**Proposed Topic**

**1A. What challenge facing the city or region do you propose addressing with a Smarter Cities Challenge grant? Please provide a brief summary of the context surrounding the proposed topic area, including past efforts and current initiatives. If desired, include links to relevant articles, papers or blogs covering the topic to provide our review team with additional background material. Previous Smarter Cities Challenge winners only: does the proposed topic relate to the topic of the city's first Smarter Cities Challenge grant? If so, how does it build on that work?**

Groningen is built on top of the 10th largest gas field in the world, gas has been extracted from the field for the last 60 years, boosting the economy of the Netherlands and Europe. Only recently the side effects of these activities have begun to be felt in the occurance of earthquakes, which increase nowadays both in number and intensity. Over 1,000 earthquakes have been registered the past few years, the strongest so far reached 3.6 on the Richter scale but it could soon be reaching a forecasted 5 on the Richter Scale.

The gas field is managed by the Nederlandse Aardolie Maatschappij (NAM), a subsidiary of Shell and ExxonMobil. A draft report of the National Security Council released only January this year (ii) revealed that untill 2013, the NAM never recognized possible safety risks, earthquakes were only seen as a damage risk that could be reimbursed.

Even a resolute action like stopping gas extraction completely seems too little too late. Even if it stops today, earthquakes would continue for at least half a century (i). Furthermore, from a financial perspective stopping completely is next to impossible

The effects of ever increasing earthquakes on the city and region are enormous. Literately feeling the ground shake beneath your feet several times a week while the knowing the best is yet to come has detrimental impact on inhabitants' social well-being. Also economically Groningen suffers: who wants to live or work in an Earthquake Zone? The general trust of the population in the government decreased substantially. Furthermore, reactions to earthquakes are mostly post-hoc: an earthquake is registered and afterwards some action might be undertaken.

General info: http://www.bbc.com/news/world-europe-22542982 and
http://www.ukrant.nl/english/10-questions-about-groningen-earthquakes.html

References:

(i) TNO, 2014 http://www.rijksoverheid.nl/onderwerpen/aardbevingen-in-groningen/documenten-en-publicaties/rapporten/2014/01/17/onderzoek-maximale-sterkte-van-aardbevingen.html

(ii) NOS, 2015, available at http://nos.nl/artikel/2012483-veiligheid-genegeerd-bij-gaswinning.html

**1B. Which key stakeholders are invested in the proposed topic area, both inside and outside of government? Please describe their current roles and involvement in the topic area.**

Stakeholders are:

Citizens: all citizens and inhabitants of the city, the villages and the earth-quake region, counting around 480,000 people.

Governments: the Municipality of Groningen as well as surrounding municipalities and villages, the province of Groningen, the Netherlands National Government and several foreign countries depending on the gas.

(Semi)-governmental bodies: the National Security Council, the State Supervision of Mines (SodM) and TNO [Netherlands Public Applied Sciences Organization].

Companies: Nederlandse Aardolie Maatschappij (NAM), a subsidiary of Shell and ExxonMobil. Several datacollecting SME's.

Academia: University of Groningen and Hanze University of Applied Sciences. Together, they are developing a knowledge center for the earthquakes.

Other: the Economic Board Groningen: a board for managing the €97,5 million designated to "compensate" the economic consequences of the earthquakes. A significant part of this money is not yet allocated.

**C. Which senior staff member would serve as the project's sponsor, and potentially lead the implementation of recommendations?**

Jan Kleine?

**D. Which areas are connected to the proposed topic?**

**(check all that apply)**

**X Economic Development**

**X Water,**

**X Energy & Environment**

**Health & Social Services**

**Transportation**

**X Public Safety**

**X Other 300 character limit:** naturals risks management, open communication

## E. What systemic factors prevent the city and community from addressing this issue without a Smarter Cities Challenge grant (for example: insufficient budget, organizational culture, regulation, legislation, etc.)?

Several systematic factors prevent the city and the region to addressing the earthquakes:

Inexperience:

The earthquakes are a relatively new challenge for all stakeholders including the city and the regional authorities, as these type of earthquakes started only recent. Winning the Smarter Cities Challenge Grant will bring in IBM's global expertise and as such help the city and region in the right directions and fasten up the process.

Technical and scientific complexity:

There are several high-level ideas to address the earthquake issue, see also "Anticipated Outcomes". However the city and region lack the expertise and the nwoledge on how to combine different data and analysis methods.

Social complexity:

The Earthquakes are devastating for the inhabitants of the region but the financial benefits of the gas represent 5% to 10% of the total income of the National Government of the Netherlands. Especially in the current economically difficult times such a change in income cannot be missed easily. Furthermore, almost all people and organizations in the Netherlands as well as several other European countries depend on the Groningen gas for their day-to-day activities like cooking. As the chemical composition of the Groningen gas is different than that of other gas fields, it cannot be easily substituted. Do the needs of the many outweigh the needs of the few?

