NORDIC ENTERPRISE TRUST NET

NET PRESENTATION:

# Beyond Cities

## Community Action for Transition to Sustainable Living

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# *"21st Century questions do not have 20th Century answers"*

# Introduction - Resilience

Resilience - *the enduring power of a body or bodies for transformation, renewal and recovery through the flux of interactions and flow of events*

Resource Resilience – keeping the lights on

Human Resilience – building capacity & capability

Financial Resilience – financial system which does not come two hours away from collapse

# Introduction – 21st Century Questions

What are the operating principles of a sustainable society?

What are the protocols & frameworks within which these principles may be made manifest?

What instruments are necessary within such frameworks?

# Introduction – Research Methodology

Review of current global policy to identify successful operating principles, protocols and instruments

Review of historic protocols and instruments

Action-based research:

Micro - proof of concept at community level

Macro – eg Caspian Energy Grid initiative

Systems Thinking - if resilient Micro is networked outcome should be resilient Macro

# Resource Resilience – Case of Denmark

Since 1980 Denmark's GDP rose 78%

Energy use has been stable

Carbon fuel use has declined significantly

*How did Denmark achieve this?*

# Resource Resilience

Least Carbon Fuel Cost principle

- minimum carbon fuel input for a given output of electricity, heat or power

- investment in renewables, heat, transport, energy efficiency

- distinct from least DK cost (or least $, € or £ cost)

# Emerging Outcome - Natural Grid

- decentralised/distributed energy

- knowledge & knowhow base: Vestas the biggest global wind turbine company in country of 6m people

- trend to energy security and energy independence

- not forgetting.....reduction in carbon use

# Linlithgow Natural Grid (LNG) – Phase 1

Aim: Linlithgow to become independent in energy

Means: application of least carbon fuel cost principle

Catalyst

- Mainstreaming Innovation academic input
- CARES funded study carried out by Dr Mohammed Imbabi of Aberdeen University

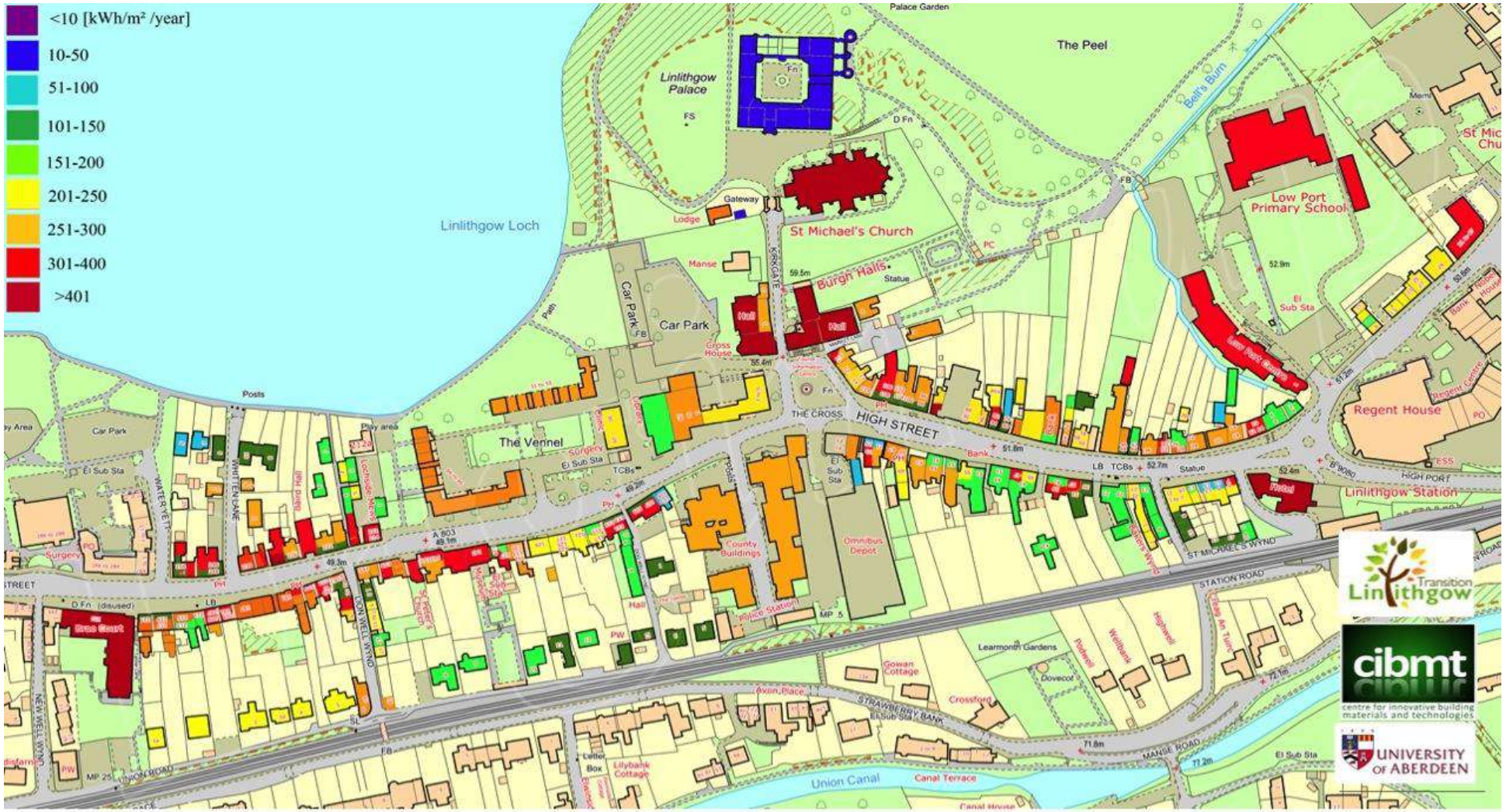
# Linlithgow Natural Grid - Initial Study

