

# SATURN: PROOF OF CARBON REDUCTION BLOCKCHAIN

- ❖ WHY A CONSENSUS
- ❖ THE INTRINSIC VALUE OF THE NATIVE TOKEN

Jan 2022



# INCENTIVIZE CARBON FOOTPRINT REDUCTION

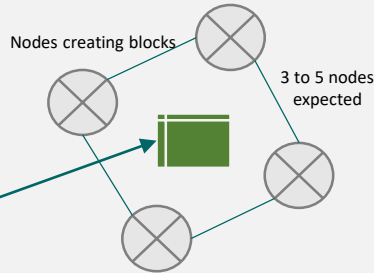
*"The lower the node footprint  
The higher their reward"*

## New public blockchain consensus: Proof of Carbon Reduction (PoCR)

- ✓ Definition and publication of a node carbon footprint assessment methodology (following ISO 14040/44 Life cycle assessment)
- ✓ Carbon footprint assessment is made excluding any compensation scheme. So the outcome is a positive number in g CO<sub>2</sub> / y
- ✓ Node operators must be audited by an independent actor with the methodology;
- ✓ Block reward increase with the lowering of the node footprint versus the average
- ✓ Long term monetary creation reach a cap by progressive halving
- ✓ **The scheme creates a virtuous circle for improving green IT infrastructure based on financial incentive**
- ✓ **It also initiate interest for participants in understanding the parameters that impact the planet**
- ✓ **Creating a "clean" usage token, native to the blockchain (known source of token)**

### How does it work:

Independent calculation  
of nodes footprint



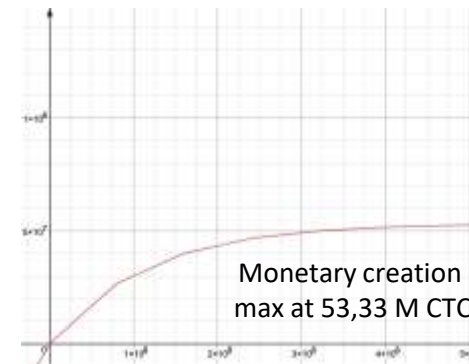
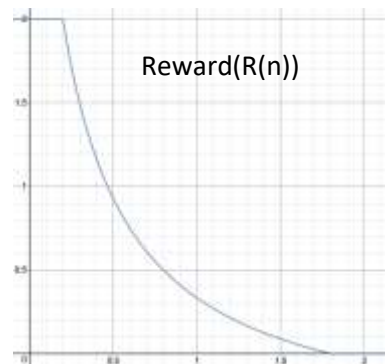
$F(n)$  = Carbon footprint of node  $n$

$GF = \sum F(n)$  = Global footprint over  $N$  nodes

$R(n) = \frac{F(n)}{\frac{GF}{N}} = \frac{\text{Ratio of the node footprint to the average}}{1}$

$\text{Reward}(n) = \frac{1}{R(n) + 0.2} - 0.5 = \text{CTC Earning of node } n$

*A node does consume energy and has a carbon footprint to execute the consensus, store the data and communicate, but it will search to improve its ecological impact to increase its earnings*



### Creation of a new native token: "Carbon Transition Coin" (CTC)

- Native to the new blockchain
- Received by nodes creating blocks
- Spent by actors of the bond issuance
- Value in fiat defined by supply & demand
- Minimum estimated price 1 CTC = 0,077€  
assumptions: 4 nodes, 10k€ / month per node,  
4 sec block interval, 1 CTC reward per block



