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PRINCIPLES OF THE FUTURE EDUCATION STRATEGY

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ABSTRACT

The paper explores the framework for the development of actuarial education in the future. The main aims are to broaden the profession while maintaining standards and to achieve global qualifications by working with other actuarial bodies. The suggested way forward would mean several changes from existing practice.

KEYWORDS

Actuarial Education; Structure; Qualifications; Content; Skills; Assessment

1. Summary

1.1 This paper outlines the rationale for projected changes to the education strategy for the actuarial profession, and explains the consultation process to date. A set of principles for future design is presented, covering both the aims and the likely future features of the education system in 2020. These principles lead on to the model presented in the paper.

1.2 If the principles are adopted, the features of the future structure will include:

— A basic common core followed by options. This will allow future actuaries to qualify in a much broader range of specialisms. The common core will cover both foundation and generalised applications subjects.
— An introductory module on business awareness. This will help future actuaries acquire a broad understanding of financial and general business sense and provide a context for their studies.
— Less emphasis on examinations of the type that actuarial students currently take, and some alternative assessments appropriate for the skills developed.
— More opportunities for full-time courses at undergraduate or post-graduate level for theoretical parts of the syllabus, with work experience during the practical parts.

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— Development of business and management skills, recognised through the maintenance of a log-book of courses attended.
— Valuable qualifications at different levels.

1.3 Detailed considerations will follow in the implementation phase. The current objective is to determine the framework of the set of principles and the likely model.

2. Background

2.1 The Vision and Values consultations undertaken in 1999 by the Faculty and Institute led to the development of goals for the actuarial profession for 2020. Education strategy is recognised as one of the key tools for the profession. There are, in fact, both external and internal forces which will affect the design of a future education system. These forces all lead to the aims that we wish to achieve in the qualification process.

2.2 External forces include:
— the roles that actuaries are likely to play in the future in the business world;
— the globalisation of the actuarial profession; and
— competition from other financial/risk disciplines for bright students.

2.3 Internal forces include:
— the recent work in the United Kingdom on Vision and Values, which has highlighted the competencies that the profession itself wishes actuaries to demonstrate;
— a strong commitment to the need to maintain standards, which needs to be coupled with an appraisal of what we mean by standards within the context of future competencies;
— concern over the proportion of actuarial students who do not gain Fellowship qualification;
— increased pressure on actuaries, which means that there is pressure on volunteers to maintain a part-time education system; full-time education could be attractive; and
— a commitment to a unified profession through the U.K. qualification system, offering education for a variety of roles.

2.4 A steering group was formed in the middle of 1999 to lead the discussions on the development of the future education strategy. The Chairman is Jeremy Goford, and the U.K. members are Simon Carne, Seamus Creedon, Chris Daykin, Nick Dumbreck, Duncan Ferguson, Paul Grace and Paul Thornton, with Lis Goodwin as Secretary. The group was augmented with some overseas members: Neville Henderson from the Society

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of Actuaries; Clare Bellis from the Institute of Actuaries of Australia; and Cecil Bykerk, Chairman of the IAA Education Committee.

2.5 An initial round of consultation in autumn 1999 indicated the aims to be achieved through the education/qualification process, and gave support for some directions to be explored. This was followed by an international education conference in Staple Inn on 17 May 2000, to debate the various suggestions further. In considering the development of strategy, the working group looked at three dimensions for a curriculum framework: structure and qualification; content and skills; and the education and assessment process. These were debated at the education conference, and helped in the development of the principles. Details of these dimensions are given in Appendix 1.

2.6 Although there was a range of different views expressed at the conference, a consensus of the principles for the future design of the model for education for 2020 emerged. Endorsement to these principles, in general terms, was given at a joint meeting of Councils in May 2000. There was general agreement that the current strategy needs to be developed to meet the future requirements of the U.K. actuarial profession.

2.7 A further consultation paper was prepared for widespread discussions with the membership in autumn 2000. The final stage of the third consultation phase is at the Sessional Meetings of the Faculty and the Institute in January 2001. After the Sessional Meetings a meeting of the joint Councils is planned for February 2001, to finalise the proposals for the future strategy. The agreed principles will help determine the framework for the future. Once determined, developmental changes, consistent with the framework, can take place at appropriate stages in the short to medium term as part of a continuous improvement process. The first stage of syllabus change, as a result of this review, is likely to be in 2005, but further changes will follow with full implementation, possibly in 2020.

