CELTIC-NEXT
Proposers Day

7th of September 2022, Online via WebEx

Pitch of the Project Proposal

<Power & Energy eXchanges- PEX>

by the Electron Network Innovators (ENI)

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Teaser

What if…:

- Energy Consumer could buy clean energy ‘smart contracts’ from Sellers at market price?

- Buildings could use their EV batteries and Renewables to reduce their carbon footprint?

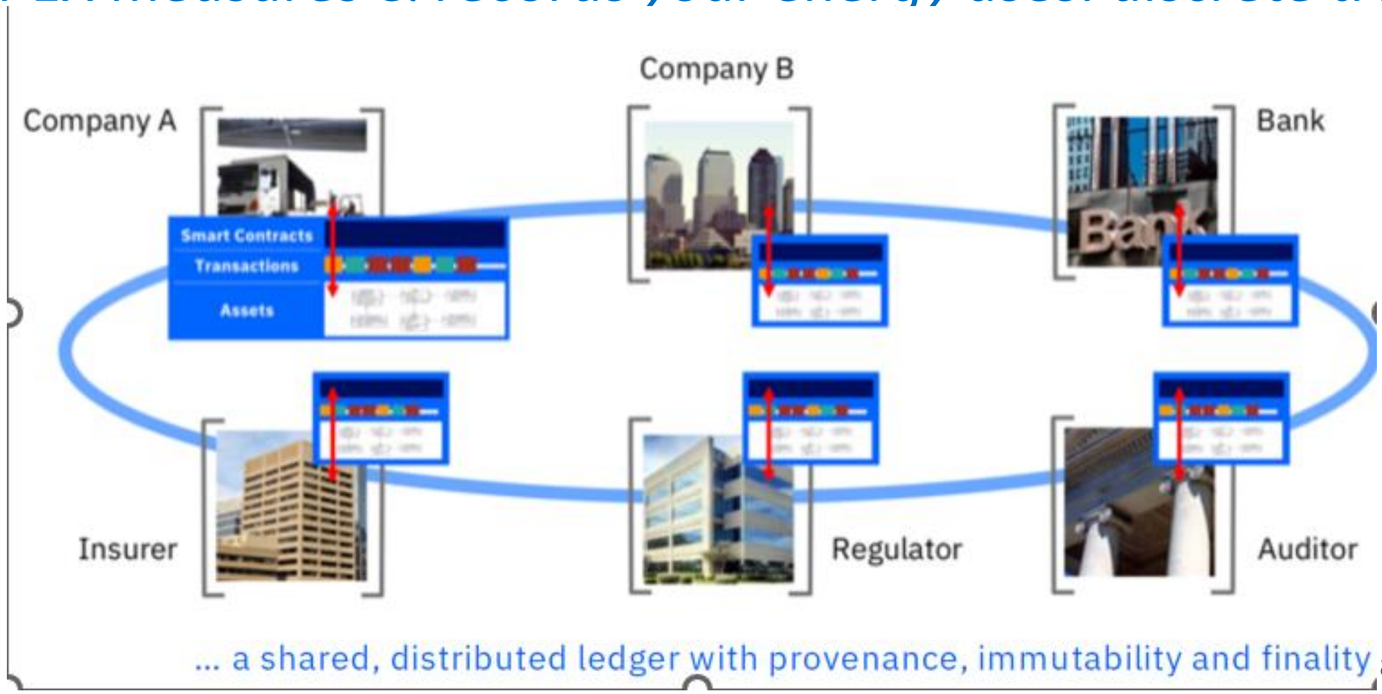
Instead, what they cannot do today is to collaborate.

PEX‘s added value is to participate in the clean energy fight enticed by carbon tax credits?

Then, I participate in the project to maximize my Carbon tax credits?

