



# **Mobile Peer-to-Peer Applications**

**and the**

# **BlueCheese Middleware**

Cheese Factory  
InBCT, Agora Center  
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# Mobile Peer-to-Peer

- Peer-to-peer computing: direct communication
- Mobile environment: wireless communication

# Gasoline Price Comparison

Master's Thesis by Oleksiy Volovikov

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- The users gather data (gasoline prices).

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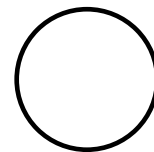
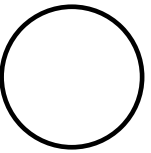
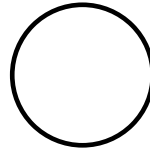
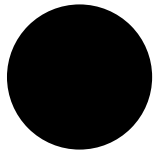
- The users gather data (gasoline prices).
- They exchange data with each other directly (P2P communication)...

# Gasoline Price Comparison

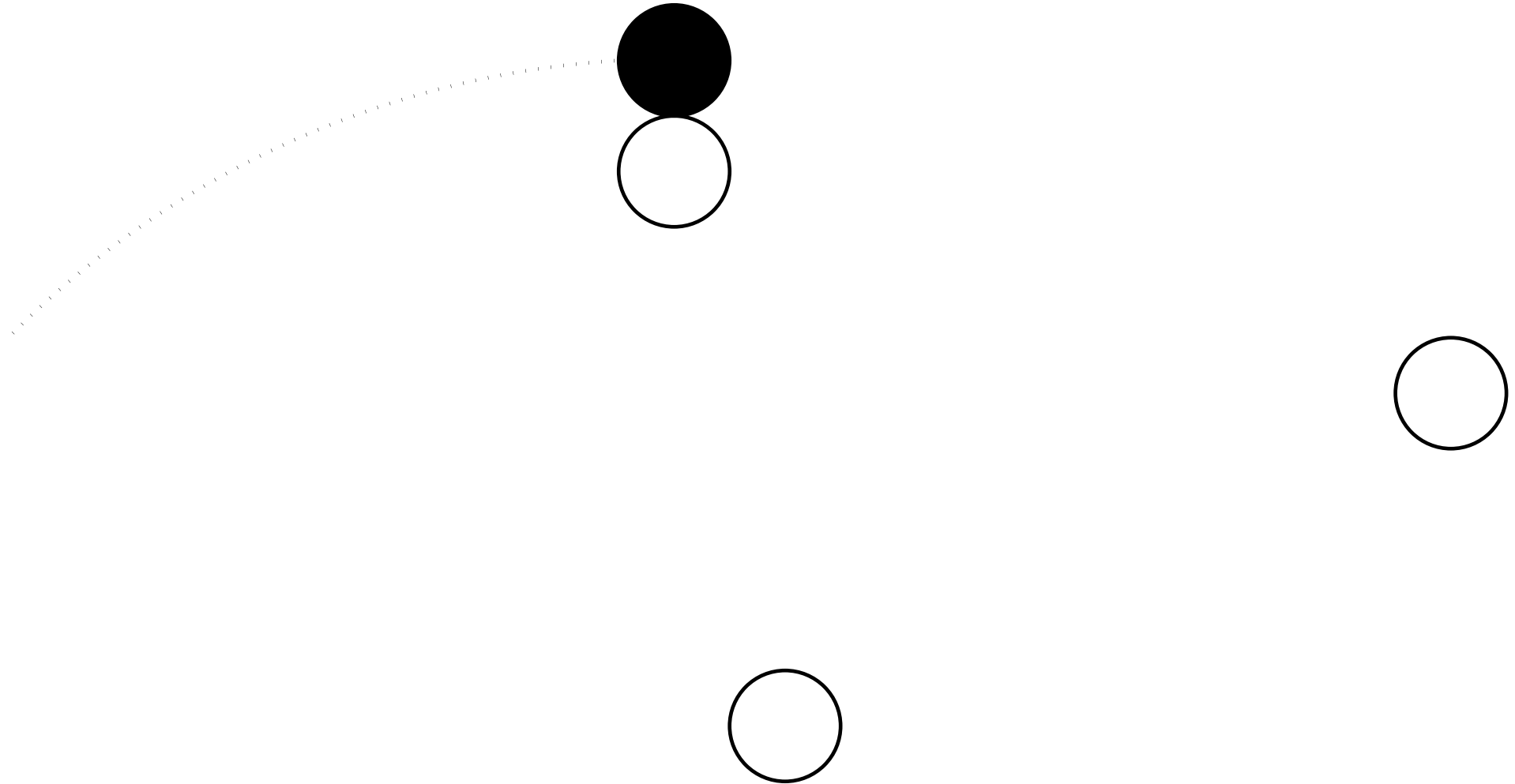
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- The users gather data (gasoline prices).
- They exchange data with each other directly (P2P communication)...
- ... using mobile devices while driving on the road (mobility).

