

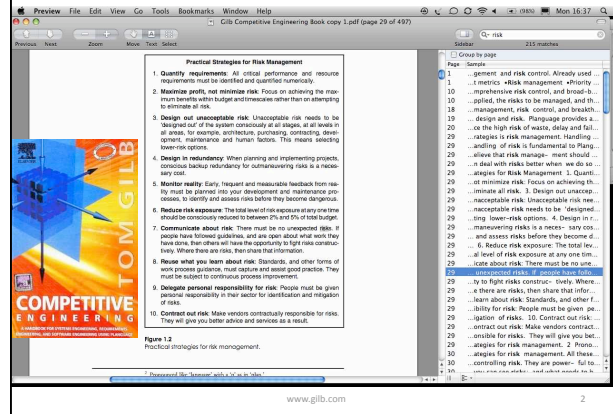
Critical Factor Dynamic Risk Control:
the use of Planguage tools
– requirement quantification, Impact
Estimation and Evolutionary Feedback –
in discovering risks and mitigating them.

Especially and originally for
The Gilb Annual London Seminar
June 23-27 2008

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215 Hits for Risk in CE Book

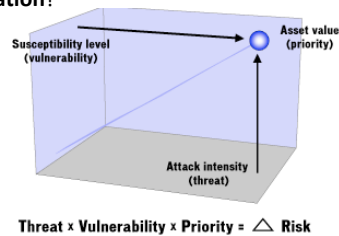


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Threats -> Negative Deviation

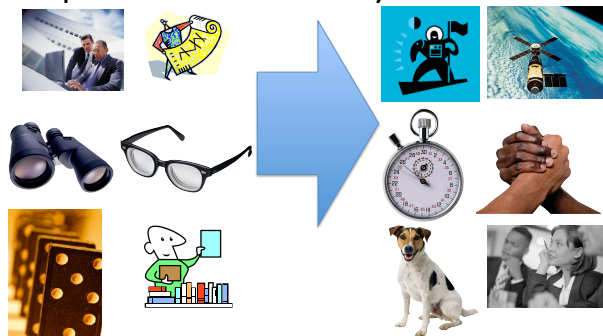
- ! Should we
 - !manage the **threats**, or
 - !Manage the **deviation**?
- ! From Plan



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Risk Analysis Options Speculation -> Reality Observation

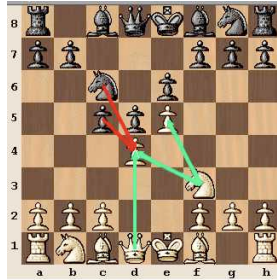


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Arguments about Analyzing Threats

- ! **For** (Threat Analysis)
 - ! They are **early** (before deviation)
 - ! We can identify many **threats in advance** from experience
- ! **Against** (Threat Analysis)
 - ! There are '*infinitely*' many threats
 - ! We cannot know what they 'all' are
 - ! We can easily miss some important ones – we are doomed to miss some
 - ! Most 'threats' will
 - ! *never happen*,
 - ! or will never be important for us
 - ! Or will never cause significant negative deviation
 - ! We can use **too much time**
 - ! to analyze threats/mitigations
 - ! that will never happen



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José Raúl Capablanca (1888-1942)

world chess champion from 1921 to 1927

- ! Capablanca was once asked
 - ! *how many moves he saw ahead?*,
 - ! he replied that
 - ! **he only saw one move ahead**
 - ! **but that he always saw the right move.**



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The Point:

Less speculation, more response to reality

- ! Maybe, by examining large *potential* sets of factors and *potential* many-step risk models
 - ! We are using too much resource (analysis and real time)
- ! By making a strong next move
 - ! (an evolutionary step delivery)
 - ! You can better use your analytical capacity
 - ! to understand the consequences of the **reaction** to that move (opponent's move)
 - ! And possibly make even smarter 'next move'
 - ! The **ROI of thinking time** might be better.



We do not have infinite time
To explore threats

But it might be useful! ☺

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Example of CEO Thinking of Risks In Advance, in Planguage

- ! Of course a non-confidential version.



Jennifer Pennington, CEO
Pin-Up Golf, Inc.

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Questions for you

•! As we look at this example:

–!Which elements of the specification of the objective

–!HELP US

•!IDENTIFY RISK

–! (become conscious of risk)

•!SPECIFY RISK

–! (make potential threats visible to others)

•!MITIGATE RISK?

–! (give us a checklist of things to mitigate, or mitigation solutions themselves)

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Competitiveness 1 of 3

Competitiveness

Ambition: Largest 3rd party developer mobile community, demonstrably superior on all **Key Use Cases** to any competitor. <- CEO 19 April 2004.!

Enterprise Credentials <-6.8 SPS, Initially. Now defined

Type: Strategic Business Objective. _!

Version: 4/22/04 9:43 am!

Confidentiality: EXAMPLE!

Spec Owner: Simon X!

Result Responsible: MARY!

Source: <?>!

Past [H1 2004]: ~ 0% <-CEO.

Rationale: there are few enterprises that today use their phones beyond simple voice. <-CEO!

Ambition: ensure that Corporate licensees have more than X% of Enterprise deployment. !

Scale: % Market Share of defined Enterprise (default All Enterprise) deployment that Corporate Licensees have.

Enterprise: defined as: phones used by Fortune 1000 and SME (Small Medium Enterprise)/SOHO (Small Office Home Office) for services and communication beyond simple voice.!

Measurement Process [Longer Term]: <Gartner/IDC/ other analyst to produce the stats>.!

