Cost of delay

Is a month of delay worth 1 Mio € or 1k €?

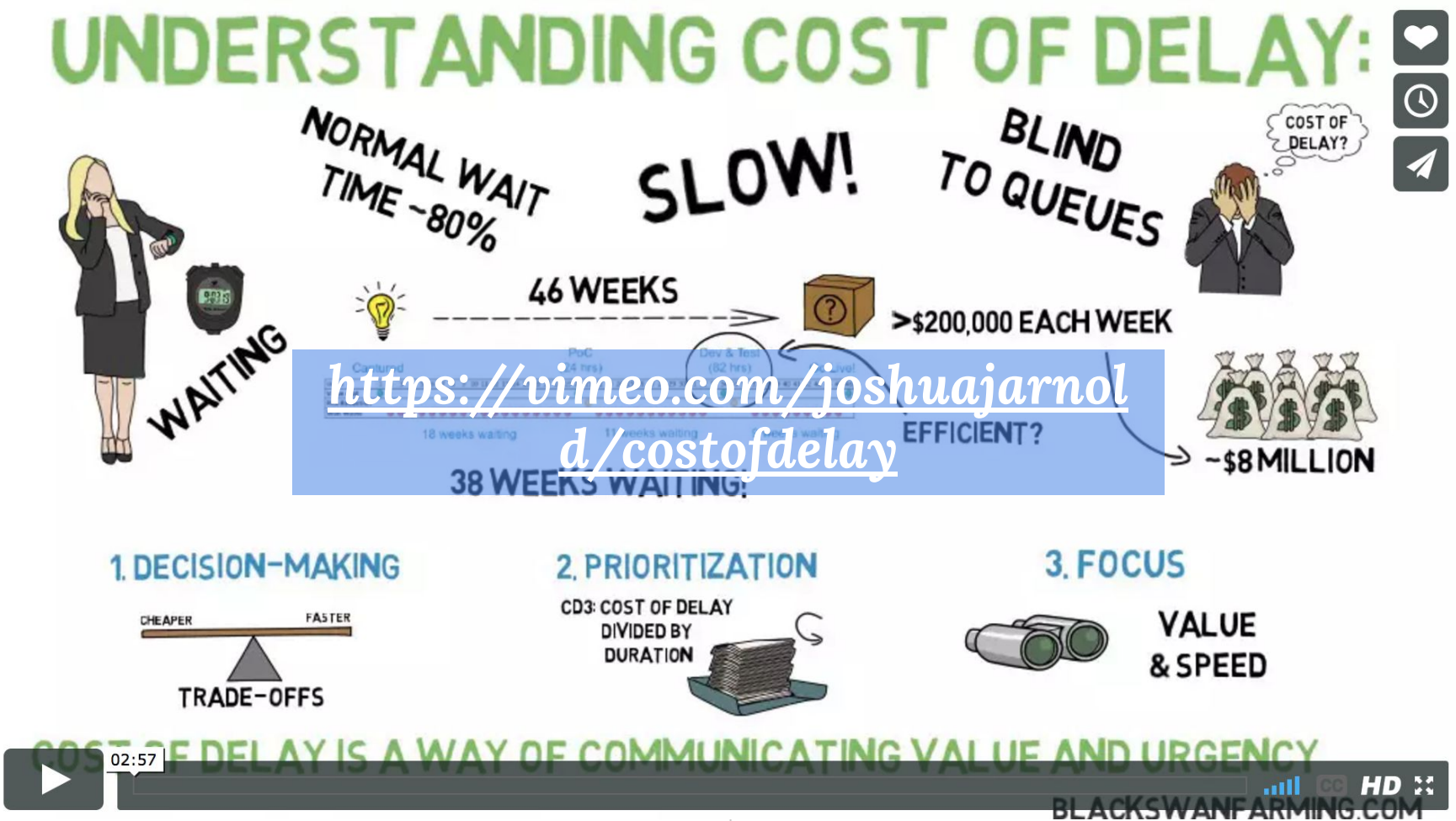
Most organisations don't suffer from a lack of innovative ideas, they suffer from not being able to pick and nurture the best ones, and deliver them quickly enough.

“

Black Swans: arrival is random

We need **flexibility**,
not fixed scope
or fixed timeframes

blackswanfarming.com


UNDERSTANDING COST OF DELAY:
NORMAL WAIT TIME ~80%
SLOW!
BLIND TO QUEUES
COST OF DELAY?
WAITING
46 WEEKS
>$200,000 EACH WEEK
https://vimeo.com/joshuajarnold/costofdelay
EFFICIENT?
~$8 MILLION
38 WEEKS WAITING!
1. DECISION-MAKING
CHEAPER
FASTER
TRADE-OFFS
2. PRIORITIZATION
CD3: COST OF DELAY DIVIDED BY DURATION
3. FOCUS
VALUE & SPEED
COST OF DELAY IS A WAY OF COMMUNICATING VALUE AND URGENCY
02:57
HD
BLACKSWANFARMING.COM

The impact of time on value

(or rephrased: Impact of time on the outcomes we hope to achieve)

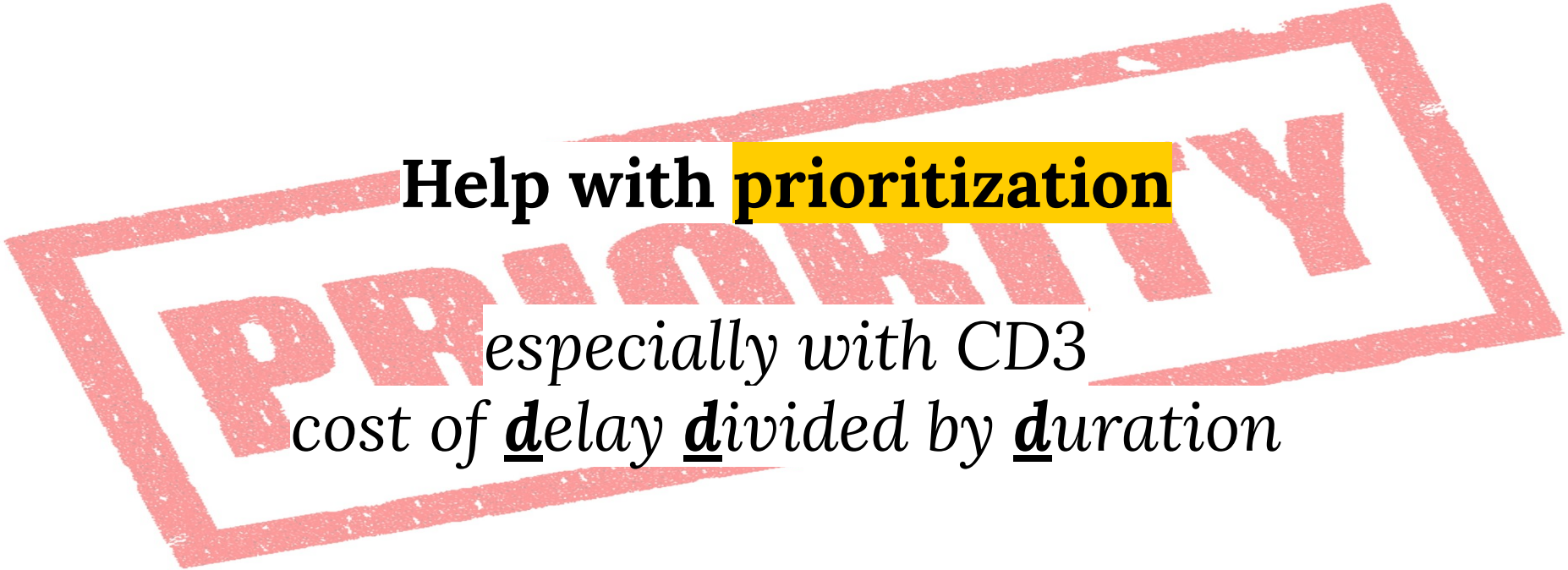
“

It's one thing for an ***organisation*** *to be* ***blind to queues***. *It's* ***another layer of blindness*** *to have* ***no clue what those queues are costing***. *We need to understand the Cost of Delay of the things flowing through the system.*

Cost of delay = value x urgency

What is it good for?


Drive economically based decisions



Help with prioritization

especially with CD3

*cost of **d**elay **d**ivided by **d**uration*


Focus discussions to speed and value
(instead of cost and efficiency)

About Value

The monetary worth of something

***Having a number is better than having no number at all**, even if the only output is to learn more about what is valuable or not.*

A framework for thinking about value

Increase Revenue	**Increasing** sales to new or existing customers. Delighting or Disrupting to increase market share and size
Protect Revenue	Improvements and incremental innovation to ***sustain*** current market share and revenue figures
Reduce Costs	Costs that we are *currently* incurring, that can be **reduced**. More efficient, improved margin or contribution
Avoid Costs	Improvements to ***sustain*** current cost base. Costs we are not currently incurring but may do in the future

Total value

=

Sum of value buckets

Risk to value conversion

calculate the **weighted risk value** by multiplying the **value of a risk x its probability to occur**

Example

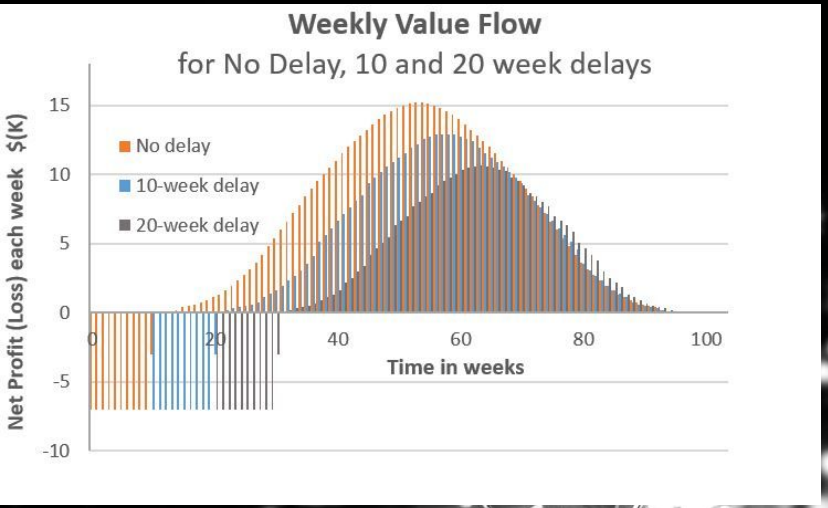
A failing oracle leads to a potential loss of 100k/week. The probability for failing is about 70%.