Organisation Profile

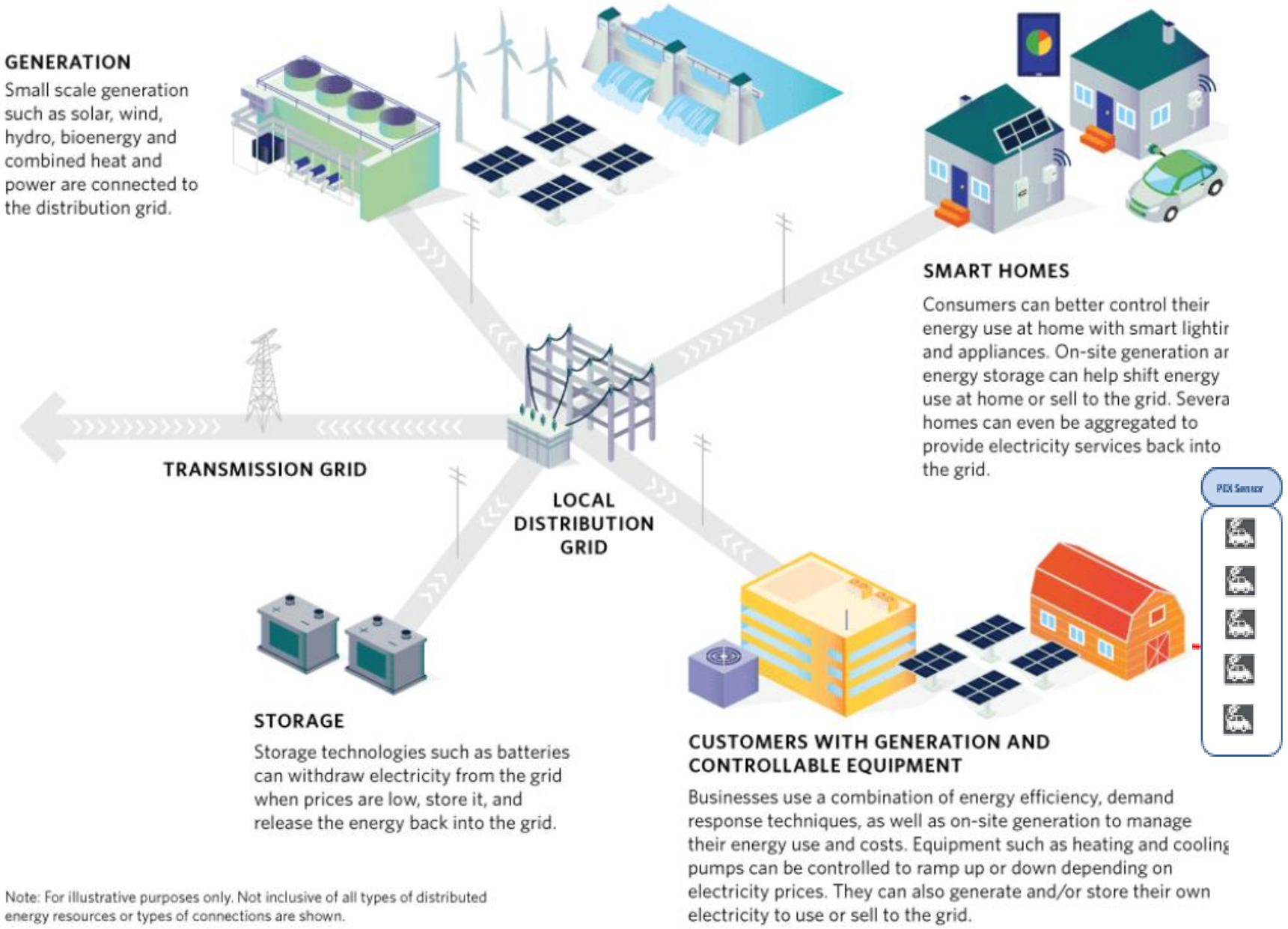
*Built/OperateTSI's **Genius Pass eXchange (GPX)** trades of telecom commodities in 1983.*
*Built **Power & Energy eXchange (PEX) now enables** 'Smart Contracts' for Electric Vehicles (EVs) to trade **PowerCoins's smart contracts** with Clean Electricity Producers using Digital Ledger Technology, the AWS Cloud and the 5G framework for IoT with all utilities.*
PEX measures & records your energy uses: discrete transactions in an immutable digital ledger.



"…an innovative way for us to address the challenges that are a direct result of more variability and uncertainty, in both supply and demand, at all levels of the electricity system,"
says Leonard Kula, CEO - IESO

ation & e-mail of presenter

How can the Power & Energy eXchanges (PEX) helps most effectively the Clean Energy Fight



PEX is an emerging technology concept to develop/prove for trading **PowerCoins Smart Contracts in Peer to Peer trades with Clean Energy Producers via the Utility's Public Distribution Grids**.

The grid's distributed energy stored resources are managed by Blockchain **Sensors** sited at stakeholders, optionally with Predictive Analysis' AI ISO/RTO, DSOs are incentivized to trade M2M via the PEX and Demand Response.

Decentralized non-emitting resources are Prosumer's smart microgrids, Independent Power Producers of renewable energy, EV battery in DC-connected to grid's charging site.

