a primer for managers



Excel workshop

What's design?

Is it a document that describes the design

- or -

Is it the living expression of design in the code?

To change people, do you change this...

Homo sapiens Build 36.1 (Current)

Chromosome: <u>1 2 3 4 5 6 7 8 9</u> [**10**] <u>11 12 13 14 15 16 17 18 19 20 21 22 X Y MT</u>

Master Map: Genes On Sequence

Region Displayed: 0-135M bp

region Displayed. Or 15514 bp							
Ideogran→X	Contig → X	Hs UniG	Genes_seq⊠ Symbol	<u>o</u>	Links	E	Cyto
10p15.3 - 10p15.2 - 10p15.1 -	NT_07756	7. Hs_283652 Hs_4055 Hs_299055 Hs_271135	PITRM1	<u>l</u> +	<u>HGNC sv pr dl ev mm hm sts</u>	best RefSeq	10p15.2
10p14 -	10H NT_07756		NUDT5	+ <u>ON</u>	AIIM HGNC sv pr dl ev mm hm sts	<u>CCDS</u> best RefSeq	10p14-p1
10p13 -	2011	Hs_533317	ARL5B	+ <u>ON</u>	/IIM HGNC sv pr dl ev mm hm	<u>CCDS</u> best RefSeq	10p12.33
10p12.33 - 10p12.32 - 10p12.31 - 10p12.2 -			ARMC4	<u>+</u> +	<u>HGNC sv pr dl ev mm hm</u>	<u>CCDS</u> best RefSeq	10p12.1-f
10p12.1 - 10p11.23 -	30H NT_00870	5. Hs_435610	<u> </u>	16.4 +	<u>sv</u> <u>dl</u> ev mm	best RefSeq	10p11
10p11.22 - 10p11.21 - 10p11.1 -	40H NT_02413	0.	RASSF4	<u>4</u> +	HGNC sv pr dl ev mm hm sts	<u>CCDS</u> best RefSeq	10q11.21
10911.1 -	NT_03398 NT_03184 NT_07757	7ns_000		5 <u>326</u> +	<u>sv pr dl ev mm hm sts</u>	mRNA	10q11.22
10q11.21 - 10q11.22 -	50H NT_07757 NT_03077 NT_01769 NT_03503	2 Hs_522932	LOC644	4612 †	<u>sv pr dl ev mm</u>	mRNA	10q21.1
10q11.23 - 10q21.1 -	60H	· 🚽		<u>P</u> +	<u>sv pr dl ev mm hm sts</u>	best RefSeq	10pter-q2
10q21.2 — 10q21.3 —	NT_00858	3. Hs_1908 Hs_522995	<u>PSAP</u>	+ <u>ON</u>	/IIM HGNC sv pr dl ev mm hm sts	<u>CCDS</u> best RefSeq	10q21-q2
10q22.1 -	70	Hs_523004	VDAC2	+ <u>ON</u>	/IIM HGNC sv pr dl ev mm hm sts	<u>CCDS</u> best RefSeq	10q22
10q22.2 - 10q22.3 -	80 H	Hs_500101 Hs_355927 Hs_356794 Hs_530291	- <u>SH2D4</u>	<u>3</u> +	<u>HGNC sv pr dl ev mm hm sts</u>	<u>CCDS</u> best RefSeq	10q23.1
10q23.1 — 10q23.2 —		Hs_352656		+ <u>ON</u>	AIIM HGNC sv pr dl ev mm hm sts	best RefSeq	10q25-q2
10q23.31 - 10q23.32 -	908-	Hs_500483 Hs_368525 Hs_500674	<u> </u>	<u>8</u> + <u>ON</u>	AIIM HGNC sv pr dl ev mm hm sts	<u>CCDS</u> best RefSeq	10q23.33
10q23.33 - 10q24.1 - 10q24.2 - 10q24.31 - 10q24.33 -	100M	Hs_447492	NKX2-	<u>3</u> + <u>ON</u>	AIIM HGNC sv pr dl ev mm hm sts	best RefSeq	10q24.2
4.4	NT_03005	Hs_500842 Hs_523238 Hs_153961	NOLC1	+ <u>ON</u>	<u>AIM HGNC sv pr dl ev mm hm sts</u>	<u>CCDS</u> best RefSeq	10q24.32
10925.2 - 10925.3 -	1108-	Hs_501012	DUSP5	+ <u>ON</u>	/IIM HGNC sv pr dl ev mm hm sts	<u>CCDS</u> best RefSeq	10q25
	1208	Hs_501135 Hs_523299 Hs_523302	EMX2	+ <u>ON</u>	/IIM HGNC sv pr dl ev mm hm sts	<u>CCDS</u> best RefSeq	10q26.1
10q26.13 - 10q26.2 -	NT_03504	Hs_381123	ACADS	<u>B</u> + <u>ON</u>	AIM HGNC sv pr dl ev mm hm sts	CCDS best RefSeq	10q25-q2
10926.3 -	130H NT_00881 NT_02583	: <u>-</u>	<u>PPP2R2</u>	<u>D</u> +	HGNC sv pr dl ev mm hm sts	best RefSeq	10q26.3