# MP2P Data Diffusion

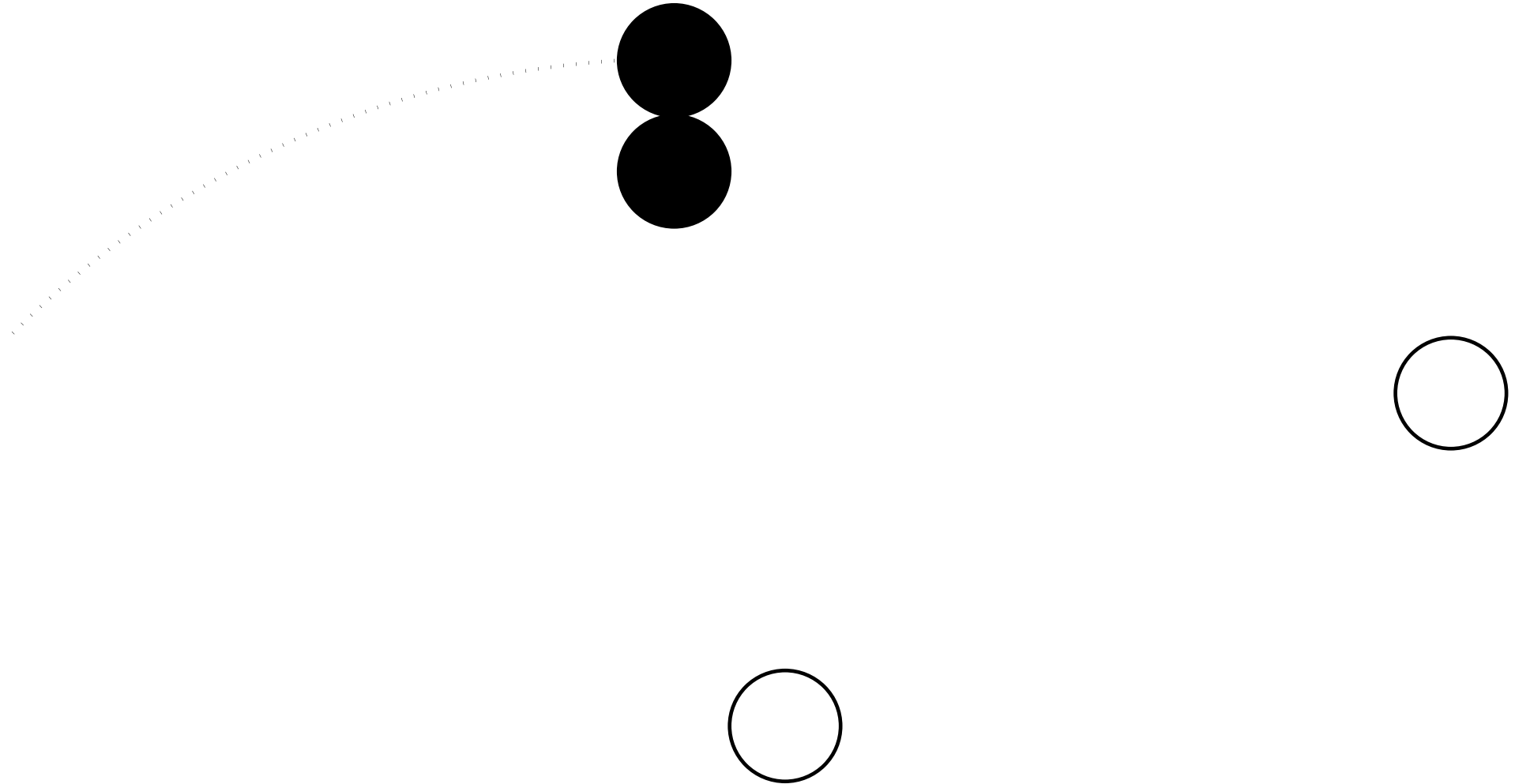


# MP2P Data Diffusion

