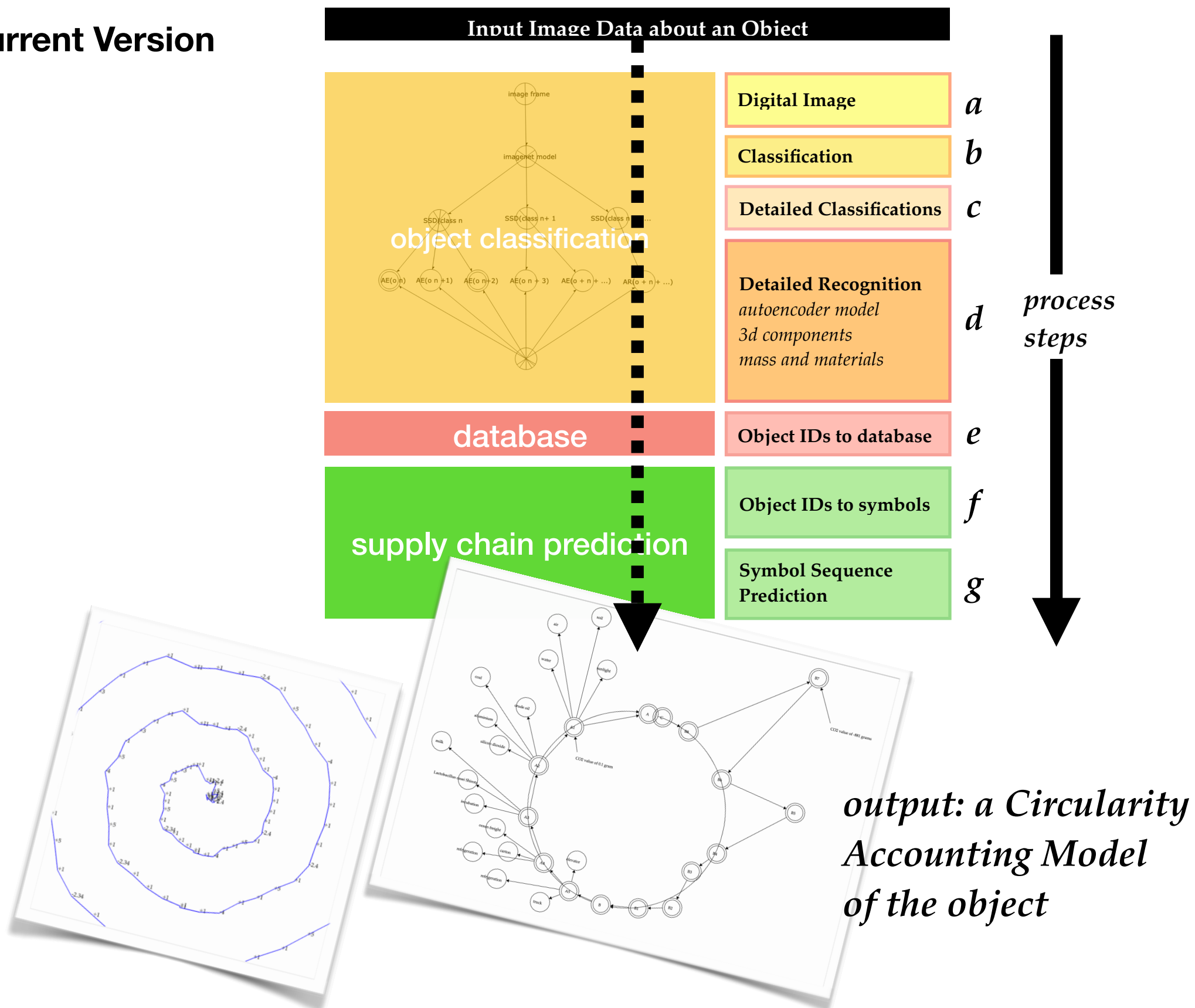


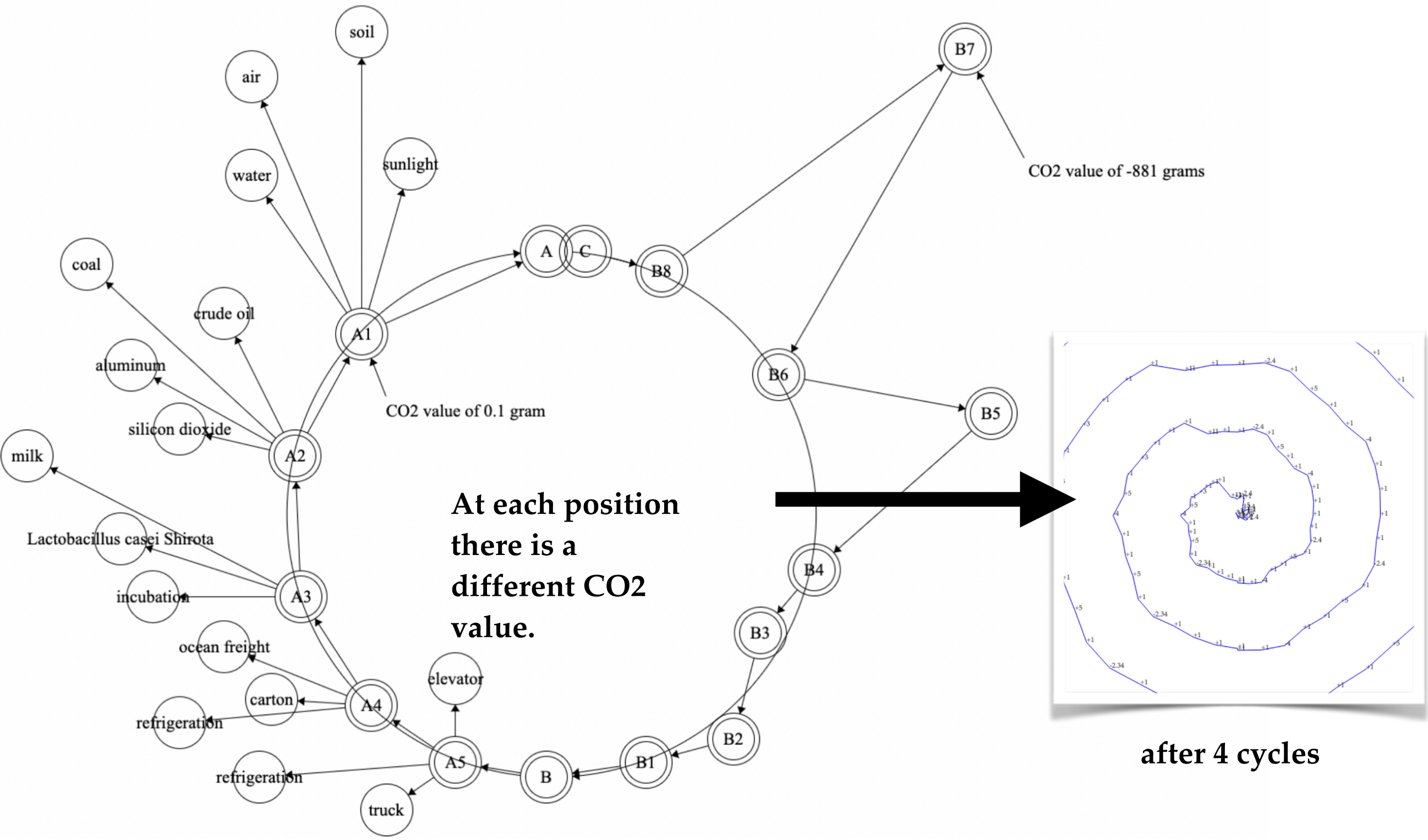
Overview concepts of data input for building CO2 sequestration networks and vectors

