation support activities and interactions with the knowledge base, support agencies and businesses. Improved collaboration between support providers across London and a critical mass of activities are required, while supporting access to innovation expertise and the testing and implementation of innovation projects that stimulate innovation in SMEs.

Objectives:

Provide high quality innovation advice and support that is relevant and effective according to the needs of London's businesses, sectors and communities.

Action:

Innovation support services targeted at small firms will be developed. These services will help SMEs to identify innovation needs and opportunities; facilitate links to sources of innovation and knowledge, supporting the transfer and exploitation of knowledge; and encourage collaborative innovation and technology transfer between academic/research institutions and business. These efforts will be supported through further development of the London Innovation website: www.london-innovation.org.uk aims to reduce confusion and streamline information.

The SME innovation project led by the LDA and targeted at the Objective 2 areas of London can form the basis of a wider pan-London programme. In some locations it may be necessary to provide physical infrastructure similar to the Knowledge Dock and the proposed London Innovation Centre from which to market, promote and deliver the services.

Small firms innovation finance

Rationale:

SMEs typically struggle to invest significant sums in innovation. This is demonstrated in the low levels of R&D investment reported in London. Such funding needs are not necessarily 'high tech' related, but concern the need to 'kick start' innovation and enable SMEs to benefit from modern technologies and processes. At present, schemes such as the DTI's SMART awards – funding feasibility studies for innovative technologies or development grants to take a promising new product, process or service to pre-production prototype stage – are important but cannot address the more straight-forward innovation needs of many small firms.

Objectives:

Provide London firms with access to funding for innovative projects.

Action:

The creation of a small firms innovation grant will be examined to provide London firms with access to funding for innovative projects. These grants will support projects that cater for the specific innovation needs of SMEs – these projects should be innovative to the company, rather than representing ground-breaking technological developments. Examples of such funding could be a new piece of machinery or software.

Innovation Centres for business

Rationale:

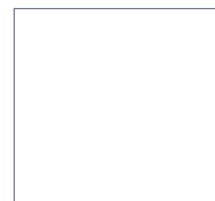
All businesses, not only high technology start ups, require support, advice and guidance at various stages of their development. Innovative businesses in particular have special needs ranging from advice on Intellectual property to sources of venture capital or from flexible incubator space to fully serviced Innovation Centre premises. Provision of such serviced and supported space and the networking of existing centres is inconsistent across London.

Objective:

Increase and enhance business innovation centres and services available across London.

Action:

Provide appropriate innovation services and space for businesses across London, agreeing a "menu" of services that will meet the needs of business, developing appropriate delivery methods and networking the services effectively. The specialist services will be promoted in a transparent and coherent manner across London.





Business networks and clusters

Rationale:

Networking is proven to increase the capacity and confidence of SME owners, managers and employees to exploit innovation opportunities. Increased networking and collaboration between innovative SMEs leads to new product, process or market exploitation. Opportunities for transferring knowledge and technology from business to business, possibly leading to the development of inter-company trading and other commercial collaborations, need to be continually stimulated and supported, gaining new 'members'. Networks are rarely formal structures but change shape, content and membership.

Objectives:

Increase networking and collaboration between innovative SMEs leading to new product, process or market exploitation.

Action:

The LDA will develop and support sectoral or subject themed networks and collaborations between SMEs, universities, colleges, venture capitalists and 'angels'. The focus will be on innovation and technology activity including the development of joint, collaborative product, process or service development or R&D programmes amongst SMEs. The sectors given particular attention in the Mayor's Economic Development Strategy will be targeted and additional support will be made available for collaborative projects, notably those involving engagement with HEIs. Existing networks such as the London Manufacturing Group and the London Biotechnology Network provide useful exemplars.



Collaborative delivery of innovation support

Rationale:

One of the challenges identified by the research underpinning this Strategy is to overcome fragmentation in the advice and support services available to London's innovative SMEs. This has prevented the development of an advice and support infrastructure, which is needed to create a focus and critical mass for activity. However, without partnership and consensus at a strategic level, as well as at an operational level, such initiatives will not be successful.

Objectives:

Overcome fragmentation in the advice and support services available to London's innovative SMEs

Action:

The LDA will lead the development of a London Innovation Centre. It will be a flagship enterprise that showcases innovation and acts as a reaction chamber for London's innovation assets and enterprises. All innovation players will be part of the Centre as partners and will collectively provide their services to businesses, both large and small.





