

# Liquid Democracy, e-Voting and Blockchain: Can they build a new political and economic system?

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- Types of democracy.
- Current online voting systems.
- Blockchain online voting systems.

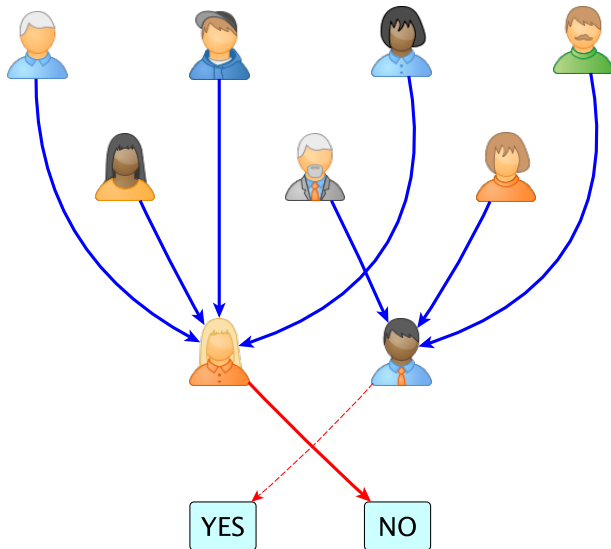
# Representative Democracy



YES

NO

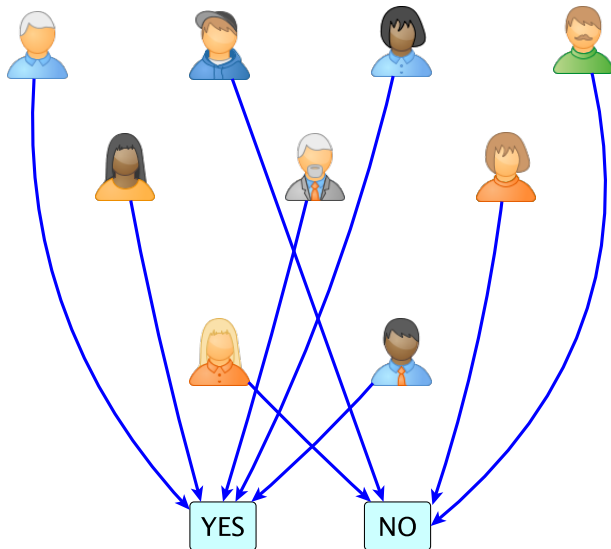
# Representative Democracy



# Issues in Representative Democracy

- Representatives are chosen for a wide range of policies  
⇒ best interest of the voter is only partially served.
- Election campaign promises are sometimes not fulfilled  
⇒ voters deal with the consequences until there are new elections.
- Concentration of power ⇒ increases the risk of corruption.
- Not everyone's voice is heard ⇒ minorities are often not represented.

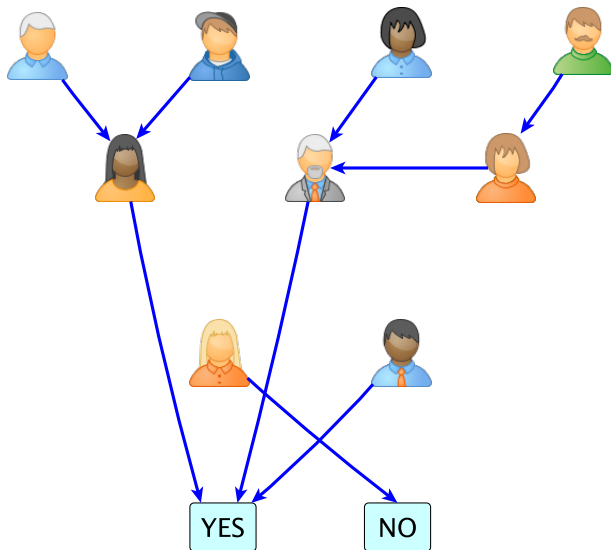
# Direct Democracy



# Issues in Direct Democracy

- Citizens are directly involved with decision-making.
- Everyone's voice is heard
  - ⇒ outcome represents the true majority of the electorate.
- Unfortunately, continuous referenda will most likely result in voter apathy.

