

Dynamic Adaptive Policymaking and planning (DAP) for Implementing Mobility-as-a-Service (MaaS)

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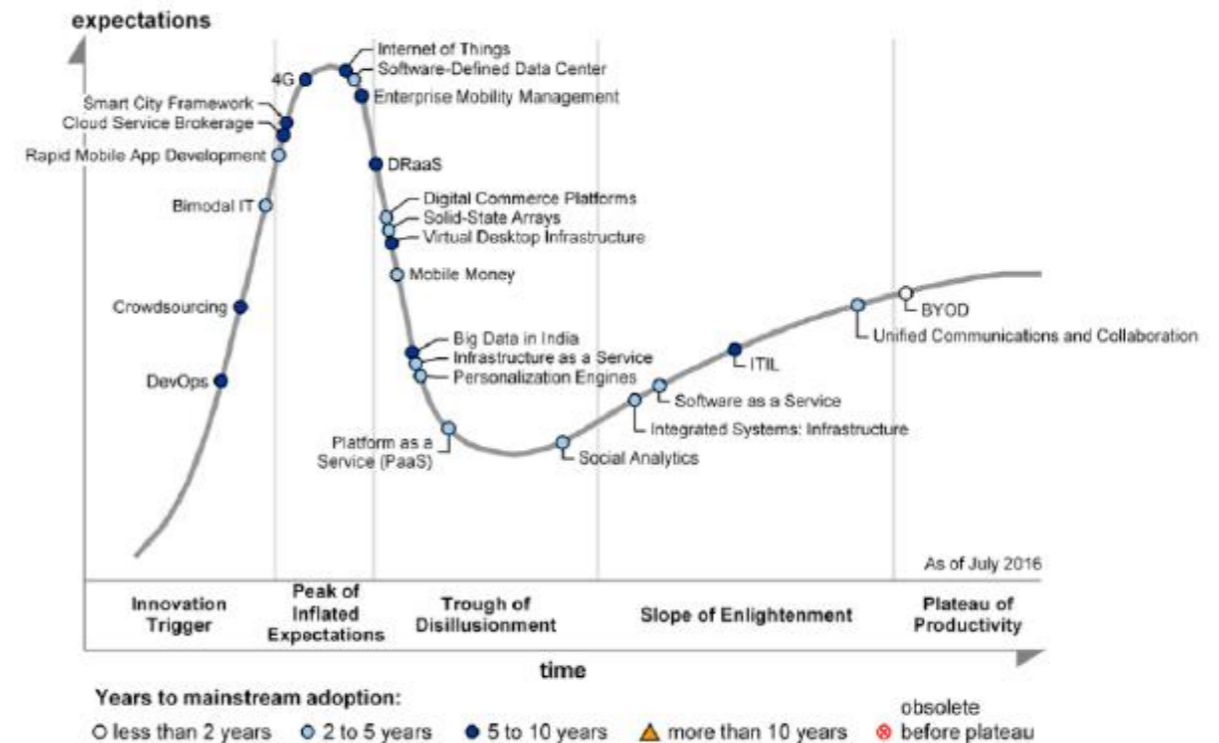
Content

- Introduction
- Current status of MaaS and its policy challenge
- Dynamic Adaptive Planning (DAP)
- DAP for implementing MaaS in Nijmegen, the Netherlands
- Next steps

Current status of MaaS implementation

- Business, industry, national government, local authority, public transport providers are becoming more and more interested in MaaS
- Some large investments are being made (e.g. MaaS Global raised €10m)
- Several new MaaS projects (or pilots) are emerging
- Given these prospects, there are issues...

Gartner hype curve for smart mobility



New MaaS projects

- Birmingham (Oct 2017)
- Amsterdam and Nijmegen (Oct 2017)
- Singapore (end of 2017/2018)
- Ghent and Antwerp (TBC)

Uncertainties surrounding MaaS



**How to develop MaaS policies,
knowing these uncertainties exist?**

Governance and organisation of public transport system:

- Roles of actors?
- Who should be platform operator?
- First to the pole?
- Contractual arrangements?
- Liability and insurance?
- Cooperation from PT operators?

Operational aspects:

- Fare & revenue distribution?
- Level of service (Planned vs Demand responsive)?
- Data security & asymmetry?