Objective 1 – map energy use in Linlithgow Cross

Objective 2 – identify & prioritise viable least carbon fuel cost interventions leading to energy descent


# Survey Target Area 2013

Linlithgow Cross Buildings Survey, TL-CARES Project




# Gas & Electricity Consumption, 2013

Linlithgow Cross Buildings Survey, TL-CARES Project

# Systemic Funding Problem

Denmark's fiscally robust local government guaranteed finance of renewables & funded heat infrastructure

UK intermediated 'for £ profit' market economy

- renewables compete with profitable marginal energy
- energy efficiency reduces energy sales

So if private sector won't & public sector can't, how can renewables & energy savings be funded?

# Linlithgow Natural Grid – Phase 2

Edinburgh Centre for Carbon Innovation (ECCI) Smart Accelerator programme

Development of community-based instruments & protocols to accelerate community energy projects

Instruments - Prepay Energy Credit

Protocols - Energy Partnership & Energy Pool

# Instrument – Prepay Credit

Tax


# Tax Prepay

Tax Prepay – credit returnable in payment of taxes

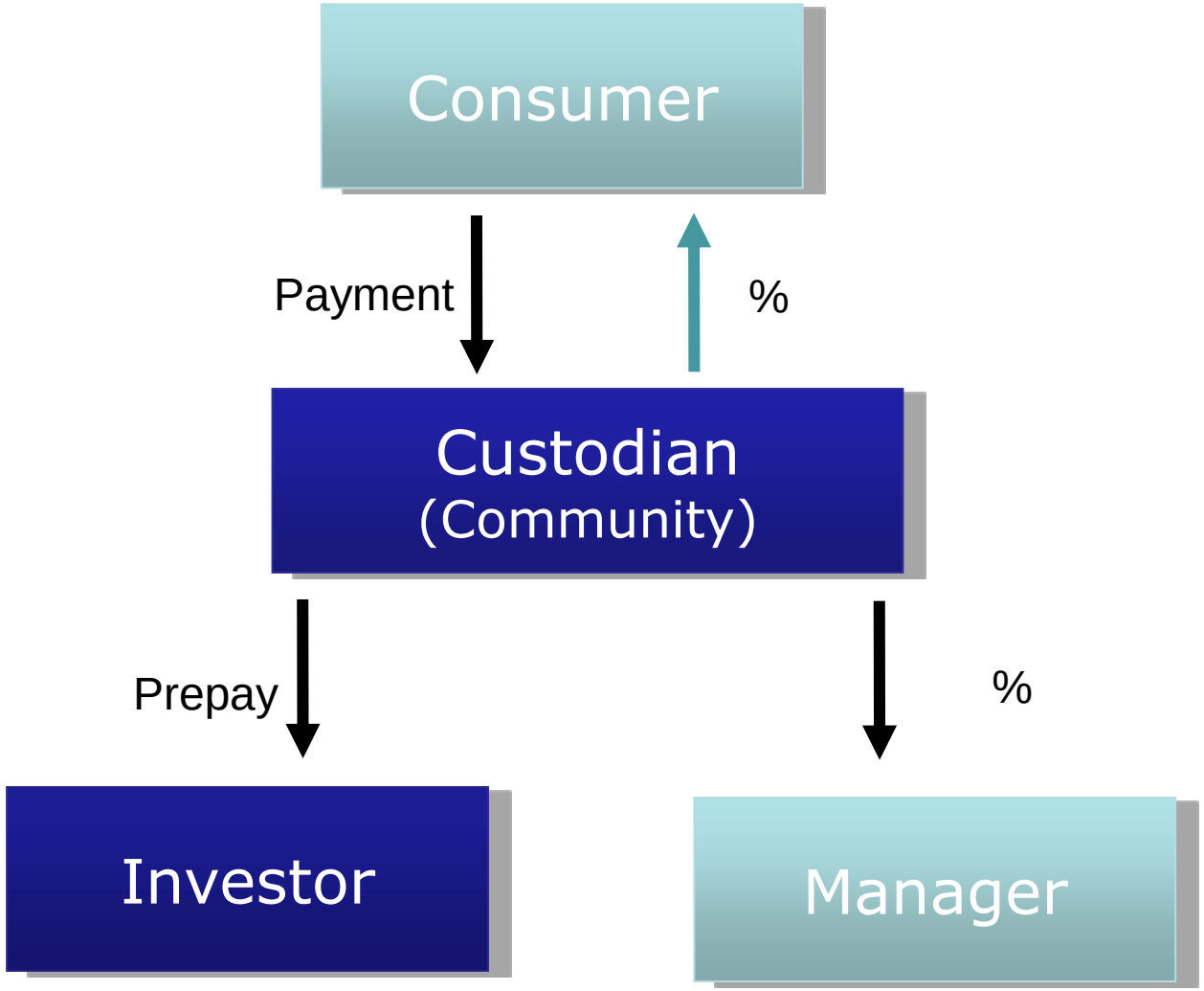
Tax Return – 'stock' part of tally stick returned to Treasury

Rate of Return - rate over time at which stock is returnable for cancellation

eg Prepay £8 for £10 tax - £2 profit 25% pa rate of return

- not fixed - depends on existence & quantity of flow

# Protocol - Energy Partnership



# Energy Partnership – Energy as a Service

Social Contract - relationship-based not transaction-based; costs transformed to revenue shares

Neutrality – removes ego and politics

Collaborative - stakeholder interests aligned

Sustainable - all have interest in minimising cost over time

# Energy Prepay – the Value Proposition

## Community

- sells value of future energy production or savings

- interest-free energy loan until credit cancelled by return vs supply or repurchase from energy savings

