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Sociological Imagination: Creating Hopeful Futures



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Digital twins and their potential use in democratising urban futures

An ADAPT – DCC collaboration

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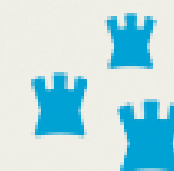
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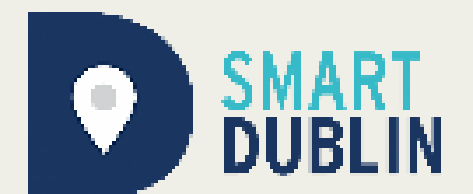
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OUTLINE

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- > Theoretical Background
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Public Participation in City Making

Why it matters?

- ❑ Acquire information about the public's preferences and opinions
- ❑ Improve decisions by incorporating local knowledge
- ❑ Achieve fairness and justice
- ❑ Ensure the legitimacy of public decisions
- ❑ Instil a sense of empowerment amongst participating citizens
- ❑ Build confidence in decision-making and participatory processes
- ❑ Meaningful implementation of projects

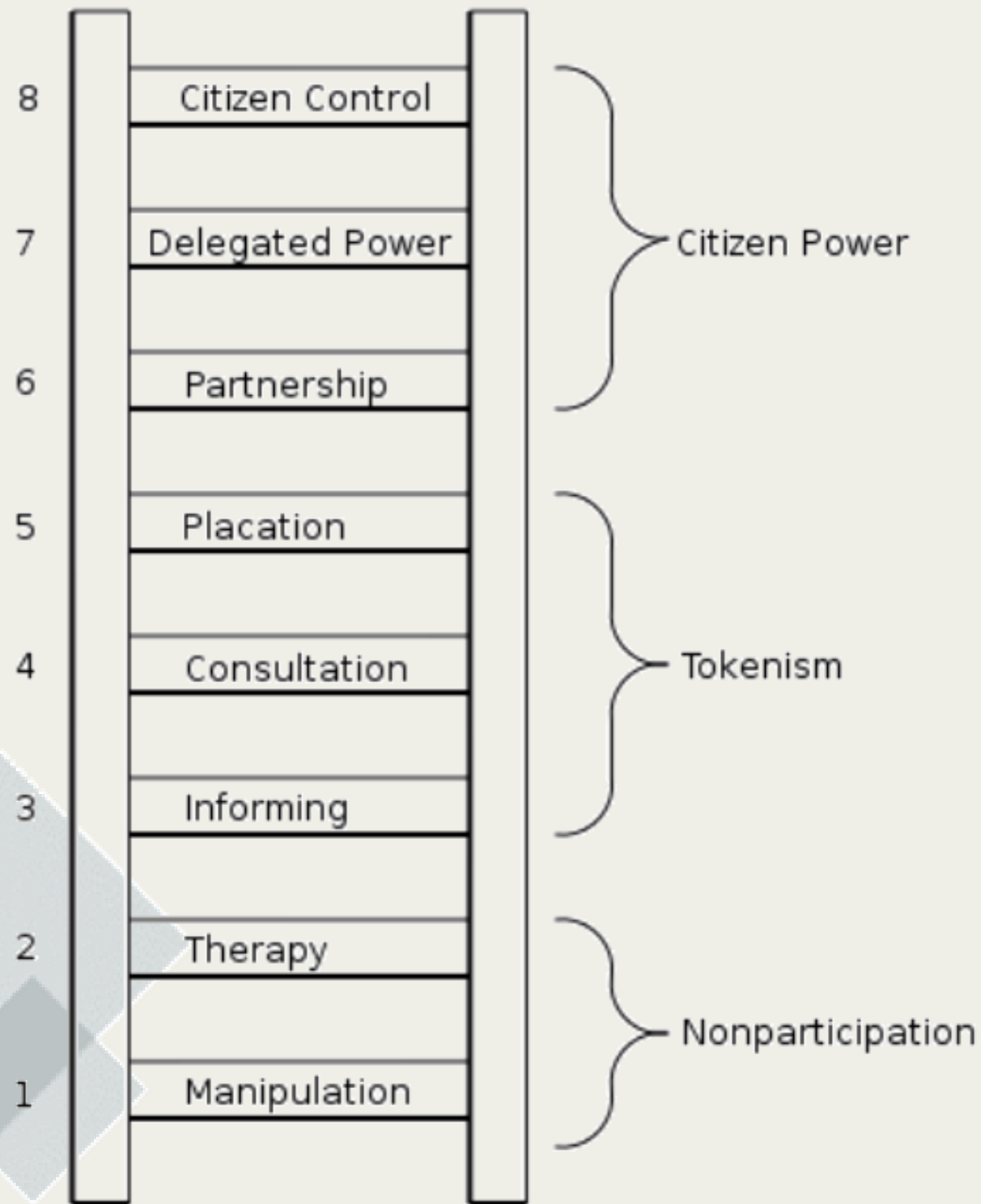
Dilemmas in Public Participation Design (Bobbio, 2019)

Participation	vs.	Deliberation
Online	vs.	On-site
Open-door settings	vs.	Mini-publics
Decision-making	vs.	Consultation
Hot deliberation	vs.	Cold deliberation



Indicator 11.3.2: Proportion of cities with a direct participation structure of civil society in urban planning and management that operates regularly and democratically

Theoretical Background



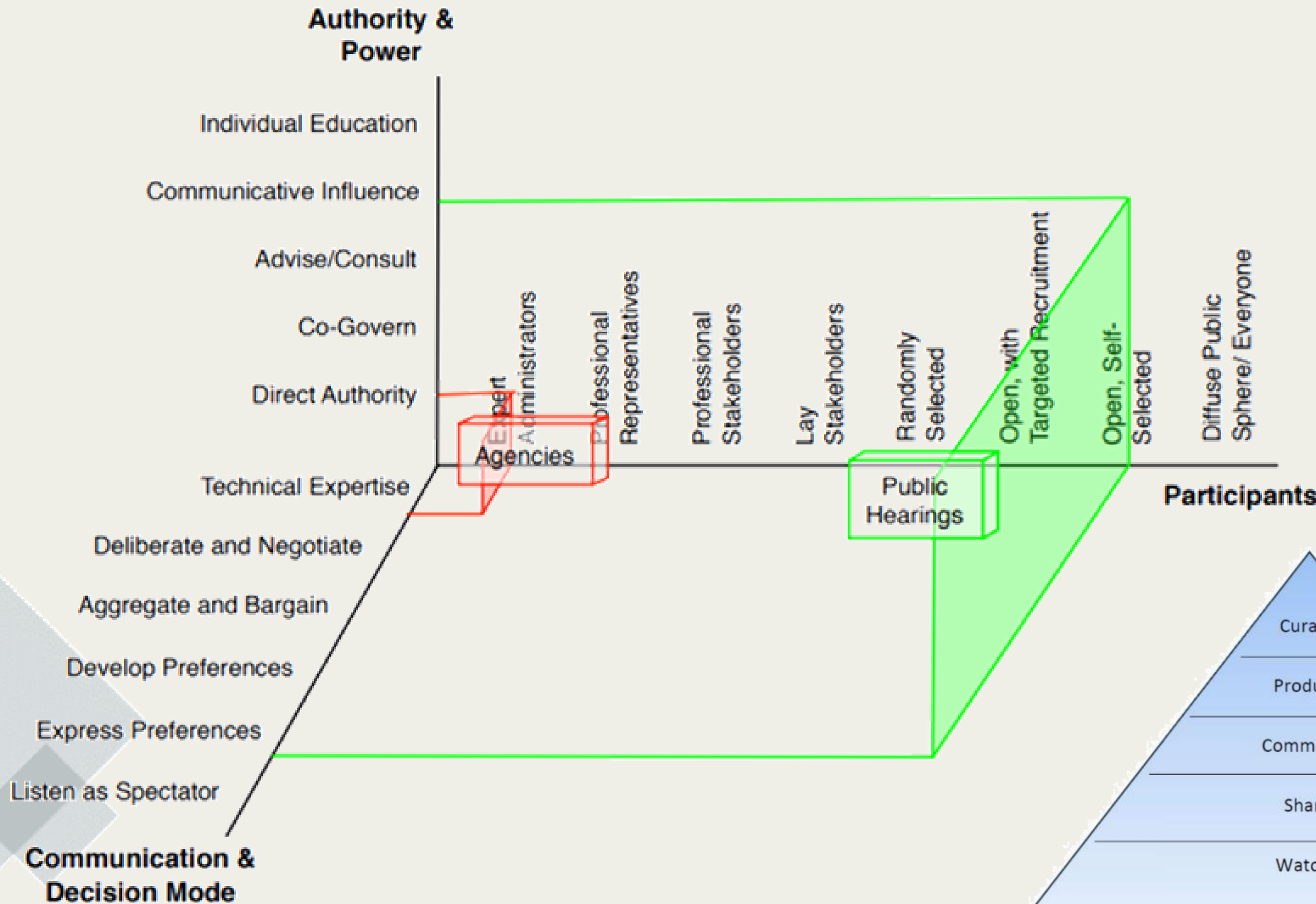
INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

