

Towards the Participatory Smart City

A Closer Look at Smart City Endeavors in Berlin and Lisbon

A Work Project, presented as part of the requirements for the Award of a Master Degree in Management from the NOVA – School of Business and Economics by Katharina Kremsreiter.

Supervision: José Tavares. Submission Date: 6th of January 2017.

Appendix

Table of Contents

Appendix I – Questionnaire (including results)	2
Introduction	2
General	3
Relationship City & Citizen	5
Technology	6
Participation.....	7
Smart City.....	10
Appendix II – Interview with a Lisbon Smart City Expert.....	12
Appendix III – Interview with a Participation Expert	27
Appendix IV – Interview with a Berlin Smart City Expert	30

Appendix I – Questionnaire (including results)

The following questionnaire was distributed to 628 participants in Berlin (292) and Lisbon (330). After deleting incomplete responses, 349 full sets of answers (159 from Berlin and 190 from Lisbon) were left and used as a basis for this thesis. They were answered between the 9th and the 15th of November 2016. Questions are highlighted in dark blue, light blue indicates the theme blocks, passages marked in italics are explanatory. The respondents remain anonymous.

Introduction

Dear participant,

the following survey is conducted for the purposes of my Master thesis research at Nova School of Business and Economics. I would like to ask for your cooperation in completing this questionnaire about your opinion as a resident of Berlin/Lisbon.

It should take you approximately 10 minutes to complete this questionnaire. The participation is entirely voluntary and can be canceled at any moment. Please be assured that this survey is anonymous. The data obtained through this study is strictly confidential and the results will only be used within this research.

For every completed questionnaire response, I will donate 0,50€ for a good cause. On the last page, you can choose the cause for which you would like me to donate.

Thank you very much for your time and cooperation.

Katharina Kremsreiter

Please state your age.

<i>Lisbon:</i>		<i>Berlin:</i>	
Median	23 years	Median	24 years
Average	23.78 years	Average	24.81 years

Please state your gender.

<i>Lisbon:</i>		<i>Berlin:</i>	
1 Male	46.84% (89)	1 Male	72.33%(115)
2 Female	53.16% (101)	2 Female	26.42% (42)
3 Other	0.00% (0)	3 Other	1.26% (2)

General

Q1 – How would you rate the quality of life in your city currently?

Lisbon:

1 Extremely good	19.47% (37)
2 Somewhat good	67.89% (129)
3 Neither good nor bad	10.00% (19)
4 Somewhat bad	2.63% (5)
5 Extremely bad	0.00% (0)

Berlin:

1 Extremely good	30.82% (49)
2 Somewhat good	57.86% (92)
3 Neither good nor bad	8.18% (13)
4 Somewhat bad	3.14% (5)
5 Extremely bad	0.00% (0)

Background: Cities are going to face serious challenges arising from ongoing population growth and urbanization (e.g. concerning transportation, housing or administration).

Q2 – Do you agree with the statement that your city is undertaking measures now to provide a high standard of living in the future?

Lisbon:

1 Strongly agree	14.21% (27)
2 Somewhat agree	47.37% (90)
3 Neither agree nor disagree	22.11% (42)
4 Somewhat disagree	13.68% (26)
5 Strongly disagree	2.63% (5)

Berlin:

1 Strongly agree	10.69% (17)
2 Somewhat agree	45.91% (73)
3 Neither agree nor disagree	18.24% (29)
4 Somewhat disagree	22.64% (36)
5 Strongly disagree	2.52% (4)

Background:

- Mobility (sustainable transport, intelligent traffic control, ...)
- Living (quality of housing, security, social cohesion, ...)
- Environment (environmental protection, sustainable resource management, energy, ...)
- Government (transparency, participation, political strategies, ...)
- People (training, creativity, participation in public life, integration and diversity, ...)
- Economy (innovation capacity, productivity, ...)

Q3 – Please rate your city's performance in each of the following departments:

Lisbon	Excellent	Good	Average	Poor	Terrible
Mobility	1.05% (2)	24.74% (47)	40.00% (76)	28.95% (55)	5.26% (10)
Living	10.53% (20)	51.58% (98)	30.00% (57)	6.32% (12)	1.58% (3)
Environment	6.32% (12)	52.11% (99)	29.47% (56)	11.58% (22)	0.53% (1)
Government	1.58% (3)	20.53% (39)	47.89% (91)	22.63% (43)	7.37% (14)
People	33.68% (64)	40.53% (77)	18.95% (36)	6.84% (13)	0.00% (0)
Economy	6.84% (13)	34.74% (66)	45.79% (87)	10.53% (20)	2.11% (4)

Berlin	Excellent	Good	Average	Poor	Terrible
Mobility	38.99% (62)	49.69% (79)	9.43% (15)	1.89% (3)	0.00% (0)
Living	10.69% (17)	49.06% (78)	27.67% (44)	11.95% (19)	0.63% (1)
Environment	13.21% (21)	49.69% (79)	28.30% (45)	8.81% (14)	0.00% (0)
Government	3.14% (5)	27.04% (43)	38.99% (62)	27.67% (44)	3.14% (5)
People	30.19% (48)	45.28% (72)	18.87% (30)	4.40% (7)	1.26% (2)
Economy	6.29% (10)	38.99% (62)	38.36% (61)	13.84% (22)	2.52% (4)

Q4 – Now, please rate how important it is to you that your city performs well in each of the following departments:

Lisbon	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Mobility	68.42%(130)	27.37% (52)	4.21% (8)	0.00% (0)	0.00% (0)
Living	62.11%(118)	32.63% (62)	5.26% (10)	0.00% (0)	0.00% (0)
Environment	42.11% (80)	41.05% (78)	16.32% (31)	0.53% (1)	0.00% (0)
Government	35.79% (68)	47.37% (90)	15.79% (30)	1.05% (2)	0.00% (0)
People	40.00% (76)	38.95% (74)	16.32% (31)	4.21% (8)	0.53% (1)
Economy	35.79% (68)	45.26% (86)	16.84% (32)	2.11% (4)	0.00% (0)

Berlin	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Mobility	64.15%(102)	27.04% (43)	8.81% (14)	0.00% (0)	0.00% (0)
Living	54.72% (87)	40.25% (64)	5.03% (8)	0.00% (0)	0.00% (0)
Environment	38.99% (62)	39.62% (63)	14.47% (23)	6.92% (11)	0.00% (0)
Government	30.82% (49)	37.74% (60)	23.90% (38)	5.03% (8)	2.52% (4)
People	36.48% (58)	33.33% (53)	23.90% (38)	5.03% (8)	1.26% (2)
Economy	27.04% (43)	40.25% (64)	24.53% (39)	7.55% (12)	0.63% (1)

Relationship City & Citizen

Q5 – How important do you feel is the citizens' best interest to your city administrators when planning city projects?

Lisbon:

1 Extremely important	24.74% (47)
2 Very important	31.58% (60)
3 Moderately important	30.00% (57)
4 Slightly important	11.58% (22)
5 Not at all important	2.11% (4)

Berlin:

1 Extremely important	14.47% (23)
2 Very important	25.16% (40)
3 Moderately important	40.88% (65)
4 Slightly important	13.21% (21)
5 Not at all important	6.29% (10)

Q6 – Would you agree that your city is doing a good job informing its citizens about city development plans/projects?

Lisbon:

1 Strongly agree	6.32% (12)
2 Somewhat agree	37.89% (72)
3 Neither agree nor disagree	25.26% (48)
4 Somewhat disagree	24.21% (46)
5 Strongly disagree	6.32% (12)

Berlin:

1 Strongly agree	5.03% (8)
2 Somewhat agree	31.45% (50)
3 Neither agree nor disagree	37.11% (59)
4 Somewhat disagree	20.75% (33)
5 Strongly disagree	5.66% (9)

Q7 – Have you actually seen the results of city improvement projects in your city?

Lisbon :

1 A great deal	8.95% (17)
2 A lot	23.16% (44)
3 A moderate amount	43.68% (83)
4 A little	17.89% (34)
5 None at all	6.32% (12)

Berlin:

1 A great deal	6.29% (10)
2 A lot	16.35% (26)
3 A moderate amount	46.54% (74)
4 A little	20.75% (33)
5 None at all	10.06% (16)

Background:

- Access (how fast can you get access, e.g. book an appointment?)
- Convenience (how easy/complicated is the process?)
- Delivery (how competently is your request processed?)