...or this?



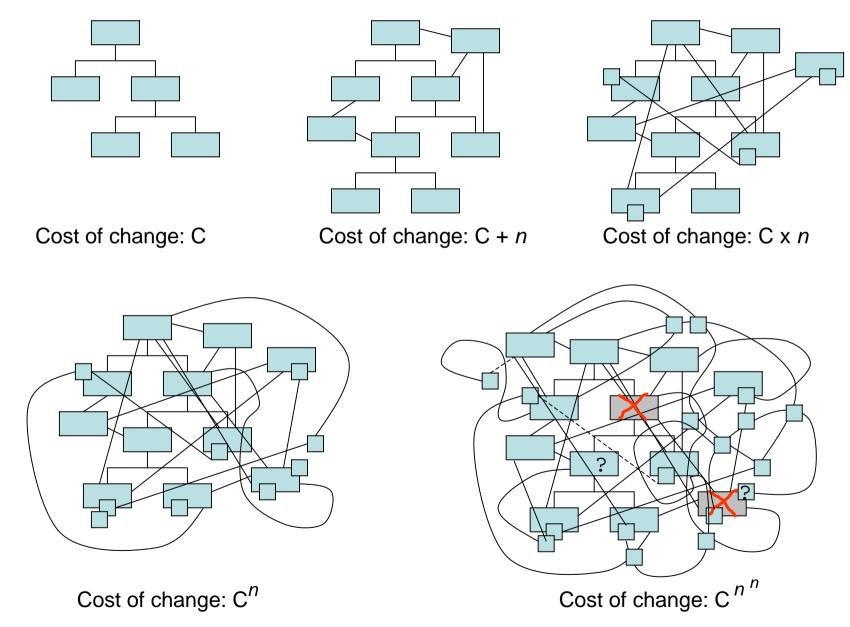
To change software do you change this...