Measurement Process [H2 short term]: <count the number of network operators actually currently supporting Corporate Licensees in Corporate (hopefully Enterprise) Sales>. In addition, we can look at licensee spend on SXXB (Corporate Enterprise Advisory Board). !

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Competitiveness 2 of 3

Goal [H1 2005, Enterprise, If this market actually emerges] 25% ±10%? <-CEO. !

Assertion: this market will suddenly emerge <-CEO!

Goal [H2 2006]: 40%±10%? <-CEO!

Goal [2010] 70% ±20%? <- CEO!

Fail [H2 2006, If this market emerges]: < 25% <-CEO!

Rationale: (Fundamental Objective, Big Bill Sidelined) ensuring that Big Bill does not secure Dominance (<more than 2x relative market share> <-CEO) in enterprise terminals. !

Value: <Big Bill are not able to leverage their dominance in the corporate sector to break into Enterprise consumer market.> Corporate protects its market share in consumer area.>. <A very big number £> <-CEO!

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Competitiveness 3 of 3

Risks (of not meeting Goal):

R1: pressure to include consumer market PREOs in the product drives out the PREOs required for Enterprise. <-CEO

R2: core enterprise partners fail to invest alongside Corporate. <-CEO

R3: Corporate licensees fail to invest <ufficiently> to support Corporate and the licensees ambitions. Note their marketing people have same conflict as in R1.<-CEO

R4: Corporate geographic footprint blinds it to the Enterprise market. The fact we are strong in Europe, will be in Japan, but small position in USA. <-CEO

R5: Big Owner developments of Enterprise enabling technology are located within Big Owner layers of technology, and are therefore blocked to other Corporate licensees who are not Big Owner licensees.<-CEO

R6: RIM Blackberry are refused to support Corporate OS - Corporate licensees are refused to license RIM technology because of patent risks. <-CEO

R7: if Big Bill bundling of phones plus Exchange server 2003 is a market-winning proposition. Their classic bundling strategy is applied. <- CEO

R8: others.... Can be added , but not now.

Issues (to be resolved):

I1: can we get Gartner to measure this market in a way we find acceptable (not the PC market tradition they have)? <-CEO

I2: will licensees support SEAB? <-CEO

I3: How will EU anti trust ruling on Big Bill be implemented.? If bundling is blocked, or API's are opened by EU, or then IIS proposition is weakened.<- CEO

I4: can Corporate ensure effective cooperation between Series 60 and UIQ to allow Enterprise vendors access to the entire Corporate base with minimum effort? <-CEO

I5: etc.

Dependencies (must be in place before we can reach Goal):

D1: none?

Impacted by: Middleware Provider Support, Operator Endorsement, Analyst Support, SEAB and SEAC Support. <- 2.5 and 2.6 EGMP, Data Services? <- 2.6 EGMP, Supports: Big Bill Sidelined Is Part of Competitiveness

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Nothing wrong with doing this advance thinking

- ! But,
- ! You need to validate this "hypothesis"
- ! As soon as possible
- ! As realistically as possible
- ! Don't put all your risk management eggs in one basket



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"Uncertainty is about variables we really care about" (Matthew Leitch, London Seminar on Risk, 25 June 2008)

- ! Scottish Executives compared risk register and critical success factors
- ! They were a mirror image
- ! If so, then we, might focus on the Critical Factors, as the de facto risk register
- ! Which is what my talk is about



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Leitch Scalar Risk Analysis Table

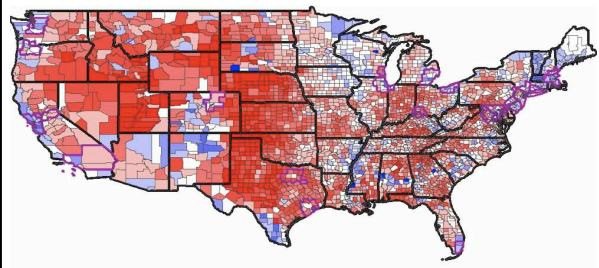
Study of actual risk register items: results

	"Risks"	Complement is a range	Complement is zero	Where at least 75% certain no "diff"
1*	47	34%	66%	32%
2	10	60%	40%	70%
3	16	100%	0%	81%
4	9	78%	22%	69%
5	12	58%	42%	75%
6	5	40%	60%	40%
7	16	69%	31%	75%
8	7	86%	14%	69%

* Civil contingency risk www.gilb.com

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Deviation from Average

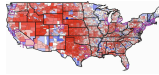


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Arguments about using Actual Output Deviation *itself*, to get control of results

- ! Fewer things to monitor (critical few)
- ! Our focus is on **results**, value
 - ! Our management and other stakeholders will
 - ! Understand and be motivated
- ! We can deal with it very **early**
 - ! Next week and every week using Evolutionary project management
- ! Using **selected 'causes'** (potential threats, but REAL ones)
- ! Extremely **complex** threats (many causes)
 - ! Are more likely to be discovered early, at all
 - ! Can be removed as soon as sensed,
 - ! Before any real harm is done

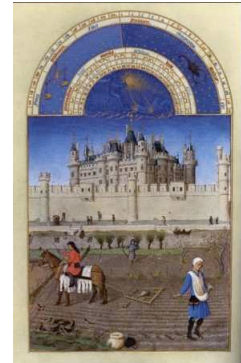


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Assumptions

- ! 'Normal Culture'
 - ! Will take care of normal and well-understood risks
 - ! Policy
 - ! Regulations
 - ! Previous System Structure
 - ! Approval Instances
 - ! Contractual Requirements
 - ! Other Requirements
 - ! We are concerned about unknowns and forgotten



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When you find \pm deviation from expected results, you can *then* analyze the causes

- ! Dave Gelperin (23 June 2008)
 - ! **"Keep looking for "unexpected" things.**
 - ! **When you detect one, thoroughly investigate"**



•! <http://www.livespecs.com/>

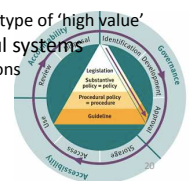
•!