Q8 – How would you rate your city government/municipality services regarding the following dimensions:

Lisbon	Extremely good	Somewhat good	Neither good nor bad	Somewhat bad	Extremely bad
Access	0.53% (1)	28.42% (54)	37.37% (71)	28.95% (55)	4.74% (9)
Convenience	2.11% (4)	23.16% (44)	38.42% (73)	27.89% (53)	8.42% (16)
Delivery	1.58% (3)	27.89% (53)	43.68% (83)	22.11% (42)	4.74% (9)

Berlin	Extremely good	Somewhat good	Neither good nor bad	Somewhat bad	Extremely bad
Access	1.26% (2)	10.69% (17)	10.06% (16)	34.59% (55)	43.40% (69)
Convenience	1.89% (3)	19.50% (31)	22.64% (36)	37.74% (60)	18.24% (29)
Delivery	6.92% (11)	35.85% (57)	28.93% (46)	19.50% (31)	8.81% (14)

Q9 – Can you use municipality/city services online? (e.g. request a new ID card, registering your city after moving, etc.)

Lisbon:

1 Yes, and I have used it before	17.37% (33)
2 Yes, but I have never used it	22.63% (43)
3 No, my city does not provide such online services	15.26% (29)
4 I do not know whether my city provides such online services	44.74% (85)

Berlin:

1 Yes, and I have used it before	22.01% (35)
2 Yes, but I have never used it	9.43% (15)
3 No, my city does not provide such online services	50.94% (81)
4 I do not know whether my city provides such online services	17.61% (28)

Q10 – Would you prefer to handle more transactions with the city over the internet?

Lisbon:

1 Yes	86.32% (164)
2 No	4.21% (8)
3 I am indifferent	9.47% (18)

Berlin:

1 Yes	89.31% (142)
2 No	2.52% (4)
3 I am indifferent	8.18% (13)

Technology

Q11 – Do you use apps or websites which make city life more convenient (e.g. for parking or transportation)?

Lisbon:

1 Yes	65.79% (125)
2 No	34.21% (65)

Berlin:

1 Yes	84.28% (134)
2 No	15.72% (25)

Q11a (if “Yes” on Q11) – The apps/websites that you are currently using for making city life more convenient are related to:

Lisbon:

1 Parking	32.80% (41)
2 Public transport	84.00% (105)
3 Car sharing	12.80% (16)
4 Smart home	1.60% (2)
5 Municipality services	11.20% (14)
6 Food delivery	29.60% (37)
7 Live traffic conditions	37.60% (47)
8 Event guides	56.00% (70)
9 Other	3.20% (4)

Berlin:

1 Parking	2.99% (4)
2 Public transport	96.27% (129)
3 Car sharing	38.06% (51)
4 Smart home	2.99% (4)
5 Municipality services	6.72% (9)
6 Food delivery	57.46% (77)
7 Live traffic conditions	29.85% (40)
8 Event guides	50.75% (68)
9 Other	7.46% (10)

Q12 – Do you feel that embracing more technological solutions for city challenges (e.g. waste, energy and water management) would benefit your city greatly?

Lisbon:

1 Yes	96.84% (184)
2 No	3.16% (6)

Berlin:

1 Yes	84.28% (134)
2 No	15.72% (25)

Q12a (if “Yes” on Q12) – In which areas do you think your city could benefit from better using technology?

Lisbon:

Out of 143 free responses, 96 were related to public transport or mobility. 34 respondents saw potential in the areas environment and waste management.

Berlin:

Out of 89 free responses, Berliners saw the most accumulated needs with government services. 34 respondents saw the most potential benefit in this area. 13 people mentioned environmental betterments.

Participation

Q13 – Do you know of any citizen participation tool(s) that your city offers? (not meant are political referendums but city-induced [often online-] tools or formats that facilitate the communication and participation of the citizens in the public discourse, e.g. social media, city debate panels/websites, collaborative decision-making tools for city budget or city building projects, hackathons).

Lisbon:

1 Yes, and I have used one before	22.63% (43)
2 Yes, but I have never used one	20.53% (39)
3 No, my city does not offer such participation tools	5.26% (10)
4 No, I do not know whether my city offers them	51.58% (98)

Berlin:

1 Yes, and I have used one before	5.66% (9)
2 Yes, but I have never used one	15.09% (24)
3 No, my city does not offer such participation tools	5.66% (9)
4 No, I do not know whether my city offers them	73.58% (117)

Q13a (if “Yes” on Q13) – Which participation tool(s) did you use?

Lisbon:

By far the widely-used tool was the participatory budgeting. Out of 35 free responses, 30 participated in the Orçamento Participativo program. Three people made use of the Na minha rua service, where one can report disturbances in their neighborhood.

Berlin:

The answers in Berlin were very mixed. Out of 9 answers, four used participation tools offered by political parties (SPD, Piratenpartei). A single respondent made use of the Ordnung-samt-App, a service similar to Na minha rua in Lisbon.

Q13b (if “No” on Q13) – Why have you not made use of the offered participation tool(s)?

Lisbon:

1 No time	41.03% (16)
2 Not interested	12.82% (5)
3 I tried but stopped as it was too complicated	20.51% (8)
4 Other	25.64% (10)

Berlin:

1 No time	41.67% (10)
2 Not interested	25.00% (6)
3 I tried but stopped as it was too complicated	25.00% (6)
4 Other	8.33% (2)

Q14 – Are you interested to be involved in decision-making/policy-making concerning city projects that affect you as a citizen? (e.g. how to use land/space, where parks should be built, etc.)

Lisbon:

1 Definitely yes	33.68% (64)
2 Probably yes	39.47% (75)
3 Might or might not	18.42% (35)
4 Probably not	7.37% (14)
5 Definitely not	1.05% (2)

Berlin:

1 Definitely yes	37.11% (59)
2 Probably yes	32.08% (51)
3 Might or might not	18.24% (29)
4 Probably not	10.06% (16)
5 Definitely not	2.52% (4)

Q14a (if “Yes” on Q14) – How much are you willing to get involved?

Lisbon:

1 A great deal (i.e. interested in co-creating new ideas)	11.51% (16)
2 A lot (i.e. interested in participating in conceptualizing and testing new ideas)	20.86% (29)
3 A moderate amount (i.e. through providing ideas, opinions and feedback)	58.99% (82)
4 A little (i.e. providing your feedback/opinion rarely and just on occasions where it is in your definite personal interest and not only for the greater good)	8.63% (12)

Berlin:

1 A great deal (i.e. interested in co-creating new ideas)	12.73% (14)
2 A lot (i.e. interested in participating in conceptualizing and testing new ideas)	29.09% (32)
3 A moderate amount (i.e. through providing ideas, opinions and feedback)	48.18% (53)
4 A little (i.e. providing your feedback/opinion rarely and just on occasions where it is in your definite personal interest and not only for the greater good)	10.00% (11)

Background: *Living labs are user-centric, open innovation research concepts based on co-creation. Inviting its citizens to Living labs allows city administrations to use the city as an urban laboratory and thus to carry out tests and pilot projects on products and services for urban life. The aim is to improve services to citizens and to make their city smarter.*

Q15 – Does your city offer living labs/urban labs?

Lisbon:

1 Yes	7.89% (15)
2 No	16.32% (31)
3 I do not know	75.79% (144)

Berlin:

1 Yes	8.18% (13)
2 No	3.14% (5)
3 I do not know	88.68% (141)

Q16 – Would you be interested to test out future city concepts and applications in a living lab?

Lisbon:

1 Yes	46.32% (88)
2 Maybe	50.00% (95)
3 No	3.68% (7)

Berlin:

1 Yes	38.36% (61)
2 Maybe	44.65% (71)
3 No	16.98% (27)

Q17 – Do you consider crowdfunding an important tool to enable the realization of innovative solutions within your city?

Lisbon:

1 Definitely yes	21.05% (40)
2 Probably yes	49.47% (94)
3 Might or might not	22.63% (43)
4 Probably not	5.26% (10)
5 Definitely not	1.58% (3)

Berlin:

1 Definitely yes	12.58% (20)
2 Probably yes	35.85% (57)
3 Might or might not	28.30% (45)
4 Probably not	16.98% (27)
5 Definitely not	6.29% (10)

Background: Open Data is the idea that some data should be freely available to everyone to use and republish without copyright. More and more governments are making non-personal government data available for its citizens in order to enable the creation of new businesses based on the free data (including datasets related to e.g. job market, demographics, geographics, health, public administration, household and taxes) and to be more transparent.

Q18 – Do you know whether your city currently runs an open data platform?

Lisbon:

1 Yes, my city offers free access to city data	11.58% (22)
2 No, my city does not offer open data	6.32% (12)
3 I do not know	82.11% (156)

Berlin:

1 Yes, my city offers free access to city data	13.84% (22)
2 No, my city does not offer open data	3.77% (6)
3 I do not know	82.39% (131)

Q19 – Do you consider open data to be useful?

Lisbon:

1 Definitely yes	53.16% (101)
2 Probably yes	34.74% (66)
3 Might or might not	11.58% (22)
4 Probably not	0.00% (0)
5 Definitely not	0.53% (1)

Berlin:

1 Definitely yes	55.35% (88)
2 Probably yes	31.45% (50)
3 Might or might not	11.95% (19)
4 Probably not	1.26% (2)
5 Definitely not	0.00% (0)

Smart City

Q20 – Are you familiar with the concept Smart City?