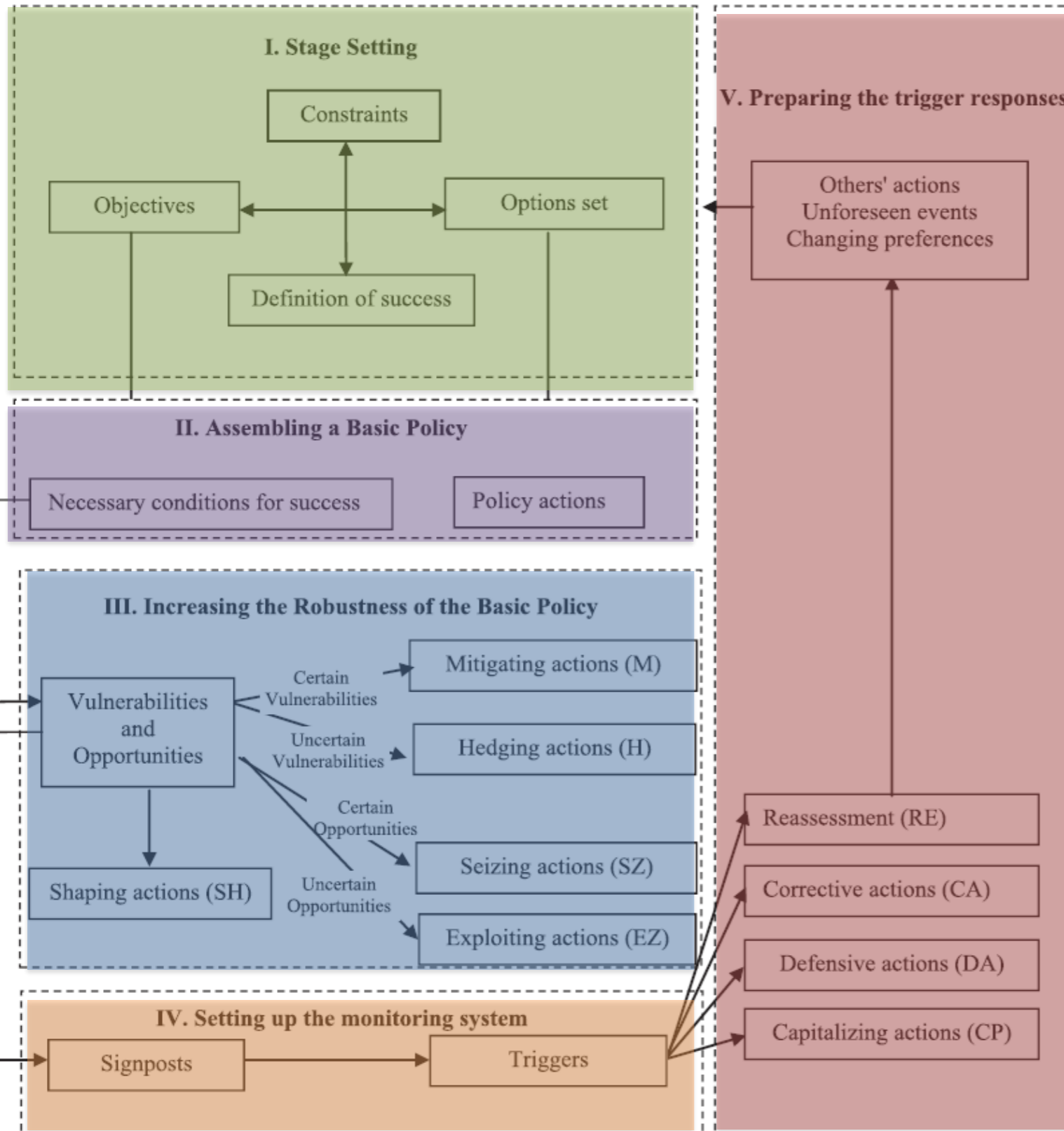
Outcomes:

- Level of sustainability?
- Resource efficiency?
- Equity and Just?

Dynamic Adaptive Policymaking (Walker et al., 2010)

- Accept that there are deep uncertainties associated with MaaS policymaking that cannot be handled by a ‘predict and act’ approach
- Move away from predictions and, instead, search for policies that are robust across a wide range of future conditions, i.e.:
 - Start with a promising basic plan
 - Protect the basic plan and adjust if needed (monitor and prepare)
 - Most robust and effective in case of deep uncertainty
- Previous applications:
 - Airport strategy planning (Kwakkel et al., 2008)
 - Innovative urban transport solutions (Marchau et al., 2008)
 - Climate change (Rahman et al., 2008)
 - Road pricing (Marchau et al., 2010).

Dynamic Adaptive Planning (DAP)



Stage 1 – Stage setting

- Set objectives
- Definitions of success
- Constrains
- Available option

Stage 2 – Assembling a Basic Policy

- Condition for success
- Preferred policy action

Stage 3- Increasing the robustness of the basic policy

- Id. Vulnerability and opportunities and associated likelihood
- Actions

Stage 4 – Setting up the monitoring system

- Setting up signposts and Trigger

Stage 5-Preparing the trigger responses

- Prepare trigger responses

Case study: MaaS for Nijmegen city



- 170,000 inhabitants (a twin city with Arnhem -150,000 inhabitants)
- Region of Arnhem-Nijmegen has about 750.000 inhabitants
- Travelers: commuters, students, business people, visitors
- Three universities and industrial estates
- Increasing transport congestion during rush-hour
- Example of how DAP can be utilised, not exhaustive

Case study: MaaS for Nijmegen city (cont.)

