OVERVIEW

What is this game about?

Reducing technical debt is important. So why doesn't everyone do it?

What happens in the game?

In this game, you're a software development team working on a project that will last for 10 sprints. Your job is to create the highest amount of new software value by the end of the project.

Technical debt can reduce that value dramatically. Fortunately, you have choices you can make that will reduce technical debt, and depending on which measures you implement, they may let you focus more on creating new value. These measures don't come for free, so you have to decide which of them are worth the investment.

How do I play?

During each turn, your software development team has a finite capacity to create new software value and deal with technical debt. In this game, we'll represent that capacity with 12 dice. At the beginning of the game, you'll have 8 dice available to create new value (NV), and 4 dice for technical debt (TD).

Each turn (representing a sprint), you'll roll the dice for creating new value and take the total of all dice rolled. Then you'll roll the technical debt dice and total that number. The net new value (NNV) you create each turn is the NV total minus the TD total.

You can lower the burden of technical debt during the game, but it will cost you NV dice in the short term. You have four different ways to reduce technical debt (continuous integration, test-driven development, code review, and a virtualized production environment for more realistic testing). You can invest in one at a time. Each investment in a TD-reducing measure reduces your NV dice for a few turns, then returns those dice to you when you're done making the investment. At that point, you get the bonus capability for dealing with technical debt, and you can invest in another TD-reducing measure, if you want.

The next page walks you through all the steps needed to play the game. It's a fairly simple game, so you might play it in less time than it will take to read the instructions.

HOW TO PLAY

1. Decide whether you want to invest in a technical debt-reducing measure.

Important: You can't start investing in a new measure until you've **finished** investing in a previous one.

1.1 Write the number of NV dice you need to invest in that measure for each sprint (turn) of the investment.

1.2 Subtract that number from the NV dice and write the adjusted number of NV dice number in the *New Value Dice box* for this turn.

You get that number of dice back the turn after you've finished investing in that measure. For example, after investing 1 die on *continuous integration* during sprints 1 and 2, add that die back to your New Value Dice on sprint 3. The 12 dice are your team's capacity for work, including creating new value, dealing with technical debt, and investing in TD-reducing measures.

		SPRINT	1	2	3
# OF NEW VALUE DICE		(8 to start)	7	7	8
# OF TECHNICAL DEBT DICE		(4 to start)	4	4	4
# OF DICE INVESTED IN TD-REDUCING MEASURES			1	1	
Reduced complexity	**EFFECT:** Remove 2 dice from the TD pool, add them to the NV pool for the rest of the game. **COST:** 2 NV dice, 3 turns				
Code review	**EFFECT:** Remove 1 die from the TD pool, add it to the NV pool for the rest of the game. **COST:** 3 NV dice, 2 turns.				
Continuous integration	**EFFECT:** Re-roll once any TD dice each turn. **COST:** 1 NV die, 2 turns.		X	X	

1.3 Some TD-reducing measures move one or two dice from the TD pool into the NV pool. If so, in the sprint after investing in that measure, subtract that number of dice from the TD pool, and add the same number to the NV pool.

For example, when you finish investing in *reduced complexity*, the number of TD dice you roll will drop from 4 to 2, and the number of NV dice will increase from 8 to 10.

		SPRINT	1	2	3	4
# OF NEW VALUE DICE		(8 to start)	6	6	6	10
# OF TECHNICAL DEBT DICE		(4 to start)	4	4	4	2
# OF DICE INVESTED IN TD-REDUCING MEASURES			2	2	2	
Reduced complexity	**EFFECT:** Remove 2 dice from the TD pool, add them to the NV pool for the rest of the game. **COST:** 2 NV dice, 3 turns		X	X	X	

2. Determine how much new value (NV) you create.

2.1 Roll the NV dice and total the results. Write this number in the *New Value Created* row.

NEW VALUE CREATED	Roll all the dice in the NV pool.	36

3. Determine the technical debt (TD) you create.

3.1 Roll the TD dice. If you've finished investing in code review, you can re-roll any of these dice once.

3.2 Total the TD dice. Write this number in the *Technical Debt Created* row. If you've finished investing in virtual production environment, subtract 3 from this total.

TECHNICAL DEBT CREATED	Roll all the dice in the TD pool.	10

4. Determine how much net new value (NNV) you created this sprint, and how much you've created during all sprints so far.

4.1 Subtract the TD total from the NV total, and write the result in the *Net New Value This Turn* row. This final value can't be less than zero.

NEW VALUE CREATED	Roll all the dice in the NV pool.	36
TECHNICAL DEBT CREATED	Roll all the dice in the TD pool.	10
NET NEW VALUE THIS TURN	Subtract the TD total from the NV total.	26

4.2 Add the *New New Value This Turn* number to the *Cumulative Value Created* number from the previous turn, and write the result in this turn's Cumulative Value Created box.

NEW VALUE CREATED	Roll all the dice in the NV pool.	36	33
TECHNICAL DEBT CREATED	Roll all the dice in the TD pool.	10	18
NET NEW VALUE THIS TURN	Subtract the TD total from the NV total.	26	15
CUMULATIVE VALUE CREATED	How much net value created so far?	26	41

5. Repeat until you've finished 10 sprints.

5.1 Your final score is the number in the *Cumulative Value Created* box for sprint 10.

ANOTHER WAY TO PLAY: "UNCERTAIN OUTCOMES" (OPTIONAL)

Many people who have played *Dice Of Debt* can't resist the temptation to calculate the odds. What is the average amount of new value and debt, based on the amount of dice that you'll be rolling for each? What, therefore, is the best investment among the TD-reducing measures?

While there's no intrinsic harm in doing these calculations, there is some small risk that (1) people will get focused on the odds, instead of the point of the game, or (2) they might conclude that, in the real world, TD-reducing measures are always going to give an extremely predictable result, no matter how different the technology stack, team, or project is.

Therefore, I've provided an optional way of playing, "Uncertain Outcomes." In this variant, you will know generally how much effort will be required, and the payback from the effort. To avoid complexity, both are lumped under the same heading, Commitment. Therefore, if the Commitment for a particular measure is *High*, you know that it will take a lot dice to implement (cost), but it will also give a substantial benefit in dealing with technical debt. You just won't know the exact amount of either cost or benefit.

To play this variant, do the following:

1. Replace the standard scoring sheet with the one designed for this variant. You'll see the words "Uncertain Outcomes" at the bottom of the sheet.
2. Print and assemble the cards for TD-reducing measures. You will create four sets, one for each measure. Each card represents one possible cost/benefit outcome for investing in that measure. The back of each card has a black band at the top that says, "TD-Reducing Measure," printed on a grey background. The front of the card has the actual cost of investment, plus the benefit when implemented, for that measure, printed on a white background.
3. For each TD-reducing measure, shuffle the cards face-down and select one. Put the other cards aside. Do not look at the front of the cards you put aside, or the one that you have selected.
4. Put the four cards you have selected, one for each measure, in an area where you can easily access them.
5. During the play of the game, when you decide to invest in a particular measure, flip over the card for that measure.
6. Copy the cost and benefit from the front of the card to the appropriate sections of the scoring sheet. You'll now know the amount of New Value dice you have to invest, for how many turns, and what kind of benefit you will get when you are finished.

Some final notes

Two of the four cards for each measure have the same cost and benefit. While in general, implementing these measures may be roughly predictable, your mileage may vary (YMMV).

Expect players to be less inclined to "Do the hard things first," if this is their first time playing *Dice Of Debt*. Not knowing what "High" or "Low" commitment represents makes people cautious.

Enjoy!

--Tom Grant