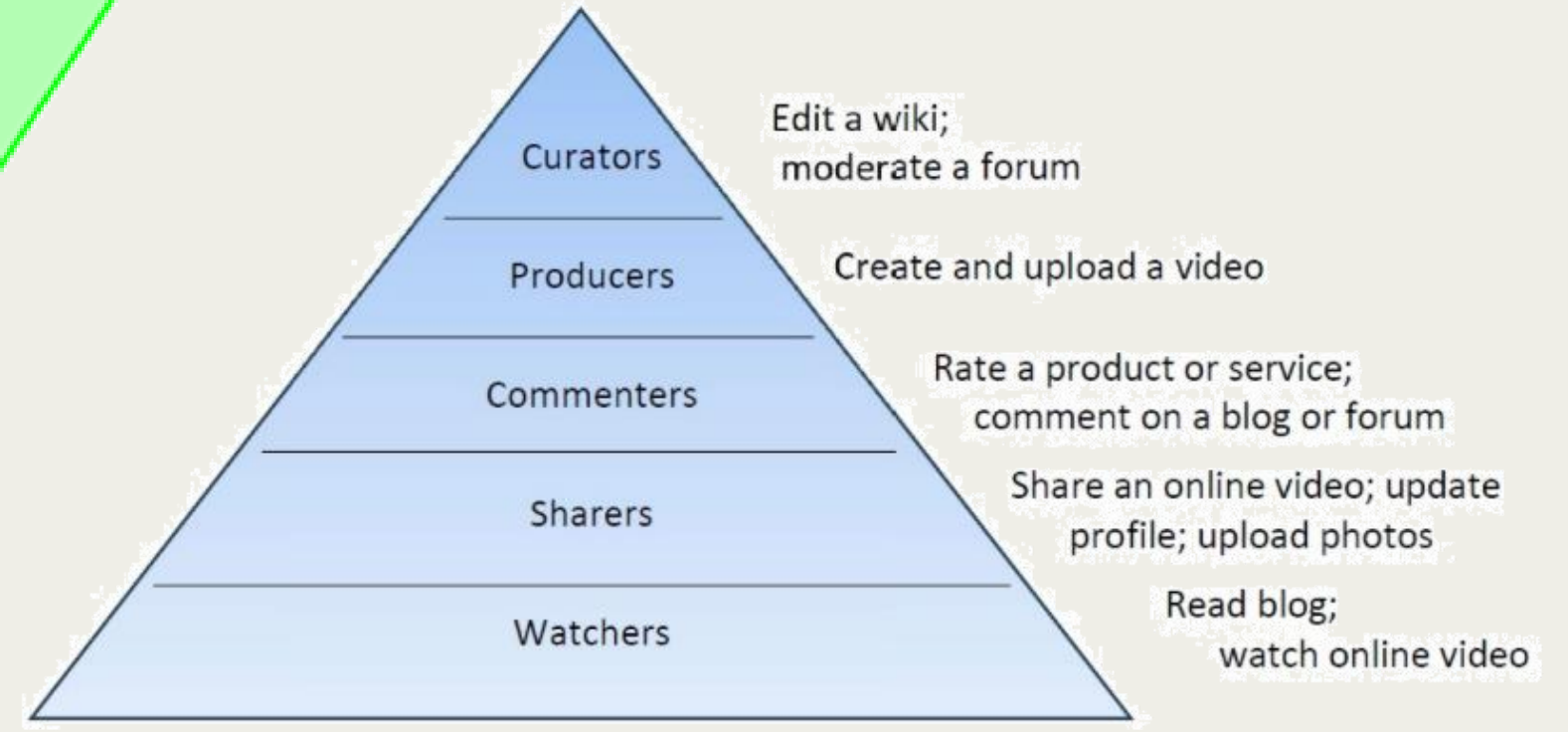
© IAP2 International Federation 2018. All rights reserved. 20181112_v1

Eight rungs on the ladder of citizen participation (Arnstein, 1969)

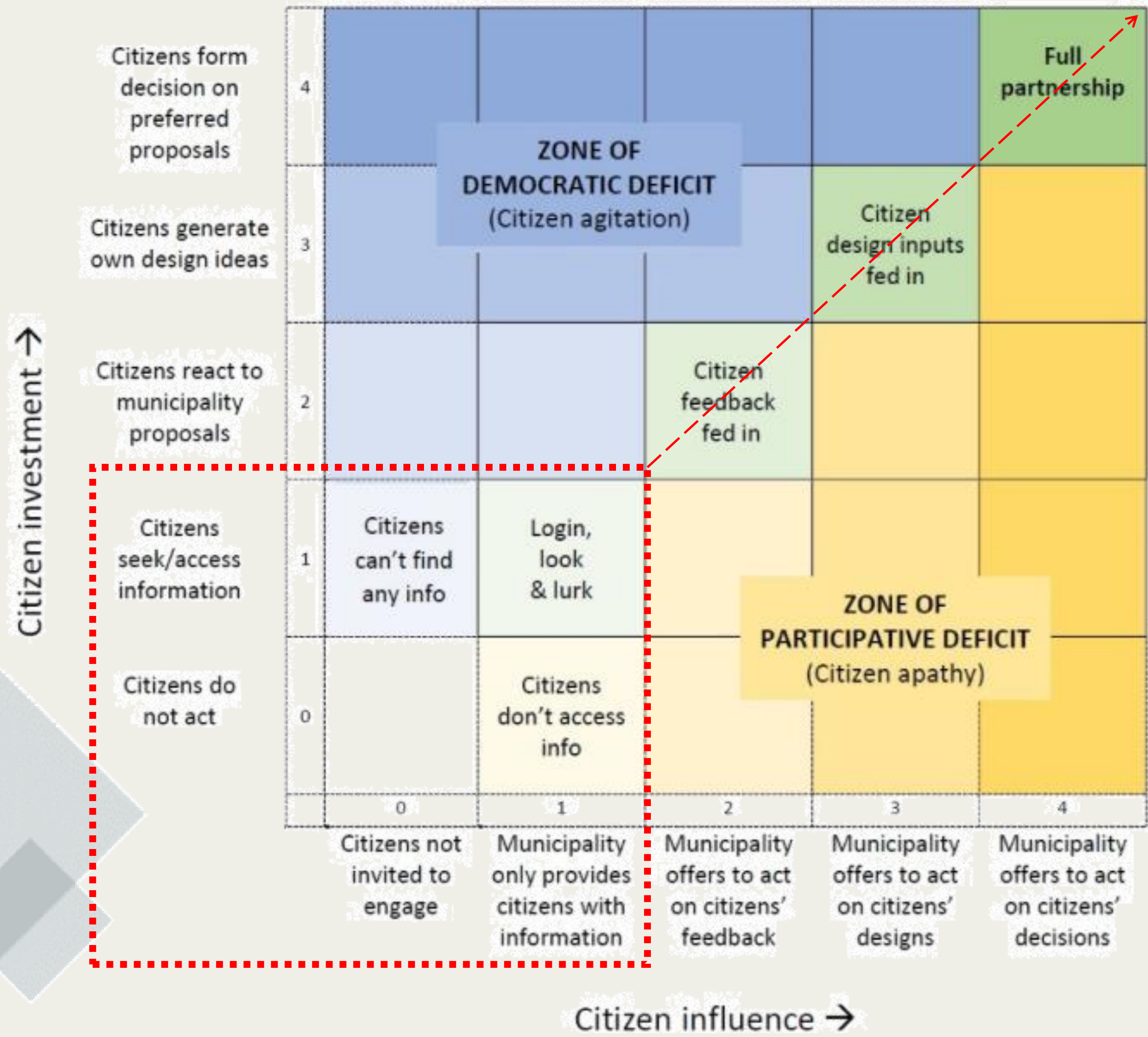
IAP2 Spectrum of Public Participation
(International Association for Public Participation (IAP2), 2018)