*20210908WA CO2 sequestration
network and vectors in model*

202108 Current Version

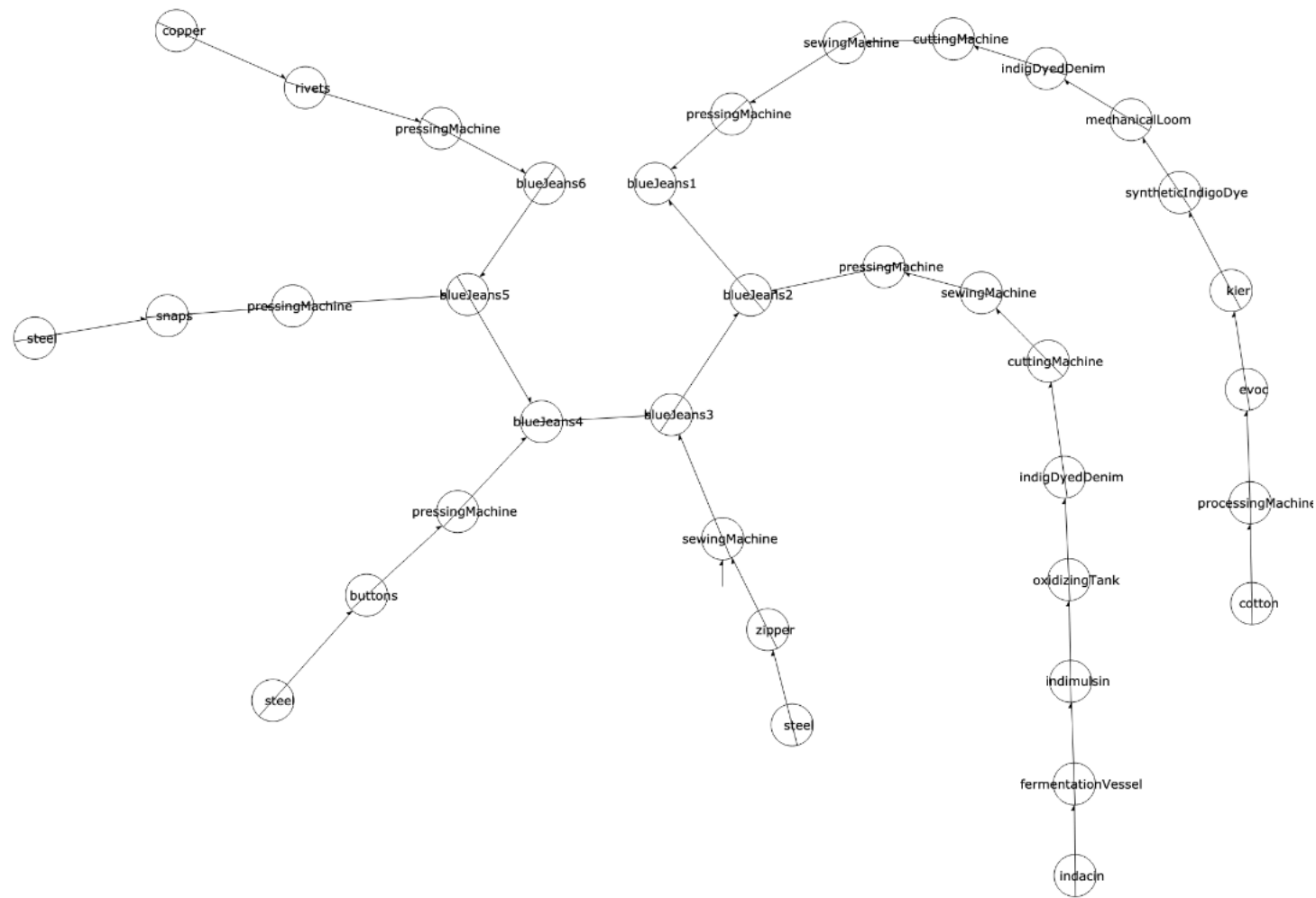


The simplified version of the graph is what we are using as the '*circularity economy*' diagram, which shows the carbon values as distances from a circle.



**requires data that
describes the supply chain
and the disposal chain**

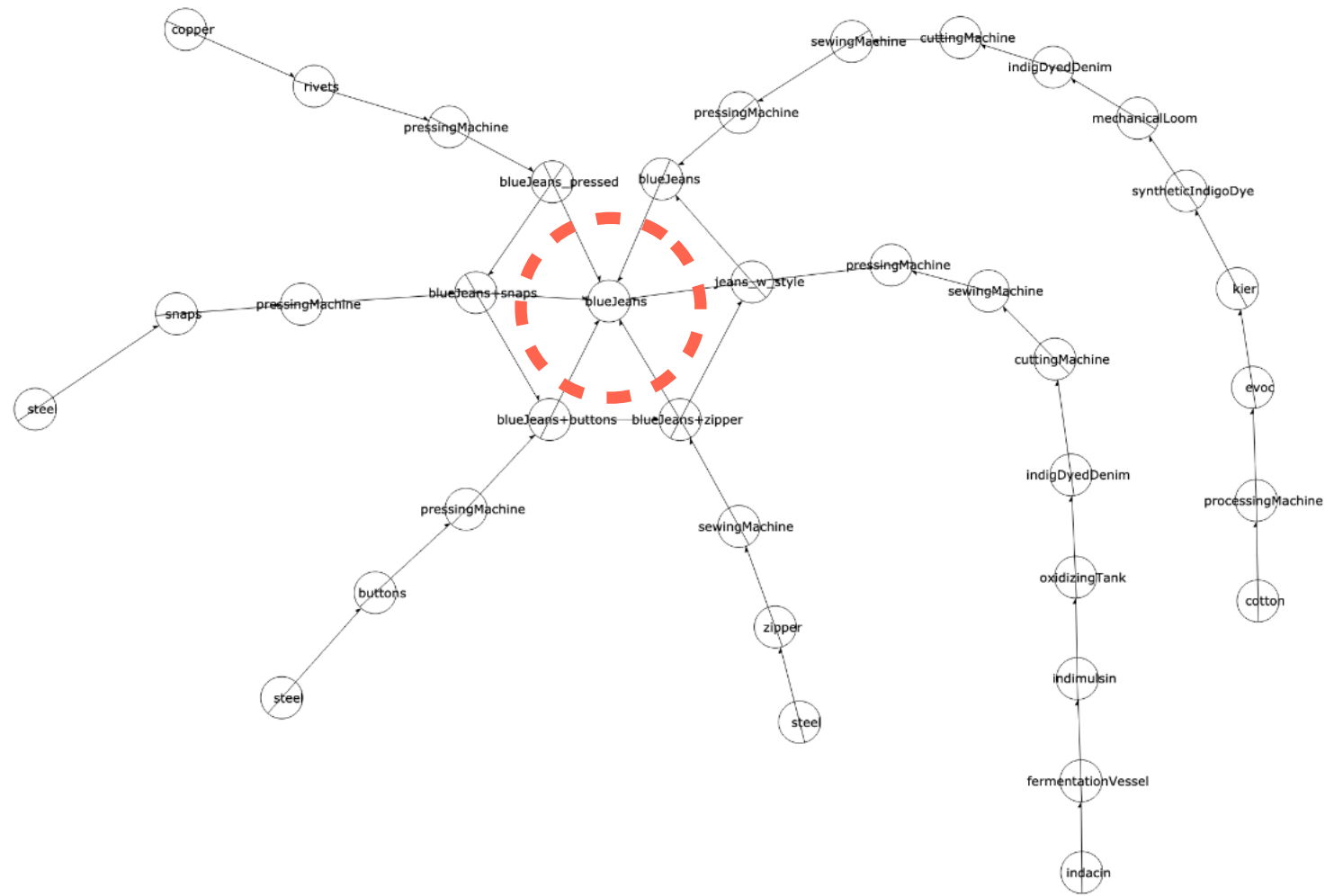
how to conceptualize and encode the steps in a
supply-destruction chain model



From the consumption vectors, we can make this graph,

which shows the inputs of carbon on the production 'circle' of blueJeans.

The circle is the the beginning to the end of the blueJeans product.

