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A non-profit organization in service of
Smart Connected Communities
http://opencommons.org

FIGURE 1:
DIGITAL ENABLEMENT OF CIRCULAR ECONOMY IN CITIES...

6 PROJECT AIRVIEW

1 PORTICO

2 PROJECT SUNROOF

8 LEAN PATH

...ASSET TRACKING
Precious metals 'mined' from products accumulating in cities, and cascaded back into different use cycles

...DECREASED EMISSION AND POLLUTION LEVELS
Vibrant cities with more life, less stress and clearer air

...MATERIAL HEALTH AND TRACEABILITY
Cheaper and more flexible built environment as components are modularised and tracked, enabling a local market for reused building materials.

...SAVING TIME AND RESOURCES
Personal health checks at home using a table-top device, transmitted straight to hospital for assessment – saving time, healthcare capacity, and energy

...SUSTAINABLE DOMESTIC WATER USAGE

...LOCALISED SMART ENERGY NETWORKS

3 NEST LEARNING THERMOSTAT

...ENERGY-SAVING STREET LIGHTS
Street lights connected to sensors and a real-time traffic management system

7 MAPS

...OPTIMISED CITY MOBILITY USING APP
Plan and buy your most efficient route – bus, taxi, ferry, bike – or combine the vehicles

...IMPROVING TRAFFIC FLOW, REDUCING CONGESTION
• Find car sharing pool
• Real-time traffic data reveals the quickest route for your journey
• Nearest available parking space
• LED lights help you and other motorists set a smooth pace
• Waiting times at red lights are minimised

WAZE **4**

...INTEGRATED DOMESTIC ENERGY
• Smartphone instructs heating and other functions to switch on 30 minutes before your arrival, for instance providing you with a boiling kettle or a hot bath
• Energy consumption minimised when home is empty

