

DevOps for Low Code

Andrew Davis

Sr. Director of Research & Innovation, Copado

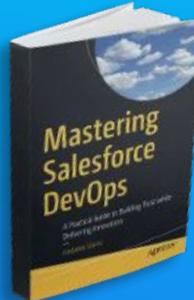
**DEVOPS
ENTERPRISE
SUMMIT**

AN  IT REVOLUTION EVENT



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Copado
Author of
Mastering Salesforce DevOps

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[@AndrewDavis_io](https://www.twitter.com/AndrewDavis_io)





What's Low Code Again?



Application development using
visual, declarative techniques
instead of code.



Infrastructure



main d3-shape / src / stack.js </> Jump to ▾

mbostock Allow pie, line, and area to take iterables.

2 contributors

58 lines (46 sloc) | 1.39 KB

```
1 import array from "./array.js";
2 import constant from "./constant.js";
3 import offsetNone from "./offset/none.js";
4 import orderNone from "./order/none.js";
5
6 function stackValue(d, key) {
7   return d[key];
8 }
9
10 function stackSeries(key) {
11   const series = [];
12   series.key = key;
13   return series;
14 }
15
16 export default function() {
17   var keys = constant([1]),
18     order = orderNone,
19     offset = offsetNone,
20     value = stackValue;
21
22   function stack(data) {
23     var sz = Array.from(keys.apply(this, arguments), stackSeries),
24       i, n = sz.length, j = -1,
25       oz;
26
27     for (const d of data) {
28       for (i = 0, ++j; i < n; ++i) {
29         (sz[i][j] = [0, +value(d, sz[i].key, j, data)]).data = d;
30       }
31
32       for (i = 0, oz = array(order(sz)); i < n; ++i) {
33         sz[oz[i]].index = i;
34       }
35     }
36   }
37 }
```

Code

Lightning App Builder Pages ▾

Case Details

Case Number 00001002 Case Owner Or Weissler Status New Priority Low Subject Seeking guidance on electrical wiring Installation for GC5060 Description

Contact Details

Name Ms. Stella Pavlova Title CFO Organization Account Name Call Activity Last Activity (1212) 542-3350

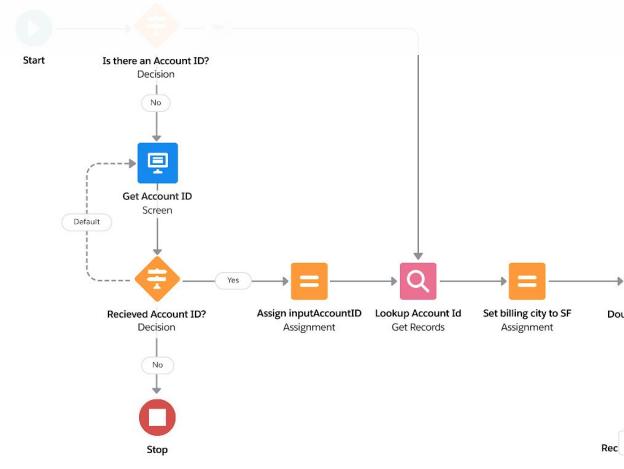
Feed Details

Post Poll

Most Recent Activity All Updates Call

Seeking guidance on electrical wiring installation for GC5060

Low-Code





200+ more

DevOps for Infrastructure

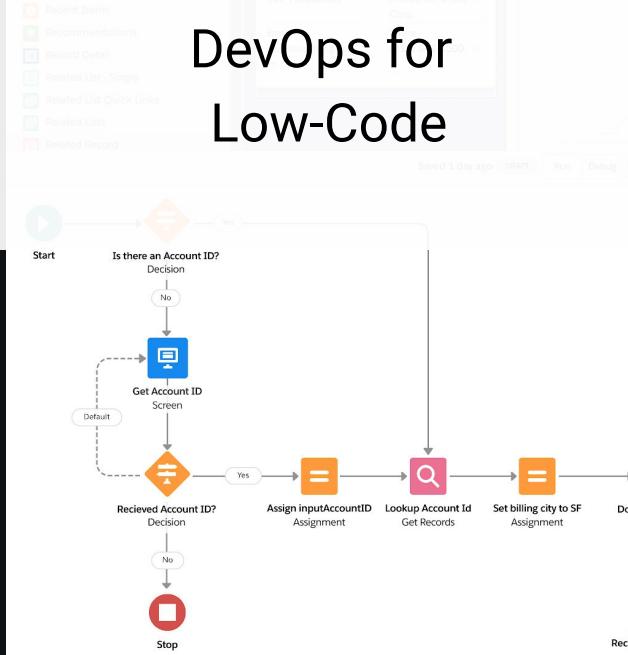


```
# Validate quality assurance for all DAGs
QA Validation:
  stage: QA Validation
  rules:
    - if: $CI_MERGE_REQUEST_ID
    - if: $CI_COMMIT_BRANCH == "master"
image:
  name: apache/airflow:1.10.11-python3.8
  entrypoint: [""]
script:
  - pip install -r requirements.txt --user
  - export PYTHONPATH="${PYTHONPATH}:/tmp/slack"
  - export AIRFLOW_HOME=$(pwd)"
  - export $(cat .env/.devenv | xargs)
  - airflow initdb
  - airflow list_dags
  - python tests/dag_qa_validation.py
```

```
8 }
9
10 function stack() {
11   const series = [];
12   series.key = key;
13   return series;
14 }
15
16 export default function() {
17   var keys = constant([]),
18       order = orderNone,
19       offset = offsetNone,
20       value = stackValue;
21
22   function stack(data) {
23     var sz = Array.from(keys.apply(this, arguments), stackSeries),
24         i, n = sz.length, j = -1,
25         oz;
26
27     for (const d of data) {
28       for (i = 0, ++j; i < n; ++i) {
29         (sz[i][j] = [0, +value(d, sz[i].key, j, data)]).data = d;
30       }
31     }
32
33     for (i = 0, oz = array(order(sz)); i < n; ++i) {
34       sz[oz[i]].index = i;
35     }
36   }
37 }
```

?????

DevOps for Low-Code





Low Code Platforms Emerge from Two Sources

Simplifying code-based systems

Making commercial apps more flexible



Simplifying code-based systems (aka raising the level of abstraction)

Machine Language

01101110110000

Assembly Language

MOV R0, A1
BNE F32C

Higher-level Language

```
function stackValue(d, key) {  
    return d[key];  
}
```

Low Code



Betty Blocks

+200 more!



Simplifying code-based systems (aka raising the level of abstraction)

Machine Language

Assembly Language

Higher-level
Language

Low
Code

- + Greater simplicity
- + Easier to maintain
- + Coarser granularity
- Less flexibility
- Less speed

First Name

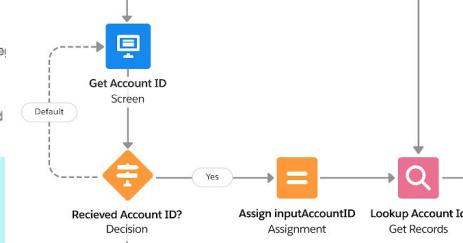
John

* Last Name

Smith

Allocation time tracking

Makes it possible for people of the related organizations to re-allocations that are linked to their organizations.
 Notify people when their timesheet is incomplete
Send an email notification to each person who registered than the workweek hours.



