

Delivering Smart Flood Management in Bangkok

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Bangkok Flood Management Decision Support System

A global first real-time stormwater flood forecasting system that can accurately predict where and when flooding will occur



Global Future Cities Programme



Bangkok flood context

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- Intense, highly localised tropical rain events causing frequent stormwater flooding
- Flat and highly urbanised
- Operational response is reactive



Flood Management Decision Support System

- Targeted rainfall radar network
 improvements
- Machine learning to overcome the limitations of hydraulic models
- Integration of sensor data, rainfall and flooding predictions and alarming in Moata





Flood Management Decision Support System Domain knowledge Digital expertise



Rainfall radar improvements

- Vertically profiling radar
- Continuous calibration
- Automatic rainfall
 maps & animations
- Nowcasting







Rainfall radar in Moata interface

Machine learning surrogate model

- Real-time stormwater flood forecasting – a global first
- Based on calibrated
 hydraulic flood model

Machine learning model



1.2

1.0

0.8

- 0.6

0.4

0.2



Hydraulic model simulation





Machine learning surrogate model

- Flood predictions in 1 second
- Relative error of 2cm
- Outputs every 10 mins







Flood Management Decision Support System

- Direct gauge feeds from BMA
- Secure, private web portal
- Real-time flood forecasting
 maps and animations
- Flood warning alarms

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Key outcomes



Real-time flood insights

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Proactive flood response 3.

Opening opportunities



Thank you