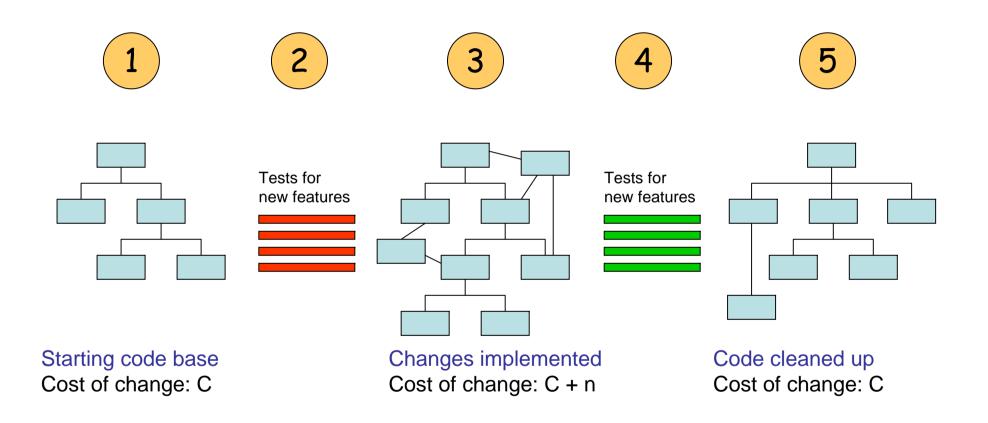
...or this?

```
if (confirm("Are you old enough to read about beer\n"
        + "according to your local community standards?")) {
   for (i = 99; i > 0; i--) {
        j = i - 1;
        if (i != 1) {
            icase = "bottles";
        } else {
            icase = "bottle";
        if (j != 1) {
            icase = "bottles";
        } else {
            jcase = "bottle";
        document.writeln(i + " " + icase
            + " of beer on the wall,");
        document.writeln(i + " " + icase + " of beer,");
        document.writeln("Take 1 down, pass it around,");
        if (j != 0) {
            document.writeln(j + " " + jcase
                + " of beer on the wall.");
        } else {
            document.writeln("No more bottles of beer on the wall!");
       document.writeln();
    }
} else {
   document.write("You might want think about moving to another community.")
}
```

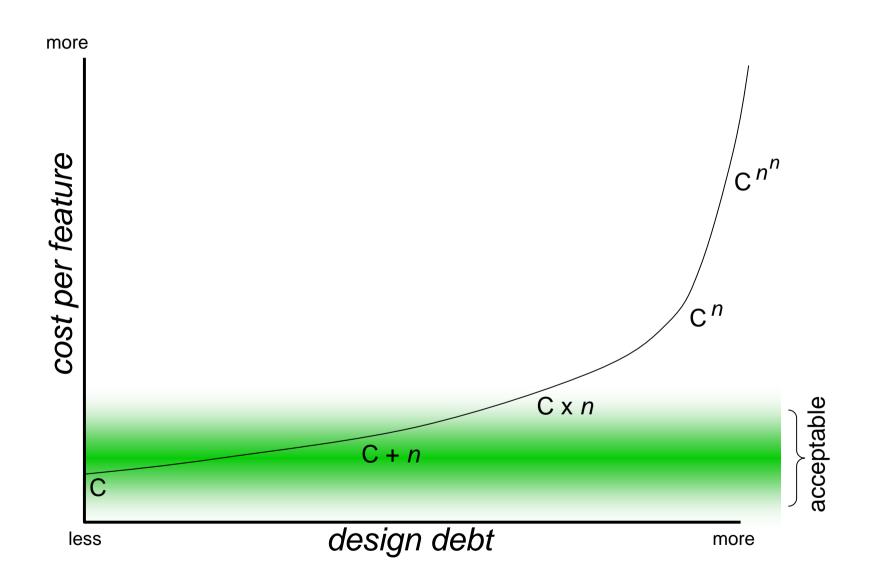
What's design debt?