Democracy Cube (Fung, 2006)



'Pyramid' of online media engagement
 as cited in (Marshall et al., 2024)

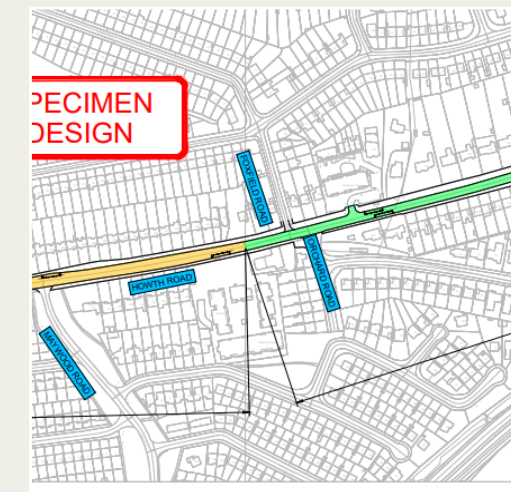


Matrix of Participative Space (Marshall et al., 2024)

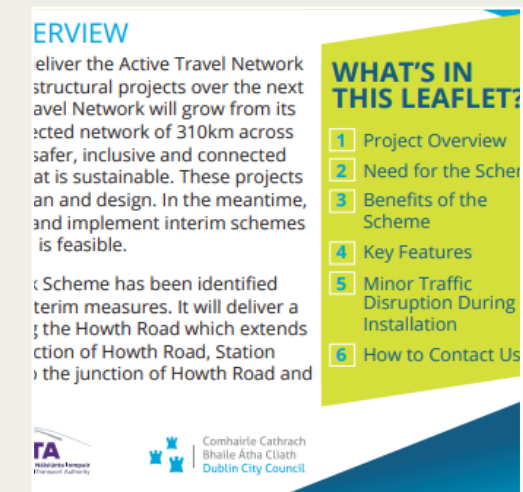


Experiencing Public Information Days in Dublin (2023)

Design drawings



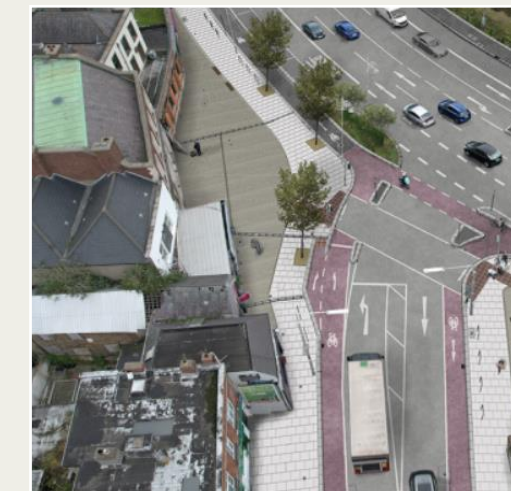
Leaflets/ flyers etc



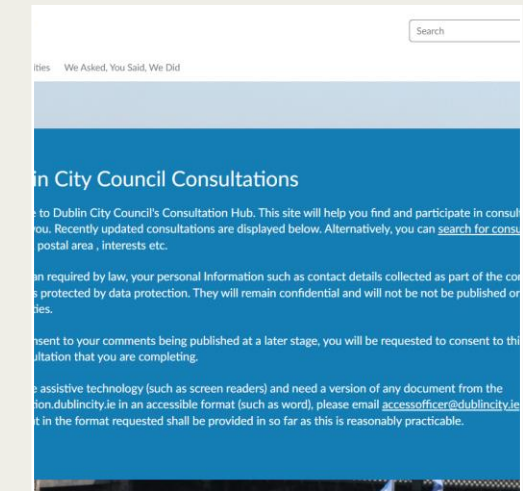
Photomontages



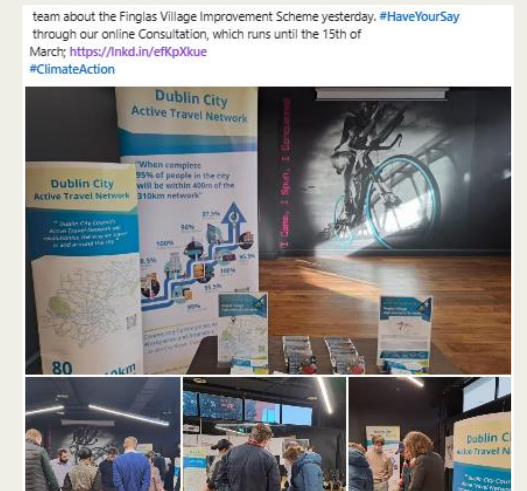
Short Video Clips



Online Surveys



Social Media



Current formats for information dissemination

Collaborative Framework Paradigm Shifts

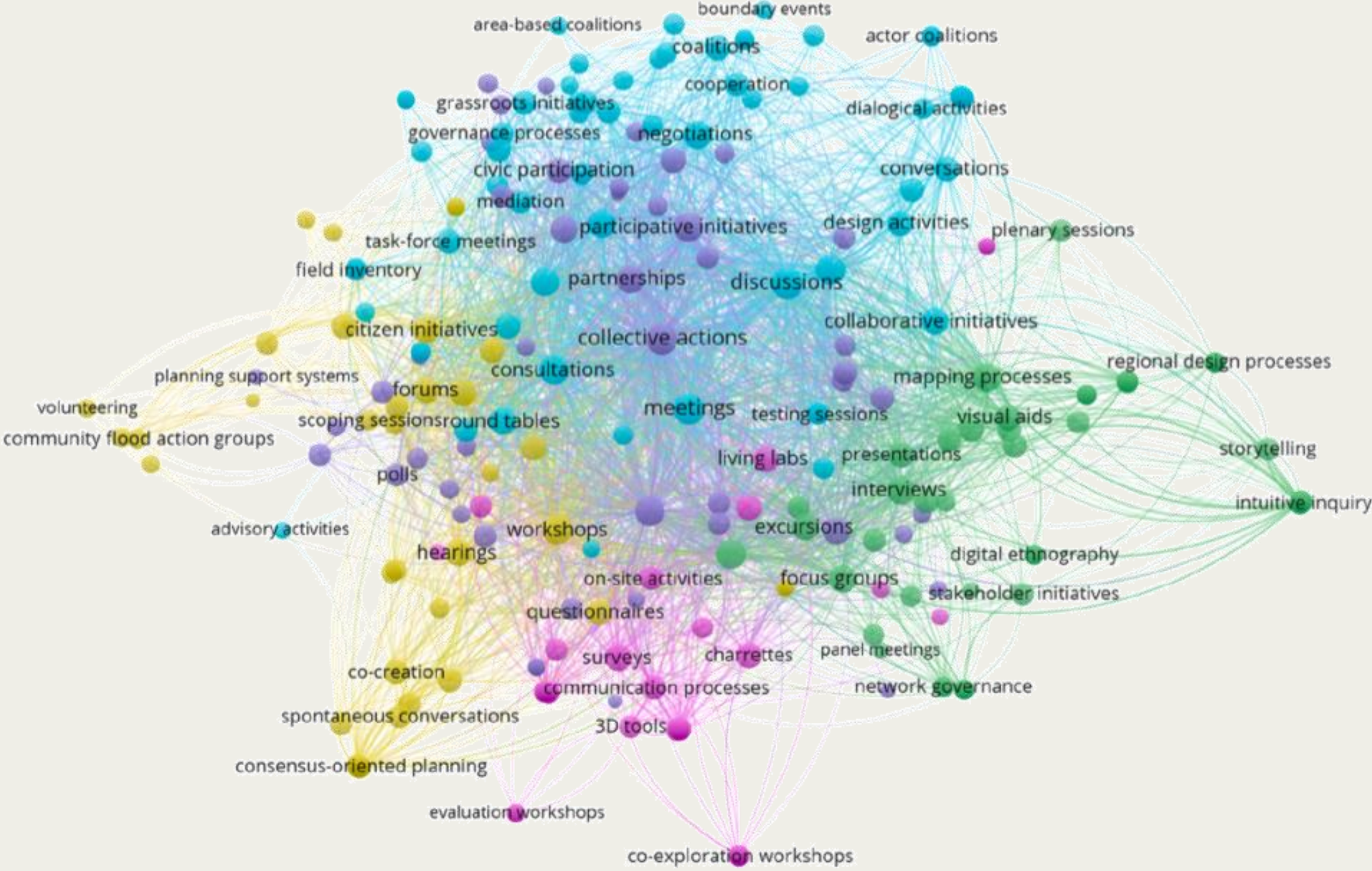
Four Models of Planning and Policy Making

