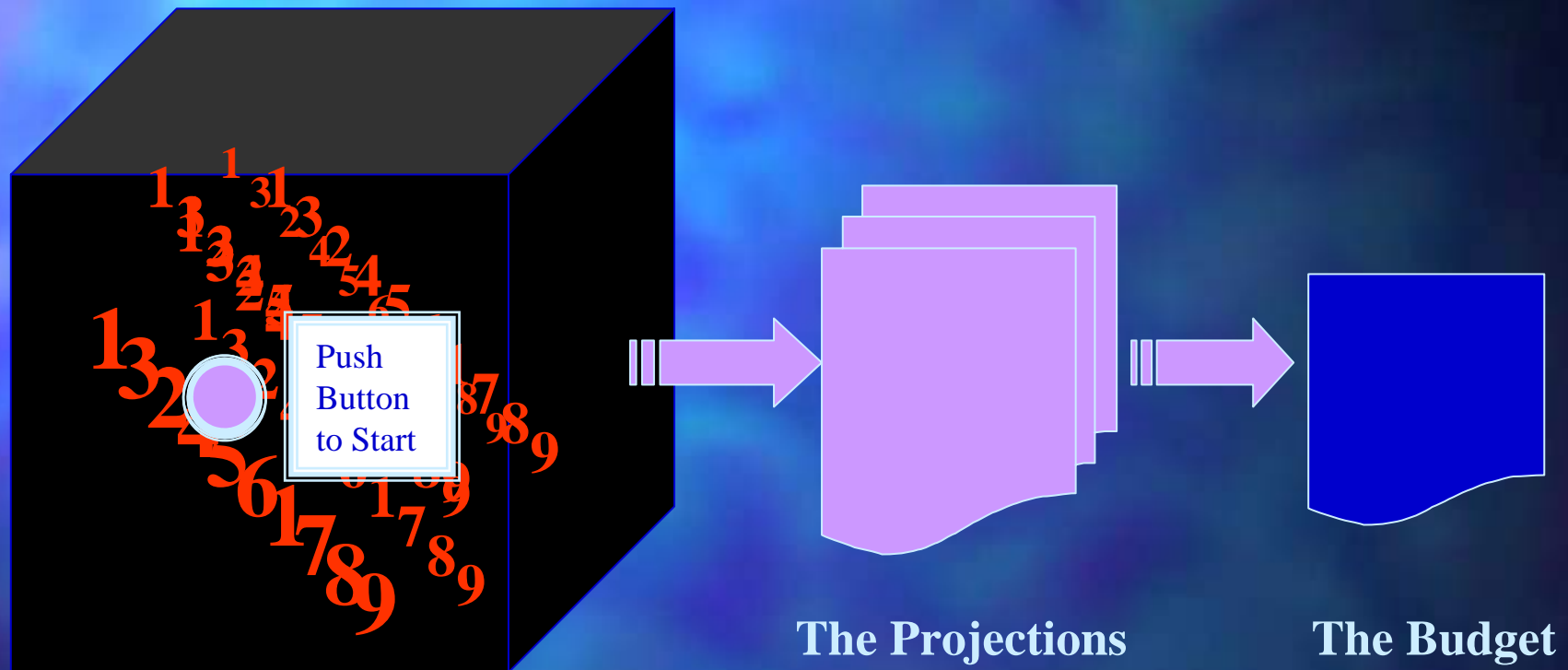


Modelling, Muddling and Meddling in the Affairs of Justice

John Walker
Manager, Research & Statistical Analysis
Portfolio Planning
Department of Justice
Victoria

Part 1: Modelling – The easy bit!