Blockchain adds prepaid contracts, Consensus between stakeholders and cyber-security. Smart Contracts of power available at the last second or can be modified in real-time by the utility distribution grid before a brownout due to a shortfall of energy before black-out, i.e. for sake of increasing the grid's **Resiliency.**

By zooming in on the most flexible Distributed Energy Resources connected to the Grid behind the meter

Proposal Introduction

Problem: Not enough stored energy in the electric infrastructure is available in some distribution zones

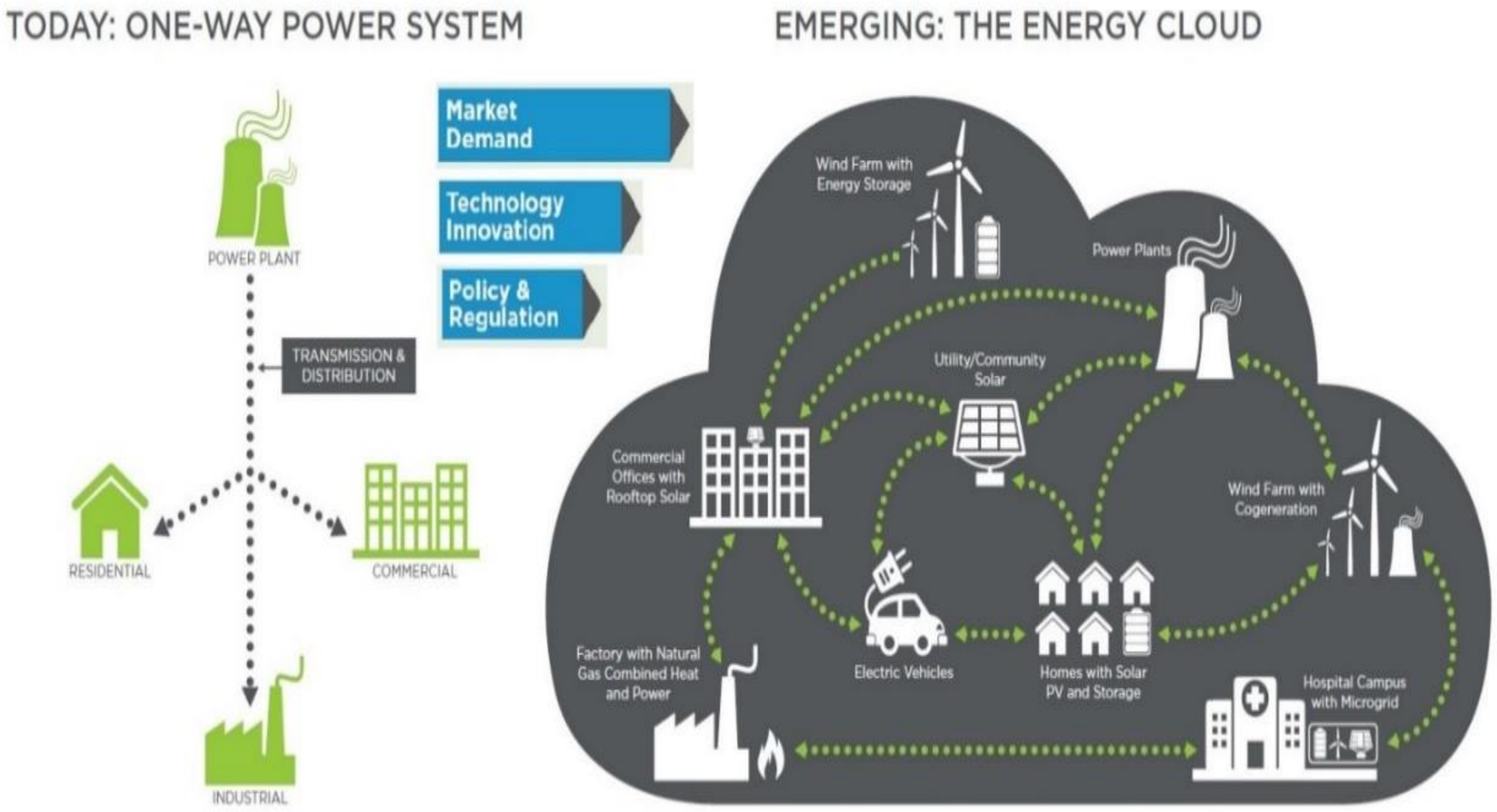
Vision: Creating a more resilient energy Infrastructure

Mission: Use EV batteries in EaaS and bi-directional energy is a reliable alternative in case of disruption

Motivation: Ensure the common electric infrastructure accommodates transactions between DERs with a financial incentive

Solution: Create a framework to allow usage of energy in the EV batteries by the utility and propose a compensation to the participants