		<u>Diversity</u>	
		low	high
<u>Interdependence of Interests</u>	low	Technical Bureaucratic <i>Convincing</i>	Political Influence <i>Co-opting</i>
	high	Social Movement <i>Converting</i>	Collaborative <i>Co-evolving</i>

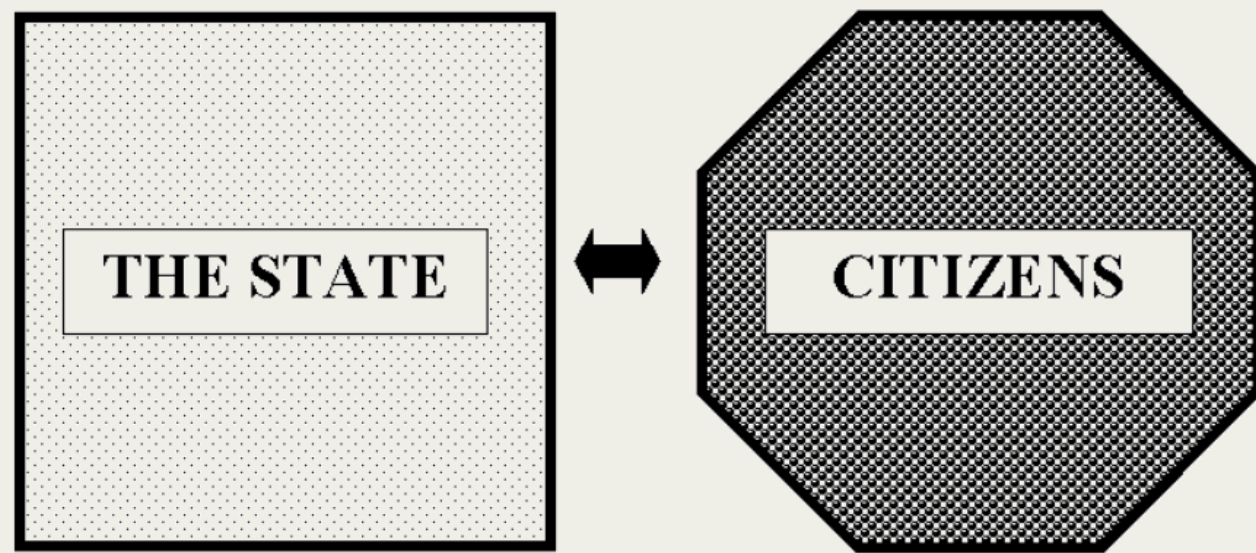
Source: Innes, J. E., & Booher, D. E. (2000). Public Participation in Planning: New Strategies for the 21st Century.

- Meta category 1: exchange knowledge-led (in green)
- Meta category 2: citizen-led (in purple)
- Meta category 3: collaborative-led (in blue)
- Meta category 4: adaptive approaches (in yellow)
- Meta category 5: comprehensive approaches (in fuchsia)

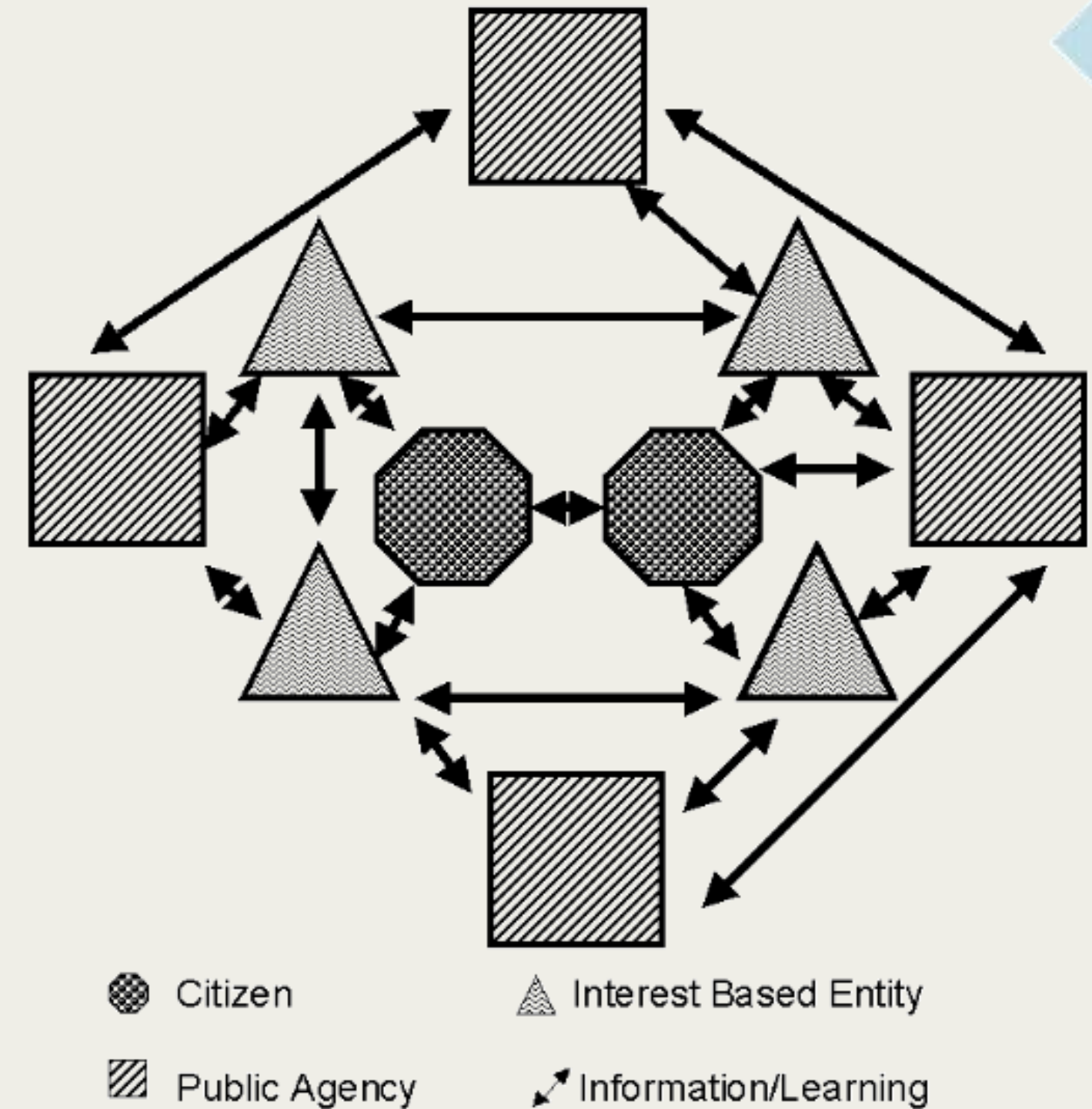
Evolution of participatory practices over time *(Hossu et al., 2022)*