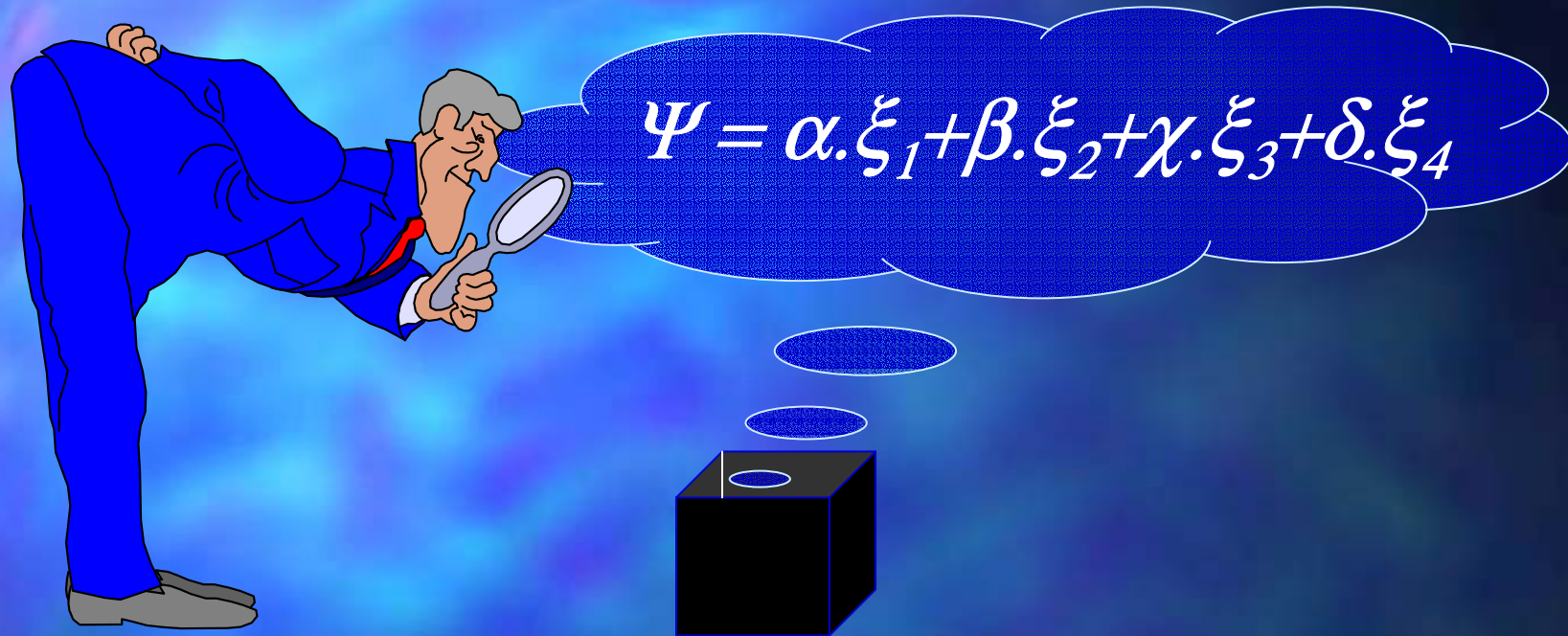
- Once upon a Time....



Sophisticated forecast modelling 1970s style - The Black Box

•

But when you look inside the box.....