2.8 In addition to the work of the U.K. strategy group, the Society of Actuaries and the Casualty Actuarial Society have also been looking at education strategy development. A joint meeting was held in August 2000, and there was close agreement on the likely principles for the future framework. We are keeping in touch with other actuarial associations worldwide, such as the Institute of Actuaries of Australia, and also with the Education Committees of the IAA and the Groupe Consultatif. Once the framework is set, the implementation phase will look at the possibility of global syllabuses, particularly for the earlier non-country specific level. This could be followed by common teaching and common assessments. The timescale for this is less certain, but is an important vision for a global profession.

3. Principles

3.1 A set of principles has been developed and is presented below. The first seven principles reflect the overall aims that we wish to achieve. The

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subsequent principles reflect the likely way forward. Discussions on these principles have been very helpful in the international dimension. We believe that discussions focused on the principles will help to confirm the future way ahead.

3.2 *Overall Aims*

3.2.1 *Principle 1. The aim of the education system for the actuarial profession must be to prepare and develop its members to deliver a service of quality and high standard appropriate to their clients and customers.*

3.2.2 *Principle 2. In all changes to the education strategy, standards, as demonstrated through the work that actuaries are able to do, will be maintained.*

Standards may be defined in two ways. Clients of actuaries are concerned that the actuary continues to have the appropriate skills to perform the required roles and tasks. The profession is, therefore, also concerned that the actuary of the future continues to have an appropriate range of skills. There is a need to ensure that each level of qualification is associated with an appropriate demonstration of attainment of necessary skills. Standards are thus defined through the breadth and depth of skills developed and attained, rather than through knowledge demonstration. The second definition of standards is to measure these with reference to past measurements and to ensure that, in the future, similar hurdles are set at qualification level as previously. Emphasis in the past has been on knowledge acquisition, with some reference to skills. In future, maintenance of standards will be determined through the skills that actuaries have, not the severity of examinations passed. Emphasis will be placed on what actuaries 'know how to do', rather than on simply what they know.

3.2.3 *Principle 3. It is important that future actuaries help retain the unique professional characteristics demonstrated by current actuaries, in particular appropriate attention to rigour and the long-term view.*

Development and maintenance of these unique characteristics will be an important feature of the future education strategy. The qualification process will need to help actuaries understand the importance of rigorous thought, but also to understand when practical business decisions must be taken based on commercial insight.

3.2.4 *Principle 4. The future education system will need to help individual members of the actuarial profession prepare to take on different roles, both specialist and generalist.*

3.2.4.1 While actuarial roles will still be found within the current applications areas in investment, insurance and pensions, they are likely also, in future, to cover other areas of financial services. Any one member of the

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profession will opt for a particular role at a particular point in his or her career, and the opportunity for change will exist through CPD opportunities.

3.2.4.2 It is important to ensure that, in broadening the profession, we still offer education for actuaries working in the current core role as a signatory under legislative requirements.

3.2.4.3 It is believed that, currently, actuaries, or those with some actuarial training, are likely to take up the following types of roles:

(1) *Signatory*
Appointed Actuary
Pensions Scheme Actuary
General Insurance Lloyds' Actuary

We believe that the education/qualification for these roles is best achieved, as at present, with a period of experience and CPD, post Fellowship (FIA/FFA).

(2) *Wider Regulators' requirements*

Specific requirements of regulators, such as the Financial Services Authority, e.g. for investment advice, will probably be met through specific courses with appropriate assessment at the relevant stage of an actuary's career. The content is likely to be knowledge based, so could be taken pre or post Fellowship qualification. This could affect different types of actuaries, and this training could be additional to the main qualification ladder.

(3) *Generalist — traditional*

This type of actuary is the current product of the present education/qualification system, with an understanding of actuarial concepts within the traditional areas of life, general and pensions, and some understanding of investment for asset/liability management. They are likely to work primarily in one of the traditional areas.

(4) *Generalist — modern*

This type of actuary has an understanding of actuarial concepts, asset/liability management and business. They are likely to work in a variety of areas or develop their own specialisms in one, e.g. healthcare.

