



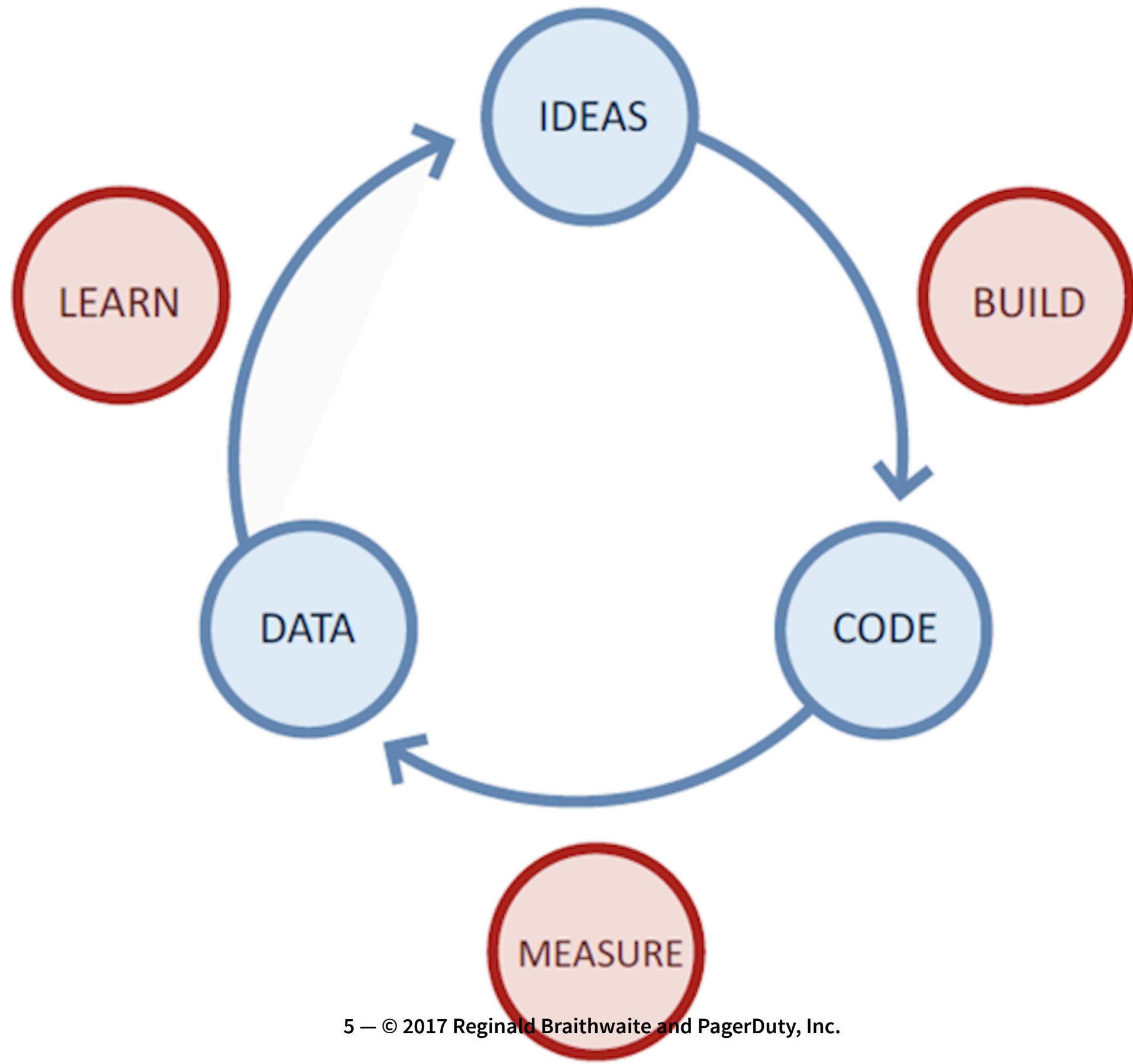
WASTE IN SOFTWARE DEVELOPMENT

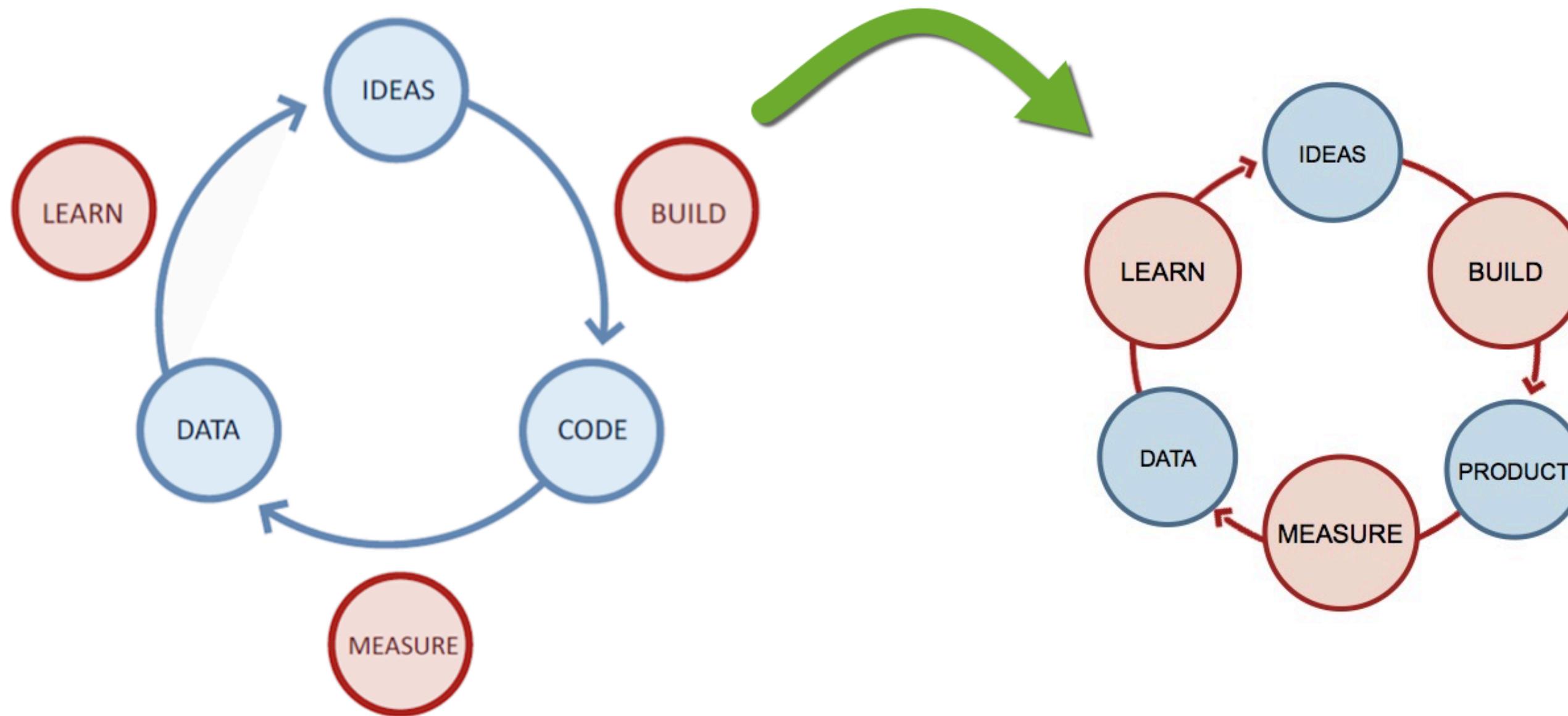
A photograph showing a massive pile of electronic waste, likely from discarded computers, filling the foreground. The waste consists of various components like monitors, keyboards, and circuit boards. In the background, there's a brick wall and some windows, suggesting an industrial or storage setting.

WHAT IS WASTE?

Waste is any material or activity that does not create value for the customer.

THE LEAN MODEL OF SOFTWARE DEVELOPMENT





ACTIVITIES

- Build
- Learn
- Measure

ASSETS

- Code
- Ideas
- Data

Code Waste

- Code that is deleted before it creates value for the customer
- Code for features the customer does not value
 - Code for features the customer cannot use

Ideas Waste

- Ideas that are discarded before being turned into potential features
- Potential features we do not turn into code
- Ideas we cannot turn into code

Data Waste

- Data that is insufficient for creating ideas
 - Data we do not turn into ideas
 - Data we cannot turn into ideas

OUR SIMPLIFIED MODEL OF WASTE

That which is:

- Incomplete, or;
- Unvalued, or;
- Unused.

```
        if (!d111.hasOwnProperty(p) && c(d111, p)) {  
            hr = "function" + hr + ")\nbreak;\n";  
        }  
        if (target + lr + ") return (0);";  
        if (target + lr + ")\ndelete J[r[i]]; return (r, length);  
    }  
    if (!d111.hasOwnProperty(p) && c(d111, p)) {  
        hr = "function" + hr + ")\nbreak;\n";  
    }  
    if (target + lr + ") return (0);";  
    if (target + lr + ")\ndelete J[r[i]]; return (r, length);  
}
```

CODE WASTE

Code that is Incomplete, Unvalued, or Unused by the customer.

Incomplete Code

- Dead-ends
 - Epics
- Work-in-Progress

Unvalued Code

- Architecture
- Tests

Unused Code

- Misfeatures
- Over-optimizations



UNFULFILLED POTENTIAL

UNFULFILLED CODE

Unfulfilled code is code that would have created customer value, had it been in the customer's hands earlier.