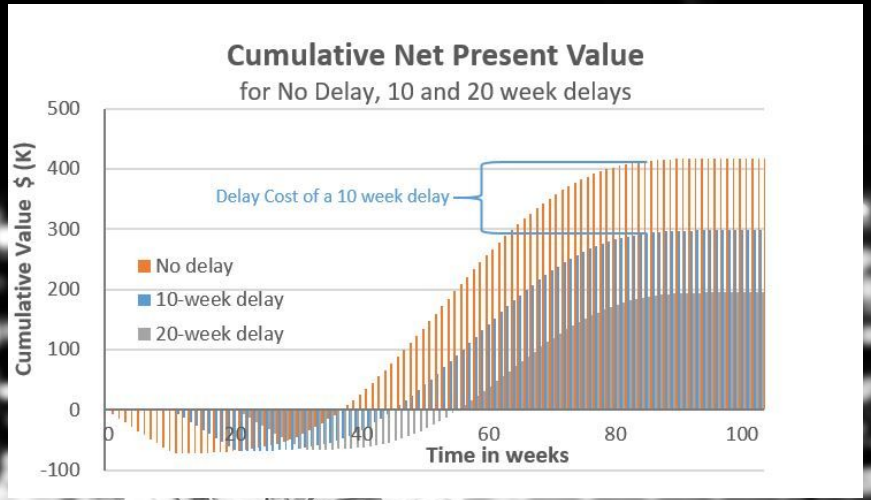
This leads to the weighted risk of 70k/week that we can take as value part for our COD calculation.

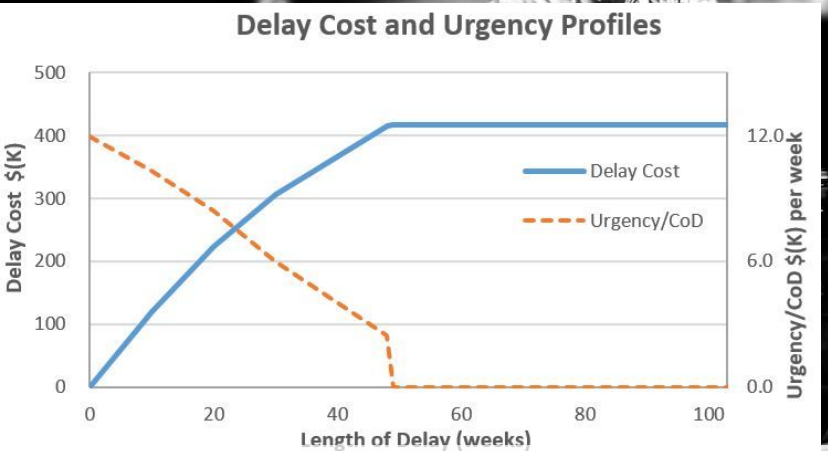
About Urgency

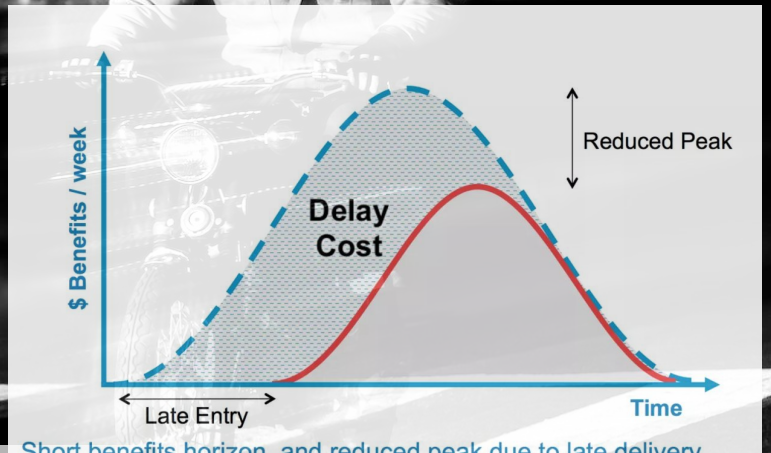
Describes the development of value over a given timeframe

Short benefit horizon and reduced peak due to late delivery



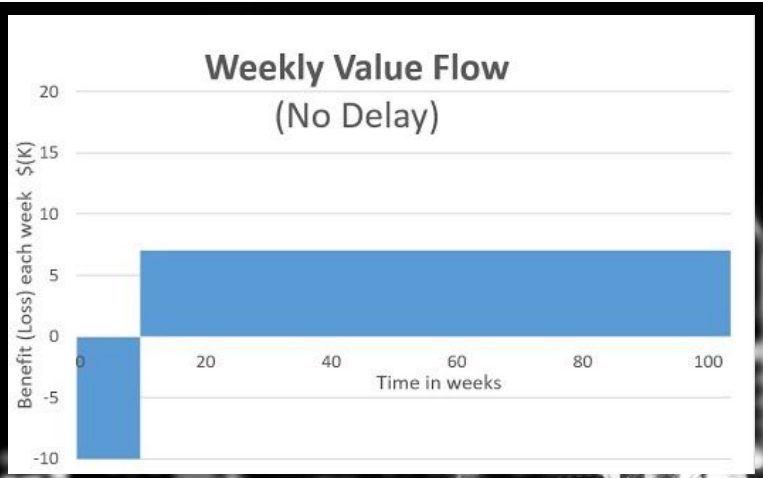


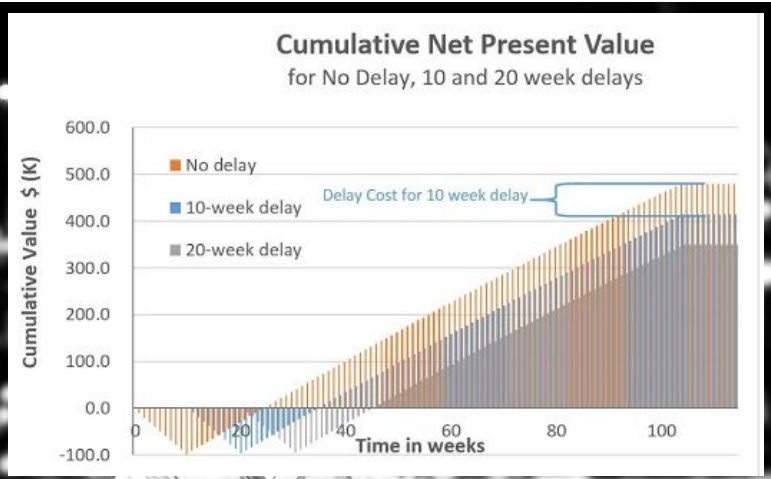


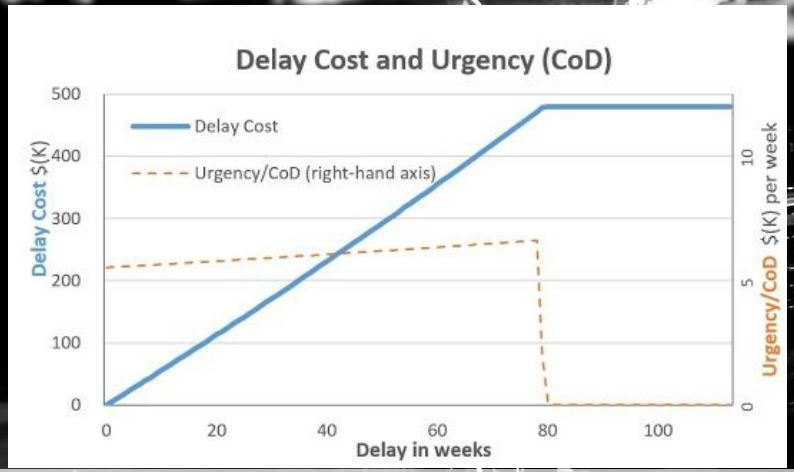


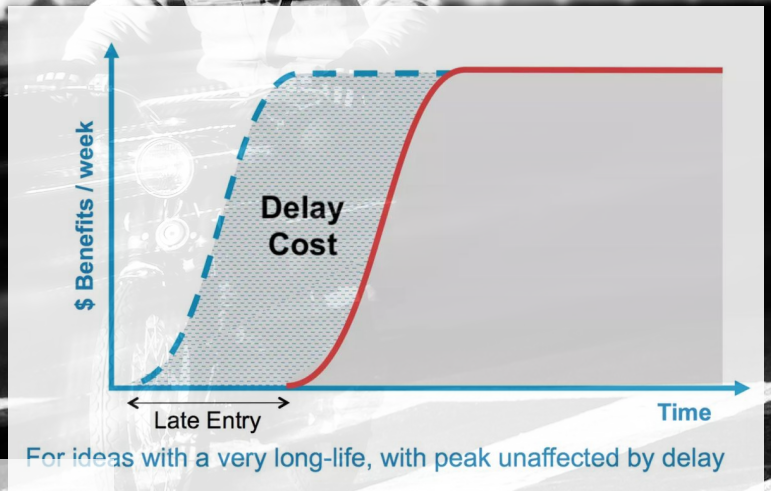
http://xprocess.blogspot.de/2016/04/cost-of-delay-profiles.html

