



The Actuarial Profession

making financial sense of the future

Life Convention and Exhibition 2011
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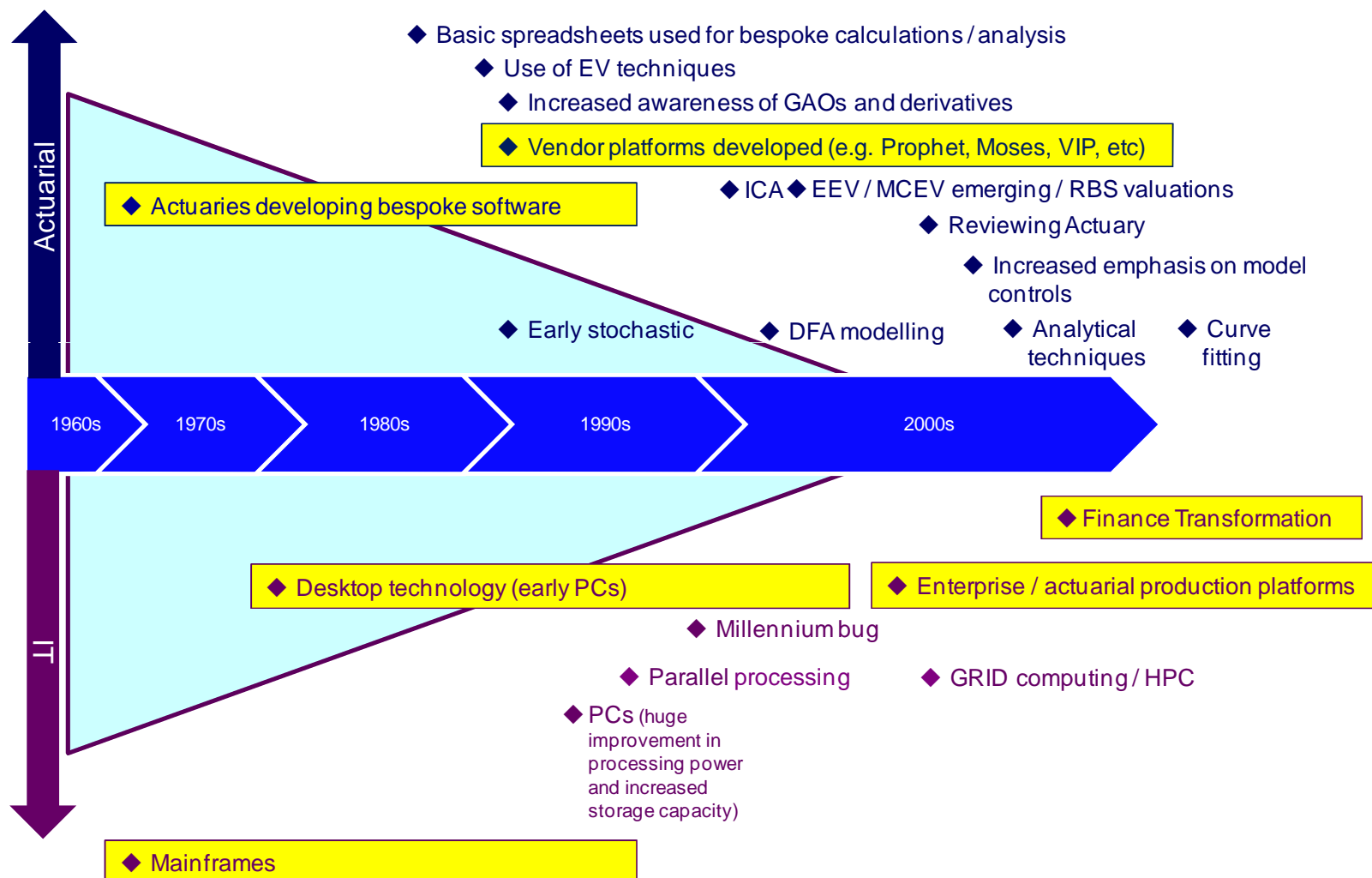
The Need for Actuaries to Embrace New Technology