...EFFICIENT WASTE DISPOSAL & REUSE
• Solar-powered, sensor-enabled waste bins that measure waste levels and compact items to reduce overflow
• Planning collection routes based on demand to save fuel
• Incentive schemes to drive progress.
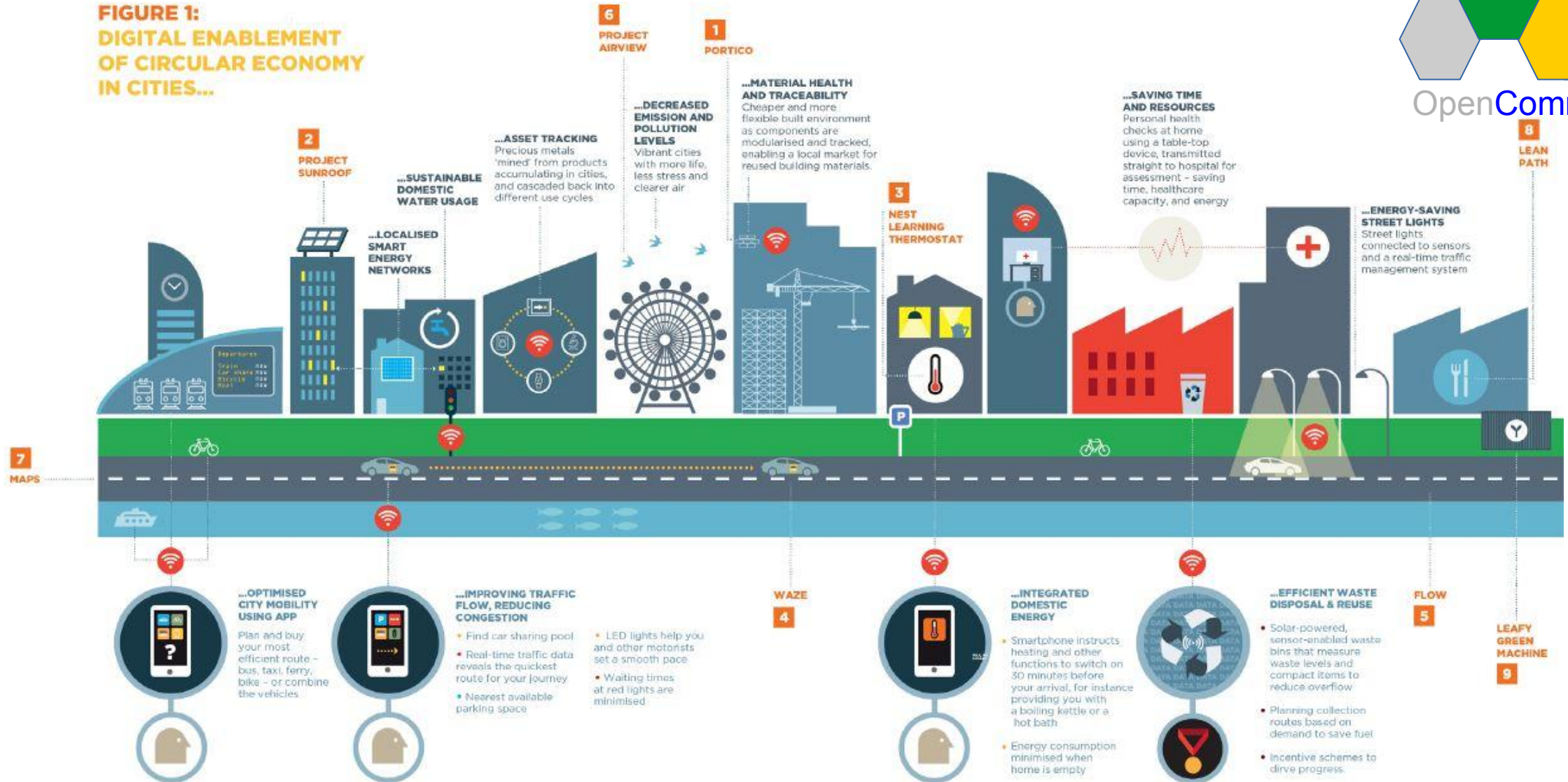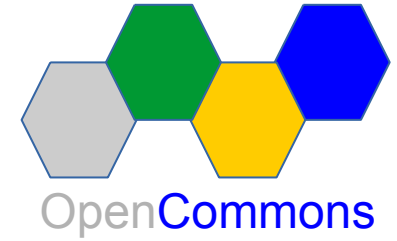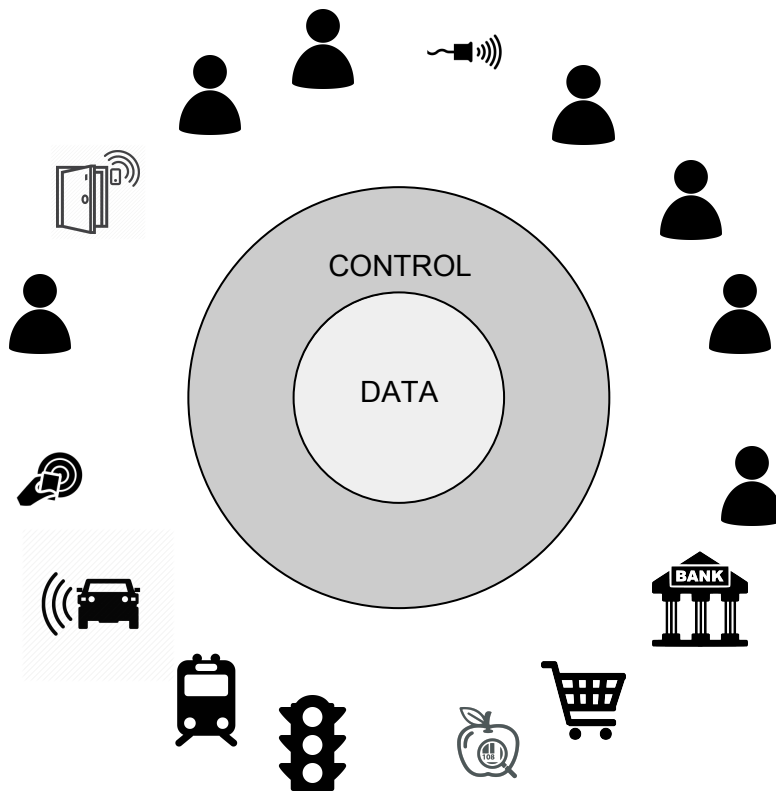
FLOW **5**

LEAFY GREEN MACHINE **9**

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Figure originally from Intelligent Assets: Unlocking the Circular Economy Potential, and adapted for this paper.

Today

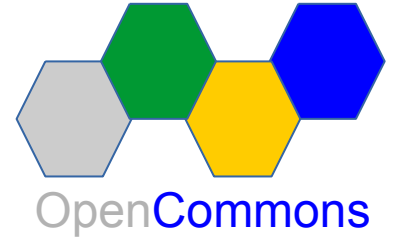Smart City transaction platform protects data through a control layer.