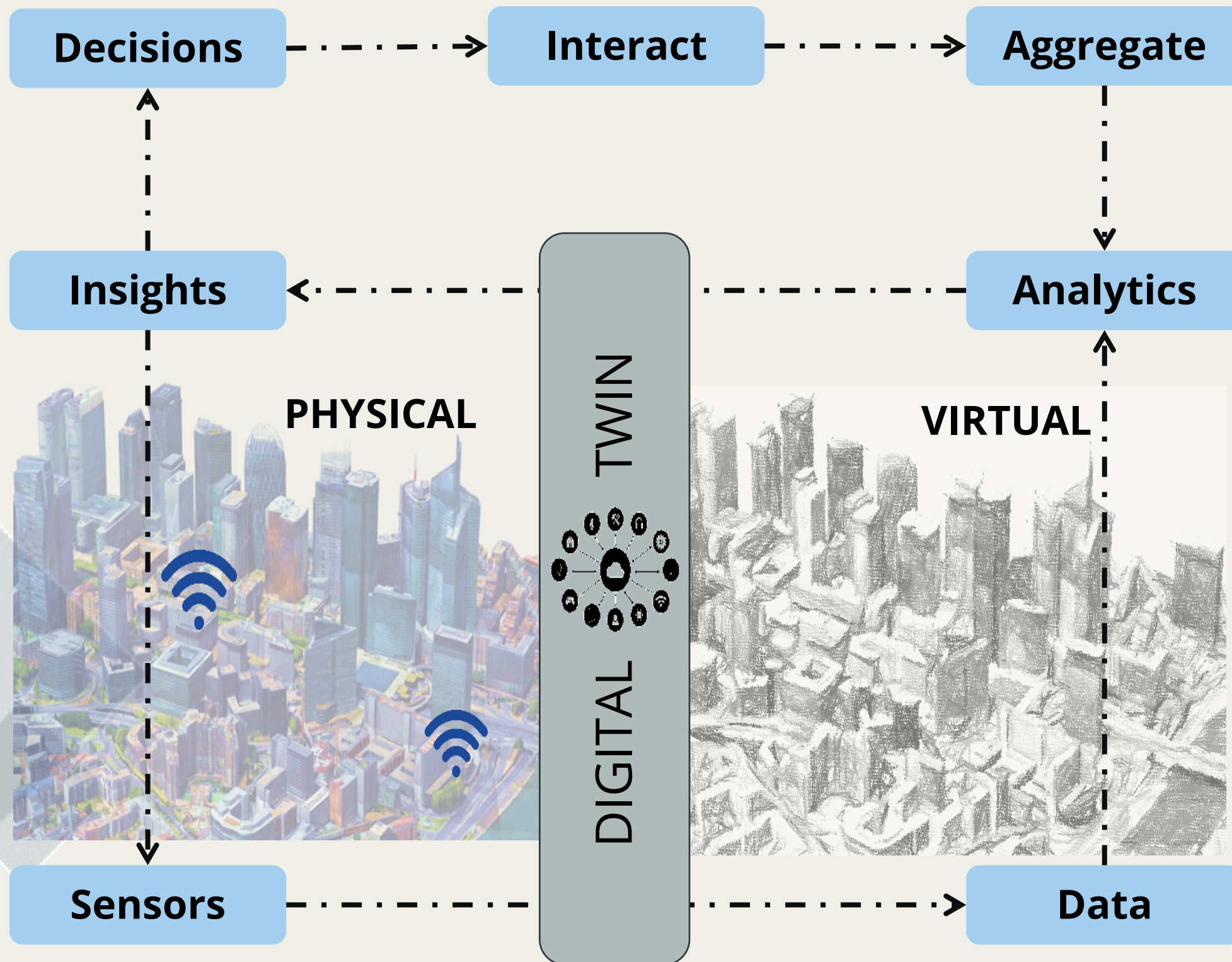
Traditional Paradigm for Citizen Participation



Collaborative Framework Paradigm for Citizen Participation



Urban Digital Twins (UDTs): an emerging technology



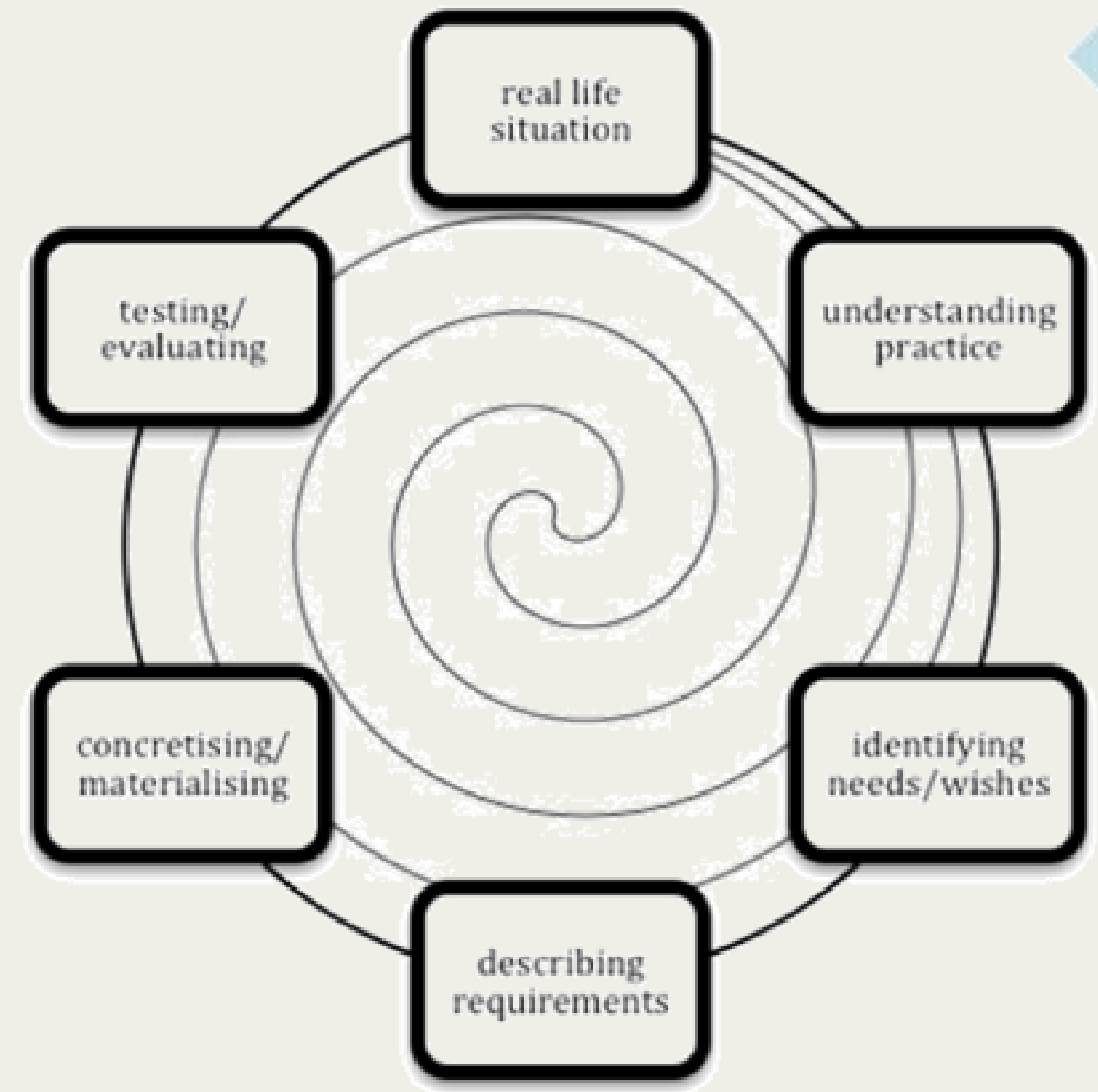
“Digital Twins represent a living model with bi-directional exchange of information between physical reality and their virtual counterparts.”

- × Not just **3D models**
- × Not just **digital representations** of physical spaces, systems and processes
- × Aren't just **static versions** of data
- × Doesn't require **manual update** of information
- × Aren't built for **single purposes**
- × Aren't **unidirectional flow** of information