November 2011

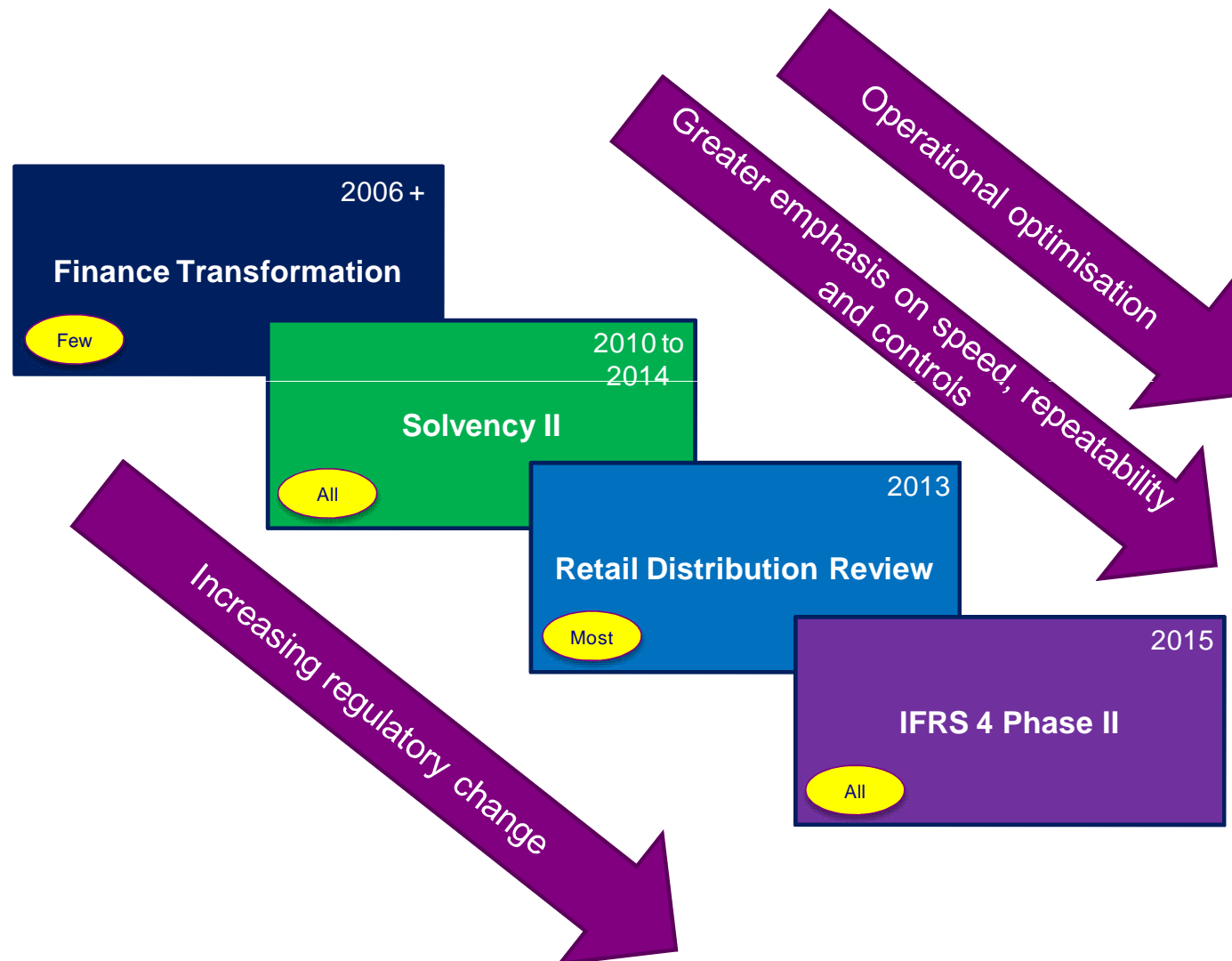
Agenda

- Increasing convergence of the actuarial and technology communities
- Period of unprecedented change
- Software development lifecycle model
- Key challenges and approaches to address
- Working in a more integrated way
- Some future challenges
- Questions