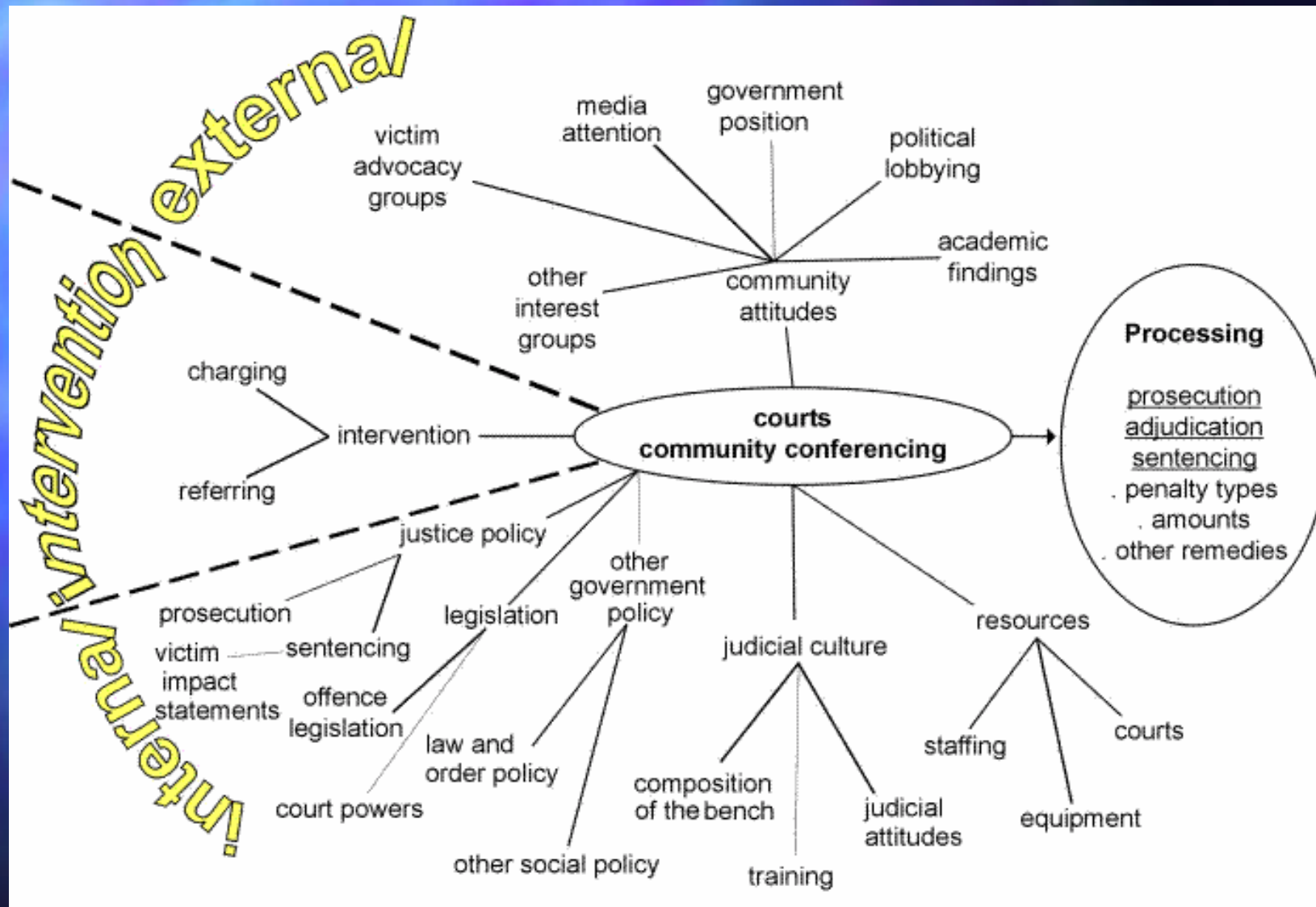


Black Box Models were based on very sophisticated multivariate statistical analysis of crime trends data and explanatory variables....

...but

- *They underestimated the complexity of the problem they were trying to address*
- *They assumed that the future is an extrapolation of the past*
- *They relied on 'explanatory' variables that we can't predict.*

MUCH too complex for statistics alone!



Factors Influencing Sentencing*

* Source: Queensland Treasury web page http://www.oesr.qld.gov.au/views/statistics/products/models/models_fs.htm

So now I take a different approach....

1. The Environmental Scan



2. Analysis of Significant Events



3. The Data Analysis



4. The Workshop



The Scenarios



The Projections



The Budget

Evidence-based – statistical evidence plus expert knowledge

4 Stages of Workshops & Modelling

Compile tables and graphs of key variables that determine trends in each of the main components of the agency's business.

Strategic Research Database

Present these trend figures to an invited expert group. Generate discussion on the causal factors behind trends of the recent past.

Significant Events Register

Turn the attention of the workshop to likely future trends. Try to quantify any anticipated changes from the current situation.

Use computer models to estimate the combined effects of these anticipated changes ("scenarios") on the key system aggregates in the future.

No Rocket Science!

