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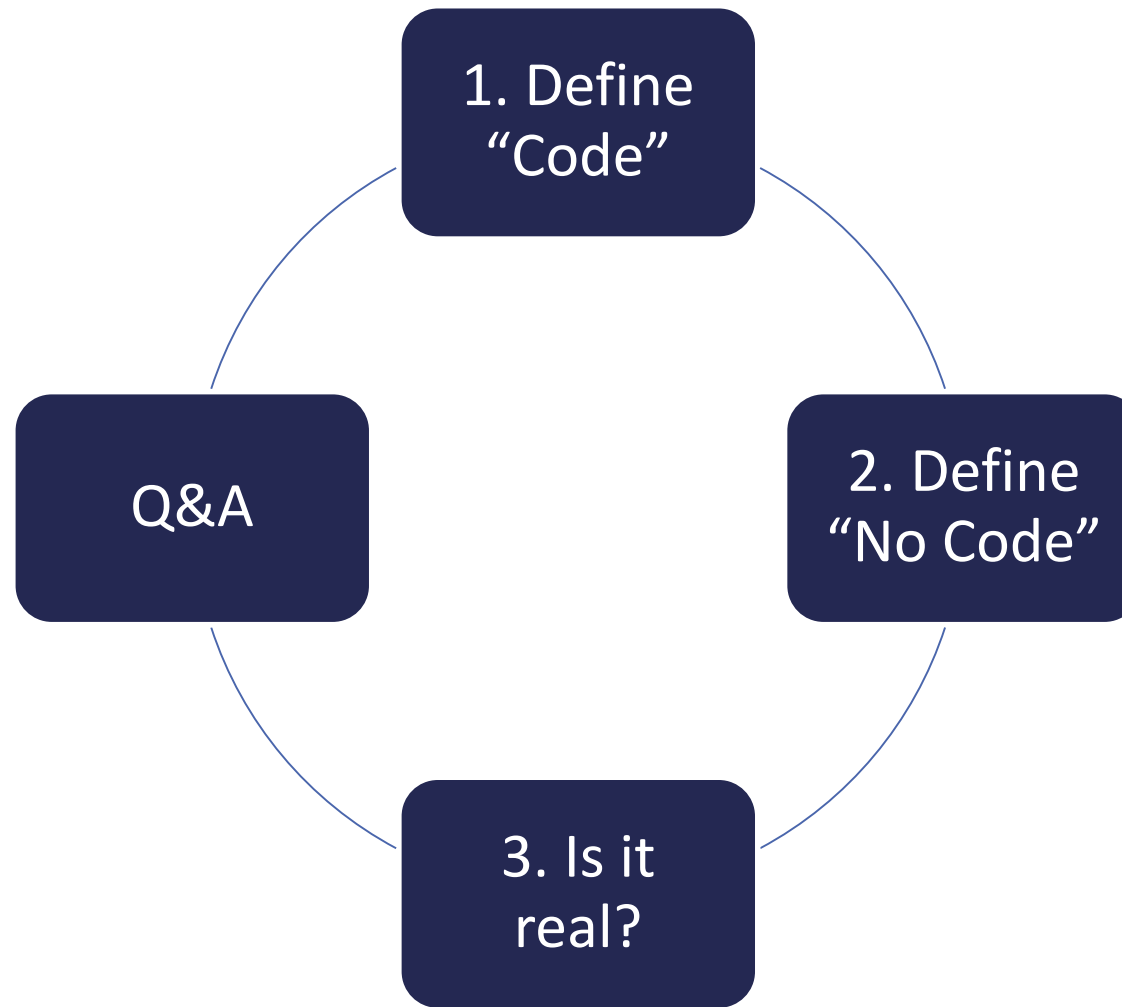
No Code & AI Empowering Domain Experts

TRANSFORM Conference Bern September 2019

Professor Dr. Erik Graf

▶ Department of Computer Science

Map of the Talk



The background features a light blue and white color scheme. It is filled with a pattern of binary code (0s and 1s) arranged in vertical columns that appear to be receding into the distance, creating a sense of depth. In the center, there is a faint, stylized illustration of a gear or a circular mechanical component with teeth.

