



Rewards and incentives in the SOCRATES^{2.0} project

Context

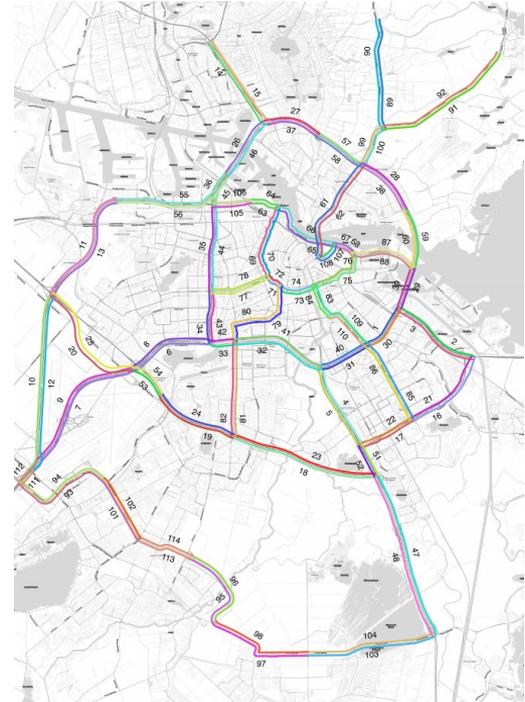
Within the **ONTF Amsterdam** use case, end-user service providers (**EUSPs**) Be-Mobile, BMW and TomTom were requested (via a Service Request, **SR**) to ask their users to **avoid a network link** if that link was forecasted to become congested within the next 15 minutes.

While avoiding the network link is **optimal for collective interests**, it might go **against individual user interests**. Reducing travel time for some users may lead to increasing travel time for others.

So the win-win-win is compromised: by following up SR's, EUSPs may offer sub-optimal services to some end users.

The win-win-win can only be restored through a system of **REWARDS** (to EUSPs) and **INCENTIVES** (to end users) for avoiding the network link.

**SOCRATES^{2.0} ONTF
Amsterdam Network**



In this slide deck

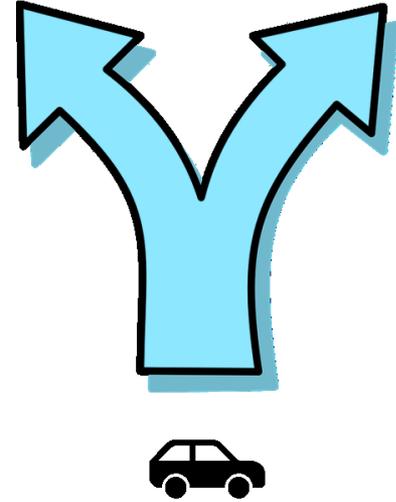
1. REWARDS

- Why do we need rewards?
- The 5 principles of a good reward system
- Rewards in Socrates^{2.0}
- What's next?

2. INCENTIVES

- Why do we need incentives?
- Incentives in Socrates^{2.0}
- What's next?

3. CONCLUDING THOUGHTS



1. REWARDS

A **REWARD** is a monetary payment to EUSPs for generating **IMPACT**

When EUSPs contribute to the identified and agreed common goals in the SOCRATES^{2.0} ONTF Amsterdam use case, they receive a payment. For example, if an EUSP manages to convince the end user to avoid a targeted link the EUSP will be awarded a payment.

Why do we need rewards?

PARADOX

In those cases where an SR has **biggest potential impact**... EUSPs have **no interest** to follow up on them



Rewards can resolve the paradox

EXAMPLE: A EUSP receives an SR to reroute an end user via route B, avoiding route A. **Two cases** are possible.