(5) *Finance and Investment*

This type of actuary needs to be able to work alongside the financial mathematicians and investment managers within financial institutions. They are likely to be working in corporate finance, investment and banking.

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(6) *Business and Management*

This type of actuary is looking for a career within the management of a financial services company or wider.

(7) *Research*

This type of actuary is looking for a role in research within a financial services organisation or within a university environment.

(8) *Education*

This type of actuary is looking for a teaching role.

(9) *Technician*

There is a need for individuals who can provide support to actuaries and other managers by producing rigorous analysis and well communicated, high quality results from complex models.

(10) *Information Technology*

Several actuaries are already involved in the development of IT systems for financial services companies.

(11) *Chief Risk Officer*

There is a new breed of senior executive being appointed in organisations of all types — not just in financial services. The CRO is responsible for the assessment, valuation and management of all the risks to which an enterprise is exposed — operational, business and financial risks.

3.2.4.4 Some professions are built around putting into practice recognised knowledge (Type A professions, e.g. law and medicine), whilst others use recognised knowledge as a foundation upon which to build a diverse range of skills (Type B professions, e.g. accountancy). The actuarial profession is now at neither end of the spectrum, but has, in the past, been closer to Type A, with a large proportion of actuarial work based on established methodologies. In future there will be migration towards Type B, with more actuaries using their professional training more as a springboard to a wider set of roles than as a set of skills and methodologies for specific applications.

3.2.4.5 Vision and Values supports the development of actuaries who not only demonstrate rigorous application of skills, but also are able to use actuarial concepts in providing both prudential and commercial assistance to clients. These concepts are built during the education process and developed with practical experience. Once mastered and supported by rigorous application of actuarial skills, the use of these concepts distinguishes actuaries from other professionals in serving their clients in whatever role.

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3.2.4.6 There are undoubtedly further roles which may be added or may be included as variations on the roles listed above.

3.2.5 *Principle 5. The education system will be designed to retain professional bodies united across disciplines.*

There is a strong commitment to retain, in the U.K., the current organisation of the actuarial profession, and not to fragment into more specialist bodies.

3.2.6 *Principle 6. The future education strategy will pay attention to global issues.*

3.2.6.1 The globalisation of the actuarial profession is closely linked to the globalisation of business. The core syllabus of the IAA has been developed to underpin global mutual recognition agreements at a level of understanding of international concepts in actuarial practice. The Groupe Consultatif has mutual recognition at full practitioner level, and has developed a more detailed and extensive education syllabus to underpin this. Mutual recognition agreements at full practitioner level exist between several countries world-wide. The U.K. actuarial profession is committed to the concept of core syllabuses internationally. Any proposed changes to the U.K. syllabuses would need to be considered alongside the current international syllabuses and any developments in them. There might be future opportunities for close working between examining bodies internationally, with some common syllabuses and assessments.

3.2.6.2 Progress on this principle may be slower than on others, but ways of working closely with other actuarial associations to facilitate transfer of members between countries will be looked at.

3.2.7 *Principle 7. The actuarial profession must be attractive to bright people from a range of numerate backgrounds.*

3.2.7.1 Students leaving universities with mathematics in their degrees are faced with an ever-increasing range of options of careers, especially those involving new technology. For those interested in financial services, increasing numbers are going into careers in quantitative finance and financial economics in the large City and global financial institutions. These jobs are often perceived as offering an opportunity to use mathematics directly in new and innovative ways, to earn high incomes at an early stage, and not to require further examinations. The students who take these jobs are often identified by their universities as bright students having a range of qualities. Other professions, such as accountancy, are also perceived as attractive, because the time to qualification is shorter, and also because accountancy is widely recognised as a good business qualification. There is an intention to make the actuarial profession more attractive and appear broader to future entrants. We will also aim to attract people who wish to change their careers.

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3.2.7.2 This principle will be achieved through the development of some other principles, such as globalisation and preparation for different roles. It will, however, need to be coupled with changes in education and assessment and the marketing of the profession in schools and universities.