But it wasn't.

UNFULFILLED IDEAS

Unfulfilled ideas are ideas that would have become features creating customer value, had we employed it to create features sooner.

But we didn't.

UNFULFILLED DATA

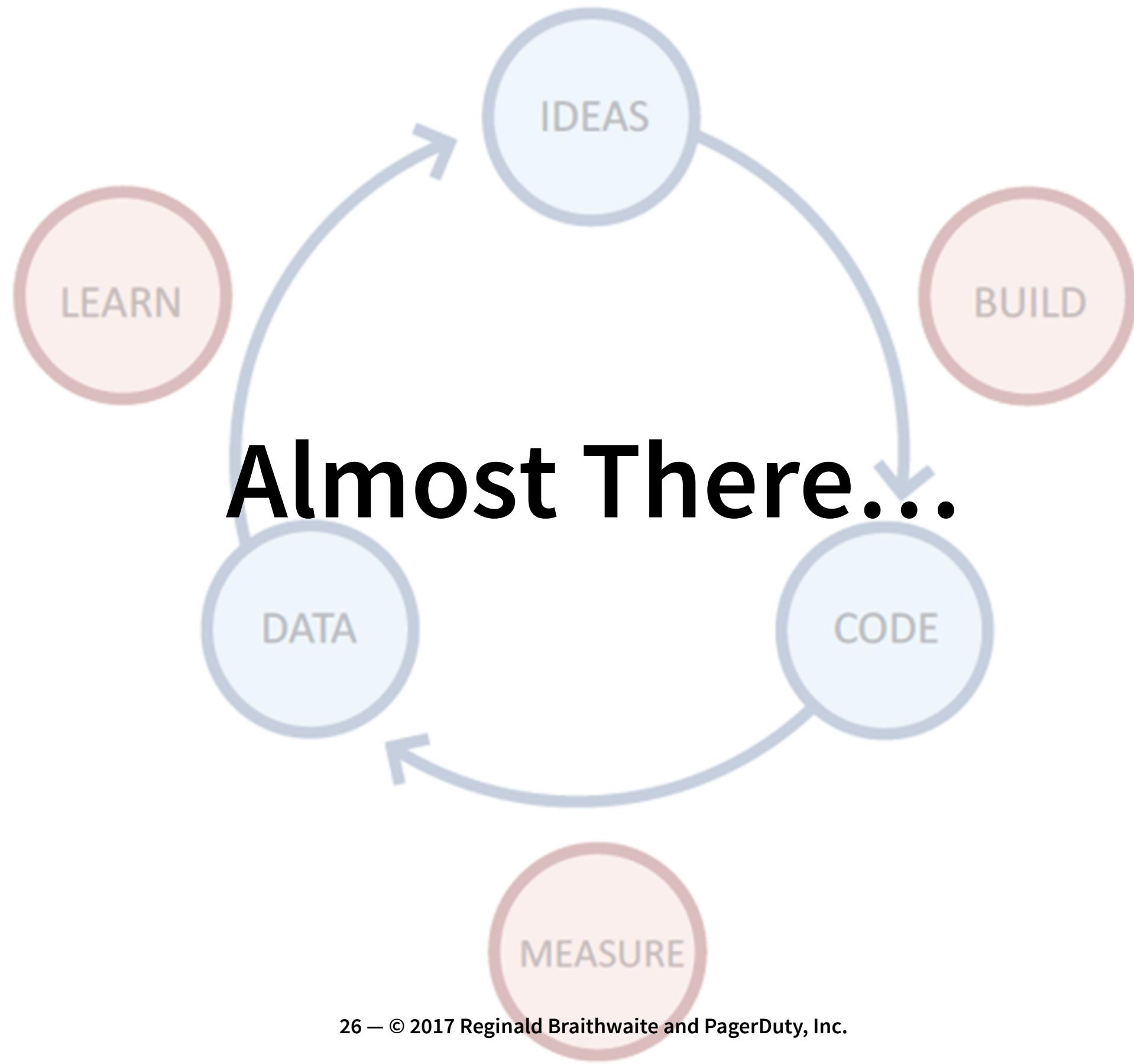
Unfulfilled data is data that would have pointed us towards valuable ideas for creating customer value, had we considered it earlier than we did.

