

The Life and Times of Online Trust

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Context

- Importance of trust in online environments is widely acknowledged.
- Even though trust is important in the real world too, this is even more so online due to the lack of the providers' physical presence and the rare frequency of transactions between two entities.

Trust definition

Trust in an ICT system is a property of individual users of the system representing their subjective view about the system.

Users who don't trust the system are disinclined to use it.

OPTET takes the view that trust is a good thing, because it helps users to benefit from new, innovative ICT systems which they might otherwise reject.

Trust definition broken up

- Two actors: trustor + trustee
- Trustor could be both human or machine
- Risk assessment + decision making
- Two outcomes: trust level and the trustor's decision to engage (or not) with a trustee by taking into account the associated risks and benefits.

A black and white photograph showing a close-up of an adult's hand gently holding a baby's hand. The adult's hand is larger and more wrinkled, while the baby's hand is smaller and smoother. The fingers are interlaced, symbolizing trust and care.

TRUST

... has received sufficient attention, yet general tendency to readily assume that trust is intrinsically beneficial...

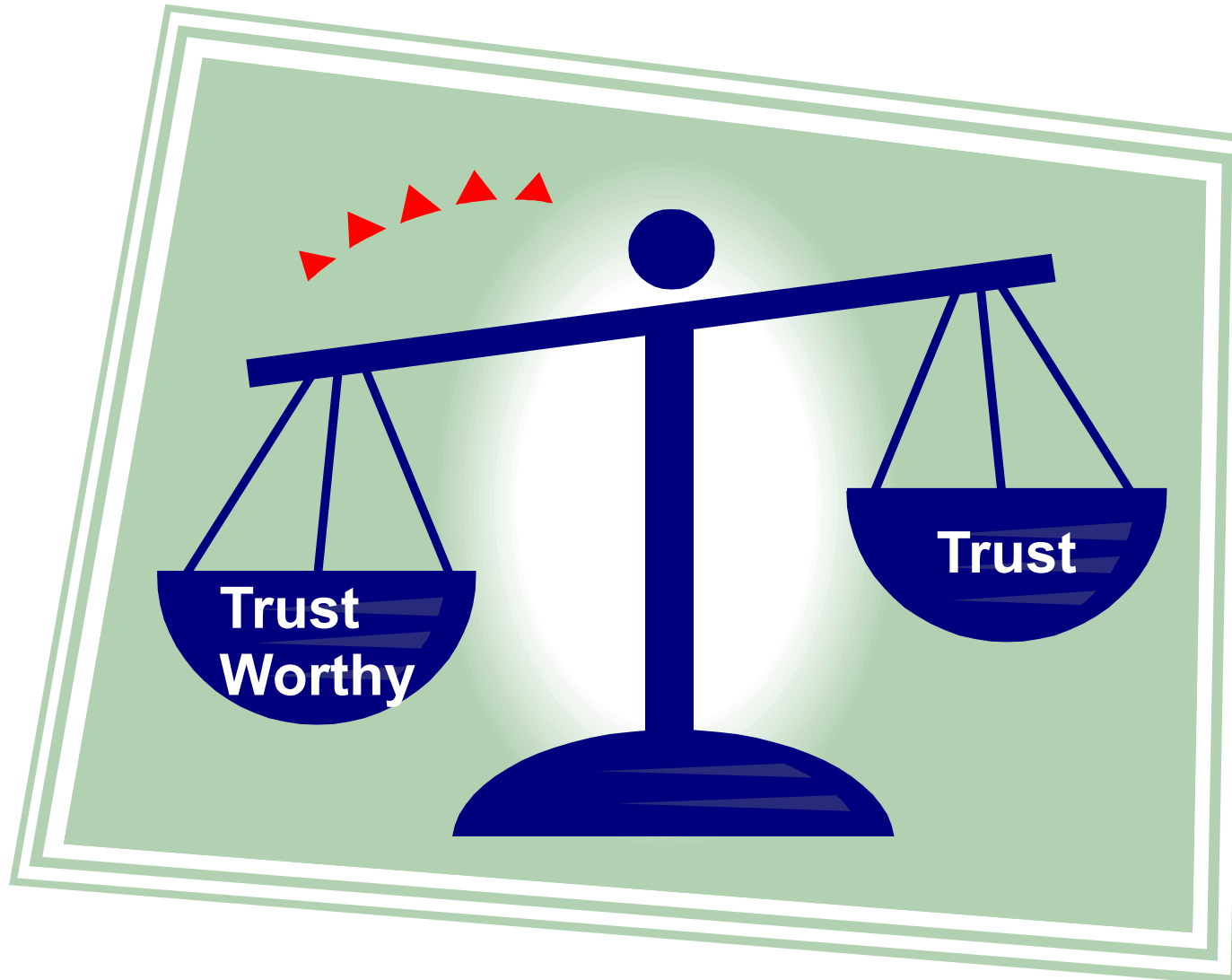
Johnie

Is trust intrinsically beneficial?