For ideas with a very long-life, with peak unaffected by delay



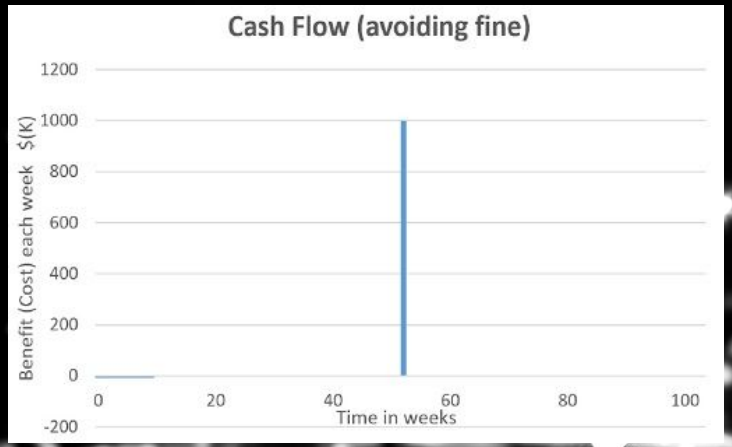


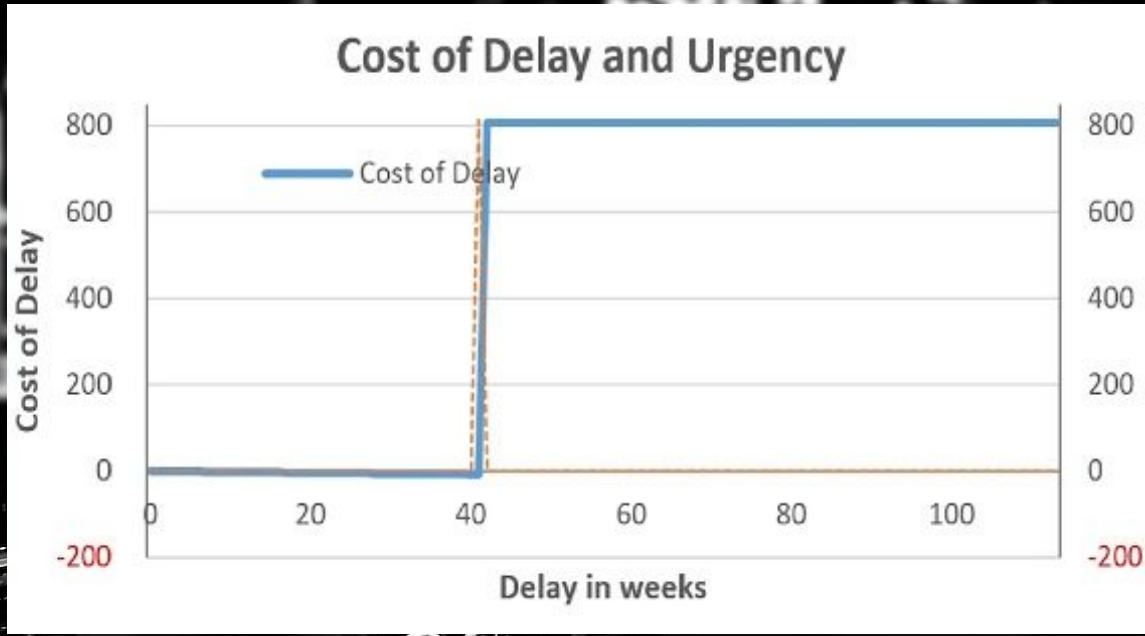


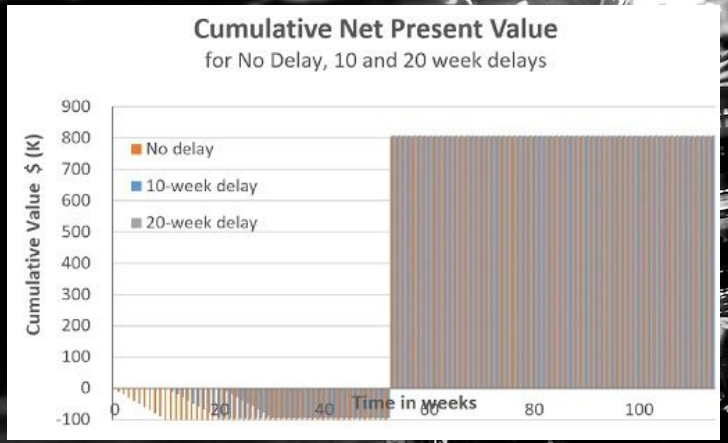


http://xprocess.blogspot.de/2016/04/cost-of-delay-profiles.html

Fixed day opportunity (e.g. 1st of may)

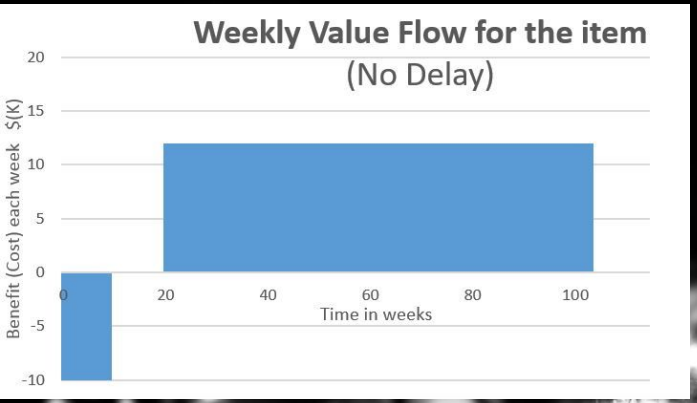


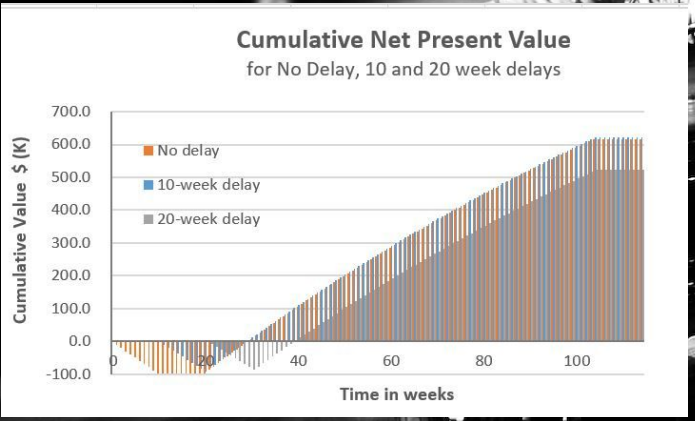


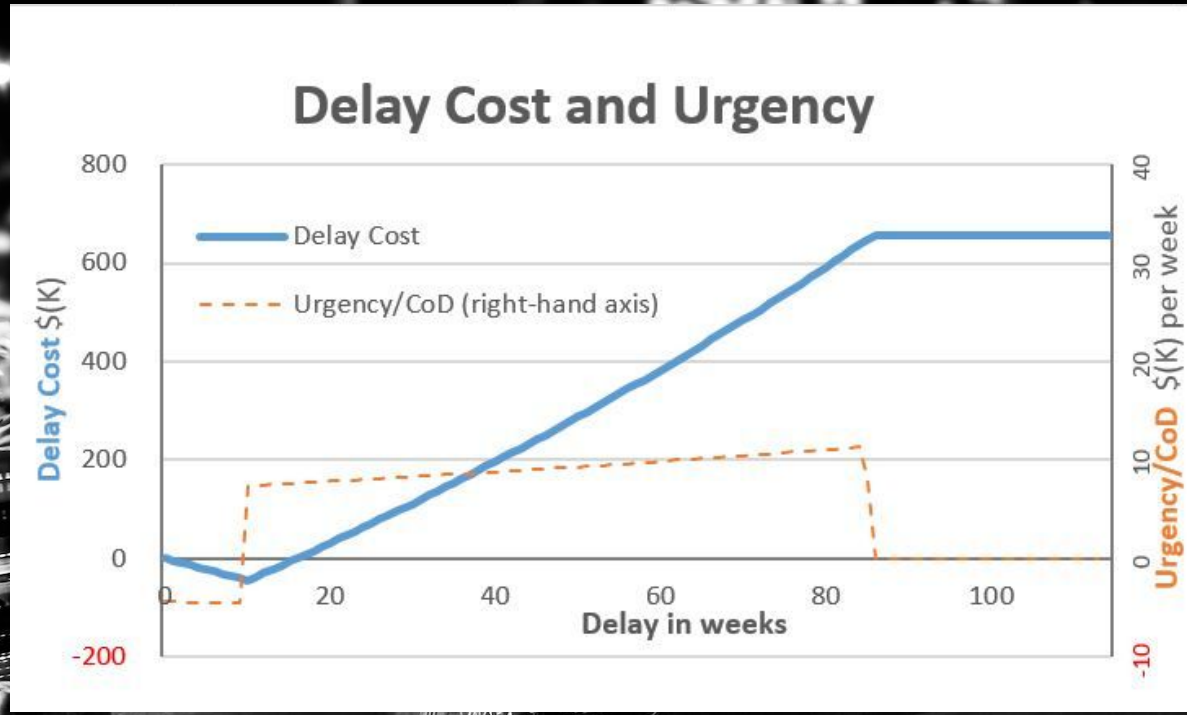


http://xprocess.blogspot.de/2016/04/cost-of-delay-profiles.html

Savings/earnings that start on a certain date (and not before)