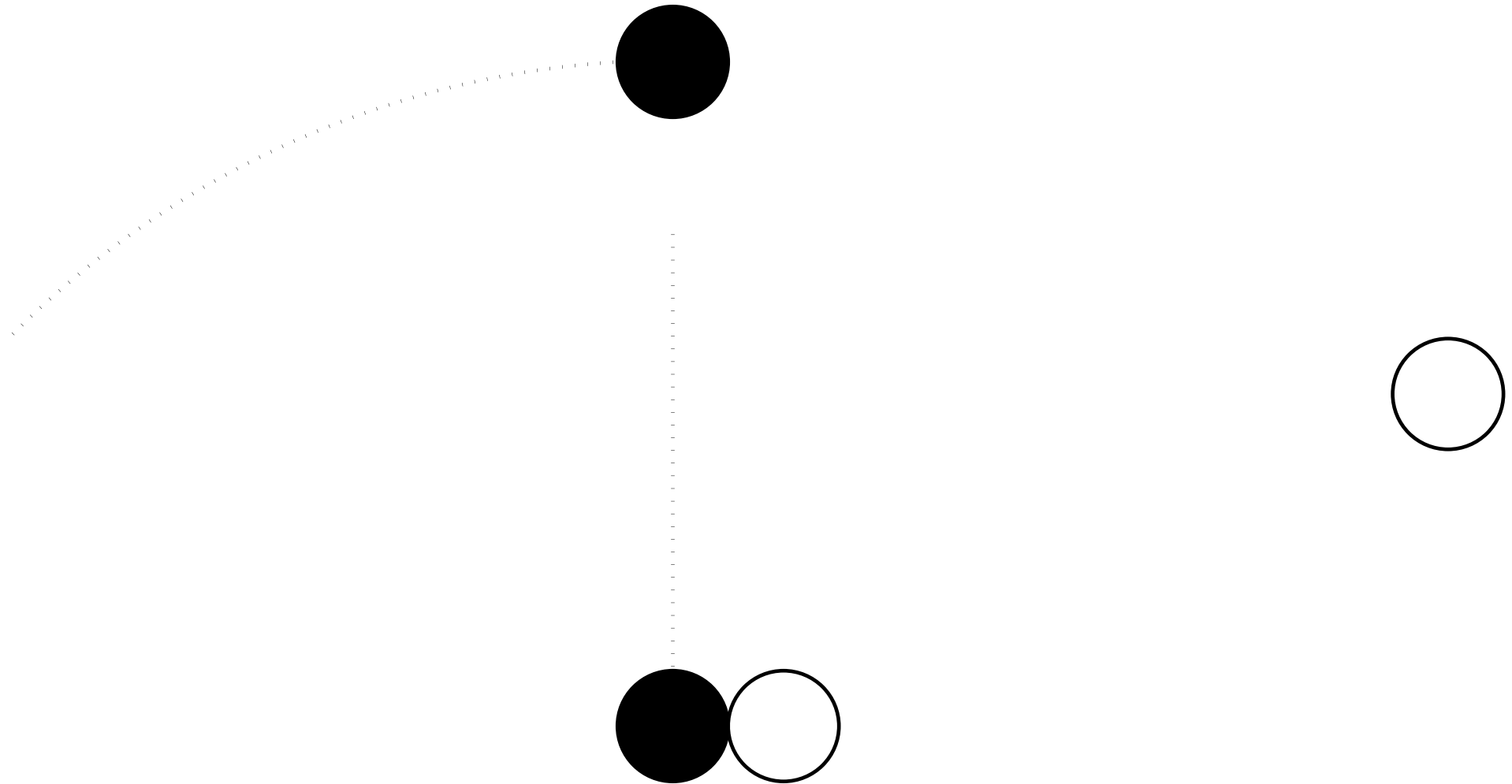




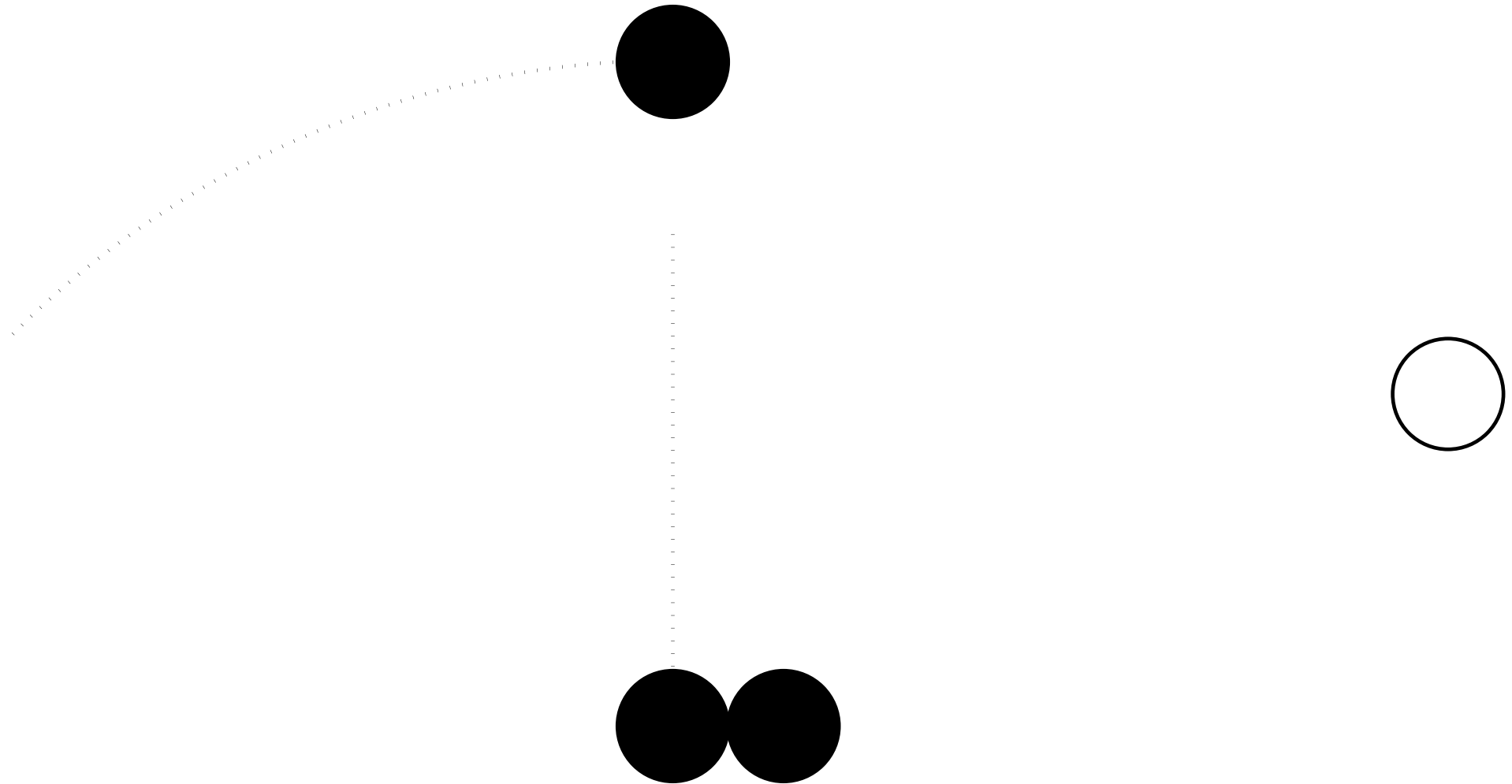
