



Promoting Green Transportation via Persuasive Games

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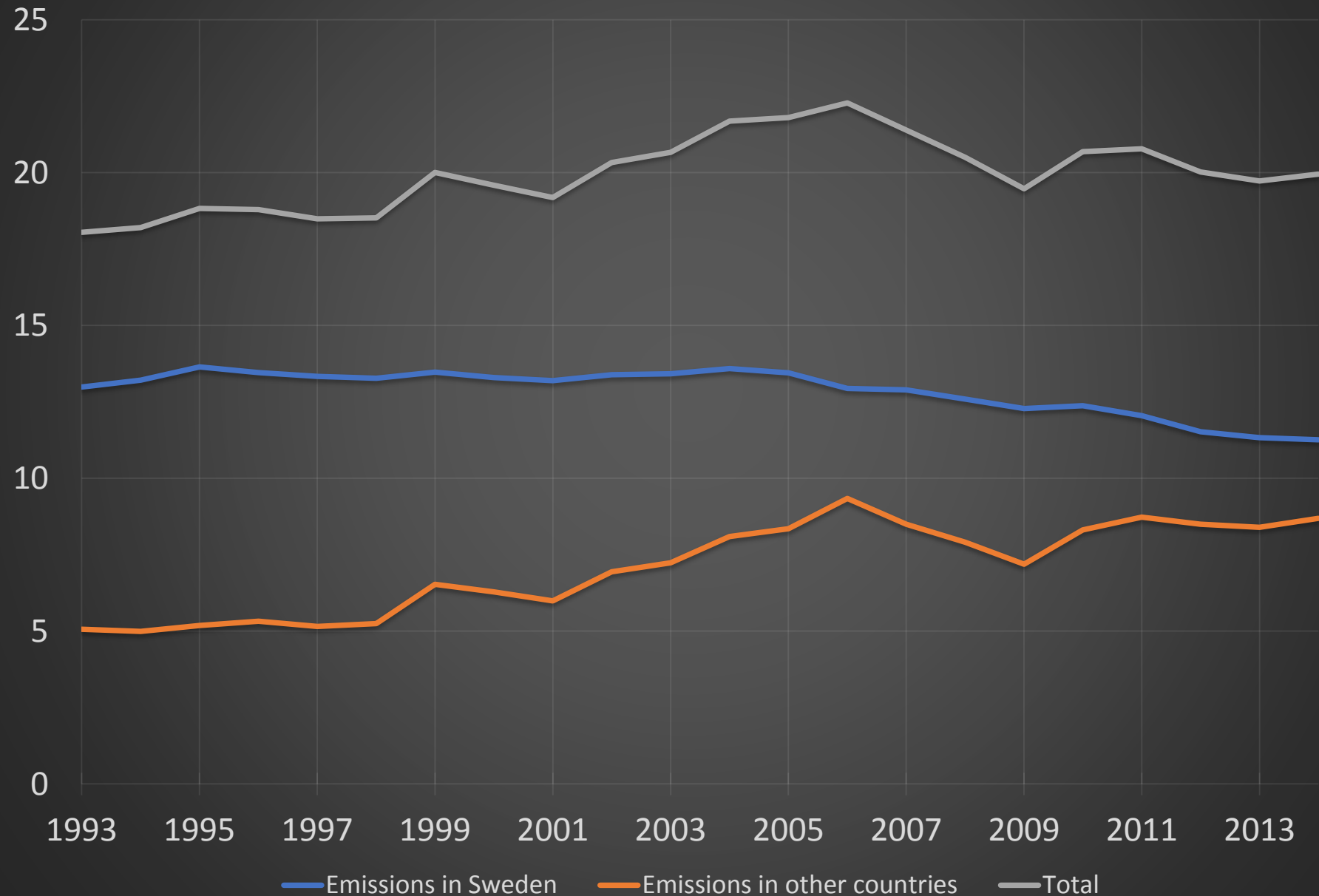
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Swedish Transport-based greenhouse gas emissions, million tons of carbon-dioxide equivalents



Change?

- Technological improvements
- Population control
- Behavioural change

Proposed solution: Persuasive game

- Entertainment Factors to retain player attention
- Game mechanics to stimulate change.