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The Risk Policy

- ! All
 - ! critical requirements (variables, constraints, targets, conditions, qualities, limited resources)
 - ! Will be specified, and agreed, in testable form.
 - ! And will be quality controlled against our standards before Exit to next process.
- ! All 'Development' will be
 - ! done in small (2%, weekly) increments
 - ! High value first
 - ! High perceived risk instances, being one type of 'high value'
 - ! Will move from pilot to realistic useful systems
 - ! In an attempt to show surprising deviations
 - ! To cure negative deviation causes
 - ! To exploit positive opportunities



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Evo Reduces Complexity of Threat Analysis

- ! If a collection of 50 elements, together, leads to at least one problem, then there might be faults in one or more of the elements.
- ! In fact each element can be either ok or faulty.
- ! That gives us 2^{50} patterns of ok/not ok across the 50 elements.
- ! Since there is a fault overall the pattern where every element is ok must be subtracted from the total. $2^{50} - 1 = 1,125,899,906,842,620$
- ! In other words, about 1.1259 quadrillion.
—! Quite a big number
- ! .Having said that, even if we just had to search for the fault by checking each of 50 elements that's 50 rather than 1 (evo). Matthew Leitch June 26 2008 London

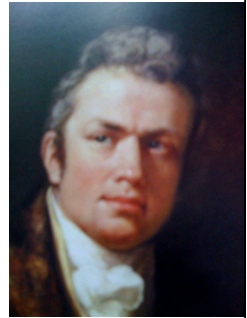
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No Cure No Pay Managing Risks In Practice



- ! “it was not until summer of 1809 that the main sum due to him (by navy), over £17,000, was paid”
- ! “agreement.. He should receive a sum equivalent to the saving made by his block machines in a year”



Marc Brunel
(father of Isambard Kingdom Brunel)

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ConFIRMit Presentation Trond Johansen

Tom Gilb Version
May 7/June 3 2005



Trond Johansen

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Requirements - 3, Real Example of Spec

Usability/Productivity (taken from ConFirmIt 8.5 development)

Scale for quantification: Time in minutes to set up a typical specified Market Research-report

Past Level [Release 8.0]: 65 mins.,

Tolerable Limit [Release 8.5]: 35 mins.,

Goal [Release 8.5]: 25 mins.

Note: end result was actually 20 minutes ☺

Meter [Weekly Step]: Candidates with Reportal experience, and with knowledge of MR-specific reporting features, performed a set of predefined steps, to produce a standard MR Report.

- ! Our new focus is on the **day-to-day operations** of our Market Research users,
—! not a list of features that they might or might not like. 50% never used!
—! We KNOW that increased efficiency, which leads to more profit, will please them.
—! The '45 minutes actually saved x thousands of customer reports'
•! = big \$\$\$ saved
- ! After **one week** we had defined more or less all the requirements for the next version (8.5) of ConFirmIt.

confirmit®



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confirmit FIRM (Future Information Research Management, Norway)
project step planning and accounting:
using an Impact Estimation Table

Trond Johansen

- IET for MR Project – Confirmit (<-FIRM Product Brand) 8.5
- **Solution:** Recoding
 - Make it possible to recode variable on the fly from Reportal.
 - Estimated effort: 4 days
 - **Estimated** Productivity Improvement: 20 minutes (50% way to Goal)
 - actual result 38 minutes (95% progress towards Goal)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	Q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EVO's impact on Confirmat product qualities
First Quarter (2003)

- ! Only 5 of 25 highlights of the impacts are listed here

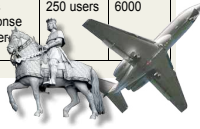
Description of requirement/work task	Past	Status
Usability.Productivity: Time for the system to generate a survey	7200 sec	15 sec
Usability.Productivity: Time to set up a typical specified Market Research-report (MR)	65 min	20 min
Usability.Productivity: Time to grant a set of End-users access to a Report set and distribute report login info.	80 min	5 min
Usability.Intuitiveness: The time in minutes it takes a medium experienced programmer to define a complete and correct data transfer definition with Confirmat Web Services without any user documentation or any other aid	15 min	5 min
Performance.Runtime.Concurrency: Maximum number of simultaneous respondents executing a survey with a click rate of 20 sec and an response time<500 ms, given a defined [Survey-Complexity] and a defined [Server Configuration, Typical]	250 users	6000



Release 8.5

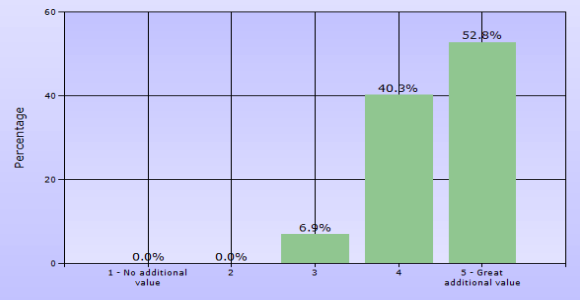
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Initial perceived value of the new release
(Base 73 people)

To what extent do you feel Confirmat 9.0 will give you additional value?