# Liquid Democracy





# Liquid Democracy

- Combines the advantages of Representative and Direct Democracy.
- Can increase participation in voting.
- More knowledgeable people can influence the final outcome.
- If trust is broken, citizens can deviate their vote to others.

# From Representative to Liquid Democracy

How can liquid democracy have a role in a representative democracy society right now?

- 1 Local councils can decide to hand over certain decisions to the public in a liquid democracy manner.
- 2 Representative democracy candidates can attempt to be elected on a liquid democracy platform.

# Has Liquid Democracy been implemented?

- ✓ , for local gov and internal political parties decisions:
  - ▶ **Demoex** political party in Stockholm that won local council seats,
  - ▶ **Pirate parties** in Germany, Italy, Austria, Netherlands,
  - ▶ **Partido de Internet** in Spain,
  - ▶ **Net Party** in Argentina.
- ✗ , for larger scale (high risk) decision-making:
  - ▶ Liquid democracy performs better online,
  - ▶ online voting issues to be first resolved.

# Current Online Voting Overview

(Some) Providers	 <p>ELECTORAL REFORM SERVICES. <small>PART OF THE ERS GROUP</small></p>	 <p>SMARTMATIC</p>	 <p>Scytal</p>	 <p>LiquidFeedback</p>
(Some) Clients/Partners	  	  <p>Utah Republican Party</p>  <p>Maipo, Chile</p>	   <p>Indian state of Gujarat</p>	  <p>CITTA' DI TORINO <small>SERVIZIO TELEMATICO PUBBLICO</small></p>  <p>PIRATEN PARTEI</p>

# Liquid Feedback: Proposing an issue

- Citizens can put forward proposals, which others can support i.e.:

## i402: Picnic area in Liberty park

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Dominique Colbert



15744 supporter

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This initiative proposes a picnic area in Liberty park with at least 8 tables.

### Rationale

Many parks in the nation offer picnic facilities. The overall experience is very positive and the parks become much more attractive.

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# Liquid Feedback: Responding to a proposal

- Citizens can suggest improvements to proposals, i.e.:

## Add a new suggestion for improvement

A short title (80 chars max)

Describe how the proposal and/or the reasons of the initiative could be improved

There should be BBQ pits / designated fireplaces.

- Or suggest competing proposals, i.e.:

## Competing initiatives

Currently this is the only initiative in this issue, because nobody started a competing initiative (yet).

START A NEW COMPETING INITIATIVE

# Liquid Feedback: Voting

- Citizens can vote on individual proposals, i.e.:

Make your choice by placing the initiatives

Approval

Abstention

Disapproval



i1282: New flyover ramp for HOT access at exit #152



Foster Westbrook Amity Bradford

# Liquid Feedback: Voting

- Citizens can also rank competing proposals, i.e.:

Make your choice by placing the initiatives

Approval (first preference)



i606: Transit center and city operated parking structure (Pines area)



Claretta Belmonte

Approval (second preference)



i605: The Pines area must remain public land



Diego Melendez

Abstention

Disapproval



i602: Sell the Pines area to private investors



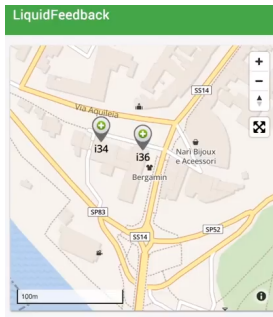
Anne Roberts





# Liquid Feedback: Delegations

- Proposals are tagged by location and topic, i.e.:



- Citizens choose a delegate by area or topic, i.e.:  
Set area delegation

Choose your delegatee  
Foster Westbrook

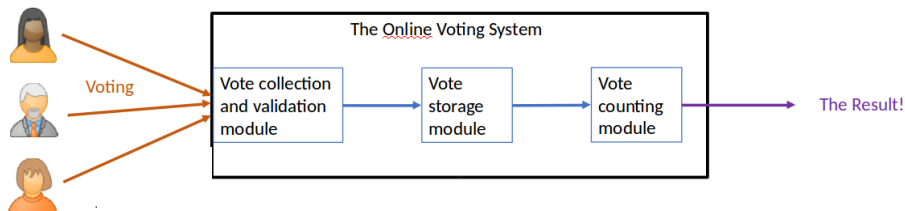
You can choose only members which you have been saved as contact before.

