



Space for Sanitation webinar

September 4th 13:00 – 14:00 (CET)

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Rita Rinaldo, Davide Coppola (ESA)

European Space Agency

→ AGENDA

- **13:00 – 13:20 (ESA)**
 - Welcome by Toilet Board Coalition and ESA
 - ESA background
 - Space for sanitation: planned invitation to tender
- **13:20-13:40 (Toilet Board Coalition)**
 - Toilet Board Coalition background
 - Sanitation: toilet economy, smart sanitation, circular sanitation economy
 - Key topics of relevance
- **13:40-14:00**
 - Open Questions & Answers session

→ WELCOME

➤ Welcome to participants

- Guidelines how/when to interact during the webinar:
 - Please keep your microphones muted and webcams off at all times
 - Please use the chat function anytime to submit your questions to the presenter. They will be addressed during the Q&A at the end of the webinar

Purpose of ESA



“To provide for and promote, for exclusively peaceful purposes, cooperation among European states in space research and technology and their space applications.”

Article 2 of ESA Convention

ESA facts and figures

- Over 50 years of experience
- 22 Member States
- Eight sites/facilities in Europe, about 2300 staff
- 5.75 billion Euro budget (2017)
- Over 80 satellites designed, tested and operated in flight



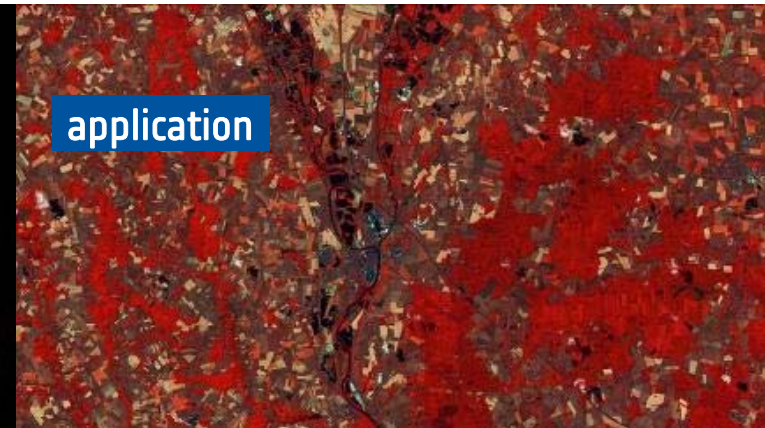
science



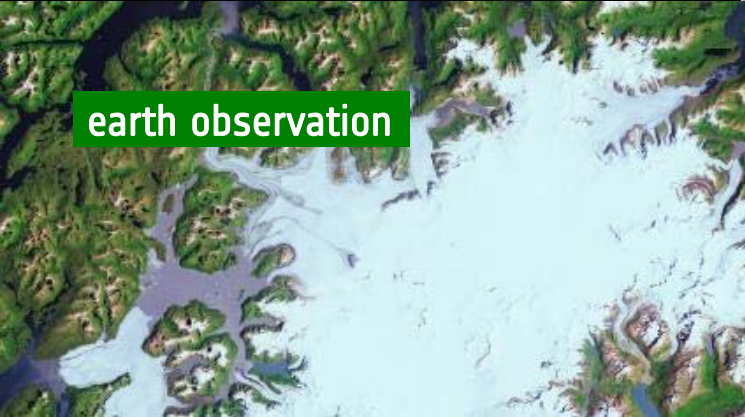
human spaceflight



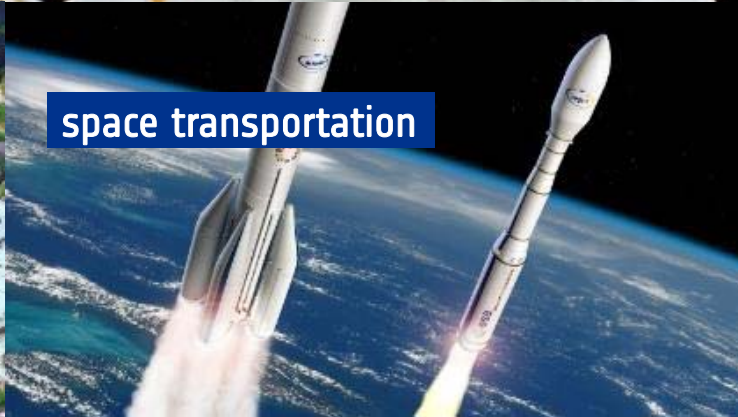
application



earth observation



space transportation



navigation



exploration



technology



telecommunication



esa business applications

→ YOUR BUSINESS POWERED BY SPACE



We have **€195m**
available for funding

And we have invested...



€190M in over



500 European Businesses

ESA UNCLASSIFIED - For Official Use



European Space Agency

→ FUEL FOR YOUR BUSINESS

Could you be leveraging
Space technology and
data for the benefit of life
on Earth?



→ OUR OFFER TO YOU

We'll work together to make your idea commercially viable, with:



Zero-Equity
Funding
(€60k-€2M+)



Tailored Project
Management
Support



Access to
Our Network
& Partners



Use of the
ESA Brand for
Credibility



→ SPACE FOR SANITATION

<https://business.esa.int/funding/intended-tender/space-for-sanitation>

→ SPACE FOR SANITATION

➤ Background:

- 2.3 billion people - primarily in Asia, sub-Saharan Africa, and Latin America and the Caribbean - still lack access to basic sanitation
- SDG 6 dedicated to clean water and sanitation.



➤ Feasibility study:

- Objectives: assess the technical feasibility and viability of space-based services in support of sanitation for developing economies; establish the roadmap for service implementation.