And this is what we've achieved so far in Victoria

Money Laundering in Australia (1997)

Global Model of Crime and Money Laundering (1997)

CGC Funding Formula (late 1980s)

Cwlth Legal Aid Funding Formula (1997)

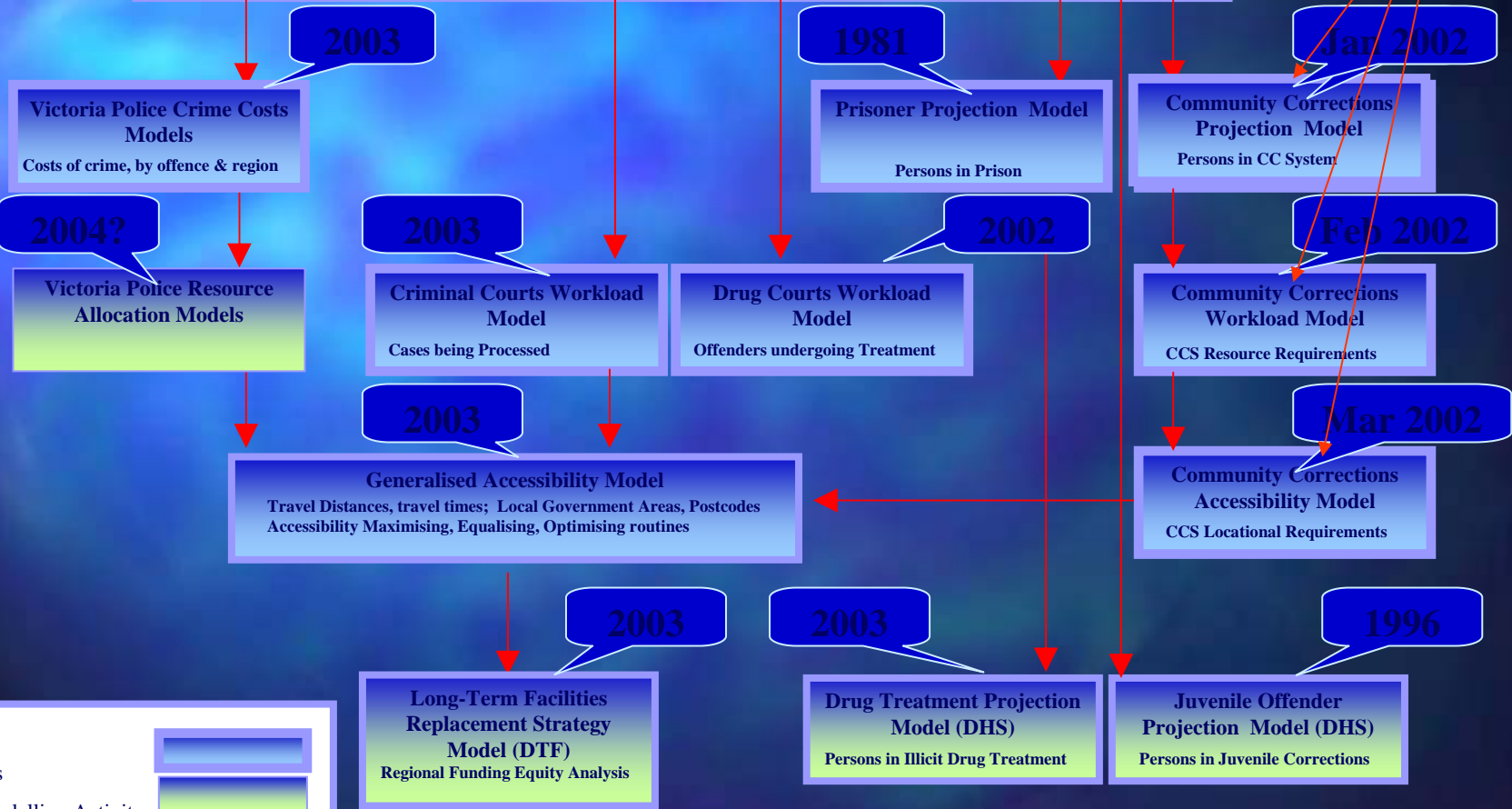
ATSIIS Legal Aid Funding Formula (2003)

Costs of Crime Model (1992-)