SAVE

CANCEL

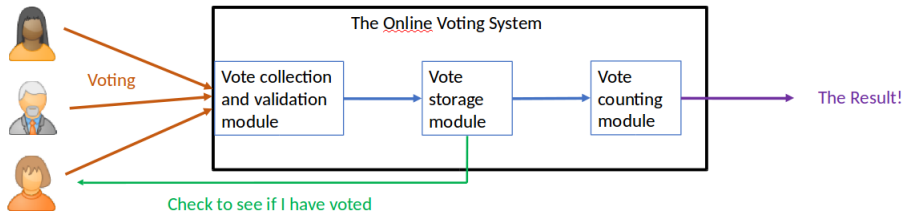
# Online Voting: General Architecture

At a high level, this is what you would expect in an online voting system:



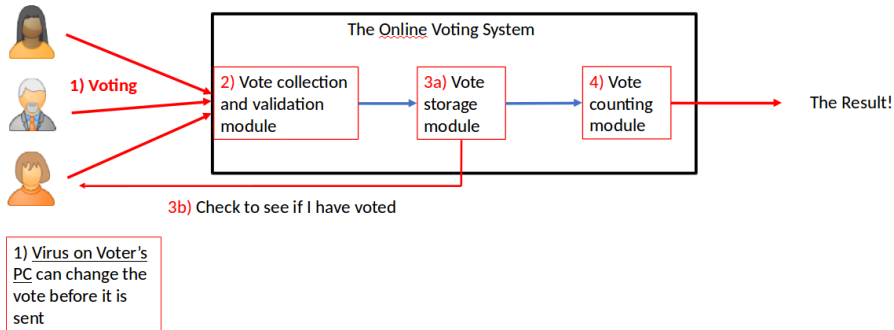
# Online Voting: General Architecture

If we are lucky:



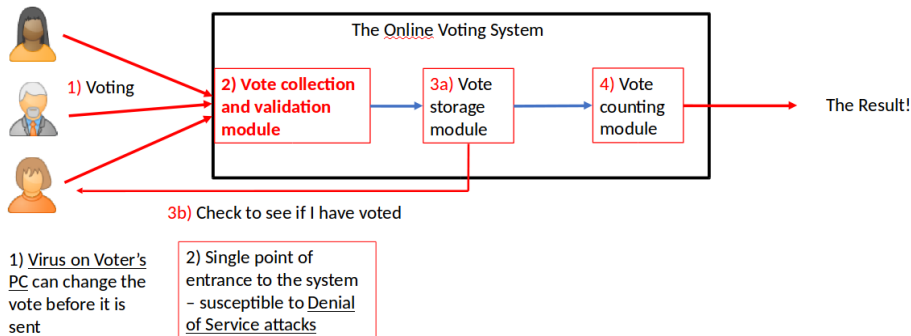
# Online Voting: General Architecture

Possible areas of **attack** or **manipulation**:



