Poster paper

Software System Practices in New Zealand Industry

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This paper describes aspects of a survey into software system practices in New Zealand industry in 2005. The focus of this paper is on software system practices in analysis, design, general system development methodologies, associated CASE tools and software architecture based methods.

The survey was nationwide and was sent to 340 organisations in New Zealand. The population sampled includes all government departments in the country, central and local, all corporations listed on the New Zealand Stock Exchange and some other private corporations including a small number of IT vendors.

The survey was sent by email. The response rate was 10% of the organizations returned a completed, valid survey (not including responses inidcating no software development).

The surveys were sent to the CIO, or equivalent, of each organisation, often requiring email dialogues to ensure that the survey was directed at the appropriate functional group in the organisation.

The survey included 12 categories of questions, only 4 categories are presented in this paper. Other categories will be presented in future publications. Each organisation was asked if their use of an item is high, medium, low or none. These results were then converted to numerical values, using a weighted sum method, and then ranked.

Table 1 Notations in Systems Analysis and Design A large class of notations is used and the distribution is quite spread out.

Item	High	Medium	Low	None	Use in 2006	Change	Weighted Use
Flow Chart	7	6	7	13	19	-1	20.3
Data dictionary	5	6	8	14	18	-1	17.0
Data Flow Diagram (DFD)	5	7	3	18	14	-1	16.4
Class diagram	5	4	2	22	10	-1	13.3
Use case description	4	5	4	20	12	-1	13.0
ERD diagram	4	5	3	21	11	-1	12.7
UML	4	3	6	20	12	-1	11.8
Activity diagram	4	3	5	21	11	-1	11.5
Use case diagram	4	3	4	22	11	0	11.2
OO Design Patterns	3	6	1	23	9	-1	11.2
System sequence diagram	3	4	4	22	10	-1	10.3

Table 2 Case Tools Not many advanced, integrated CASE tools are being used to the extent I expected. Integrated CASE tool usage may have declined since the 1990's.

Item	High	Medium	Low	None	Use in 2006	Change	Weighted Use
Microsoft Word	15	6	6	6	27	0	34.5
Microsoft Visio	6	7	13	7	26	0	21.2
Rational Rose	1	2	2	28	5	0	4.2
Oracle Designer	0	3	2	28	6	1	3.3
Rational XDE Professional	0	3	0	30	2	-1	2.7
Rational RequisitePro	0	3	0	30	3	0	2.7

Table 3 General Systems Development Methodologies Not widely used and the waterfall method seems to be still holding its own among more recent contenders. The distribution has a wide spread.

Item	High	Medium	Low	None	Use in 2006	Change	Weighted Use
Linear Sequential Method (Waterfall)	3	3	5	22	10	-1	9.7
Rapid Application Development Method	2	4	5	22	10	-1	8.8
Developmental prototyping	2	3	8	20	13	0	8.8
Incremental Method	1	3	3	26	7	0	5.5
Software Reuse Methods	1	3	2	27	6	0	5.2
Software Reengineering	0	4	1	28	5	0	3.9
Agile methods	1	0	7	25	9	1	3.9
Unified Process Method	0	3	3	27	7	1	3.6

Table 4 Software Architecture Based Methods A wide range of software architecture based methods is in use.

Item	High	Medium	Low	None	Use in 2006	Change	Weighted Use
Relational Database Methods	10	9	1	14	19	-1	25.9
Object-Oriented Methods	8	5	4	16	17	0	20.3
Internet Software Methods	5	7	2	19	14	0	16.1
Client/Server Software Engineering	3	8	6	16	17	0	14.5
World Wide Web Software Methods	3	5	3	22	11	0	10.9