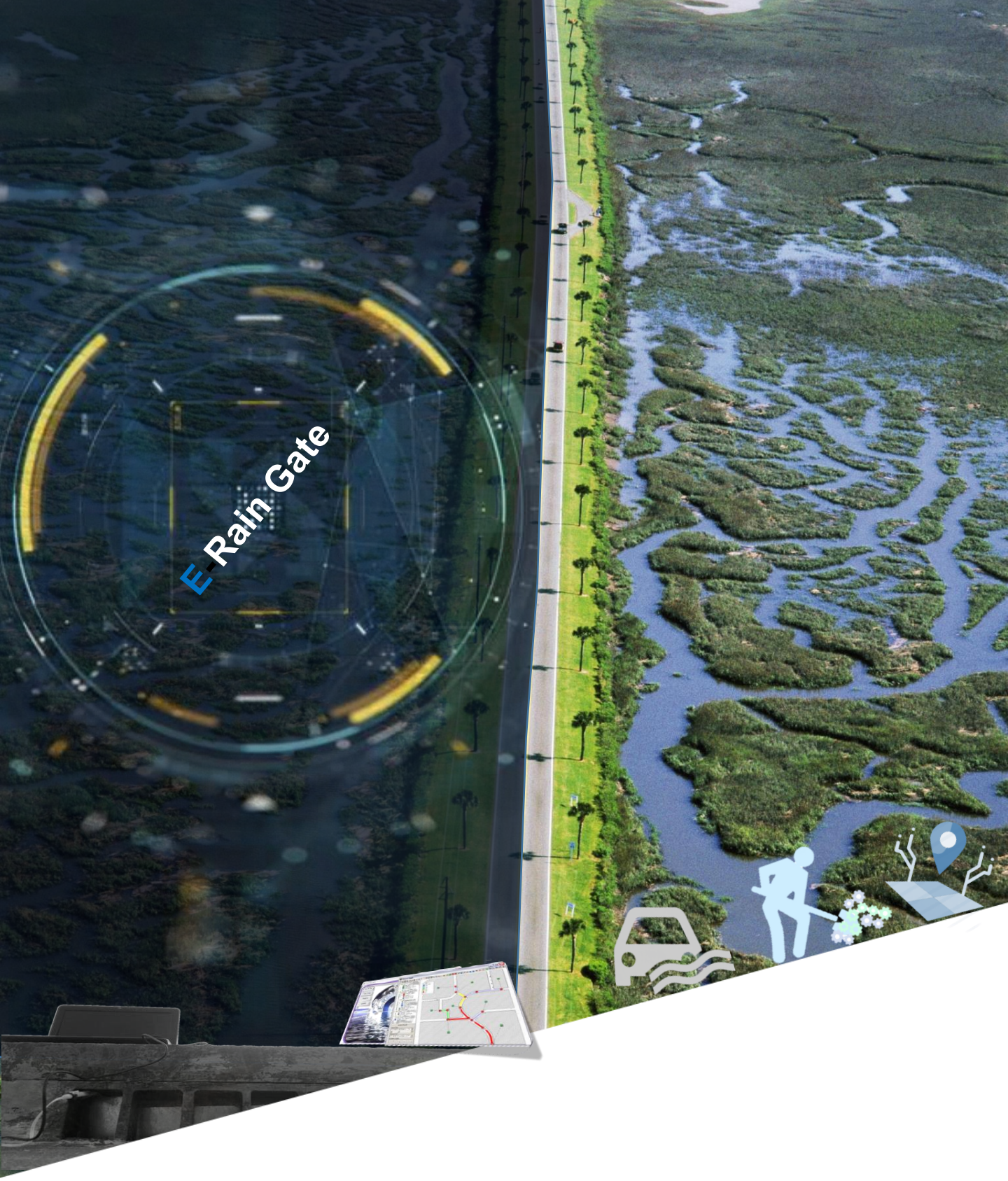

E-Rain Gate. Our path to the future

EXECUTIVE SUMMARY

JUNE 2021

InfraChallenge

I. VALUE PROPOSITION

1.1. MISION AND VISION

Since 2011, E-Rain Gate has been working on a variety of innovative engineering projects. Through our activities, we aim to use the latest technologies in order to improve the way our communities run.

Smart infrastructure has succeeded by supporting smart city dimensions, in distinguishing itself as a world leader in providing intelligent living opportunities. In E-Rain we have devised a way to make road drainage systems smarter.
In the time of technological advancements, our main purpose is to serve clients across various sectors with practical engineering services as we deliver innovative solutions for complex storm water problems.

1.2. VALUE PROPOSITION AND ALLIGMENT WITH INFRACHALLENGE

We are currently facing a triple environmental crisis (climate change, biodiversity loss & pollution) and feel the need to "make peace with nature".
The transformation of our productive systems will allow us to develop a "New Nature Economy" capable of facing this crisis through three main blocks of action: infrastructure system, raw materials system and food system.