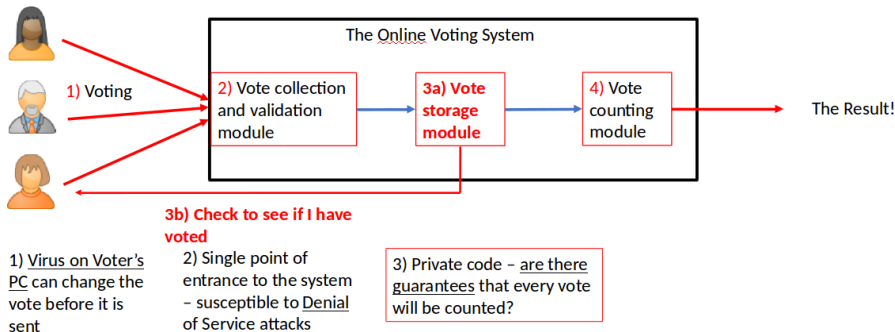
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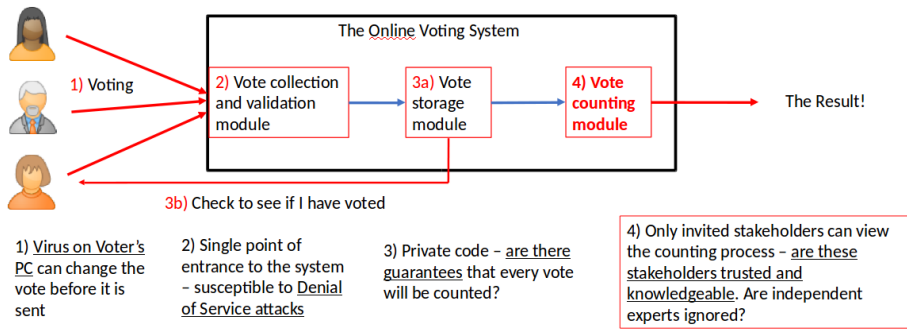
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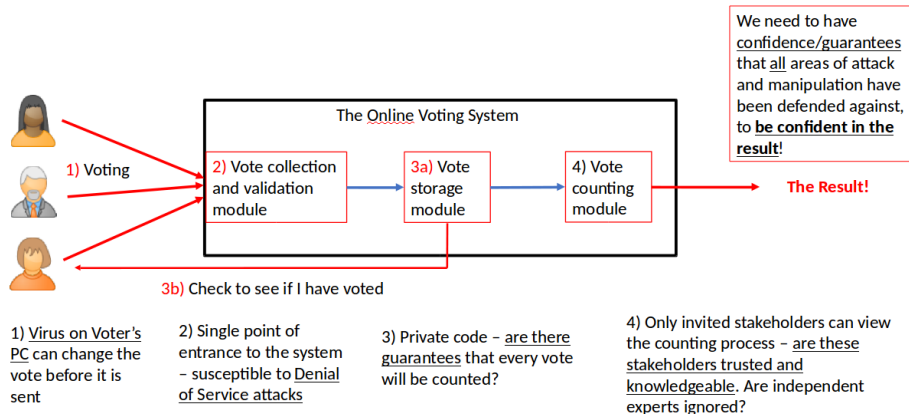
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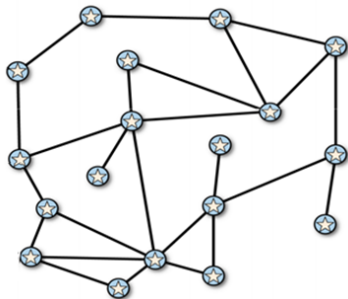
# Online Voting: Tips

Tips to minimise the risks if you want to use an online voting system:

- Attempt small scale trials
- Use a provider you can trust!
- This provider should sufficient safeguards against attacks (e.g. monitoring voting traffic frequency from different locations, secure data storage,...)
- Be involved in the project as much as possible (e.g. in the data storage and counting procedures)
- Do not use for critical elections without sufficient trials

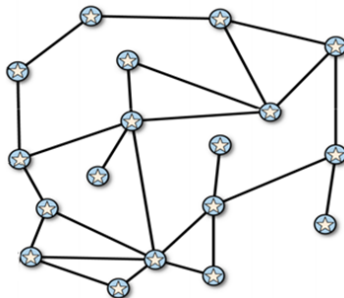
# What is a blockchain?