CASE I: Route B is already the fastest route for end user

Interests of EUSP are aligned with SR: EUSP will advise Route B anyway

but SR has no impact: the end user would have taken Route B irrespective of SR

CASE II: Route A is faster than Route B for end user

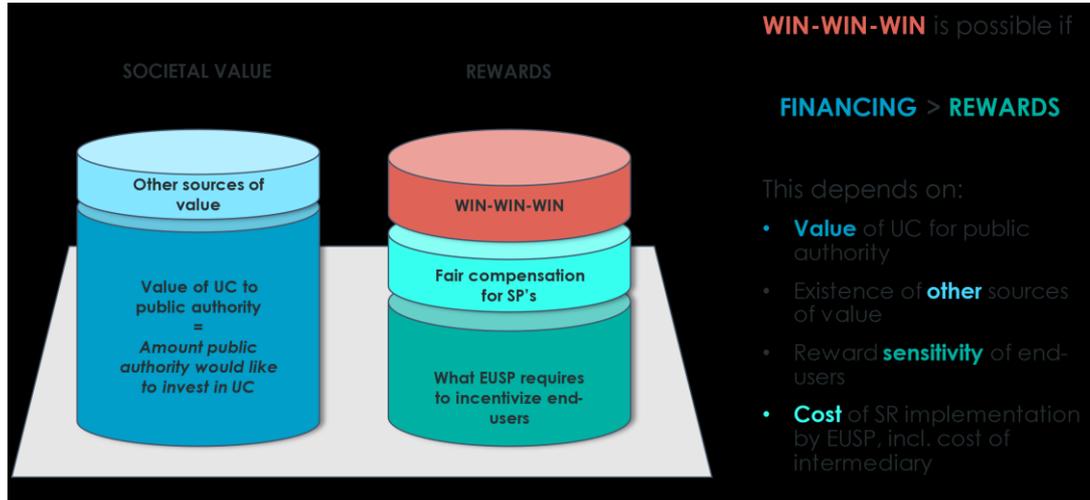
Interests of EUSPs are not aligned with SR: EUSP offers slower Route B to end users

but SR could have impact: if critical mass is reached, congestion on route A could be avoided

The 5 principles of rewards

- 1. Focus on PUBLIC impact:** Rewards align interests of EUSPs with public goals
- 2. Ensure PARTICIPATION by EUSPs:** EUSPs are at least compensated for all costs incurred to generate an impact
- 3. Aspire a win-win-win:** Total reward amount should be less than the total (monetary) value of the use case to the public authority (see next slide).
- 4. Determine rewards based on IMPACT:** EUSPs should be compensated based on the impact they generate, rather than on how they generate this impact. This leaves EUSPs the autonomy to implement their own services, increasing efficiency by letting the market work.
- 5. Measure and validate by an ASSESSOR:** Impact by EUSPs should be measurable so that it can be validated by a trusted third party – the Assessor.

Aspire a win-win-win

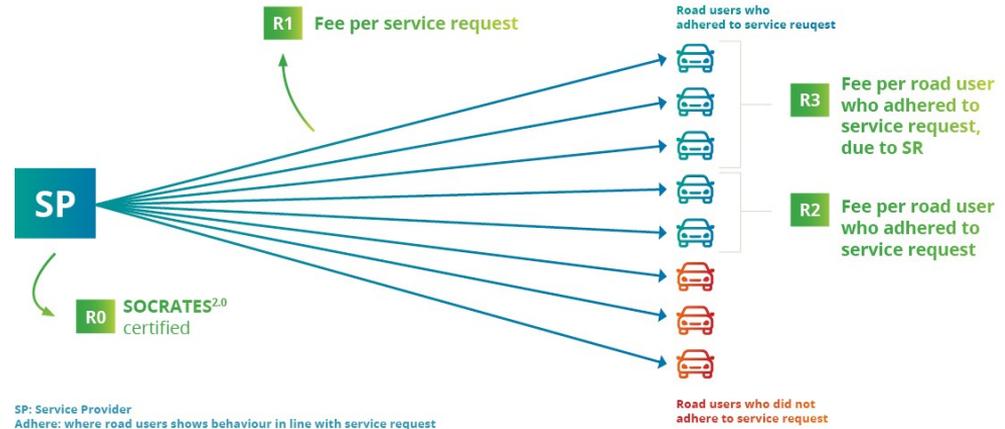


Total reward amount should be less than the total (monetary) value of the use case to the public authority

Rewards in SOCRATES^{2.0}

Four different reward types were identified

- **R0 – SOCRATES^{2.0} certified:** The EUSP receives a one-time fee as a reward for participation in the ecosystem.
- **R1 – EUSP follow-up:** The EUSP receives a fee per relevant end user to which it relayed the service request.
- **R2 – End user follow-up:** The EUSP receives a fee per relevant end user who adhered to the service request (i.e. who showed behaviour in line with the service request).
- **R3 – SR impact:** The EUSP receives a fee per relevant end user who adhered to the service request, and who would not have done so without the service request.