Organizational culture:

If Groningen wins the Smarter Cities Challenge Grant, the awarded period of consulting as well as the report coming out will probably help to fasten the cooperation process with several parties cooperating in a knowledge center combining each others data, knowledge and analysis into one system.

**Anticipated Outcomes**

### A. What would be successful short and long-term outcomes of a Smarter Cities Challenge engagement for the city?

On the short term a successful Smarter City Challenge would provide (i) recommendations on how to deal with the Earthquakes information system as well as (ii) ideas on how to implement these recommendations in a project for all stakeholders.

On the longer term a successful Smarter City Challenge will provide the city and region with Incident & Disaster Management capabilities and as such take up its public responsibilities better and more visible. Such Disaster Management capabilities would include:

- Risk analysis and mitigation: possibly instruments to do impact analysis, evaluate what-if scenarios, use big data analytics to improve modelling and forecasting, easy adding new data sources.

- Early warning and response: possibly instruments for some form of real-time monitoring, situational awareness and dashboard functions for city and regional authorities. As well as applications for inhabitants to get open and transparent access to information concerning them, and even adding information themselves, making it into an interactive system.

- Communication: (i) information instruments including semi-open access data ("check-yourself" for citizens) as well as (ii) social instruments to understand and respond to earthquake related sentiments.

On the long run, the above will result in:

- Increased safety for the citizens due to better understanding risks and quick and effective responses in case a risky situation occurs

- Restored trust in the city and regional authorities and as such alleviate the economic decline due to uneasiness about the earthquakes

- Make of Groningen a showcase for Smart Incident & Disaster Management. This might help and inspire other cities with similar problems, for example tsunamis, large forest fires or floods to deal with these problems in a more effective way.

**Anticipated Outcomes**

**B. After the engagement, what specific actions would be taken to implement recommendations? What efforts would be taken to share best practices with other cities and regions?**

The recommendations will be used to help and enhance the cooperation between the stakeholders, especially the knowledge center  and to start up a project to realize the recommendations. To fund the realization of the recommendations, funds from the special "Earthquake compensation fund" might be used.

Groningen has two renowned universities and a quarter of the population consists of students. As such Groningen names itself "City of Talent" and making the city a smart city is at the strategic core of its development agenda. When Groningen has smart Disaster Management Capabilities the city and region will happily inform if not broadcast this to the rest of the world, as it reinforces the agenda of the city: being known as a smart City of Talent.

In other words: IBM might want to use the best practices for Disaster Management Capabilities developed during or as a result of the Smarter City Challenge Groningen as a show case. Groningen is more than interested in being that showcase.

**Capacity for Driving Change**

> A. **Please describe the city's accomplishments in encouraging innovation and driving change, that demonstrate the city's and city leader's capacity for acting on recommendations delivered by an SCC grant. Previous Smarter Cities Challenge winners: please describe the progress the city has made on the topic of the city's first Smarter Cities Challenge grant, including implementation of Smarter Cities Challenge recommendations and related efforts.**

The city of Groningen counting 200.000 inhabitants, is the largest city and the economic capital of the northern Netherlands. With over half of the population being under 35, the inhabitants are, on average, younger than anywhere in the country. Groningen is home to two universities and the second largest University Medical Center in the Netherlands. It is home to 60.000 students, of which some 6000 are from abroad. The Groningen workforce is on average the highest educated in our country. The city's economy thrives on the service-industry, with a focus on healthy ageing, energy and creative industries, as innovation drivers. The city sits at the core of the Functional Urban Area of 480.000 inhabitants, underlining the central function of Groningen (source: OECD).

The city scores systematically high in (inter)national benchmarks on quality of living. Groningen is seen as the cycle capital of the world (57% of all commutes by bike), top 1% of safe cities in the OECD countries, voted best inner city of the Netherlands, repeatedly voted best student city of the Netherlands. In a EU-survey Groningen ranked third in overall citizens satisfaction, on par with København, Oslo and Zurich, and was the highest ranking medium sized city.

As a city of talent, Groningen is both competing and cooperating in an international environment, together with both the mayor economical regions in Europe and with the medium sized cities. Groningen is aware of this international playing-field. Being a relative small player, Groningen has chosen for focus: we aim to be a European center of excellence on Healthy Ageing and on Energy Transition, and we offer many smart facilities to the talents we are looking for.

The way Groningen tries to speed up innovations in our focus fields is through a 'smart city' approach: an effort to counter the societal challenges by an integrated approach of city development, based on the best knowledge and practices of our partners: business and knowledge institutions. Because we focus on a very high citizen satisfaction, the user of our city is central in this approach, we want our citizens to control and develop their own living environment.

With this approach we have attracted international attention. In March 2014 the city of Groningen became the runner up for Europe's Innovation Capital competition, the iCapital award. Running together with Barcelona and Grenoble the city was acknowledged for its outstanding innovation climate.

**Data**

**A. What role can open data and citizen engagement play in addressing the proposed topic area?**

**B. What data relevant to the topic area would be available to a Smarter Cities Challenge team for analysis? What data relevant to the topic area is not available? 1600 character**