Increasing convergence of the actuarial and technology communities



Period of unprecedented change

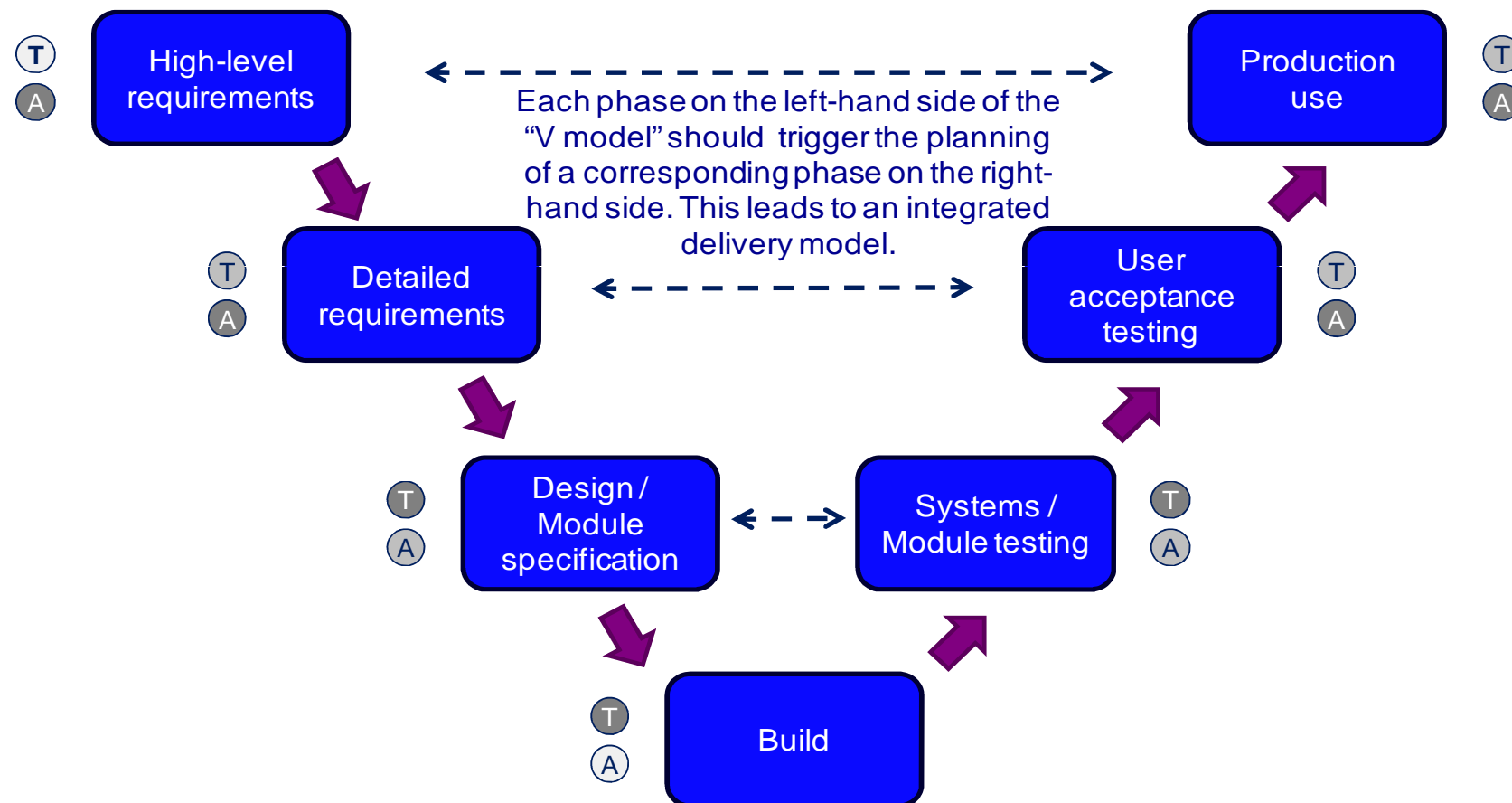


Systems development lifecycle model

- There are many frameworks used to describe delivering software
- They all do the same thing – apply structure and control
- The larger the piece of work the more important structure becomes – 100s of developers cannot work on the same thing without structure
- Furthermore, the larger and more complex the challenge, the more likely that different people and different skill sets will be involved – teams must be able to communicate effectively
- We will use the “V Model” here to help describe the challenges and opportunities for actuarial systems development

The “V Model”

When systems are specified by actuaries and built by technologists, there are differing levels of involvement in the different phases. Hand-offs between the stages can often be between teams and, quite often, geographies.