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Evo's impact on Confirmat 9.0 product qualities
The Second Quarter Results 2003 1/2

Product quality	Description	Customer value
Intuitiveness	Probability that an inexperienced user can intuitively figure out how to set up a defined Simple Survey correctly.	Probability increased by 175%
Productivity	Time in minutes for a defined advanced user, with full knowledge of 9.0 functionality, to set up a defined advanced survey correctly.	Time reduced by 38%

Product quality	Description	Customer value
Productivity	Time (in minutes) to test a defined survey and identify 4 inserted script errors, starting from when the questionnaire is finished to the time testing is complete and is ready for production. (Defined Survey: Complex survey, 60 questions, comprehensive JS scripting.)	Time reduced by 83% and error tracking increased by 25%

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Evo's impact on Confirmat 9.0 product qualities
The Second Quarter Results 2003 2/2

Product quality	Description	Customer value
Performance	Max number of panelists that the system can support without exceeding a defined time for the defined task, with all components of the panel system performing acceptable.	Number of panelists increased by 1500%
Scalability	Ability to accomplish a bulk-update of X panelists within a timeframe of Z second	Number of panelists increased by 700%
Performance	Number of responses a database can contain if the generation of a defined table should be run in 5 seconds.	Number of responses increased by 1400%

So, can **your** projects 'brag' about such good results,
In such a short time,
with your customers encouragement?

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Initial qualitative feedback on the new release

"... keep up the good work."

"It looks like you have listened to the people that actually use the software daily and aimed to make it easier for them ..."

Or ->



"I was very impressed with the version 9.0"

•! Seminar observations "

- ! On several occasions, customers gave spontaneous "WOWs" and applauds!
- ! The training room in London was literally packed with people eager to test the new version.
- ! Several clients asked if they could access the test server from home as well.
- ! Great participation rate; 95% of all registered people showed up. "

Increase Your Productivity up to 38%
Release the Power of Version 9.0



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004-11-29: Press Release from FIRM New version of Confirmit increases user productivity up to 80 percent NOVEMBER 29th, 2004

- ! FIRM, the world's leading provider of online survey & reporting software, today announced the release of a new version of Confirmit delivering substantial value to customers including increased user productivity of up to 83 percent.
- ! FIRM is using **Evolutionary (EVO) development to ensure the highest focus on customer value through early and continuous feedback from stakeholders**. A key component in EVO is measuring the effect new and improved product qualities have on customer value. Increased customer value in Confirmit 9.0 includes:
 - ! Up to 175 percent more intuitive user interface.
 - ! Up to 80 percent increased user productivity in questionnaire design and testing.
 - ! Up to 1500 percent increased performance in Report and Panel Management Features delivering increased customer value include:
 - ! A completely new and state-of-the-art user interface.
 - ! Random Data Generator enabling automated testing of questionnaires.
 - ! Real-time Script Checker for on-the-fly script validation.
 - ! Block Randomization of questions to avoid respondent bias.
 - ! Reportal BitStream for fast online tabulation on high volume of responses.
 - ! We are very pleased to see major improvements in Confirmit 9.0, including updates to both the user interface and survey engine. We plan to deploy this new version when it becomes available to server customers, stated Alex Grinberg, Greenfield Online's Chief Information Officer.
 - ! We believe the improvements in Confirmit 9.0 will benefit Greenfield Online's survey programming, data collection and data delivery capabilities, helping us to bring even more value to our clients.
 - ! FIRM's VP of Marketing, Kjell Øksendal, comments: "FIRM, through evolutionary development, is able to substantially increase customer value by focusing on key product qualities important for clients and by continuously asking for their feedback throughout the development period."
 - ! Confirmit is used by the leading market research agencies worldwide and Global 1000 companies, and together, we have defined the future of online surveying and reporting, represented with the Confirmit 9.0. Confirmit 9.0 was released onto FIRM's ASP environments in London and New York on November 27th. The new version will be available for server customers in January 2005. * Measured in FIRM's Test Lab by monitoring internal and external stakeholders executing predefined test scenarios. Press contact: - Kjell Øksendal, FIRM's VP of Marketing +1 646 229 5655

Increase Your Productivity up to 38%
Release the Power of Version 9.0



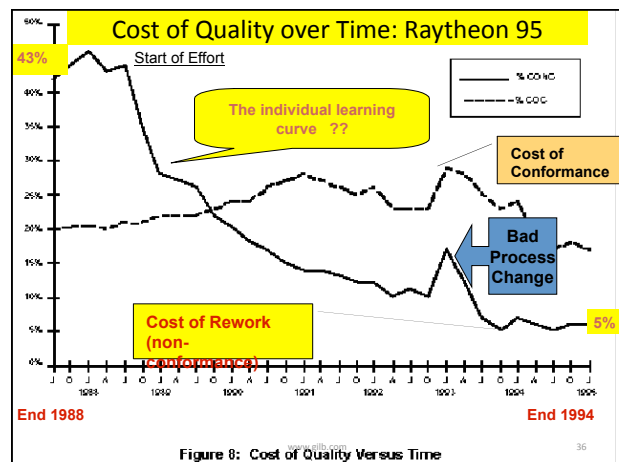
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Software Process Improvement at Raytheon

- ! Source : Raytheon Report 1995
 - ! <http://www.sei.cmu.edu/pub/documents/95.reports/pdf/tr017.95.pdf>
 - ! Search "Dion & Raytheon"
- ! An excellent example of process improvement driven by **measurement of improvement**
- ! Main Motor:
 - ! "Document Inspection", Defect Detection
- ! Main Driver:
 - ! "Defect Prevention Process" (DPP)