Define «Code»

What is Code?

```
function lb(a) {
  var b, d, e, f, g, h, k, l, n, q, p, m = [];
  f = [];
  g = c._data(this, "events");
  if (a.liveFired !== this && g && g.live && !a.target.disabled && (!a.button || "click" !== a.type)) {
    a.namespace && (p = new RegExp("(^|\\.)" + a.namespace.split(".").join("\\.(?:.*\\.)?") + "(\\.|$)"));
    a.liveFired = this;
    var r = g.live.slice(0);
    for (k = 0; k < r.length; k++) g = r[k], g.origType.replace(ja, "") === a.type ? f.push(g.selector) : r.splice(k--, 1);
    f = c(a.target).closest(f, a.currentTarget);
    l = 0;
    for (n = f.length; l <
      n; l++)
      for (q = f[l], k = 0; k < r.length; k++)
        if (g = r[k], q.selector === g.selector && (!p || p.test(g.namespace)) && !q.elem.disabled) {
          h = q.elem;
          e = null;
          if ("mouseenter" === g.preType || "mouseleave" === g.preType) a.type = g.preType,
            [e = c(a.relatedTarget).closest(g.selector)[0]] && c.contains(h, e) && (e = h);
          e && e === h || m.push({
            elem: h,
            handleObj: g,
            level: q.level
          });
        }
    l = 0;
    for (n = m.length; l < n; l++) {
      f = m[l];
      if (d && f.level > d) break;
    }
  }
}
```

What is Code?

The image shows a screenshot of an Amazon product page for a "Weighted Blanket w/ 2 Duvet Covers for Hot & Cold Sleepers". The product is priced at \$109.99 and is in stock. The page features a "SIZE SCALE" section with three options: TWIN BED (39" W X 74" H), FULL BED (54" W X 75" H), and SOFA (104" W X 42" H). Each option shows a diagram of the blanket with weight options (5 lbs and 6 lbs) and dimensions (48", 60", 72", 48").

The product title is "Weighted Blanket w/ 2 Duvet Covers for Hot & Cold Sleepers|Advanced Nano-Ceramic Beads Deliver Durability & Silky Comfort (48x72 15LB Navy/Grey)" by Degrees of Comfort. It has 1,549 customer reviews and is a "#1 Best Seller" in Kid's Weighted Blankets.

The price is \$109.99, and there is a coupon that saves an extra \$15.00 when applied. The size is 48x72" 15lbs. Other size options include 36x48" 5lbs, 36x48" 6lbs, 41x60" 8lbs, 41x60" 10lbs, and 48x72" 12lbs.

The page includes "Add to Cart" and "Buy Now" buttons. It is sold by La Fiore and fulfilled by Amazon.

The browser's developer tools are open, showing the HTML structure of the product page. The selected element is a `span` with the class `"a-list-item"` and the attribute `class="a-declarative"`. The `data-action` is `"main-image-click"` and the `data-main-image-click` is `"{}"`. The `style` attribute is `"height: 700px;"`. The `img` tag inside has the `src` attribute `"https://images-na.ssl-images-amazon.com/images/I/617HwMcYwFL_SX679.jpg"` and the `style` attribute `"max-height: 679px; max-width: 679px; data-old-hires="https://images-na.ssl-images-amazon.com/images/I/617HwMcYwFL_S11000.jpg" data-a-manual-replacement="true"`.

The developer tools also show a list of events for the selected element, including `focusin`, `focusout`, `focus`, `pointercancel`, and `pointerover`. The `pointerover` event is expanded, showing a function `lb(a)` that handles the event.

The CSS styles for the selected element are also visible, including `background-color: transparent;` and `border: 1px solid black;`.

What is Code?

Code defines a computer's "reaction" in relation to input.

What is Coding (aka Software Development)?