- (up to) 200K€ funding, 12 months duration.
- Planned to be issued in early Sept 2018.

→ SPACE AND SANITATION



Satellite
Navigation

geo-reference collected in-situ sensors' data



Satellite
Communication

(remote areas) in-situ sensors communications to data repositories for further processing



Earth
Observation

Environmental (e.g.: landscape / land use, environmental risk, water quality, crops yield, etc) and socio-economic data (e.g.: households, size/growth of settlements and industrial activities)



Spaceflight
Technologies

Human Space Flight spin-in technology in the areas of water recycling and sanitation e.g.: Melissa mission
(https://www.esa.int/Our_Activities/Space_Engineering_Technology/Melissa)

→ FUNDING

- Funded participation to ESA Business Applications is open to any company and/or organisation, be it as group of users, public body or non-governmental organisation, residing in any of those states that subscribe to the ARTES IAP programme.
- To date, **Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, The Netherlands, Norway, Poland, Portugal, Romania, Sweden, Switzerland and the United Kingdom** have subscribed.

→ ADDITIONAL INFORMATION

- Invitation to Tender will be shortly published in the ESA EMITS system
<http://emits.sso.esa.int/emits/owa/emits.main>
- EMITS reference: 18.1AA.03 SPACE FOR HEALTH: "INTEGRATED APPLICATIONS FOR SANITATION ECONOMY" FS - EXPRO PLUS
- EMITS allows to express your interest to the tender (https://www.esa.int/About_Us/Business_with_ESA/How_to_do/Expressing_Interest_in_an_Invitation_to_Tender_III_Intended_Invitation_to_Tender_III)
- How to do business with ESA: the latest information on the registration process:
http://www.esa.int/About_Us/Business_with_ESA/How_to_do/esastar_Registration_Process

The screenshot displays the ESA EMITS system interface. The top navigation bar includes the ESA logo, 'emits', and links for 'ENTITIES', 'LOGIN', and 'ESA Home Page'. The left sidebar shows a menu with options like 'News', 'Procurement & Tender Board Announcements', 'Open Invitations to Tender', 'Ordered by Closing Date', 'By Keyword', 'Global List', 'Intended Invitations to Tender', 'Reference Documentation', 'WCO Resources', and 'How to do Business with ESA'. The main content area shows a list of tenders with columns for ID, Reference, and Description. Below this, a detailed view of a specific tender (AO9447) is shown, including its title, dates, status, and a summary of the tender documents. The 'Tender Documents' section lists various documents like 'Letter of Invitation', 'Statement of Work', 'Contract Conditions', and 'Tender conditions'. The 'Expression of Interest' section is also visible at the bottom.