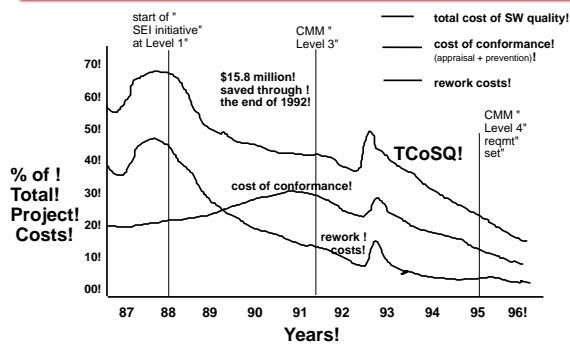
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The Cost of Software Quality at RES



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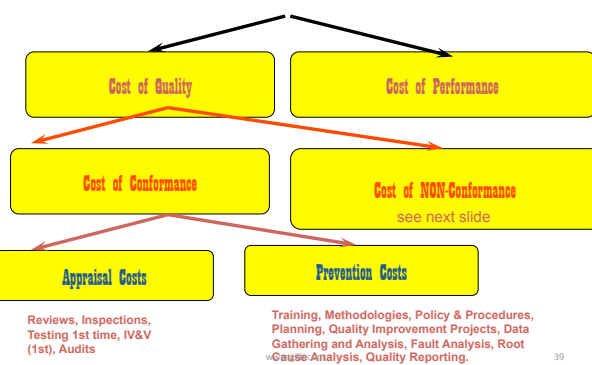
Rework Cost: Making a plan

- ! **Ambition:**
 - ! reduce by-half wasted development effort due to avoidable errors, if process improved.
- ! **Scale:**
 - ! % of total effort which is applied to handling (identifying, correcting, re-testing, reissuing) avoidable errors.
- ! **Past [Our test process, 2006]**
 - ! 45%
- ! **Goal**
 - ! [Us, 2007 end] 30%,
 - ! [End 2008] 20%,
 - ! [End 2009] 10%,
 - ! End 2010] 5%

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Project Cost



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Costs of Non-conformance Items

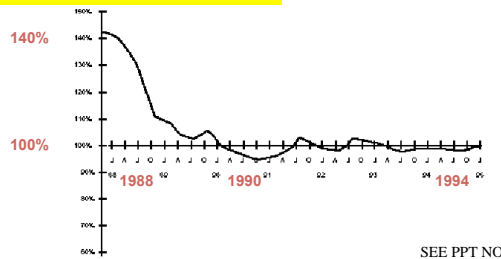
- ! Re-reviews
- ! Re-tests
- ! Fixing Defects (code, documentation)
- ! Reworking any document.
- ! Engineering Changes
- ! Lab Equipment Costs of Retests
- ! Updating Source Code
- ! Patches to Internal Code
- ! Patches to Delivered Code
- ! External Failures
- ! from Crosby's Model according to Raytheon95 Fig. 7

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Achieving Project Predictability: Raytheon 95

Cost At Completion / Budget %



SEE PPT NOTE FOR
DEFINITION.!

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Examples of Process Improvements: Raytheon 95

•! Process Improvements Made

- ! **Erroneous interfaces during integration and test -**
 - ! Increased the detail required for interface design during the requirements analysis phase and preliminary design phase - Increased thoroughness of inspections of interface specifications
- ! **Lack of regression test repeatability -**
 - ! Automated testing - Standardized the tool set for automated testing - Increased frequency of regression testing
- ! **Inconsistent inspection process -**
 - ! Established control limits that are monitored by project teams - Trained project teams in the use of statistical process control - Continually analyze the inspection data for trends at the organisation level
- ! **Late requirements up-dates -**
 - ! Improved the tool set for maintaining requirements traceability - Confirm the requirements mapping at each process phase
- ! **Unplanned growth of functionality during Requirements Analysis**
 - ! Improved the monitoring of the evolving specifications against the customer baseline - Continually map the requirements to the functional proposal baseline to identify changes in addition to the passive monitoring of code growth - Improved requirements, design, cost, and schedule tradeoffs to reduce impacts

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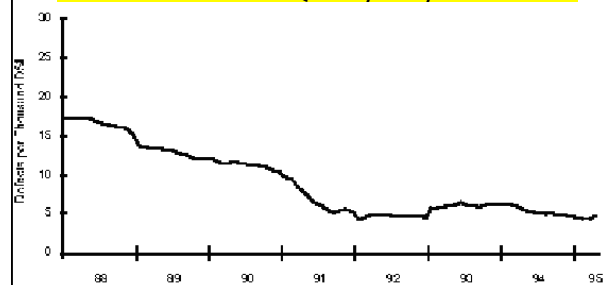
Overall Product Quality: Definition at Raytheon

- ! Overall Product Quality
- ! The primary measure used to assess overall product quality is the **defect density** in the final software products.
- ! We measure this factor in "**number of software trouble reports (STRs) per thousand lines of delivered source code (STRs/KDSI)**" on an individual project basis.
- ! The project defect densities are then combined to compute the monthly weighted average (using the same approach as the cost of quality described above) thus yielding a time-variant plot of our overall product quality measure.
- ! As shown in next slide, data collected over the period of the initiative shows an **improvement** from an average of **17.2 STRs/KDSI** to the current level of **4.0 STRs/KDSI**.