- ‘A market in which participants are trusted to the correct degree is as efficient as a market with complete trustworthiness’ *
- Thus, high trust is not panacea but trust should correctly reflect trustworthiness!

* Brainov, Sandholm, “Contracting with uncertain level of trust”, In Proceedings of the 1st ACM conference on Electronic commerce (EC '99)

Finding the correct balance



Information Asymmetry



Gap

Social sciences:

- Trust antecedents
- Impact of 'trust by design' solutions
-

Computer sciences:

- Computational models
- Autonomous decision making
- Reputation systems/recommenders
- ...

Goal

- Explore for both individual trustors as for organisations/ service providers issues related to finding the right balance between Trust and Trustworthiness
- Research and integrate subjective attributes in a trust computational model for individual trustors towards an online system

Results Individual trustors

Methodology

Datamining on 8 trust related concepts:

- **Trust stance**
- Trust beliefs in general professionals
- Institution based trust
- General trust sense levels
- ICT-domain specific sense of trust levels
- **Motivation to engage in trust related seeking behavior**
- **Trust related competences**
- Perceived importance of trustworthiness design elements

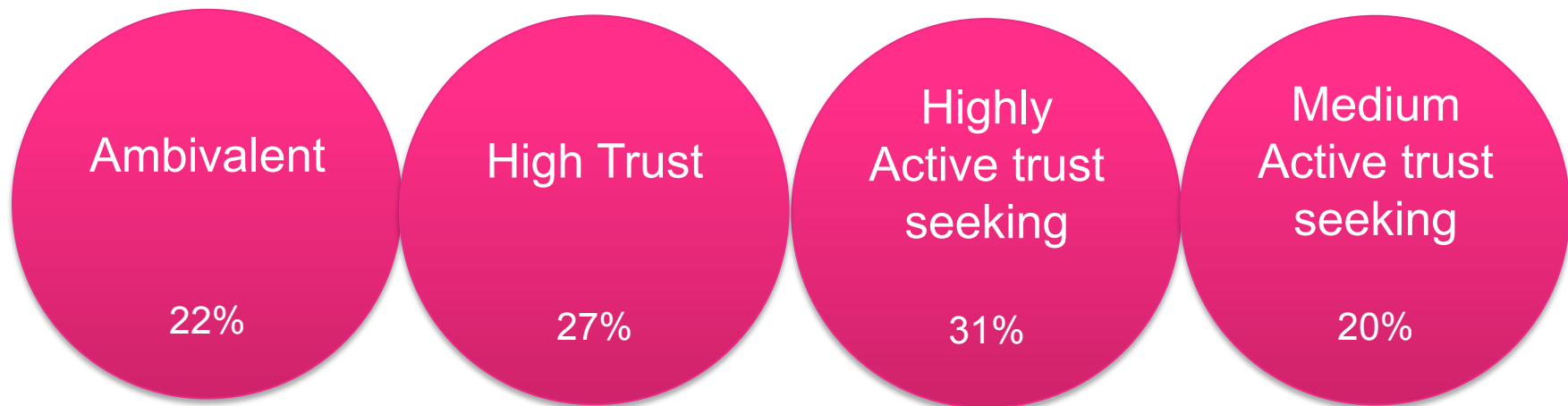
Survey details:

- Online survey
- Period: February-March 2013
- 28 countries
- Major representation of UK (32%) and Greece (18%)
- 90 subjects included in analysis
- Mostly 5 point Likert scale items
- K-means clustering for segmentation purposes
- Anova