Data

Configuration

No Code
App Dev

HelloWorldLead.apxt *

```
Code Coverage: None API Version: 37
trigger HelloWorldLead on Lead (before insert) {
    for (Lead l : trigger.new) {
        l.Country1 = 'Singapore';
        l.Company = 'World';
    }
}
```

Logs	Tests	Checkpoints	Query Editor	View State	Progress	Problems
Name	Line	Problem				HelloWorldLead 3 Invalid field Country1 for SObject Lead

servicenow

workday



Low
Code

+ more

Making commercial apps more flexible
(aka increasing adaptability)

Data

Configuration

No Code
App Dev

- + Greater flexibility
- + Meets more needs
- + Change the app,
not the users
- More work required
- More complicated

Low
Code

**Making commercial apps more flexible
(aka increasing adaptability)**

Making commercial apps more flexible

(Mostly
SaaS)

(On-prem or
cloud agnostic)

Low
Code

Simplifying code-based systems

The rise of Low Code

“By 2025, 70% of new applications developed by enterprises will use low-code or no-code technologies (up from less than 25% in 2020).”

“50% of all new low-code clients will come from business buyers that are outside the IT organization.”

- Gartner Forecast Analysis:
Low-Code Development Technologies

Magic Quadrant for Enterprise Low-Code Application Platforms



Source: Gartner (September 2020)