Key challenges and approaches to address High-level requirements

Actuarial

Key Challenges

Achieving high-level requirements (functional and non-functional) that are “fit for purpose”.

Approaches to address

The Operating Model – People, Processes and Technology – should be an input into the process of developing high-level requirements. This will influence the high-level requirements and detailed requirements.

Technology

Key Challenges

Getting ‘sign off’ to enable the next phase to start. Traditional methods often make it hard to explain “what you will get”.

Approaches to address

A key phase where a bridge must be built between teams and skills. Utilise experience of how to define solutions in a way that technologists understand.

Drawing pictures to explain the flow of activity (processes) and information (data flows) are often the best way of creating this bridge.

Key challenges and approaches to address Detailed requirements

Actuarial

Key Challenges

Requirements need to be complete and well understood.

Regulatory requirements are often moving.

Exposing implicit assumptions, risks and dependencies.

Approaches to address

Collaboration with all key stakeholders required through workshops to understand / clarify / approve requirements.

“As is” to “To be” analysis critical in understanding gaps. Need to be able to build into the design sufficient “agility” to be able to absorb future changes – true for Solvency II and even more true for IFRS II Phase 4.

Actuaries are used to making implicit assumptions since often writing specifications for fellow actuaries.

Now need to write specifications for non-actuaries, and even the most familiar things for actuaries need to be called out explicitly. Similarly, much sharper focus on being explicit about risks and risk mitigation strategies required.

Key challenges and approaches to address

Detailed requirements

Actuarial

Key Challenges

“Prototyping” may lead to changes to the detailed requirements.

Change control process.

“Rigid” structure required by technology can restrict “natural creativity” enjoyed by actuaries.

Approaches to address

Sufficient “agility” should be built into the programme to be able to “absorb” such changes.

Version control rigour around requirements needs to be applied in a disciplined manner. The requirements should be base lined and change controlled. Any changes should be effectively communicated to technology development teams to ensure that changes are well understood and applied across the solution in a consistent and uniform way.

Right balance needs to be sought between the way in which actuaries like to work and the way in which technology consultants like to work.

“Prototyping” can help to bridge the two mind-sets as long as the assumptions and risks are clearly understood by key stakeholders.;

Key challenges and approaches to address Detailed requirements

Actuarial

Key Challenges

Requirements need to be “testable” to enable progress through the different stages of the delivery model.

Approaches to address

Actuaries are used to being involved in all stages of the delivery – design, build and test – with input often “blurred” across all three.

Change is “mindset” is required to think in this way, but absolutely critical in knowing when you have delivered.

Key challenges and approaches to address

Detailed requirements

Technology

Key Challenges

Getting actuaries to write requirements in a way that allows progression to the next stage – design.

Minimising the chance of change.

Approaches to address

Technologists need to explain *why* they want requirements written in a certain way - requirements must be *specific* and *testable*.

Ideally requirements should be requirements ... and not proposed solutions.

The standard 'lifecycle' deals with change inelegantly. Often you must simply rewind and do it again.

Where requirements are known and stable, change is minimised by ensuring the provider of requirements understand how they will be interpreted and the designer having a clear understanding of what was meant – simple communication!

Where change is inevitable, a different delivery model may be required...

Key challenges and approaches to address

Design / Build / Test

Actuarial

Key Challenges

Minimise systems build “surprises”.

Approaches to address

Appropriate actuarial skills required to oversee build activity (could be offshore) to ensure that there are “no surprises” in the “black box” that is delivered by IT.

Use of test cases in advance with intermediate results can help to give actuaries increasing confidence that build is in line with expectations.

Key challenges and approaches to address Design / Build / Test

Technology

Key Challenges

Dealing with ambiguity within requirements.

Agreeing the best tool (technology) for the job.

Approaches to address

In the 'V Model' the 'design' must resolve the uncertainties to create a specific solution that cannot be misinterpreted. This is easier if the requirements are specific.