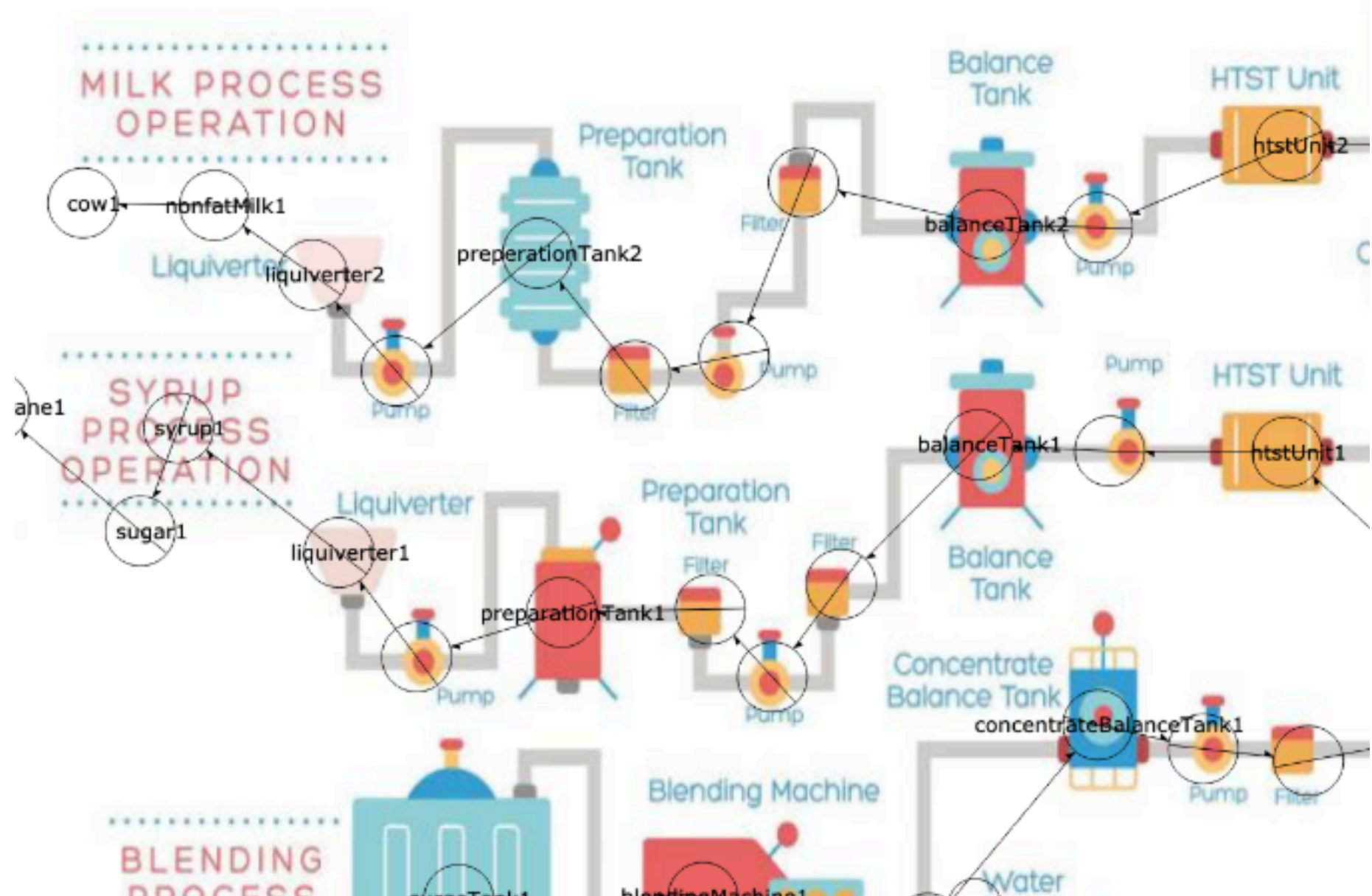


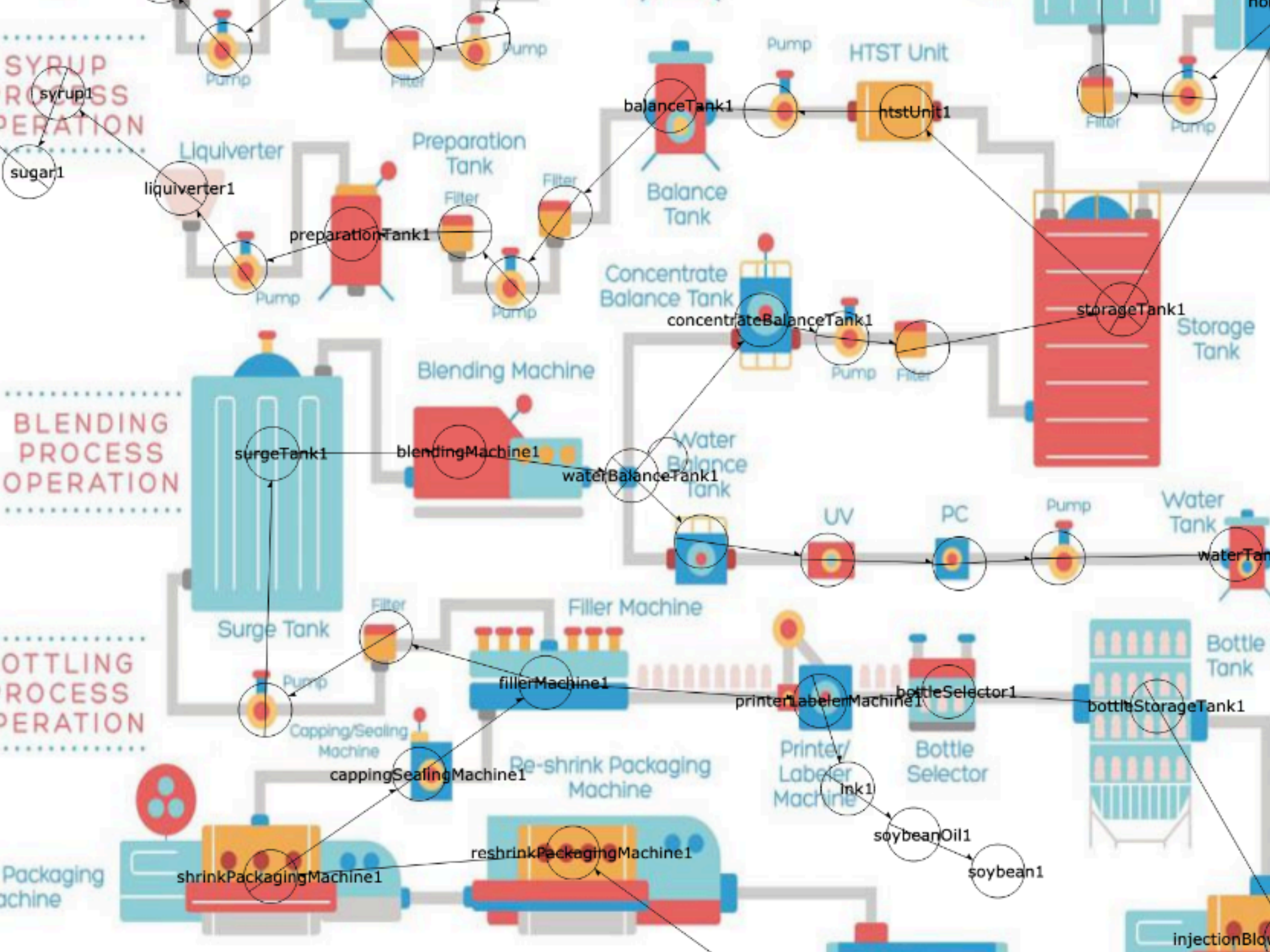
Note the addition of the center node, and the requirement to sum all the component vectors.

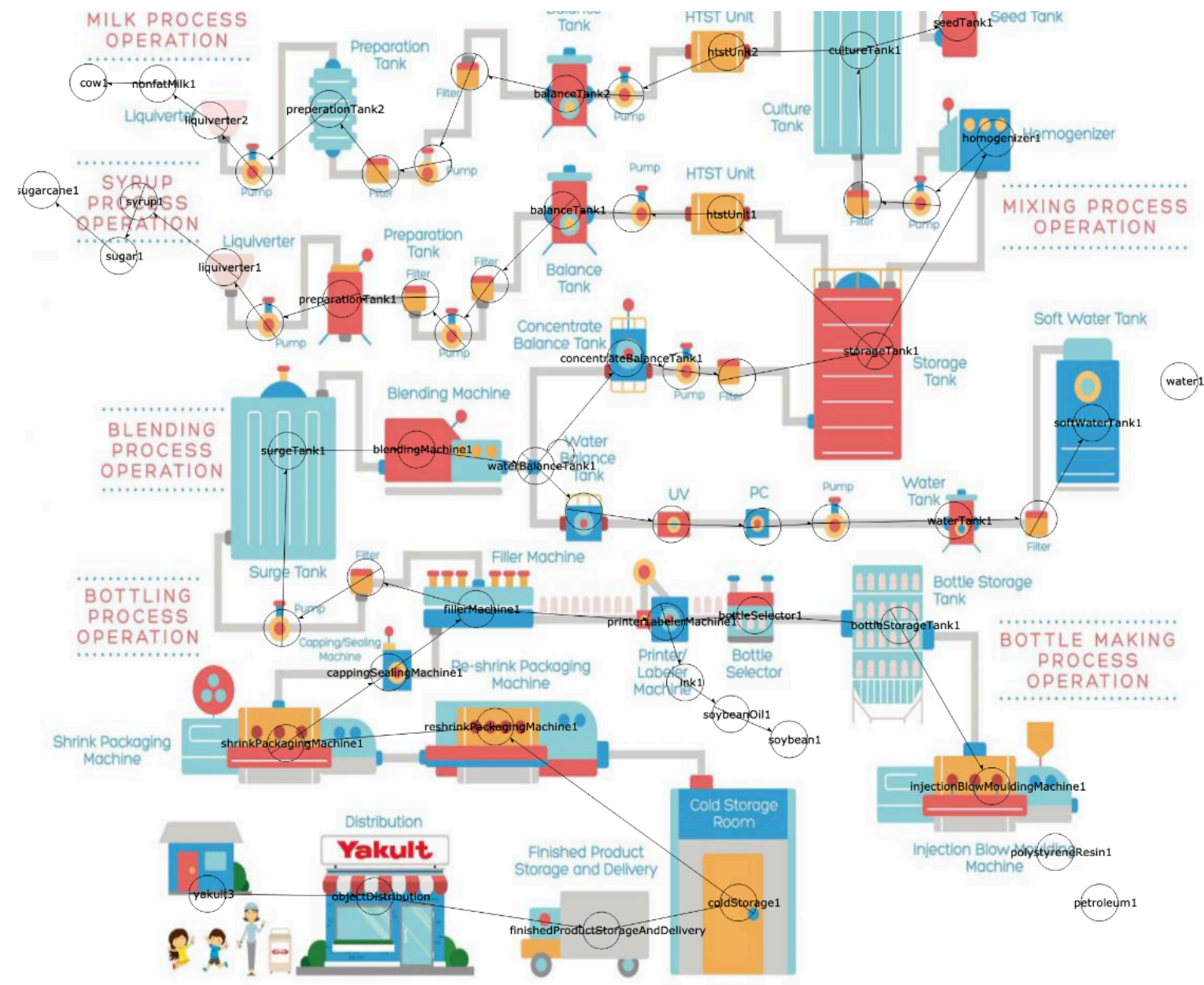
Yakult Manufacturing

We can make a realistic graph, from the inputs of carbon on the production network of Yakult.