3.3 *The Way Forward*

3.3.1 *Principle 8. The education strategy, in its development, will ensure that members have different qualification completion points. After completion of a qualification, members will be encouraged to continue studies for further qualifications or to actively undertake CPD. We will not require attainment of one qualification before progression to another.*

3.3.1.1 In the U.K. there are currently four formal levels of qualification: Diploma in Actuarial Techniques (DAT), Associate, Fellow, Fellow with a Practising Certificate. We also have categories of Affiliate Member and Honorary Fellow. We might, in future, prefer to replace the DAT with a member category with designatory letters.

3.3.1.2 The qualification of Associate could be placed at different levels, for example at the end of the common core. This common core is likely to be much slimmer than at present, especially if some of the present foundation material is made optional. Alternatively, Associateship could be kept at a similar level as at present. This might also mark the end of the examination process, but not the qualification process. Some students may prefer to gain one qualification before starting another, whereas others may prefer to take subjects in an order of their own choice.

3.3.2 *Principle 9. There should be more certainty in the duration of time to appropriate qualification.*

3.3.2.1 Concerns are expressed both about the uncertain and the often long time taken to qualify as a Fellow and the high proportion of entrants who do not complete to qualification. This concern is strongly linked to the need to maintain standards. Analysis of standards in terms of the demonstration of skills linked to appropriate assessment methods may be helpful in resolving what currently are seen by many as irreconcilable aims. Other professions in the U.K., such as law and accountancy, have more certain times to qualification, and this involves a more structured approach to the education process than currently is part of the actuarial education process. A qualification ladder, constructed in stages with relevant finishing points, might be helpful in allowing more certainty of qualification at different stages, rather than the single exit point of Fellowship only.

3.3.2.2 In designing the new system, we need to balance key factors over the length of time that it takes a member to reach a designated qualification. These factors include: student/employer choice over the rate of study; the students' ability to develop appropriate understanding of issues and mental

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maturity; and the number of assessment hurdles necessary to demonstrate a standard of attainment. It will be helpful if a new student is more aware of the likely time to completion of each level of qualification. This may be difficult to achieve, but is an important principle to aim for.

3.3.3 *Principle 10. We will need to introduce options following on from a common core. This is necessary to meet other principles. The common core will prepare actuaries in the principles of actuarial thinking. It will consist of a set of agreed foundation subjects covering the core technical subjects and the generalised applications subjects. The options will cover further technical knowledge and further applications knowledge appropriate to each specialism.*

3.3.3.1 The types of content and skills required for actuarial development may be analysed as follows:

— pre-entry technical knowledge;
— core technical knowledge;
— generalised applications knowledge;
— optional technical knowledge;
— optional specialised applications knowledge across several areas (new and traditional);
— optional specialised local knowledge;
— higher order skills, e.g. analysis, synthesis, judgement and communication;
— business and management skills within the qualification;
— business and management skills outside the qualification; and
— professionalism skills.

3.3.3.2 This principle means that we will have to look carefully at our current building blocks and consider what is core to all actuaries and what might be made optional to support different routes. We will thus aim to reduce the overall content currently in the early technical subjects which must be studied by individual students. We will also consider whether assumed pre-entry knowledge can be increased. For example, we could ask students who have not studied economics or statistics to take an approved course with some form of assessment at the end. Attention to transition arrangements must be given.

3.3.3.3 We believe that generalised applications may be covered through the development of assessments to demonstrate understanding of generalised assets, generalised liabilities and the actuaries' role in the interaction between assets and liabilities. We would include the use of the Control Cycle and financial modelling.

3.3.4 *Principle 11. We will encourage universities and other tuition providers to offer full-time courses leading to exemptions from examinations in the common core and the further optional non-country specific specialist material. We will ensure that routes to qualification remain open to people who start*

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actuarial training with employers with no exemptions from the actuarial examinations based on previous studies.

The common core will contain the principles of actuarial thinking and practice. It is thus well suited for delivery in a full-time context, as it does not rely on detailed current practical experience. We will retain a part-time study route. Block release might be another alternative route.

3.3.5 *Principle 12. We will develop alternative assessment methods appropriate for the skills being assessed.*

3.3.5.1 Approaches to current assessment may be categorised as follows:

— Within the qualification we have, currently, only one type of assessment: time constrained unseen examinations.
— Students are required to attend a professionalism course and are awarded a certificate to indicate that they have participated in the course. This is another form of assessment which could be developed as an assessment approach for other skills.
— Currently, in the 100 series, some students gain exemptions from corresponding courses taken at designated universities. The assessment of the standard reached is done by the university in conjunction with an independent examiner from the profession. The content is required to be similar, so that exemptions may be seen as an alternative assessment method.
— In future, we might require students to undertake some specific training as part of the qualification, but would not assess the students' performance through the profession. We might accredit providers of tuition.