Lisbon:

1 Yes	61.05% (116)
2 No	38.95% (74)

Berlin:

1 Yes	40.88% (65)
2 No	59.12% (94)

Background: Major urbanization requires innovative ways to manage the complexity of urban living.

At its core, the idea of Smart City is rooted in the creation and connection of human capital, social capital and information and communication technology (ICT) infrastructure in order to generate greater and more sustainable economic development and a better quality of life. This is done by excelling in one or multiple key areas: economy, mobility, environment, people, living and government.

Quintessentially, by using new technologies (ICT, internet of things and sensors), the city improves the efficiency of its services, meets citizens' needs and makes the city more livable.

Q21 – Now that you have an idea what a smart city entails: Do you agree with the statement that your city is a Smart City?

Lisbon:

1 Strongly agree	2.11% (4)
2 Somewhat agree	15.26% (29)
3 Neither agree nor disagree	27.37% (52)
4 Somewhat disagree	40.00% (76)
5 Strongly disagree	15.26% (29)

Berlin:

1 Strongly agree	1.26% (2)
2 Somewhat agree	18.24% (29)
3 Neither agree nor disagree	23.90% (38)
4 Somewhat disagree	39.62% (63)
5 Strongly disagree	16.98% (27)

Q22 – Do you think your city needs to become smarter?

Lisbon:

1 Definitely yes	62.63% (119)
2 Probably yes	31.58% (60)
3 Might or might not	3.68% (7)
4 Probably not	1.05% (2)
5 Definitely not	1.05% (2)

Berlin:

1 Definitely yes	50.31% 80
2 Probably yes	32.70% 52
3 Might or might not	7.55% 12
4 Probably not	6.29% 10
5 Definitely not	3.14% 5

Q23 – Do you think you would feel the benefit of your city becoming a smarter city?

Lisbon:

1 Definitely yes	57.89% (110)
2 Probably yes	34.74% (66)
3 Might or might not	5.79% (11)
4 Probably not	1.05% (2)
5 Definitely not	0.53% (1)

Berlin:

1 Definitely yes	44.65% (71)
2 Probably yes	35.85% (57)
3 Might or might not	13.84% (22)
4 Probably not	3.14% (5)
5 Definitely not	2.52% (4)

Q24 – As promised you are now able to choose the cause for which you would like me to donate 0,50€ for your completion of this survey:

Lisbon:

1 UNHCR	23.94% (45)
2 Doctors Without Borders	23.40% (44)
3 Amnesty international	9.04% (17)
4 Atmosfair	7.45% (14)
5 Direct Relief International	0.53% (1)
6 Serve the City Berlin	2.13% (4)
7 Serve the City Lisboa	33.51% (63)

Berlin:

1 UNHCR	10.69% (17)
2 Doctors Without Borders	37.11% (59)
3 Amnesty international	10.69% (17)
4 Atmosfair	8.18% (13)
5 Direct Relief International	0.00% (0)
6 Serve the City Berlin	31.45% (50)
7 Serve the City Lisboa	1.89% (3)

Thank you very much for your time in completing the survey.

Appendix II – Interview with a Lisbon Smart City Expert

The interviewee is a senior consultant at Lisbon's municipality. As a project manager he is partly responsible for the city's Smart City project. The interview was conducted in English language on the 25th of October 2016 in Lisbon at the Direção Municipal Economia e Inovação of Câmara Municipal de Lisboa. The following pages depict the transcript of the recorded interview.

K.K. is the interviewer. N.X. is the interviewee. The numbers surrounded by pound signs are timestamps. Prior to the interview, the researcher briefly introduced herself and explained the aims of the study to set a context for the interview. Furthermore, it was explained to the interviewee that he is free to end the interview at any time.

K.K.: Of course, I researched online about Lisbon and Smart City. But can you give a short overview of the vision and the profile? Because, you know, every city has a different profile concerning Smart City. The northern cities have a lot of CO2-Neutrality and every city is different, so I wanted to see what is the vision in Lisbon and what is its profile? #00:00:28-4#

N.X.: The vision in Lisbon is / We have a program for the management of the city where the citizen is the focus of the attention of the city hall. What we feel is the right vision for ourselves as a Smart City is to instigate and to promote the communication between the citizen and the municipality. So, citizen participation is the focus of our strategy. The changing of the behavior of the citizen towards sustainability, good choices around mobility and energy management and all of that / But we feel the focus must be the participation of the citizen and the mechanisms to begin changing the behavior towards sustainability. So, this is our main focus and our main strategy. Towards co-design also of solutions with the citizen. To put online tools for the citizen to be heard and to participate in the city management. This is our main focus / our vision on Smart City. So, we feel there is a need for a human Smart City where the human focus is very important. Not only technology, but the citizen. #00:01:44-6#

K.K.: This is actually very interesting because my thesis that I write is about Smart City and citizen centricity, so participation. #00:01:51-4#

N.X.: Perfect. Perfect. #00:01:53-7#

K.K.: Yeah. So, I'm talking to the right person. #00:01:56-4#

N.X.: I didn't tell you this but I am also a student at Nova University. But at Nova Information Management School, IMS. I am also studying and having my PhD on e-Participation. So, we have a lot in common. #00:02:13-5#

K.K.: That's great. What a coincidence.

So, my next question is: What do you think: When the Smart City started here in Lisbon, what were the strengths and weaknesses that Lisbon brought with it and what could you do with it?

What was the initial or the starting situation? What did you have to work with? What was there before? #00:02:40-3#

N.X.: It's a long path and we began going through that path and going in the right direction. But it's difficult here in Lisbon because the city decided to lower off the people that inhabit the city. It was a city that had almost one Million inhabitants some fifty years ago and it has been decreasing the population. Many people have been leaving the city as inhabitants, but many are coming in because services began taking the inner circle off the city. And the structure of the municipality was very big because of the one Million inhabitants and it was cut to almost half. And the flexibility of the structure of the municipality is not as big as that. So, we didn't cut in half our own structure. We have had a lot of challenges regarding bureaucracy, regarding the silo mentality within the municipality, regarding not being very apt for technological innovation because also the career opportunities of, for instance, engineers or informatics and information managers were better outside of the municipality than inside. So, we lost a lot of good workers around those areas. But we began trying to make partnerships with university, with technological companies and all of that and we began opening up technological innovation. With this vision of always having the citizen as the center, of trying to hear the citizen on city management. We had the first experience in Europe around participatory budgeting in 2007 or 2008, I'm not sure. It has been an excellent experience. People are participating in the management of the city and feel heard. This was a very interesting shift that has begun some years ago. And also, the structure of the municipality. It has been, I am not sure if I can use this word, more flexible and more open to innovation. So, we also have strong strategies around start-ups, business incubators and all of that. Not only with the municipality but with added partners from civil society, from universities, from commercial associations. That is our main vision and goal. It is interesting because the first business incubator, that we have here in Lisbon was a result of the participatory process of participatory budgeting, where citizens proposed to have a start-up-business-incubator. It was voted and the municipality made a partnership with a bank and created like a sand with its own budget to instigate technological innovation. The start-up Lisbon, start-up LX. It was the first and then it began growing. #00:06:12-6#

K.K.: Yes. It is a whole cluster now. #00:06:13-7#

N.X.: Yes, a whole cluster of innovation. So, I think this was the main shift that was made some years ago. Since 2007 or 2008. And it has been going well because we won some prizes regarding entrepreneurship and start-up-incubators, all of that. Also, the participatory budget was in the UN as a good experience in Europe - the first city to have a deliberative participatory budget in Europe. #00:06:45-1#

K.K.: That is interesting. Would you also say that with the start of the participatory budgeting / did you also, back then in 2007 and 2008, have the idea of the Smart City set? Did you already then say: 'Lisbon has to become a Smart City!' and also used the term? Or was it something else that now is called Smart City and you had the vision before Smart Cities were a trend? #00:07:08-0#

N.X.: Before it was scattered out within the municipality. Nowadays we began trying to make it more of something more centralized. Where there is a vision and there are organs within the municipality who coordinate this vision. But it is something by itself that has to be a participatory process. We have some strategic documents, like Lisboa Europa 2020, which was a document that was made with those partners from civil society, from universities, from research centers to identify and to define and to document which clusters are the most important for the

city as a city that wants to be developed, to keep increasing, to keep promoting economic activity. Some documents were made and identified the cluster that, for instance, the financing of the European community could be more useful for ourselves. Then we decided to go, for instance, when we decided make a candidacy for the age 2020, we note which cluster we should address the effort. Because we can't go to all of the calls the EU puts out. It is important to have this discussion and to have a consensual process, where it is the city and not only the management that defines which are the main goals to invest time, to invest human resources of the city. #00:08:53-1#