Coding is the **explicit** definition of rules that define a computer's reaction to input.

Define «No Code»

What is it?

No Code

Low Code

Less Code

Different
Code

What is “No Code”?

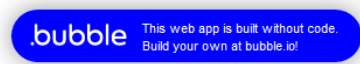
If Code = Explicit Rules

“No Code” = No Rules?

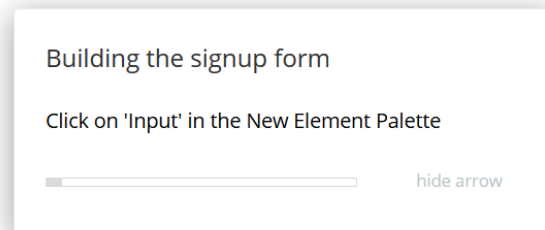
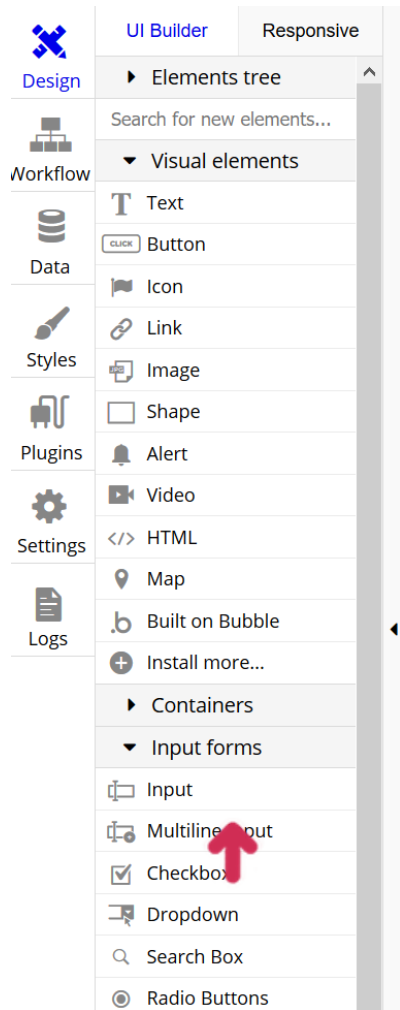
What is “No Code”?