● No-code development platform
Topic

● Low-code development platf...
Software

+ Add comparison

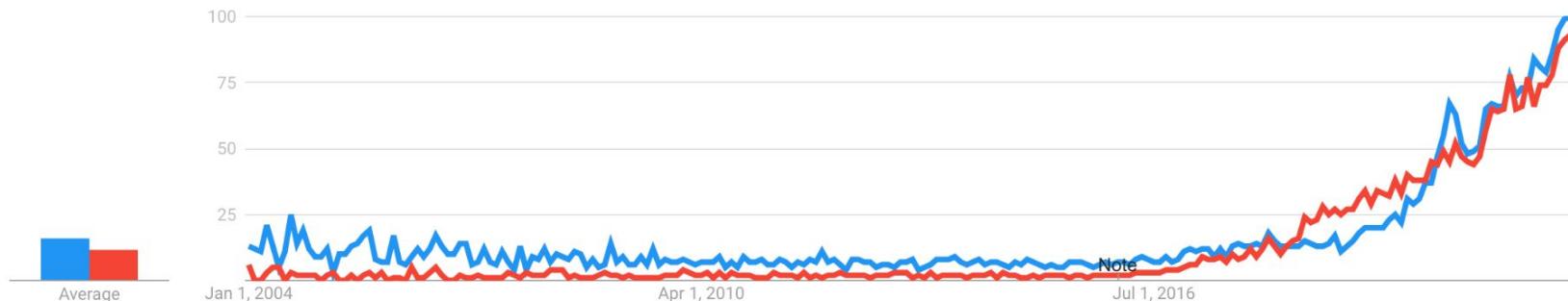
Worldwide ▾

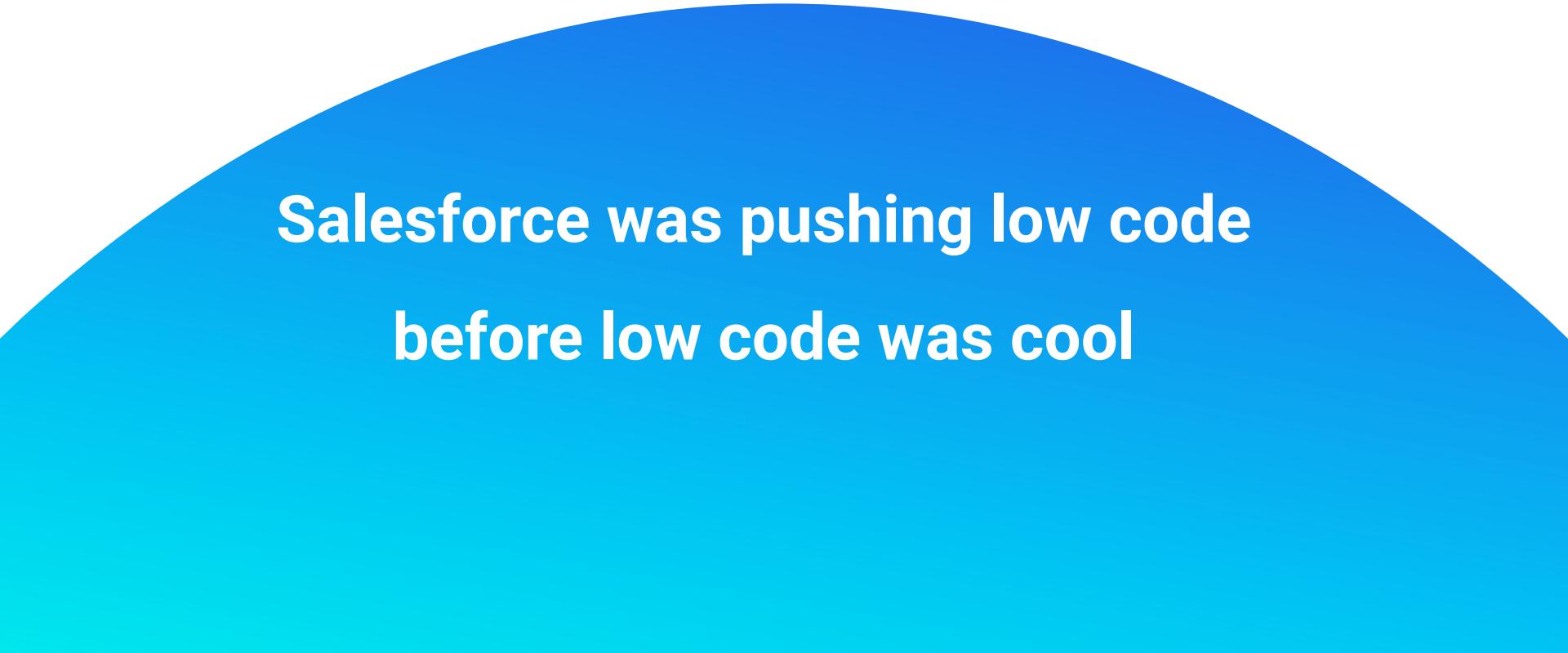
2004 - present ▾

All categories ▾

Web Search ▾

Interest over time

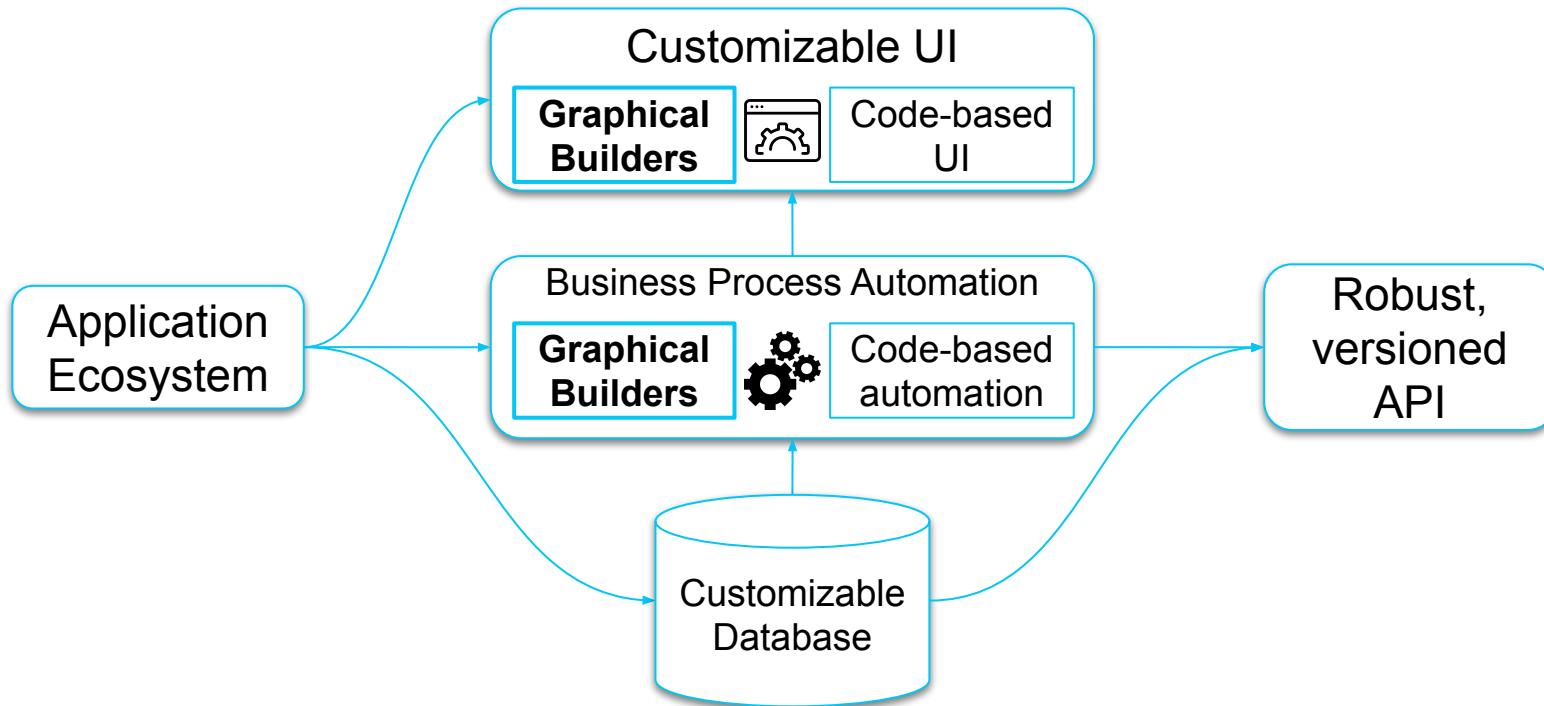




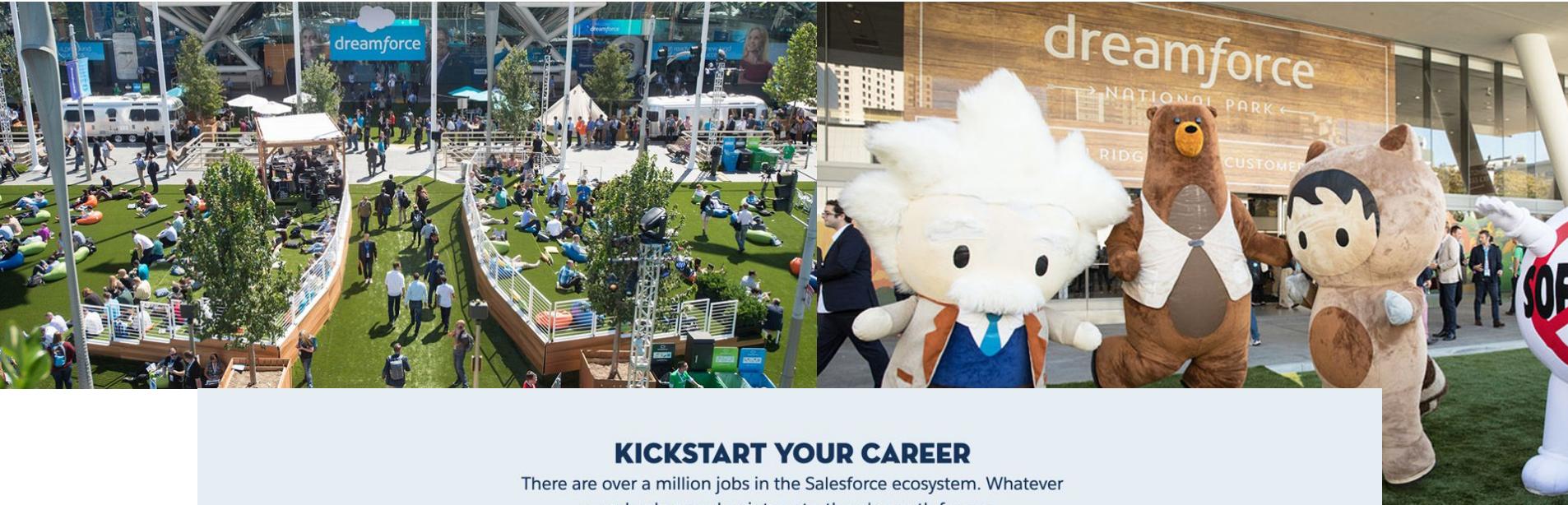
**Salesforce was pushing low code
before low code was cool**

Salesforce Application Development

aka: the fun bit



Salesforce World and Culture



KICKSTART YOUR CAREER

There are over a million jobs in the Salesforce ecosystem. Whatever your background or interests, there's a path for you.



Salesforce
Administrator



Salesforce
Developer



Sales
Manager



Marketing
Manager



Salesforce
Technical
Architect



Business
Analyst



Other Roles

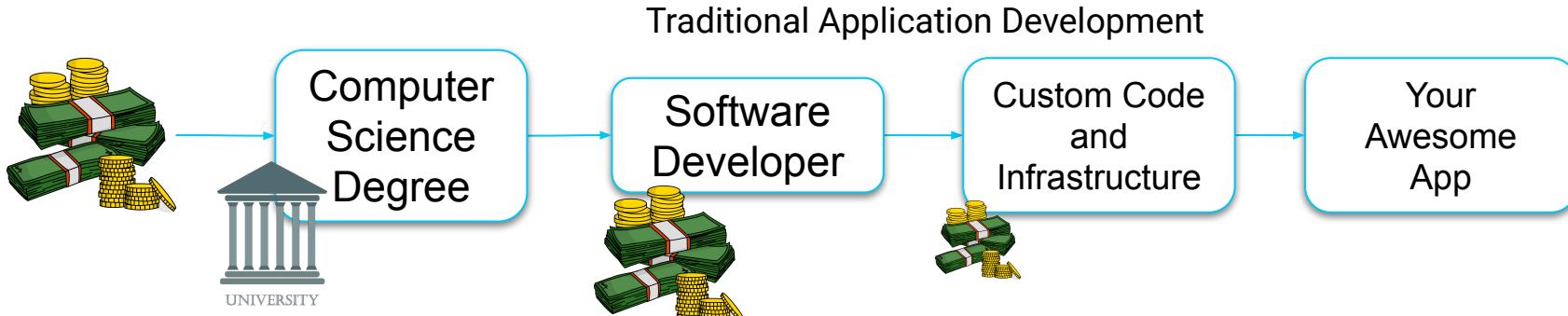


A photograph of a swimming pool from an underwater perspective looking up at the surface. Several pairs of legs and feet are visible, hanging vertically from the edge of the pool, suggesting people sitting or standing on the edge. The water is clear and blue, with light reflecting off the surface. In the center bottom, there is a white circular object, possibly a pool light or a drain cover. The bottom of the pool is made of blue and white square tiles.