Often multiple layers of design are needed – e.g. to bridge to requirements (actuarial) and to bridge to developers.

Prototyping is often needed to resolve ambiguity by showing what the potential options look like and getting feedback before it is too late.

There are many 'tools' and each have strengths and weaknesses. An agreement must be reached as to the best balance for the problem at hand.

Flexibility ; Control ; Performance ; Maintenance

Key challenges and approaches to address

User acceptance testing

Actuarial

Key Challenges

Developing a risk-based testing strategy.

Greater appreciation of the “building blocks” of the technology solution.

Defect resolution process.

Approaches to address

Appreciation of how the system has been built and where “bugs” could hide is helpful. Efficient use of test cases to seek out the “bugs” quickly is crucial.

Testing strategy needs to give senior management “incremental assurance” on quality of system.

Need to have a good appreciation of how technology solution is joined together to be able to do this effectively.

Needs to be carefully designed with a mechanism for prioritising defects.

Need to get the right balance between “need to have” and “nice to have” through collaborative discussion between actuaries and technology team.

Key challenges and approaches to address

User acceptance testing

Actuarial

Key Challenges

Establishing and applying well defined “exit criteria”.

Approaches to address

Embedding clarity on when the testing is “good enough” to move onto the next stage. Often requires agreement to pre-defined “exit criteria” and discipline in moving on when the criteria have been satisfied.

“Time boxing” can help to bring about some additional focus in meeting criteria and existing.

Key challenges and approaches to address

User acceptance testing

Technology

Key Challenges

Defining and agreeing what is 'good enough' – preventing perpetual testing

Ability to turn around defects rapidly

The understanding that a complex system cannot be 'free of bugs'

Approaches to address

Acceptance Criteria must be agreed – and examples worked through to eliminate misunderstandings.

Materiality thresholds must be set and adhered to so as to prevent uncontrolled overrun.

Consider 'time-boxing' to focus prioritisation.

The ability to 'see' the result of a fix often requires the 'V Model' to be re-executed – this can lead to a significant lag.

Prototyping is needed to demonstrate a fix and ensure the remedial activity will resolve the bug.

Defects must be prioritised and not all defects will/can be fixed. Perfection is generally prohibitively expensive and those that pay probably don't want it!

Key challenges and approaches to address Production use

Actuarial

Key Challenges

Use of the new technology within a BAU environment.

Approaches to address

Developing an Operating Model up front will help. Also, a transition plan is key (which is well understood by all key stakeholders) in moving the new technology from a programme environment into a BAU environment.

Change in “mindset” often required to fully embrace new technology – new rigour / controls should be a barrier to use.

Technology

Key Challenges

The need for a controlled ‘production’ environment often leads to a surprise – less flexibility.

Approaches to address

Systems can be built with flexibility built in – specify it as a requirement!

Control is there to help – if it is hindering a business then the system has been specified incorrectly. Controls exist to manage our risk.

Working in a more integrated way

- Strong interaction between Actuarial and technology teams essential – sit together and create cross functional teams
- ‘Cross Over People’ – actuaries that ‘get’ the IT message and technology people that ‘get’ actuaries
- Actuaries need to understand the practical implications of the key technical and architecture decisions that are made
- Actuaries need to buy into the IT principles – they are often mandated by board or regulator level requests
- Acknowledgement that actuaries often need an environment and development process which enables them to be creative with their modelling work
- Need to obtain the optimal balance across: Functionality, Flexibility, Maintainability, Performance, Transparency and Controls

Working in a more integrated way

- Development of common understanding of respective languages, terminology and day-to-day issues
- Importance of regular and effective communication to Business Sponsors / Key Stakeholders (many often not actuaries)
- Actuarial knowledge within the technology team so that “obvious” business requirements are not missed e.g. actuaries will not be happy with a “black box”
- Mutual education of underlying technologies and implications
- Actuaries really do provide the “tip of the delivery arrow” on such programmes and appropriate engagement needs to be structured from the onset of a programme on an on-going basis through to the delivery into a BAU environment
- Mutual respect for actuarial and technology disciplines is important

Some future challenges

Process automation

Intelligent Business
Analytics

Centralisation /
Globalisation

Cloud computing

Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

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