## Consumer

- prepays for energy and locks in price

# Energy Prepay – the Value Proposition

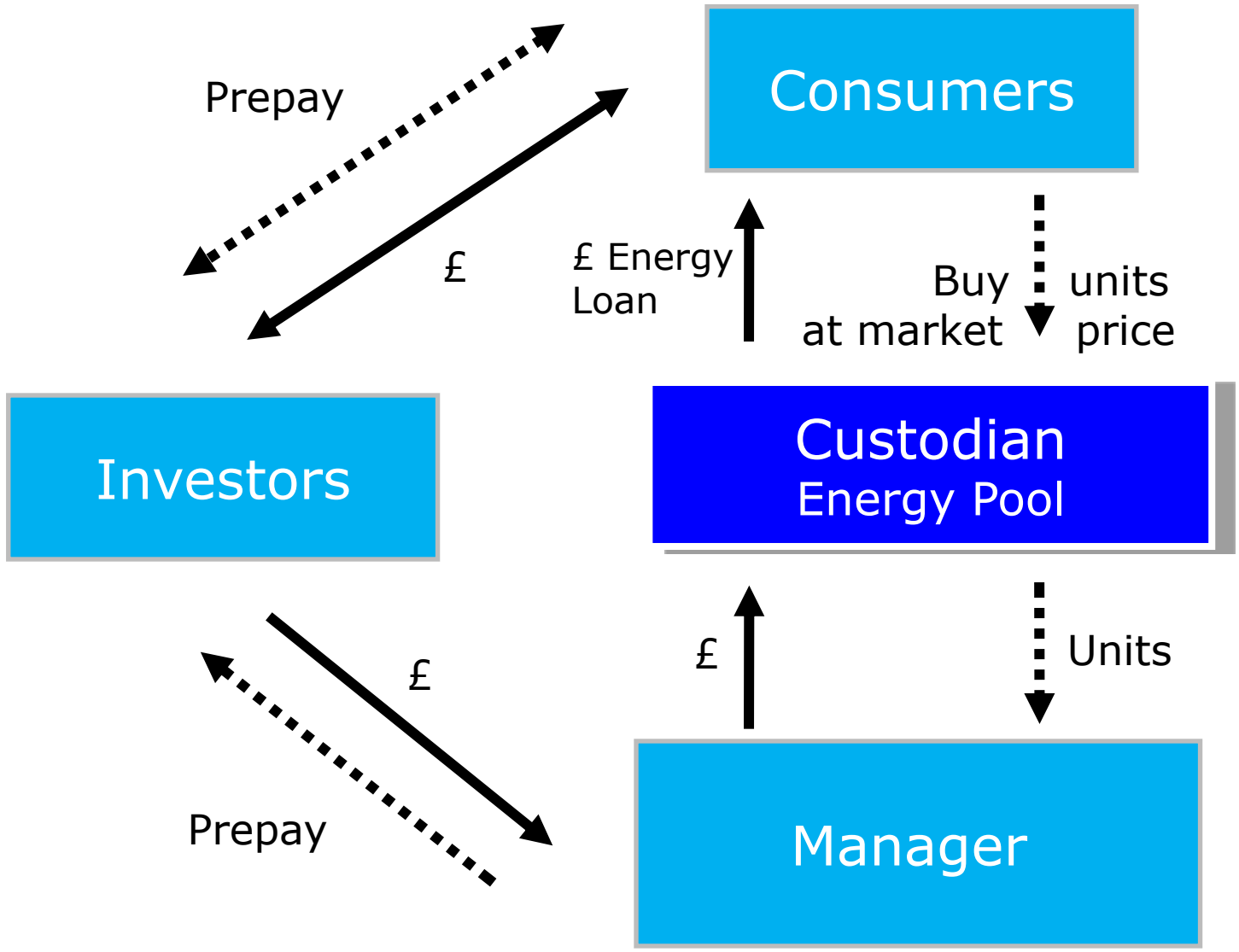
## Investor

- Energy Loan investment directly “Peer to Asset”
- Consumers buy credits from Investors at best price below physical energy price & return against supply

## Manager

- shares in gross revenues or production
- interests aligned with Investor
- no 'Principal/Agency' problem

# Protocol - Energy Pool Clearing Union



# Next Steps

Q1: *Based on your current research or practice, what potential future research in your area and/or multidisciplinary research should follow?*

A. Implementation of protocols and instruments in two Linlithgow proof of concept locations:

- Linlithgow Energy Park – business oriented
- Vennel Energy – community oriented

# Next Steps

Q2: *How the outputs of your research and/or practice could support social innovation, i.e. engagement of community groups or individuals in applying the research or practice outputs to contribute to more sustainable living?*

A. Subscription of the community to the aims of Linlithgow Natural Grid via subscription to the protocols

NB. More expensive carbon fuel becomes, the more £ profit there is in saving it – reduced CO2 use follows

# Next Steps

Q3: *What dissemination routes would enable faster understanding and application of new knowledge not only by businesses and industry, but also by communities and entrepreneurial individuals?*

A. Cascading local community engagement for older generations plus social media for younger generations

Suitably crafted documentaries and reality TV

Community level events & engagement

# Next Steps

Q4: *Who might be potential enablers of knowledge dissemination to the population – government and its agencies, local authorities, community groups, media, online knowledge platforms, etc. ?*

A. Cadre of local & neighbourhood energy developers to lead development & disseminate best practice

Developer Guild approach: apprentice, journeyman, master ?

Paid out of energy production & reduction

# Next Steps

Q5: *What governance frameworks and partnerships should be developed to support social innovation?*

A. Collective risk sharing – Guarantee Society

Associative production sharing – Capital Partnership

Nondominium governance

No stakeholder has dominant rights: stakeholders have veto rights on matters which concern them

# Next Steps

Q6: *What 'big data' do communities and innovators need to enable development of innovative solutions in your area of research or practice?*

A. Energy production & use data.

Geospatial data.