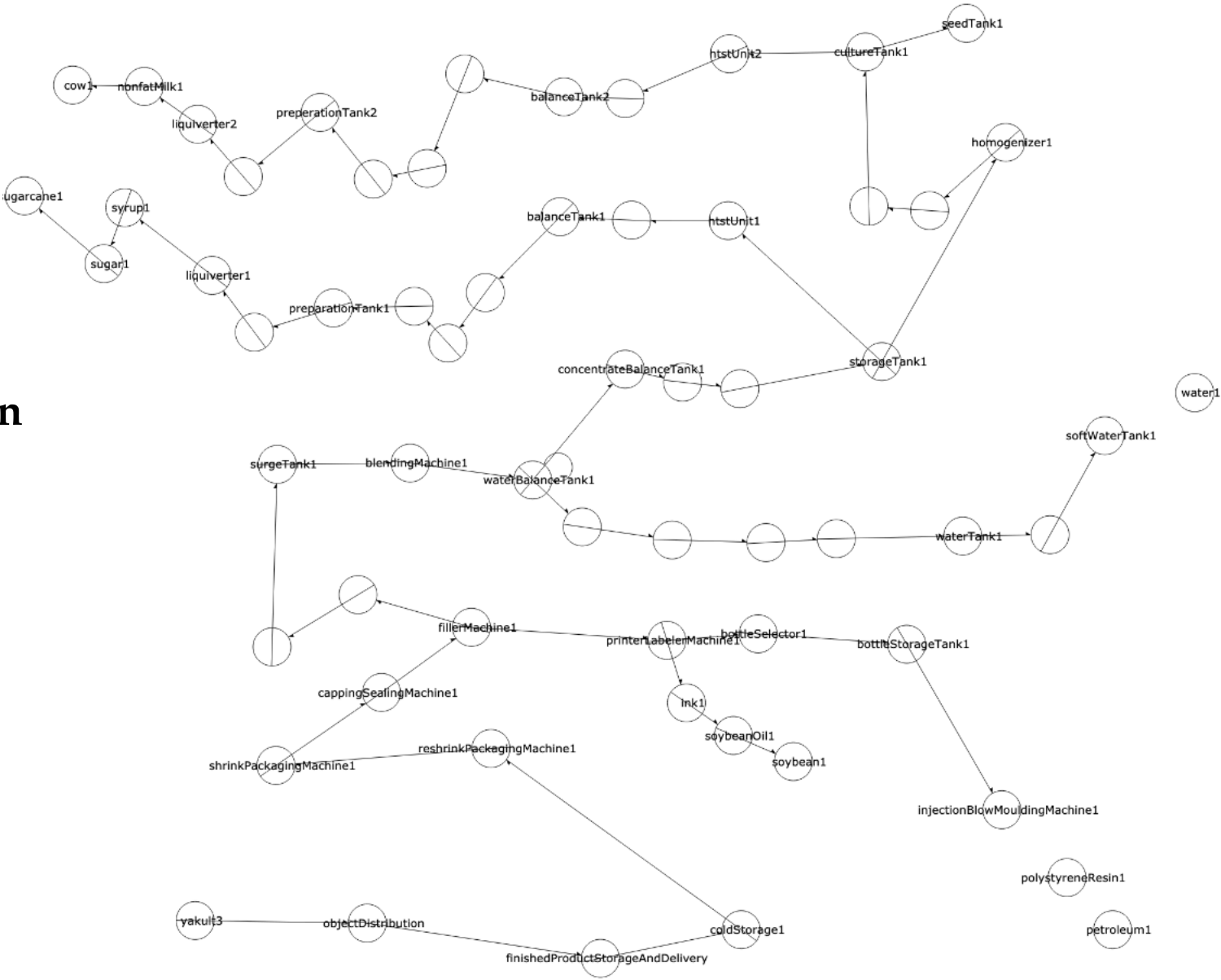
This network is not circular.



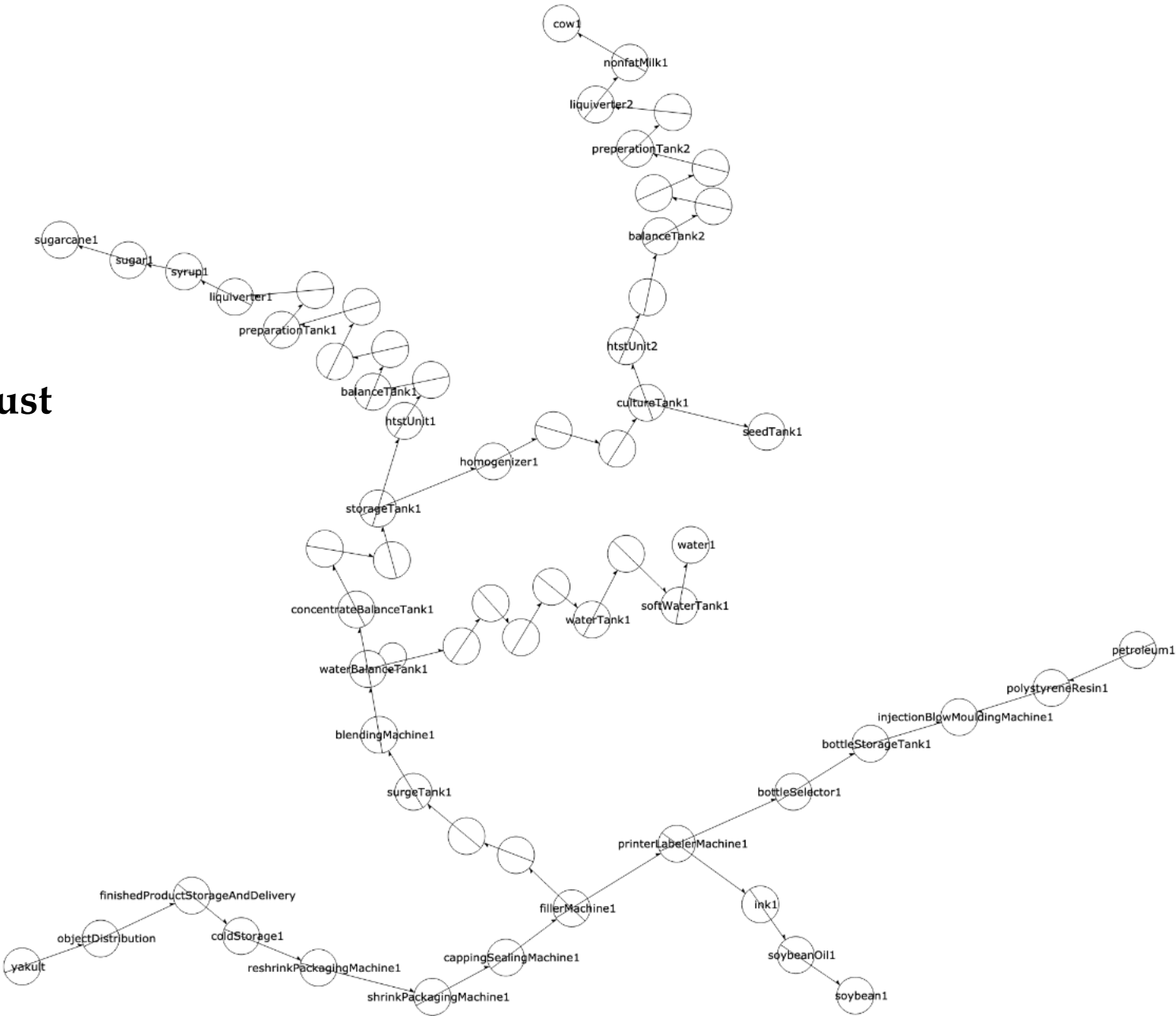




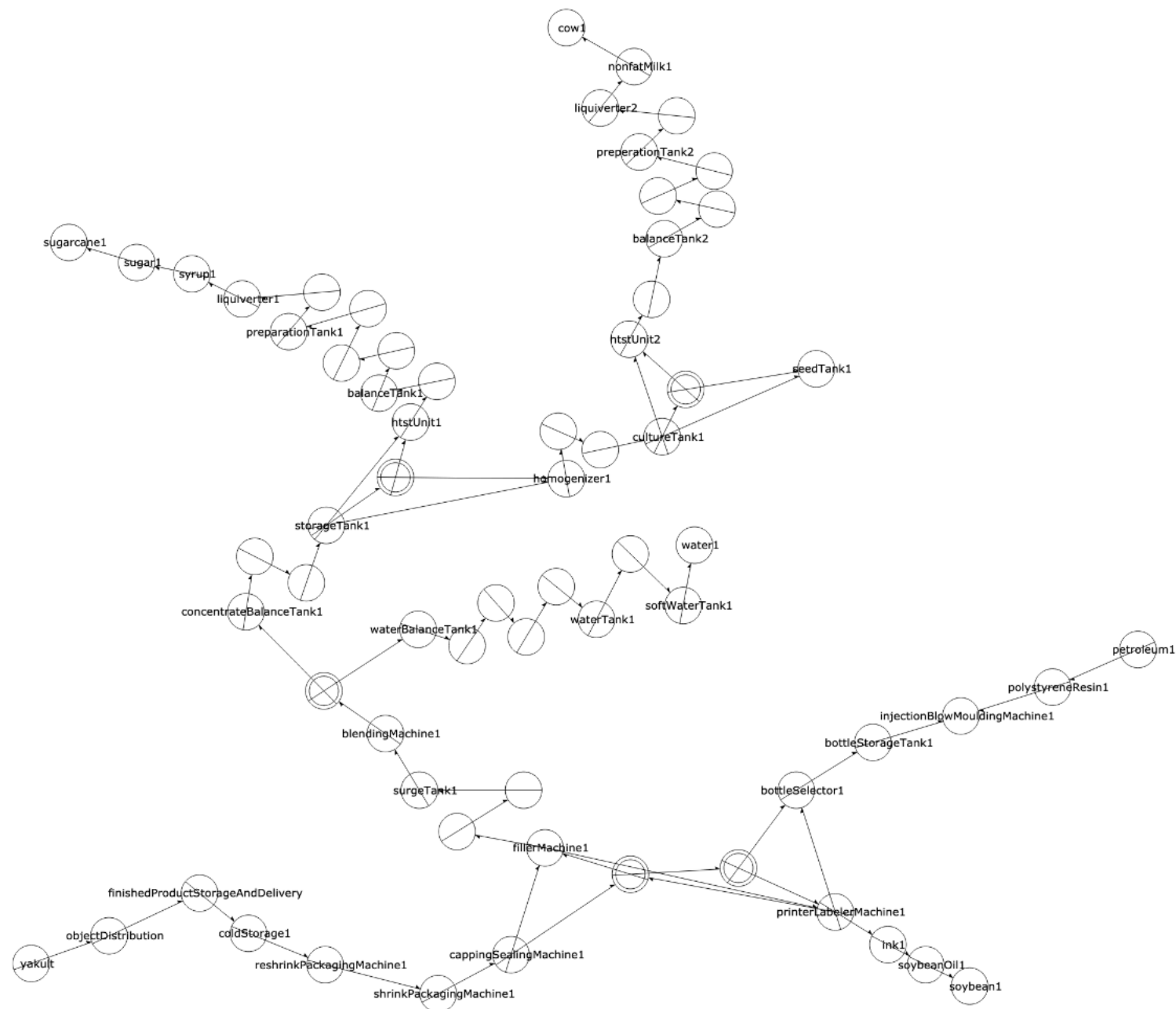
Realistic production network of Yakult.