Stage 1 – Stage setting

Objective:

to maintain the levels of accessibility, reliability, and safety of its transport system from the perspectives of visitors, residents and economic vitality of the inner city (city of Nijmegen, 2017)

Definition of success:

1) Increase accessibility and flow, 2) Increase quality and quantity of parking facilities, 3) Increase road safety, 4) Stimulate participation public transport, and 5) Stimulate bicycle use (city of Nijmegen, 2017)

Alternative policies:

- Improving the existing public transport service,
- Improve cycling and walking facilities
- Infrastructures investment (bridge, train line, or
- Demand management (e.g. shift starting time of universities classes)
- Introducing an innovative demand-responsive transport service (a MaaS service)
- Implementing a MaaS scheme

Constraints:

- Available resources, budget
- Existing legislation
- Users' acceptance
- The willingness of transport operators to support the implementation
 - due to lack of trust, potential loss or control over their operation, and the need to adjust their business model

Case study: MaaS for Nijmegen city (cont.)

Stage 2 - Assemble a basic policy

Basic Policy :

Implementing an innovative demand-responsive shared-ride service , Brengflex

Condition for Success :

Sufficient support by crucial actors, such as public transport operator, and stakeholders, such as taxi operator.

Step 3 – Increase the robustness of the basic plan

Certain Vulnerability:

Lack of willingness to collaborate due to lack of trust, efforts required to adjust services, or potential loss of operation control. Strong opposition from competing services, such as taxi.

Action taken to increase robustness:

(Shaping action) Lobby supports from critical actors and actively involve relevant stakeholders and competitor from the design phase to ensure service acceptability and support
(Mitigation action) Secure funding to subsidise service.




Case study: MaaS for Nijmegen city (cont.)

Stage 4 – Setting up a monitoring system

Sign-post:

Level of Stakeholders' interest and corporation, feedback and comments

Trigger:

Level of participation drop below expected

Step 5 – Preparing trigger responses

Adaptive action:

(Corrective Action) Intensify and actively engaged stakeholders to reduce conflict

(Defensive Action) Reduce scope of service to necessary minimal

(Reassessment) If support is in sufficient reassess basic policy

Benefits and Challenges in applying DAP

Benefits:

- Get started right away
- Better protected against vulnerabilities
- Ready for opportunities

Challenges:

- Apply DAP in practice with real world decisionmakers (Bosomworth et al., 2017)
 - Difficulties in using DAP to deal with complex (uncertainty about system structure) and contested (uncertainty about preferences) issues
 - How to establish signposts and triggers within a complex system,
 - How to take into account the institutional and governance issues

Next step:

- Revise DAP by involving e other stakeholders related to Brengflex
- Retro-fit DAP to Brengflex to improve its operation
- Apply DAP to SL!M Nijmegen (a MaaS pilot project)



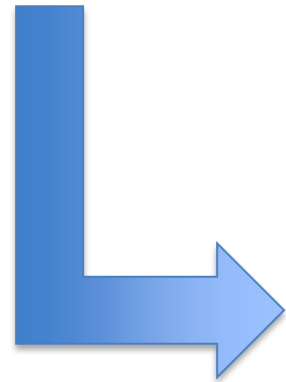
SL!M Nijmegen  breng



Next step: Development of participatory DAP (pDAP)

Desktop DAP

Derive an initial basic plan DAP basis from desktop study, literature review, and discussion among a limited group of experts



Delphi Survey

Gaining a broader perspective through global experts involvements

Future of MaaS
Global experts panel



Participatory Planning Sessions

Contextualise plan through local actors and stakeholders participation

Decision lab



Delphi Survey: Future of MaaS



- Global expert panel on transportation and MaaS
- Focuses on:
 - Implementation timeframe
 - Early-market (age/trip purpose/mobility preference)
 - Actors and stakeholders
 - Preference on platform operator
 - Planning elements (Objective, constraint, condition of success)
- Identify consensus and disagreements
- Reveal underlies motivations

Development of participatory DAP (pDAP)

Timeline:

Nov – Dec 2017

Delphi Survey: Future of MaaS
Round 2 & 3

Dec 2017 – Jan 2018

Survey data analysis

Feb – April 2018

Development of Participatory session

April – May 2018

Participatory Planning Sessions



Takeaway message

- MaaS is attracting interests from different parties
- There is still a high level of uncertainty surrounding MaaS, which can obstruct its implementation
- Dynamic Adaptive Planning can help to address these uncertainties, thus increase its likelihood to success
- Participatory development of a DAP will likely improve its success
- The mobility research team at RU is working at such an improvement

Thank you.

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