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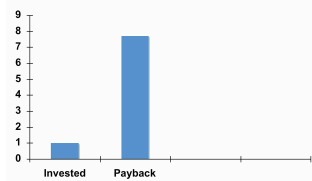
Overall Product Quality: Raytheon 95



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Return On Investment at Raytheon about \$10,000 per programmer/year



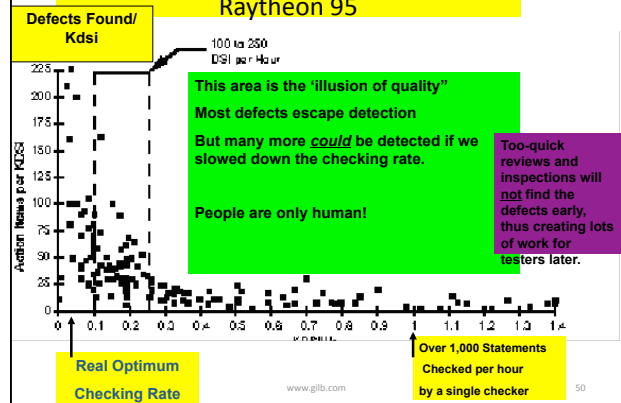
- ! \$7.70 per \$1 invested at Raytheon
- ! Sell your improvement program to top management on this basis
- ! Set a concrete target for it
 - Goal [Our Division, 2 years hence] 8 to 1



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Fault Density versus Checking Rate: Raytheon 95



Great Case study book of software change (similar to Raytheon story)

- ! Craig Kaplan et al
- ! Secrets of Software Quality
 - ! 40 innovations from IBM
 - ! McGraw Hill
- ! about 1995, maybe out of print but used copies at amazon.com \$2.99

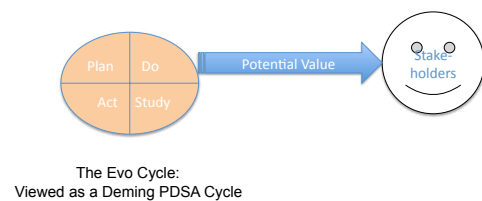


- ! See Gilbs set of Kaplan slides!
 - ! ckaplan@iqco.com
 - ! <http://www.iqco.com/>

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Primary Evo Concept: Deliver *Potential* Value

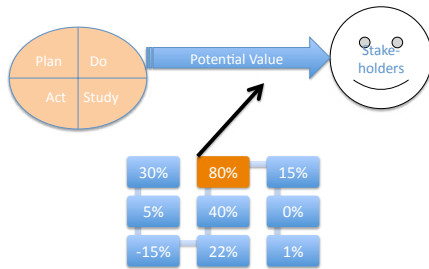


- ! Incremental Value Delivery to Stakeholders

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Deliver the highest value for resources

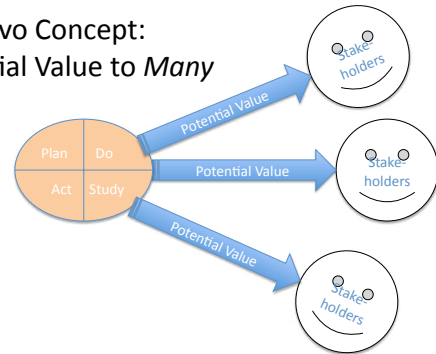


HIGHEST AVAILABLE Incremental Value Delivery to Stakeholders

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Evo Concept: Potential Value to *Many*

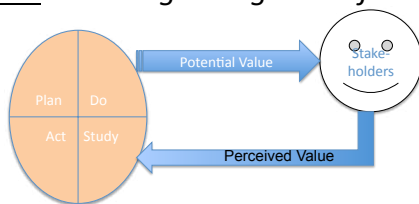


•! Incremental Value Deliveries to *Many* Stakeholders

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Evo Concept: Short Term Feedback “This looks like a change I can get value from!”



•! Initial Feedback from Stakeholders, after Evo Cycle delivery

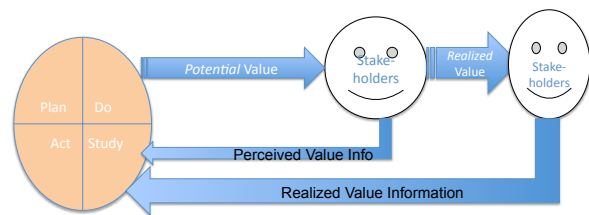
Value Quotes – Ethics Quotations on Value and Values
http://www.valuequotes.net/

Quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for. A product is not quality because it is hard to make and costs a lot of money, as manufacturers typically believe. This is incompetence. Customers pay only for what is of use to them and gives them value. Nothing else constitutes quality.
Peter F. Drucker, *American Management Guru*

55

Long-Term *Real* Value Feedback

“This is the real value we have gotten to date, and what we expect to get in the future!”

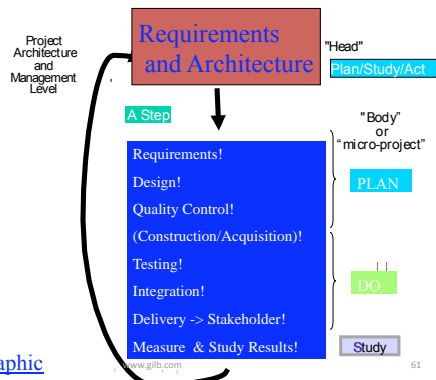


•! 2 Kinds of Feedback from Stakeholders, when value increment is *really* exploited in practice after delivery