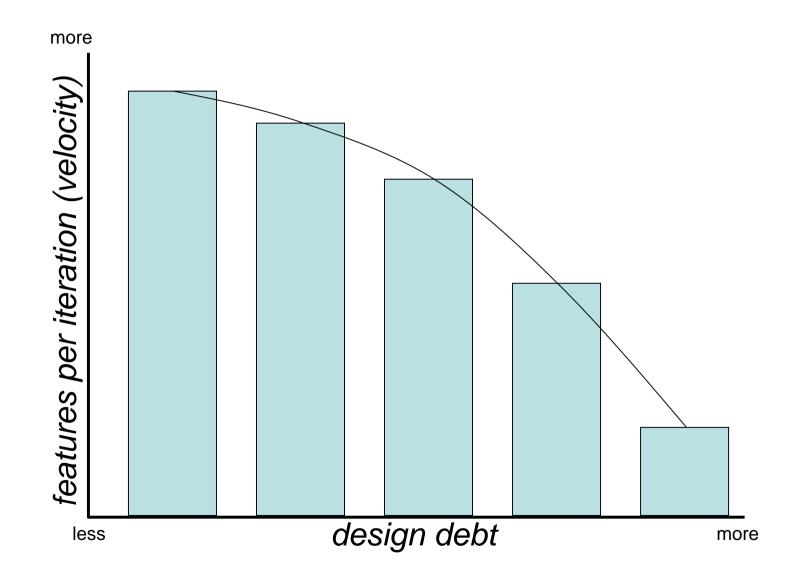
Installment payments for design debt



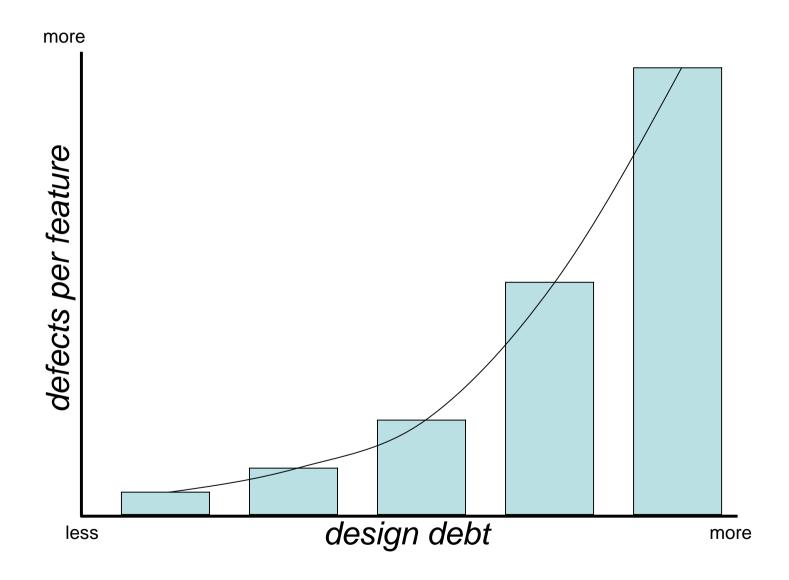
What is test-driven development and why do I care? Effect of design debt on development cost during a project



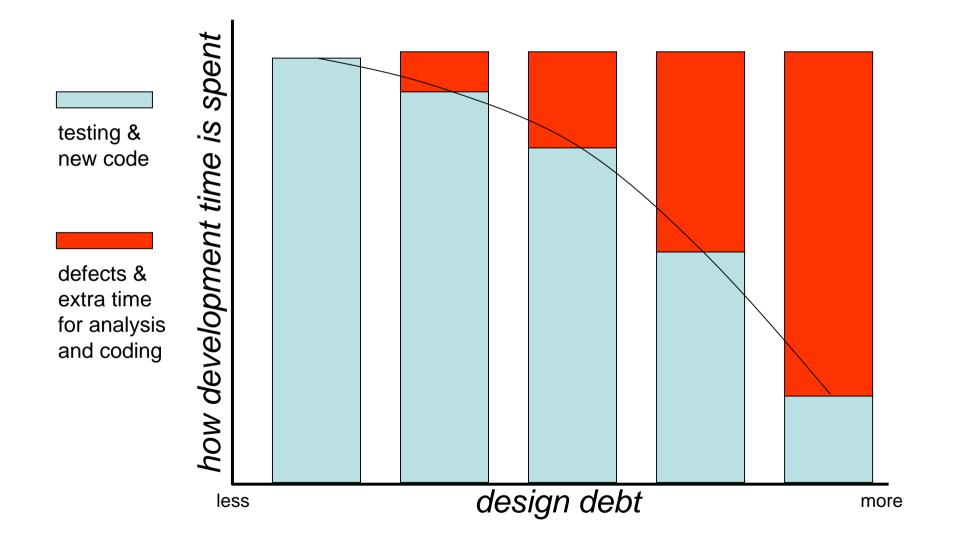
What is test-driven development and why do I care? Effect of design debt on team productivity during a project



