A world of opportunities

We combine data from both physical sensors and crowdsensing. By doing so, we obtain even more detailed and higher quality information on the weather and its impact on society, in real-time. This opens a world of opportunities: these techniques can be applied to many other aspects of urban living.

Are you interested in further exploring these opportunities, or would you like to cooperate with us? Visit our website http://shine.tudelft.nl for more information, or contact us via info@shine.tudelft.nl

SHINE

Data science for environmental monitoring in urban environments

The starting point of the SHINE research project is simple: better data leads to better understanding leads to better decisions. This holds for both individual citizens and government authorities. For this reason, SHINE develops ICT techniques to collect, process, and visualize data that concerns different aspects of urban life. Heavy rainfall is a good example of this.

SHINE : Sensing Heterogeneous Information Network Environment.

DELFT DATA SCIENCE

TUDelft

SHINE

Social sensing

We collect data from physical sensors, e.g., weather stations that measure rainfall and wind direction. Likewise, data is collected by crowdsensing: citizens collecting and sharing weather data through social media or mobile apps. We combine data from social media (social media retrieval) with techniques to actively request people to contribute data (request-driven social sensing). In particular, we investigate how to cluster data efficiently over a network of mobile social sensors (data aggregation). Also, we develop languages that citizens can use to specify when, how and by whom their data may be used. Finally, we investigate how to stimulate cooperation between social sensors, by using incentive schemes.

Decision

Knowledge

Data

From
Data
to
Decision
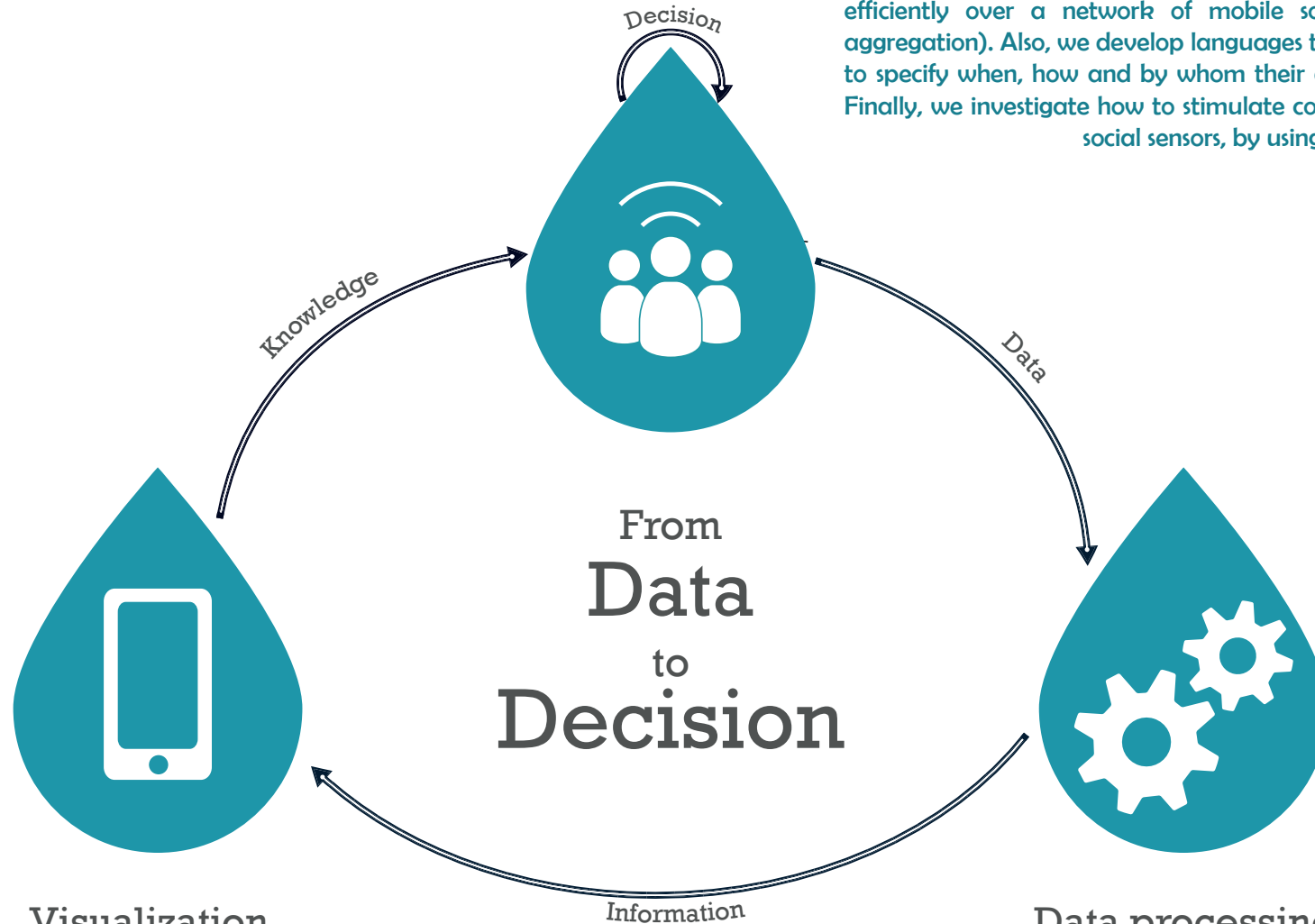
Information

Visualization

Correct interpretation and representation of the data is difficult. Even more so when different sources of information need to be represented in one single app. SHINE creates novel visuals for analyzing, comparing and filtering data for different types of people: from environmental analysts to everyday users.

Data processing

To process data from these sensors, SHINE develops signal processing algorithms. For example, the signal between cell phone towers becomes weaker when it rains. By developing smart calculations (algorithms), we map how hard it rains over time in a certain area. Additionally, we process the data in a way that respects users' privacy.