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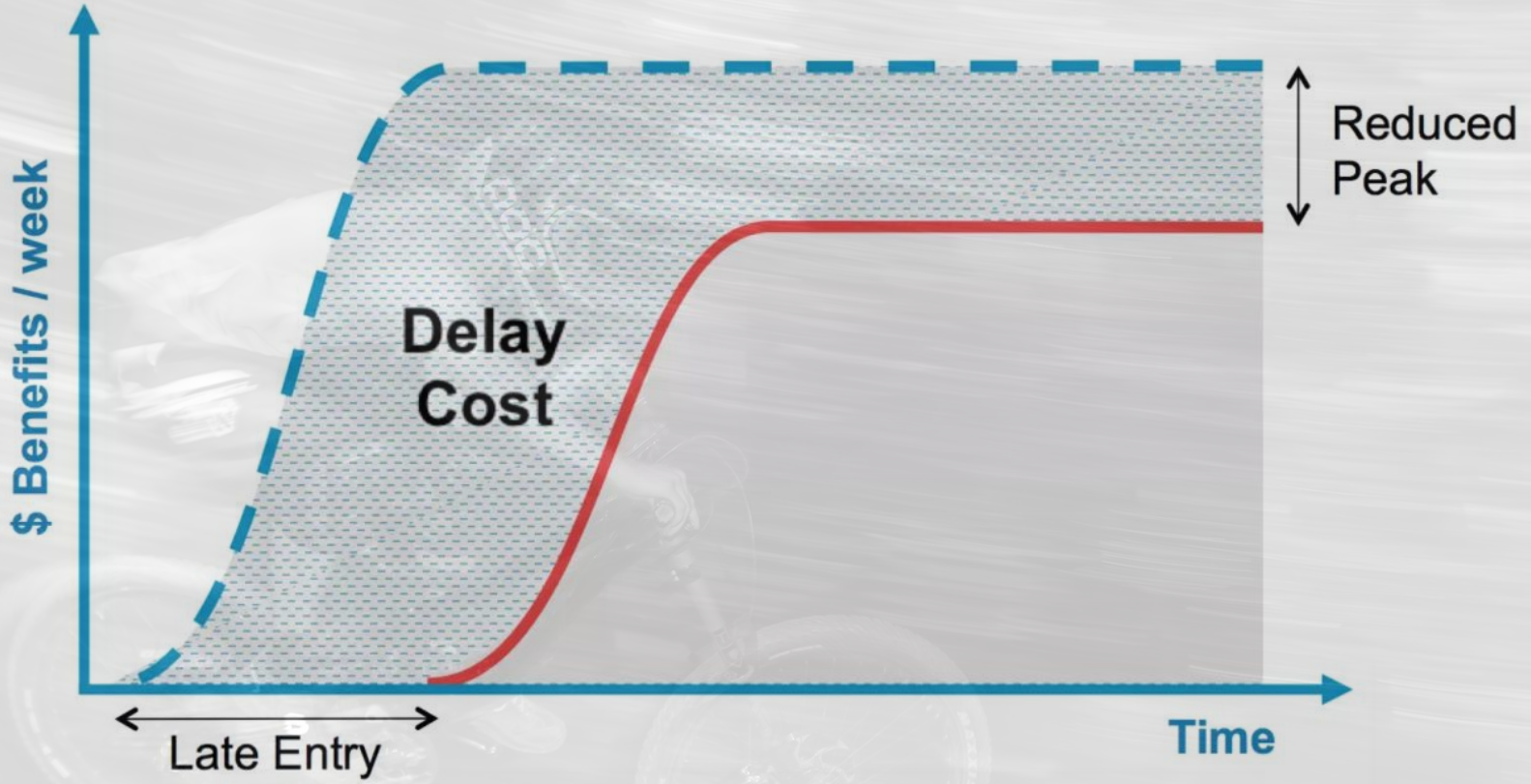


For ideas with a very long-life, with reduced peak due to later delivery

Cost of Delay – Example 1

RQ-9076

Improve invoice accuracy leading to:

- Reduction in number of customers paying late, worth an additional $4,000,000 per annum
- Reduction in number of calls currently costing 5 FTEs at $20k per FTE

Increase Revenue: $4,000,000 p.a.

Reduce Cost: $100,000 p.a.

Delaying this requirement by 1 week is worth $4.1m/52 weeks

Cost of Delay = $78,846 per week

Cost of Delay – Example 2

RQ-9077

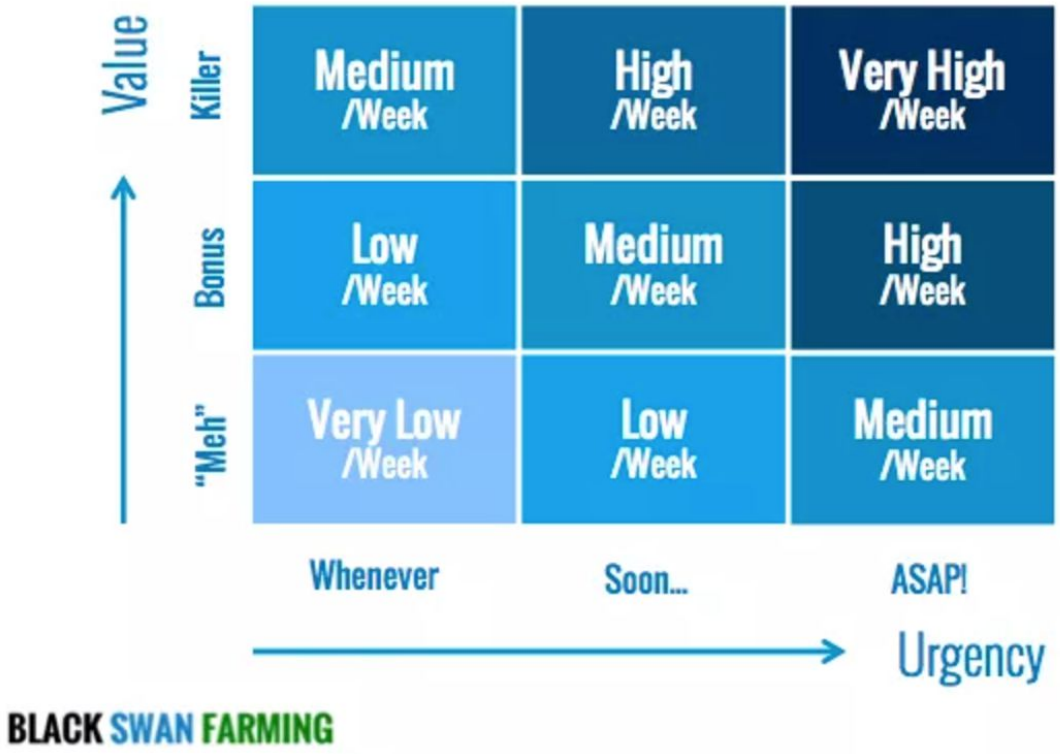
Automating a process to satisfy new regulation that will be effective from 1st Sept 2012, in order to:

- Avoid the additional manual processing resource which is estimated to cost about 20 FTEs at $20k per FTE

Avoid Cost: $400,000 p.a.

It's going to take about 13 weeks to automate, so delaying the start by 1 week **beyond the last responsible moment of 1st June 2012** is worth $0.4m/52 weeks

Cost of Delay = $7,692 per week



Qualitative Cost of Delay matrix

- Fast and easy to apply
- Helps to differentiate between many options initially


Let’s exercise

Project Start Date: 11.04.2017

Name: B

Cost of Delay/Week: 10000

CoD Start Week:

CoD End Week:

CoD Start Date:

CoD End Date:

Feature Dev Duration: 5

Add Feature | Calculate Sequence | Clear Input | Show Chart

Best Sequence: C,B,A **200000**

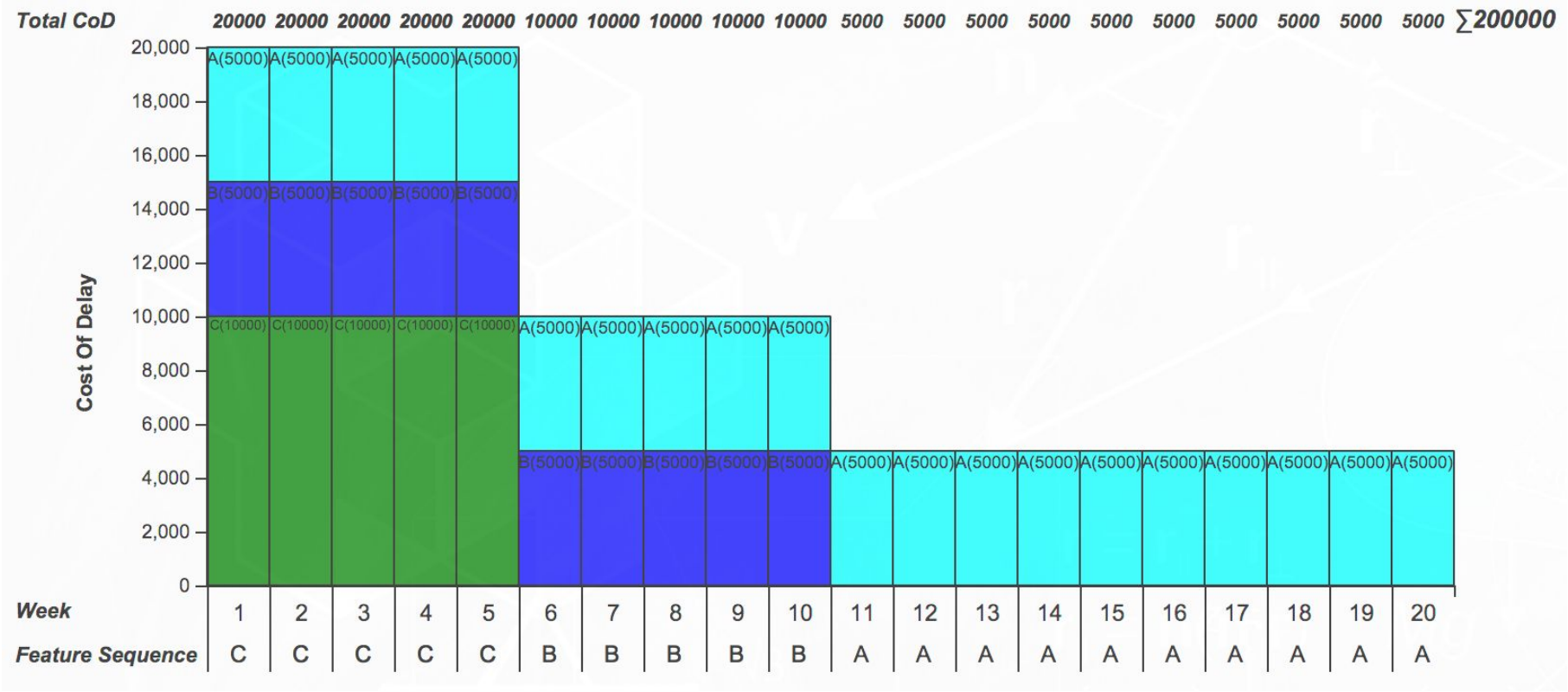
Worst Sequence: A,B,C **325000**

Wsjf Sequence: C,B,A **200000**

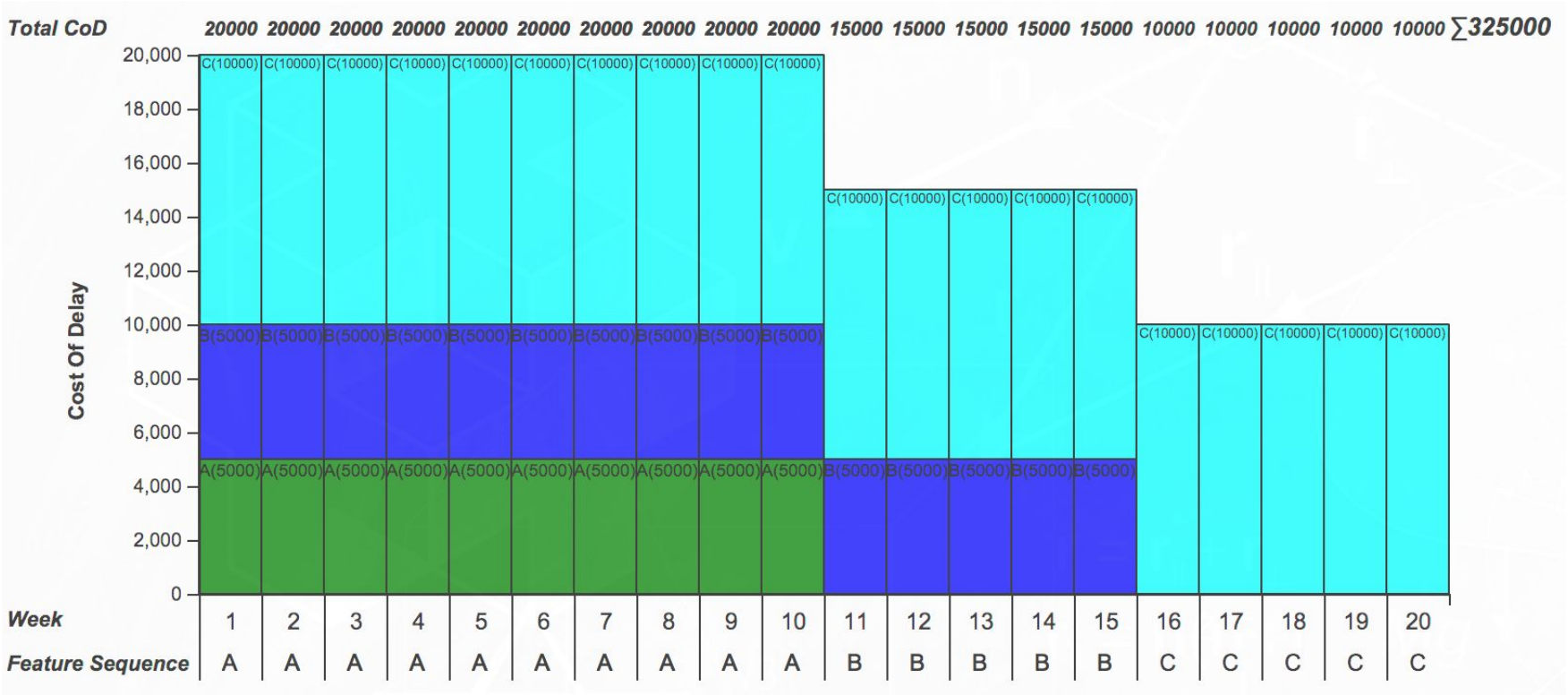
Features

Nr	Name	CoD/Week	Duration	CoD Start Date	CoD End Date	CoD/Duration
0	A	5000	10			500
1	B	5000	5			1000
2	C	10000	5			2000

Download at https://github.com/sradics/cod/releases/tag/v0.1.1


Total CoD
20000 20000 20000 20000 20000 10000 10000 10000 10000 10000 5000 5000 5000 5000 5000 5000 5000 5000 5000 5000 ∑200000
Cost Of Delay
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
A(5000) A(5000) A(5000) A(5000) A(5000)
B(5000) B(5000) B(5000) B(5000) B(5000)
C(10000) C(10000) C(10000) C(10000) C(10000)
A(5000) A(5000) A(5000) A(5000) A(5000)
B(5000) B(5000) B(5000) B(5000) B(5000)
A(5000) A(5000) A(5000) A(5000) A(5000) A(5000) A(5000) A(5000) A(5000) A(5000)
Week
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Feature Sequence
C C C C C B B B B B A A A A A A A A A A

Best case

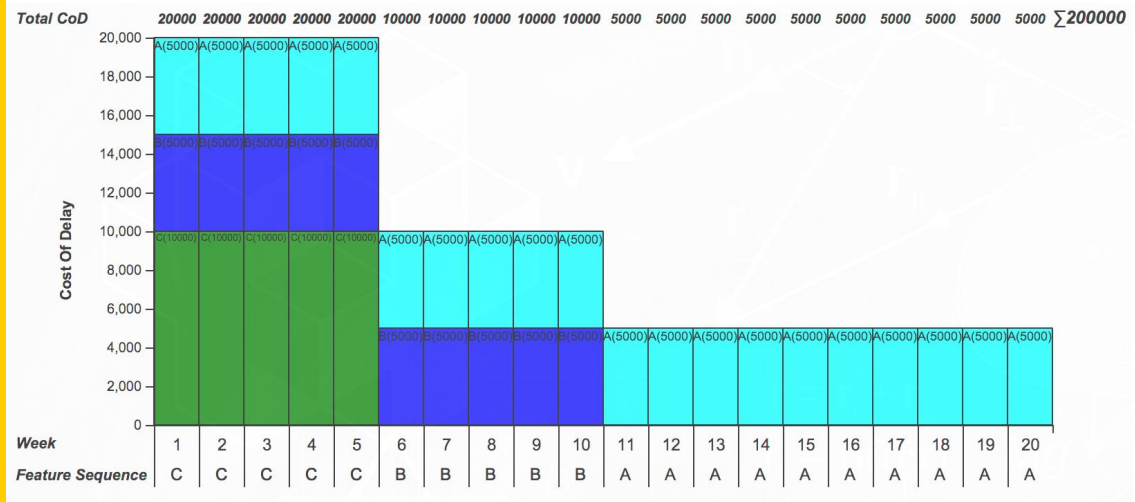

Total CoD
20000 20000 20000 20000 20000 20000 20000 20000 20000 20000 15000 15000 15000 15000 15000 10000 10000 10000 10000 10000 ∑325000
Cost Of Delay
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
C(10000)
B(5000)
A(5000)
Week
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Feature Sequence
A A A A A A A A A A B B B B B C C C C C