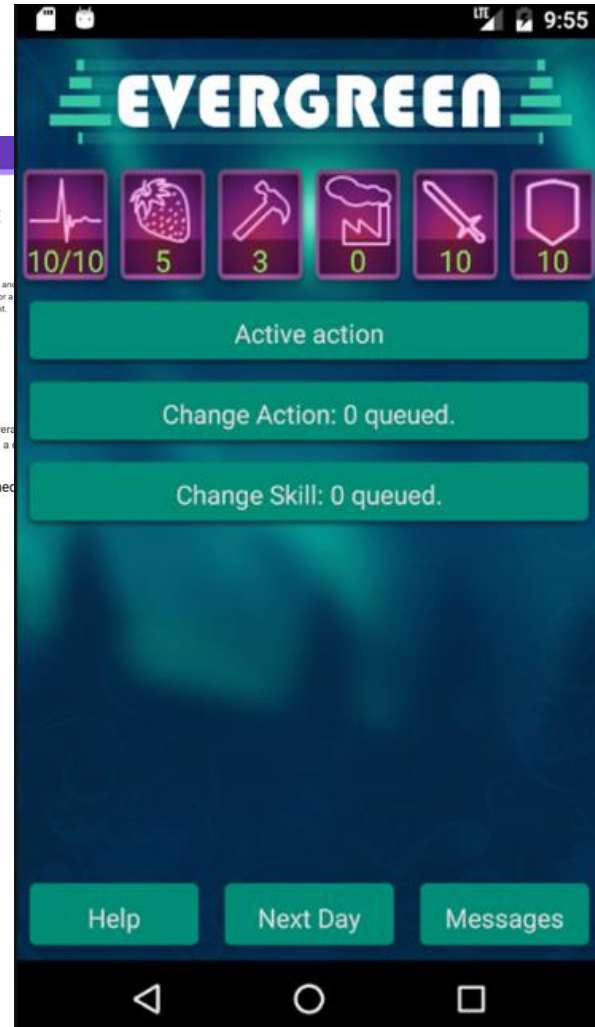
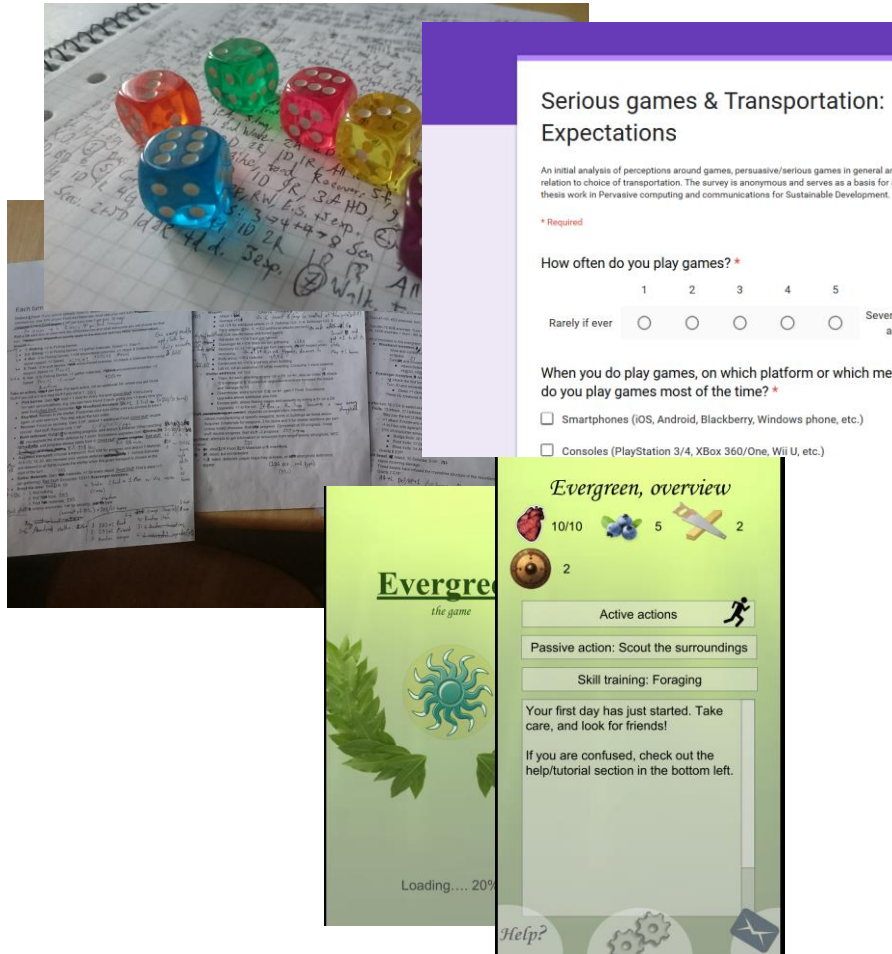
How?

