

# *Blockchain:* Enhancing Food Traceability

Craig Nelson

# Blockchain: Enhancing Food Traceability

**Blockchain technology has potential in the Food Industry to improve traceability.**



# Blockchain: Enhancing Food Traceability

- ▶ **Today's discussion**
  - ▶ **Understanding Blockchain**
  - ▶ **Blockchain's role in the Food Industry**
  - ▶ **Considerations / Costs to embrace Blockchain**
  - ▶ **Opportunities for**



# Blockchain vs Food Production

Food steps through the process, adding Lot Identity Codes, resulting a final product.



# Blockchain vs Food Production

Every final product Identity is simply a list of its Contributing Identities



# Blockchain vs Food Production

Blockchain tracking the steps in a transaction.



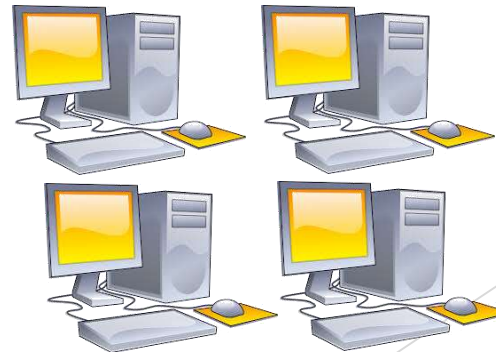
A transaction is input.



A transaction is created.



The transaction is sent to every node in the Blockchain system.



The Blockchain system validates the transaction.



The transaction is added to the chain.

# Blockchain vs Food Production

Blockchain tracking the steps in a food transaction.



921723735e145d44e7f369910beda47709d77d7ae261276b8904c87ac9f58bc4



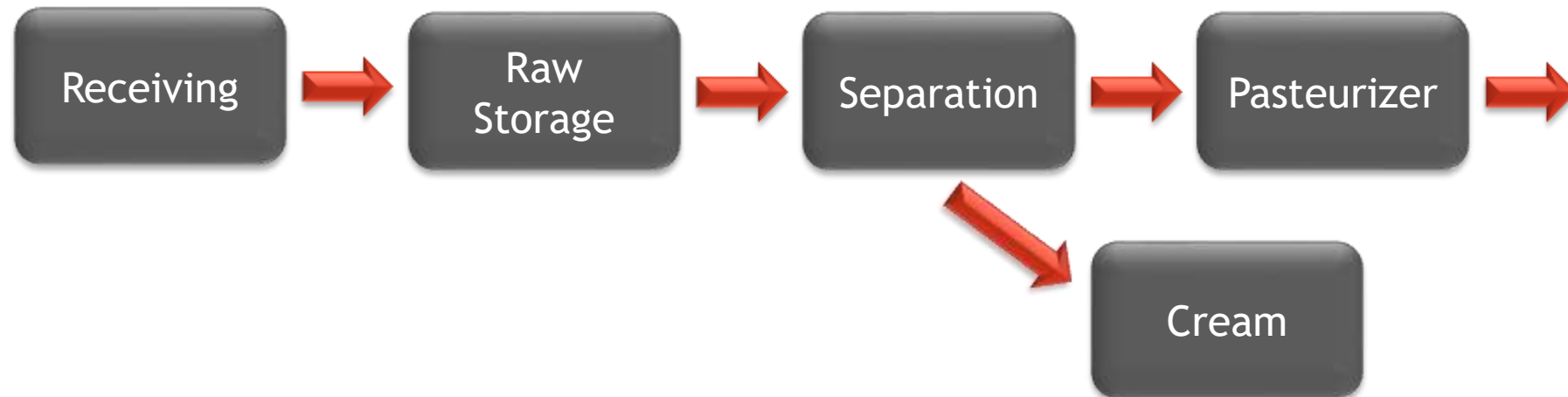
921723735e145d44e7f369910beda47709d77d7ae261276b8904c87ac9f58bc4

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A transaction is created.