2001-03

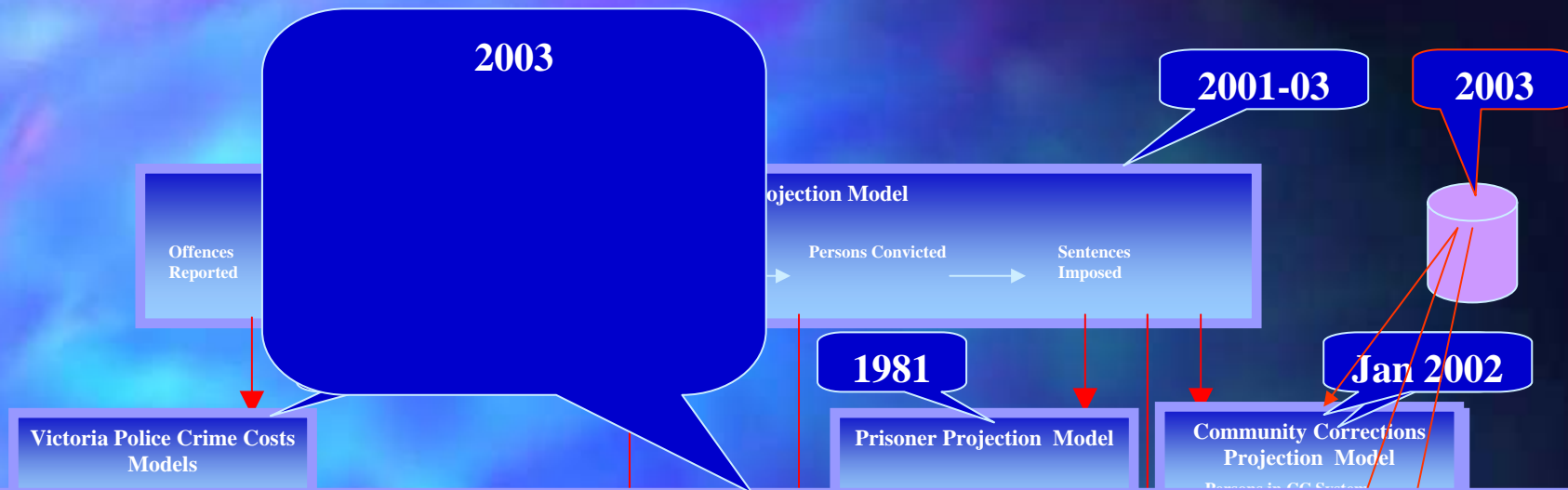
2003



Legend:

- DoJ Models (Blue box)
- External Modelling Activity (Green box)
- Links (Red arrow)

.. And this is what we've achieved so far in Victoria



Generalised Accessibility Model

Microsoft Excel - AccessModel_710 with Police data June 03.xls

Step 2. Supply profile

Supply of what? - In which Postcodes are your service suppliers located?

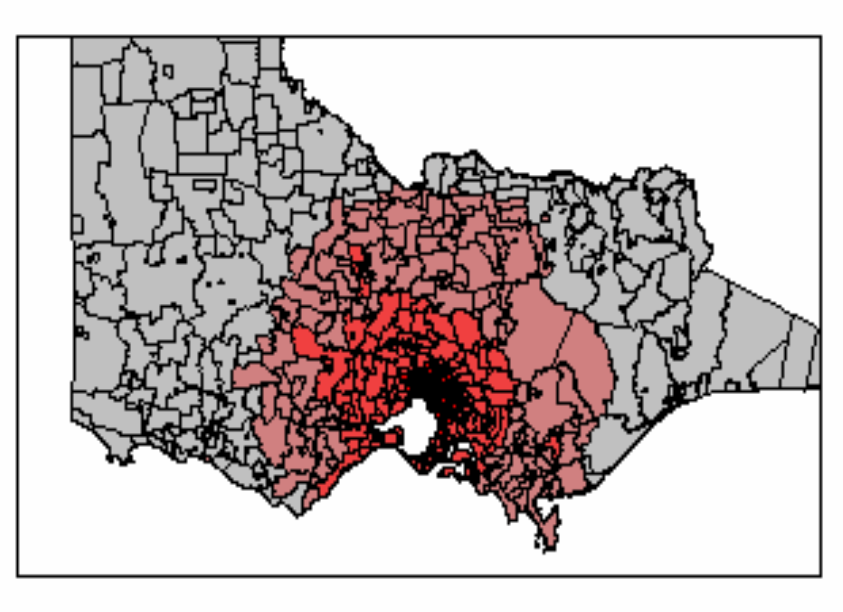
Supply variable (supply of...): New Capacity (old + additions)