Strategic priority: Harnessing London's knowledge base:

Access to advice and support in universities and colleges

Rationale:

The support services available from London's universities and colleges are in need of improved transparency, access and coverage. The expertise that universities and colleges hold is often inaccessible to small firms because they lack the confidence or resources to find the appropriate 'point of entry' into the knowledge base. Creating access points that are of significant scale and coverage will be crucial since it is likely that existing schemes such as the London Technology Network (LTN) only 'scratch the surface' at present. There needs to be comprehensive provision that increases access and decreases confusion.

Objectives:

Improve the efficiency and transparency of university and college innovation support for businesses

Action:

The LDA will play a coordinating role in the development of improved innovation advice mechanisms. LDA will play a greater role in enabling HEIF funding to be targeted towards a more cohesive and collaborative knowledge transfer strategy for London. A pan-London programme to communicate the diverse 'offer' of London's knowledge base is required that will enhance existing initiatives or create complementary initiatives. To help coordination, the London Innovation website will also be enhanced.

Science parks and incubators

Rationale:

Recent research commissioned by the LDA indicates that the lack of incubator provision is a barrier to the generation of HEI spinouts in London, with the availability of premises in turn providing the greatest constraint on incubator development in London. The research further indicates that those research hotbeds in central London that are spinning out companies are particularly constrained for space. As a consequence, incubation capacity in London, particularly that associated with higher education institutions, needs to be increased by at least 25% in order to meet current and future demands.

Objectives:

Increase the scale, type and scope of incubator support across London.

Action:

A programme for the provision of networked incubator space, aligned with 'hot bed' university environments, key sectors and strategic locations will be put in place. This incubation/innovation plan for London will be supplemented by a continuum of support measures reflecting the evolving needs of innovative SMEs. This will include a 'spin-out' support programme, operated in partnership between the LDA and universities and colleges, which introduces management skills, marketing and finance capacity into new innovation, science and knowledge-based businesses. It will be further supplemented by 'next stage' space for start-ups, including science parks.

The LDA is conscious of the effective role that innovation centres can play in the creation of high-growth businesses. Innovation/incubation centres as an effective regeneration tool for strategic locations will continue to be an important theme for intervention.

SME – knowledge base links

Rationale:

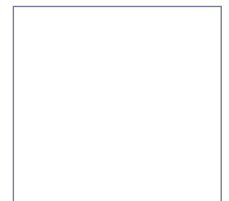
Integrating innovative small firms with the knowledge base through 'soft' networks are a key method by which the assets of the knowledge base can be harnessed. There are many successful examples where universities and colleges have either developed their own 'soft' networks or have taken leading roles in existing business networks and associations.

Objectives:

Increase profitable interactions between business and the knowledge base, breaking down barriers to collaborations.

Action:

The LDA will support and encourage universities and colleges to integrate with local and pan-London networks through the identification of successful models of networking and their replication or expansion in London. In particular, the LDA will seek to develop robust innovation networks in the sectors and strategic locations identified by the Mayor's Economic Development Strategy as required. The Innovative Cluster Fund has already been used to good effect in support of this type of activity.





Research collaboration and commercialisation

Rationale:

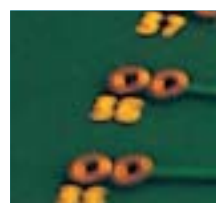
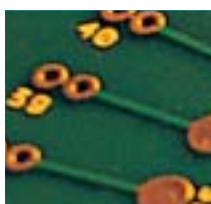
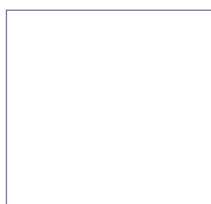
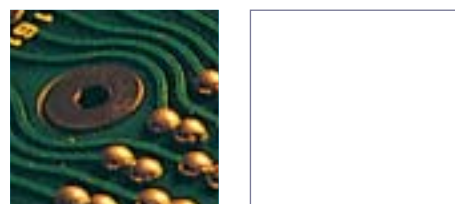
The level of formal collaboration and joint ventures relating to knowledge commercialisation and development varies greatly across London's knowledge base. It is clear that the number of centres in London's knowledge base with world-class research and commercialisation results could be greatly increased through a programme of collaboration by focusing on commercialisation and research funding opportunities. Initiatives such as the London Bioscience Innovation Centre need to be replicated in other key areas of science and knowledge, including non-technological areas.