3.3.5.2 There are a variety of alternative assessment methods that could be used by the profession, and work is under way to look at these.

3.3.5.3 Assessment of country specific, specialism specific, material at Fellowship level might include open book unseen examinations or dissertations presented orally and in written format. Supervised work experience might also contribute to the attainment of Fellowship.

3.3.6 *Principle 13. Business and management skills are important to actuaries, and to encourage these some emphasis will be included within the qualification structure.*

3.3.6.1 Actuaries need an appropriate blend of technical skills, professionalism skills and other skills, which may be categorised as business, management and personal skills. The U.K. Vision and Values exercise outlined a number of characteristics of actuaries. In an ever rapidly changing world, these skills will include learning how to learn and how to acquire new skills as they are needed. There will be more emphasis on understanding the reasons behind concepts as well as on the concepts themselves. We need flexible and reflective practitioners who can respond to change.

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3.3.6.2 However, for business and management skills, alternative assessments from time constrained unseen examinations set by the profession will be explored. One suggestion is that there should be a list of accredited courses that students might attend. It is assumed that the profession will not provide or assess these courses directly. Courses should be similar to professionalism courses, and participants will need to demonstrate active involvement. Topics and the extent of these courses would depend on the optional routes that the candidate chooses. In determining which skills are important, we will analyse current employer practice and take into account foreseeable developments requiring new financial competencies.

3.3.6.3 Communication skills are currently examined, but, in future, these might be assessed differently. This would not be a sign that communications are being given less emphasis, but would allow us to consider options for a more natural development and/or assessment of these skills.

3.3.7 *Principle 14. Professionalism skills will continue to be given importance in the qualifications.*

We will continue to place emphasis on professionalism skills, by offering courses to develop them at appropriate stages.

3.3.8 *Principle 15. The common core will contain a module in business awareness.*

This could be an 'attractor' module for entrants, to help them to understand the business environment and organisation structures within which they are working. If included, this would be taken during the first stage of the qualification. We would aim to use a module in conjunction with some other provider, and look for guidance on its assessment. Well crafted, such a module could become a recognised entry point for any career in finance and banking.

3.3.9 *Principle 16. Work experience for Fellowship is important to support core applications skills.*

Any period of work experience required before completion of a qualification will need careful planning between the student and the employer. Business and management skills can be developed. Employers also want to use this period of work experience for the development of understanding of their company practices and company specific systems, such as IT. Some statement of the skills acquired during this period should be made to the profession. As part of the broadening of the profession, we will need to make sure that the mechanism for certification of work experience is appropriate for those working in non-traditional areas.

3.3.10 *Principle 17. In developing the new system, we will look to work in partnership with other organisations as much as possible.*

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3.3.10.1 This is important for the achievement of a global actuarial profession. We might be able to develop further common syllabuses, leading to common tuition methods and common examinations.

3.3.10.2 There are considerable resource pressures at present, and each actuarial profession cannot do everything alone. This means that we need to work, not only with other actuarial associations, but also with other professional bodies. Other professional bodies could supply material for the contextual background to allow a number of different specialisms to emerge.

3.3.11 *Principle 18. An actuary will undertake CPD in activities appropriate for particular specialisms. These need not necessarily be activities provided by the profession, provided that they reach an appropriate standard. At present this will be left to the member's own discretion, but in future we might need to introduce an accreditation process.*

Actuaries may want to transfer into other specialisms later in their career. It is believed that this could be done after the Associate qualification. CPD activities will be needed to reflect the need to get up to speed in the missing elements. This might include formal assessments for particular purposes, including recognition of achievements, as in the current Certificate in Derivatives.

4. Model for the Future

4.1 Students of the future will need to understand clearly what is required of them to attain different levels of qualifications and how long it is likely to take to attain a qualification. This section looks at the future from the student's view.

4.2 During the consultation process a large number of possible models were suggested for the future education process. We considered the dimensions of education models, which are described in Appendix 1. As the principles for the education framework emerged the choice of models narrowed. It may also be helpful to compare the future model with the current U.K. model. This is given in Appendix 2.

