

# signal

A new kind of remote employee management

*Dan White - VPO, Copenhagen 31.10.18*

“True intuitive expertise is learned from prolonged experience with good feedback on mistakes”.

*Daniel Kahneman*



**How to add \$24,000 per pilot annually to the bottom line, and help the environment at the same time**

Is what's important to the company, as important to the individual?



**signal**

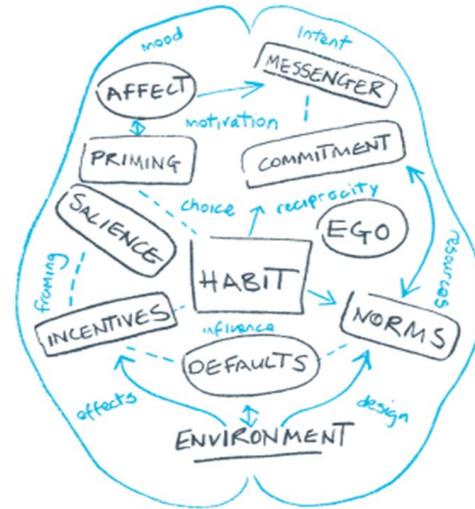


## The toolbox

- M** – Messenger
- I** – Incentives
- N** – Norms
- D** – Defaults
- S** – Saliience
- P** – Priming
- A** – Affect
- C** – Commitment
- E** - Ego

## MINDSPACE

*Influencing behaviour through public policy*



# TWO LETTERS, ONE DIFFERENCE

Dear Sir/Madam

[www.hmrc.gov.uk](http://www.hmrc.gov.uk)  
Date of issue 4 August 2011  
Reference REFERENCE NUMBER

Please pay £9999999999.99

Our records show that your Self Assessment tax payment is overdue.

It is easy to pay. Please call the phone number above to pay by debit card, credit card, or Direct Debit.

You can also pay using internet and telephone banking. For more information on when and how to pay, go to [www.hmrc.gov.uk/payinghmrc](http://www.hmrc.gov.uk/payinghmrc)

If you don't believe that this payment is overdue, please contact us on the number above.

If you have already paid, thank you. If not, please act now.

Yours faithfully

Officer of Revenue and Customs

Dear Sir/Madam

[www.hmrc.gov.uk](http://www.hmrc.gov.uk)  
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Please pay £9999999999.99

Our records show that your Self Assessment tax payment is overdue.

Nine out of ten people pay their tax on time.

It is easy to pay. Please call the phone number above to pay by debit card, credit card, or Direct Debit.

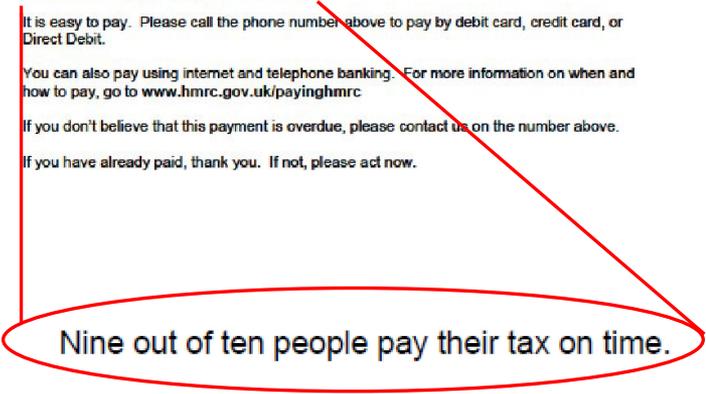
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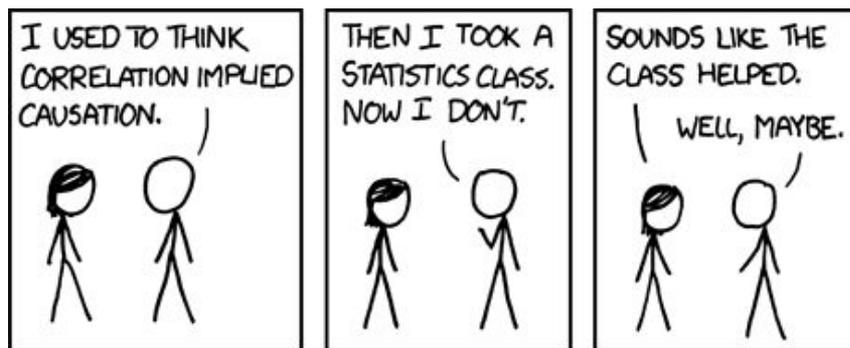


Nine out of ten people pay their tax on time.

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# MEASURING CHANGE: THE EFFECTIVENESS OF PROPOSED SOLUTIONS

1. How do we **know** our intervention has made a difference?
2. What is our measured outcome?





# The First *Impact Vertical*: Aviation



Jet fuel prices have risen by 37.5% in the last year and are rising. Fuel represents 30-40% of an airline's operating costs. This is many \$millions for most airlines.



Civil aviation contributed to 2% of all man-made carbon emissions in 2017 (IATA 2018).