Rewards in SOCRATES^{2.0}

The role of the Assessor

The Assessor is the neutral third party who

- measures and validates the impact, as communicated by EUSPs; and
- translates the measured impact into validated (monetary) reward.

An important tool for the Assessor is the Waterfall Report. The report breaks down the targeted end users for each SR based on

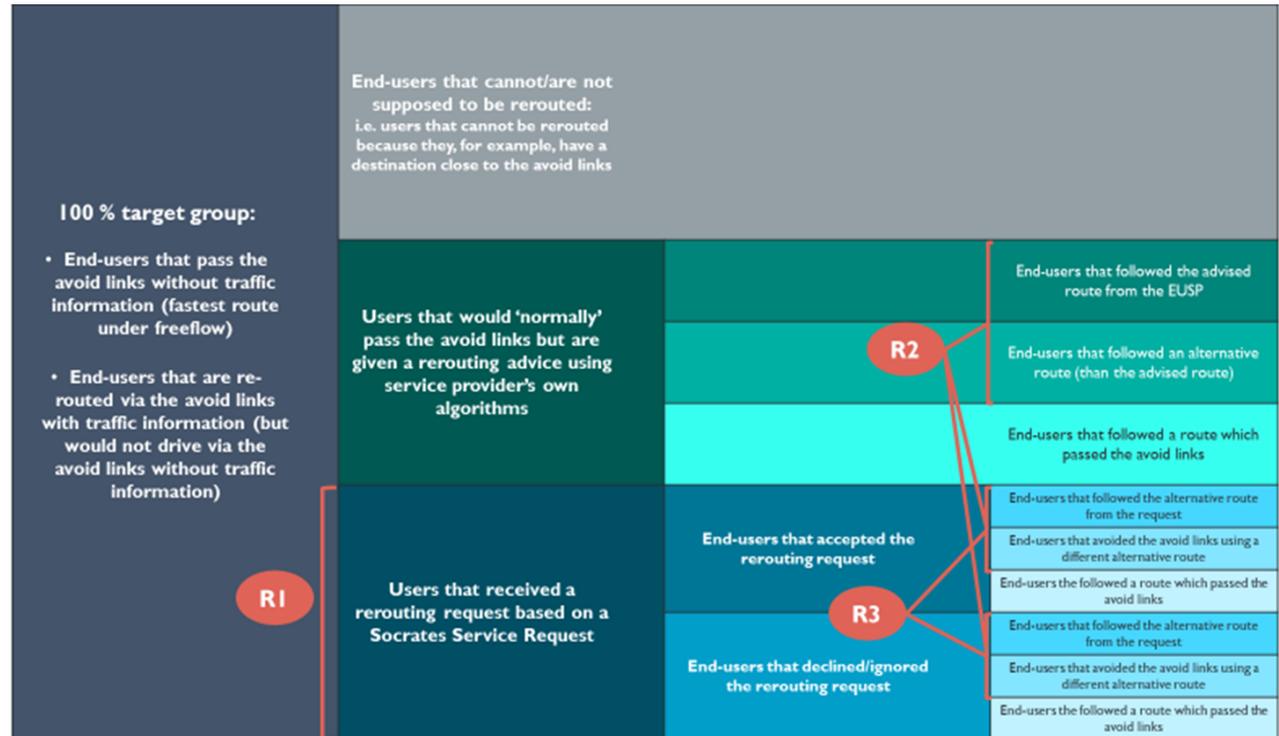
- whether they were offered an alternative route by the EUSP;
- whether they accepted this offer; and
- whether they ended up adhering to the SR (e.g. avoided the link to be avoided)

The next slide provides a schematic overview of the Waterfall Report for ONTF Amsterdam.