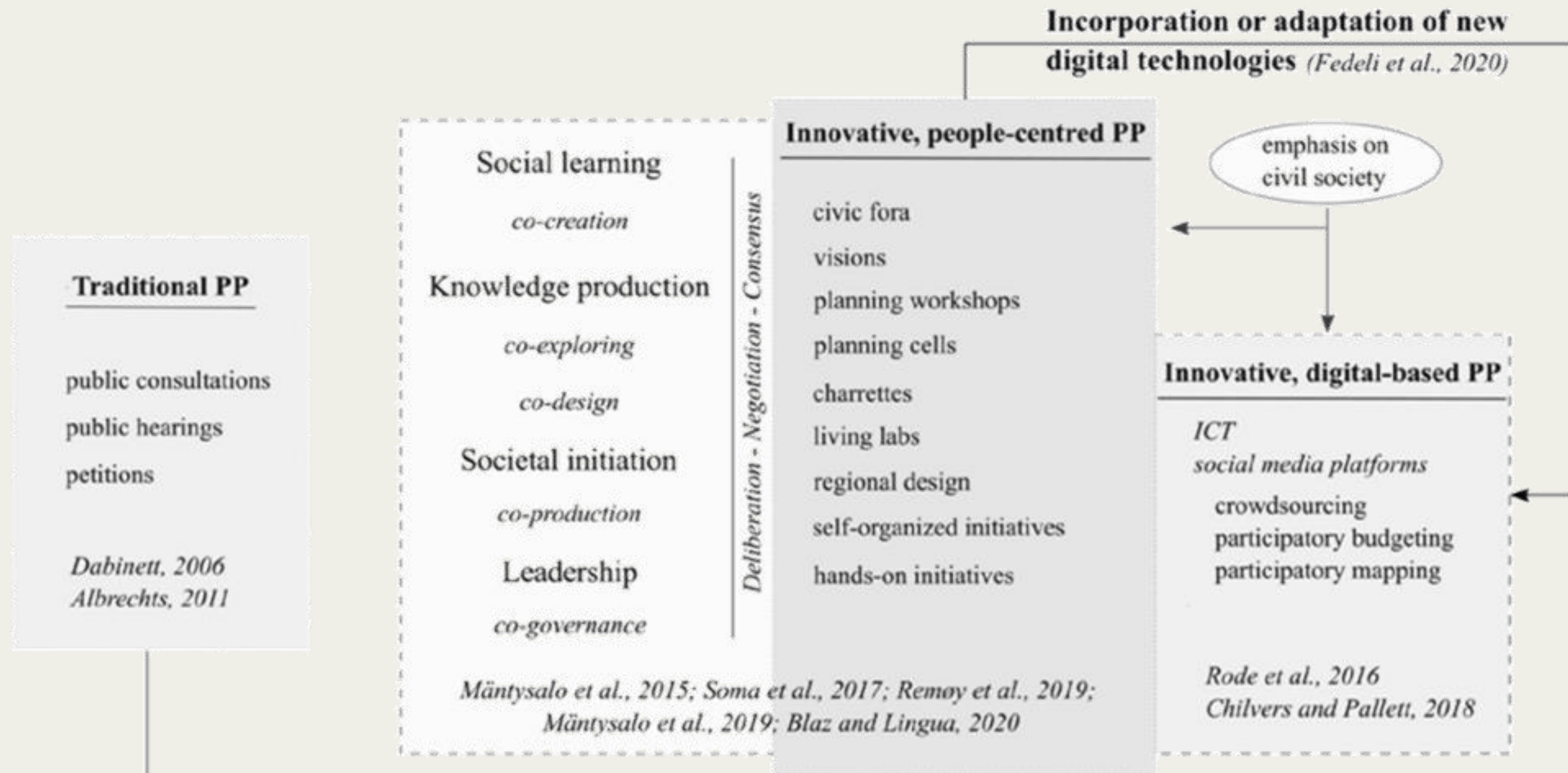
UDTs for Participatory Design

Participatory Design is defined as:

“A process of investigating, understanding, reflecting upon, establishing, developing, and supporting mutual learning between multiple participants in collective ‘reflection-in-action’. The participants typically undertake the two principle roles of users and designers where the designers strive to learn the realities of the users’ situation while the users strive to articulate their desired aims and learn appropriate technological means to obtain them.” (Robertson & Simonsen, 2012)



Six Phase Iterative Design Cycle
(van der Velden & Mørtberg, 2014)



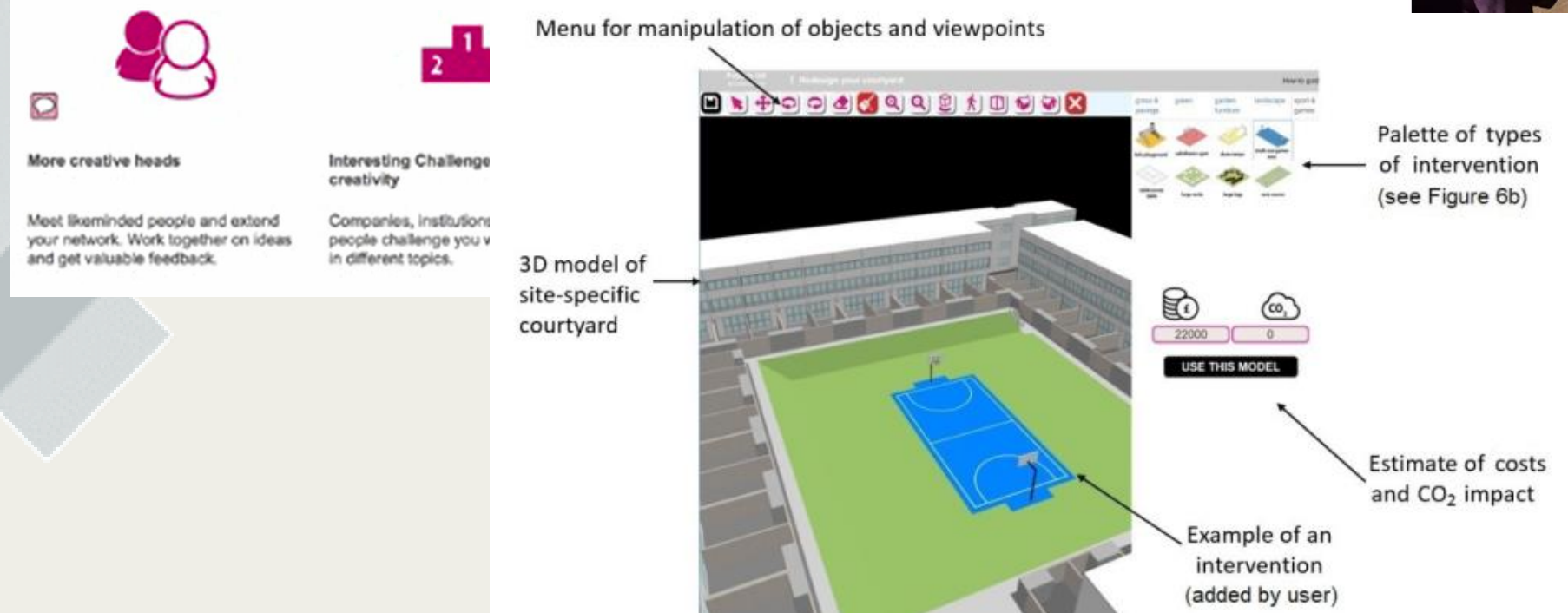
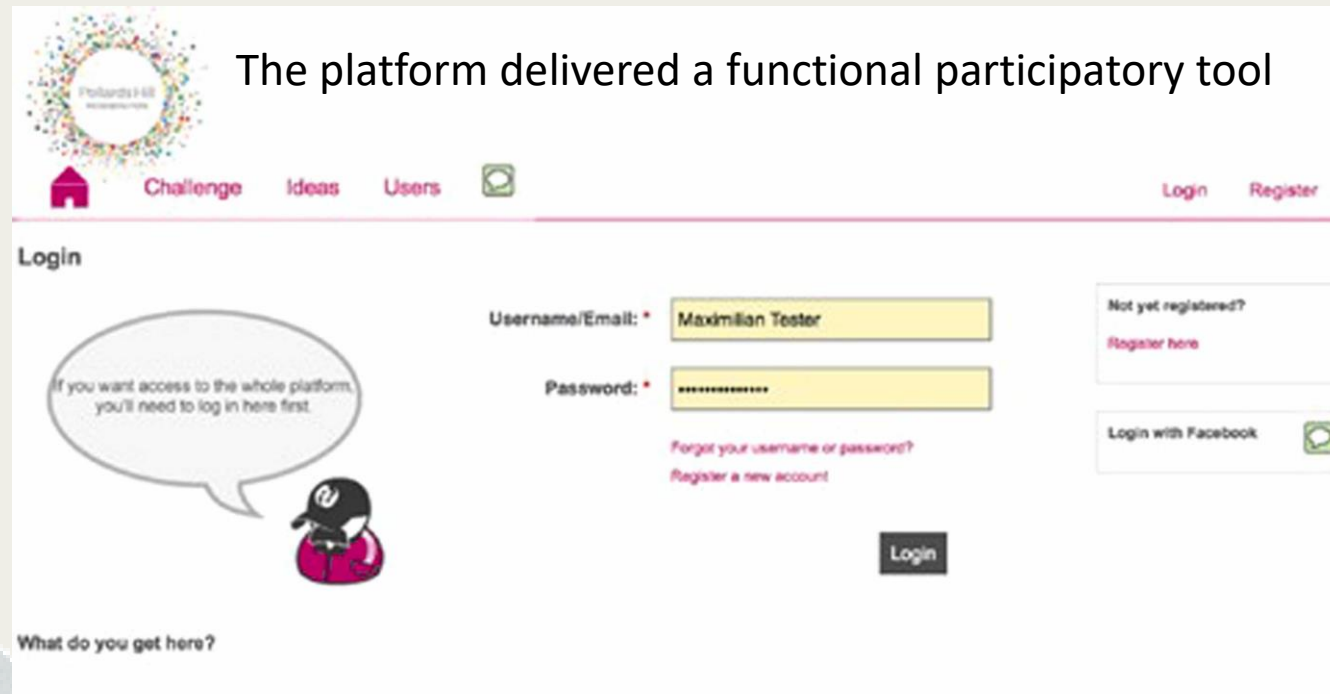
(*Wolfram 2018, Akbari, 2020, Fedeli et al., 2020*)

General participatory practices trends in strategic spatial planning
(*Hossu et al., 2022*)

Case Studies

Incubators of Public Spaces project

[Incubators of Public Spaces | The Bartlett School of Planning - UCL - University College London](#)



Herrenberg Digital Twin

[The Herrenberg Digital Twin \(youtube.com\)](#)



"Situations/circumstances can be presented in many perspectives."