# CARBON FOOTPRINT EVALUATION – APL NEUTREO METHODOLOGY

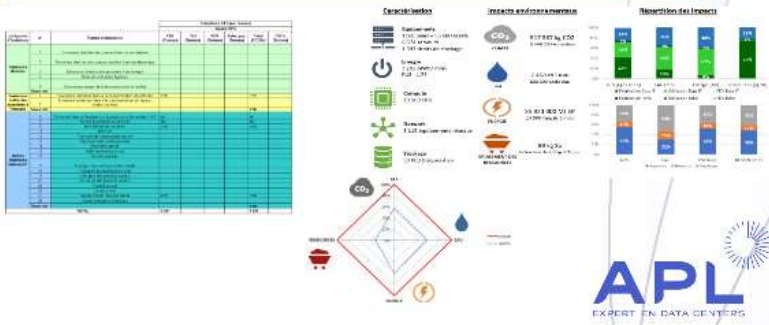
## LCA AND CALCULATOR

### Details of this step :

- Environmental impact assessment methodology
  - LCA conform to the ISO 14040/44 standards
  - Choice of relevant environmental criteria
- Calculator
  - How will the Input and Output be expressed
  - Format: Excel sheet

### Deliverables :

- Excel sheet of the calculator
- Methodological note of using the calculator
- Specifications for the integration of the environmental algorithm or program into the blockchain from the calculator

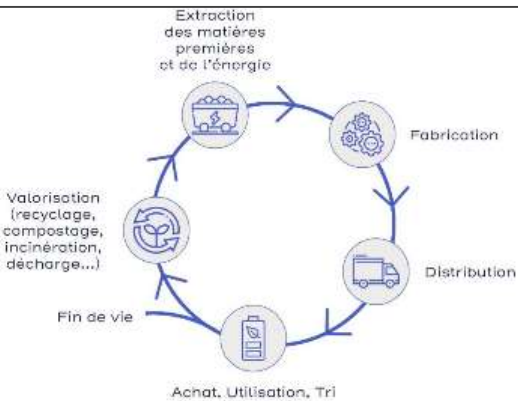


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## Focus: Life-cycle assessment

Impacts of a product,  
its flows into potential  
avoiding pollution



## The NegaOctet Database



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The standards applicable to this approach are as follows:

- ISO/TR 14062: 2002 standard – Integrating environmental aspects into product design and development
- NF EN ISO 14040: 2006 standard – Life cycle assessment: principles and framework
- NF EN ISO 14044: 2006 - Life cycle assessment: requirements and guidelines
- NF EN ISO 14063: 2010 - Environmental communication - guidelines and examples

The environmental impact will be assessed using the GHG emission indicator.