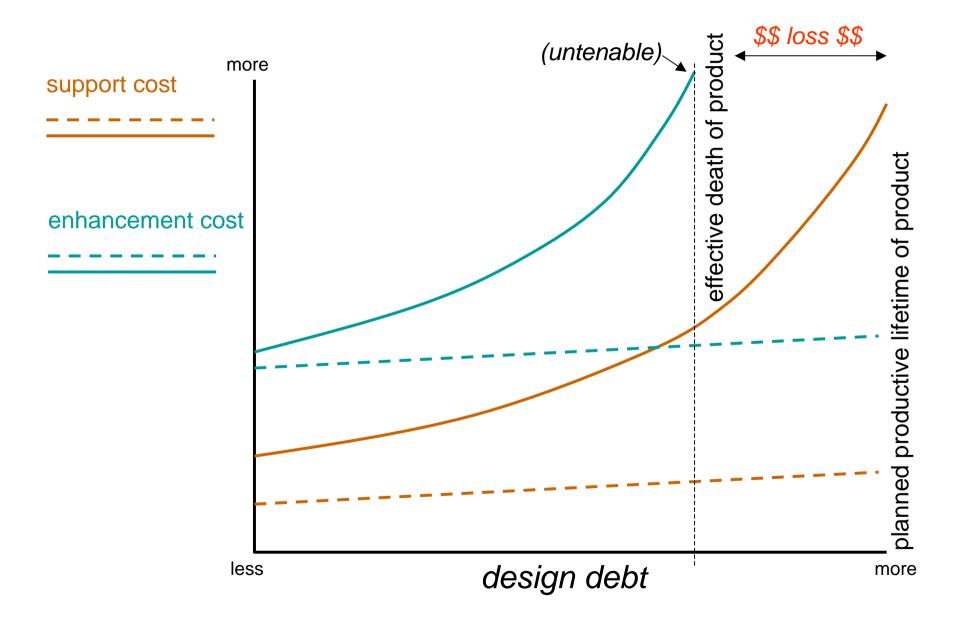
What is test-driven development and why do I care? Effect of design debt on the defect rate during a project



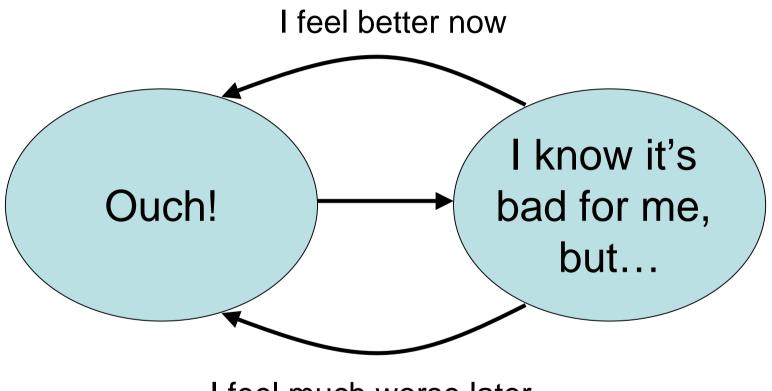
What is test-driven development and why do I care? Effect of design debt on time available for testing during a project



What is test-driven development and why do I care? Effect of design debt over the life of a product



What is test-driven development and why do I care? Why people continue to incur design debt



I feel much worse later

What can I do about it?

As a manager, I...

...barely understand this myself ...can't tell technical professionals how to do their jobs ...don't have an answer for their technical rationalizations ...need to give them "space" to work effectively What is test-driven development and why do I care? How can I influence things at this level without damaging morale?

As a manager, I can...

...attend daily stand-up meetings and ask questions ...visit the work area and observe the process ...ask team members about TDD and how they use it ...track the defect curve closely and raise issues What is test-driven development and why do I care? Design debt and test-driven development



Design debt compounds interest just like financial debt



It's easier to pay off interest in small installments than to let it accumulate



TDD pays design debt as it is incurred, like paying off a credit card account in full every month



You care because it's your money



You can influence the team indirectly