# Challenges in Food Traceability

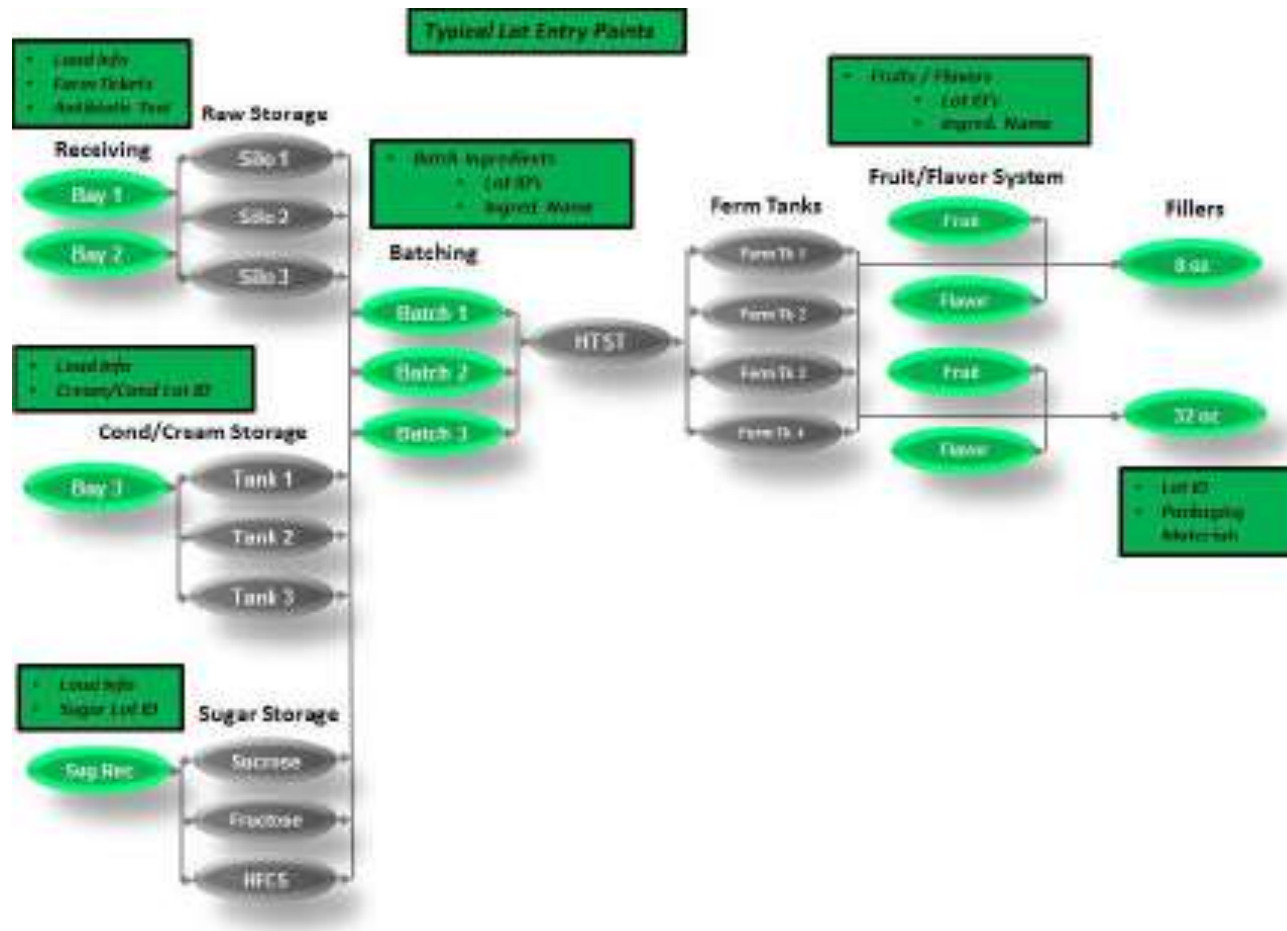
Food Traceability adds a level of complexity. Lots are combined, separated, and recombined.