K.K.: So, you could say that in Lisbon it's not so much a top-down-approach but more really the bottom up? #00:08:58-7#

N.X.: Yes, that's it. For sure. #00:09:00-9#

K.K.: The citizens are involved in every part and it's not one mayor saying / #00:09:08-3#

N.X.: For sure. Because the other approach before 2007 or before 2006 was the other way around: The city was managed top down. But it doesn't work that way. For instance, public contracting laws in Portugal are very restrictive. So, it's more easy for the municipality to promote innovation. For instance, technological innovation in a program like the age 2020 sharing cities than by procurement by itself. Because procurement laws are so strict and so closed in nature that it won't work that way. So, I think this is very important. The partnerships, the bottom-up-approach, and also finding the good innovation projects that the EU funds for us to launch. Projects that are for more than / for instance the sharing cities runs for five years but we are doing it and we are trying to manage the problem for it to go much longer than the five years. #00:10:07-7#

K.K.: So, it finances itself afterwards? #00:10:09-6#

N.X.: Yes. Of course. #00:10:10-9#

K.K.: Because you want a long-term effect, right? #00:10:13-1#

N.X.: And we want to work for products that arise from that program that are for the city and not for the municipality. So, the members of the consortium are the whole owners of what we are doing. For instance, what we call the Urban Data Platform that we are doing in a specific work package that manages data integration, IoT technologies in the city. We wanted to be a product for the city and not for the city all by itself. Another interesting project that I might strike out is the Open Data strategy of the municipality. We promoted a lot of protocols with more than thirty entities on the city that own data and they are also beginning to open up datasets / Because some years ago we also had an Open Data portal. But it was focused only on municipal data and we had a lot of criticism and a lot of start-ups that said: 'This is not enough for us.'. So, we decided to go to the / #00:11:14-4#

K.K.: It's the Open Smart Data / #00:11:17-4#

N.X.: Yeah. It was the Open Data LX and now it is Lisboa Aberta. #00:11:24-7#

K.K.: I read about it; that you are trying to find new business models and services. You know, you take the start-ups and they look at the open data and see what they can make out of it. #00:11:34-4#

N.X.: Yes. That is the Smart Open Lisboa. #00:11:37-8#

K.K.: Exactly. I saw that and thought this is a very good approach because this is what you want with open data. I mean it's always also for transparency reasons. So, citizens, if they want to / But what you want is to create some products and services out of it that are useful for the citizens. So, it's always the citizen in the end. #00:11:57-5#

N.X.: What is good about that is that the services and products are not designed by public servants that are on their desk trying to figure out what the civil society needs. It is something that is then by the inventors and by the innovators themselves. I think this is the main shift that we had in the municipality in last few years. The person that began it, I worked with her, is no longer with the municipality because she went to central government. But she was a very interesting person because she had this mentality of openness and not only to: 'I'm here, I work at the municipality and the municipality has to be the motor of innovation of the city.' The municipality is an enabler not the central stone of the innovation strategy. It has to be a facilitator. #00:12:45-9#

K.K.: I think that your projects really show that. I think you have come a long way. That is really, very innovative in an organizational, in a cultural sense.

So, you talked about it before that it's not just the municipality, it is many people working together. So, would you say that Lisbon also has the triple-helix-approach that everyone is talking about? Or would you even say that there are more parties involved? #00:13:16-5#

N.X.: I would say it is a quadruple-helix. Because even the co-design and the participation of civil society is very important for us. Not only the research centers, the municipality, the economy and the finances but also the citizen. #00:13:33-5#

K.K.: Okay. Great. I have a few questions just on the functional set-up. What is the management and organization? I mean, the smart city leadership obviously lies here in the [innovation and economy] municipality office. But, is there a designated role for a coordinator of everything? #00:13:56-3#

N.X.: The management is done like this: We have the councilman for economy and innovation, this is the vice president of the municipality. And then there is also the human resources and finance councilman, who is the councilman I am working for, and Rui is also a councilor. He has a role of a city lead regarding the sharing cities and Smart City strategy. But is all coordinated with the councilman of economy and innovation and of human resources and finances. And within the structure of the human resources and finance councilor there is a team which is called Equipe Emissao Lisboa Europa 2020. It is like a mission team for Europe Lisbon 2020, yes. And it is where that document that I have told you about, the carta strategico Lisboa Europa

2020 was made with the civil society and with universities. And this is the team that identifies the opportunities around Smart Cities, the financing models and all of that and the partners that can be involved in this project. So, for instance, if a guy that works in garbage disposal has a need, he talks to this team and this team can also proactively talk to him and try to figure out what kind of innovative solutions are there and what kind of projects and innovation can be done in garbage collection. And then there is a project that is set-up and a specific team is put in place cross-departmental to promote the project. For us it is the sharing cities project which is very big so we had a team that was nominated with a city lead, a problem manager, project manager, and a project management team that goes cross-departmentally to every department involved. For instance, energy, mobility, human resources, information systems. There are people that are designated from each of those departments that work with us. We created a normal work package structure where everybody is represented and has meetings from time to time with the usual program management methodology. #00:16:31-4#

K.K.: So, I think here from what you just told me it is very clear that there are roles and everybody knows whom to talk to. #00:16:39-4#

N.X.: Of course. #00:16:40-3#

K.K.: And who is in charge of what. Because sometimes / You know, I have researched Smart City in many cities it is not so clear sometimes, even people within the management don't know whom to talk to and who is in charge. #00:16:54-0#

N.X.: We decided to do this because some time ago it was very fragmented. So, it was that confusion that we talked about. And sometimes with such a big structure as ours there were parallel projects going on that didn't have synergies that were very natural because the people didn't know in the next department there was somebody. For instance, making a project around data integration or something like that, there was not enough synergies going on. So, we decided to do things like this. But it's something that has been going on in the last three or four years maybe. #00:17:37-0#

K.K.: Yes, it is not somethings that you can make on the point, it takes some time and it evolves. #00:17:39-9#

N.X.: Yes, of course. #00:17:42-9#

K.K.: Is there also an external agency involved? In some smart cities, for example Vienna, they have an external agency. I read something about eNova? #00:17:50-9#

N.X.: Yes, what I was going to talk to you about. The sharing cities lighthouse project for instance is in partnership with Lisboa eNova. Lisboa eNova is like the energy agency of the city. But nowadays it has been doing projects not only with the Lisbon municipality but with neighborhood municipalities, Amadora and all of that. So, we do a lot of projects also with them. Because they are a little bit more flexible than the municipality. #00:18:32-1#

K.K.: I think we have talked about a little bit, but something else that I am curious about is the status quo concerning Smart City Lisbon. You know, I tried to read up online what is happening in Lisbon concerning Smart City. But there is not yet a Smart City webpage dedicated to Smart City Lisbon where all the projects are listed. So, for me, as I only speak a tiny bit of Portuguese, it was difficult to find out more. I could see that some projects are already in the implementation phase, but I guess you are also still planning new projects simultaneously, so that you are constantly planning and constantly implementing. You told me that there is a Smart City Lisbon strategy. So, I wanted to see where in the timeline are you currently? #00:19:22-9#

N.X.: We have done interesting work with the benchmark of where we were and what's the roadmap for the future. I'm not sure if Paul might have told you this. Which was a project done with Fraunhofer Institute which is called Morgenstadt City Lab. I can facilitate for you the documents / Because it is still not online because it was done a short while ago. It was delivered the final version. But I can give you access to it. Because it has a benchmark with a lot of Smart City indicators where Lisbon is or it is concerning the other cities and a roadmap for the future for eNova and Morgenstadt have worked with us. I might also give you access. I will keep you email and I will send you that via email. #00:20:17-3#

K.K.: That would be great. Thank you so much. #00:20:18-0#

N.X.: I think it's a good document for you, also for your thesis. #00:20:24-1#

K.K.: Another question. Because sometimes / For example I read the whole Berlin Smart City strategy. And for me there was something missing. And those were clear goals and performance measurements. I always felt: 'Oh, this and this needs to happen.' But I'm like: 'Until when?' and 'What exactly?' Because, you know, you can only measure the success or progress of a project if something is clearly defined .../ #00:20:49-4#

N.X.: Of course. You can only go the right way if you have the coordinates. #00:20:53-9#

K.K.: If I don't know what exactly they want to achieve, how am I going to rate it afterwards? So, in your strategy you probably do have these / #00:21:01-7#

N.X.: Yes. That document that I will give you access to has that. #00:21:04-8#

K.K.: Ok, great. So, that also answers my questions. A next question is: There are many organs involved, obviously, it's not just the municipality but many people work together. We already talked a little bit about synergies. Is there a good flow of information? What do you think works well in your case, are parties working well together? #00:21:30-8#