Rewards in SOCRATES^{2.0}

Schematic view of the Waterfall Report for ONTF Amsterdam

Red labels indicate the reward type determined by the specific waterfall groups



FAST

SAFE

GREEN

SOCRATES^{2.0}

Rewards in SOCRATES^{2.0}

Reward System Procedure

Six Steps

1. **Collect** relevant data [task for EUSP]
2. **Create Waterfall** Report [task for EUSP]
3. **Validate** Waterfall Report [task for Assessor]
4. **Determine reward** and communicate reward to Public Authority and EUSP [task for Assessor]
5. **Review** reward [task for Public Authority]
6. **Sign-off** off on reward (and payment) [task for Public Authority]



Rewards – What's next?

In **SOCRATES^{2.0}** the reward system **remained largely theoretical** (except for the implementation of the Waterfall Report). In a potential follow-up project, the following elements should be tackled:

- **Implement Reward System Procedure** with (initially fake, but later real) reward payments.
- **Gather insights and consolidate findings on potential market organisation**: Should an intermediary determine the price of rewards? Should we let the market work instead (and e.g. tender off impact)?
- **Establish scope for win-win-win**: For which use cases is win-win-win achievable? Under what circumstances? How do we determine societal gain?

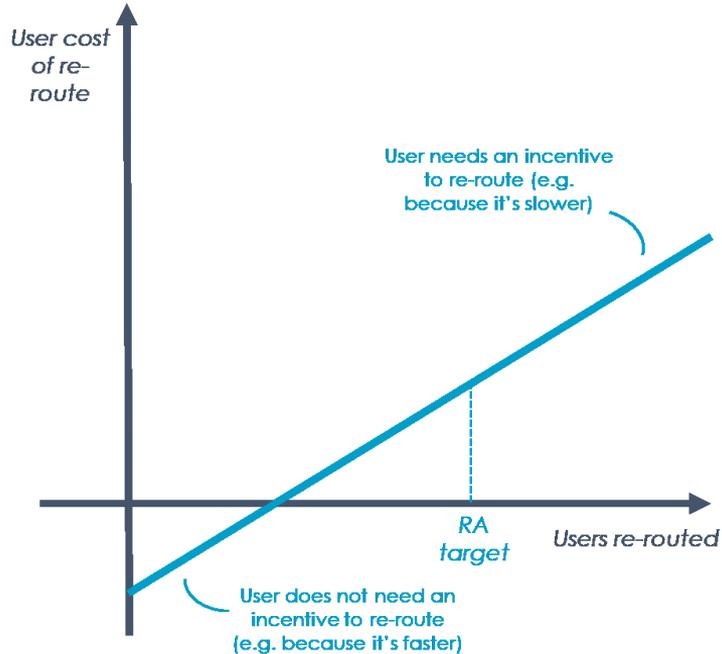
2. INCENTIVES

An **INCENTIVE** is a compensation to end users for generating **IMPACT**

End users may be compensated (via monetary payment, or in-kind) for costs incurred while taking individually sub-optimal mobility choices that serve public mobility goals. This ensures that users are not disadvantaged while pursuing these goals.

Why do we need incentives?

Setting the scene



Users can be seen as **suppliers of reroutes** (with the Road Authority demanding reroutes)