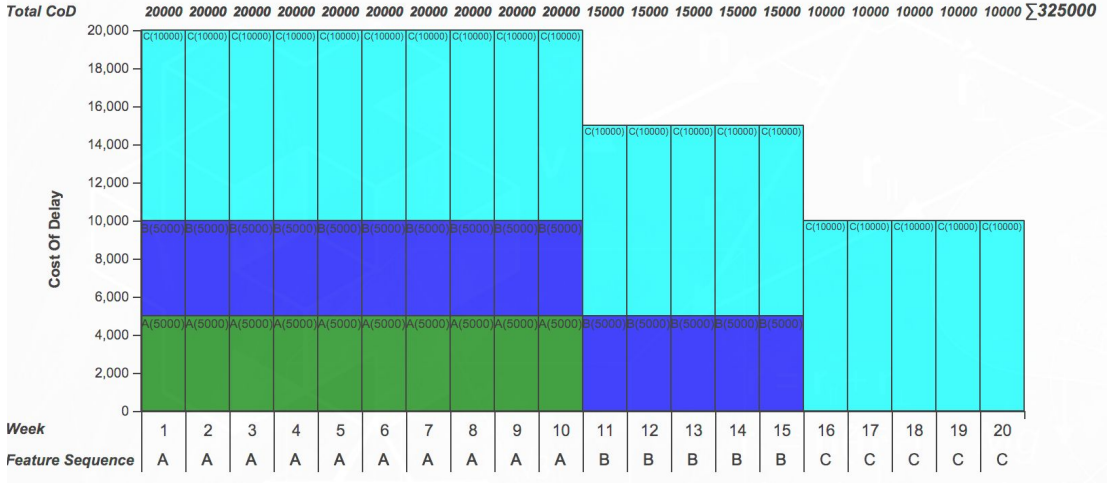
Worst case

Best case

vs

Worst case





Project Start Date: 11.04.2017

Name: B

Cost of Delay/Week: 10000

CoD Start Week:

CoD End Week:

CoD Start Date:

CoD End Date:

Feature Dev Duration: 5

Add Feature | Calculate Sequence | Clear Input | Show Chart

Best Sequence: C,B,A **200000**

Worst Sequence: A,B,C **325000**

Wsjf Sequence: C,B,A **200000**

Features

Nr	Name	CoD/Week	Duration	CoD Start Date	CoD End Date	CoD/Duration
0	A	5000	10			500
1	B	5000	5			1000
2	C	10000	5			2000

Project Start Date: 03.03.2017

Name:

Cost of Delay/Week:

CoD Start Week: CoD End Week:

CoD Start Date: CoD End Date:

Feature Dev Duration:

Add Feature Clear Input Show Chart

120 Kombinationen

Best Sequence:	C,D,A,B,E	67000
Worst Sequence:	E,D,B,A,C	162000
Wsjf Sequence:	D,C,A,E,B	79000

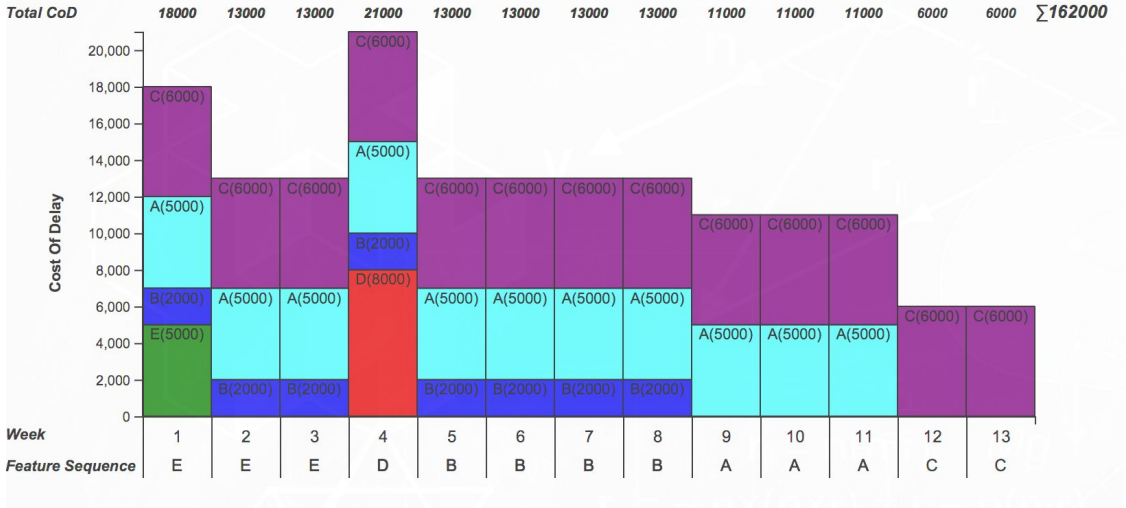
Features

Nr	Name	CoD/Week	Duration	CoD Start Date	CoD End Date	CoD/Duration
0	A	5000	3			1667
1	B	2000	4			500
2	C	6000	2			3000
3	D	8000	1	24.03.2017	31.03.2017	8000
4	E	5000	3	17.03.2017	24.03.2017	1667

Best case

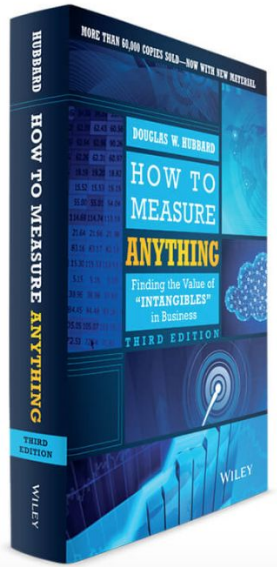
vs

Worst case



How to measure anything

A short book teaser?



www.howtomeasureanything.com

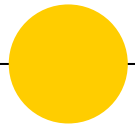
Often, an important decision requires better knowledge of the alleged intangible, ***but when a [person] believes something to be immeasurable, attempts to measure it will not even be considered.***

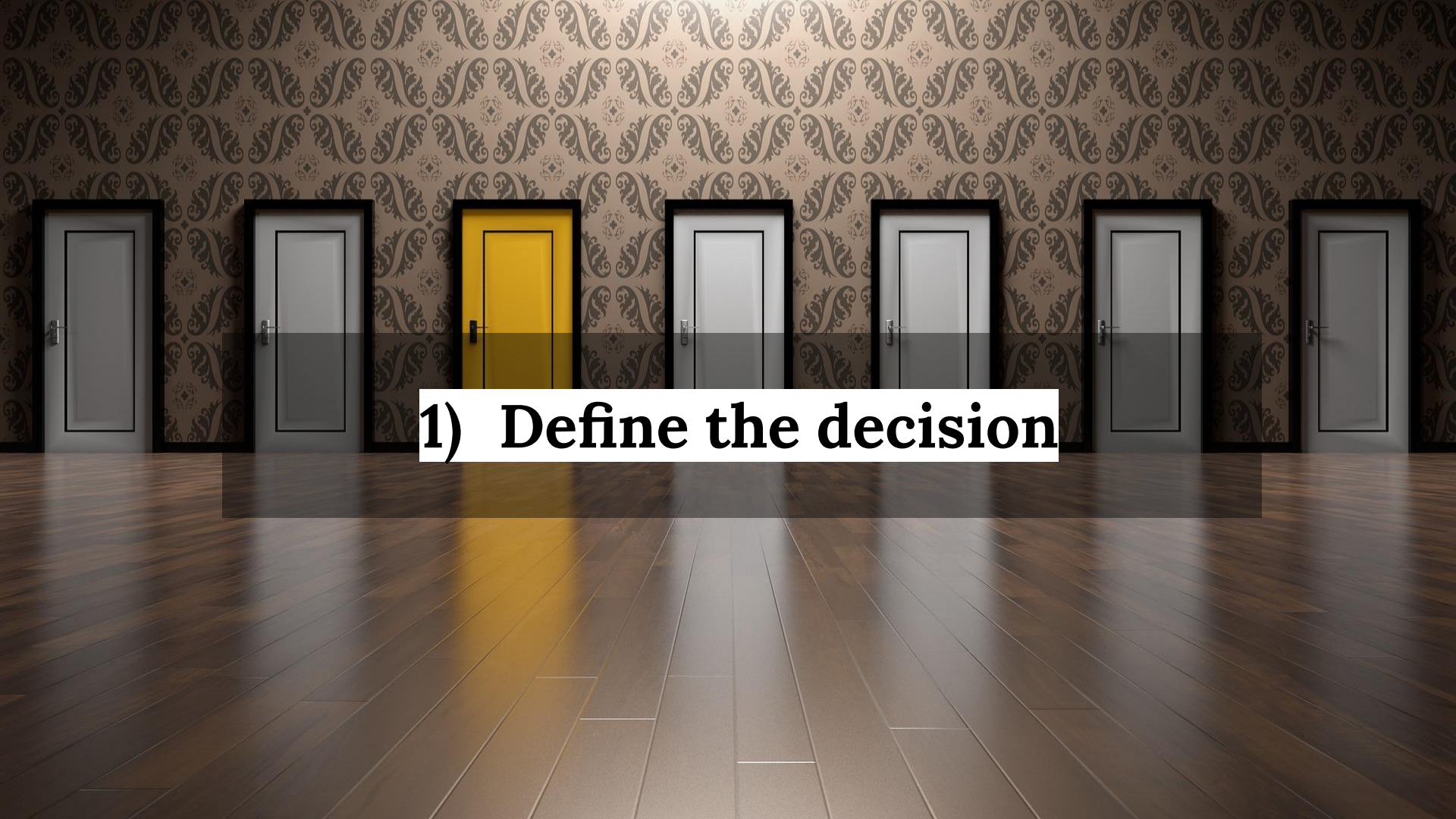
The standard approach to measurement … is for smart people ***being smart and have to invent the method for a new measurement themselves…***

If ***outcome*** *of a decision* ***is highly uncertain*** *and* ***has significant consequences*** *then measurements that reduce uncertainty have a high value*