Indicator	Method	Unit
GHG emissions	IPCC 100 years	kg CO2 eq

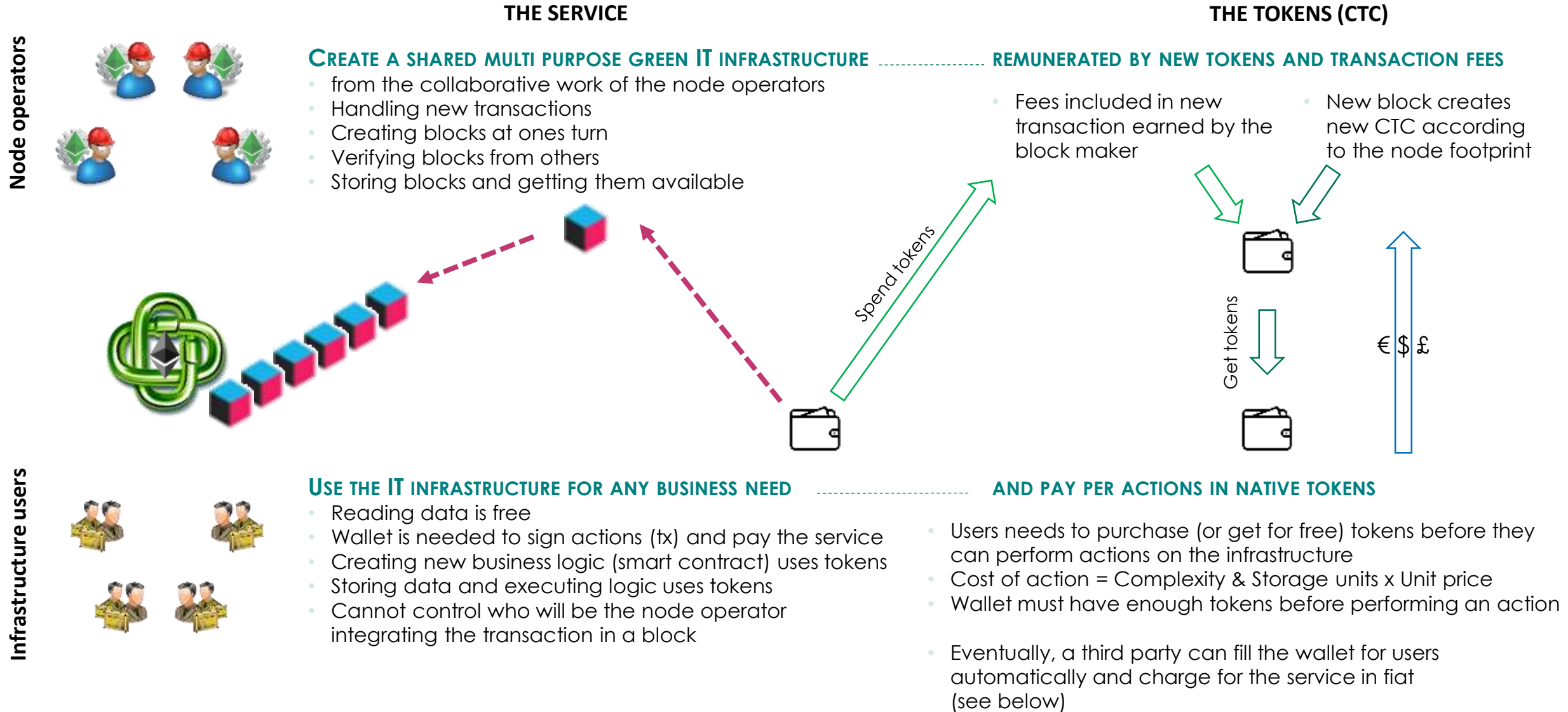
The results could also be presented through 8 other indicators of the NegaOctet database (in line with PEF)

- Acidification (mol H+ eq)
- Fine particles emission (disease occurrence)
- Ionizing radiations (kBq U 235 eq)
- Electronical waste production (ton)
- MIPS (kg)
- Primary energy consumption (MJ)
- Resource depletion (kg Sb eq)
- Water resource depletion (m3 )