Objectives:

Significantly increase the level and range of research collaborations and commercialisation amongst and between London's universities and colleges.

Action:

A programme of support and encouragement for 'centres of excellence' in innovation, including those following research, will be put in place, most notably in relation to the sectors identified in the Mayor's Economic Development Strategy.



Management skills

Rationale:

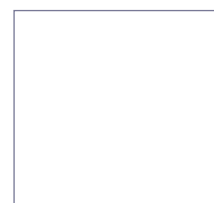
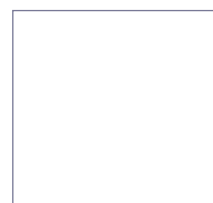
Research undertaken by the LDA has identified that investment by business angels and venture capitalists in spin outs from universities and colleges is hindered by weaknesses in the entrepreneurial and managerial skills of the researchers and technologists at the heart of the spin-out. A perceived lack of managerial skills possessed by potential innovators and entrepreneurs in London HEIs is a crucial factor slowing the progression of London's higher education commercialisation activities. Rapidly improving the quality of entrepreneurial and managerial skills, as well awareness-raising for other relevant skills, is vital to creating a step-change in the performance of the wider system of higher education/knowledge commercialisation in London.

Objectives:

Improve the rate and success of spin outs from London's HEIs and colleges by improving their managerial capabilities.

Action:

A programme to improve the management skills of potential innovators and entrepreneurs emerging across London's HEIs by identifying and promoting appropriate mentors. The project will select mentors to work with academics across the breadth of HEIs in London through the building of strong management teams. Such teams will be established by 'importing' management skills from the private sector. These teams give HEI spin outs the commercial acumen required to progress them, in addition to facilitating academics in their long-term approach to developing commercialisation activities.





A Science and Knowledge Policy for the London Development Agency

London has a rich and varied science and knowledge base, encompassing its companies, universities, colleges, research institutions and individuals. This knowledge base provides important 'fuel' that helps to drive innovation in London's businesses. It also makes an important contribution to the UK's wider knowledge economy. This paper sets out the strategic context for a regional science and knowledge policy, the current state of the London knowledge and science base, and outlines a strategic policy role for the LDA.

Science, Knowledge and RDA Strategy

Government support for science, research and knowledge development has traditionally been developed and delivered at a national level with little policy consideration given to regional needs or opportunities. It has recently been recognised, however, that improvements to regional capacity and capability in research and development are important contributors to national science and technology performance. In response a number of the English Regional Development Agencies (RDAs) have sought to develop science strategies over the past two years. These have tended to be built around mechanisms such as foresight exercises and regional science councils.

The strategies developed by the North West and North East regions, for example, are cited in the recent Government 'Strategy for Science, Engineering and Technology'.⁶ This calls for RDAs to develop an improved understanding of the needs of businesses in their region with regard to science and knowledge. The RDAs are also expected to address any 'mismatches' that have been identified, by integrating these actions into their regional economic strategies.

The position of RDAs in science policy has been further acknowledged and strengthened in the recent White Paper on 'The Future of Higher Education'.⁷ This calls for stronger partnerships between HE institutions in each region and the RDA and other agencies charged with promoting economic development. This will include RDAs being given a stronger role in steering the Higher Education Innovation Fund (HEIF) to ensure that it meets regional development priorities.

Position of London

This policy document recognises that London's science and knowledge base encompasses a range of different types of University and college and that all contribute to the strength of London's knowledge base. While the 5* research centres are of vital importance, London's knowledge base stretches beyond the research-intensive universities, it also encompasses the less research intensive universities that have a crucial role to play in contributing to local and regional economic development.

London's economy is different from many other regional economies in the UK in that its high value added service sector is significant. In addition, it enjoys a cultural and creative strength and diversity that is unique. Therefore, focusing attention on the science base alone is insufficient to recognise both the needs and opportunities that London represents. This policy therefore strongly emphasises the need to consider "knowledge" as well as "science". Encompassing the non-technological excellence and non-research intensive assets that London has to offer.

For the 2001 Research Assessment Exercise (RAE), London had 180 departments that were awarded either a 5* or 5 rating, with over 5,800 researchers in these departments; of these 32 technological departments achieved 5* and 65 a 5; in the case of non-technological departments 29 achieved a 5* and 54 achieved a 5. Total funding for university research in London is £729m; 25% of the UK total and by far the largest research income of any region. Five of the top ten UK research-led universities are in London.