# Challenges in Food Traceability

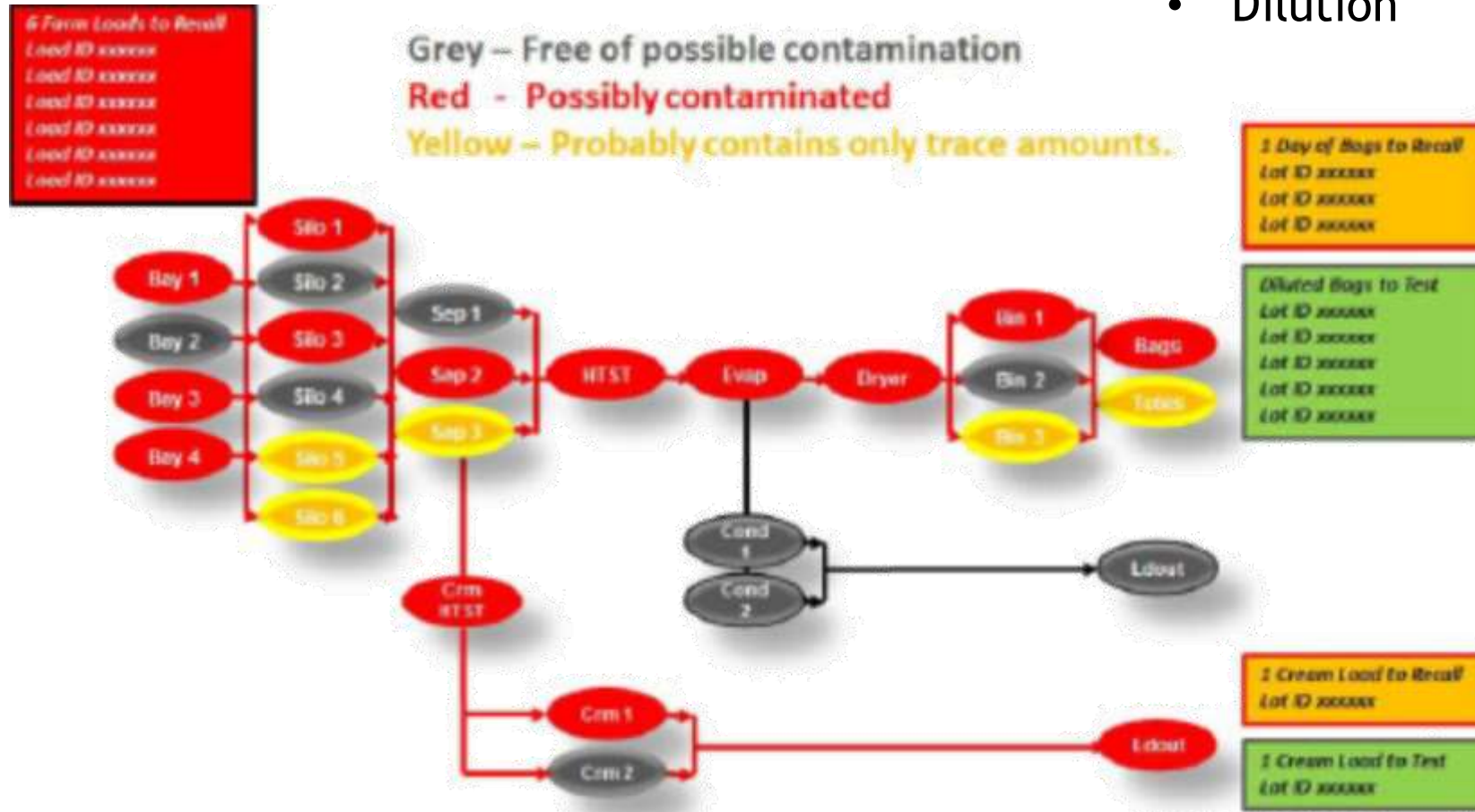
Typical points of “transformation” requiring traceability records.  
(Cheese Plant)