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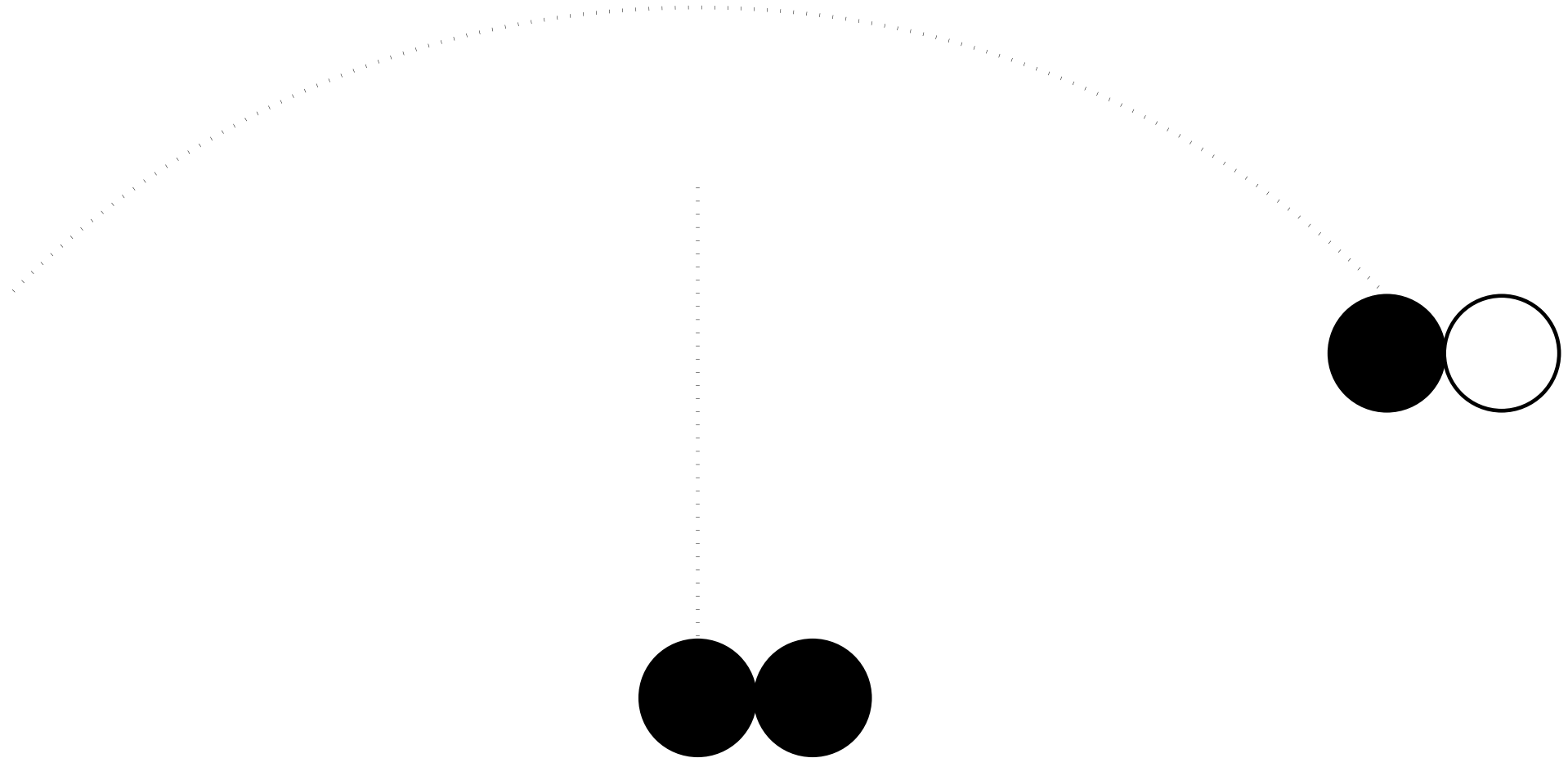