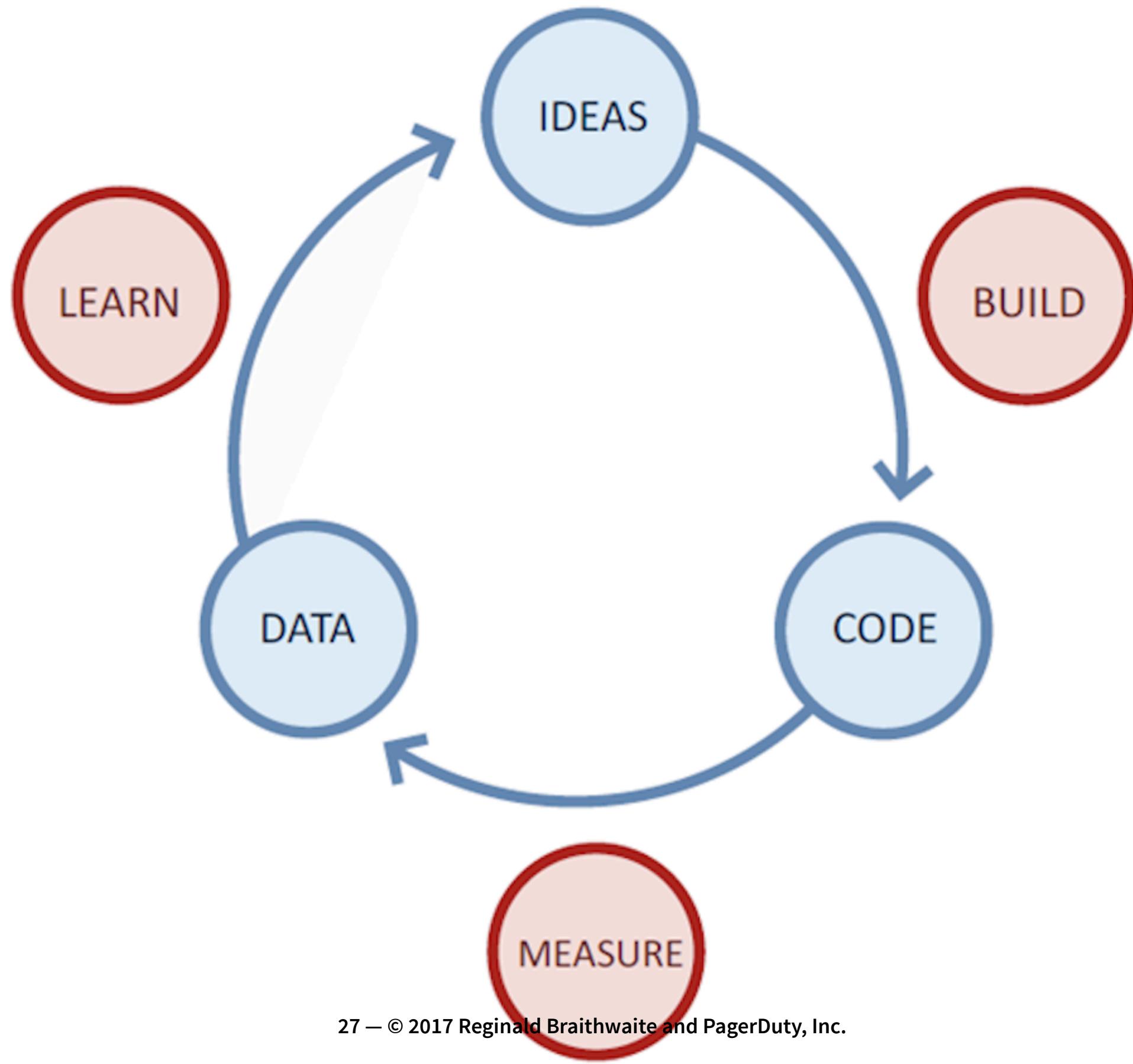
But we didn't.



A large, dense stack of shipping containers in a port terminal. The containers are stacked high, filling the frame. Many of the containers are Maersk-branded, with their signature blue and white star logo. Other brands visible include Safmarine, Hyundai, and APL. The containers are of various colors, including red, blue, green, and white. In the background, there are several large industrial cranes and some green trees. The overall scene is one of a busy shipping port.

UNFULFILLMENT IS WASTE





WASTE (AGAIN)

Waste is:

- Incomplete, or;
- Unvalued, or;
- Unused.

CODE WASTE (AGAIN)

Incomplete code, such as dead-ends, epics, and work-in-progress.

Unvalued code, such as architecture and tests.

Unused code, such as misfeatures and over-optimizations.

Unfulfilled code, such as features that are ready,

FIVE EASY PIECES

Question One

IS TECHNICAL DEBT WASTE?

Question Two

DO BIG RELEASES CREATE
WASTE?

Question Three

IS TOOLING ACTUALLY WASTE?

Question Four

WHAT DOES THIS MODEL TELL US
ABOUT CONTINUOUS INTEGRATION
AND DEPLOYMENT?

Question Five

WHAT DOES THIS MODEL TELL
US ABOUT BIG DESIGN UP-
FRONT?

Bonus Question

ARE TECHNICAL TALKS WASTE?