Platforms:
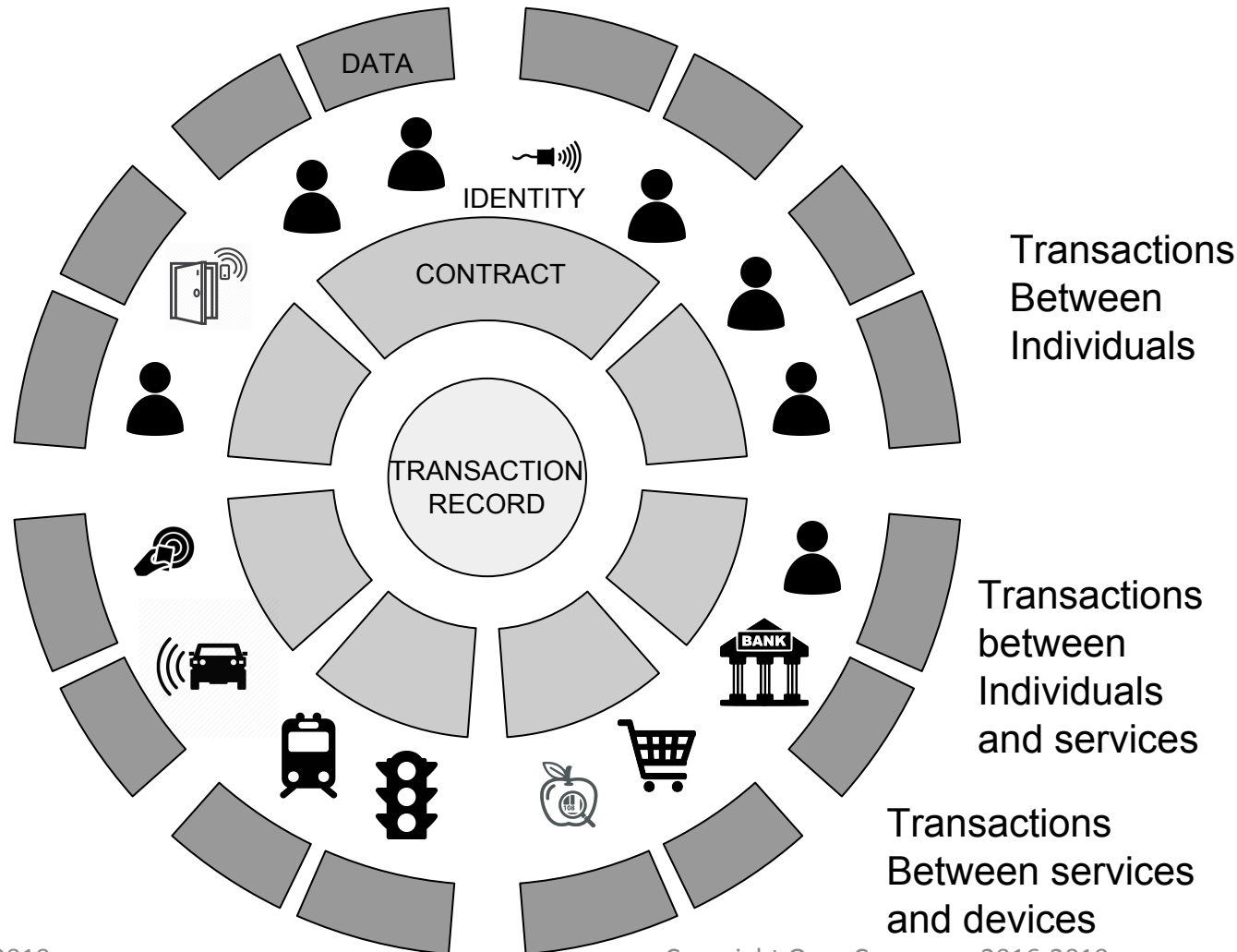- IBM - Bluemix
- GE - Predix
- Cisco - AllJoyn
- Intel - IoTivity
- Google - Sidewalk Labs
- Amazon - AWS IoT services
- ? FIWARE

Today

HOP CARD

PARKING KITTY

BIRD

Smart City transaction platform protects data through a control layer.

Issues:
- Privacy
- Interoperability
- Innovation
- Contractual Monopoly
- Transaction friction
- Scalability
- Resilience

Benefits:
- Business Model
- Client Competence

Goal

Transactions between groups and sensors

Transactions Between Individuals

Transactions between Individuals and services

Transactions Between services and devices

Transactions between devices

Transactions between Individuals and devices

DATA
IDENTITY
CONTRACT
TRANSACTION RECORD
BANK

Build a smart city transaction platform that eliminates these issues, builds trust and enables new services.

Benefits:
- Privacy
- Interoperability
- Innovation
- Contractual Monopoly
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- Scalability
- Resilience

Issues:
- Business Model
- Client Competence

Identity

Self Sovereign

An identity created and managed by the user and has the credentials need to interact in the digital and physical world, without relying on a centralized organization or authority.