- It records data across many computers of a decentralised network



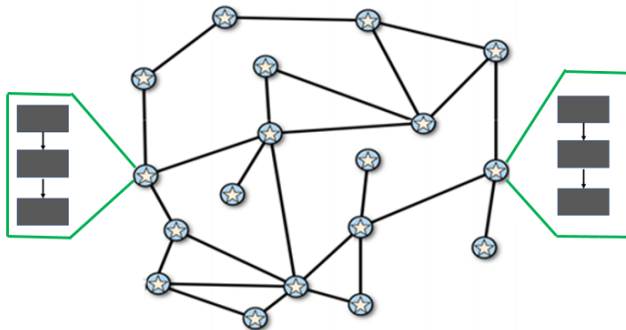
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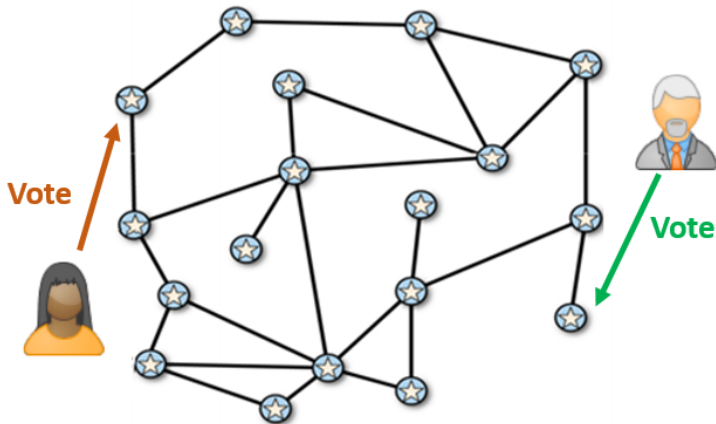
# What is a blockchain?

- It records data across many computers of a decentralised network
- Data is organised into blocks that are linked together
- Each computer on the network (eventually) has a copy of the same data in the same order



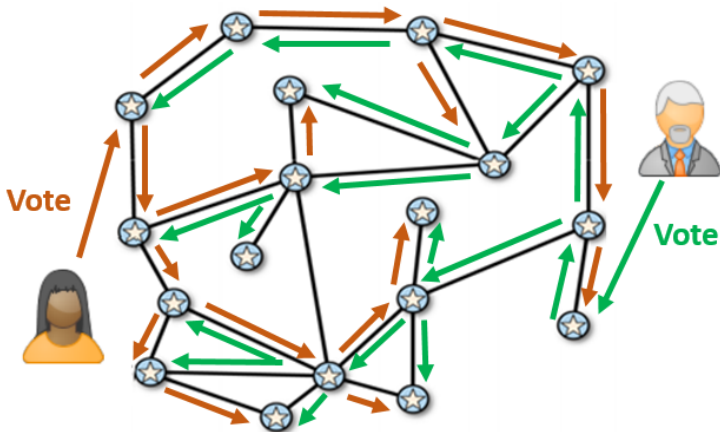
# How to vote using blockchain technology

- Vote through any node of the network (your vote can be encrypted)



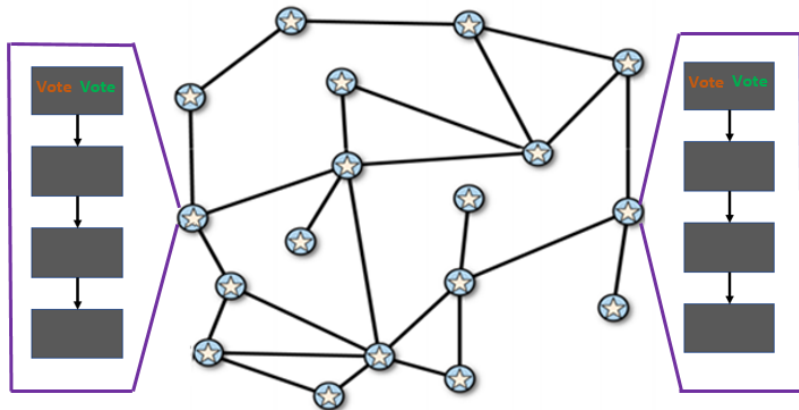
# How to vote using blockchain technology

- Vote through any node of the network (your vote can be encrypted)
- The vote will be sent to all nodes and eventually be added to a block



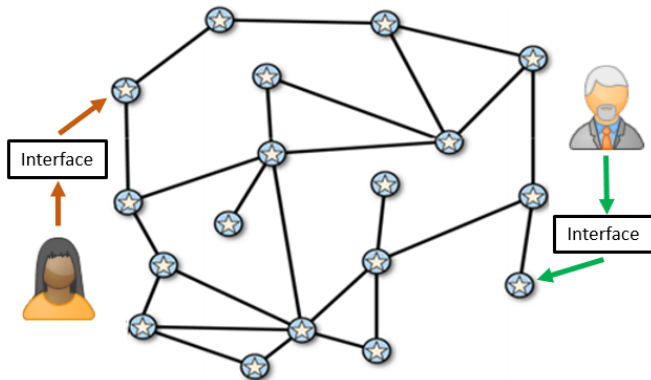
# How to vote using blockchain technology