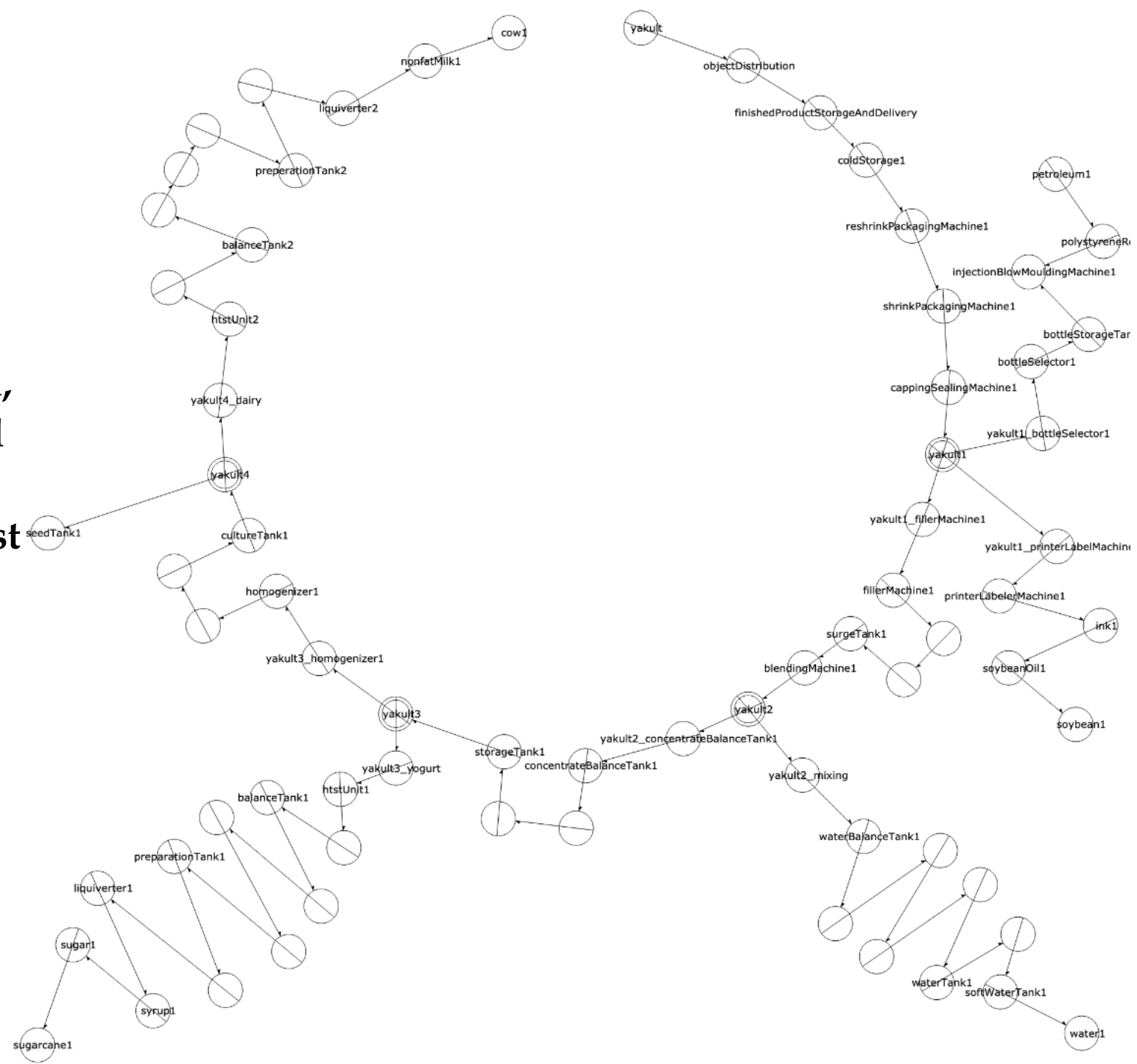
Re-flow the graph, the links are unchanged, just visual difference.

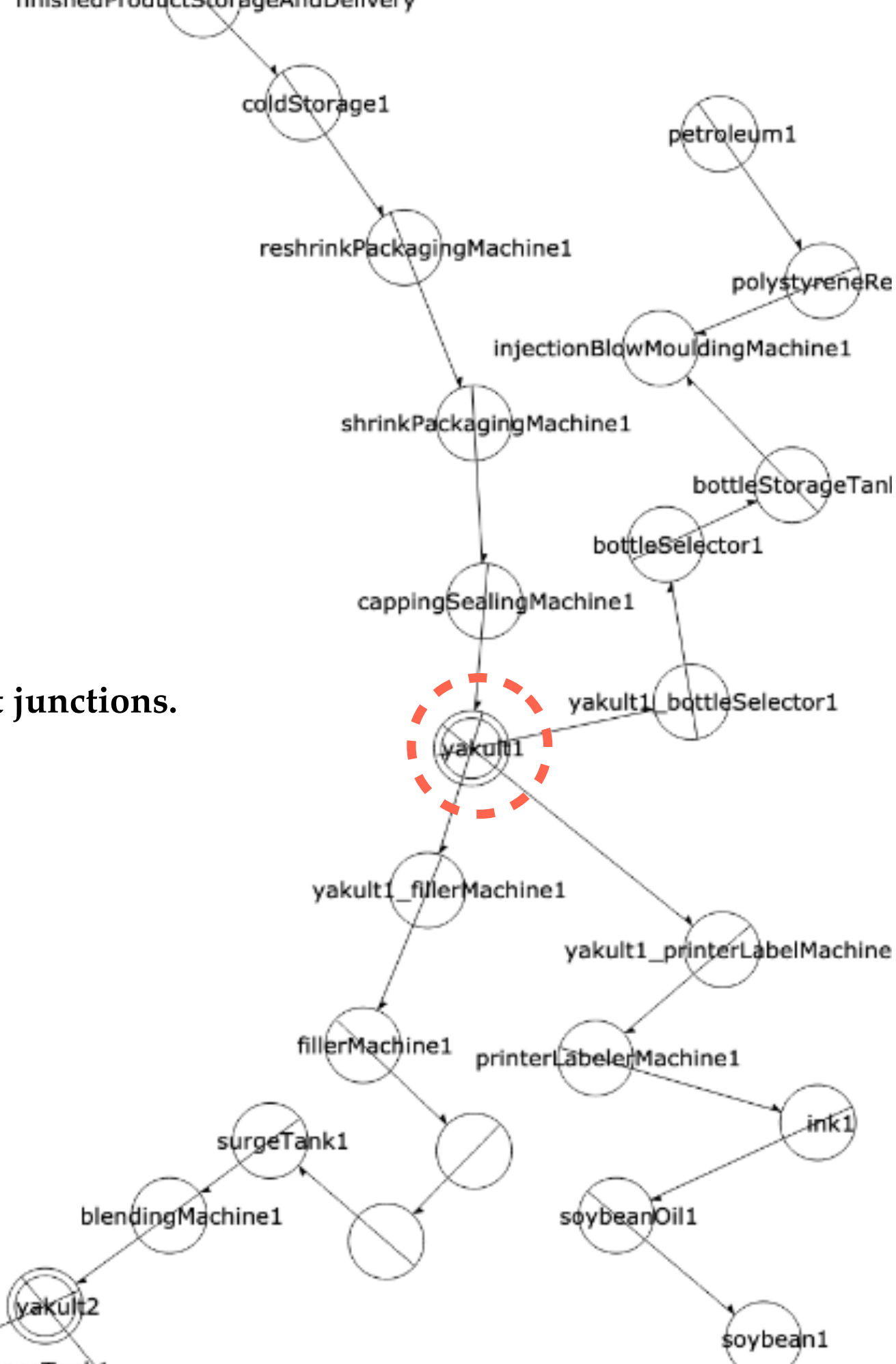


Insert new nodes at
junctions in the chain.