Examples:

- Sovrin
- LifeID

Transaction Record

Immutable

Once written transactions cannot be changed. Errors need to be corrected with new transactions leaving a true record of what happened.

Examples:

- Any Blockchain

Contract

Smart Contract

Allow the performance of credible transactions without third parties that are trackable and irreversible.

Examples:

- IOTA (https://www.iota.org)

Data

Personal to Identity
Enables users to manage and deploy their key personal data in a highly secure and structured way

Examples:
- Solid
- OpenPDS
- Project Bali

Projects
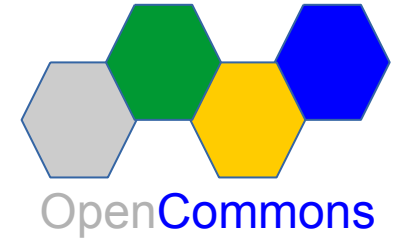
- Public Election Funding

- Memberships or Resident's Card ([DigitalTel](#))

- Funding Commercial Real Estate ([Crowdstreet](#))

- Funding Infrastructure ([Infrashares](#))

OpenCommons
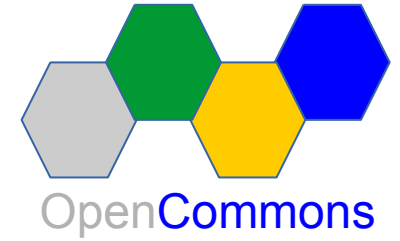
Business League (501c6): an association of persons having some common business interest, the purpose of which is to promote such common interest and not to engage in a regular business of a kind ordinarily carried on for profit.

Operations (Smart City)

- Best Practices of Smart Cities (Standards, Implementations)

- Collaborative Legal Platform (Code, IP, Rules of Engagement)

- Collaborative Business Platform (Catalogue, Interoperability)

- Collaborative Technical Platform (Coms, Docs, Code, Data)

- Educational Platform (Smart Cities and Communities, Civic Eco)

- Collaborative Professional Platform (Conference, Digital Library)

- Collaborative Marketing (What is smart city)
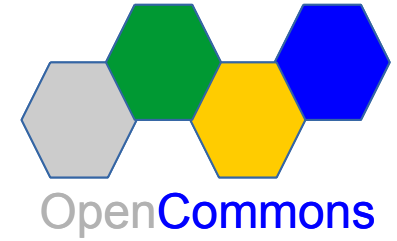
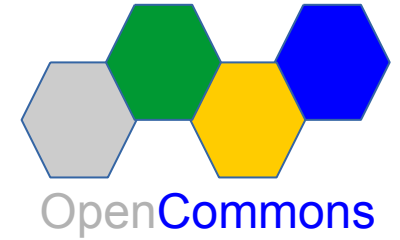# IoT-Enabled Smart City Framework

- Smart City technologies are being developed and deployed at a rapid pace.

- Many previous smart city deployments are custom solutions.

- A number of architectural design efforts are underway worldwide but have not yet converged.

- NIST and its partners are convening a public working group to distill a common set of architectural features from these architectural efforts and city stakeholders.

Goal: A reference framework for the development incremental and composable Smart Cities

Catalogue

The Internet of Things Landscape 2016 — a full catalogue infographic by Matt Turck (@mattturck), David Rogg (@davidjrogg) & FirstMark Capital (@firstmarkcap), organized into three major sections: Applications (Verticals), Platforms & Enablement (Horizontals), and Building Blocks.

OpenCommons - Smart City

Vision and Marketing	Standards and Interoperability	Catalog and Interfaces	Legal and Operational

Membership

Advisory Board	Advisory Board	Advisory Board	Advisory Board
Vision	Standards	Products	Membership
Website	Developers	Interfaces	Contracts
Literature	Maintainers	Supporters	Arbitration

Membership
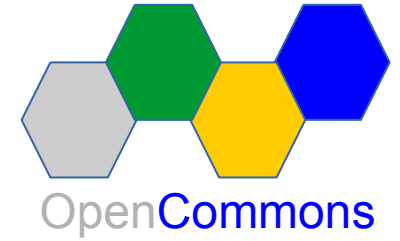
Type \ Size	1	5	10	50	100	1000	>10000
Leader (50 Max) Add One Board Member	$10000	$10000	$11000	$13000	$15000	$20000	$35000
Sponsor Add Committee Memberships	$250	$1000	$1500	$4500	$7500	$15000	$30000
Member Organization Membership	$150	$600	$1000	$3000	$5000	$10000	$25000