"Better imagination of consequences/implications."

"Complex planning processes can become more concrete."

"Simple presentation, everyone can imagine the plans better."

"One can better imagine the spatial impact."

Community Design Exercise in the Netherlands, the Blue Zone Malvalaan

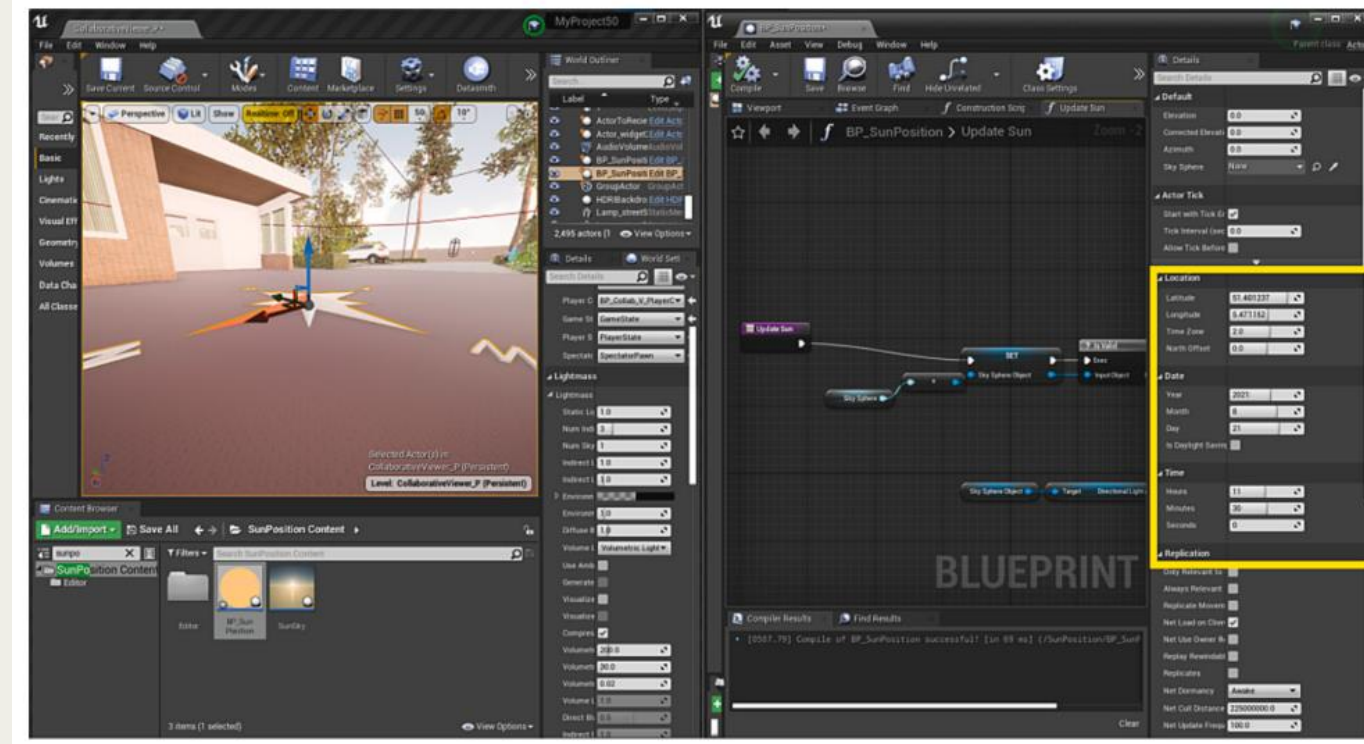
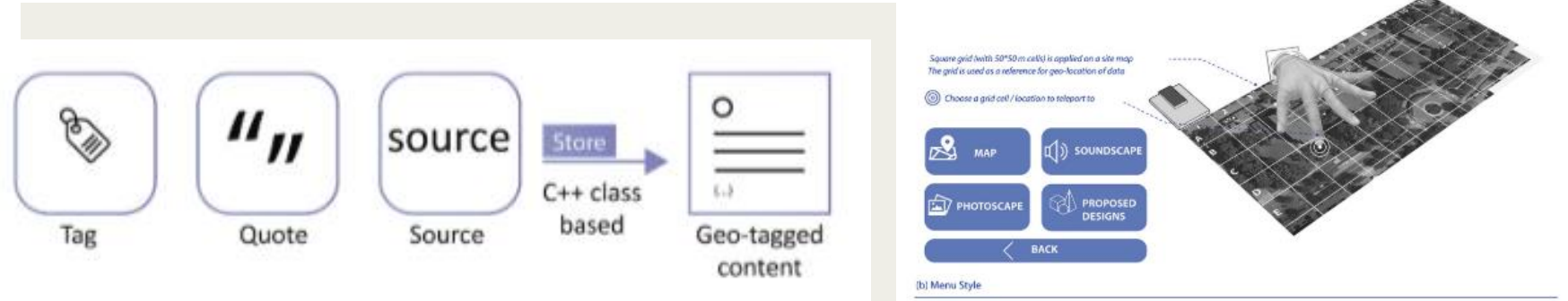
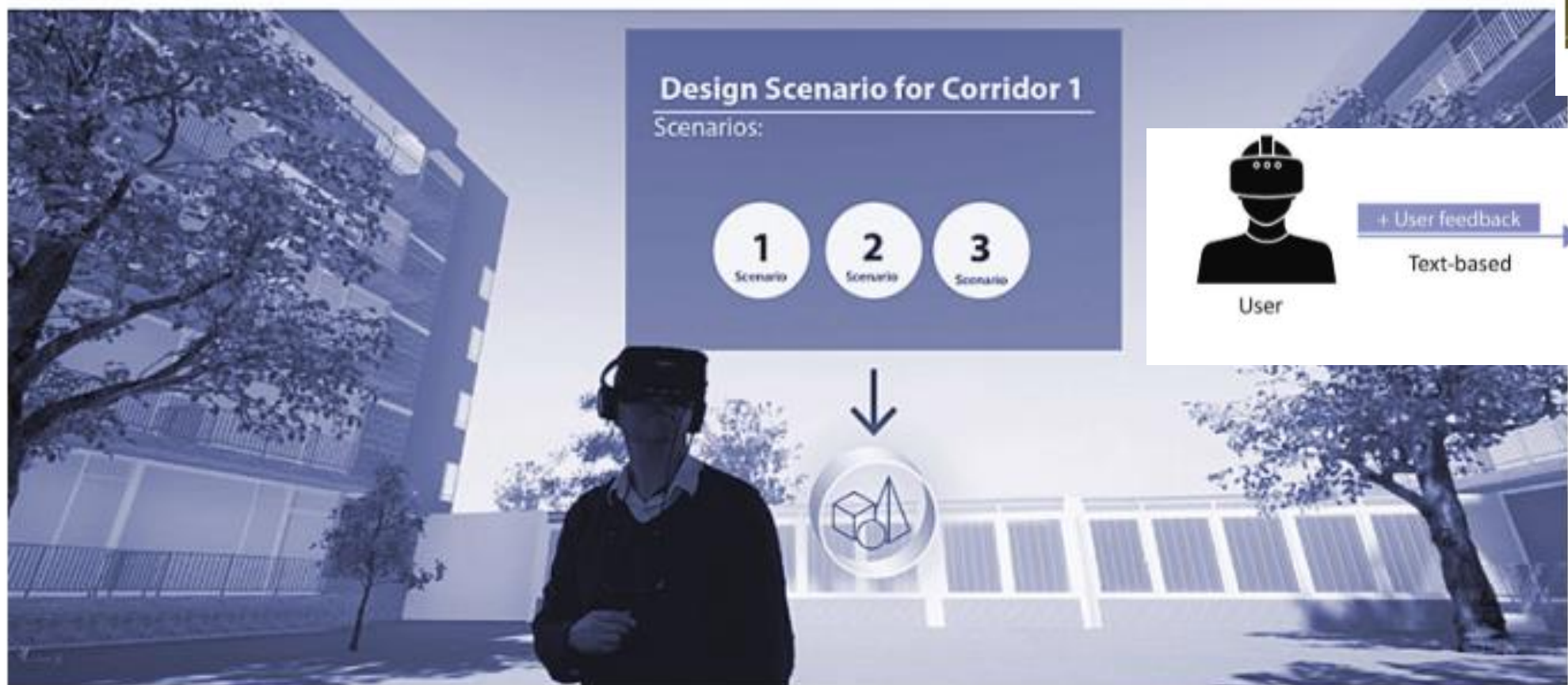