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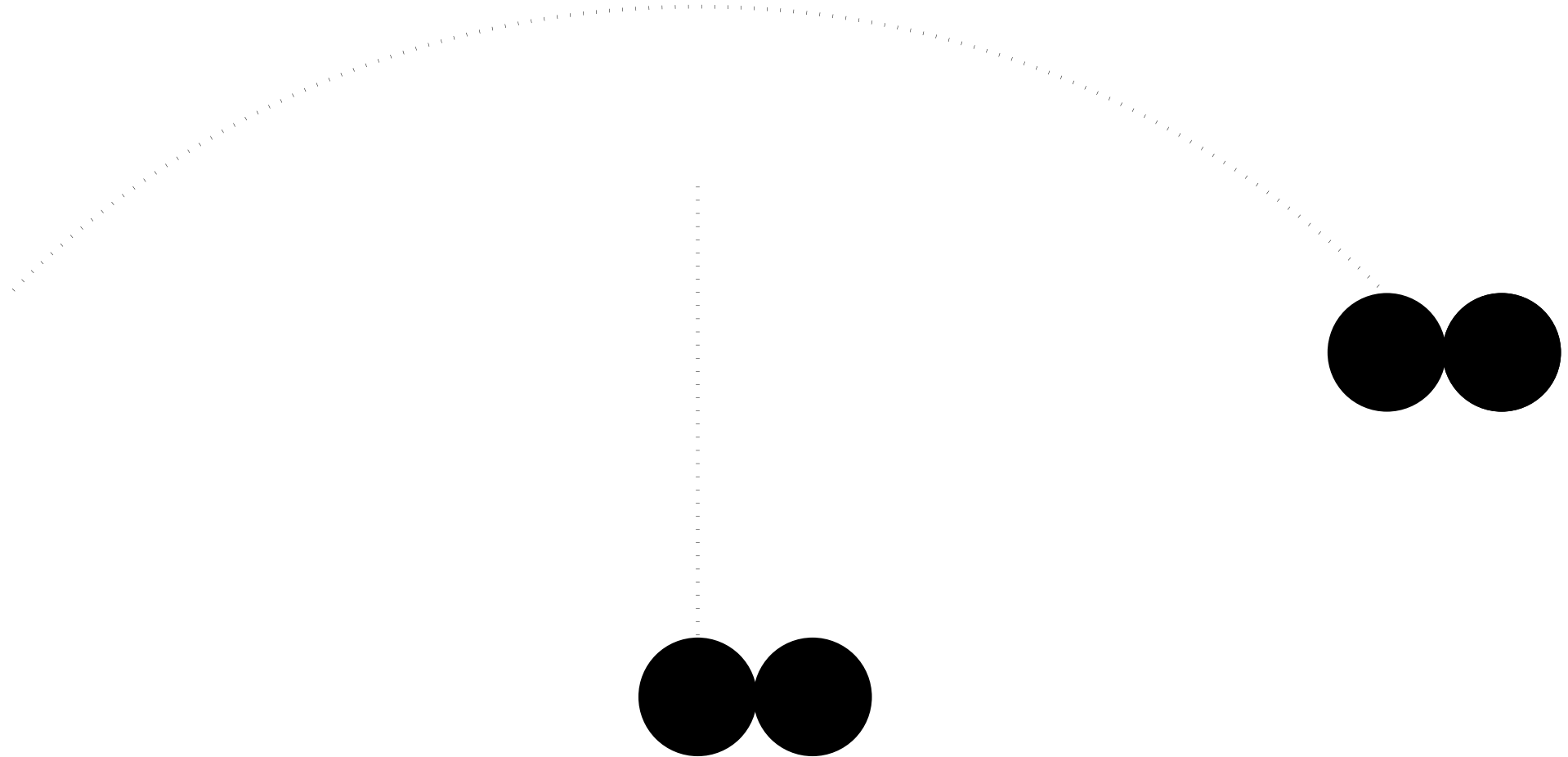