# CURRENT APPROACHES

Fuel

Hardware

Regulation

# Signal: We've Proved it Works!



2015: First experiment

2016: Began building Signal

2017: First prototype

2018: Ready for field testing

**signal**

# CAPTAIN EFFORT ON THREE MARGINS

1.

## FUELING

Proportion of flights for which the correct fuel calculation was completed and fuel load adjusted as necessary.



2.

## FLYING

Proportion of flights for which actual fuel use is *less* than planned fuel use (e.g., optimised speed, altitude, etc.).



3.

## TAXI-IN

Proportion of flights for which at least one engine was shut off during taxi in.



# DESIGN

- No selection into experiment
- But captains were aware of the experiment
- Randomization using all baseline data

	Information	Targets	Prosocial incentives
Control			
Group 1	✓		
Group 2	✓	✓	
Group 3	✓	✓	✓

## Fuel and carbon efficiency report for Capt. John Smith

Below is your monthly fuel and carbon efficiency report for **February 2014**.

### 1. ZERO FUEL WEIGHT

*Proportion of flights for which the ZFW calculation was completed and fuel load adjusted as necessary*

**RESULT: 0% of flights**

### 2. EFFICIENT FLIGHT

*Proportion of flights for which actual fuel use is less than planned fuel use (e.g., optimised speed, altitude etc)*

**RESULT: 75% of flights**

### 3. REDUCED ENGINE TAXY IN

*Proportion of flights for which at least one engine was shut off during taxi in*

**RESULT: 25% of flights**

We will continue to keep you updated on your monthly performance for the next **5 months**, John.

*Please see reverse side for further details of the three behaviours.*

**Questions?** We are here to help! Please email us at [project\\_email.com](mailto:project_email.com).

## Fuel and carbon efficiency report for Capt. John Smith

Below is your monthly fuel and carbon efficiency report for **February 2014**.

### 1. ZERO FUEL WEIGHT

*Proportion of flights for which the ZFW calculation was completed and fuel load adjusted as necessary*

**TARGET: 75% of flights**  
**RESULT: 0% of flights**

You **MISSED** your target.

### 2. EFFICIENT FLIGHT

*Proportion of flights for which actual fuel use is less than planned fuel use (e.g., optimised speed, altitude etc)*

**TARGET: 25% of flights**  
**RESULT: 75% of flights**

You **ACHIEVED** your target.

### 3. REDUCED ENGINE TAXY IN

*Proportion of flights for which at least one engine was shut off during taxi in*

**TARGET: 25% of flights**  
**RESULT: 25% of flights**

You **ACHIEVED** your target.

1) Information

2) Target

### WHAT WAS YOUR OVERALL OUTCOME?

Due to your fuel and carbon efficient decision making last month, you achieved **2 out of your 3 targets**.

**WELL DONE!** We will continue to keep you updated on your monthly performance for the next **5 months**, John.

Please continue to fly efficiently **7 months** to achieve your targets.

*Please see reverse side for further details of the three behaviours.*

**Questions?** We are here to help! Please email us at [project\\_email.com](mailto:project_email.com).

## Fuel and carbon efficiency report for Capt. John Smith

Below is your monthly fuel and carbon efficiency report for **February 2014**.

### ZERO FUEL WEIGHT

*Proportion of flights for which the ZFW calculation was completed and fuel load adjusted as necessary*

TARGET: 75% of flights  
RESULT: 0% of flights

You **MISSED** your target and missed out on £10 in donations to CHARITY.

### 2. EFFICIENT FLIGHT

*Proportion of flights for which actual fuel use is less than planned fuel use (e.g., optimised speed, altitude etc)*

TARGET: 25% of flights  
RESULT: 75% of flights

You **ACHIEVED** your target and earned £10 in donations to CHARITY.

### 3. REDUCED ENGINE TAXY IN

*Proportion of flights for which at least one engine was shut off during taxi in*

TARGET: 25% of flights  
RESULT: 25% of flights

You **ACHIEVED** your target and earned £10 in donations to CHARITY.

1) Information

2) Target

3) Prosocial

### WHAT WAS YOUR OVERALL OUTCOME?

Due to your fuel and carbon efficient decision making this month, you have secured **£20 out of a possible £30 for your chosen charity, CHARITY.**

**WELL DONE!** We will continue to keep you updated on your monthly performance, John.

For the next **5 months**, you still have the ability to give **£150 to CHARITY**. Please continue to fly efficiently next month so that your chosen charity does not lose out.