# Challenges in Food Traceability

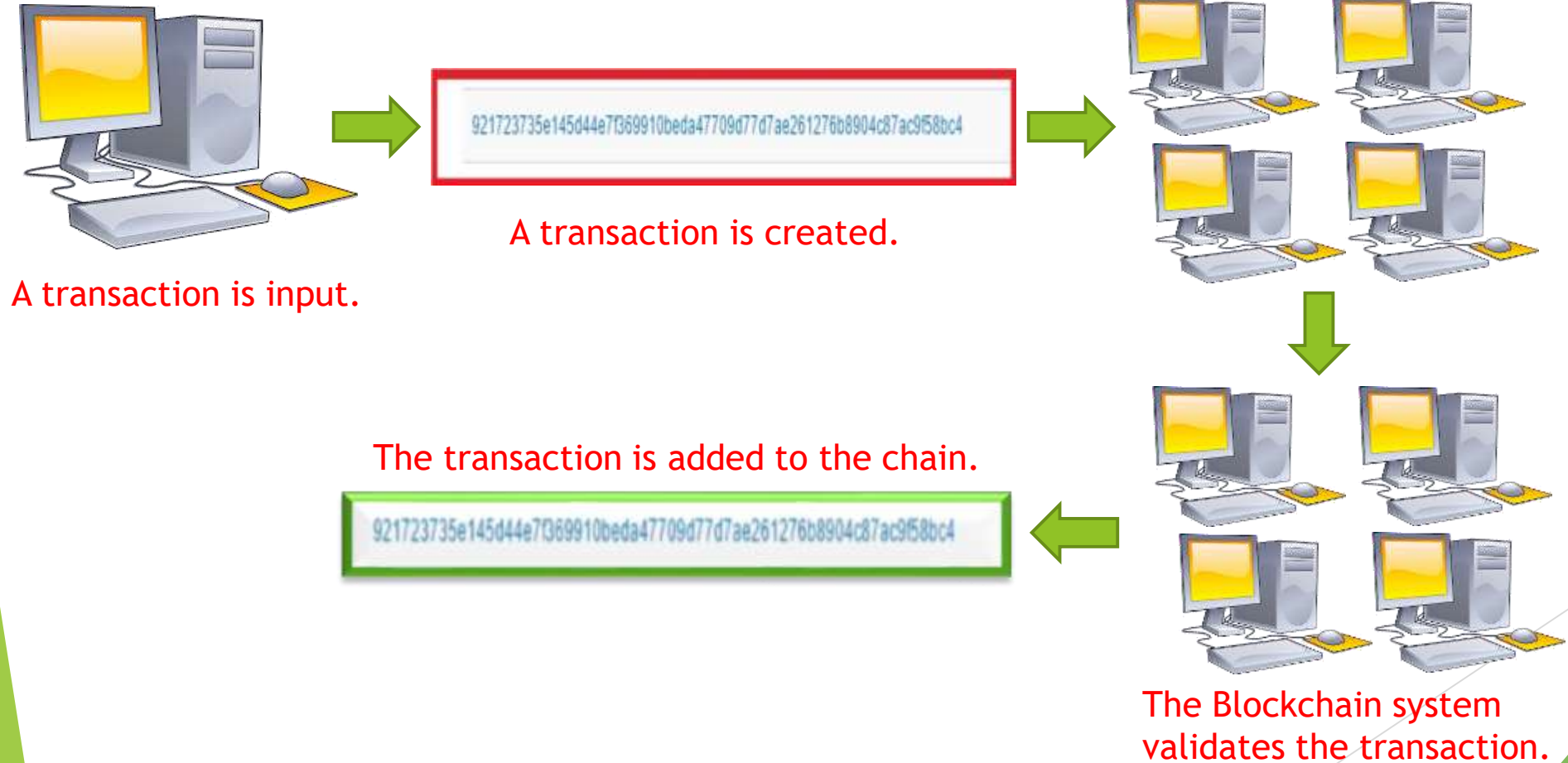
Goal of traceability, and Blockchain:

- Inclusion
- Exclusion
- Dilution



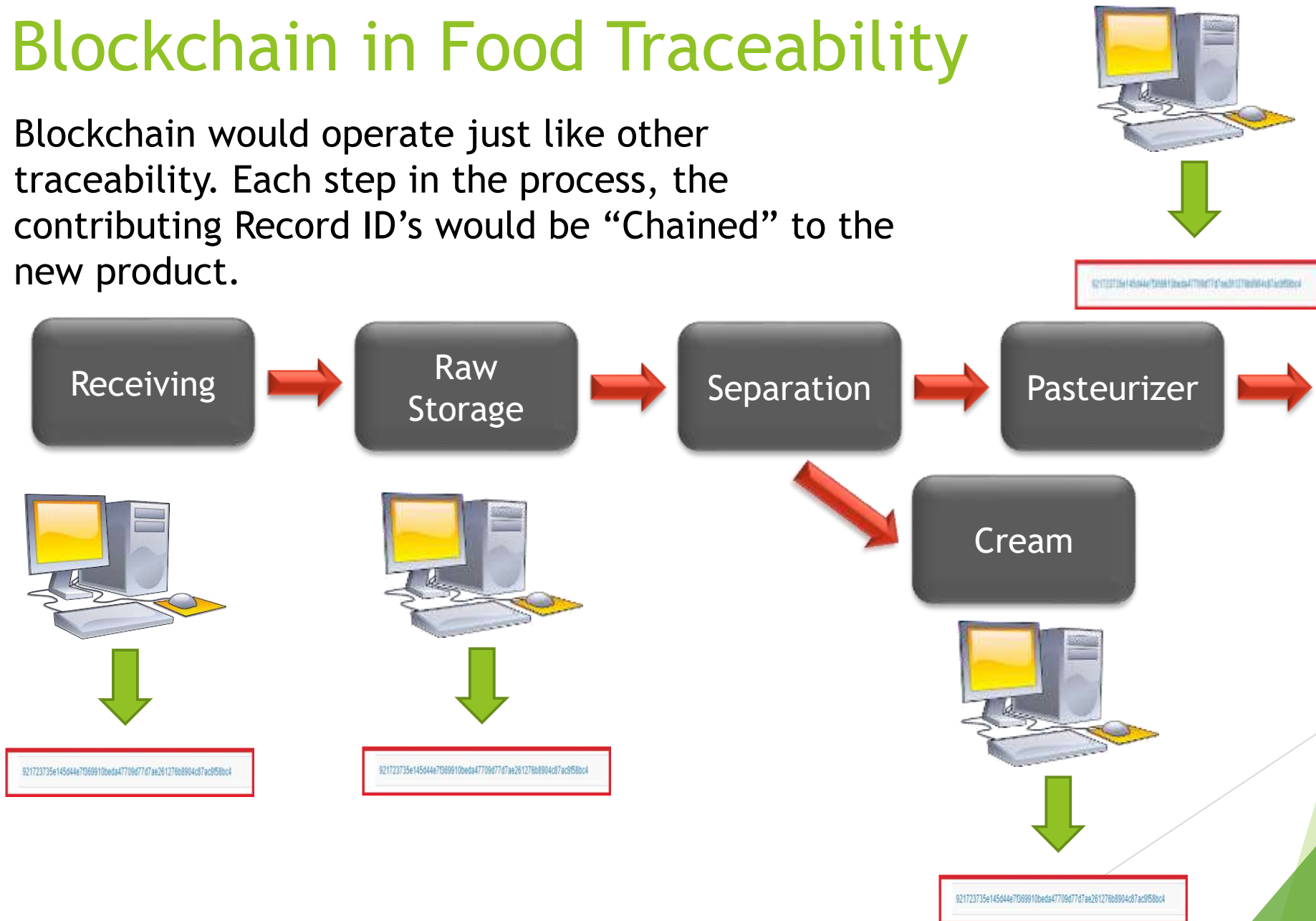
# Blockchain vs Food Production

Reminder of the method of Blockchain.



# Blockchain in Food Traceability

Blockchain would operate just like other traceability. Each step in the process, the contributing Record ID's would be "Chained" to the new product.



# Blockchain in Food Traceability

Blockchain retains the relationship between the source and destination.