Different Code - Sign up for the newsletter

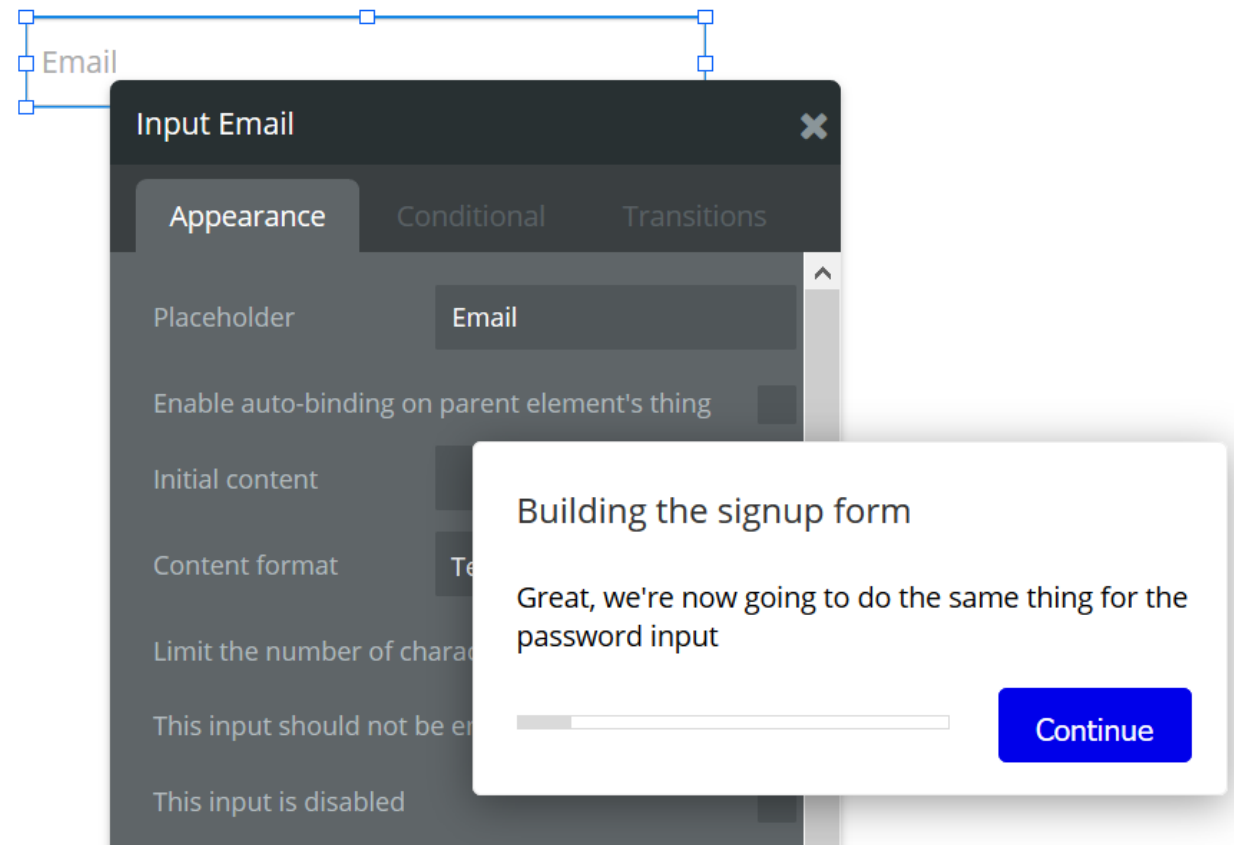
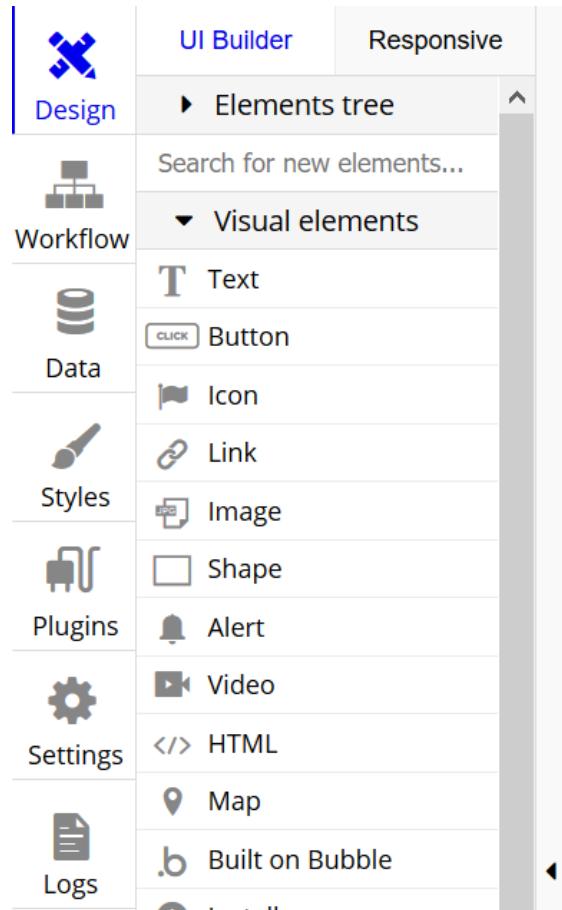
<https://different-code-signup.bubbleapps.io/>



Click and Drag Visual Elements



Define Attributes



Create Workflows

The screenshot displays a workflow editor interface. On the left is a vertical sidebar with icons and labels for 'Design', 'Vorkflow', 'Data', 'Styles', 'Plugins', 'Settings', and 'Logs'. The main workspace contains a 'When' trigger block with the text 'Button Sign Up is clicked' and a dashed box labeled 'Click here to add an event...'. Below this, an 'Action' menu is open, showing a list of actions under the 'Account' category. The actions listed are: Sign the user up, Log the user in, Signup/login with a social network, Log the user out, Update the user's credentials, Make changes to current user, Send confirmation email, Send password reset email, Create an account for someone else, Check password for the current user, Assign a temp password to a user, Change the email for another user, and Log out other user's sessions.