Transactions are distributed resources in the Cloud



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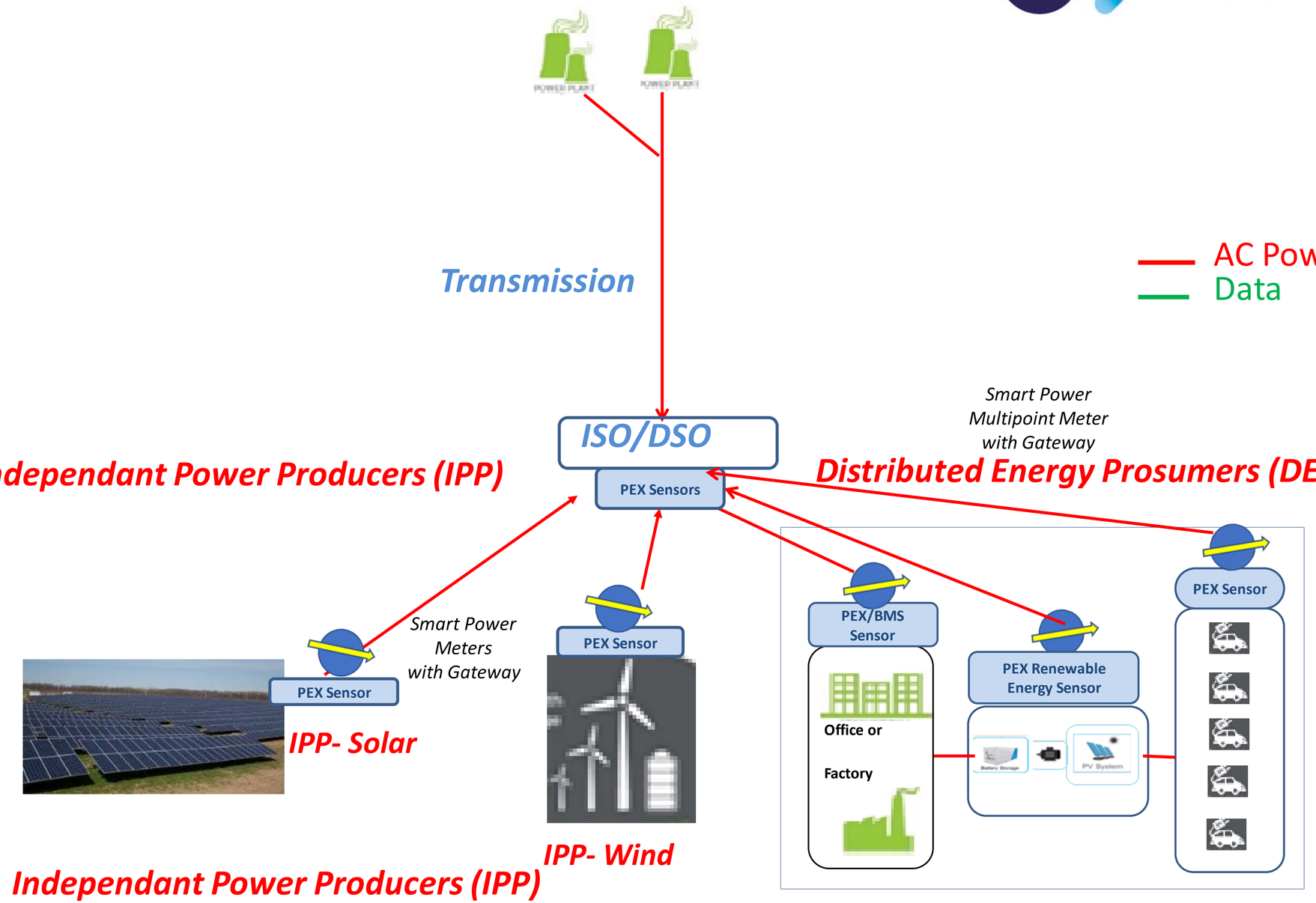