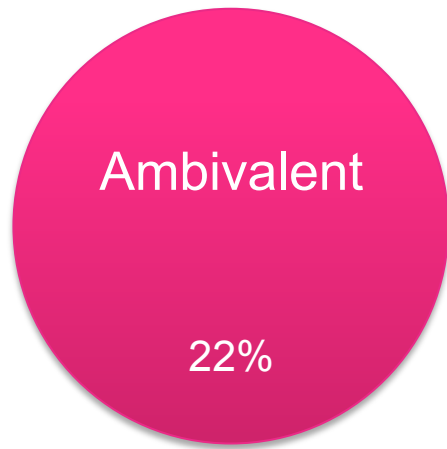
Trust seeking behaviour

| | General (n= 90) | High Trust (n = 24) | Ambivalent (n= 20) | Highly active Trust seeking (n=28) | Medium active Trust seeking (n=18) | Anova | |
|---|--------------------|------------------------|-----------------------|--|--|--------|------|
| | Mean | Mean | Mean | Mean | Mean | F | Sig. |
| Motivation to engage in trust related seeking behavior | | | | | | | |
| I look for information about the reputation of the organization | 4,01 | 3,83 | 3,75 | 4,50 | 3,78 | 4,307 | ,007 |
| I look for information about the (physical) location of the organization | 3,61 | 3,42 | 3,20 | 4,29 | 3,28 | 7,980 | ,000 |
| I look for information about laws that are applicable with regard to my interaction with the organization | 3,07 | 2,75 | 2,50 | 3,86 | 2,89 | 14,627 | ,000 |
| I look for any guarantees regarding confidentiality of the information that I provide | 3,67 | 3,38 | 3,00 | 4,54 | 3,44 | 14,992 | ,000 |
| I look for any information about complaint procedures in case of problems | 3,37 | 2,79 | 2,90 | 4,18 | 3,39 | 14,188 | ,000 |
| I look for any information about who is liable in case of problems | 3,28 | 2,67 | 2,70 | 4,25 | 3,22 | 20,876 | ,000 |
| I look for trust marks or seals of approval | 3,58 | 3,42 | 3,15 | 4,18 | 3,33 | 6,289 | ,001 |

Individual trustors segments



Segment 1: Ambivalent Trust



- Medium to high trust stance
- Moderate seeking activity
- Low competence level
- 'Forced' trust'
- Simple heuristics

Segment 2: High Trust



- High trust stance
- Limited seeking activity
- Medium competence level

Segment 3: Highly active trust seeking



- Low to medium trust stance
- Very thorough trustworthiness investigations beyond cues from service provider
- Medium competence level
- Procedures in case of problems

Segment 4: Medium active trust seeking



- Low to medium trust stance
- Medium level seeking activity
- Medium to high competence level
- Procedures in case of problems

Trust levels

| | General (n= 90) | High Trust (n = 24) | Ambivalent (n= 20) | Highly active Trust seeking (n=28) | Medium active Trust seeking (n=18) | Anova | |
|------------------------------|--------------------|------------------------|-----------------------|--|--|--------|-------------|
| | Mean | Mean | Mean | Mean | Mean | F | Sig. |
| ICT-domain | | | | | | | |
| Online stores | 3,92 | 4,21 | 4,00 | 3,57 | 4,00 | 5,247 | ,002 |
| Social networks | 3,30 | 3,88 | 3,35 | 2,96 | 3,00 | 4,266 | ,007 |
| Professional online networks | 3,69 | 4,21 | 3,63 | 3,30 | 3,63 | 4,474 | ,006 |
| Online governmental services | 4,17 | 4,63 | 4,45 | 3,71 | 3,94 | 10,214 | ,000 |
| Online banking | 4,27 | 4,63 | 4,70 | 3,75 | 4,11 | 7,999 | ,000 |
| Online health services | 3,67 | 4,33 | 4,00 | 3,00 | 2,89 | 11,014 | ,000 |
| Online review sites | 3,19 | 3,30 | 3,05 | 3,21 | 3,18 | ,391 | ,760 |