# Blockchain in Food Traceability

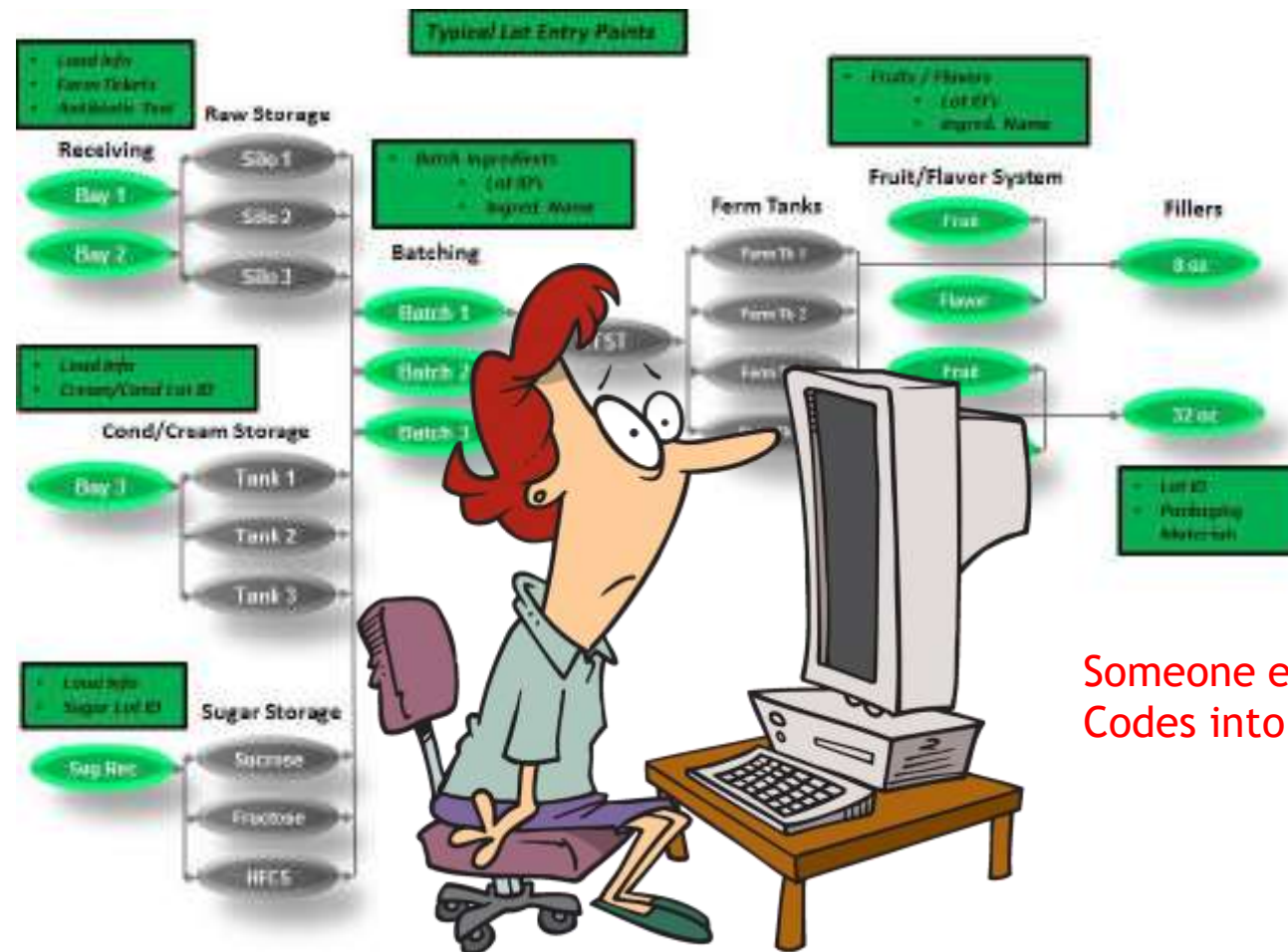
Blockchain retains the relationship between the source and destination.

It “Chains” together the “Blocks” of Record ID’s.