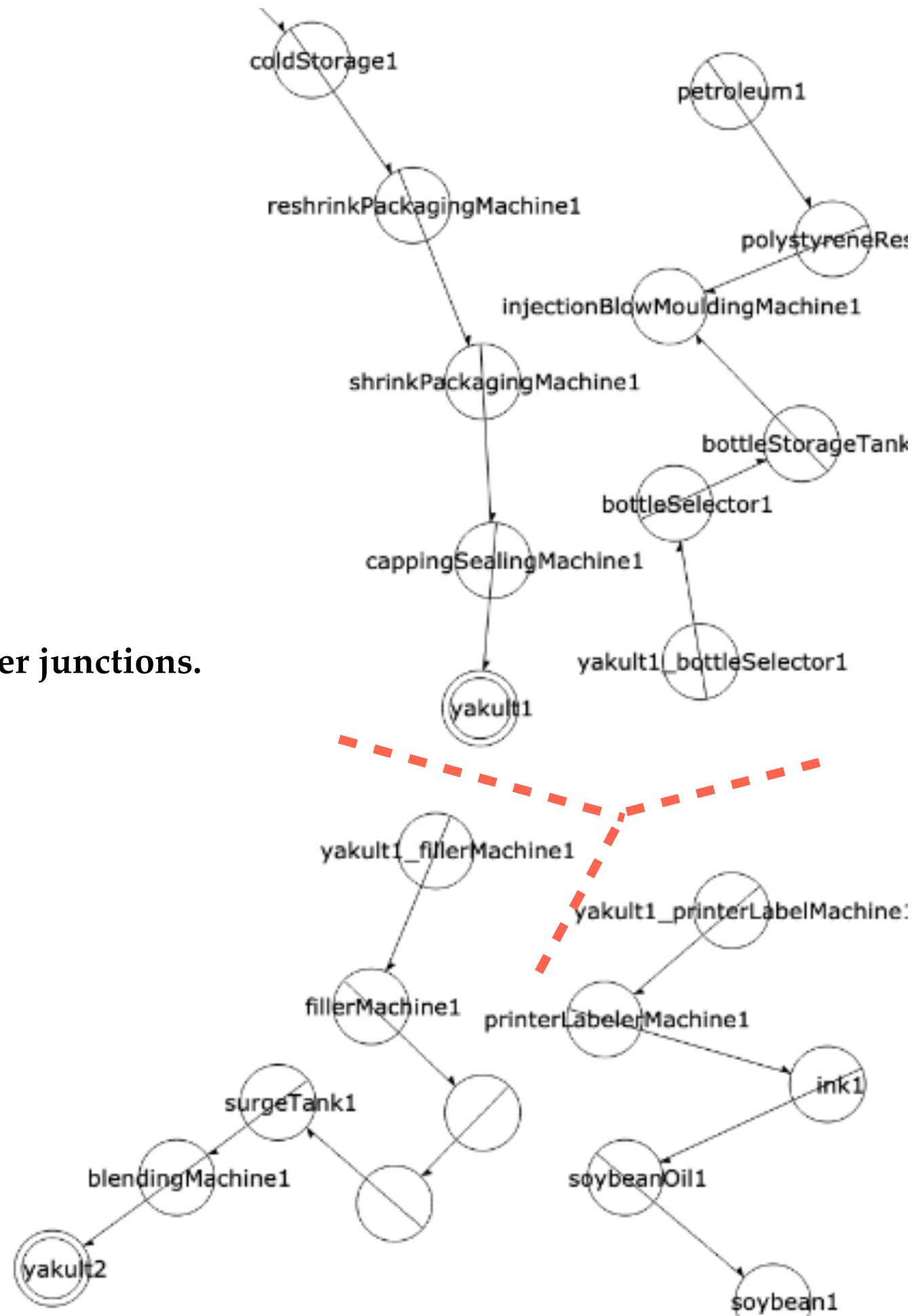


Re-flow the graph again,
the links are unchanged
(with the addition of
nodes for junctions), just
visual difference.



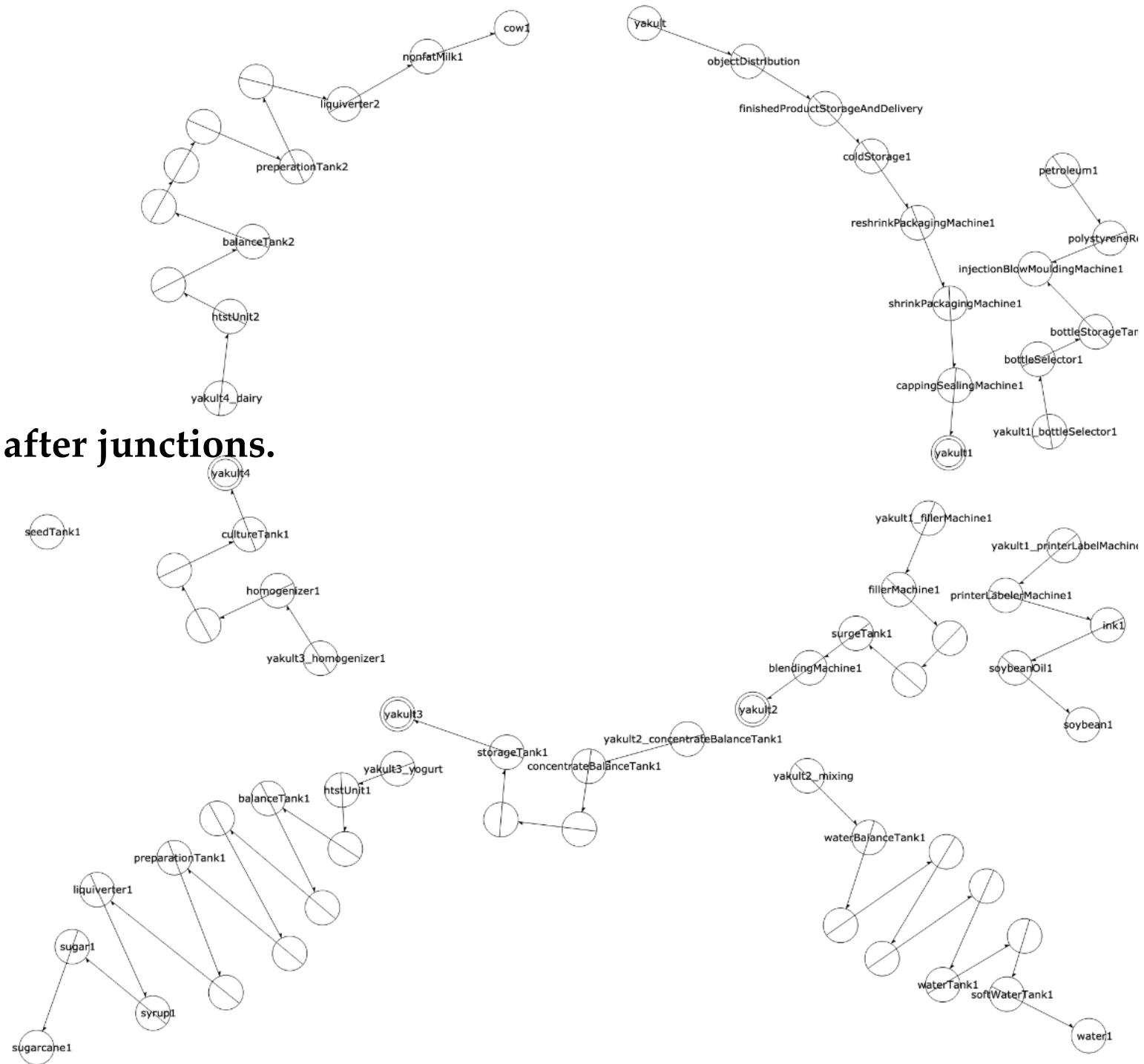


Note the insertion of nodes at junctions.