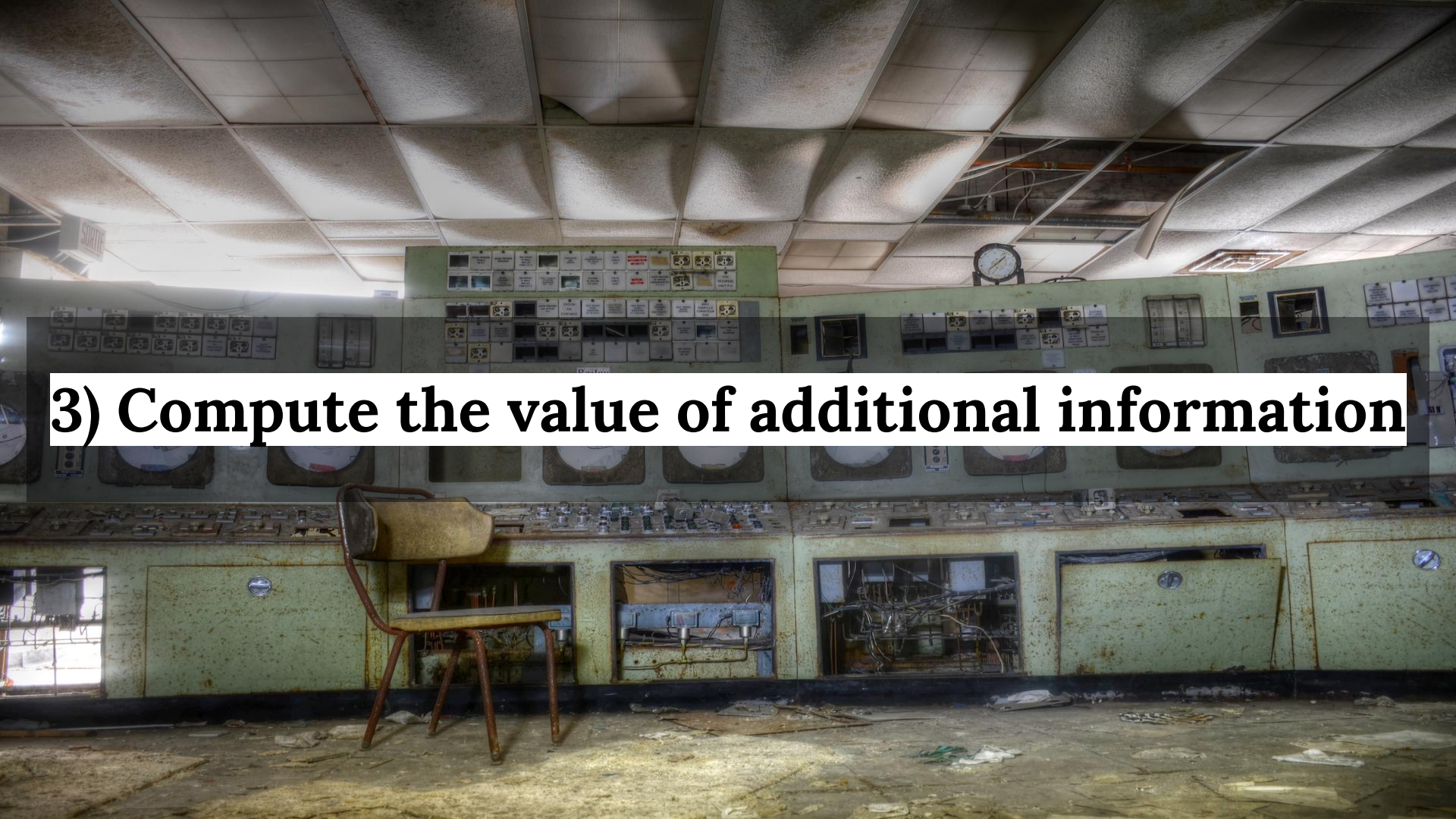
(don't confuse the proposition that anything that can be measured with everything should be measured)

A universal approach to measurement




1) Define the decision

2) Determine what you know now



3) Compute the value of additional information

4) Measure where information value is high

5) Make a decision and act on it

4

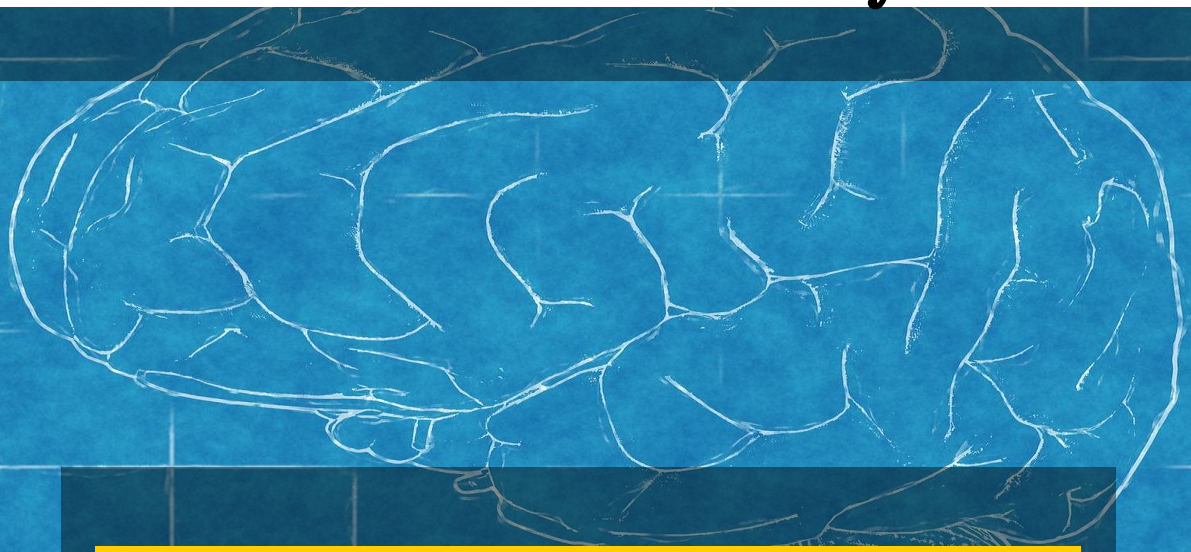
Measurement assumptions


It’s been done before
Don’t reinvent the wheel

You have access to more data than you think

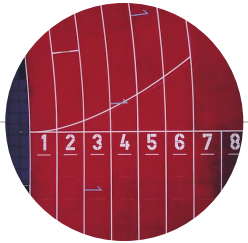
It might just involve some resourcefulness and original observations.

You need less data than you think



If you're clever about how to analyze it.


An adequate amount of new data is...
probably more accessible than you first thought.



Sequential vs. Parallel

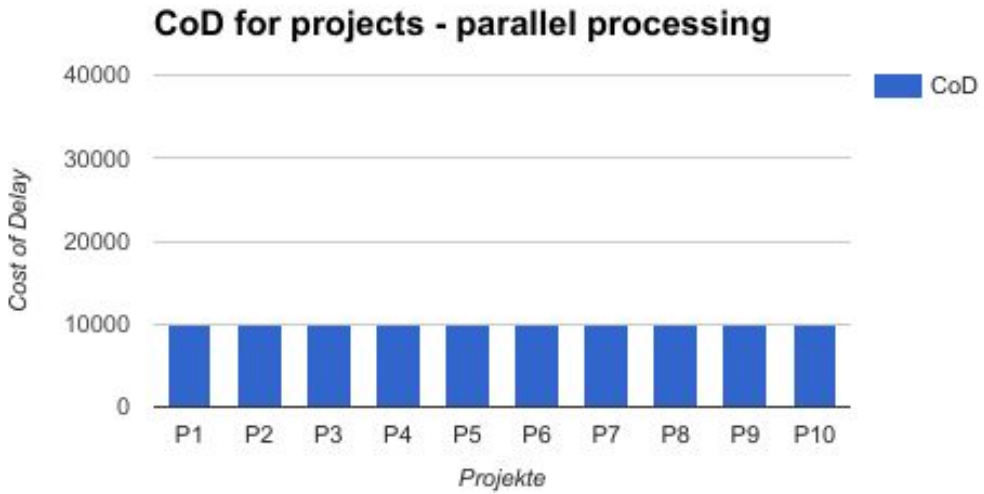
And the winner is... ?

10 weeks

100% done

(on the last day)

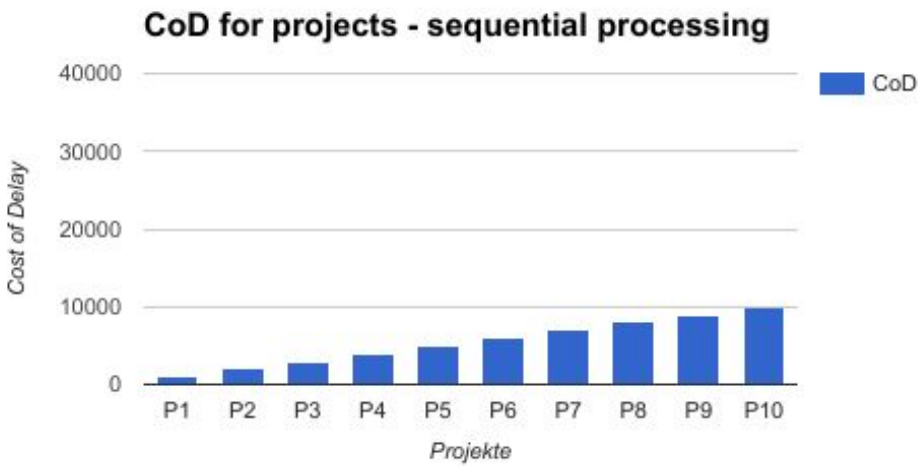
Max parallel - 100.000€ CoD



Projekt	Dauer	CoD/Tag	CoD
P1	10	1000	10000
P2	10	1000	10000
P3	10	1000	10000
P4	10	1000	10000
P5	10	1000	10000
P6	10	1000	10000
P7	10	1000	10000
P8	10	1000	10000
P9	10	1000	10000
P10	10	1000	10000