London also has 9 Research and Technology Organisations (RTOs) with strong links to business. In addition, many sectors are also able to interact through the large variety of networks established in London. These fora – such as the London Biotechnology Network – represent important mechanisms for companies to learn from each other and to transfer science and knowledge.

Despite this picture, the contribution of London's science and knowledge base to economic development is faced with a number of weaknesses:

- Businesses under perform against key measures such as expenditure on research and development, and patent applications.
- 'Intermediary structures' that connect London's universities with business are under developed.
- Although collaboration between universities is growing, there are significant factors limiting collaboration and, instead, fostering competition.
- Many of London's world-class universities are, understandably, externally focused and consequently have only limited interconnection with local business communities.
- The scale of the 'knowledge base' in London makes it difficult even for large and influential organisations to fully understand the enormous potential that exists for the exploitation of London's science and knowledge assets.
- London does not benefit from a Foresight activity that is able to adapt to changing priorities and opportunities for science and knowledge in London.
- As a major world city, London attracts and retains world-class companies and individuals. It has not, however, secured significant foreign direct investments based around research and development or even academic activities.⁸
- To date, London's universities have been largely unsupported by the public sector in accessing EU and international research funding. Indeed, significant competition is now emerging in this area from Central European states.



Role of the LDA in Science and Knowledge

As the strategic economic development agency for London, the LDA has an important role to play in addressing these challenges. To this end the LDA will seek to take a strategic but pragmatic perspective in terms of its remit and capabilities for science and knowledge. It will also seek to add value to science and knowledge in London while allowing itself flexibility to act if there is a compelling need to prevent or address market failures when they are identified.

The LDA will implement the Science and Knowledge Policy as an integral part of the Innovation Strategy. The Science and Knowledge Policy focuses on supporting innovation and technology transfer from and between London's universities, colleges, businesses and sectors.

The principles embodied in this policy are:

- The LDA will seek to make a significant contribution in terms of the creation of new science and knowledge infrastructure and physical and human resource capacity in London. In particular by maximising the exploitation of the knowledge base by providing the infrastructure that enables the exploitation of research through spin-offs and licensing and enabling the transfer of knowledge to London's businesses.
- The LDA recognises that mainstreaming London's knowledge assets is an important component of wealth creation.
- The LDA Science and Knowledge Policy will seek to reconcile the focus on strategic locations and sectors with the innovation, science and knowledge agenda for London. In particular, the LDA will encourage pathways to relevant research that enhances sector competitiveness.

- The LDA will encourage and support collaborative approaches from the knowledge base in respect of infrastructure and service provision, the attraction of EU funding for research and the development of centres of excellence. In particular, the LDA will foster collaboration within the knowledge base to improve access to businesses through common gateways.
- The LDA will seek to enhance access to continuous professional development from the knowledge base in sector specific areas promoting and encouraging the uptake of science, engineering and creative courses in schools to address labour market needs.

These principles are reflected in the actions set out in the Action Plan of the Innovation Strategy under the strategic priority of 'Harnessing London's Knowledge Base'.

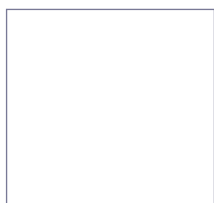
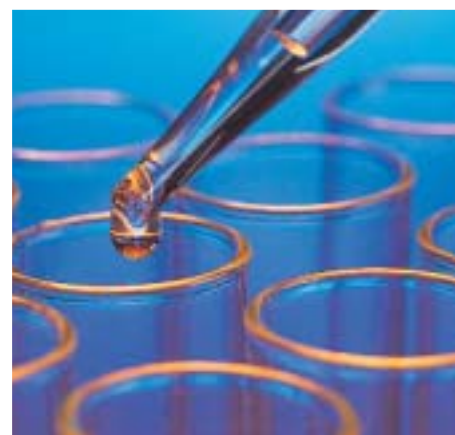
The delivery of the LDA Science and Knowledge Policy will therefore focus activities around some key areas of science and knowledge that exist in London's universities and colleges. For example, stronger linkages and collaboration with London's centres of excellence in arts and design, music, new media and fashion will enhance the creative and cultural industries. Similarly, London's expertise in engineering disciplines, natural sciences and design offer significant potential benefits to firms and groups working in the environmental sector. Such benefits are already being realised in London's life sciences industries through interaction with London's impressive biomedical and pharmacology expertise.