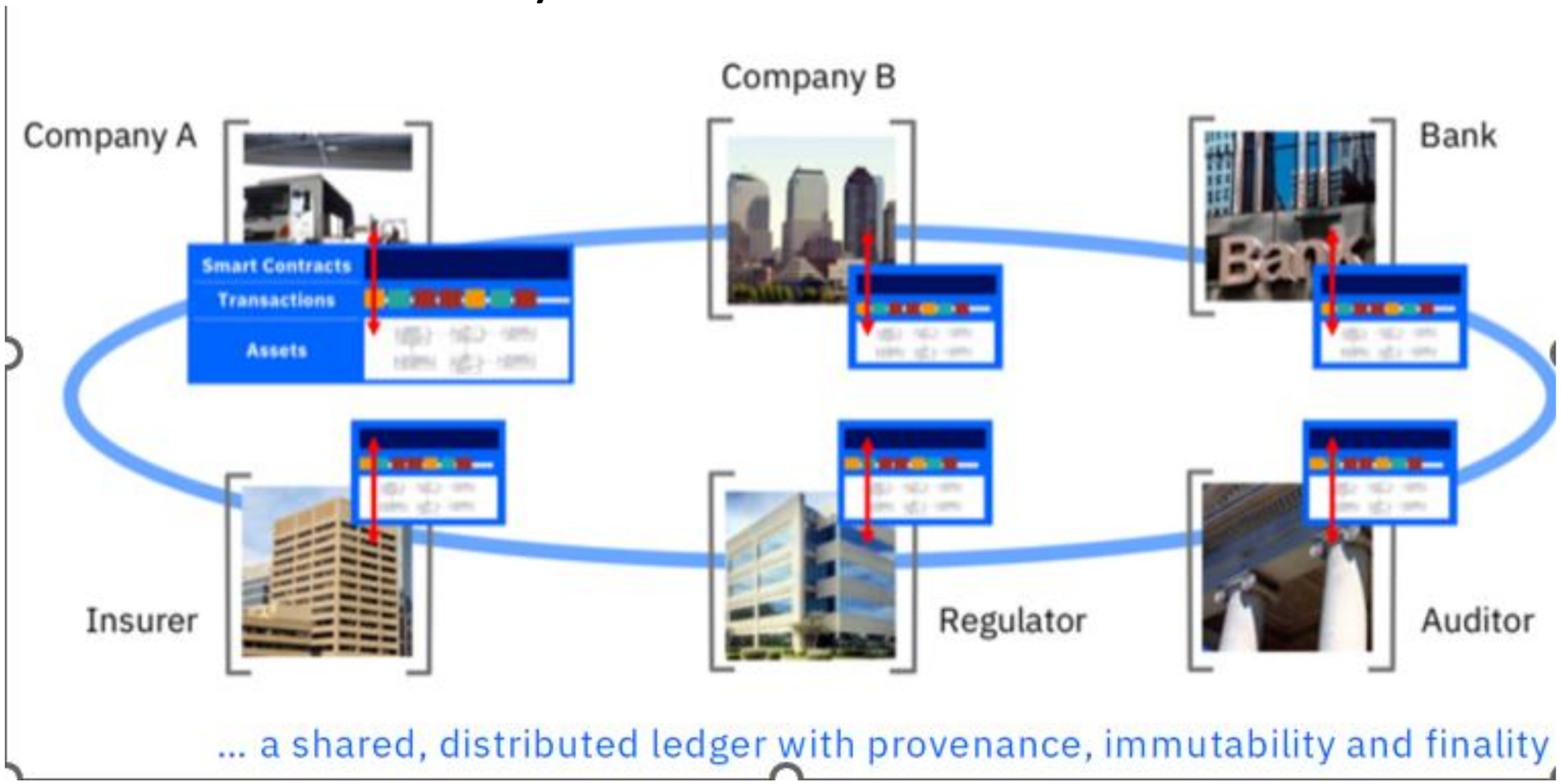
PEX – Consumers Trade "Smart Contracts" with Decentralized (Clean Energy Producers)