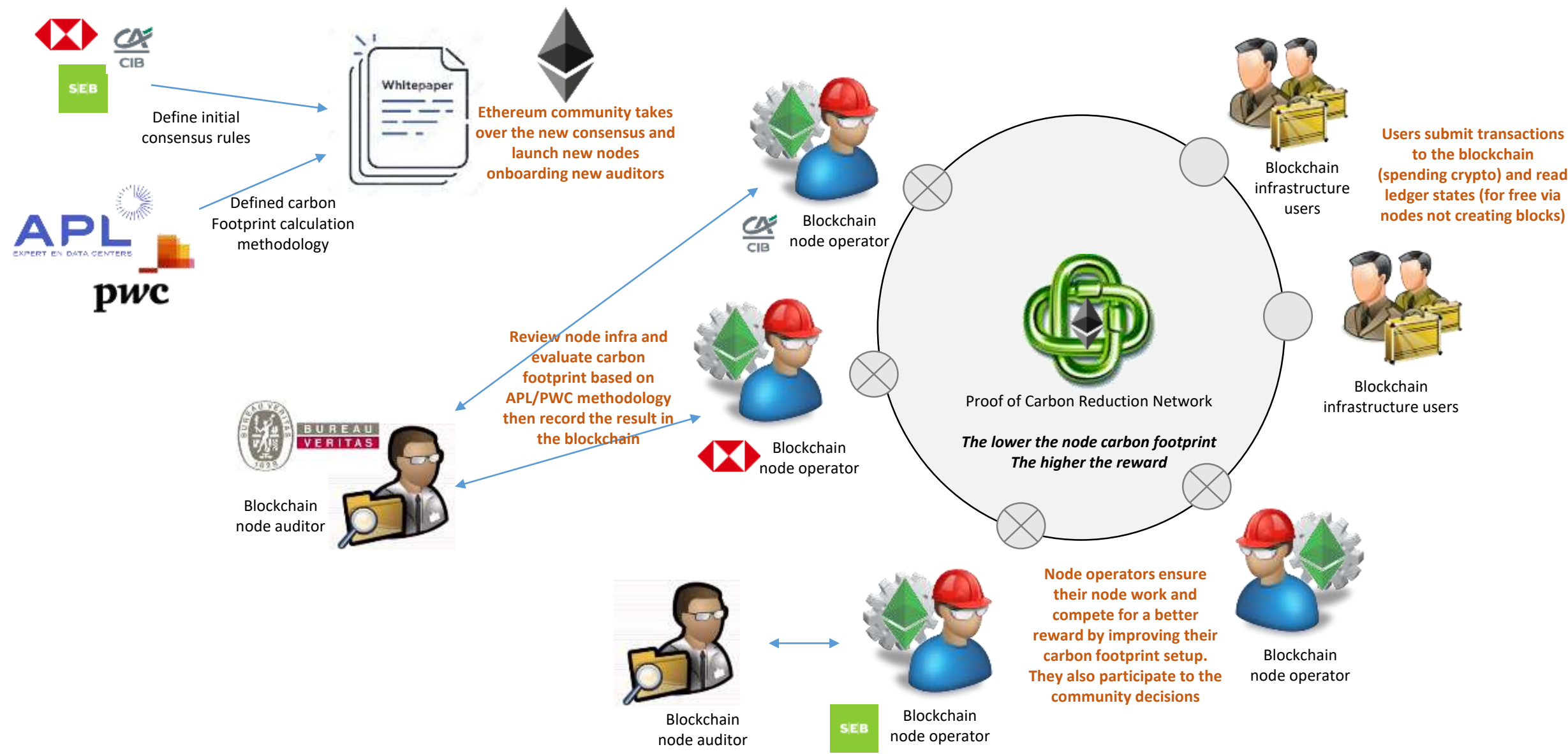
With a view to popularization, these indicators can be reduced to tangible units.