N.X.: It goes well but you have to have these kinds of structures, the cross-departmental teams. They have to be set-up; they have to have a clear mission and they have to be designated. What we feel is / It's very important in an organization as big as ours to have a formal document where you empower the people that are managing the projects. For them to have a clear mandate and for them to be able to go to each department, to each designated representative office of the structures that have to be involved. And to say: 'You have to work with us, doing this.' It's very

important for the first step, and then it's only making the work groups work together, come together, discuss solutions. Because people naturally like to solve problems. What you have is to have this first step to make them see that their time is worthwhile and then beginning to work and to have those measures, the sharing of the documents, the sharing of the goals, the discussions together. When there is some event, for instance. Our project has a lot of events, international events. You have to take the people sometimes with you, also for them to see what's the impact of it, internationally. And if you do things like this, it goes well. It begins going more smoothly along the way. #00:22:58-8#

K.K.: Smart City is a lot about interconnectedness and collaboration, you already talked about partnerships. Would you say that public-private-partnerships work well here in Lisbon? Do you have a lot of public-private-partnership? #00:23:13-6#

N.X.: Yes. Yes. Of course. There are some things that we contract directly in a public bid contracting process. But in this kind of innovation process, we usually go for the bids on European Community. We find what's interesting and compare it to the strategy that we have designed and we talk to the usual partners we have. We try to privilege the university, the research centers, non-profits. And after that we see that there is a need for a technological company. We try to see which company is more apt to go with us for a certain project that we launch. It's more flexible like this. #00:24:05-7#

K.K.: Okay. So, could you maybe first sum up the main challenges. You already talked about this before in other contexts. But what would you say were the maybe three or four main challenges here, concerning the transformation to a smart city and what were, in your opinion, the success factors? #00:24:28-0#

N.X.: The main challenge in the last few years have been budgetary issues. We have lots of problems here in Portugal regarding budget. Sometimes we would like to do a project or to have a specific solution for the city but we didn't have enough budget for it. Then the organization itself, because it is a big organization, the municipality, sometimes worked in silos. It was difficult to put get the machine rolling. The organizational structure of the municipality was a big challenge but we've done some reforms and simplifications. What more can I say? Another challenge. Citizen participation and gaining citizens' trust on the processes and the messages that we want to put out there and make the citizen engage with us and begin changing the behavior / For instance, when we talk about mobility or energy efficiency, all of that, we have to convince each of the citizens to have a sustainable behavior. It's more important than technology instead. To do that you have to have the confidence of the citizen. Your message must be put out in a clear manner that they understand and that they feel the benefit, not only for themselves individually but for the whole community. And the success factors. I think it's this involvement of the citizen too / Because we have a lot of technology available nowadays but you have to have a clear vision on how to use it and you have to have also a clearly architected strategy for the information systems of the municipality and of the city. That big picture of the architecture around smart city solutions who have a shared architecture with all of the player, it's very important. For that we are doing those protocols with a lot of players and stakeholders who have city data or city-relevant data for our operational center. I'm not sure if somebody has told you also this. We are doing a big project to integrate not only the open data but all of the data relevant for the city management in a big operational center. Which will be done in the next year. We launched a public bid, we have a lot of players interested in doing this with us. And with the European Projects: We work on the best standards, the best methodology, the best

integration technologies, and all of that. It is the intelligent operation center of the city, the COI [Center operacion integrad] #00:27:19-8#

K.K.: Interesting. I have not heard about that. #00:27:20-6#

N.X.: The document that I will / #00:27:25-6#

K.K.: Okay, thank you. Good. So, we had challenges and success factors and I also have a good idea of how you deal with challenges. I think it came out very well when you talked about it. Going back to something that you just mentioned: Technology is an enabler but you have to have the citizens involved. Which leads me to my next question: What role does technology play in the Smart City Lisbon? Because, you know, there is some Smart Cities where technology is the overriding main focus #00:27:49-0#

N.X.: The center. #00:27:49-8#

K.K.: The center, exactly, and everything else comes afterwards. Interestingly, this is also partly true for academic smart city research. There has been a lot about Smart Cities and technology but not so much about Smart City and the citizens. That was neglected a lot. So, I wanted to get Lisbon's opinion on this topic. From what you said before I understood that technology is an enabler, you use it, but it is not the prime source, did I get this right? #00:28:12-7#

N.X.: Of course. For instance, in the sharing cities project one of the work packages is citizen engagement. And what we are trying to design also is incentives with technology, with apps. Everybody nowadays has a smartphone. There is a lot of schemes that can be put out where it's not only money or monetary incentive for people to have a smart behavior and a smart city. So, we can put out things like a digital bond scheme, negotiate with partners for them to give discounts or other incentives, for instance, if a citizen leaves his car in the outskirts of the city in a park and then he has a shared bicycle, for instance, to go to the center. What apps, what incentives can we design for him to adapt to that behavior? It's not only putting the bicycle station and the park. If you only do that the person might or might not use it. You have to give the right incentives. We have a methodology also to design with the partners and with the research centers. What kind of incentives can we give? And that has to be integrated with the communication strategy, with technology, with sessions around the city where the mayor might go and try to give his example to the citizens. It's an overarching strategy that has many dimensions. Not only the technological but the communication, the participation, all of that. #00:29:52-6#

K.K.: I think that this is very interesting because from what I have heard so far sometimes it is the case - and there was one in Germany where Smart City went wrong, because it was only designed from a technology perspective and in the end the citizens didn't really want it. And they didn't use it. And maybe it was also about the incentives, like you just said and people weren't asked / #00:30:15-7#

N.X.: And the technology companies, I think, have to have that in mind. Because there was a strong push some years ago of technological companies to sell, sell, sell, sell technology. But then in the end not even the CEO of the technological company is happy that the technology

was sold and then it stops being used five years from now, ten years from now. That's not good for nobody. Neither for the municipality, nor for the technological company. So, I think even the companies are beginning to see things another way. #00:30:48-7#

K.K.: Yes. And they see that they need to design for the end user. #00:30:51-7#

N.X.: Of course. Because if not, not even their solutions will be sustainable in the long run. #00:30:59-1#

K.K.: One of my questions would have been how technology citizens and institutions interact in the Smart City Lisbon. But I think this is also something we covered already. So now I will come to the part about the involvement of citizens in the planning. We already talked about that. But one thing is: How would you assess the citizens' attitude towards Lisbon becoming a Smart City? Have you had feedback from the citizens here? Do they like it? Because sometimes, you know, culture in a city changes. I mean technology is coming, sensors are put everywhere. Are some people may be afraid of those changes? Do you feel that the Lisboners are embracing these things? #00:31:45-5#

N.X.: Yes. The demographics also play a role in that because the younger people, the younger generations, people like us, are of course very satisfied. They are the people that put out the proposal in participatory budgeting for us to have a start-up business incubator. They are the guys that leave the colleges and feel happy to feel nurtured by the municipality and by the initiatives we are taking. But then there is a lot of persons in the city that are elders. Those don't see the benefit in the short term. But they are beginning also to feel some differences and some help and some / For instance with tele-assistance, monitoring the elders and having the medical assistance / #00:32:39-4#

K.K.: Ambient Assisted living also. #00:32:40-2#

N.X.: Yes, assisted living. All of that. Slowly, they are also beginning to see that it is very important in the city to have technology and to put technology / #00:32:50-6#

K.K.: And that it will help them. That they will benefit from it. #00:32:54-3#

N.X.: Yes, yes. The municipality there has a very strong role because it has to be not only the enabler but sometimes the supporter of those kinds of technology. Because there are some slices of the population that don't have access or can't access those kinds of devices to / And some years ago we had some very big problems regarding elders being isolated. For instance, 10 years or 20 years ago I remember being young and seeing the news about an elder person that died and was there for two weeks before somebody knew that that person was in need and she died. So, I think the elders are beginning / And within the project also, interestingly, we only have two of those which is now digital inclusion centers. Where we try to pick up the persons that are not so digitally included and try to take them to rooms and to have teams that work with them to make them show what solutions we have, how can they interact with us, and all of that. And even to use Skype to contact a person that is on the other side of the world. The municipality has also tried with the partnerships to do those what we call digital citizenship centers. #00:34:25-7#

K.K.: That would have been my next question: How do you educate those people who weren't born digital natives. So how do they get the education to use the technology that benefits them? The digital divide is a big thing but I think you already answered that.