4.3 Actuaries require both theoretical knowledge and practical experience. We believe that practical experience is best gained through a period of work experience. The length of appropriate work experience is currently being reviewed both for Fellowship and with respect to the new Associateship. There have been several comments that the time to qualification should be shortened. Delivery of theoretical knowledge through specific full-time education will help students concentrate, without the distraction of the world of work. Full-time education should help improve progression rates through the theoretical parts of professional study and provide greater certainty of

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qualification. It may not shorten the time for some, as a period of work experience will be necessary.

4.4 The model for the future is now described.

4.4.1 *First Stage: Technical core*

4.4.1.1 The content for the first stage is likely to be drawn from the current foundation subjects, the 100 series subjects, but will exclude some material appropriate only to certain key specialisms.

4.4.1.2 The subjects might be, as an example:

101 statistical modelling (or presumed as pre-entry knowledge);
102 financial mathematics;
107 economics (or presumed as pre-entry knowledge); and
108 finance and financial reporting;

two subjects involving a core subset of material from:
104 survival models;
105 actuarial mathematics for life and pensions; and
106 actuarial mathematics for general insurance; and

one subject involving a core subset of material from:
103 stochastic modelling; and
109 financial economics.

4.4.1.3 Assessment would remain by professional examination or by exemptions from full-time study. In addition, there would be a module dealing with business awareness and ethics taken early on as a student, sponsored by the profession.

4.4.1.4 *This could be the level at which the current Diploma in Actuarial Techniques or a new qualification 'Member' is awarded.*

4.4.2 *Second Stage: Applications core*

There is likely to be one generalised liabilities section, one generalised assets/investments section and one asset/liability management section. Assessment would remain by professional examination or exemptions. In addition, a course offered by the profession on modelling and the Control Cycle would be taken. Students will consider the principles of actuarial decision making in general terms, but with specific examples from both traditional and non-traditional applications areas. The approach could be similar to that taken in Australia.

4.4.3 *Third Stage: Specialist non-country specific*

4.4.3.1 Students will opt for one specialism, and will study both further specialism-specific technical knowledge and specialist applications which are

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non-country specific. The technical content would be based on material in the current 100 series foundation subjects, which is not included in the common core. As an alternative, the generalist actuary might take two applications subjects, which could include subjects typically found in MBA programmes.

4.4.3.2 Assessment would remain by professional examinations or by exemptions.

4.4.3.3 There will also be a professionalism course to be taken during a period of one year relevant work experience. The work experience would be agreed by the profession, and there need not be an actuary as direct supervisor, but an actuarial mentor could be appointed.

4.4.3.4 *Completion of Stages Two and Three could be the level at which an Associate is awarded.*

4.4.4 *Fourth Stage: Specialist — country specific*

This would be the stage leading to Fellowship. It is envisaged that there would be no traditional examination at this stage. Fellowship might normally be awarded on completion of:

— a test of local knowledge in the specialism, which might be open-book, if assessment is required by the regulator;
— maintenance of a logbook of certain designated courses in business and management skills;
— completion of a substantial report/dissertation in a relevant area of work, which would be assessed both orally and through written documents;
— participation in some agreed activities/CPD relevant to particular specialisms; and
— a total period of three years' work experience since starting as an actuarial student, with an oral assessment of competence on a scale set down by the profession.

A professionalism course would also be attended.

4.4.5 *Fifth Stage: Specialist — advanced*

This would be the stage leading eventually to practising certificates, but first to maturity as a practising professional. CPD plays an important role in this period.

4.5 *Time to Qualification*

There would be four possible main routes to the attainment of Fellowship. It should be noted that unseen examinations will be over by the end of the third stage.

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1. Full-time study (postgraduate)	Age at entry	21
	First three stages — full time study	two years
	Fourth stage — work experience	three years
	Total to Fellowship	five years
	Age at FIA/FFA	26
2. Full-time study (undergraduate)	Age at entry	18
	First three stages — full time study	four years
	Fourth stage — work experience	three years
	Total to Fellowship	seven years
	Age at FIA/FFA	25
3. Part-time study (after first degree)	Age at entry	21
	All stages done by part-time study with concurrent work experience of three years	
	Total to Fellowship (median)	six years
	Could be	three years to eight years
	Age at FIA/FFA	24-29
	Median likely to be	27

Partial exemptions earned from the first degree could reduce this timescale. The timescale will also vary, depending on the speed of part-time study.