# So what would Blockchain mean for you?

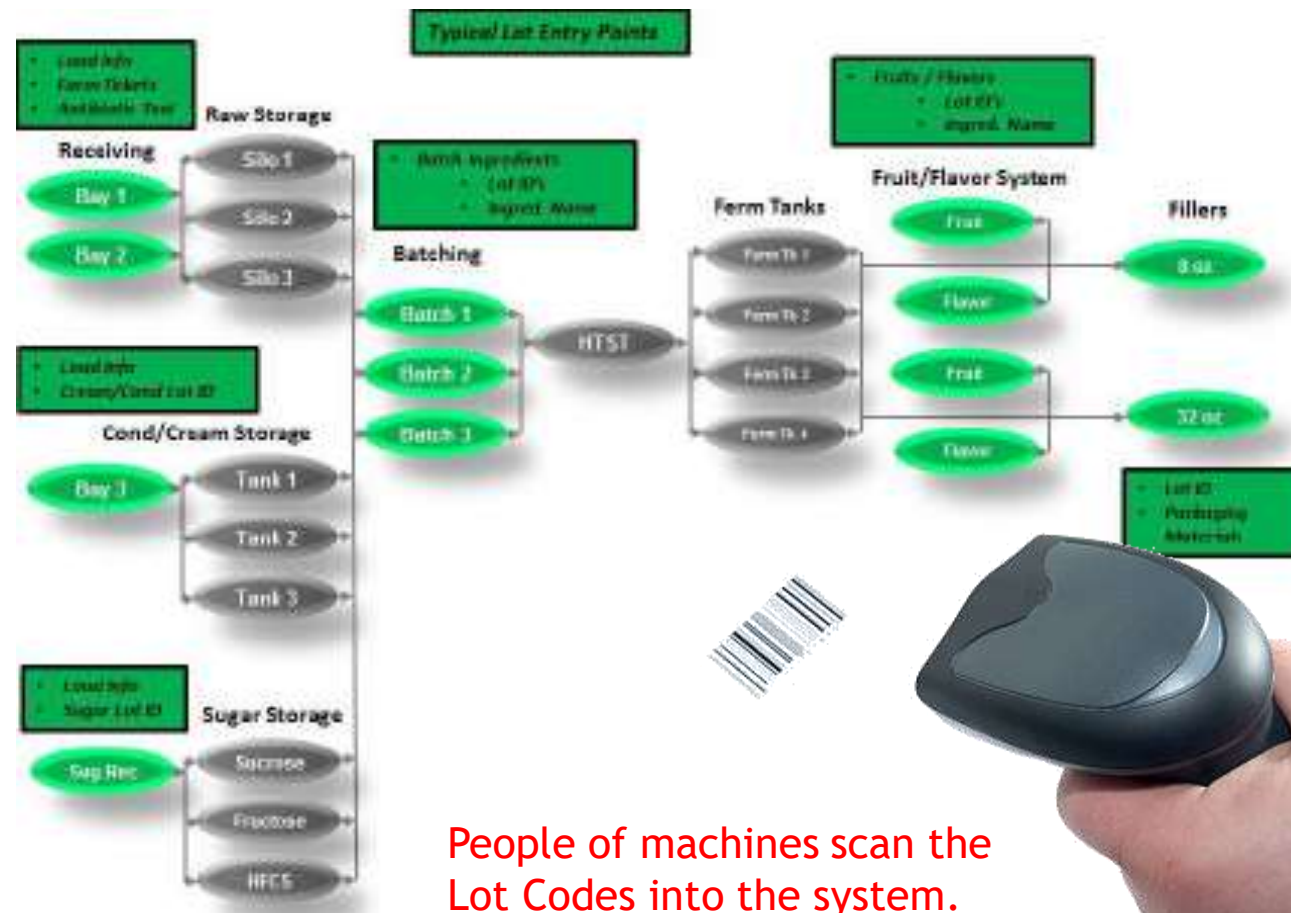
Records, and accurate Lot Codes would need to be entered into the Blockchain system.



Someone enters the Lot Codes into the system.