The Talent Pool

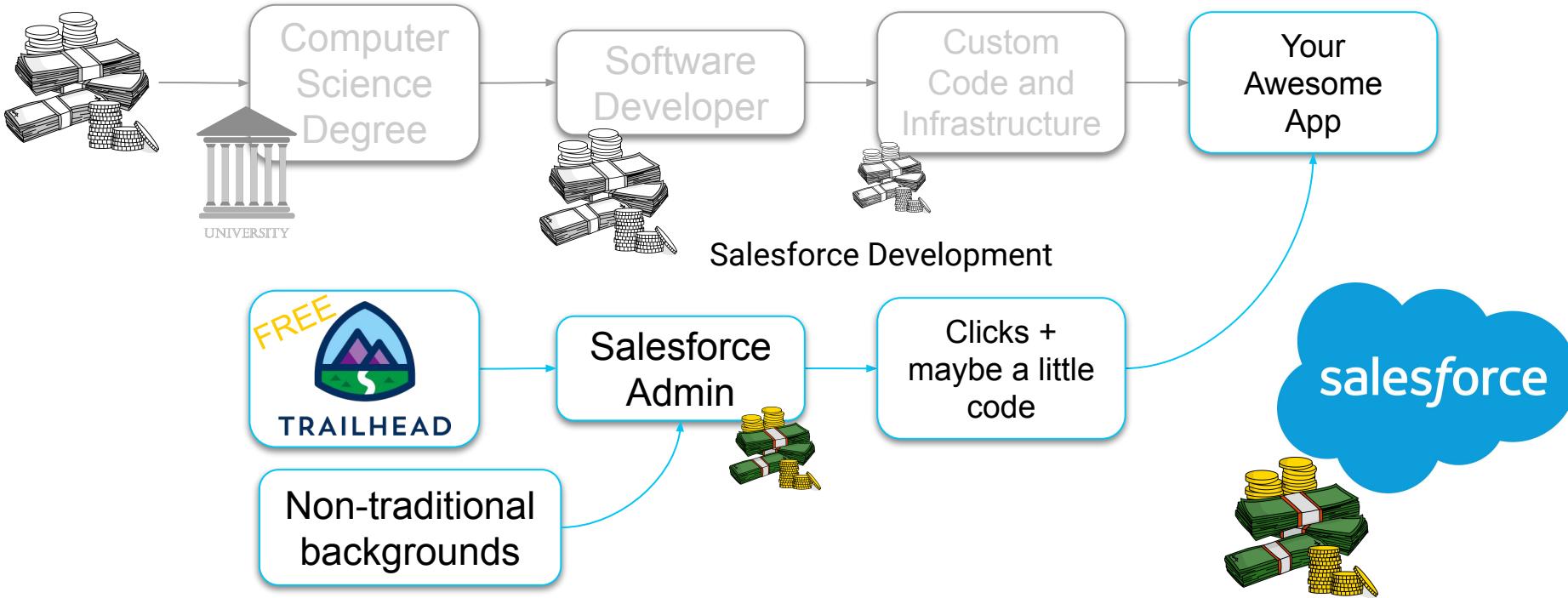
Application Development: The Traditional Way

You know it, you love it



Application Development: The Salesforce Way

Oooooo ... that was kind of easy



The Salesforce Community is ... shall we say ... Dedicated



Building on Salesforce - Customizable Data Model

The screenshot shows the Salesforce Schema Builder interface. At the top, there's a navigation bar with icons for Setup, Home, Object Manager, and a search bar labeled "Search Setup". Below the navigation is the title "Schema Builder" with a help link "Help for this Page".

The main area displays three objects:

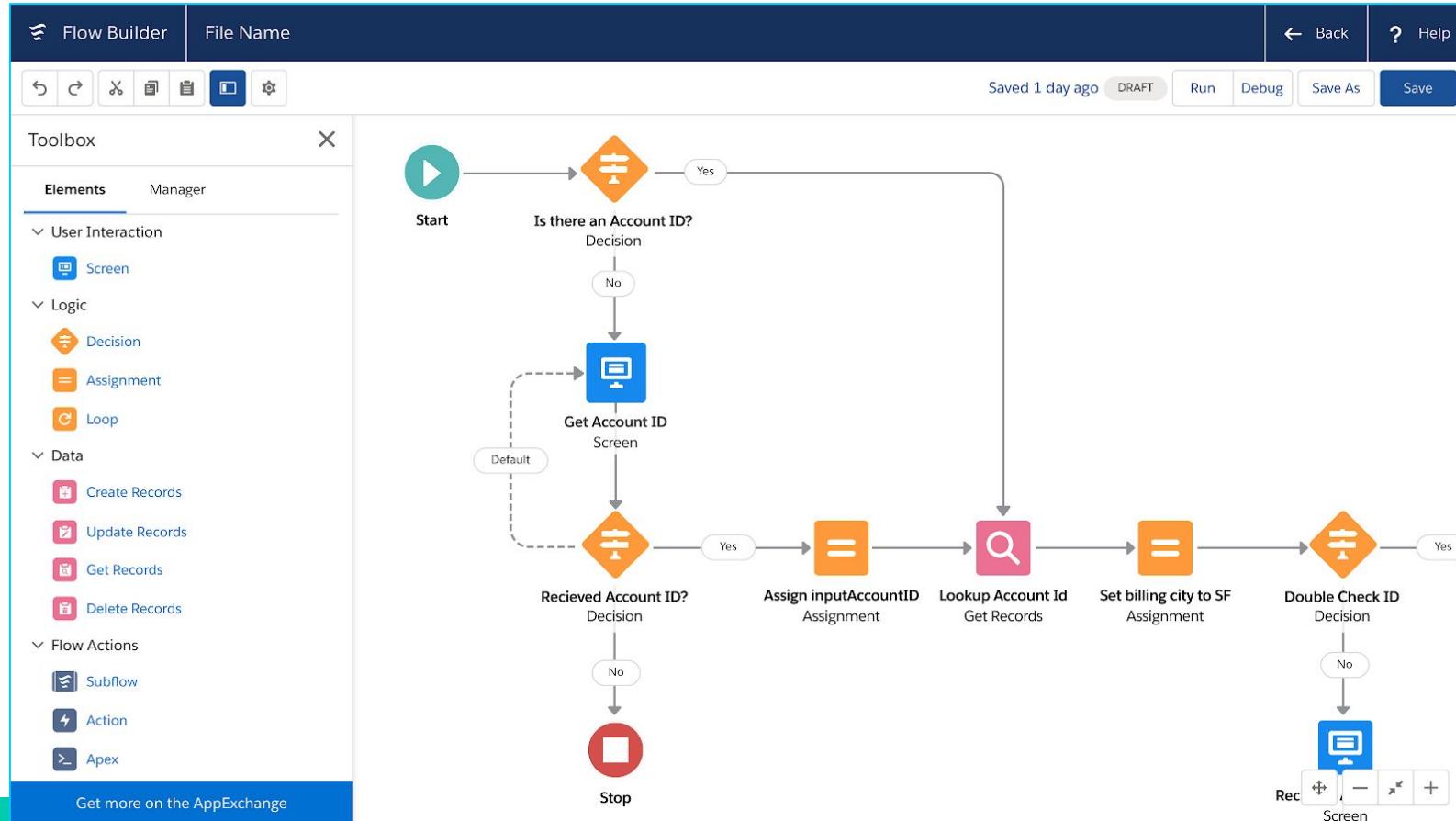
- Solution**:
 - Created By: Lookup(User)
 - Last Modified By: Lookup(User)
 - Public: Checkbox
 - Solution Details: Rich Text Area(32000)
 - Solution Number: Auto Number
 - Solution Title: Text(255)
 - Status: Picklist
 - Visible in Public Knowledge Base: Checkbox
- Lead**:
 - Address: Address
 - Annual Revenue: Currency(18, 0)
 - Campaign: Lookup(Campaign)
 - Company: Text(255)
 - Company D-U-N-S Number: Text(9)
 - Created By: Lookup(User)
 - Current Generator(s): Text(100)
- D&B Company**:
 - Annual Revenue Growth: Number(12, 6)
 - Annual Sales Volume: Number(18, 0)
 - Annual Sales Volume Indicator: Picklist
 - Company Description: Long Text Area(32000)
 - Delinquency Risk: Picklist

A legend on the right side defines the relationship types:

- Lookup Relationship (blue line)
- Master-Detail Relationship (red line)
- Required Field (red border)

Relationships are shown as lines connecting the objects. There are two blue lines (Lookup Relationships) connecting the Lead object to both the Solution and D&B Company objects. There is one red line (Master-Detail Relationship) connecting the D&B Company object back to the Lead object.