E-Rain Gate is part of this global solution, included in any resilient infrastructure toolbox with the following macro benefits for the three production systems (or main blocks of action):

- Climate Change Fighter: avoiding the effects of torrential rains in cities.
- Resilient Agent: reinforcing existing infrastructure
- Technology Enabler: spreading its innovative approach to other connected city assets.
- Synergy generator: by integrating city systems to recover sand, we contribute to water savings and energy production.

E-Rain Gates is a smart solution to flooding. The solution solves complex drainage problems without direct human intervention. This is enabled by creating smart gates for rain-sensitive stormwater grates with proven electronic maintenance, thus reducing not only manual labor but also flooding in cities that are prone to stormwater problems by:

- Preventing sand and other elements from clogging drains that cause street flooding. (Public benefits)
- Reducing manual labor and mistakes in sewer maintenance. (Human benefits)
- Leading to an intelligent form of street management, where periodic checks can be performed at the click of a mouse. (Government benefits)

II. IMPLEMENTATION

2.1. IMPLEMENTATION, RESOURCES AND SCALABILITY

Resources and Margin expansion: We expect to be able to manufacture small factory units for assembly parts (no more than =$20,000) with smaller team and equipment at the beginning to make it more profitable.
Scalability: E-Rain Gates can be expanded to countries that have rainwater drainage networks and large amounts of sand (e.g. Gulf countries).
Large sales: the main purchasers are governments, not individuals. Our approximate market size in 5 years could cover locally 75% of the Gulf Area and globally 40% of different areas where the effects of torrential rains are suffered.

2.2. TRACK RECORD AND BENEFITS TO END USERS

The real prototype was applied in a rainwater drainage exit to show the effectiveness of the device in U.A.E., Abu Dhabi (Shakhbout City) 2012.
Patented: Software Patent No.:001936/2012 ITIDA & Registered Hardware Patent No.:2011/514EGY
Fund: - Cash Award support: Swedish Foundation2011 & Ajman University Innovation (AUIC)2019
Cooperation with: Associations, companies, centers and departments in Sweden, U.A.E, Egypt, Malaysia and Taiwan.
Establishment: Web Site and Social media pages (Twitter & Facebook).

The **social acceptability** of this approach has been proved through International Awards and good practice examples, as well as 70 medals (with internationally approved innovation certificates) have been won at numerous international innovation conferences and exhibitions (30 countries worldwide).

Our technology **benefits end users**, as an overall solution that is part of any resilient infrastructure toolbox:

- **Economical**: It will save governments and municipalities more than 65% of the cost of normal grates maintenance, and it will also strengthen them through increased protection, accurate performance and high quality.
- **Environmental**: As a climate change fighter, this new technology is particularly useful in tropical countries where torrential rains are common, or desert countries where the wind distributes large amounts of sand before it rains (e.g. Gulf countries). In these places, the risk of environmental damage caused by flooding is reduced with E-Rain Gate.
- **Social and human**: Reduces manual labor and errors in the maintenance of these sewer grates. It all leads to an intelligent form of road operation and maintenance management (O&M) for Smart Cities and sustainable regions by exploiting innovative concepts of regional development, consisting of integrating electronic control and data transfer.

III. THE FUTURE

Our **solution is unique** as we provide innovative smart solutions for complex stormwater and roadway flooding problems by:

- Environmental technology intervention in sustainable smart infrastructure cities.
- Reduction of manual labor and errors in the maintenance
- Prevention, mitigation or transfer of a potential risk such as the accumulation of rainwater on the road, with the consequent obstruction of traffic, accidents, flooding and asphalt slippage
- Empowering governments with perfect output and control, saving more than 60% of the normal maintenance cost to the government.
- No direct human intervention with the use of data to avoid faulty assessment.

Unique selling point - Countries generally have rainwater drainage networks. However, in those countries where sandstorms occur (e.g. Gulf countries), as well as tropical countries with torrential rains and desert countries where the wind distributes sand before it rains, these rainwater drainage networks are not sufficient. It is precisely in these countries that E-Rain Gate would be particularly useful.
There is currently no similar or homologous product on the market, so there are no competitors for the project's products on the market. We differentiate ourselves because we use intelligent technology for the electronic control of infrastructure (O&M) of civil works.

The impact that winning InfraChallenge would have on our solution:

- We seek to implement the project in a real basis by making an agreement (by advanced payment) with the municipality (Government or small Private City).
- This would be possible thanks to the support mechanism from infrastructure organizations (IWG and GI Hub) so that the companies involved would work with the municipality in the operation and maintenance would be carried out by international companies and organizations specialized in technology (e.g. Siemens, ABB, Bosch, General Electric, Samsung, Franke, Philips, etc.).
- It would also allow a funding package in order to implement the solution on a large scale, along with the business license and the deal with the Government.

Technology Readiness - Popularization: Our project is developed with Polyvinyl Alcohol (PVA) material to improve and reduce costs, which enables us to have a multiple solution and keep up with all government initiatives, as well as contributing to green economy initiatives for the smart future.
Work has begun in order to enable the project by coding the rainwater drainage entrances (QR code and barcode), where it is easy to know the location of sewer grates, as well as the drainage details in terms of depth, invert level, cover level and ground level, which will help facilitate the project task and the calculation of the amounts of sand in the sewer grates.