4. Part-time study (after first degree)	Age of entry	21
	First three stages — block release	four years
	Fourth stage — part-time study	one year
	Concurrent work experience of three years	
	Total to Fellowship	five years
	Age at FIA/FFA	26

Variations on these timescales are possible, dependent on how much is done in full-time study and how much in part-time study. The rate of study part-time will tend to be more variable than in the first two routes.

5. Next Stages

5.1 As described earlier, implementation discussions will start once there is an agreed framework. Work has already been started on determining the likely content of the compulsory technical core and the technical content for some of the options, in particular the finance and investment option. The

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compulsory technical core is being developed by looking at the sort of knowledge and skills needed to support a large proportion of the various roles that actuaries undertake, as demonstrated in the CPD handbook. A review of work experience has also started. Qualification levels are being debated. There will be many detailed decisions to be made during the implementation phase. Full implementation of the model, with a move to more full-time education, will need time.

5.2 Once the way ahead is determined, work will really begin!

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APPENDIX 1

EDUCATION DIMENSIONS

A1.1 As part of the consideration of the model for student education that will follow from the principles, it may be helpful to note the different dimensions behind an education model. These are:

S — Structure and Qualifications ladder
C — Content and Skills
E — Educational process, including assessment.

Although the three separate dimensions can be defined, there is a strong interaction between them.

A1.1.1 *S — Structure and qualifications ladder*

This dimension concerns the qualifications awarded at different stages/levels of the education process and the professional responsibilities that the holder can assume. This covers issues such as the difference between an Associate and a Fellow and whether a lower level of actuarial qualification below these two should be defined. Discussions on structure and qualifications go beyond the educational arena, but it is essential to reflect on these issues while developing educational strategy.

A1.1.2 *C — Content and skills*

This dimension covers the content of the educational process and the skills that need to be developed during the process.

A1.1.3 *E — Educational process, including assessment*

This dimension covers discussions on how actuaries are educated and how to assess the attainment of skills and knowledge.

A1.2 The earlier consultations suggested that the following areas should be looked at:

— alternative qualifications;
— the role of CPD;
— the role of work experience;
— the development of options;
— business, management and communication skills, including business awareness;
— more work with universities;
— closer links with other professional bodies;
— alternative assessment; and
— alternative tuition.

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The first three areas are primarily within the 'S' dimension, the second two within the 'C' dimension and the final four within the 'E' dimension, and are explained in Section 3.2.

A1.3 The principles for the way forward that emerged may be categorised similarly:

S — Principles	8, 18
C — Principles	10, 13, 14, 15
E — Principles	9, 11, 12, 16, 17.

Thus, it is important to consider the future model in each of these dimensions separately. Each of these dimensions is the responsibility of a different group within the profession.

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APPENDIX 2

CURRENT UNITED KINGDOM MODEL

At present we have the model described below for U.K. examinations.

Entry qualification: Mathematics at higher school leaving stage

100 series	101	Statistical Modelling
9 subjects	102	Financial Mathematics
	103	Stochastic Modelling
	104	Survival Models
	105	Actuarial Mathematics 1
	106	Actuarial Mathematics 2
	107	Economics
	108	Finance and Financial Reporting
	109	Financial Economics

Qualification: Diploma in Actuarial Techniques

200 series	201	Communications
1 subject		
300 series	301	Investment and Asset Management
4 subjects	302	Life Insurance
	303	General Insurance
	304	Pensions and Other Benefits

Qualification: Associate (after professionalism course)

400 series	401	U.K. Investment and Asset Management
1 subject from	402	U.K. Life Insurance
		U.K. General Insurance
		U.K. Pensions and Other Benefits

Qualification: Fellow (plus professionalism course and work experience [Institute])

It is assumed that business skills are acquired through the employer, both pre qualification and as part of CPD, but there is no formal requirement.

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CPD and work experience

Qualification: Practising Certificates (for signatory roles)

Voluntary specialised certificates: at present we have the Certificate in Derivatives and the Advanced Certificate in Derivatives.

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