Building on Salesforce - Business Process Automation



Building on Salesforce - User Interface Design

The screenshot shows the Lightning App Builder interface for creating a desktop application. The top navigation bar includes 'Lightning App Builder - desktopDefault', 'Back', 'Help', 'Save', and 'Activation...'. The main area is divided into sections:

- Lightning Components:** A sidebar with a search bar and categories:
 - Recent Record:** SmartScope Recent Record
 - Tasks:** Today's Tasks
 - Deals:** Top Deals
 - Events:** Upcoming Events
 - Visualforce:**
- Custom Components:** Sections for 'Custom (0)' (No components available) and 'Custom - Managed (10)' (TaskRay Board, TaskRay Feed, TaskRay Kanban, TaskRay My Projects, TaskRay Project Clone, TaskRay Snapshot, TaskRay Status, TaskRay Time Entry, TaskRay To Dos, TaskRay Today).
- Page Preview:** Displays two components: 'TaskRay Feed' and 'TaskRay Today'.
- Page Configuration:** Fields for 'Label' (desktopDefault), 'Developer Name' (desktopDefault), 'Page Type' (Home Page), 'Template' (Standard Home Page), and 'Description'.

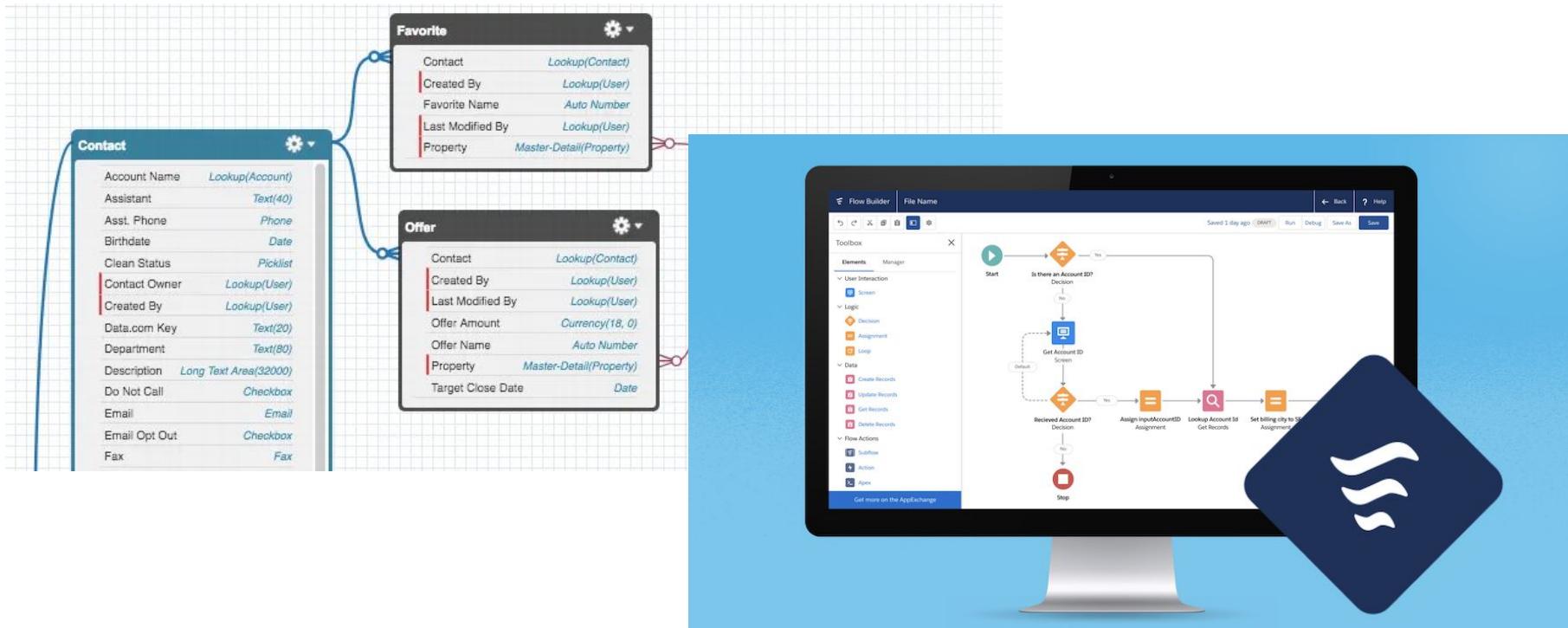




What's Different about DevOps for Low Code?

DISCLAIMER:
This varies a lot by platform

Salesforce makes it easy to build





Easy is Great*

*Some conditions apply



The trouble with Easy:



Easy → Fast → More → Complex

Things add up

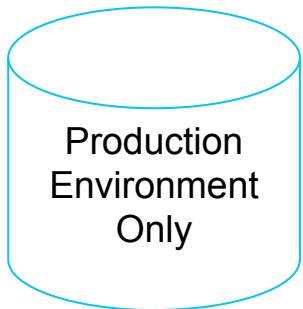


Bigger orgs with bigger teams
need to be increasingly careful



DevOps for Low Code - Level 0

Seduction

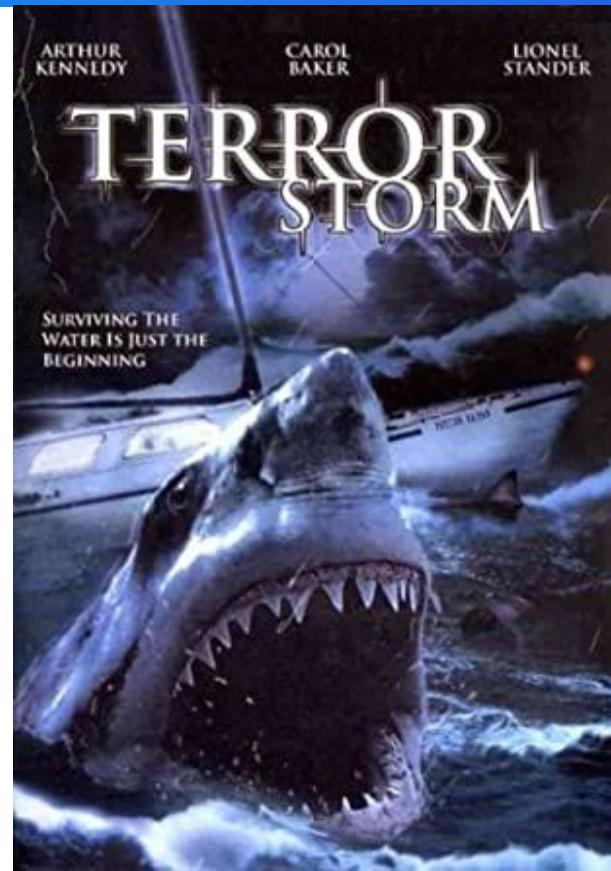
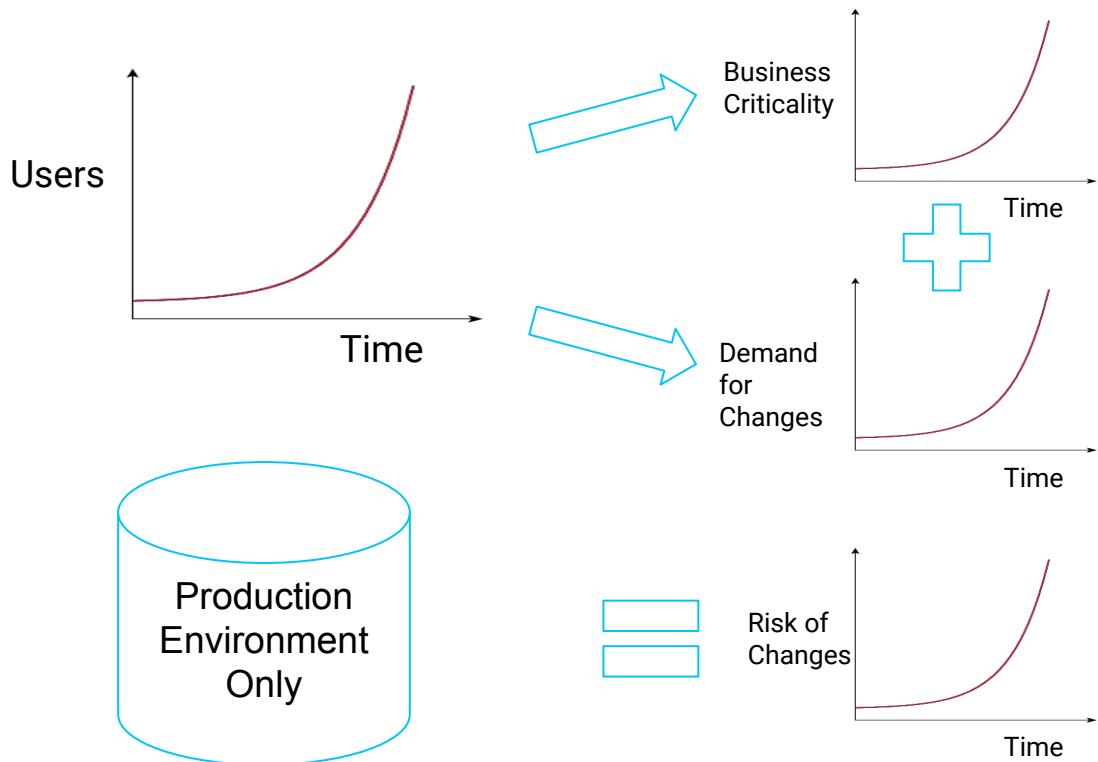


Life is simple



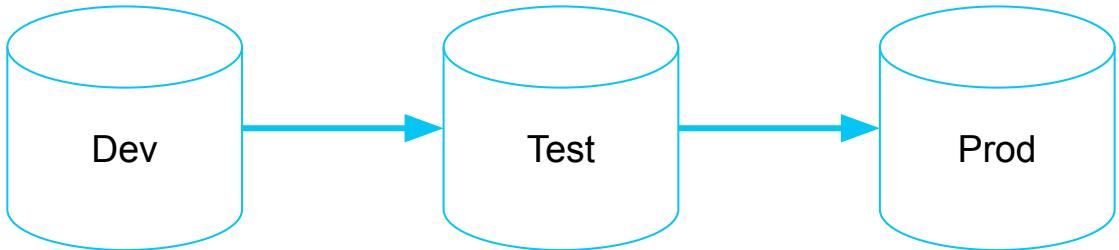
DevOps for Low Code - Level 1

The Price of Success



DevOps for Low Code - Level 2

The Hero's Journey



How hard could it be?



DevOps for Low Code - Level 3

Where Things Get Complicated



Learning to Drive
with Trailhead



Traffic Engineering
The largest
Salesforce orgs



Challenges

- Keeping Orgs in Sync
- Tracking Changes
- Propagating Changes Systematically
- Risk of Interactions and Side-effects
- Accumulating Technical Debt