Results Organisations / service providers

Methodology Organisations

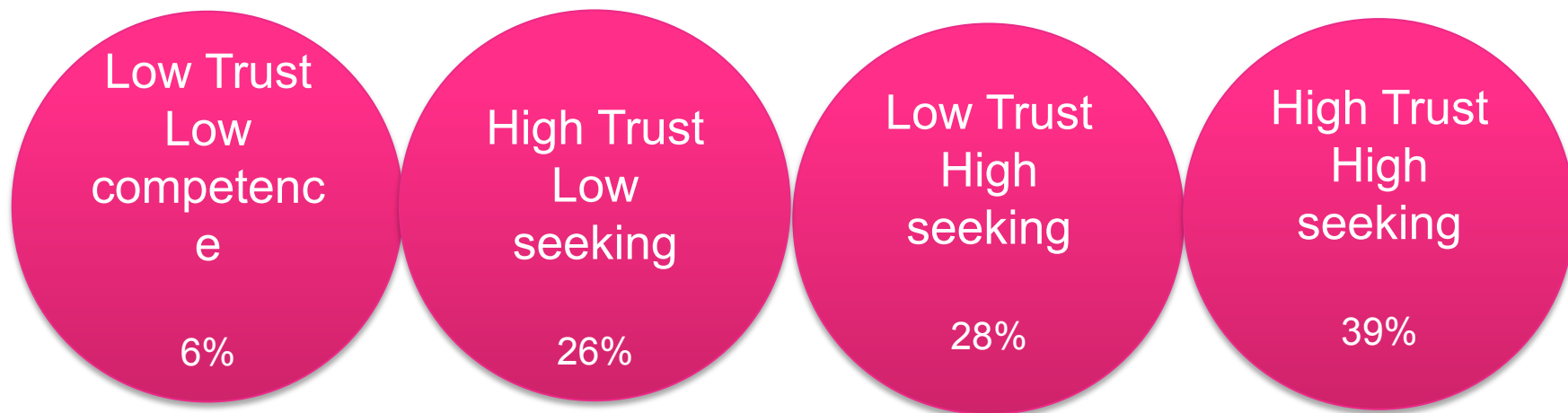
Datamining on trust related concepts:

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- General trust sense levels
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- **Motivation to engage in trust related seeking behavior**
- **Trust related competences**
- Active assessment of the trustworthiness of own and third party applications
- Trustworthiness design elements

Survey details:

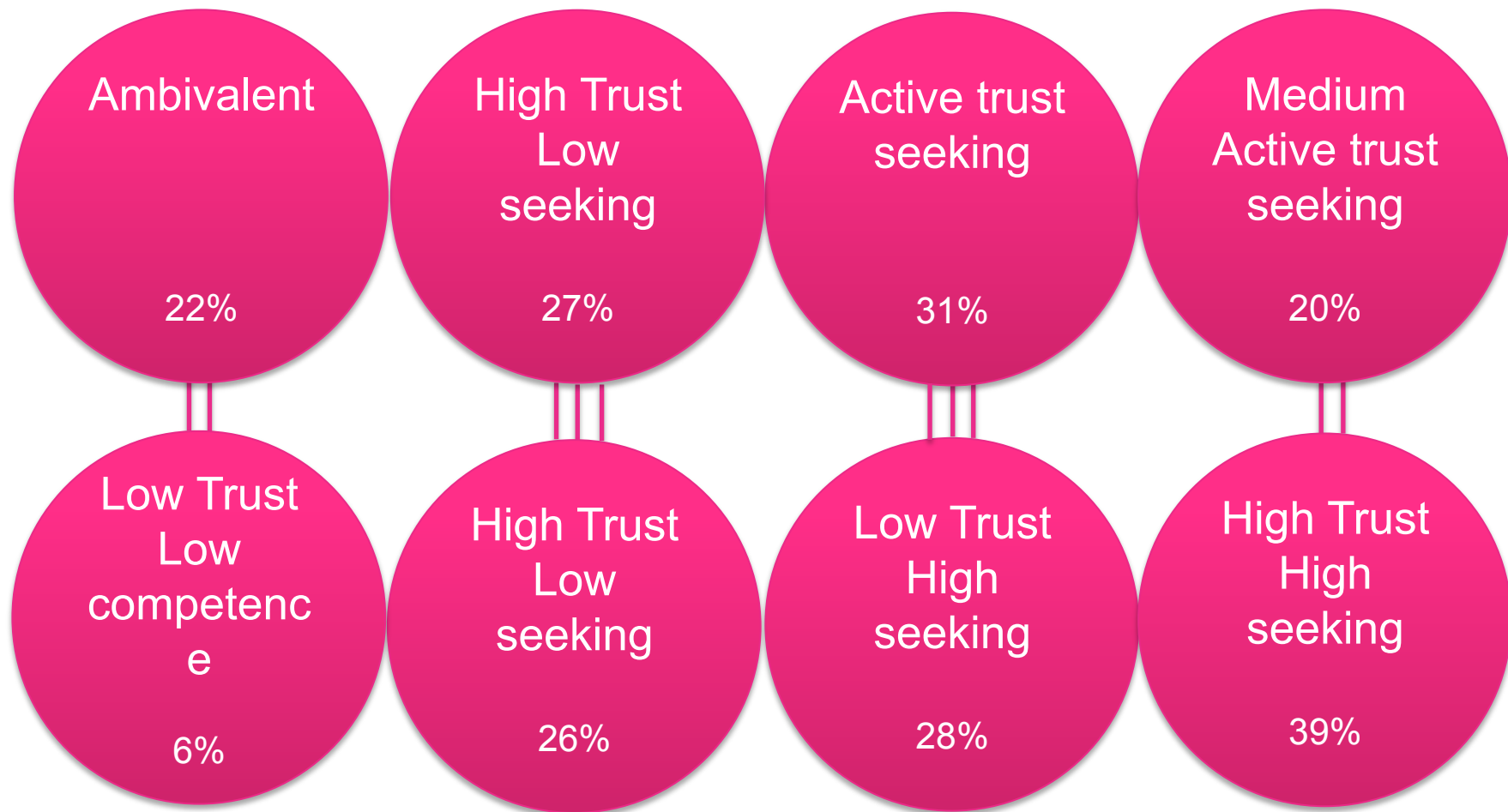
- Online survey
- Period: February-March 2013
- Pool of international, national, regional and local organisations
- 48 commercial organisation + 57 public organisations
- Mostly 5 point Likert scale items
- K-means clustering for segmentation purposes
- Anova