- Good game design.
- Feedback-loop between Reality and In-game world

So,.. again, how?

- Iterated prototype game
- Machine learning used to classify reality
- Detected transports as input in the game.

Methodology – Game Design



- Role-playing Game
- Turn-based Strategy
- Gather resources
- Craft weapons, armor, upgrade dwelling
- Survive attacks of monsters
- Co-operate or compete

Demo (pics)

So, who are you

Name: Tor Strongjaw

GE
RAND

Starting details

Choose Avatar 

Choose Starting Bonus: Food supply

Choose Difficulty: Easiest

Register

EVERGREEN

 Tor Strongjaw


18/18 20 12 0 26 14



Active actions

Event log

Menu

 **HP**

READ DETAILED DESCRIPTION

HP or Hit points are a measure of how wounded or whole, sick or healthy you are. Once this reaches 0 you are knocked out and may be out of the game. HP is by default recovered by 1 point per day, assuming you aren't starving. Use the Recover action if you have been badly hurt.

Select Daily Action

Daily actions

Current Queue

GATHER BERRIES

GATHER MATERIALS

SCOUT THE AREA

RECOVER


BUILD DEFENSES

LOOK FOR PLAYER

Build de

Consume Materials to

You find a Rough Knife in the vicinity.

 -- Day 1 --

Skill Defensive training reached level 1!

Skill Weaponized combat reached level 1!

Skill Parrying reached level 1!

SKILL UP

SKILL UP

SKILL UP

Failed to invent anything new.

Shelter defense progress increased by 6 units. Progress is now at 6 units out of 10.

OK

Select

Trainable Skills

FORAGING

SCAVENGING

FLEET RETREAT

SURVIVAL

ARCHITECTING

MATERIAL EFFICIENCY

Architecting

Increases building speed when building shelter defenses and other structures

Item / Log / Emissions Levels

**Attack** 10.0

READ DETAILED DESCRIPTION

Attack outside: 10 in shelter: 11

Attack damage: 1-6

Attacks per round: 1

Relevant items

CRUDE CLUB  1  1-10  1

Previous Home Next

 Player Harald Fewventured sent you 25.00 units of Materials.

 Player Harald Fewventured sent you 12.00 units of Materials.

 -- Day 10 --

 Shelter defense progress increased by 6 units. Progress is now at 10.9 units out of 30.

Invented a new Armor: Crude Scout's garb

 Recover: Recovered 1.00 units of HP.

You gave the Crude Harvesting tools to sakura.