Coming back to something else you have mentioned before: The people got involved with the participatory budgeting so I think it is fair to say that in Lisbon there is a rather high level of willingness to participate. Right? Would you say that this is true? #00:35:00-6#

N.X.: Yes. Because of the participatory budgeting and because it has been growing since 2008 #00:35:08-8#

K.K.: So, it's big #00:35:08-9#

N.X.: Yes, very big. And it has dimensions that are online but we have participatory assemblies where people from the municipality have sessions in rooms where they sit with people on round tables and people begin discussing what's best for their parish. And they instigate the talk between the citizens. For us also not to have 3000 proposals but for people to get together and consensualize what are the best proposals for their neighborhood. #00:35:47-5#

K.K.: Yes. Okay. One of the things I wanted to ask but I think you also spoke about is: How to make sure that Lisbon citizens will adopt the Smart City? But one thing is if you involve them from an early stage then you plan not for them but with them. This is how you make sure that in the end someone will use. #00:36:13-2#

N.X.: Co-creation is a fancy word but it is a reality. People are more willing to co-design solutions with the public body, like the municipality, than for instance if Siemens or if IBM told them. You would have to pay for it. People would feel like a job not like being owners of the solution. The public bodies have that power that people see that they are there to serve them and so they co-design solutions with the public body. It's not something that's for only monetary profit or for something like that. #00:36:50-7#

K.K.: I think that they really know that you have their best interest in mind when planning #00:36:53-8#

N.X.: Yes. But the big challenge is to win the trust of the citizens. When this is not the case it begins to get very difficult. But that I think we have done in the last few years. #00:37:05-8#

K.K.: Great. We already talked about those open innovation and participation tools. We talked about the Orçamento participativo / #00:37:14-3#

N.X.: Particip- / #00:37:15-4#

K.K.: That's the budgeting, right? And I also saw that you have Lisboa em debate #00:37:24-1#

N.X.: Yes. #00:37:28-8#

K.K.: And Lisboa Aberta. So, there are many participatory endeavors to include citizens that even I could see from researching a little bit. Have you been able to use all the insights that you get from citizens effectively? Have you been able to use them well and right away? Do you have any learnings or take-aways from how to use what you gathered? #00:37:53-8#

N.X.: I think so. Because in the beginning, for instance with the participatory budget / It has begun in 2008 but it has been evolving. The issue of trust and the feeling of efficacy of the citizens when they are participating is something that has to be built up. And it has been being built up along the way. But we had to make some changes within the municipality. To track the interactions between the citizen and the public servants to make them see that part of their objectives is not only to staple forms and to give licenses and to tax people but also to talk to them, to listen, and to listen to them, and to propose also and to be proactive in finding out solutions for the problems that people have. So, that is a part of the evaluation process when the hierarchies of the public workers of the municipality evaluate them. Many of them are evaluated also on that aspect: How proactive were they, facing the needs of the citizens and the interactions they have with the citizens? How did they solve the problems of the citizens? How did they dialogue to find a solution? That is something that has been going on constantly. I think it's more built up in our organizational culture of the municipality. But it is something that has been going on in this last two years. It's not switching and telling them: 'You have to do this.' It doesn't work like that. #00:39:40-9#

K.K.: Were you able to use many of the ideas in a co-creation sense? Meaning, you get an idea of what citizens want and then actually implement it, transfer it to a real-life project? #00:39:53-7#

N.X.: Yes. Yes. #00:39:54-3#

K.K.: So, they were very useful? #00:39:55-6#

N.X.: Yes. Yes. Yes. That's the main difference and the main positive thing of our participatory budgeting. It's deliberative. When people say: 'We want to do the start-up incubator or the cycle sharing in the city.' and people vote for it, it is done, then the municipality has to do it #00:40:16-4#

K.K.: Ok. #00:40:17-3#

N.X.: And the difference between the first years is / In the first year the municipality / The proposal was put out, it was voted, it was decided to be implemented. Then the municipality within itself decided how to implement it. It became done and then it was presented to the public. Nowadays it's an interactive process where we can even discuss with the proponents: How do they want their idea to be implemented? So, it's not something that you say: 'Let's do this' and five years from now I tell you it is done #00:40:50-9#

K.K.: This is the result. #00:40:51-6#

N.X.: Yes. That's it. #00:40:54-6#

K.K.: That's also great. Because I wanted / You know I read up on citizen participation and I read a lot about how you involve the citizen in planning. But sometimes I couldn't find out so much about how or even if citizens are also involved in the implementation. Because I think / #00:41:12-7#

N.X.: They are. They are. #00:41:14-5#

K.K.: Not just get the idea and then do something and say: 'This is it now. This is what you get.' #00:41:19-8#

N.X.: Yes, they really are. In the beginning, sometimes it happened that the citizens were not satisfied with the final result. And sometimes people think: 'Oh, it's the mayor or something higher up in the hierarchy that didn't do things well.' It wasn't the case. The case was that sometimes people wanted to do things right and said: 'The citizens want this.' But they closed themselves within their offices and things don't go that way because things are dynamic. For example, a proposal takes two or three years to be implemented because it's difficult, because there are legal constraints. Sometimes you have to adapt it. But to adapt it you have to talk to the person that had the idea in the first phase and the people that voted to see if they are welcome to a little change or to other circumstances than the ones when they voted. So, this is very important. #00:42:18-3#

K.K.: Yes. I think so, too. We could say that Lisbon itself is a Living Lab, right? #00:42:25-1#

N.X.: Yes. #00:42:26-8#

K.K.: It is totally. Because you know, you read these buzzwords and you read about them. And sometimes you say: 'Hmm, Living Labs?' But now I can really, from your experience and from what you have told me / I can really see how Lisbon itself has become a Living Lab. #00:42:39-9#

N.X.: And we have the perfect conditions for it because we have a lot of servants, we have Erasmus students who arrive every year, we have the set-up perfect to do that. #00:42:49-7#

K.K.: That is great. Returning to the public image of Smart City Lisbon / and I have said this before / You know when I tried to look it up there was not a website dedicated to Smart City Lisbon as with other Smart Cities: Vienna, Amsterdam, Barcelona / #00:43:11-1#

N.X.: They have documents and sites. #00:43:13-3#

K.K.: Exactly. Are you in the process of planning such a web presence? How are you marketing your Smart City? #00:43:21-8#

N.X.: That's a suggestion I have done and we are trying to implement it. A kind of a map of the Smart City strategy of the city and of things that are being done on the ground, on the city streets. We are beginning to do that. For instance, for a project. We are going to have an exposition of the solutions with the partner in the city hall square, downtown. That's what I was doing there with Rui and the designer and my colleague from communication. We are setting up expositions and events where citizens can even interact with solutions that we are promoting and seeing and putting questions to the partners out there. Or put their people to answer the citizens' questions, to have their feedback. The strategy is there. We have to centralize the information and to make it more interactive, that's for sure. #00:44:22-8#

K.K.: Exactly. Because I think now that I dove deeper into the topic I thought: 'Oh my god. There is this and Lisbon has that.' But, you know, I had to look there and had to look there and there and there was not this one webpage. I think this is why Lisbon is not yet in, you know, in the rankings. #00:44:38-4#

N.X.: In the main street of Smart Cities. #00:44:41-6#

K.K.: Exactly. Because, you know, there is Barcelona and there is Amsterdam or London / Lisbon is not on the global map yet as a smart city. But so much is happening here #00:44:54-5#

N.X.: It is beginning because of the Web Summit. We managed to have the Web Summit here. #00:45:00-3#

K.K.: That's a big thing. It is starting. #00:45:04-1#

N.X.: But we have to / #00:45:05-7#

K.K.: Because I think people, you know, assume that you have a website and you see: 'We do this and that. Everyone knows.' #00:45:10-4#

N.X.: In Barcelona, they even have the Smart City tour around the city. #00:45:13-9#

K.K.: I know, it's crazy. I just have one last question. Oh, no, two. Did you look at other smart cities that were maybe early models and said: 'Oh, this is what we want to do.' Did you see what are they doing and figure out whether you could implement some of it as well? #00:45:42-4#

N.X.: We had some experience with other city because these kinds of projects, like our sharing cities project. As we have interaction with them we benchmarked a little bit with them. Yes. We are in the international process. We always keep a good line of connection with the other Smart City leads. #00:46:06-1#

K.K.: I think that this is very important. To have a conversation with them and see what you can learn from them, what they can learn from you. #00:46:10-7#

N.X.: This year we already been to Milan, Milan already came here, we went to London. And the structure is interesting because each of the cities has a city lead regarding Smart Cities. So, it's very interesting because it's a one-to-one conversation where we can discuss the main ideas and then you drill down and you promote the projects and you exchange experience. We have a lot of webinars with other cities also. People from Brussels, from Milan, from London. So, we try have conversation with the cities. Working together as cities not only as technological companies. Even the cities must cluster together and begin these discussions. #00:46:58-4#

K.K.: And I think this is important because this is at the heart of the Smart City. Because the Smart City is about collaboration. And it's not just your own city. #00:47:04-8#