Summary information on the Open Tender

Tender Documents

Expression of Interest

TOILET BOARD COALITION

Cheryl Hicks - Executive Director

ESA Tender Webinar July 2018



Firmenich

LIXIL
Link to Good Living



Kimberly-Clark



VEOLIA

TATA TRUSTS



USAID
FROM THE AMERICAN PEOPLE



WSUP
Water & Sanitation
for the Urban Poor



Confederation of Indian Industry



THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP



OUR GOAL:

To catalyse and support private sector engagement to deliver **smart, sustainable and resilient sanitation for all**

OUR VISION:

To build THE SANITATION ECONOMY



Smart Sustainable
Sanitation Business Solutions



Sanitation becomes a solution provider for sectors & governments

Global water gap of
40%

China, the USA and
India will account for
2/3rds of global
renewable energy
expansion to 2022

Nutrient deficits are
affecting food
chains and
agriculture

The global (IoT)
healthcare market is
estimated to grow to
USD
\$163.2B by 2020

WATER



SANITATION



HEALTH



WASTE



FMCG



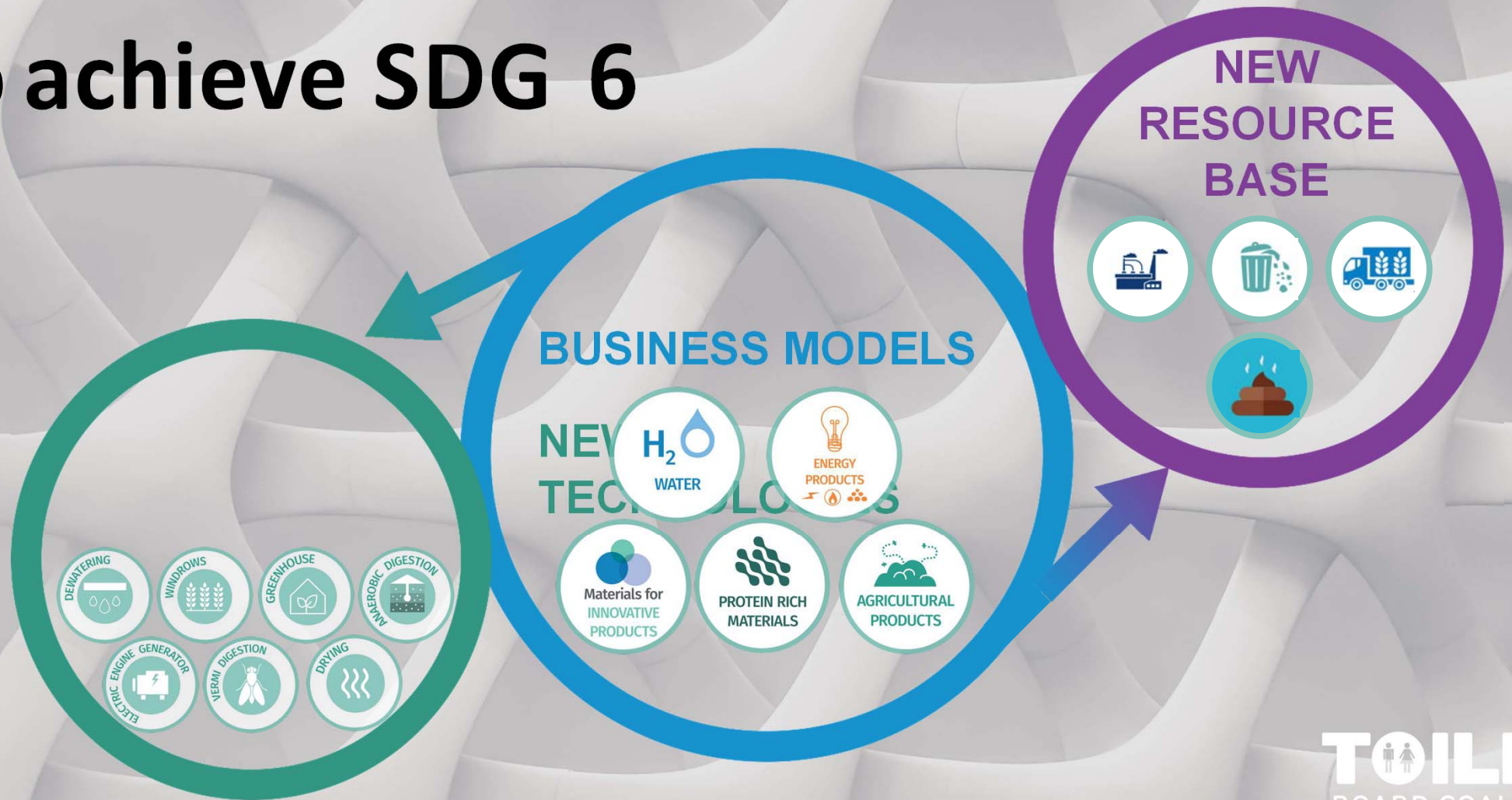
ENERGY



FOOD/
AGRICULTURE



Business brings new solutions To achieve SDG 6

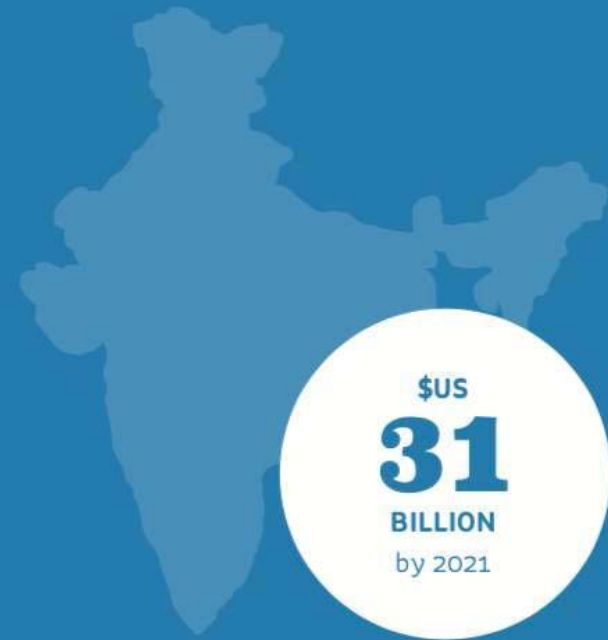


THE TOILET ECONOMY

TOILET PRODUCTS AND SERVICES

MARKET ESTIMATE:

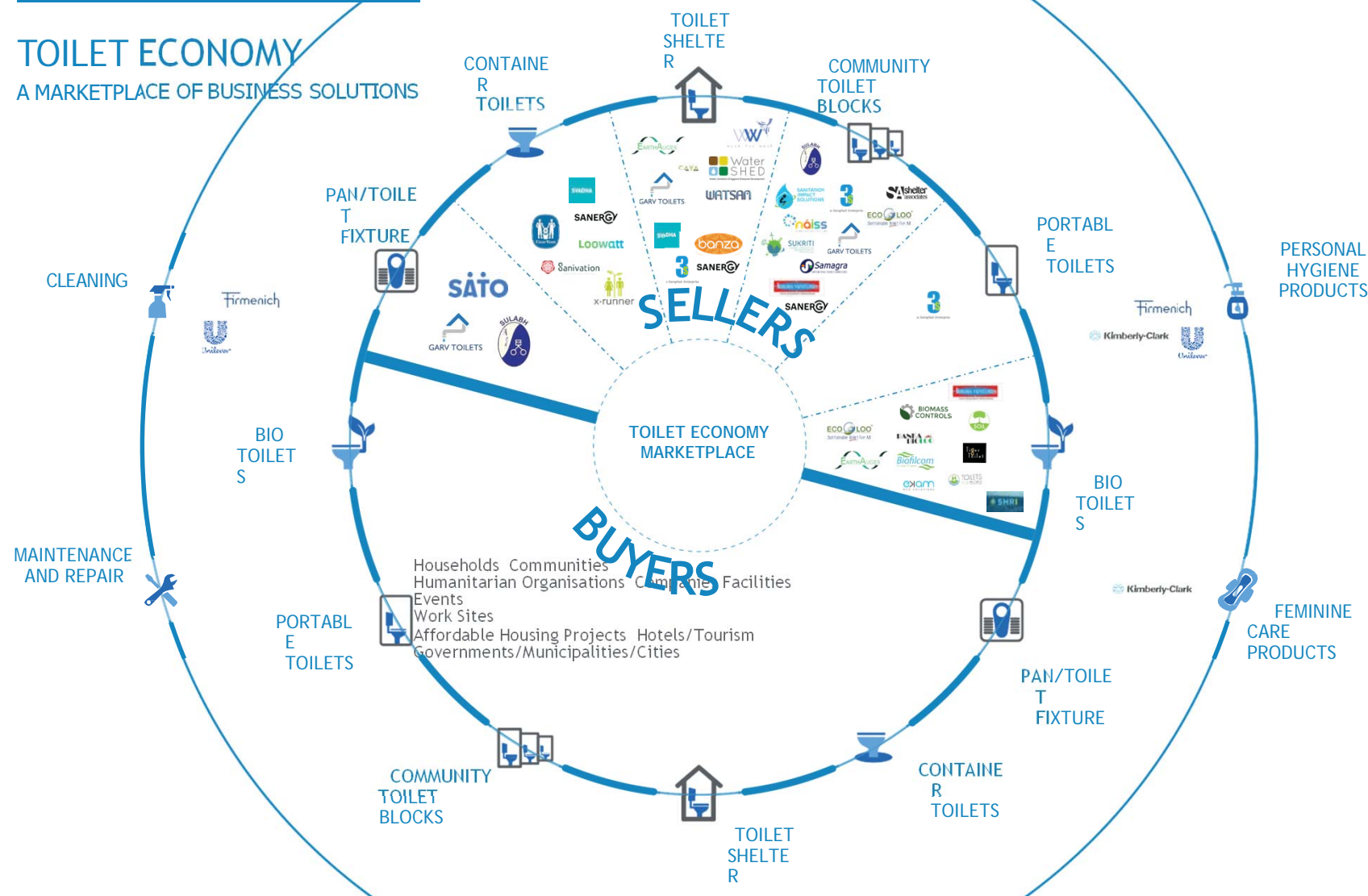
The total market for construction of individual & community toilets, deployment of portable toilets, maintenance, repair & cleaning is estimated to be worth **\$14 BILLION** in 2017 and could more than double to **\$31 BILLION** by 2021.*



GLOBAL MARKET

TOILET ECONOMY

A MARKETPLACE OF BUSINESS SOLUTIONS



TOILET
BOARD COALITION

THE CIRCULAR SANITATION ECONOMY

PRODUCTS DERIVED FROM TOILET RESOURCES

MARKET ESTIMATE:

Products derived from Toilet Resources, and organic / bio products, as water, fuel, electricity, proteins, and organic fertilisers can have a tremendous scope

for growth. Considering both the supply side¹ and demand side scenarios in India², the overall market for products derived from toilet resources is estimated to be \$14 BILLION in 2017 and is expected to grow to \$25 BILLION by 2021.*



GLOBAL MARKET

CIRCULAR SANITATION ECONOMY

A MARKETPLACE OF BUSINESS SOLUTIONS

AGRICULTURE PRODUCTS



THE SMART SANITATION ECONOMY

DIGITAL TECHNOLOGY APPLICATIONS FOR SANITATION

MARKET ESTIMATE:

The Smart Sanitation market could get started with an estimated value of **\$4 BILLION** in 2017 and could grow to an estimated **\$6 BILLION** by 2021 considering available data comparisons to some **digital healthcare and smart cities applications.***

Health prevention data through the capture of data from sanitation systems is not yet being monitored today, but could be worth **\$3 BILLION** in 2021 as part of the **healthcare Internet of Things (IoT) market.**



GLOBAL MARKET

SMART SANITATION ECONOMY

A MARKETPLACE OF BUSINESS SOLUTIONS



1ST SMART SANITATION CITY PUNE

1. Smart Community Toilets

2. Smart Preventative Health

3. Smart Waste Management & Resource Recovery

4. Rural / Peri-Urban Smart Solutions

5. Smart Sanitation Data Architecture



Pune
Municipal
Corporation

TOILET
BOARD COALITION

PUNE SMART SANITATION PROJECT OVERVIEW

1. Smart Community Toilets

Focus on optimising usage at scale and behaviour change



3. Smart Waste Management & Resource Recovery

Optimise existing treatment plant operations and shape the new treatment investment plans to reduce costs and pollution and realise smart and circular elements of Sanitation Economy



2. Smart Preventative Health

Focus on monitoring health indicators through sensors and linking to behaviour change



4. Smart Village Toilets

34 villages on outskirts of PUNE to be added to the PMC jurisdiction



PUNE SMART SANITATION PROJECT OVERVIEW

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Focus on optimising usage at scale and behaviour change



3. Smart Waste Management & Resource Recovery

Optimising treatment plant operations and investment plans to reduce costs and realise smart and circular economy