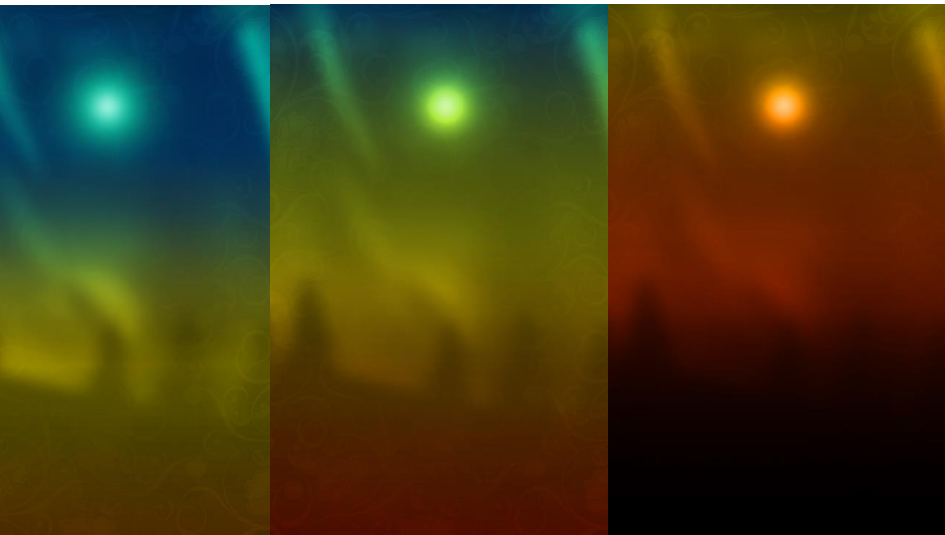
 -- Day 11 --

 Shelter defense progress increased by 5 units. Progress is now at 15.9 units out of 30.

Failed to invent anything new.

 You reduced your emissions by 7.3 points.

OK



Dwelling Levels

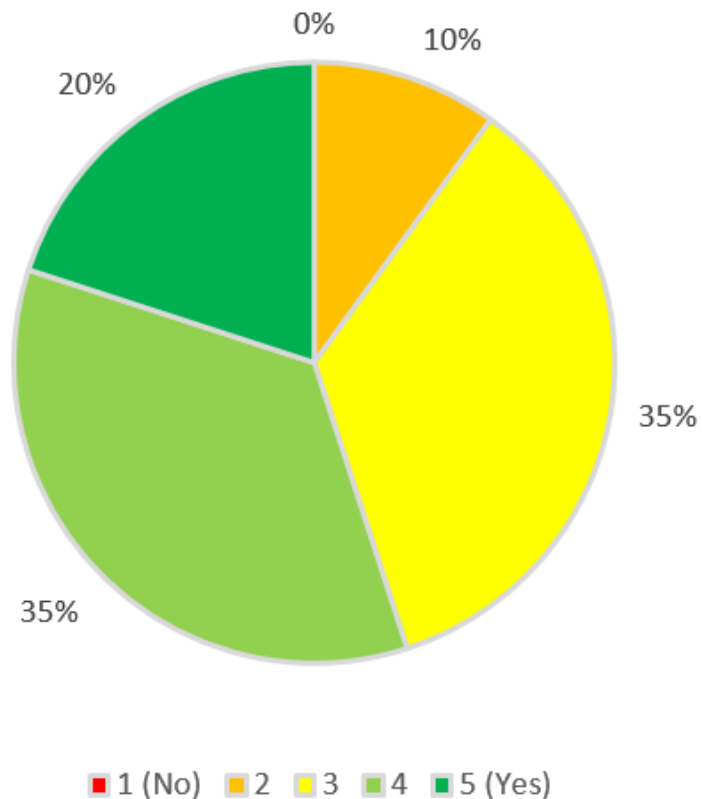


Log Icons



Results – Estimated Behaviour Change

Do you think a game designed to change people's choice of transportation could be successful in general?



Methods

- Questionnaires
- Interviews

People think games can

- impact lifestyle
- change people's choice of transport

4 game-testers

- 10 days or more
- estimated 0-25% of total transport time could be affected.

Discussion

- Iterative design (e.g. RPGs/strategy), Co-operative and competitive interactions, Highlight impact of vehicle usage all impactful for persuasiveness
- Few testers - Bias in possible behaviour change
- Bugs in prototype
- Persuasion may affect short-term if change is not sustained – needs further testing
- Potentially a 100'000 tCO₂e could be saved each year (Sweden, 2014, 5% players, 10% change).

Future work

- Larger tests: more players, longer time
- Measuring and comparing actual changes in detected transports
- Testing persuasiveness for other behavioural changes.

Evergreen:

- Add more game interactions

Conclusion

- Persuasive games may affect up to 25% of transportation time.
- Multi-player and ongoing feedback based on real-life actions seem interesting for players to include into future persuasive games.
- 2 out of 4 test-players still playing the game 50 days after public launch