INSURANCE POLICY VALUATION MODEL APPLICATION

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WHAT I WILL DISCUSS TODAY

- Who is this application for?

- What is this application meant to do?

- The technical details of the application

- What I have learned from this project so far

WHAT IS PRUDENTIAL?

- Multinational Life Insurance and Financial Services Company

- Offers pensions, annuities, savings and investments.

- Offers a large amount of the Insurance available in the UK

INSURANCE POLICY VALUATION

- Life Insurance policy valuation is a convoluted process involving the long-term (decades!) projection and discounting of future cash flows of a policy.

- Values worked out through data inputs (e.g. premiums paid), assumptions (e.g. future tax and interest rates) and calculations (e.g. management expenses of the fund).

- Valuation models are always growing and being added to over time, resulting in more and more data and calculations needing to be done.

THE PROBLEM

- The application needs to be able to value insurance policies using it's model and display this data in an organised, easily intractable manner for the user (as they are already used to certain programs/ways of doing the model valuation).

- The model needs to be easily understandable and flexible in its extendability options, so as to be able to be modified in the future as the valuation model changes over time.

- The application needs its coding to be refined, easy to understand and simple to update for use in an ever-evolving business environment.

PROJECT GOALS

- Development of an application that gives the user many customisable options in generating and viewing the valuation model.

- Ensure the model can easily be updated in the future to accommodate new data submissions, methods and ways of reporting the data through an object-orientated approach.

- As such, ensure the application is completed in a way that is easily sub-classed, readily viewable/understandable and fully ready to customise as needed in the future.

TECHNICAL DETAILS

- Created in c# due to Prudential's Microsoft based systems.

- Use of Microsoft Visual Express platform for development, allowing ease of deploying the application on multiple systems.

- Customisable inputs, model scenarios and result displays through various sub-classes/modules, put together as various composites and nested calculations within the model.

THE MODEL

- Basically, monitoring policy cash flow over time given a variety of factors.
- Used to calculate the profit and liability of the insurer over time as a policy matures.
- Variety of factors affecting the model; unit reserves, sterling reserves, survival factors, rates of lending etc… each requiring their own section within the model.
- The model must remain extendable as more of these factors must be added in the future in order to gain more realistic results.

| | | | | | Profits | | | | | |
Premium	Inv	Expenses	Claims	UR	SR	dRes	Profit	RetEarn	disc fact	EV
				10,000.00	100			0		
99.75	24.91	2.49	25.41	10,097.13	9.00	6.13	90.62	90.62	99.75%	95.272617
99.49	25.15	2.49	25.66	10,193.99	8.42	96.28	0.22	90.83	99.76%	
99.24	25.39	2.48	25.91	10,290.58	7.86	96.02	0.22	91.05	99.76%	
98.99	25.62	2.47	26.15	10,386.89	7.32	95.77	0.22	91.26	99.76%	

MODULES

Unit Reserves (if in-force)			
Premiums	AIR	Charges	UR
			10000
100	0.25%	1.87	10,122.80
100	0.25%	1.89	10,245.87
100	0.25%	1.91	10,369.24
100	0.25%	1.93	10,492.88

Survival Factors			
Prudent		Realistic	
q	p	q	p
	1		1
0.00339605	0.99660395	0.00253505	0.99746495
0.00339605	0.99321943	0.00253505	0.99493633
0.00339605	0.9898464	0.00253505	0.99241412
0.00339605	0.98648483	0.00253505	0.9898983

Sterling Reserves (if in-force)				
Expenses	Charges	SRCF	disc fact	SR
				100
2.50	1.87	0.63	99.75%	9.02
2.50	1.89	0.61	99.51%	8.46
2.50	1.91	0.59	99.26%	7.92
2.50	1.93	0.57	99.02%	7.39

FEATURES

- Customisable and versatile UI, lots of information to display that needs to be filtered.

- Ability for the user to pick and choose inputs and scenarios that affect the model.

- Fully extendable program with allowances for the addition of future model modules to add to accuracy and realism.

- Easy to understand and modify code, to reduce complications over time.

WHAT I HAVE LEARNED (SO FAR!)

- The software development process is *never* as simple as you believe it will be initially.

- Ergonomic GUI design requires *many* iterations to become acceptable.

- Flexibility of method is the key!

QUESTIONS?