2. Smart Preventative Health

Focus on monitoring health sensors and linking to behaviour change



5. Smart Sanitation Data Architecture

Cutting across the full project work streams will be data capture and analytics



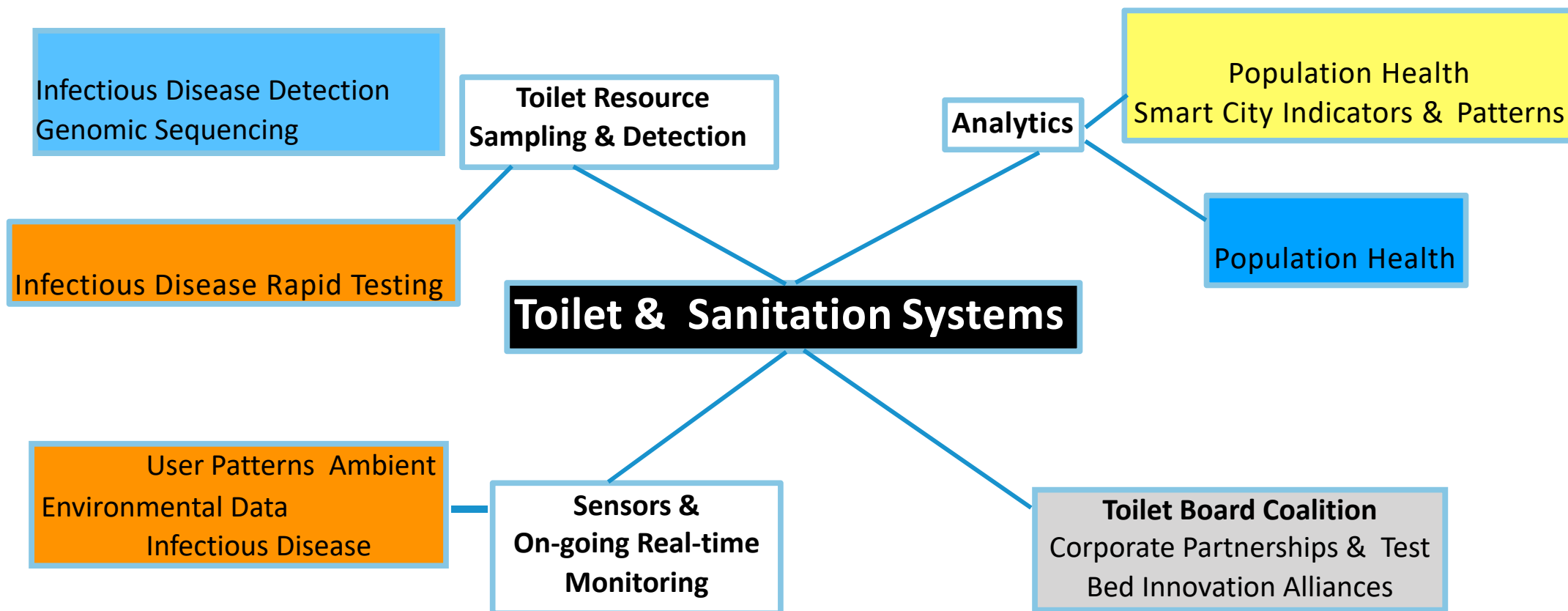
TATA TRUSTS

4. Smart Toilets

Planned on outskirts of PUNE to be added to the BMC jurisdiction



Smart Preventative Health via Sanitation Systems



Problems we want to solve - What each proposal should address for this tender

Public health information from toilets

-Real-time monitoring (vs. sampling) of health of citizens / disease surveillance in the city via continuous monitoring of the human excreta going into public and community toilets

What is the Digital Health Ecosystem?

-What is the network of technology, business and public sector partners that can deliver a sustainable and resilient preventative health system?

Sewage system operations & maintenance

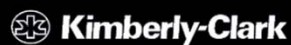
-Indications of sewage contamination, potentially other pollutants to be defined), and measures of conditions at sewage plant inflows and outflows, need for maintenance and repair

Agricultural soil and water health / quality

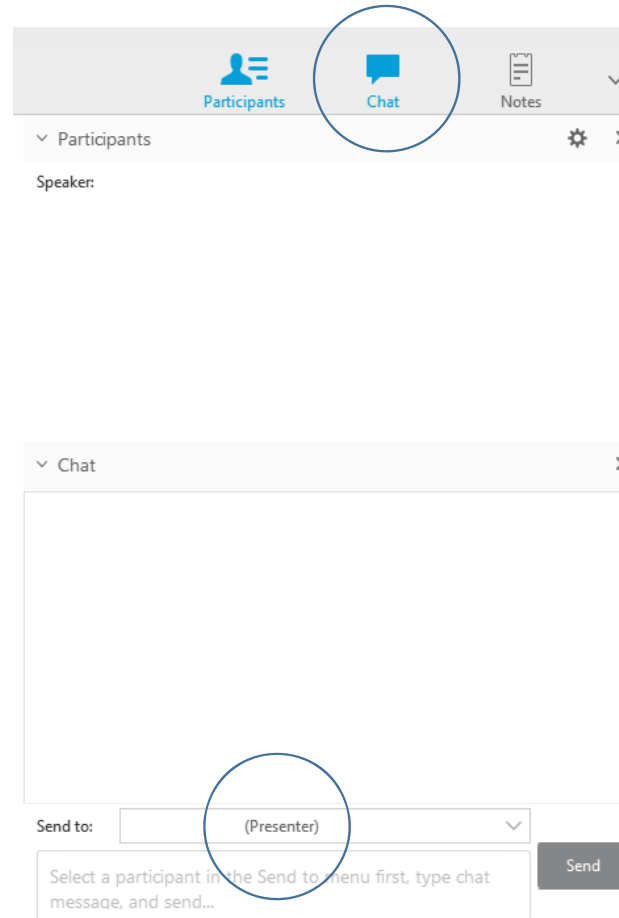
-Indications of sewage contamination, potentially other pollutants to be defined)
-Plantation soil and water measurements (details need to be defined – could include water table, soil nutrient & moisture levels, pollution in water courses, crop types, crop growth, pest prevalence, deforestation of adjacent woodlands)

TOILET

BOARD COALITION



OPEN QUESTIONS & ANSWERS SESSION





business
applications

TOILET
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<https://business.esa.int/funding/intended-tender/space-for-sanitation>

European Space Agency