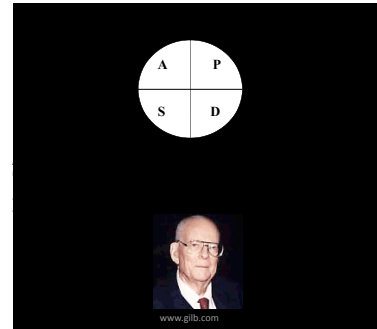
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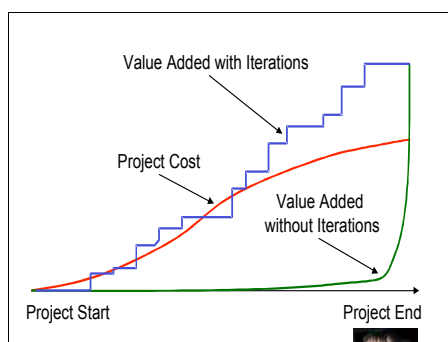
The Head:Body Model of Evo



The P D S A Cycle from Deming



Value Added Paradigm



Courtesy: Erik Simmons, Intel Oregon!



Tao Te Ching (500BC)



- ! That which remains quiet, is easy to handle.
 - ! That which is not yet developed is easy to manage.
 - ! That which is weak is easy to control.
 - ! That which is still small is easy to direct.
 - ! Deal with little troubles before they become big.
 - ! Attend to little problems before they get out of hand.
 - ! For the largest tree was once a sprout,
 - ! the tallest tower started with the first brick,
 - ! and the longest journey started with the first step.
- ! From Lao Tzu in Bahn, 1980 (also quoted in Gilb, Principles of Software Engineering Management page 96), Penguin book

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Ansoff: Corporate Strategy

"The procedure within each step of the cascade is similar.

- (1) A set of objectives is established.
- (2) The difference (the 'gap') between the current position of the firm and the objectives is estimated.
- (3) One or more courses of action (strategy) is proposed.
- (4) These are tested for their 'gap-reducing properties.'

A course is accepted if it substantially closes the gaps; if it does not, new alternatives are tried."

...<- Igor H. Ansoff, "Corporate Strategy", 1965(Pages 25-26) Quoted in MINTZBERG94:44



This gives the appearance of solving the problem several times over, but with successively more precise results."

"Another important characteristic of this process is feedback. Since the cascade is a process of search for the best solution, information may develop at later stages which casts doubt on previous decisions." ibid 32-35

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Descartes On Small

- ! "We should bring the whole force of our minds to bear upon the most minute and simple details and to dwell upon them for a long time so that we become accustomed to perceive the truth clearly and distinctly."

•! Rene Descartes, Rules for the Direction of the Mind, 1628



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Ericsson Experiences: Mobile Base Stations for Japan

**A bit of
luck helps, too**



On succeeding
Jack Järkvik & Lars Kylberg et al.

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**Lite tur
behövs också**



Om att lyckas
Jack Järkvik & Lars Kylberg m.fl.

67

Early simple proof of concept (Ericsson)

ERICSSON


- ! "Organic integration [Evo] is a way of getting rid of the myth [that problems don't exist] very early on.
- ! You could say that organic integration demands of an organization that it do the specifications, the system, the design and the verification for *one first very small task* very quickly.
- ! It also demands of the organization that it *do this right* in terms of delivering products correctly.
- ! If the organization cannot even manage its first simple task in the time agreed, it certainly should *question the ability* to manage more difficult tasks.
- ! This *process of questioning* is very healthy. It may for example prevent the *delusions of grandeur* so common in nearly all organizations".
- ! [Ericsson94], page 26, Jack Järkvik, in the context of building mobile telephone base stations



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Harlan Mills on Project Control



- ! "Software Engineering began to emerge in FSD" (IBM Federal Systems Division, from 1996 a part of Lockheed Martin Marietta) "some ten years ago [about 1970] in a continuing evolution that is still underway.
 - ! Ten years ago general management expected the worst from software projects – cost overruns, late deliveries, unreliable and incomplete software.
 - ! Today [1980] , management has learned to expect on-time, within budget, deliveries of high-quality software.
- ! A Navy helicopter ship system, called LAMPS, provides a recent example.
 - ! LAMPS software was a four-year project of over 200 person-years of effort,
 - ! developing over three million, and integrating over seven million words of data for eight different processors distributed
 - ! in 45 incremental deliveries.
 - ! Every one of those deliveries was on time and under budget.
- ! A more extended example can be found in the NASA space program,
 - ! where in the past ten years, FSD has managed some 7,000 person-years of software development, developing and integrating over a hundred million bytes of program and data for ground and space processors in over a dozen projects.
 - ! There were few late or overrun deliveries in that decade, and none at all in the past four years." Harlan Mills, Systems Journal No. 4, 1980, p. 415], Reprinted IBM SJ Vol. 38 1999, 289-295


between
Doug Locke LAMPS
SW Architect

See note for Flight software. <http://history.nasa.gov/sts1/pages/computer.html> Case Study.
"The Space Shuttle Primary Computer System," *Communications of the ACM* 27, No. 9 (September 1984): 871-900.
See note for Weinberg history FSD via Mercury project

 www.gilb.com [Go to Quinnan IBM FSD](#)


How Did Mills Invent His Evo?

From Tom Gilb 21 May 70




Harlan,
I have always wanted to ask you (for 10 years)
What is the history of thought which led you (and FSD) to Evolutionary/Incremental Delivery/Testing.
As reported by you and FSD 80->86, yesterday
I have two hypothesis:
1)! It evolved from IPT (Improved Programming Technology) Top down design and testing.
2)! It was a "local" analogy to rocket process control.
Answer from Harlan: "It was kind of both"

The piece of paper with the question that I handed to Mills during a conference.
His verbal reply was recorded by me!