<https://www.behance.net/gallery/113621/mio-gps>
CC BY-NC-ND 3.0

Environments

Salesforce controls the underlying environments

Production Orgs

Hosted by Salesforce

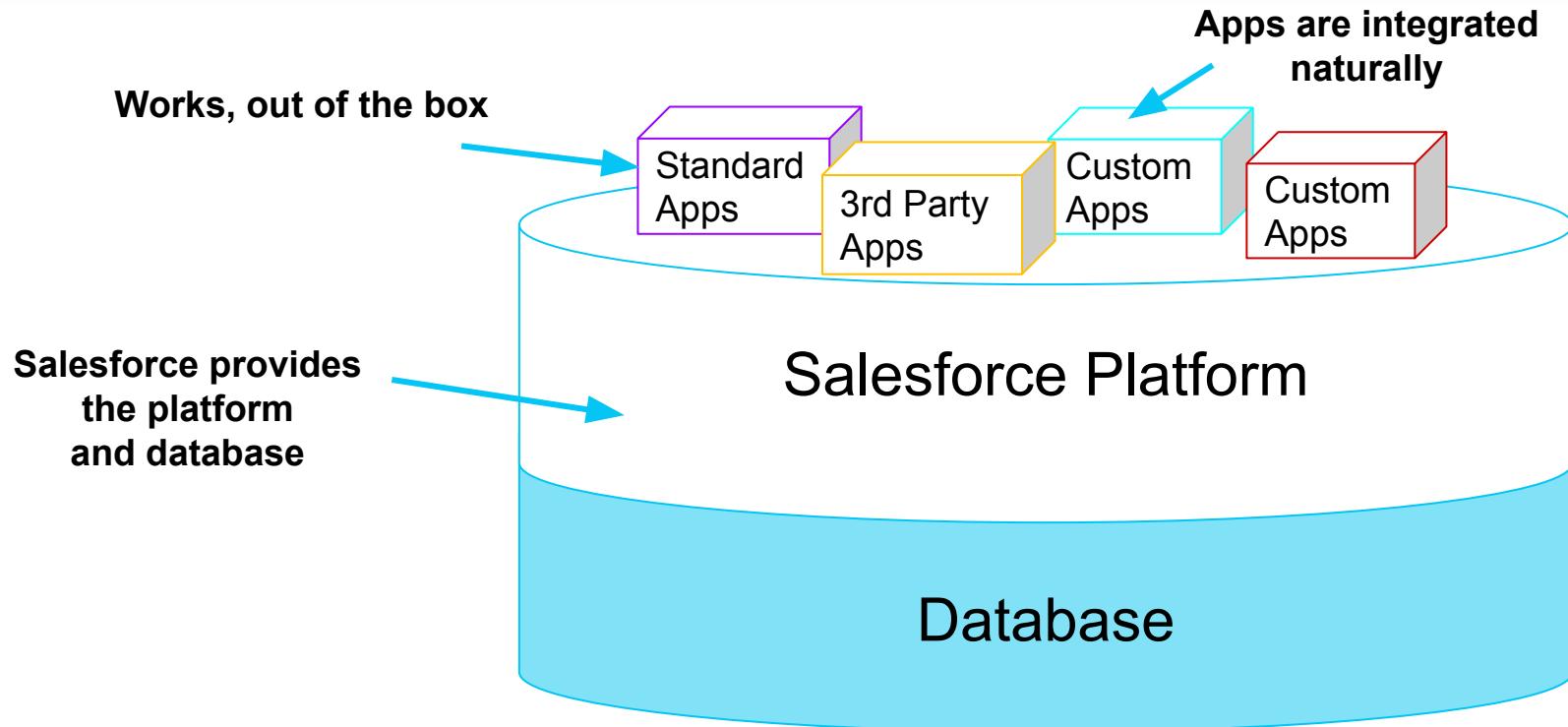
Long-lived Sandboxes

Hosted by Salesforce

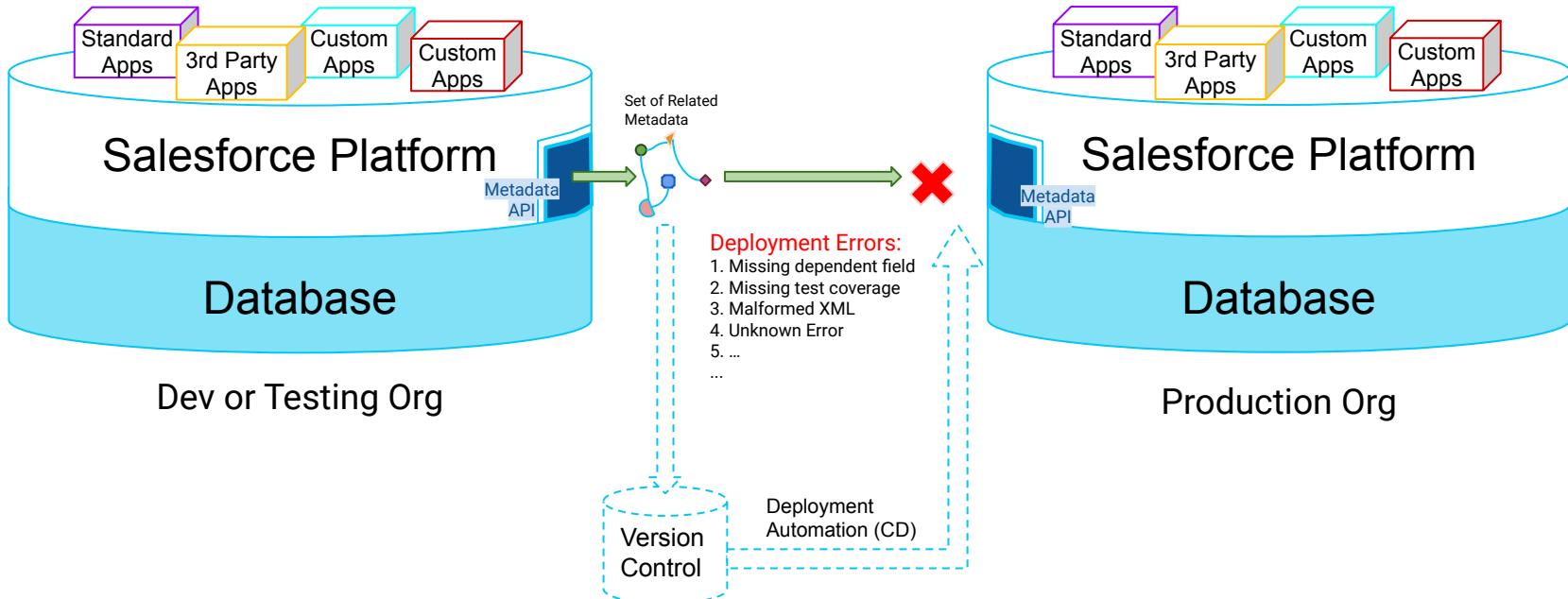
Short-lived Scratch Orgs

Hosted by Salesforce. Can be used in limited situations

Each Salesforce instance is a monolithic database



The Metadata API is the only gateway for deployments



Typical Tools Used in DevOps Processes

Most DevOps Tools focus on supporting IaaS or PaaS systems

PERIODIC TABLE OF DEVOPS TOOLS (V1)																	
1	En	2	Os	3	Fr	4	Fm	5	Pd	6	En	7	Os	8	En	9	Os
O	12c	My	MySQL	Git	Free	Freemium	Paid	Mq	Enterprise	Sv	Subversion	Ch	Puppet	An	Salt	Dk	Az
19	Os	20	Fr	21	Os	22	Os	23	En	24	Os	25	Pd	26	Os	27	Fr
Pq	PostgreSQL	Mc	Mercurial	Mv	Gradle	Gr	Mr	Jn	Jenkins	Bb	Bamboo	Tr	Travis CI	Ar	Fn	Se	Gn
Mg	MongoDB	Gh	Github	Br	Buildr	At	Bm	Cs	Codeship	Sn	Snap CI	Cr	CircleCI	Nx	Cu	Cj	Qu
55	En	56	Fm	57	Fm	58	En	59	Pd	60	Fm	61	Fm	62	Os	63	Os
Db	DB2	Bb	Bitbucket	Qb	QuickBuild	Ub	Ta	Tc	TeamCity	Sh	Shipable	Cc	CruiseControl	Ay	Jm	Tn	Tn
73	Fr	74	En	75	Os	76	Os	77	Os	78	Os	79	Fm	80	Os	81	Os
Cs	Cassandra	Hx	Helix	Msb	MSBuild	Rk	Rake	Lb	LuntBuild	Cu	Continuum	Ca	Gump	Ng	Ap	Xltv	Tc
91	En	92	En	93	En	94	En	95	En	96	Pd	97	En	98	En	99	Fm
Xlr	XL Release	Ur	UrbanCode Release	Ls	CA Service Virtualization	Bm	BMC Release Process	Hp	HP Codar	Ex	Excel	Pl	Plutora Release	Sr	Serena Release	Tr	Jr
106	En	107	Os	108	Fm	109	Os	110	Os	111	Os	112	Os	113	Os	114	Fm
Sp	Splunk	Ki	Kibana	Nr	New Relic	Ni	Nagios	Gg	Ganglia	Ct	Cacti	Gr	Graphite	Ic	Icinga	Sl	Logstash
115	Os	116	Fm	117	Os	118	Os	119	Os	120	En	121	Os	122	Os	123	En
Gr	Graylog	Sn	Snort	Tr	Tripwire	Cy	CyberArk	Pv	Pivotal Tracker	Sn	ServiceNow	Fd	Flowdock	Sl	Slack	Rf	HipChat