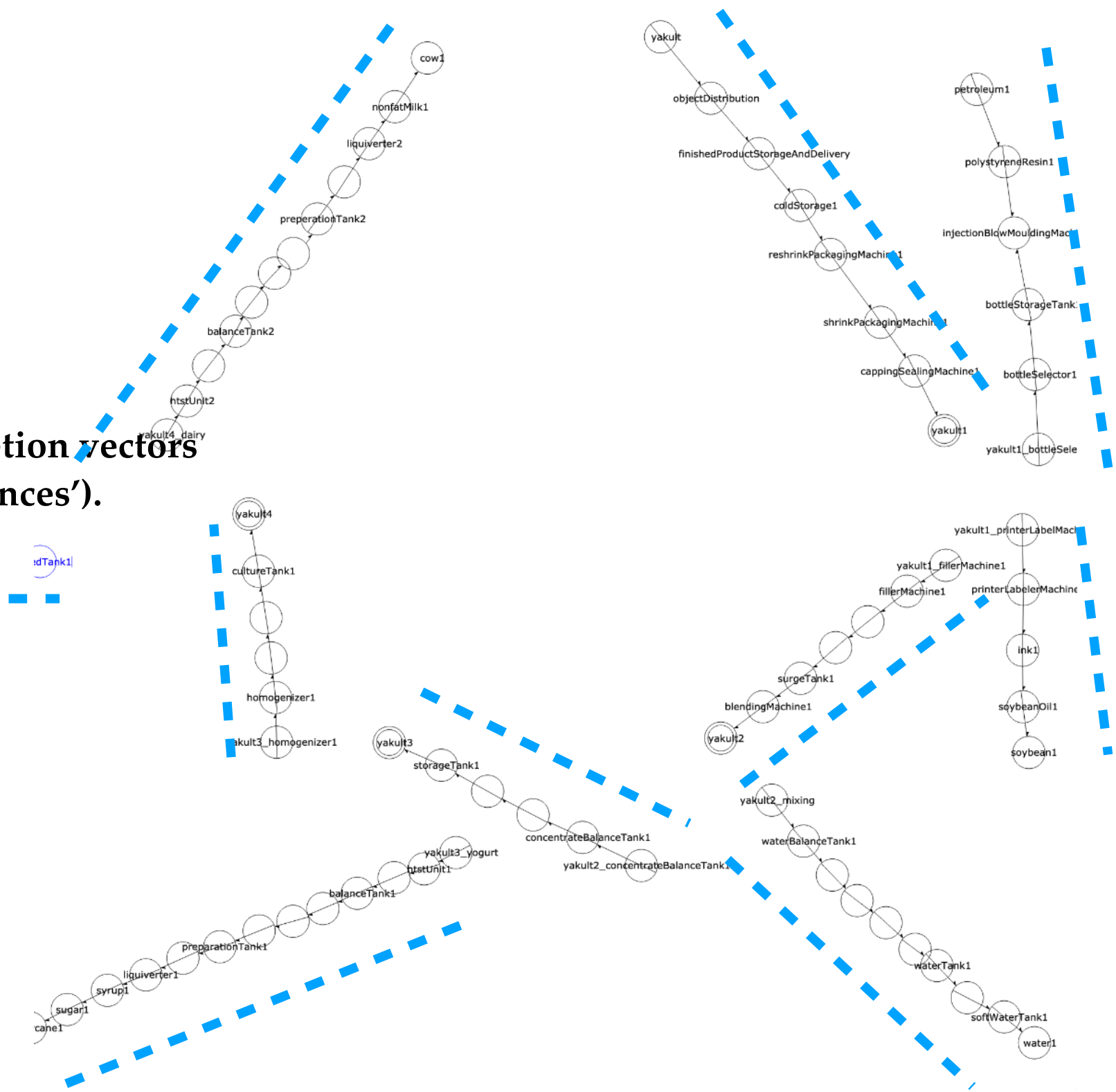


Note the deletion of links after junctions.

Note the deletion of links after junctions.



Segmentation of consumption vectors into smaller pieces ('sentences').



water1 softWaterTank1 waterTank1 waterBalanceTank1 blendingMachine1 surgeTank1 filterMachine1
cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1
yakult1

sugarcane1 sugar1 syrup1 liquiverter1 preparationTank1 balanceTank1 htstUnit1 storageTank1
concentrateBalanceTank1 blendingMachine1 surgeTank1 filterMachine1 cappingSealingMachine1
shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1 yakult1

lactobacillus seedTank1 cultureTank1 homogenizer1 storageTank1 concentrateBalanceTank1
blendingMachine1 surgeTank1 filterMachine1 cappingSealingMachine1 shrinkPackagingMachine1
reshrinkPackagingMachine1 coldStorage1 yakult1

cow1 nonfatMilk1 liquiverter2 preparationTank2 balanceTank2 htstUnit2 cultureTank1 homogenizer1
storageTank1 concentrateBalanceTank1 blendingMachine1 surgeTank1 filterMachine1
cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1
yakult1

naturalflavors homogenizer1 storageTank1 concentrateBalanceTank1 blendingMachine1 surgeTank1
filterMachine1 cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine1
coldStorage1 yakult1

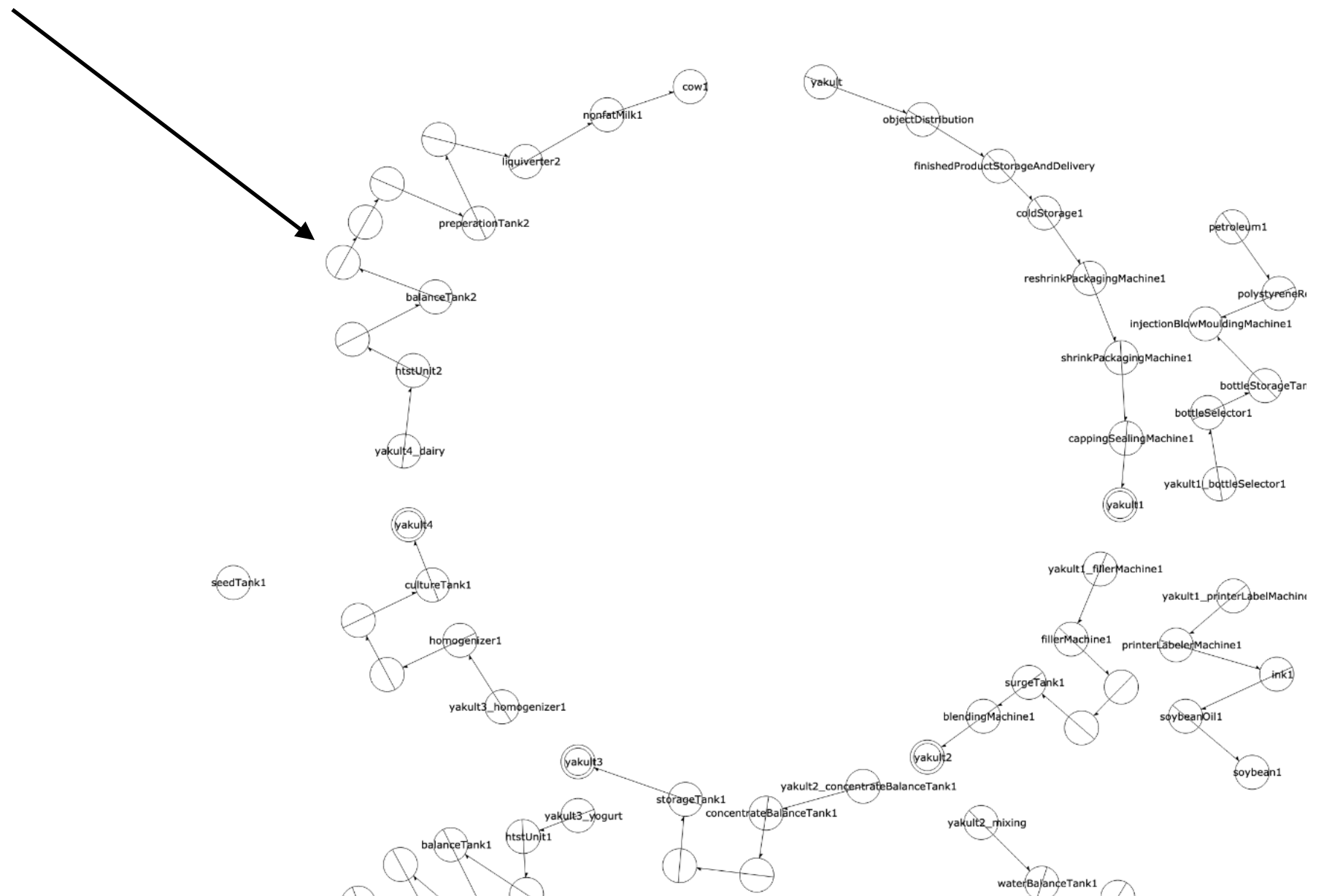
petroleum1 polystyreneResin1 injectionBlowMouldingMachine1 bottleStorageTank1 bottleSelector1
printerLabelerMachine1 filterMachine1 cappingSealingMachine1 shrinkPackagingMachine1
reshrinkPackagingMachine1 coldStorage1 yakult1

soybean1 soybeanOil1 ink1 printerLabelerMachine1 filterMachine1 cappingSealingMachine1
shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1 yakult1

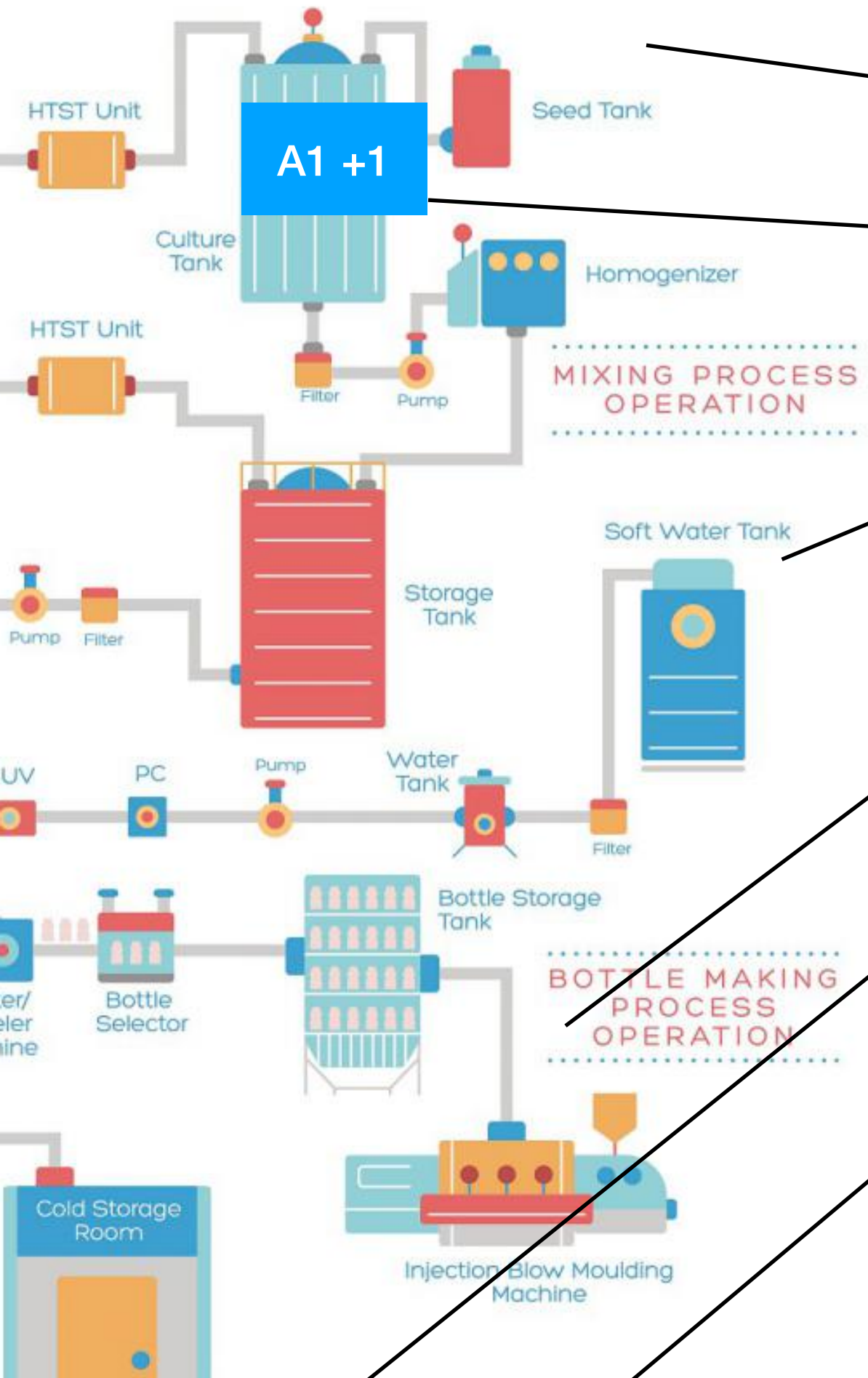
From the consumption vectors, we can
make this graph,