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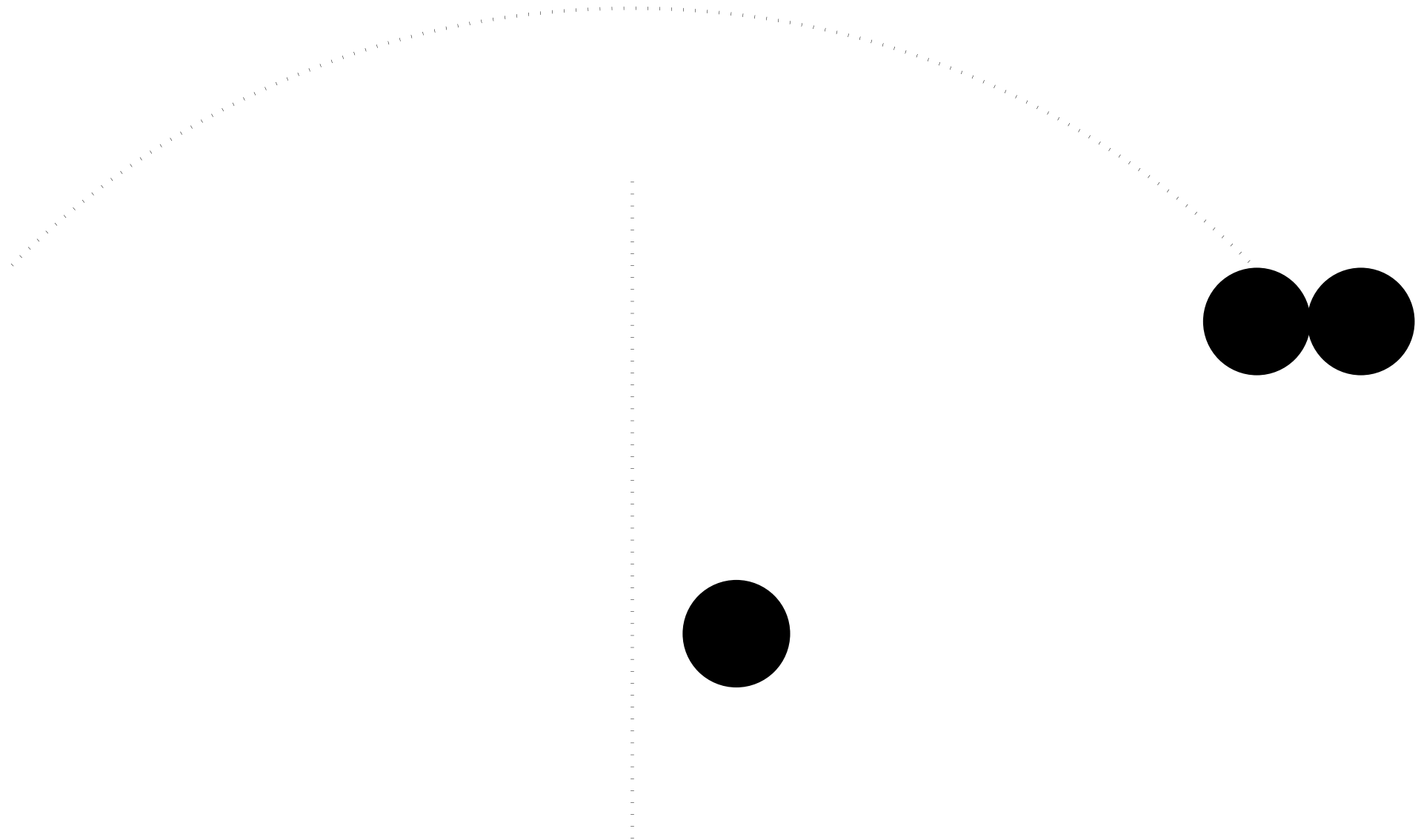