*Please see reverse side for further details of the three behaviours.*

**Questions?** We are here to help! Please email us at [project\\_email.com](mailto:project_email.com).

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## RESULTS

	Eff. Fuel Load	Efficient Flight	Efficient Taxi
Control	+1.8%	+14.4%	+12.5%
Information	+2.5%	+16.1%	+20.6%
Targets	+3.9%	+18.1%	+22.2%
Prosocial	+4.3%	+19.1%	+21.4%

Estimated fuel savings: **8.5 million kg (£4 million)**

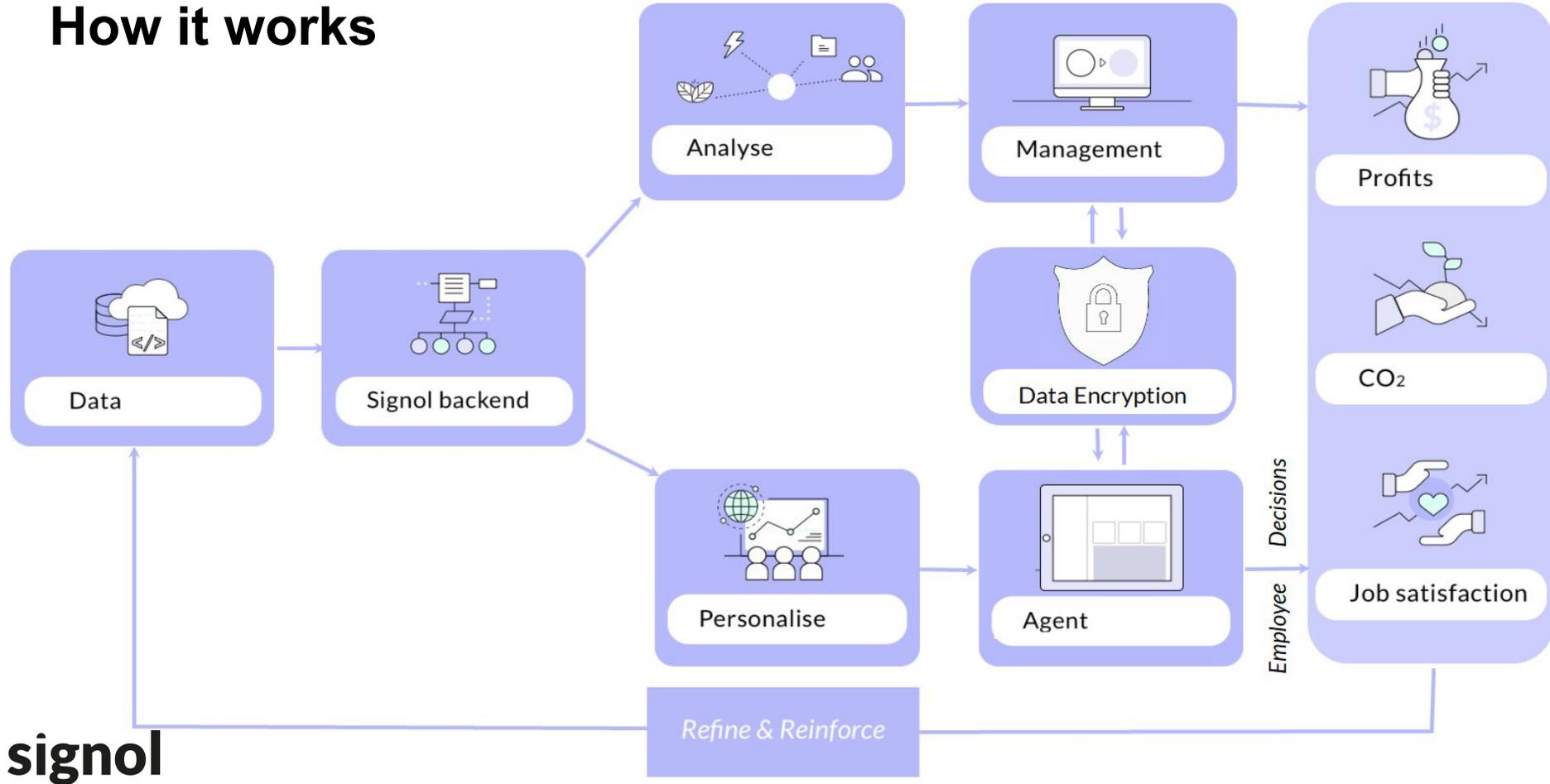
Estimated CO<sub>2</sub> savings: **27 million kg**

Signal is a multi-platform solution that applies the world's most advanced Behavioral Economics to drive better business, environmental and social outcomes.

# Signal

- can reduce airline fuel usage by as much as **34,000 kg** per captain annually
- can reduce CO<sub>2</sub> emissions by as much as **100 tonnes** per captain annually (under CORSIA, the price of carbon will be valued at \$3-33 per tonne of CO<sub>2</sub>)
- can increase captains' reported job satisfaction—to the same extent as moving from poor to good health under some conditions

# How it works



# Another direction

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- How much value does behavior change have for shipping?
- What behaviors are important *and* measurable?
- What are the most effective modes of communication?

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# Team Leads

**Chief Strategy  
Officer &  
Co-Founder**



Professor Robert  
Hahn

**Chief Research  
Officer &  
Co-Founder**



Professor Robert  
Metcalfe

**Chief Executive  
Officer &  
Co-Founder**



Daniel White

**Project Manager**



Lee-Ann Perkins

**Full-Stack  
Developer**



Vlad Predovic

We would like to partner with **you** to help better manage 21<sup>st</sup> century maritime challenges.

## How?

- By making better use of behavioural science and the existing data
- By designing experiments together that causally demonstrate what works and by how much

A unique solution to help pollution, people, and profits

Thank you