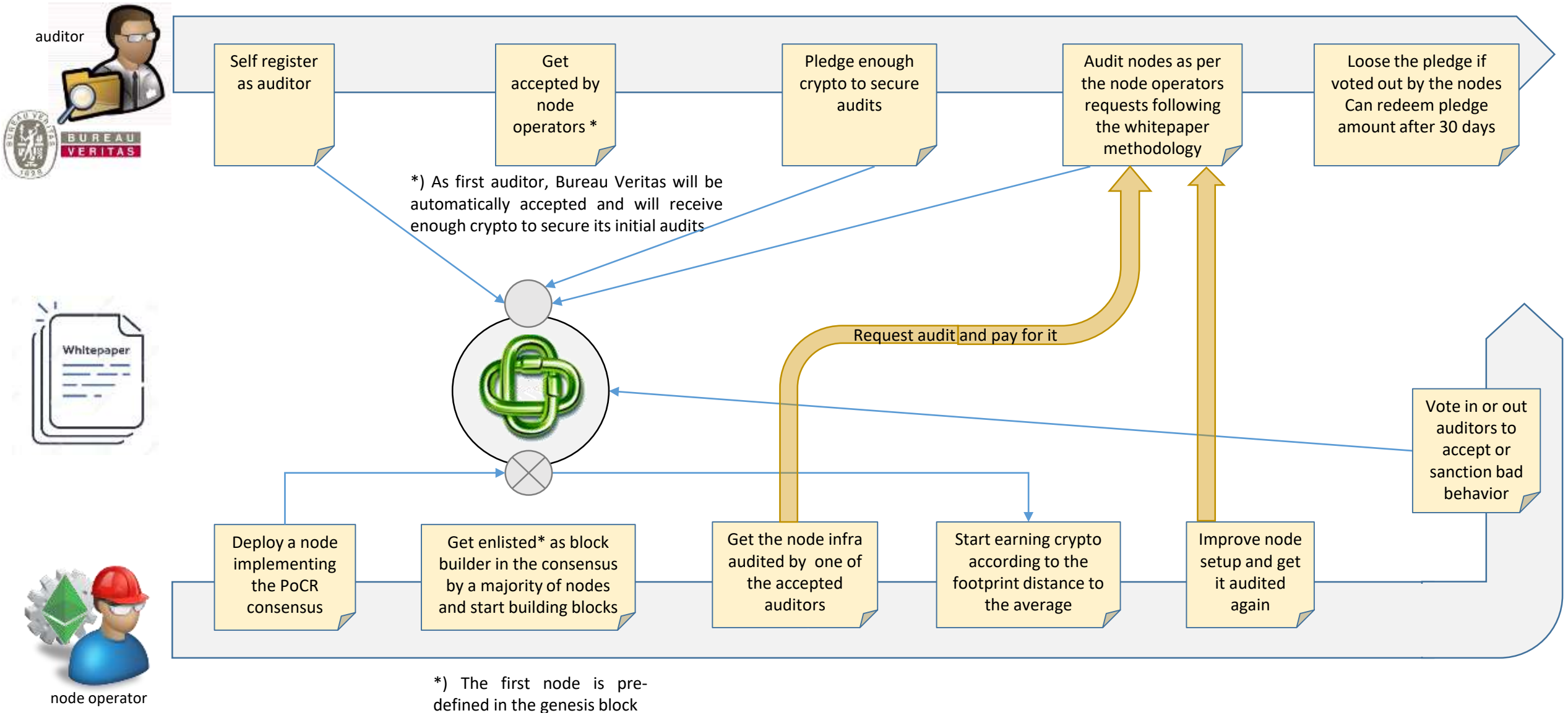
# A NATIVE TOKEN TO VALUE A FLEXIBLE AND OPEN IT SERVICE



# POCR BLOCKCHAIN ECOSYSTEM



# POCR BLOCKCHAIN ECOSYSTEM – ONBOARDING JOURNEY

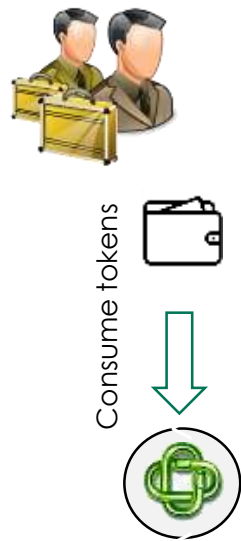




# ALTERNATIVE : USING AN EXTERNAL WALLET REFILL SERVICE

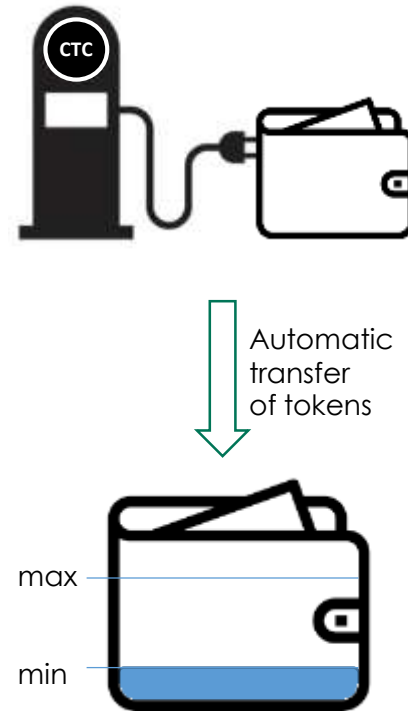
- For infrastructure users to receive tokens automatically without having to effectively purchase and hold the tokens

## BLOCKCHAIN USERS



- Consider the tokens on the wallet for its usage only
- Cannot sell the tokens
- Account the invoice as service or consumable

## REFILL WALLET SUPPLIER



- Monitor the token supply on the registered wallets
- Refill the wallets when below to minimum
- Invoice the owner for the service
- May need to be registered as PSAN

## NODE OPERATOR