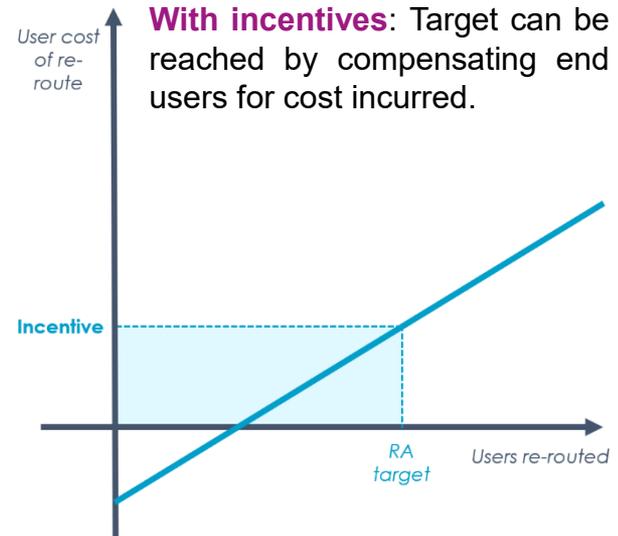
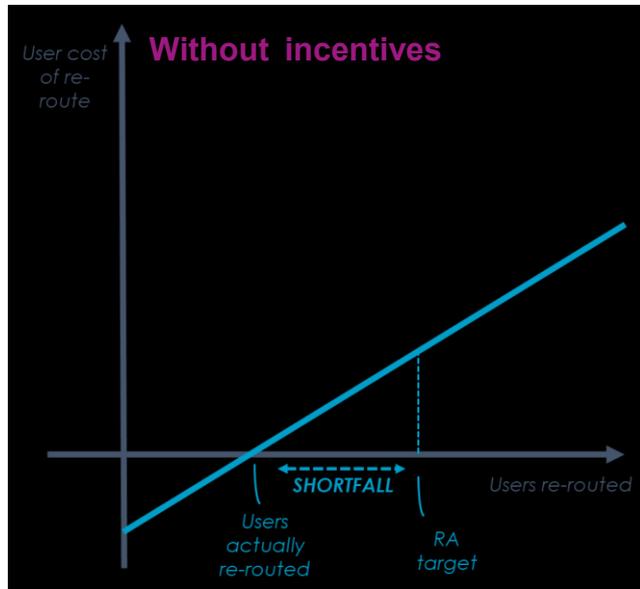
Each user has a rerouting **cost**

- *Some users do not incur a cost to reroute as they gain from rerouting (e.g. because rerouting is faster)*

Ordering users by cost level produces an upward sloping **re-routing 'supply curve'**

Why do we need incentives?

Incentives helps to reach critical mass needed to achieve impact



Incentives in SOCRATES^{2.0}

Incentives as implemented in Flitsmeister – incentives IN KIND

User gets rerouting advice



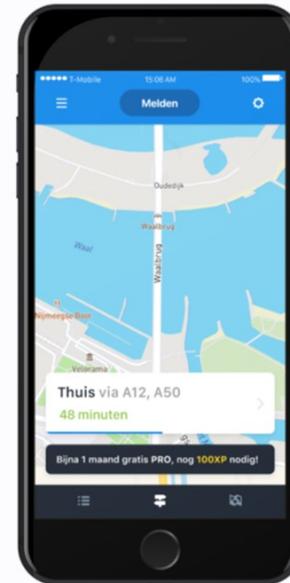
User follows up rerouting advice



User reaches destination and earns points



User collects points towards PRO subscription



FAST

SAFE

GREEN

SOCRATES^{2.0}

Incentives – What's next?

SOCRATES^{2.0} pioneered an in-kind incentive system (Flitsmeister PRO subscriptions). The focus was first on the **implementation and validation of the technical chain**.

While early results suggest users are enthusiastic about the system, the limited amount of data points gathered does not allow us to obtain **robust insights on how the system could be used to increase the impact** of service requests.

Follow-up projects should focus on (further) **quantifying the sensitivity of users to incentives (monetary and in-kind)**:

- How much **extra travel time** are users willing to incur for an incentive of X?
- Can the willingness to incur extra travel time be increased through “**nudging**” techniques?
- Can appealing to **altruistic motives** play a role?

3. CONCLUDING THOUGHTS

SOCRATES^{2.0} offered a **unique setting to pilot public-private cooperation. A central theme within the project was the **potential for win-win-win** – for the public, service providers, and road users.**

If such a win-win-win can be achieved, public-private cooperation could provide an **answer to the seeming tension between individual interests (getting from A to B as fast as possible) **and public interests** (improving flow, safety and sustainability of traffic).**

Rewards and incentives constitute a crucial building block of the ecosystem for achieving this win-win-win. The insights gathered within SOCRATES^{2.0} are a first important step towards the win-win-win.