which shows the inputs of carbon on the
production 'circle' of Yakult.

The circle is the the beginning to the end
of the Yakult product.



consumption vectors



water1 softWaterTank1 waterTank1 waterBalanceTank1 bler
cappingSealingMachine1 shrinkPackagingMachine1 reshrin
yakult1

sugarcane1 sugar1 syrup1 liquiverter1 preparationTank1 bal
concentrateBalanceTank1 blendingMachine1 surgeTank1 fil
shrinkPackagingMachine1 reshrinkPackagingMachine1 colo

lactobacillus seedTank1 cultureTank1 homogenizer1 storage
blendingMachine1 surgeTank1 filterMachine1 cappingSealin
reshrinkPackagingMachine1 coldStorage1 yakult1

cow1 nonfatMilk1 liquiverter2 preperationTank2 balanceTan
storageTank1 concentrateBalanceTank1 blendingMachine1
cappingSealingMachine1 shrinkPackagingMachine1 reshrin
yakult1

naturalflavors homogenizer1 storageTank1 concentrateBala
filterMachine1 cappingSealingMachine1 shrinkPackagingMa
coldStorage1 yakult1

petroleum1 polystyreneResin1 injectionBlowMouldingMachi
printerLabelerMachine1 filterMachine1 cappingSealingMach
reshrinkPackagingMachine1 coldStorage1 yakult1

soybean1 soybeanOil1 ink1 printerLabelerMachine1 filterMa
shrinkPackagingMachine1 reshrinkPackagingMachine1 colo

water1 softWaterTank1 waterTank1 waterBalanceTank1 blendingMachine1 surgeTank1 filterMachine1
cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1
yakult1

sugarcane1 sugar1 syrup1 liquiverter1 preparationTank1 balanceTank1 htstUnit1 storageTank1
concentrateBalanceTank1 blendingMachine1 surgeTank1 filterMachine1 cappingSealingMachine1
shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1 yakult1

lactobacillus seedTank1 cultureTank1 homogenizer1 storageTank1 concentrateBalanceTank1
blendingMachine1 surgeTank1 filterMachine1 cappingSealingMachine1 shrinkPackagingMachine1
reshrinkPackagingMachine1 coldStorage1 yakult1

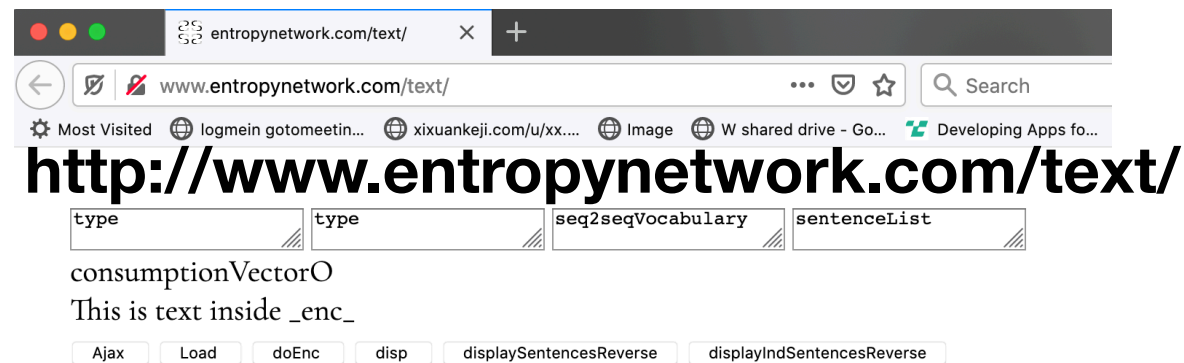
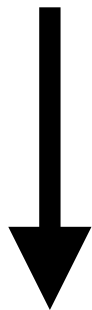
cow1 nonfatMilk1 liquiverter2 preperationTank2 balanceTank2 htstUnit2 cultureTank1 homogenizer1
storageTank1 concentrateBalanceTank1 blendingMachine1 surgeTank1 filterMachine1
cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1
yakult1

naturalflavors homogenizer1 storageTank1 concentrateBalanceTank1 blendingMachine1 surgeTank1
filterMachine1 cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine1
coldStorage1 yakult1

petroleum1 polystyreneResin1 injectionBlowMouldingMachine1 bottleStorageTank1 bottleSelector1
printerLabelerMachine1 filterMachine1 cappingSealingMachine1 shrinkPackagingMachine1
reshrinkPackagingMachine1 coldStorage1 yakult1

soybean1 soybeanOil1 ink1 printerLabelerMachine1 filterMachine1 cappingSealingMachine1
shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1 yakult1

water1 softWaterTank1 waterTank1 waterBalanceTank1 blendingMachine1 surgeTank1 filterMachine1
cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine1 coldStorage1 yakult1



shrinkPackagingMachine1 reshrinkPackagingMachine 1 coldStorage1 yakult1 petroleum1 polystyreneResin1 injectionBlowMouldingMac hine1 bottleStorageTank1 bottleSelector1 printerLabelerMachine1 filterMachine1 cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine 1 coldStorage1 yakult1 soybean1 soybeanOil1 ink1 printerLabelerMachine1 filterMachine1 cappingSealingMachine1 shrinkPackagingMachine1 reshrinkPackagingMachine 1 coldStorage1 yakult1	["water1 0","softwatertank1 1", "watertank1 2","waterbalancetan k1 3","blendingmachine1 4","sur getank1 5","filtermachine1 6", "cappingsealingmachine1 7","shri nckpackagingmachine1 8","reshrin kpackagingmachine1 9","coldstor age1 10","yakult1 11","sugarcane l 12","sugar1 13","syrup1 14", "liquiverter1 15","preparationt ank1 16","balancetank1 17","hts tunit1 18","storagetank1 19","c concentratebalancetank1 20","lac tobacillus 21","seedtank1 22", "culturetank1 23","homogenizer1 24","cow1 25","nonfatmilk1 26", "liquiverter2 27","preperation ank2 28","balancetank2 29","hts tunit2 30","naturalflavors 31", "petroleum1 32","polystyreneres in1 33","injectionblowmouldingm achine1 34","bottlestoragetank1 35","bottleselector1 36","prin terlabelermachine1 37","soybean	water1 0 softwatertank1 1 watertank1 2 waterbalancetank1 3 blendingmachine1 4 surgetank1 5 filtermachine1 6 cappingsealingmachine1 7 shrinkpackagingmachine1 8 reshrinkpackagingmachine1 9 coldstorage1 10 yakult1 11 sugarcane1 12 sugar1 13 syrup1 14 liquiverter1 15 preparationtank1 16 balancetank1 17 htstunit1 18 storagetank1 19 concentratebalancetank1 20 lactobacillus 21 seedtank1 22	water1 softwatertank1 watertank1 waterbalancetank1 blendingmachine1 surgetank1 filtermachine1 cappingsealingmachine1 shrinkpackagingmachine1 reshrinkpackagingmachine1 coldstorage1 yakult1. sugarcane1 sugar1 syrup1 liquiverter1 preparationtank1 balancetank1 htstunit1 storagetank1 concentratebalancetank1 blendingmachine1 surgetank1 filtermachine1 cappingsealingmachine1 shrinkpackagingmachine1 reshrinkpackagingmachine1 coldstorage1 yakult1. lactobacillus seedtank1 culturetank1 homogenizer1 storagetank1 concentratebalancetank1
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CO2 values

water1	1
softwatertank1	2
watertank1	23
waterbalancetank1	34
blendingmachine1	34
surgetank1	?
filtermachine1	?
cappingsealingmachine1	?
shrinkpackagingmachine1	?
reshrinkpackagingmachine1	?
coldstorage1	?
yakult1	?
sugarcane1	?
sugar1	?
syrup1	?
liquiverter1	?
preparationtank1	?
balancetank1	?
htstunit1	?
storagetank1	?