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# How to vote using blockchain technology

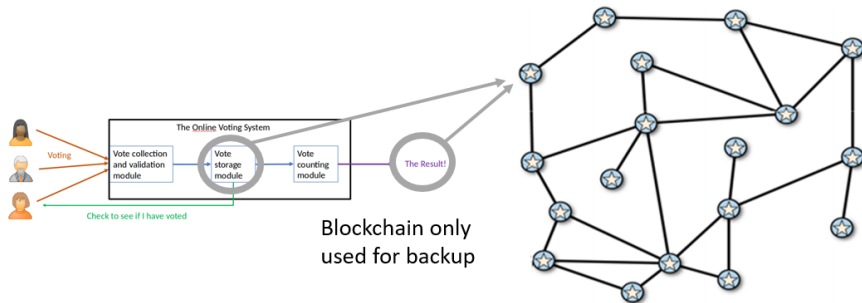
- Vote through any node of the network (your vote can be encrypted)
- The vote will be sent to all nodes and eventually be added to a block
- The block will reach every node of the network
- If you cannot hold a copy of the blockchain on your computer, you can connect to another computer/server that does have a copy





# Blockchain voting systems: weaknesses

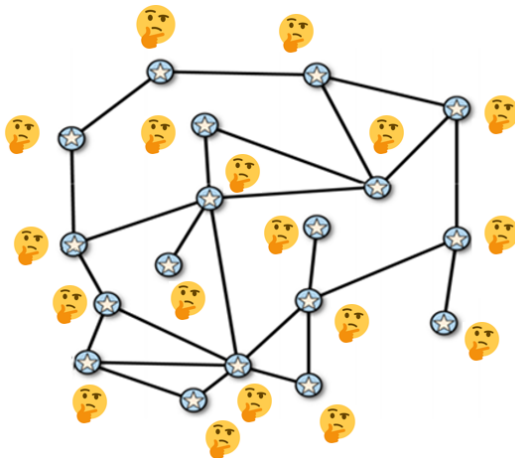
- Not all 'blockchain voting systems' use blockchain to it's full extend!



# Blockchain voting systems: weaknesses

- Not all 'blockchain voting systems' use blockchain to it's full extend!
- Blockchains are only unhackable if between 25% and 51% of the nodes are not malicious (dependant on which blockchain is used).

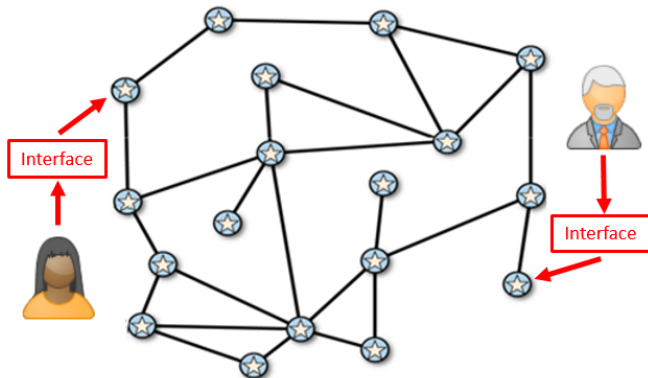
Who are  
my friends  
and my  
foes on  
the  
network??



How many  
foes are  
on the  
network??

# Blockchain voting systems: weaknesses

- Not all 'blockchain voting systems' use blockchain to it's full extend!
- Blockchains are only unhackable if between 25% and 51% of the nodes are not malicious (dependant on which blockchain is used).
- If you do not hold a copy of the blockchain on your computer, we need to make sure that the connection to the blockchain is secure



# Where are we now?

- Online voting systems for elections of a low and medium importance are ready, e.g.:



LiquidFeedback

nVotes

- Blockchain voting enabled systems are generally in the prototype stage ⇒ but they are coming:

HORIZON STATE

SECUREVOTE



Polys



- Liquid and Direct Democracy at a local or national level can be implemented now ⇒ if the people want it:



LiquidFeedback



UNITED VOTE



Michael Allman  
for Congress

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