Design

Vorkflow

Data

Styles

Plugins

Settings

Logs

When
Button Sign Up is clicked

Click here to add an event...

Click here to add an action...

- Account
 - Sign the user up
 - Log the user in
 - Signup/login with a social network
 - Log the user out
 - Update the user's credentials
 - Make changes to current user
 - Send confirmation email
 - Send password reset email
 - Create an account for someone else
 - Check password for the current user
 - Assign a temp password to a user
 - Change the email for another user
 - Log out other user's sessions

Defining “No Code”

~~No Code~~

~~Low Code~~

Less Code

Different
Code

“No Code” does not equal “No Rules”. We still have to explicitly specify the program’s reaction to input.

“No Code” – A Different Kind of Coding

~~No Code~~

~~Low Code~~

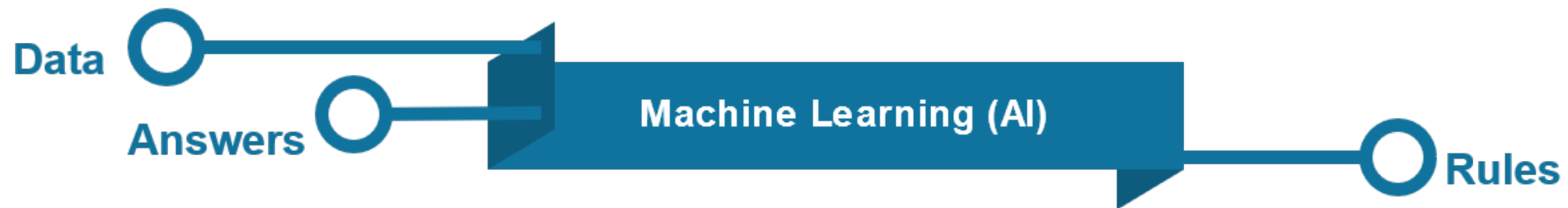
~~Less Code~~

Different
Code

“No Code” does not mean there is generally less code involved ... it is just “hidden” in the platform.

AI – an Entirely Different Kind of Coding

Observation by Francois Cholet (deep learning framework author, researcher @ Google)



AI – an Entirely Different Kind of Coding

Input: Data and Answers



Label: Monkey



Label: Cat



Label: Fossa

Result: Rules to classify mammals by species

Domain Experts Shape Contract Intelligence Programs

CREDIT AGREEMENT

dated as of

February 28, 2012

among

FACEBOOK, INC.,

THE LENDERS PARTY HERETO

and

JPMORGAN CHASE BANK, N.A.,
as Administrative Agent

J.P. MORGAN SECURITIES LLC
as Sole Lead Arranger and Joint Bookrunner

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CREDIT SUISSE AG, CAYMAN ISLANDS BRANCH
as Managing Agents

ROYAL BANK OF CANADA – WFC BRANCH
WELLS FARGO BANK, NATIONAL ASSOCIATION
as Co-Agents

\$5,000,000,000 Senior Unsecured Revolving Credit Facility

- Domain experts label contracts
- Experts must understand manipulation of system

Bank X Trader:	7:51:46	yes
	7:51:51	that's really imp[ortant] q[uestion]
	7:52:01	dont want other numpty's in mkt to know
	7:52:17	but not only that
	7:52:21	is he gonna protect us
	7:52:33	like we protect each other against our own branches
	7:52:46	ie if you guys are rhs.. and my nyk is lhs..ill say my nyk lhs in few
UBS Trader:	7:53:52	what concerns me is that i know he'll never tell us when at risk...