Organisational profile segments

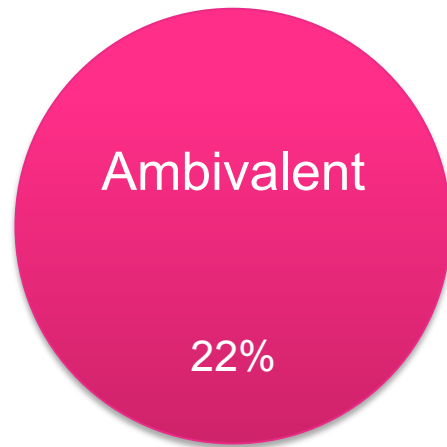


Implications

Mapping Individual and Organisational Segments



Tailored 'Trust by design' solutions



- Referrals
- Easy to scan, simple and straightforward cues
- Familiarity
- Technically working well

Tailored 'Trust by design' solutions



High Trust
Low
seeking

- Quick scanning of cues
- Look & feel

Tailored 'Trust by design' solutions



Highly
Active trust
seeking

- Clear terms of service + data policy
- Contact information
- Outline on legal frameworks
- Offers a complaint mechanism
- Large set + variety of cues

Tailored 'Trust by design' solutions



Medium
Active trust
seeking

- Clear terms of service + data policy
- Display the financing organization

Conclusion

- Both congruence + asymmetry between individual trustors and organisational profiles
- Diverging implications
- Prioritizations in terms of actions for organisations/service providers
- Services providers need to develop 'trust by design' solutions targeted various trustors segments

Outcome: Trust Modelling and Estimation based on Subjective Attributes

High Trust

Ambivalent
trust

Highly active
trust seeking

Medium active
trust seeking

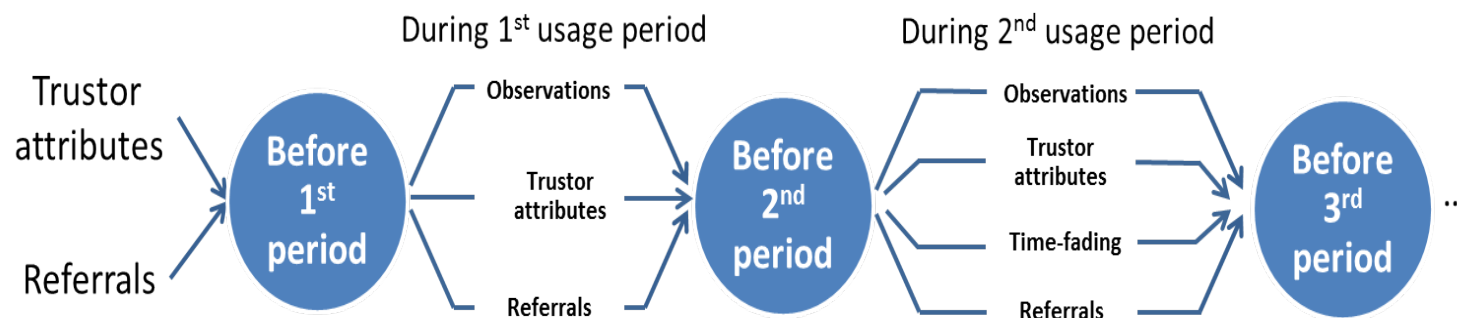
User segments

Trust stance

Trust related
competences

Motivation to engage in
trust seeking behavior

Core trust attributes underlying segmentation



Translation of trust attributes into trust estimator

Thank You!

See for more info:

OPTET project (EC funded): www.optet.eu

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