Project's Background, Purpose

The Canadian Energy Grid Innovators (CEGI) addressed the grid' ***Resiliency*** via **Adaptive Demand Response:**

- ***Grid's Peak Hour:*** DEPs Supply 40% of the power capacity and energy over the average daily production and Time-of-Use
- intermittent generation reduces resiliency (bottlenecks between Transmission and Distribution zones)
- Centralized storage (grid-tied battery) **frequency regulation** compensates only shortage Transmission
- Distributed Prosumer reduces sub-second power needs/brownouts via **Enhanced Frequency Regulation**
- Test-Bench with AI validates interoperability of V2G enhancing resiliency-non-wire alternative
- Now we also need a **cybersecure the consensus between the various stakeholders** and M2M payments:



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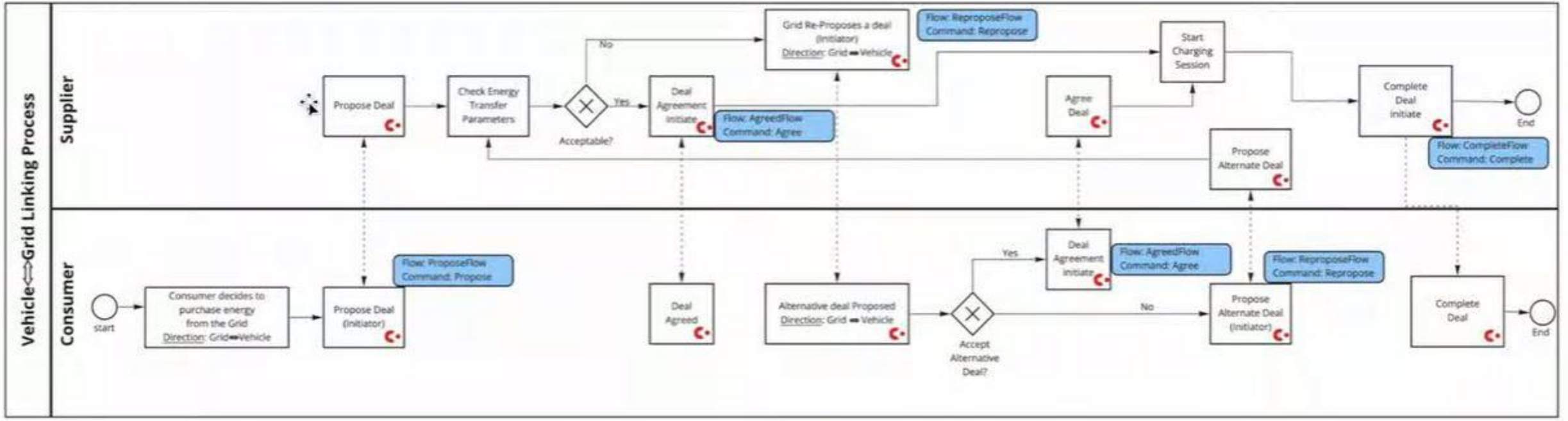
2.2 Technical architecture for MVP

2.2 Business Process Flow

Swimlane flows for communication, security and validation between parties involved

You have butchered it, but I am fine with it.



PEX will use Swimlane flows to allow purchase transactions by the consumer of the clean energy delivered by a Charge Hub or EVability Charge Point using R3 Corda and 5G to enable real-time Communications:

1.Operator to manage through Deals that are consensus-based with the Utility or any provider of clean energy such as a Solar or Windmill or Distribution Service Operator Power Provider via the bidirectional Charger BTM of private Facilities.

2. Buyer/consumer of clean energies transferred in its EVs is entitled to **PowerCoins**TM and to claim Carbon Tax Credits

The Bi-directional ELECTRON NETWORK CHARGE HUB's for Power & Energy eXchanges (PEX)

What are you trying to convey??

Powerful applications from a highly flexible energy solution requiring virtually **zero make-ready** are described as follows:

EV charging supports Power capacity of host facility regardless of the existing power supply and grid conditions:

Electric Vehicle Fast Charging: High-speed EV charging of up to 600 kW, allowing you to boast a premium service that fully charges vehicles in under 10 minutes. Also Bus charging at up to 600kW

Renewables Integration: Connect with onsite solar or wind to fully capture the energy generation and use it to reduce facility emissions and lower energy cost.

Facility Integration: Minimize your electricity bill and avoid demand charges through our patented Battery Management System (BMS).