N.X.: Of course. Of course. Of course. #00:47:08-5#

K.K.: We're in a globalized world. Obviously, it's not just Lisbon but all the cities around. I think that is very interesting that you are doing that. And one last thing and I think you might have answered this also a little bit. I wanted to know: What other cities can learn from Lisbon? I mean, you are in the process of exchanging, Milan came here and looked at what you are doing. What do you think is what Lisbon does best? Is it the citizen centricity? Is the approach that you think that the citizen is in the center of your strategy? #00:47:38-9#

N.X.: I think so. I think that's the main goal that differentiates us from other cities. Because we are such a heterogenous city, because we have a lot of cultures, immigration, problems with the elders, digital divide and all of that. But we managed to involve the people and bonding of trust between citizens and the city has also been made. It's interesting because in a time where the people are not participating so much, even in politics and in the voting process. Our last election that took place three years ago was the strongest voting for / I'm not a politician but I must strike out this because I've always seen the elections in Lisbon. It was something historical to have such a strong vote on a specific management structure of the city, it was the first time it happened since there is democracy in Portugal. I think this participatory process is something that is beginning to be nurtured by all of the parties. #00:49:02-2#

K.K.: I think it's deeply rooted in the culture. #00:49:05-3#

N.X.: The party that is now running the municipality took the credit for it. It had a very, very strong election. But nowadays the other party is also knowing that it's the only way to go from now on. It's a bond that has been created that cannot be reversed. So, I think this is something that all of the cities must / The technology for it, the means to participate, to instigate / It's just a question of putting them online and having the structure inside also connecting with the citizens. It's not just only putting a website and then sending e-mails and hoping that people will keep on. It's making them feel satisfied with the process. Learning from it and continuously beginning to go better. #00:50:01-0#

K.K.: So, I think we could say that the citizen is really the driver behind the Smart City strategy? #00:50:05-6#

N.X.: Of course. Of course. Of course. #00:50:08-0#

K.K.: And would you say that your infrastructure and the whole technology part / Do you think it is sufficient? Do you still have problems there? #00:50:17-2#

N.X.: That is a challenge also that we have. Because of budgetary constraints in the last year, because of this flow of resources that didn't work for the municipality or left the municipality regarding, for example, information systems. We have the banks that have a lot of legacy systems and of dispersed information / We still suffer a little bit from it. But we are getting there. Because the main thing is to have that overarching vision and the architecture of the IT of the municipality. And with the help of innovation projects and partnerships with other cities, with universities like the Nova IMS university and Philanova. We have a vision now. It's just a matter of putting the change in place, year after year. #00:51:18-7#

K.K.: So, one last thing maybe. Where do you see Lisbon in five to ten years? Do you think it's going to be very different from what we know, what it is now? #00:51:26-9#

N.X.: I think so. Because it has evolved so much in the last two or three years. I think it's a challenge to imagine how it will be. But I'm pretty sure it will be more prosperous with more jobs, with a stronger economy, even than it is nowadays. Because our growth has been so fast in the last two or three years that I think it's also irreversible to keep this path going. I hope for the best. #00:52:03-3#

K.K.: I do so, too. Thank you so much for the interview. It's was such great insights. Thank you so much.

Appendix III – Interview with a Participation Expert

The interviewee is Head of the Participation Research Unit at Technical University (TU) Berlin's Center for Technology and Society. The interview was conducted via telephone on the 25th of November 2016 in German. The following represents the researcher's transcript of the interview in English.

K.K. is the interviewer. C.S. is the interviewee. Prior to the interview, the researcher briefly introduced herself and explained the aims of the study to set a context for the interview. Furthermore, it was explained to the interviewee that she is free to end the interview at any time.

K.K.: I would like to start out conversation by inquiring about what you deem to be the most important prerequisites for an inclusive, collaborative smart city that fosters participation?

C.S.: • Well, I guess it is important to not only look at participation from a mere technological side, but think a) about the effects on individuals, b) how to deal with technical things and c) realize that people do have their own techniques that are sometimes very difficult to bring together or align with technology.

- Technology is not yet fully understood, as the skills and the knowledge to deal with new technologies are not fully developed within the broad mass. Additionally, it's also a case of what society is doing with the internet and not what the internet is doing with society.
- So, where we need to get to is a different action logic: We need to think more from a human side or perspective rather than from a technological one and that's a current error in reasoning

K.K.: Would you say that the term smart participation is already established?

C.S.: • I think that it is not yet anchored or grounded, however, terms like e-democracy and e-participation are already wider known. There is the problem of being stuck in old thought patterns of how citizen participation works offline and the attempt to transfer the offline directly into online. So, what I think would be worthwhile it to have more experiments, maybe with activists in social media scene.

K.K.: Which role does the Municipality/city government play in the participation context?

C.S.: • The Municipality is needed as an important institution as city planning should not completely be taken over by the industry/large multinationals. In that sense, municipalities should definitely understand and realize business interests in the city context, however, they play a governing role so that they should also conductively restrict those interests.

- Furthermore, there is a big learning to be made of how to be able to deal with smartness competently and adequately in a city context. The municipalities therefore need to enhance their skills and their knowledge in this area. However, this does not only apply to

municipalities and government but also for civil society to better grasp the idea of smartness.

K.K.: In the context of smart city and citizen participation the quadruple helix model, which is an extension of the triple helix model showing the collaboration between academia, industry and government, now includes the citizens/people as a fourth dimension. How well would you – from your personal and professional insights – say that this model is already working?

C.S.: • Obviously, it always depends on the specific topics, so it is hard to give a general answer to that. What I have experienced concerning the levels is that it does not always make sense to include all parties.

- Concerning the Smart City discourse, there have been approaches or attempts for two years now and I would say that the successes are still frugal or modest so to say. Clearly it is always case-based, i.e. how is the willingness/readiness of the civil society or the businesses in the respective city?
- In general, we can say that this concept is great in theory, however in the real world, in practice it is still very much in its infancy. However, the first step is made, there are many positive joint declarations of intent.

K.K.: How and to what extent can participation be integrated in the smart city concept?

C.S.: • Concerning the actual execution/implementation we need to ask ourselves, does it really need ITC in order to be smart? The objective needs to be to connect new technology with physical presence.

- Furthermore, there is a necessity to break down smartness so it is comprehensible and to allow points of contact for the people to take away their uncertainty.
- There are the challenges of integration of new technology. Additionally, how do you actually run a qualified/meaningful/conducive participation? The old or known problems connected to participation are not being solved by new technologies so far, concerning a) the number of people who participate: The hope was that those numbers would be rising due to internet, however this did not come true. This implies that you need some warm-up time. And on the other hand b) the group of people who participate: We still get most elder male people and the hope that more women and minority groups would be reached has also not been proven true
- However, I would say that there has been a change visible within the last two years. Participation has become an integral part, this has really changed. We can see that people actually take the offerings: they come to those events, they want to discuss, they want to be part and this takes courage but also effort
- So, what we can see is a stabilization and continuation of the participation-culture, people really want to give their input and it is something they can only do in their leisure/spare-time, so they give up some of their leisure time. The internet definitely has the potential to further this.

K.K.: Can you name main challenges related to participation that you have encountered?

C.S.: • First, Civil participation is still not very transparent. Second, there is definitely a problem concerning financial resources. Mostly it is not a case of missing the willingness or good intent, but much more a case of lacking budget

K.K.: What would you say are critical success factors based on your experience?

C.S.: • Alright, let me list a few that I can think of:

- 1) Comprehensibility (i.e. questions as: What is it about? How is this connected with me and the society as a whole?)
- 2) Start as early as possible.
- 3) Don't let it be just about signing off on decisions that have already been taken
- 4) How will the communication culture develop in the future? Will we be able to overcome the chasm? And this needs to happen now!
- 5) True/genuine willingness of all involved parties
- 6) Openness
- 7) The verifiability of successes within an adequate scope or frame to allow perception of the aspect of change, i.e. don't put it into a drawer that is not going to be opened anymore.

K.K.: This is indeed a good point that needs to be addressed further. Just getting feedback once and then not follow-up on the citizen over time does only give you a singular view. Are there already many participation practices out there that are in fact not one-time but try to get feedback over time to see whether the implemented measures based on the initial feedback have changed the view?

C.S.: • There are indeed positive examples on a local level where the follow-up of events and/or workshops and project progress is easier to show. For instance, in the e-domain the issue management apps.

K.K.: You are talking about the kind where people can report issues to the city, like the *Ordnungsamt-App* in Berlin?

C.S.: • Yes, exactly. They include a direct feedback system allowing some level of exchange. Furthermore, with online budgeting you also can follow-up on the participation. However, following up on participation is usually very resource-intensive, but it is an approach that is really close to the citizen. The important question to answer here is at which points is it really necessary to get the external feedback.

K.K.: Thank you very much for all the meaningful insights and the time you spent on answering these questions. Your input is truly appreciated.