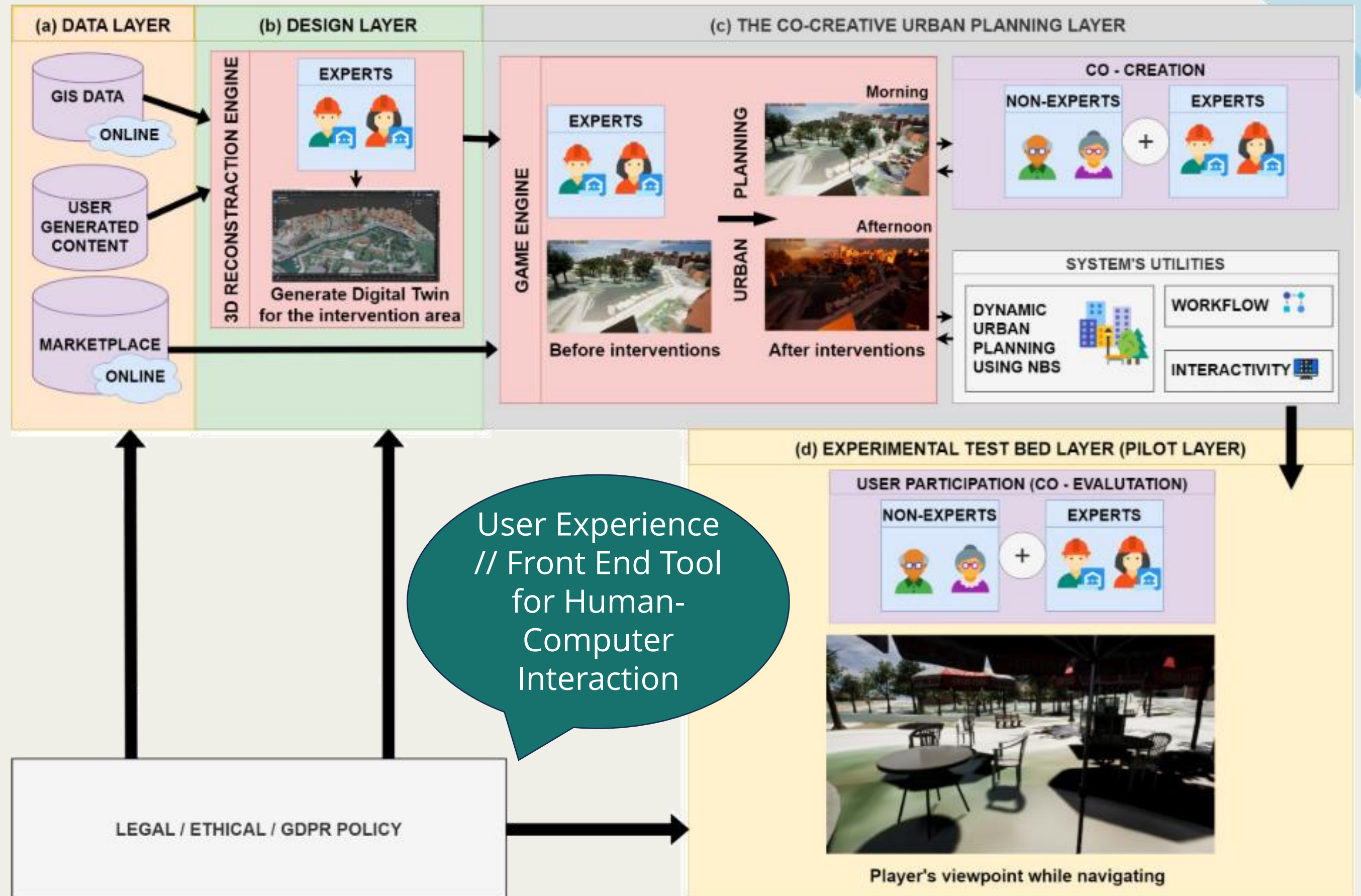
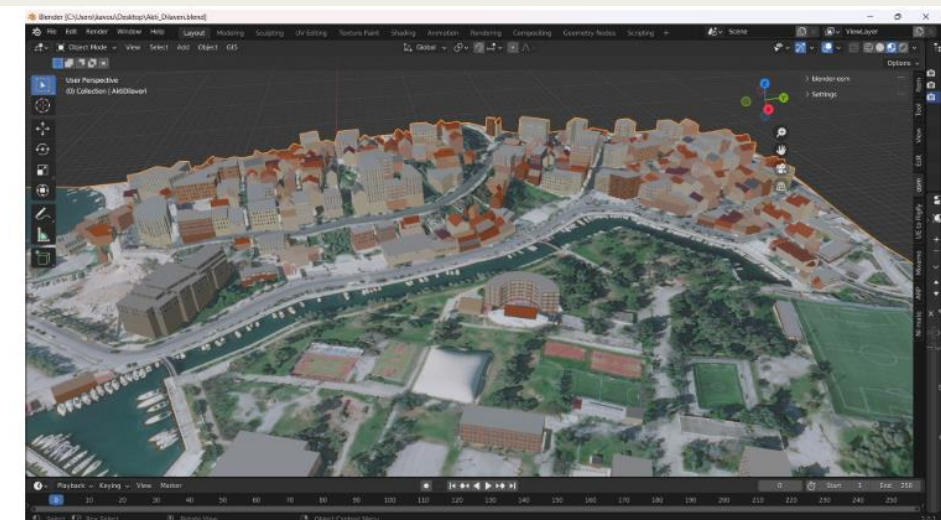
Fig. 16. Geo-tagged Feedback in the Malvalaan virtual CIM.



Mean Satisfaction Ratings ranging from 4.17 to 4.54 out of 5 for females, and from 4.46 to 4.54 out of 5 for males

Source: (Najafi et al., 2023)

UDTs for co-creation



Co-Creation Urban Planning Layer includes the game engine tools that will be used for the development of the urban planning solution, including co-creation capabilities.

Source: (Kavouras et al., 2023)

Few Irish Examples

Living Streets: Dún Laoghaire

[Living Streets: Dún Laoghaire Part 8 Public Consultation](#)
[\(14\) dlr Living Streets Flythrough - YouTube](#)



Dublin MetroLink Station at St Stephen's Green

[Home page - MetroLinkWeb](#)
[StStephensGreen on Vimeo](#)



Concluding Remarks

- ❑ Traditional participatory methods and tools can lead to black-box decision-making and thus, need to embrace collaborative planning mechanisms.
- ❑ Digital Twin technology could be one of the solution for improving the process of public participation for urban scale projects.
- ❑ They are relatively easier to understand and have potential to be used for disseminating information to non-expert users.
- ❑ Furthermore, if intended for genuine participation, it can help to build trust and confidence in proposed urban interventions.
- ❑ Our project is also looking at the social and ethical implications as well as the growing influence of technology.
- ❑ Given how contentious and technocratic current city planning processes are, and how tokenistic public consultations can be, any tools that are better informed by robust datasets, and easily understood 3D visualizations, and that can enable more dialogic engagement between city planners, public representatives, and citizens are worth exploring.

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