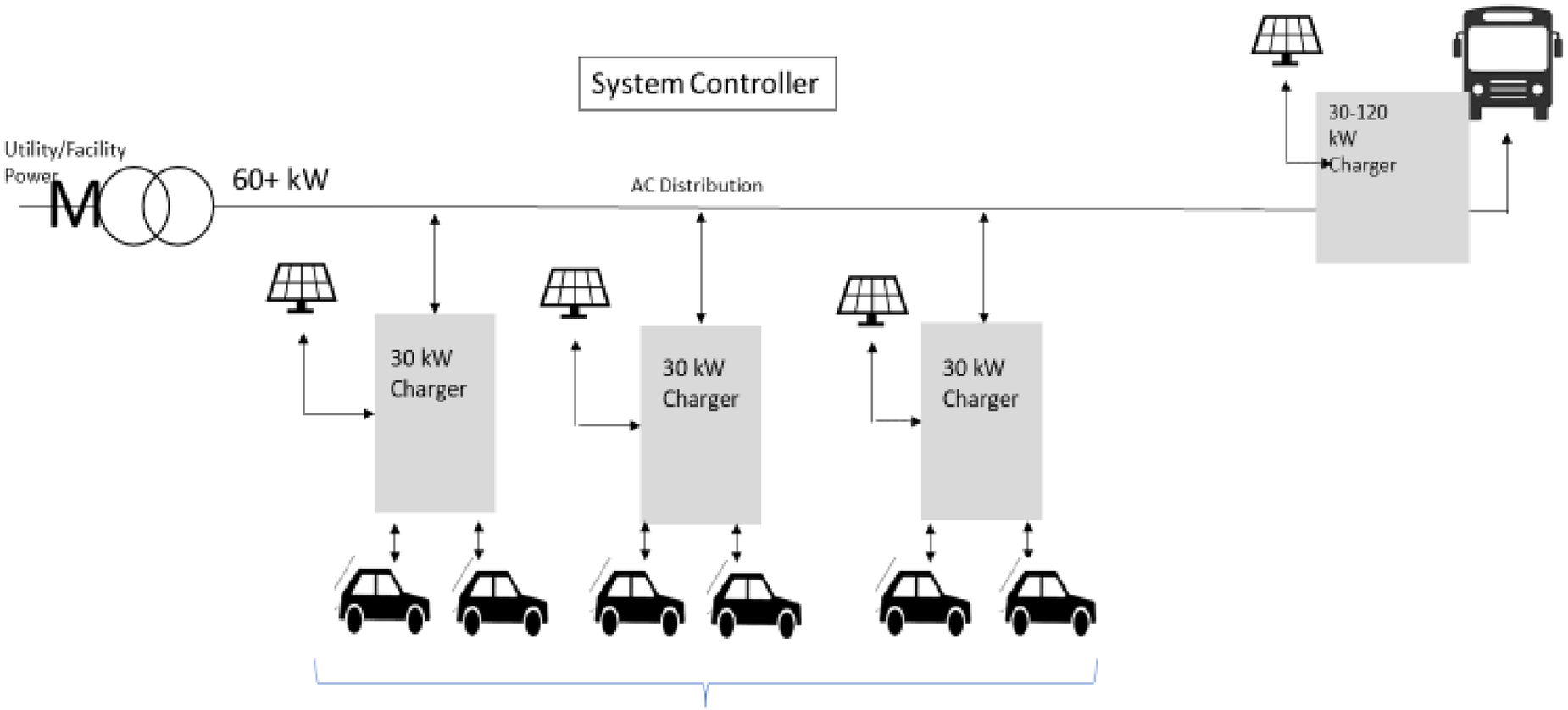
Grid Connection: Transform a grid connection of any power level into a high-power energy source that satisfies your energy needs, regardless of the time of day.

Energy Storage & Demand Response: With our small-footprint smart battery storage, gain a backup power source and earn additional revenue through participation in local Demand Response Programs.

Aggregation & Virtual Power Plant: Pool resources and activate Inter-hub communication to simulate a virtual power plant that can be dispatched in areas needing additional infrastructural support.

EVability EV Recharge Station delivers **Power & Energy eXchanges** for Charge Point Operators, EV Drivers and Fleet Managers solution bringing together complementary distributed storage solutions under a common platform of integrated technologies:

EVability: e-Mobility Faster Recharge Station for Fleets of Urban EV Truck, e-Bus, "Affiliated Drivers" (EV Taxis, Téo, Uber, Lyft, Car-Sharing , Car-Hailing, & Heavy users



M = Commercial meter 480 V+

Priority to accredited members of a Fleet/Car-Sharing Service and accepting accredited heavy user EV drivers

Confidential
TSI-eco 4 Aug2022

Features:

Direct Solar to Vehicle Charging enhanced in winter.
Uses EV's batteries and stationary Energy e-Battery (new & repurposed)

- Vehicle to Building will peak-shaves power demands
- Connects EV charging to existing facilities eliminating the need for facility upgrades

Smart charging for e-fleets.
User interface that provides a quick and effective experience.

Bad Team slide pictures, shorter, what they have done that can qualify them?

Electron Network International - Team:

Maurice Malka, president of **TSI-eco.com** and Electron Network Canada, P. Eng., MBA. Full time President. Resident of CDA can work in USA,
Experienced integrator of telecom, energy and blockchain technologies to produce competitive solutions for utilities. Invented the **Power & Energy eXchanges (PEX)**
Previous CTO of Bell Canada for 10 years. Opened Telecom Network Competition in Canada via Sharing Groups. www.linkedin.com/in/maurice-malka-02866/
Familiar with existing trading systems from with DSO and ISO and supporting the resiliency of the electric grid via Frequency Response services.
Deploys special EV chargers: **EVability** or **CHARGE HUB**

Rick Szymczyk, CTO of TSI-eco.com, CEO Upstartz energy Ltd, rick@upstartz.com,, Carleton U., Eng'g 1987, Queens U. MBA, 2004,Previously at General Motors Canada. He also co-developed the **CHARGE HUB** and the **EVability** solutions: www.linkedin.com/in/rick-szymczyk-bb523812/
Patents: Method & Systems for Controlling a Hybrid Vehicle (Multiple patents), Energy Storage based Electric Vehicle Fast Charger, Fast Charging Home system for an Electric Vehicle, eCamion's EV battery based technology, Other Automotive focused patents.