10 projects, all parallel, 1000€ CoD/day, same efforts

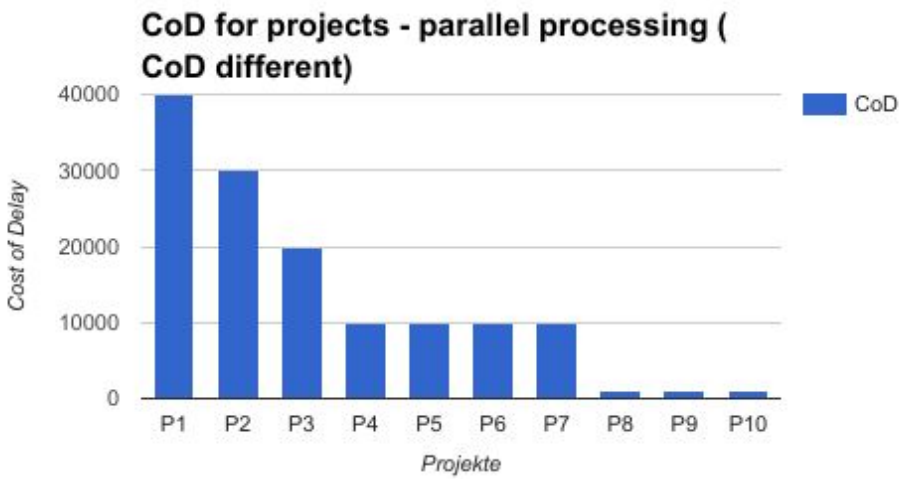
Min parallel - 55.000€ CoD



Projekt	Dauer	CoD/Tag	CoD
P1	1	1000	1000
P2	2	1000	2000
P3	3	1000	3000
P4	4	1000	4000
P5	5	1000	5000
P6	6	1000	6000
P7	7	1000	7000
P8	8	1000	8000
P9	9	1000	9000
P10	10	1000	10000

10 projects, all sequential, 1000€ CoD/day, same efforts

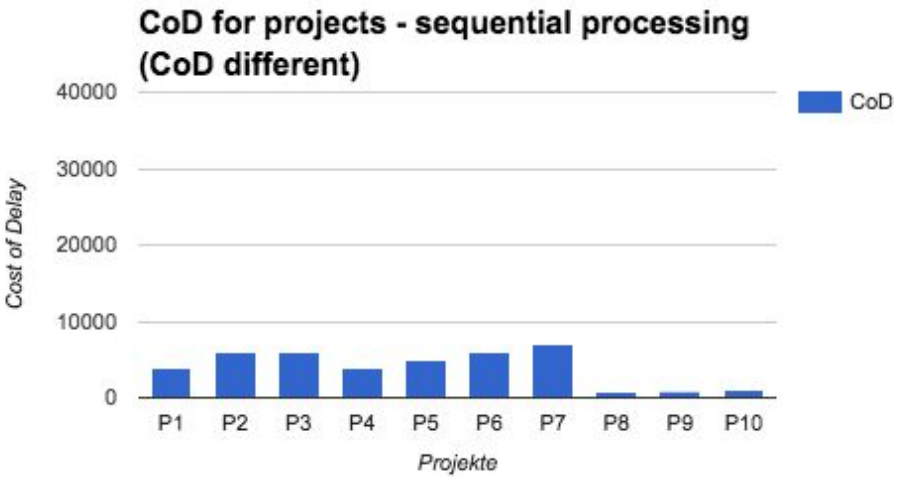
Max parallel - 133.000€ CoD



Projekt	Dauer	CoD/Tag	CoD
P1	10	4000	**40000**
P2	10	3000	30000
P3	10	2000	20000
P4	10	1000	10000
P5	10	1000	10000
P6	10	1000	10000
P7	10	1000	10000
P8	10	100	1000
P9	10	100	1000
P10	10	100	**1000**

10 projects, all parallel, different CoD/project, same efforts

Min parallel - 40.700€ CoD



Projekt	Dauer	CoD/Tag	CoD
P1	1	4000	**4000**
P2	2	3000	6000
P3	3	2000	6000
P4	4	1000	4000
P5	5	1000	5000
P6	6	1000	6000
P7	7	1000	7000
P8	8	100	800
P9	9	100	900
P10	10	100	**1000**

10 projects, all sequential, different CoD/project, same efforts

133.000€

For all parallel with different CoD – That's a lot of money

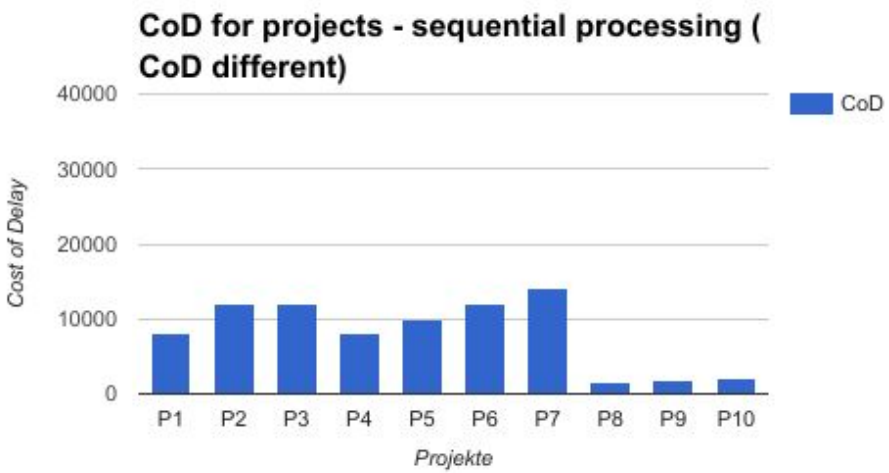
40.700€

What a reduction … if finishing project by project, starting with highest CoD

Worst case 226% more

CoD in action!

Min parallel - half of people involved - 81.400€ but 20 days



Projekt	Dauer	CoD/Tag	CoD
P1	2	4000	8000
P2	4	3000	12000
P3	6	2000	12000
P4	8	1000	8000
P5	10	1000	10000
P6	12	1000	12000
P7	14	1000	14000
P8	16	100	1600
P9	18	100	1800
P10	20	100	2000

10 projects, all sequential, different CoD/project, same efforts but viewer half the people working on it

Read more

- The Principles of Product Development Flow
- Great explanations by BlackSwanFarming
- How to measure anything by Douglas Hubbard
- Cost of Delay – how to find the best sequence for your feature development
- Cost of Delay – a key economic metric

Appendix - fictitious project examples

Exercise: Place the following 10 project examples in the shown cost of delay matrix. Please distinguish urgency and value. Discuss the distribution in your group. Every group has one observer who shares her observations afterwards.

Project 1 - 1st of May special product

On the 1st of April we are on track with our project to offer special products for the holiday on the 1st of may. We assume it will take 3 more weeks to complete everything. Based on the forecast from marketing there can be 10.000 more orders on the 1st of may with this special offers. With every order we earn on average 20€.

Project 2 - Technical debt

We accumulated technical debt while preparing for the last release. As soon as we clean it up two developers can save ½ a day for manual maintenance each week. On average a developer earns 400€/day. The developers estimated the cleanup to take around 4 days.

Project 3 - CRM vendor selection (1)

We need a CRM to increase sales by 100.000€/month. Vendor A costs 50.000€ and it needs 8 weeks to integrate it. It includes all necessary functionality.

Project 4 - CRM vendor selection (2)

We need a CRM to increase sales by 100.000€/month. Vendor B costs 100.000€ and it needs 4 weeks to integrate it. It includes all necessary functionality.

Project 5 - Penalty payments

It’s the 25th of April and the new legal regulation that all offered prices have to be displayed in green is enforced by the 1st of May. Each day we miss this requirement forces us to pay a penalty of 50€. It takes us about 4 days to fix it.

Project 6 - The growing bug

We discovered an interesting bug in a legacy part of our payment module. When the payment method “Holopay” is used it happens that we ignore Cent payments and instead interpret it as further parts of the number. So - if the customer has to pay 10,5€, we withdraw 105€. Currently it does not cause any harm, as it just appears when the payment method “Holopay” is used. We plan to activate this payment in 2 months. “Holopay” will be used by around 1000 customers per day.

Developers mentioned it will take about 2 weeks to fix it.

Project 7 - The grown bug

We discovered an interesting bug in a legacy part of our payment module. When the payment method “Holopay” is used it happens that we ignore Cent payments and instead interpret it as further parts of the number. So - if the customer has to pay 10,5€, we withdraw 105€. Currently it does not cause any harm, as it just appears when the payment method “Holopay” is used. We plan to activate this payment in 3 weeks. “Holopay” will be used by around 1000 customers per day.

Developers mentioned it will take about 2 weeks to fix it.

Project 8 - The risky one

Our security team discovered a vulnerability that will cause a damage of 10.000€/day when detected from outside. The probability that it will be detected by attackers is about 10%. It takes about two days to fix it.

Project 9 - Nearly done

Our project “magic horse” is about to be finished soon. After one year development time, it just will take one more month to finish it. When finished we expect an daily additional revenue of about 100€.

Project 10 - Enter the market

We are about to finish a new product (remaining efforts are estimated to take about 4 weeks). There is not yet a comparable product available by competitors but we know they are working on it too and are about to finish it within the next 3 months. Based on market analysis we can earn 100€/order and we expect that about 100 customers will use it daily. All based on the assumption that we enter the market first. If we miss that, only about 10 customers will use it daily.