Conclusion

This policy framework establishes a clear role for the LDA in supporting the development of London's science and knowledge base. In particular, it recognises that the LDA has a legitimate role to influence and maximise technology transfer between universities, businesses and the wider knowledge base, and to support the exploitation of London's science and knowledge base, wherever possible.

The policy framework complements the Mayor's Economic Development Strategy, and underpins the London Innovation Strategy. Many of the challenges identified in this policy framework are addressed in further detail in the Action Plan associated with the Innovation Strategy.

The LDA Science and Knowledge Policy will add value to science and knowledge in London while allowing itself flexibility to act if there is a compelling need to prevent or address market failures. The LDA will implement its Science and Knowledge Policy through partnership with other bodies, while also acting alone, if necessary, to create new capacity in the system where gaps exist.





Appendix I

LDA Supported Sectors and Selected Technology Strengths

The table below highlights the LDA's supported sectors and selected technological strengths present in London.

LDA Supported Sectors	London Technology Strengths (see Appendix III)	
Creative and cultural industries	<ul style="list-style-type: none"> • Design and fashion • Communications, cultural and media • Art and design 	<ul style="list-style-type: none"> • Music • Dance, drama and performing arts • Architecture
Tourism	<ul style="list-style-type: none"> • Accounting and finance • Art and design • Business 	<ul style="list-style-type: none"> • Communication, cultural and media studies • Languages
Production industries	<ul style="list-style-type: none"> • Metallurgy and materials • Statistics • Chemical engineering • Civil engineering 	<ul style="list-style-type: none"> • Electrical, electronic engineering • Mechanical and aeronautical and manufacturing engineering • Mineral and mining engineering
Environmental services and products	<ul style="list-style-type: none"> • Electrical, electronic and general engineering 	<ul style="list-style-type: none"> • Art and design
ICT	<ul style="list-style-type: none"> • Computing • Electrical and electronic engineering • Mathematics 	<ul style="list-style-type: none"> • Physics • Statistics
Life sciences	<ul style="list-style-type: none"> • Computing • Law • Mathematics • Chemical engineering • Electronic engineering • Clinical and pre clinical studies • Clinical laboratory sciences • Community based clinical subjects • Dentistry 	<ul style="list-style-type: none"> • Medical research • Pharmacy • Pharmacology • Physics • Psychology • Business • Accounting finance • Communication, cultural and media studies
Public sector	All above	



Appendix II

Universities with 5/5* rating in technological and non-technological departments:
(Research Assessment Exercise 2001):

Technological Departments:	Universities:	
Anatomy	University College London	King's College London
Applied Mathematics	Brunel University King's College London	University College London Imperial College of Science, Technology and Medicine
Biological Sciences	King's College London Royal Holloway, University of London	University College London (x2) Imperial College of Science, Technology and Medicine
Chemical Engineering	Imperial College of Science, Technology and Medicine	University College London
Chemistry	Imperial College of Science, Technology and Medicine	University College London
Civil Engineering	Imperial College of Science, Technology and Medicine	University College London
Clinical Dentistry	Queen Mary, University of London University College London	King's College London
Clinical Laboratory Sciences	King's College London London School of Hygiene and Tropical Medicine	Imperial College of Science, Technology and Medicine
Community-Based Clinical Subjects	Imperial College of Science, Technology and Medicine London School of Hygiene and Tropical Medicine	King's College London
Computer Science	Royal Holloway, University of London University College London	Imperial College of Science, Technology and Medicine
Economics and Econometrics	Birbeck College Queen Mary, University of London	London School of Economics and Political Science University College London
Electrical and Electronic Engineering	Imperial College of Science, Technology and Medicine King's College London	University College London
General Engineering	Brunel University	Imperial College of Science, Technology and Medicine
Hospital-Based Clinical Subjects	University College London (x4)	Imperial College of Science, Technology and Medicine
Law	Birbeck College Brunel University City University King's College London School of Oriental and African Studies	University of Westminster London School of Economics and Political Science Queen Mary, University of London University College London
Mechanical, Aeronautical and Manufacturing Engineering	Brunel University King's College London Queen Mary, University of London	University College London Imperial College of Science, Technology and Medicine
Metallurgy and Materials	Imperial College of Science, Technology and Medicine	Queen Mary, University of London
Mineral and Mining Engineering	Imperial College of Science, Technology and Medicine	
Other Studies and Professions Allied to Medicine	City University King's College London	University College London
Pharmacology	University College London	
Pharmacy	King's College London	School of Pharmacy
Physics	Queen Mary, University of London Royal Holloway, University of London	University College London Imperial College of Science, Technology and Medicine
Pre-Clinical Studies	Imperial College of Science, Technology and Medicine King's College London	St George's Hospital Medical School
Psychology	University College London	
Pure Mathematics	King's College London Queen Mary, University of London Royal Holloway, University of London	University College London Imperial College of Science, Technology and Medicine
Statistics and Operational Research	Imperial College of Science, Technology and Medicine Queen Mary, University of London	University College London