Appendix IV – Interview with a Berlin Smart City Expert

The interviewee is Head of the Urban Management Division of the Berlin Senate's Department of Urban Development and the Environment. Together with the State chancellery and Berlin Partner GmbH, this bureau oversees the Berlin Smart City project and was leading in devising the Strategy document for the Smart City Berlin.

The interview was conducted via telephone on the 21st of December 2016 in German. The following represents the researcher's transcript of the interview in English.

K.K. is the interviewer. T.T. is the interviewee. Prior to the interview, the researcher briefly introduced herself and explained the aims of the study to set a context for the interview. Furthermore, it was explained to the interviewee that he is free to end the interview at any time.

K.K.: What is the profile and what is the vision of Berlin's Smart City project?

- T.T.:** • Concerning vision, Berlin wants to become one of the leading Smart Cities within Europe and concerning the profile Berlin aims to generate value for the whole city in terms of increasing the quality of life for all citizens and make it a liveable city. Regarding the content of the strategy, a focus in Berlin is laid on a) smart mobility, b) smart housing and c) energy and climate.
- The catalyst for Berlin's Smart City strategy were requirements in bidding calls by the European Union's Horizon projects.
 - Berlin makes use of (partly) governmentally owned companies for Smart City related agenda setting.

K.K.: What are challenges and success factors for transforming Berlin into a Smart City?

T.T.: • Challenges:

- 1) The term "smart" is not yet established and fully understood within civic society, but also with political decision-makers. There is a translation- but also definition problem, which results in uncertainty within society as well as administration.
 - 2) Complexity of the Smart City, which is a project that involves many organs but also many sub-projects.
 - 3) Having a dedicated political lead.
 - 4) Difficulties in streamlining the coordination. For instance, the board has not yet come together. Decision-making is a cumbersome process and a top-down-approach not feasible.
- Success factors:
 - 1) Having a dedicated political lead
 - 2) Berlin's individual strengths: Berlin is a creative city, with a broad knowledge society and great innovation potential and brings with it the critical mass to test out big solutions, as well as being well connected

K.K.: Does Berlin follow the quadruple helix approach for the smart city project?

T.T.: • It definitely does within implementation, i.e. in concrete projects industry, administration and citizens work closely together to create innovative approaches, for example in the quarter of Moabit

- However, concerning the overarching approach to the Smart City Berlin, involving every party of the quadruple helix did not make sense at the time, as it is too complicated (industry, citizens and academia as well as all administrative organs).
- Lots of drive and impulse are coming from the private sector, e.g. Siemens. The focus in Berlin is, however, on urban planning and citizens – not corporations.
- There is hesitation in the population. Term “smart” not necessarily positively connotated by a large share of citizens – Hype around “smart” things pushed by companies. (11:30)

K.K.: Concerning the topic of civic engagement: Where is the difference between participation in Berlin as it was and Berlin as Smart City now? Did participation also become smarter?

T.T.: • The intention and hope is that ICT enable a higher amount of participation, therefore in a smart city more feedback from citizens is expected through technological advancements

K.K.: In the implementation plan it says that the implementation of the smart city strategy is a task for the whole urban community and that politicians, industry and academia are required to do their part to make it successful. At which point can the citizen be effectively involved? Do you see a difference between the involvement in the strategy stage and the implementation phase?

T.T.: • This depends very much on the topic. It definitely does make no sense to involve the citizen in every decision, as for certain decisions specific knowledge and expertise are required. So, it is a question of: Concerning which topic can the citizen truly contribute? An example where involving the citizens is not feasible is concepts against climate change. People lack knowledge on the topic and comprehension of functioning of administrative processes.

- A concrete example where citizens can participate in Berlin is the platform mein.berlin.de, where they can vote and comment. However, one disadvantage of such a platform is that it does not deliver a differentiated picture, meaning that the citizen can mostly vote “yes” or “no”. But there are other participative formats where this is possible. An example is in the quarter of Lichtenberg, where they have participatory budgeting and which allows for more in-depth discussions and therefore has a deeper level of involvement.
- Concerning the transformation into a Smart City, in Berlin, a systematic incorporation of all relevant stakeholders, also during strategy formulation, was not fully given. However, this is due to two issues: First, in the first phase, where the strategy had to be devised in a timely manner, it was not feasible to involve everyone in the process. Second, the state of Berlin had to deal with more pressing issues, as this was also the peak-time of the refugee crisis and a lot of resources went into that so that the smartification of the city was not a systematic focus at that time.

- A useful tool for collaboration are stakeholder dialogues. The city has a register of around 120 special interest groups, e.g. the chamber of commerce and industry, labor unions, experts on ecology, or representatives of the social sector. Whenever a conflict of interest occurs, the affected interest groups are invited to discuss solutions together with the municipality. Participants depend on the situation.
- However, overall, we can say that the citizens can effectively be involved in the implementation phase within the concrete projects that are executed all over the city, especially concerning living environment.

K.K.: Furthermore, the implementation plan speaks of setting up a *CityLab*. What will this look like? Is it a kind of living lab where citizens can go to and test out future city applications and solutions?

T.T.: • This project is still very much in its infancy, so the idea is not finalized. At this point the aim is to better bring together academia and industry and to foster fruitful collaborations there. The citizen is not meant to take part, as of yet. The precise process is not determined and I am not directly involved in this project, so my information is not complete on this matter.

K.K.: How can participation lead to effective results? Are you able to indeed transform the gathered citizens' insights, the input into output?

T.T.: • The minimum requirement to ensure effective participation is to have a clear strategy beforehand, i.e. knowing and communication a) what is indeed a topic that allows involvement, b) what can be achieved in the given timeframe.

- It is also a question of the level of involvement, until what point is it just information that you are communicating and at what point do you really want and gather the citizens' input.
- Be honest with the citizens! Do not call something involvement with no intention of implementing the results.
- Berlin is on a good way concerning participation, at this point there are not yet any systematic guidelines or rules institutionalized, but this is one of the goals that Berlin has committed to.

K.K.: Concerning the Berlin Smart City domain *Smart Administration & Governance and Smart Civic Society*: Do you think is already smart in that regard?

T.T.: • There are huge problems with citizen centers. The minimal requirements are not reached yet, for example: Why is it not possible to get a registration card online?

- Especially concerning e-government there is still a long way to go. But an e-government strategy has been passed and it includes a strict timeline, so that Berlin aims to be smart in this area by 2021.
- Different branches of the administration use different IT systems.

K.K.: What do you do in order to make the citizens smarter so they can use the Smart City adequately? How are you dealing with the digital divide?

T.T.: • The Volkshochschule (= adult education center) provides a broad spectrum of offerings.

- Especially schools are well-positioned concerning digitization, even though this is not the highest priority topic in education policy, as Berlin culturally needs to focus on topics as social inclusion
- Then there is the Berlin self-understanding or identity, which shows that Berliners do not aim at digitizing everything a 100%, thus having clear strategies for helping people overcoming the digital obstacle, but also helping them by keeping things analogue.

K.K.: The smart city is based on a collaboration so that partnerships are often crucial. Can you name concrete examples of successful partnerships?

T.T.: • Concerning Private Public Partnerships, there are quite a few. The most important ones are those that involve state-owned companies, as for example Berlin's mobility companies.

- Other examples are wheelmap.org (which is a map for finding wheelchair accessible places. It works almost the same as Wikipedia does, meaning anyone can contribute and mark public places around the world according to their wheelchair accessibility) and parking finding apps, where we are working together with Siemens to make the traffic concerning finding parking space more efficient and transparent.

K.K.: Have you established contact to/exchange with other smart cities?

T.T.: • Yes, we are in contact with Amsterdam for example. A collective application for EU Horizon funding is underway. Although it is not feasible to transfer what they are doing directly to Berlin, as every city is different and thus has different requirements and a different culture, it is interesting to see how other smart cities are working and see that they face similar challenges.

K.K.: What do you do to ensure that the Smart City Berlin is well-accepted and therefore well-adopted by Berlin's residents?

T.T.: • Communication is the most crucial. What needs to be done is communicating Berlin's objectives so that citizens understand why Berlin should be smart, i.e. communicate the aims of an increased quality of life and sustainability. Acquiring funding for such purposes is very difficult. Our partner agency, *Berlin Partner GmbH*, did a big campaign that aimed at showing people that the smart city is not about economic interests, but is aimed at an added value for the citizens.

- But what is different in Berlin to for example Vienna is the communication of the term smart. It was already mentioned before that this term might prove critical. Whereas Berlin's public image is communicated as smart, for example at international conferences. But we have to be careful with the communication within the city, i.e. to the citizen, we do not want to make every aspect smart, as Vienna did for example, we want to have

the end-result of a smart city, the higher quality of life, but do not see a necessity to label everything smart to arrive at that goal, as has been said before that this label might evoke more uncertainty than establishing clarity of what Berlin wants to achieve.

K.K.: Thank you for your time and insights.