Alberto Quiroz, P. Eng, President **Intellimeter Canada** offers a comprehensive line of sub-metering systems to provide detailed, real-time information on Electricity, Water, Gas, and Thermal Energy consumption, Our i-meter-Energy Analysis cloud-based software is the gateway to intelligent information for our clients. Our greatest value is providing customers with energy information that strengthens conservation, accountability and helps to promote lean property management.

Jay Fallah, jay.fallah@parsedata.xyz, Full-time 2 years, Carleton U., Chemistry 1983, "Partner of TSI-eco.com www.linkedin.com/feed/hashtag/parsedata/* - Google Patents Solving the Issues in Electric Vehicle Charging: Announcing Parsedata as the **Corda Challenge: 5G Winner - R3**. President of **Parsedata**
Experienced in energy, automotive, blockchain, security. Inventor of a "Software Defined" Direct to Grid Level 2 AC V1G/V2G bi-directional lamp post charger framework for monetization of charging infrastructure **Whenergy** through peer to peer marketplace tokenization of **Energy as a Service**. * Current Traction with Utilities. Feasibility assessed by **Alectra Utility** from Pilot data gathered over Sept-Nov 2022. Dec. 2022 is planned for analytics to assess if the measured power transactions are accurate and within 2% of actual numbers. If so, then Alectra will go ahead or make changes have to be done to get it within range. Not much trouble anticipated. TSI-eco.com proposes to offer this unique Blockchain Proof-of-Concept with Level 3 EV chargers EVability or CHARGE HUB and power submeters.

4. **Constance Herrera**, BSc. Physics Mc Gill U, MPA, completed PHD studies at ENAP, VP TSI-eco.com, Treasurer of Electron Network Canada.
www.linkedin.com/in/coherrera/

5. **Tanya Krackovic**, VP Electron Network Canada.
Special Projects for CHARGE HUB
www.linkedin.com/in/tanyakrackovic/

Proposal Introduction

Expected outcome, **Proof-Of-Concept 1: Adapt/Demo PEX Features Integrating: Distribution System Operator (DSO) managing Consumer's Grid-tied EV Batteries Behind-the-Meter:**

- Blockchain smart contract for
  - ✓DEP with renewable energy and energy storage controlling Fast DC EV chargers
  - ✓Peer-to-Peer Energy Trading with the Utility's Distribution System Operator (DSO)
  - ✓Enhanced Frequency Response in Real-Time (msec) case at 60 HZ grid's frequency

PoC2 - Net-Zéro Building e/w Fuel-cell contributions:

Net-Zero Building of 3,000 m2 with 150 MWh/year own fuel-cell generation for building's needs and 150 MWh/year in excess capacity. A microgrid is require more Li-Ion batteries to enable participation in grid services: EFR or Demand Response Load-shedding

- Blockchain smart contract for
  - ✓DEP microgrid with solar panels and energy storage
  - ✓EV charging
  - ✓Peer-to-Peer Energy Trading with the Distribution System Operator (Engie as a J-V Partner)
- Enhanced Frequency Response Real-Time (msec) case at 50 HZ grid frequency

Partners

Electron Network International regroups TSI-eco.com as Team Leader for the PEX ,
Upstartz Energy, is building the bi-directional Level 3 EV Chargers
ParseData is developed the R3 Corda Framework
a Major North American Utility (TBF),
EV Charging Points "behind the meter" in Gas & Alternate Fuels Service Stations.

looking for EU experienced Clean Power Producer and OEMs of V2G EVs to participate

Not just the name of partners, what are you doing for you? How are they partnering? What do they seek as their reward?

Electron Network International - Team:

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Maurice Malka, president of TSI-eco.com and Electron Network Canada, P. Eng., MBA. Full time President. Resident of CDA can work in USA, Experienced integrator of telecom, energy and blockchain technologies to produce competitive solutions for utilities. Invented the **Power & Energy eXchanges (PEX)** Previous CTO of Bell Canada for 10 years. Opened Telecom Network Competition in Canada via Sharing Groups. www.linkedin.com/in/maurice-malka-02866/ **Familiar with existing** trading systems from with DSO and ISO and supporting the resiliency of the electric grid via Frequency Response services.

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Contact Info

For more information and for interest to participate please contact:

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