Appendix II continued

Non-Technological Departments:	Universities:	
Accounting and Finance	London School of Economics	
Archaeology	University College London	
Art and Design	City University Goldsmiths College Royal College of Art	The London Institute University College London
Asian Studies	School of Oriental and African Studies	University of Westminster
Business and Management Studies	London Business School City University	Imperial College of Science London School of Economics
Classics, Ancient History, Byzantine and Modern Greek Studies	King's College London University College London	Royal Holloway, University of London
Communication, Cultural and Media Studies	Goldsmiths College University of East London	University of Westminster
Drama, Dance and Performing Arts	Royal Holloway, University of London	
Education	Institute of Education; King's College London	
English Language and Literature	Birbeck College University College London Goldsmiths College	Queen Mary, University of London Royal Holloway, University London
European Studies	University College London	
French	Royal Holloway, University London King's College London	Queen Mary, University of London University College London
German, Dutch and Scandinavian Languages	King's College London Royal Holloway, University London University College London (x3)	Birbeck College Queen Mary, University of London
History	Birbeck College King's College London London School of Economics (x2) School of Oriental and African Studies Imperial College of Science	Queen Mary, University of London Royal Holloway, University of London University College London University of Surrey Roehampton
History of Art, Architecture and Design	Birbeck College Middlesex University	University College London
Iberian and Latin American Languages	Birbeck College King's College London (x2)	Queen Mary, University of London



Non-Technological Departments:	Universities:	
Italian	University College London	
Library and Information Management	Brunel University; City University	
Linguistics	Queen Mary, University of London University College London	University of Westminster
Middle Eastern and African Studies	School of Oriental and African Studies	
Music	City University Royal Holloway, University of London Goldsmiths College	King's College London School of Oriental and African Studies
Philosophy	King's College London London School of Economics Birbeck College	Middlesex University University College London
Politics and International Studies	King's College London Birbeck College	London School of Economics
Russian, Slavonic and East European Languages	Queen Mary, University of London	
Social Policy and Administration	London School of Economics	
Sociology	Goldsmiths College Brunel University	London School of Economics
Theology, Divinity and Religious Studies	King's College London	School of Oriental and African Studies

Notes

1. UK National Accounts – The Blue Book.
2. Office for National Statistics: Regional Trends 36, 2001.
3. Department of Trade and Industry: Regional Breakdown of the UK Innovation Survey, 2001.
4. TCS Annual Report, 2001/2002.
5. Department for Education and Skills 'The Future of Higher Education', White Paper, 2003.
6. HM Treasury, Department for Education and Skills and Department of Trade and Industry: 'Investing in Innovation: A Strategy for Science, Engineering and Technology', 2002.
7. Department for Education and Skills 'The Future of Higher Education', White Paper, 2003.
8. For example, Cambridge-MIT; Microsoft Research Centre, Cambridge; Nissan Research Centre, Cranfield.



Credits

This strategy document has been produced by the London Development Agency in April 2003.

The LDA is London's job-creation agency. Working for the Mayor, and in conjunction with business and a wide range of other organisations, the LDA actively pursues economic opportunities for London and all Londoners. It uses its financial resources, property and land assets, and its influence to:

- Support business, industry and the economy
- Attract investment
- Develop skills and knowledge
- Revitalise the city
- Promote equality and diversity
- Unite London

For further information about the London Innovation initiative and an electronic copy of the strategy, please visit:
www.london-innovation.org.uk

For more information about the London Development Agency, please visit:
www.lda.org.uk

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