# So what would Blockchain mean for you?

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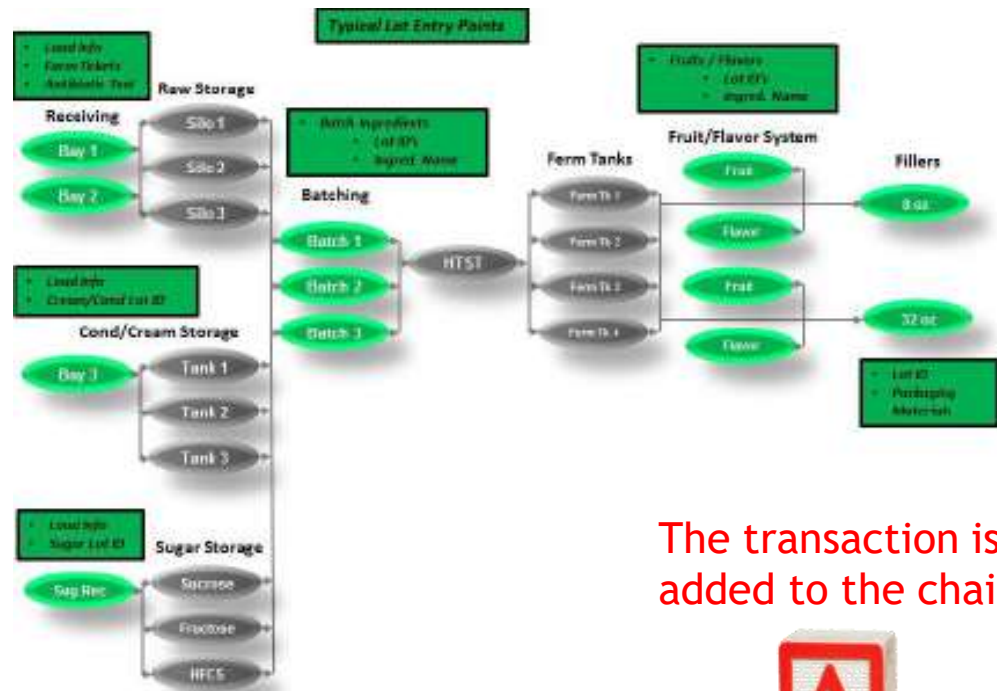
People or machines scan the Lot Codes into the system.



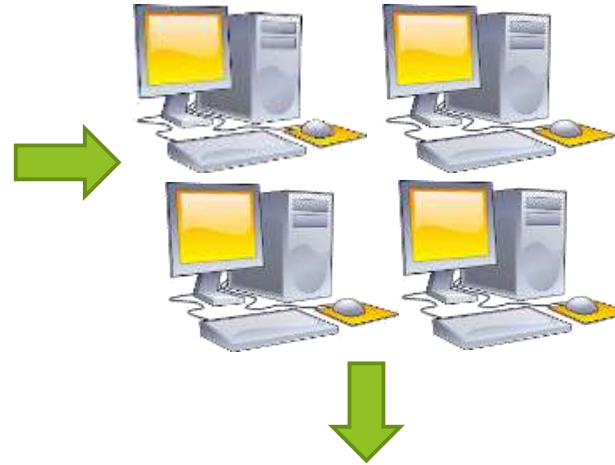


# So what would Blockchain mean for you?

Records, and accurate Lot Codes would need to be entered into the Blockchain system.



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# Challenges to adopting Blockchain?



**VS**



# Challenges to adopting Blockchain?

In a Blockchain application like Bitcoin, every record starts and ends in a computer connected to the Blockchain network.



VS



In a Blockchain application like cheese, many records have to be manually recorded or scanned, and entered later.

# Challenges to adopting Blockchain?

- Entering in the Records
  - Entering them timely
  - Entering them accurately
- Scanning in the Records
  - Adding scanning at every step of the process
  - In 2017 it was estimated scanning everywhere would > 5B impact.

# Challenges to adopting Blockchain?

- Entering in the Records
  - Entering them timely
  - Entering them accurately
- Scanning in the Records
  - Adding scanning at every step of the process
  - In 2017 it was estimated scanning everywhere would > 5B impact.
- Potential Regulatory Compliance
  - If this becomes the standard, how would record entry be enforced?

# Opportunities to adopting Blockchain?

- Corporate System
  - Ability to trace and recall across all facilities
  - Ability to have immediate root cause of quality metrics.
- National System
  - Ability to trace and recall across multiple companies.
- International System
  - Ability to trace and recall across multiple companies, including foreign sources.

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