- Remove CS side as a bottleneck
- CS side's understanding of legal aspects is limited

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Is it real?

How transformative are these developments?

“No Code” Explosion

Anecdotal evidence



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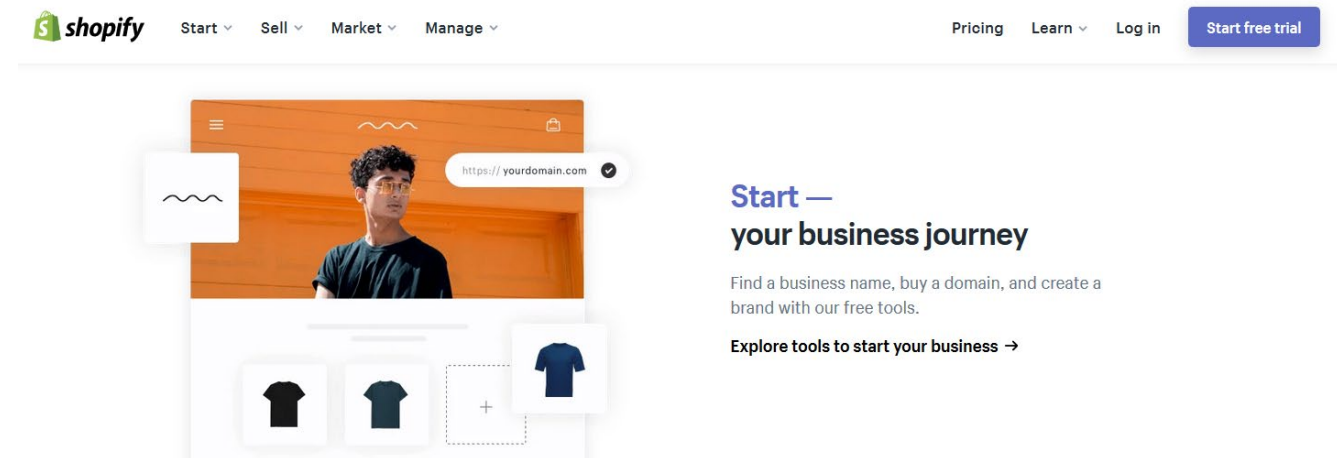
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- raised \$ 160m from VCs in 2018
- used by 80'000 companies
- valued at \$ 1bn+

“No Code” Explosion

Anecdotal evidence: Shopify



	eBay Inc EBAY (NASDAQ)	Shopify Inc SHOP (NYSE)
Mkt cap	33.57B	38.39B
Employees	14'000	4'000

Number of merchants more than doubled between 2016 and 2018 to 800'000

“AI” Explosion

Contract Intelligence

Bloomberg

Markets

JPMorgan Software Does in Seconds What Took Lawyers 360,000 Hours

By Hugh Son

Updated on

-
- ▶ New software does in seconds what took staff 360,000 hours
 - ▶ Bank seeking to streamline systems, avoid redundancies
-

Is it real? NO!