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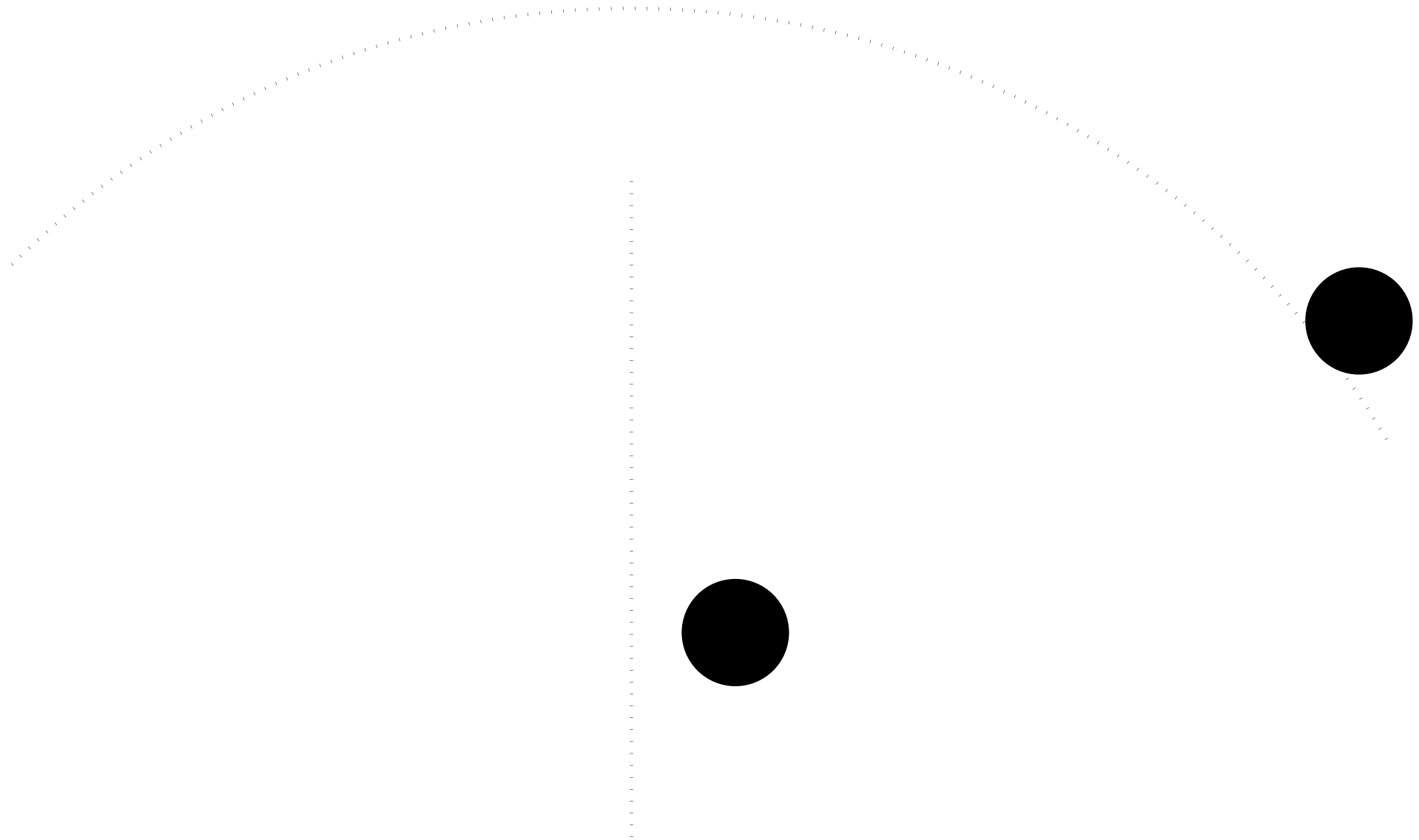
# MP2P Data Diffusion