New or enhanced sites	Postcode	Additional Capacity	Location	Accessibility Ratio	Accessibility Range	Accessibility Variance
	3301	50.0		1.4523	3.9716	0.087238
	50					

Note: The three Accessibility measures above can be used to direct the model to produce an optimal solution. After entering new or enhanced sites in the table to the left, you may minimize the Accessibility Ratio, or maximize either the Accessibility Range or Variance, subject to a set of constraints, using the "Solve" function in the Tools menu.

User-Input Supply Variables											
Postcode	Selected supply value	Current Capacity (FTEs)	New Capacity (old + additional)	Current Cases	Drug Offences	Other Offences	Property Offences	Violent Offences	Grand Total	Not used	Not used
3000	0	0	0	1856	1901	6273	827	10,857			
3002	0	0	0	29	87	209	37	362			
3003	0	0	0	19	21	195	95	330			
3004	0	0	0	0	0	0	0	0			
3006	0	0	0	48	107	452	181	788			
3011	0	0	0	566	256	1534	143	2499			
3012	0	0	0	86	60	346	54	536			
3013	0	0	0	95	33	211	31	290			
3015	0	0	0	22	36	236	120	344			
3016	0	0	0	23	50	206	40	319			
3018	0	0	0	25	50	287	69	401			
3019	0	0	0	46	22	187	43	288			
3020	26	26	539	183	288	1334	178	1981			