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7 da Vinci Principles: (Evo!) <-Gelb, p.9

- ! **Curiosità**
 - ! Insatiably curious, unrelenting quest for continuous learning
- ! **Dimostrazione**
 - ! Commitment to test knowledge through experience, willingness to learn from mistakes. Learning for ones self, through practical experience
- ! **Sensazione**
 - ! Continual refinement of senses. As means to enliven experience
- ! **Sfumato**
 - ! Willingness to embrace ambiguity, paradox, uncertainty
- ! **Arte/Scienza**
 - ! Balance science/art, logic & imagination, whole brain thinking
- ! **Corporalità**
 - ! Cultivation of grace, ambidexterity, fitness, poise
- ! **Connessione**
 - ! Recognition & appreciation for interconnectedness of all things and phenomena, Systems thinking



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Da Vinci on Practical Feedback

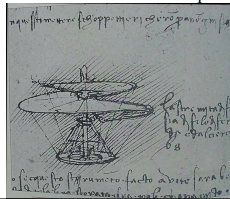
- ! Leonardo, proudly described himself as:
 - ! **Uomo senza lettere** (man without letters)
 - ! **Discepolo delle esperienze** (disciple of experience)
- ! "To me it seems that those sciences are in vain and full of error which are not born of experience, mother of all certainty, first hand experience which in its origins, or means, or end has passed through one of the five senses."
 - ! Source: Gelb page 78

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Leonardo's persistence

- ! "Although generally recognized as the greatest genius of all time, Leonardo made many colossal mistakes and staggering blunders." - Galt
- ! "Despite mistakes, disasters, failures, and disappointments, Leonardo never stopped learning, exploring, and experimenting. He demonstrated Herculean persistence in his quest for knowledge." - Galt
- ! Leonardo wrote: - Galt p.79
 - ! "I do not depart from my furrow.
 - ! "Obstacles do not bend me"
 - ! "Every obstacle is destroyed through rigor"

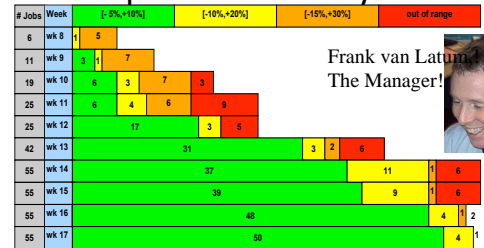
Da Vinci's helicopter



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Philips Evo Pilot May 2001

36!



Frank van Latum
The Manager!



The GxLine PXX Optimizer EVO team proudly presents the success of the Timing Prediction Improvement EVO steps. Shown are the results of the test set used to monitor the improvement process. The size of the test set has grown, as can be seen in the first column. (In the second column the week number is shown.) We measured the quality of the timing prediction in percentages, in which -5% means that the prediction by the optimizer is 5% too optimistic. Excellent quality (-5% to +10%) is given the color green, very good quality is yellow, good quality is orange, & the rest is red. The results are for the T000Xz X(i) and EXXX X(i), and are accomplished by thorough analysis of the machines, and appropriate adaptation of the software. The GxLine Optimiser Team presented the word document below to the Business Creation Process review team. The results were received with great applause. The graphics are based on the timing accuracy scale of measure that was defined with Jan verbakel. Classification: Unclassified

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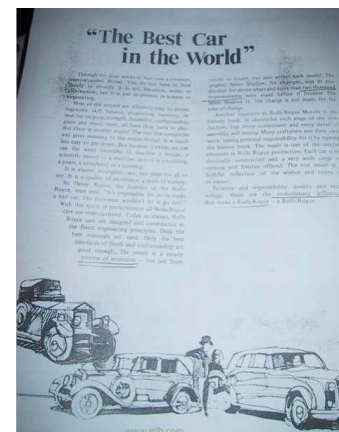
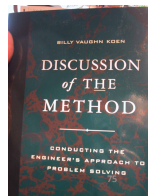


Koen on Risk Control

- ! Make small changes in the sota:
 - ! 'Sota' = Engineering State Of The Art Heuristics <-Koen, Discussion, p. 48
- ! Always give yourself a chance to retreat; and
- ! Use feedback to stabilize the design process

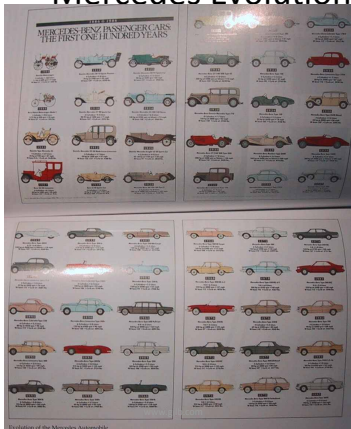


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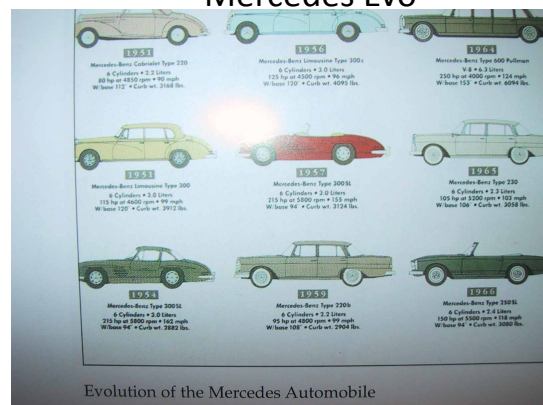
76

Mercedes Evolution



77

Mercedes Evo



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Ski Jump Evolution 2004



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