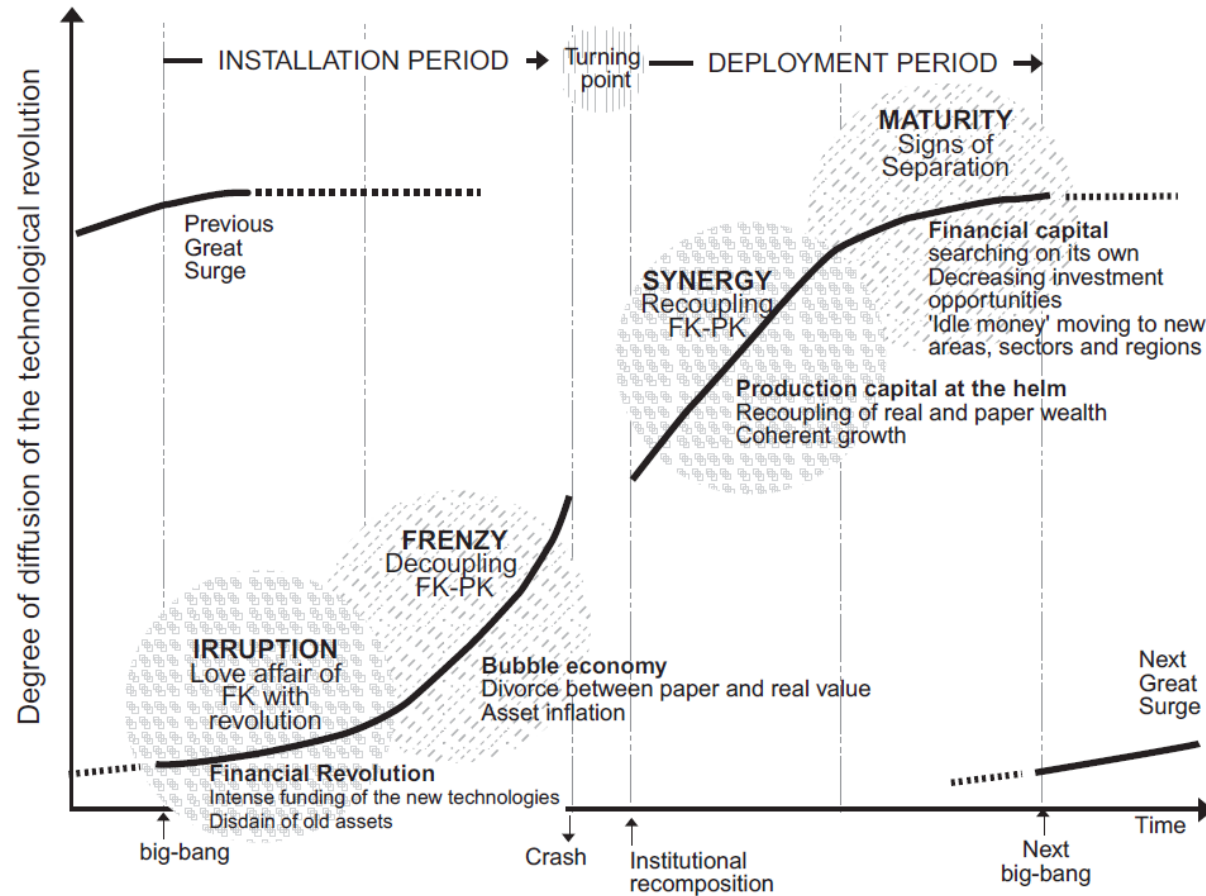
- ▶ There is no such thing as “**No** code”, however we do see
 - ▶ decentralization of computer program creation
 - ▶ democratization of computer program creation
 - ▶ users starting on a path to alter the behavior of the programs they use
- ▶ There is also no such thing as “Artificial **Intelligence**”, however we do have
 - ▶ novel ways to instruct computers to react to input
 - ▶ more scalable ways to instruct computers

Transformative? YES!

The real transformation potential is **not** about “No Code” or “AI”.

It is about **how we instruct** machines to do our bidding and **who is instructing** these machines.

Technological Surge Cycle (Carlota Perez)



Perez:

Every technological revolution can be divided into two phases:

- Installation
- Deployment

The pertinent question is where AI and democratized IT program development stand.

The background features a light blue, semi-transparent graphic. It consists of a central circular gauge with a needle, surrounded by a dense field of binary code (0s and 1s) arranged in a circular pattern, suggesting a digital or data-related theme.

Q&A

Q&A

Empowering domain experts to “code” ... a good idea?

- ▶ “Different Coding”
 - ▶ Potential?
 - ▶ Immense ... exciting times.
 - ▶ Risks?
 - ▶ Many!
 - ▶ Examples?

Thank you for listening (reading)

Questions, comments:

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- ▶ erik.graf@bfh.ch