Resource data – especially water

Transport use data

# Next Steps

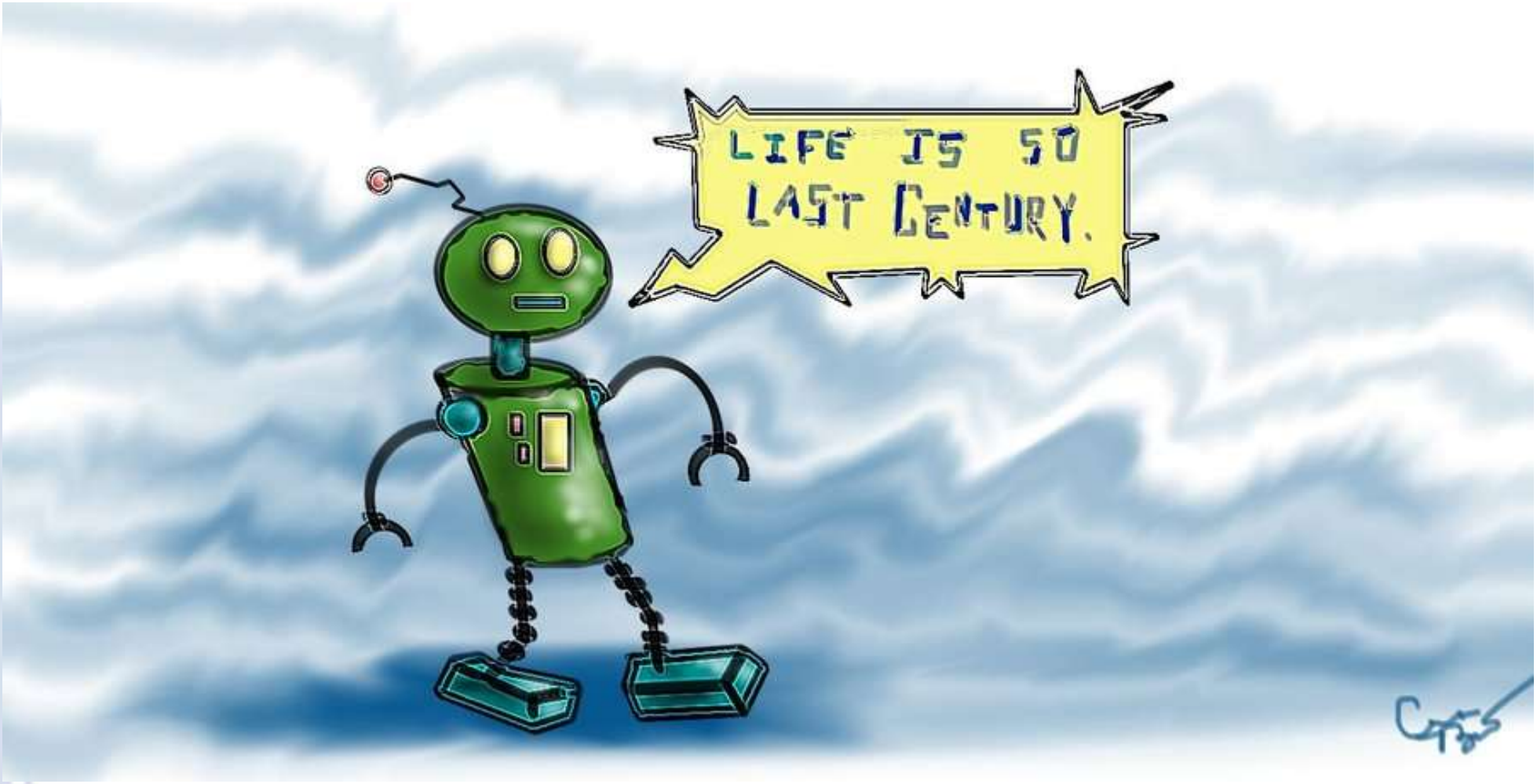
Q7: *What tools should be developed for different users to enable the application of a systems approach in decision-making on governance, planning, infrastructure systems and development of innovative solutions?*

A. Innovative use of graphic design & 3D representations

Online decision making tools - liquid democracy

Social engagement

# 21st Century questions do not have 20th century answers.....



# …….21st century answers pre-date modern finance