# MP2P Data Diffusion



# MP2P Data Diffusion



# Other Applications

- Newspaper distribution: to get a copy of today's newspaper from a neighbor
- Jokes propagation: to receive new jokes propagated by other users
- Matchmaking: to be notified when passing by someone whose parameters match yours



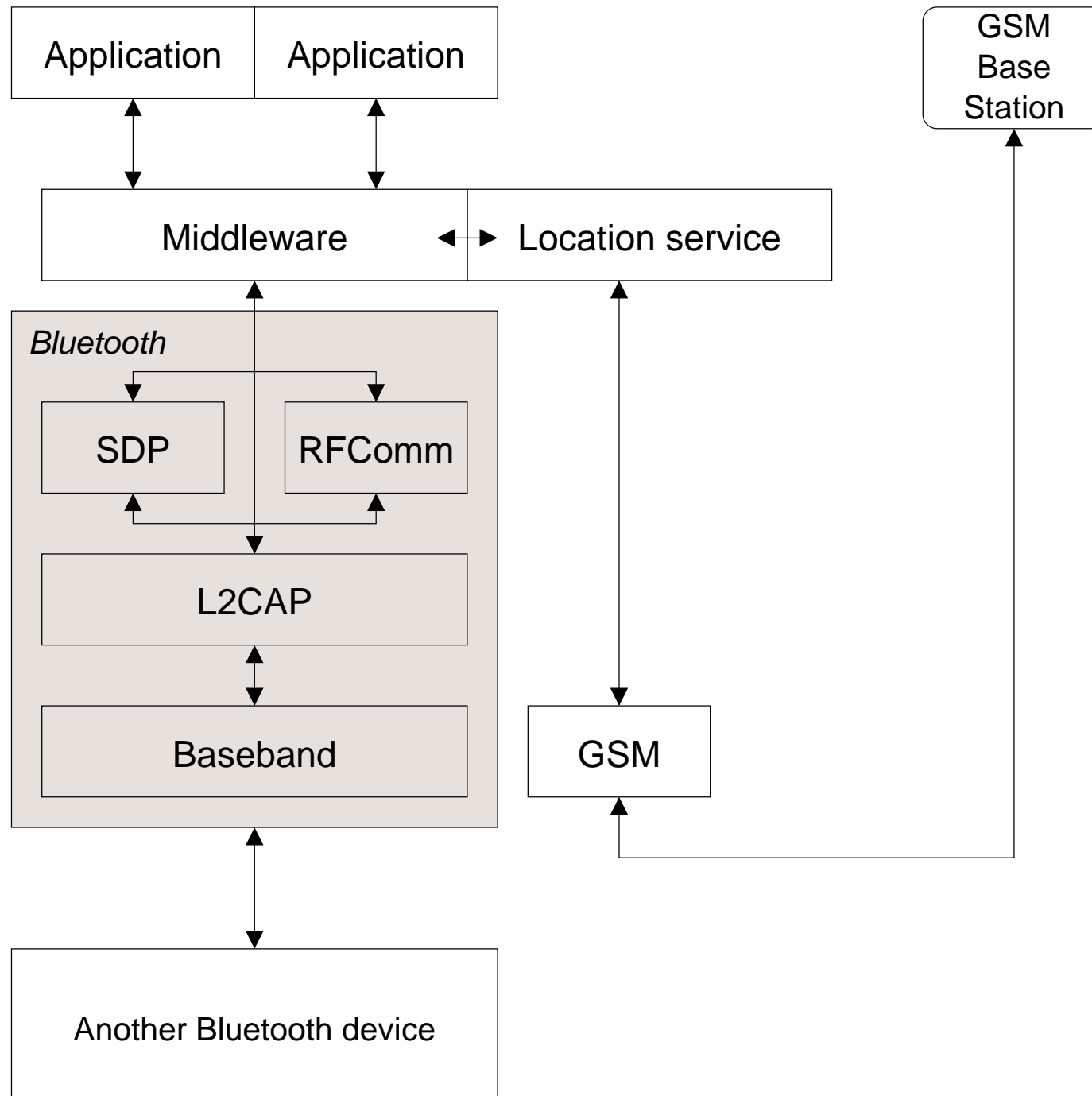
# BlueCheese

- Communication middleware using Bluetooth
- Used by MP2P applications
- Developed on SymbianOS by the MoPeDi student project
- Integrated in the Cheese Factory project
- First implementation during Autumn 2003

# Features

- Multiple applications using the middleware at the same time
- Communication with a single device at a time
- Packet-based and stream-based data transfer
- GSM-based geographical distance estimation

# System Architecture



# GSM Distance Estimation

- Based on the current GSM cell ID and the cell ID of the target
- No assistance from the GSM operator is required
- Algorithm:
  - Different networks: not applicable
  - Same network, different local areas: “far away”
  - Same local area, different cell: “quite close”
  - Same local area, same cell: “close”

# Future Improvements

- BlueCheese port to J2ME
- Ad-hoc routing (multi-hop message passing)
- Other wireless communication technologies  
(WLAN...)