ment
ing r



Links

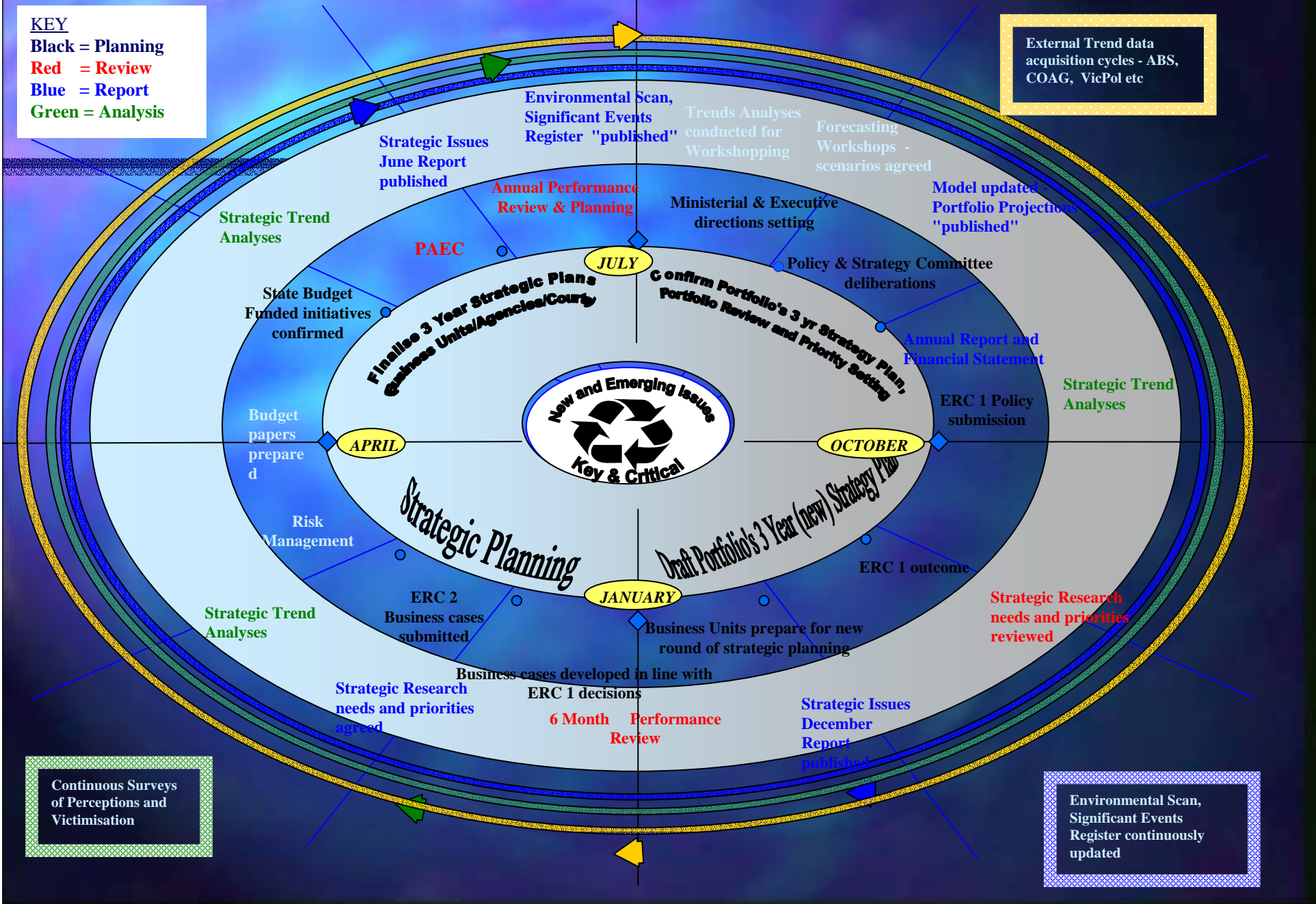
A Hierarchical Process



... and build it into the calendar

KEY
 Black = Planning
 Red = Review
 Blue = Report
 Green = Analysis

External Trend data acquisition cycles - ABS, COAG, VicPol etc



Part 2: - The Hard Bits

Muddling through with dodgy data and heroic assumptions

- You won't be able to model what you want to model!
 - Other interests will cloud the issue and divert the project; is the purpose to identify the broad parameters for strategic planning? the detailed resource implications? the trends in client subgroups? seasonal variation?
 - KISS if you can get away with it!
- You won't be able to get the data you need!
 - Vital data will not be available in sufficient detail, or other excuses will be found to avoid its use (confidentiality, provisional data only, not available at regional level etc)
- You won't be able to get the resources you need!
 - Research is always the lowest priority. Researchers the scarcest form of staff.
- You won't be able to confirm the relationships you think are important to model!
 - See 2, 3
- You won't be able to convince the business units that they need this modelling stuff!
 - They haven't needed it for 2000 years, so what's new?

So what can we do about it?

What can we do about it?

Beginners' Guide to Muddling through:

- You first have to learn not to blush – think like an economist, not a statistician!
- Use the data that are available in your jurisdiction, and fill the blanks with data from somewhere else – until you have local data to replace it.
- If you can't find ANY data, set up a quick survey or simply make some up. But document your sins – it is much better to be corrected than found out!
- Credibility is much more important than accuracy. Accuracy is probably unattainable and almost certainly meaningless. We are forecasting in order to ensure that the worst cases don't happen – in that case at least one scenario will never even be tested, let alone be proven accurate!
- Match the scale of your model to the scale of the problem: - infinite detail that costs lots of research time and data isn't necessary in a global model; relationships that make sense between individuals don't always make sense in aggregates.
- Keep your model flexible and modular. You will want to modify it.
- Think like an economist – not like a statistician.

Meddling – an important implementation tool!

- Co-opt powerful allies
 - Environmental Scanning should be done hierarchically: State level; Departmental Level; Business Unit level.
 - This means central agency involvement – cultivate them.
 - Take your models to modelling workshops and compare.
- Develop data gathering tentacles
 - Subscribe to all the Bulletin Boards (AIC, Crimnet, ABS, OESR, UK Home Office, UNODCCP, Transparency International, BIS Shrapnel, etc) and extract the key research findings and trend data.
- Feed information to the “experts”
 - Give your workshops a chance to really think about trends.
 - Focus on the resource and cost implications (that’s all they’re interested in!)
- Build supporting structures – make it easy for business units to use
 - Research Database, Environmental Scan, Significant Events Register
 - Live links to operational databases, “front-ends” to models.

Conclusion

- There's more modelling in justice than you would think.
- Governments are now taking notice of us.