Source: <https://digital.ai/periodic-table-of-devops-tools/>

Almost None of These Tools are Relevant to Salesforce

Only version control, ALM/collaboration, build and CI tools are at all relevant

PERIODIC TABLE OF DEVOPS TOOLS (V1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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91	En	92	En	93	En	94	En	95	En	96	Pd	97	En	98	En	99	Fm	100	Pd	101	Fm	102	Fm	103	Fm	104	En	105	En	106	En	107	Os	108	Fm	109	Os	110	Os	111	Os	112	Os	113	Os	114	Os	115	Os	116	Os	117	Os	118	Os	119	Os	120	Os	121	Os	122	Os	123	Os	124	Os	125	Os	126	Os	127	Os	128	Os	129	Os	130	Os	131	Os	132	Os	133	Os	134	Os	135	Os	136	Os	137	Os	138	Os	139	Os	140	Os	141	Os	142	Os	143	Os	144	Os	145	Os	146	Os	147	Os	148	Os	149	Os	150	Os	151	Os	152	Os	153	Os	154	Os	155	Os	156	Os	157	Os	158	Os	159	Os	160	Os	161	Os	162	Os	163	Os	164	Os	165	Os	166	Os	167	Os	168	Os	169	Os	170	Os	171	Os	172	Os	173	Os	174	Os	175	Os	176	Os	177	Os	178	Os	179	Os	180	Os	181	Os	182	Os	183	Os	184	Os	185	Os	186	Os	187	Os	188	Os	189	Os	190	Os	191	Os	192	Os	193	Os	194	Os	195	Os	196	Os	197	Os	198	Os	199	Os	200	Os	201	Os	202	Os	203	Os	204	Os	205	Os	206	Os	207	Os	208	Os	209	Os	210	Os	211	Os	212	Os	213	Os	214	Os	215	Os	216	Os	217	Os	218	Os	219	Os	220	Os	221	Os	222	Os	223	Os	224	Os	225	Os	226	Os	227	Os	228	Os	229	Os	230	Os	231	Os	232	Os	233	Os	234	Os	235	Os	236	Os	237	Os	238	Os	239	Os	240	Os	241	Os	242	Os	243	Os	244	Os	245	Os	246	Os	247	Os	248	Os	249	Os	250	Os	251	Os	252	Os	253	Os	254	Os	255	Os	256	Os	257	Os	258	Os	259	Os	260	Os	261	Os	262	Os	263	Os	264	Os	265	Os	266	Os	267	Os	268	Os	269	Os	270	Os	271	Os	272	Os	273	Os	274	Os	275	Os	276	Os	277	Os	278	Os	279	Os	280	Os	281	Os	282	Os	283	Os	284	Os	285	Os	286	Os	287	Os	288	Os	289	Os	290	Os	291	Os	292	Os	293	Os	294	Os	295	Os	296	Os	297	Os	298	Os	299	Os	300	Os	301	Os	302	Os	303	Os	304	Os	305	Os	306	Os	307	Os	308	Os	309	Os	310	Os	311	Os	312	Os	313	Os	314	Os	315	Os	316	Os	317	Os	318	Os	319	Os	320	Os	321	Os	322	Os	323	Os	324	Os	325	Os	326	Os	327	Os	328	Os	329	Os	330	Os	331	Os	332	Os	333	Os	334	Os	335	Os	336	Os	337	Os	338	Os	339	Os	340	Os	341	Os	342	Os	343	Os	344	Os	345	Os	346	Os	347	Os	348	Os	349	Os	350	Os	351	Os	352	Os	353	Os	354	Os	355	Os	356	Os	357	Os	358	Os	359	Os	360	Os	361	Os	362	Os	363	Os	364	Os	365	Os	366	Os	367	Os	368	Os	369	Os	370	Os	371	Os	372	Os	373	Os	374	Os	375	Os	376	Os	377	Os	378	Os	379	Os	380	Os	381	Os	382	Os	383	Os	384	Os	385	Os	386	Os	387	Os	388	Os	389	Os	390	Os	391	Os	392	Os	393	Os	394	Os	395	Os	396	Os	397	Os	398	Os	399	Os	400	Os	401	Os	402	Os	403	Os	404	Os	405	Os	406	Os	407	Os	408	Os	409	Os	410	Os	411	Os	412	Os	413	Os	414	Os	415	Os	416	Os	417	Os	418	Os	419	Os	420	Os	421	Os	422	Os	423	Os	424	Os	425	Os	426	Os	427	Os	428	Os	429	Os	430	Os	431	Os	432	Os	433	Os	434	Os	435	Os	436	Os	437	Os	438	Os	439	Os	440	Os	441	Os	442	Os	443	Os	444	Os	445	Os	446	Os	447	Os	448	Os	449	Os	450	Os	451	Os	452	Os	453	Os	454	Os	455	Os	456	Os	457	Os	458	Os	459	Os	460	Os	461	Os	462	Os	463	Os	464	Os	465	Os	466	Os	467	Os	468	Os	469	Os	470	Os	471	Os	472	Os	473	Os	474	Os	475	Os	476	Os	477	Os	478	Os	479	Os	480	Os	481	Os	482	Os	483	Os	484	Os	485	Os	486	Os	487	Os	488	Os	489	Os	490	Os	491	Os	492	Os	493	Os	494	Os	495	Os	496	Os	497	Os	498	Os	499	Os	500	Os	501	Os	502	Os	503	Os	504	Os	505	Os	506	Os	507	Os	508	Os	509	Os	510	Os	511	Os	512	Os	513	Os	514	Os	515	Os	516	Os	517	Os	518	Os	519	Os	520	Os	521	Os	522	Os	523	Os	524	Os	525	Os	526	Os	527	Os	528	Os	529	Os	530	Os	531	Os	532	Os	533	Os	534	Os	535	Os	536	Os	537	Os	538	Os	539	Os	540	Os	541	Os	542	Os	543	Os	544	Os	545	Os	546	Os	547	Os	548	Os	549	Os	550	Os	551	Os	552	Os	553	Os	554	Os	555	Os	556	Os	557	Os	558	Os	559	Os	560	Os	561	Os	562	Os	563	Os	564	Os	565	Os	566	Os	567	Os	568	Os	569	Os	570	Os	571	Os	572	Os	573	Os	574	Os	575	Os	576	Os	577	Os	578	Os	579	Os	580	Os	581	Os	582	Os	583	Os	584	Os	585	Os	586	Os	587	Os	588	Os	589	Os	590	Os	591	Os	592	Os	593	Os	594	Os	595	Os	596	Os	597	Os	598	Os	599	Os	600	Os	601	Os	602	Os	603	Os	604	Os	605	Os	606	Os	607	Os	608	Os	609	Os	610	Os	611	Os	612	Os	613	Os	614	Os	615	Os	616	Os	617	Os	618	Os	619	Os	620	Os	621	Os	622	Os	623	Os	624	Os	625	Os	626	Os	627	Os	628	Os	629	Os	630	Os	631	Os	632	Os	633	Os	634	Os	635	Os	636	Os	637	Os	638	Os	639	Os	640	Os	641	Os	642	Os	643	Os	644	Os	645	Os	646	Os	647	Os	648	Os	649	Os	650	Os	651	Os	652	Os	653	Os	654	Os	655	Os	656	Os	657	Os	658	Os	659	Os	660	Os	661	Os	662	Os	663	Os	664	Os	665	Os	666	Os	667	Os	668	Os	669	Os	670	Os	671	Os	672	Os	673	Os	674	Os	675	Os	676	Os	677	Os	678	Os	679	Os	680	Os	681	Os	682	Os	683	Os	684	Os	685	Os	686	Os	687	Os	688	Os	689	Os	690	Os	691	Os	692	Os	693	Os	694	Os	695	Os	696	Os	697	Os	698	Os	699	Os	700	Os	701	Os	702	Os	703	Os	704	Os	705	Os	706	Os	707	Os	708	Os	709	Os	710	Os	711	Os	712	Os	713	Os	714	Os	715	Os	716	Os	717	Os	718	Os	719	Os	720	Os	721	Os	722	Os	723	Os	724	Os	725	Os	726	Os	727	Os	728	Os	729	Os	730	Os	731	Os	732	Os	733	Os	734	Os	735	Os	736	Os	737	Os	738	Os	739	Os	740	Os	741	Os	742	Os	743	Os	744	Os	745	Os	746	Os	747	Os	748	Os	749	Os	750	Os	751	Os	752	Os	753	Os	754	Os	755	Os	756	Os	757	Os	758	Os	759	Os	760	Os	761	Os	762	Os	763	Os	764	Os	765	Os	766	Os	767	Os	768	Os	769	Os	770	Os	771	Os	772	Os	773	Os	774	Os	775	Os	776	Os	777	Os	778	Os	779	Os	780	Os	781	Os	782	Os	783	Os	784	Os	785	Os	786	Os	787	Os	788	Os	789	Os	790	Os	791	Os	792	Os	793	Os	794	Os	795	Os	796	Os	797	Os	798	Os	799	Os	800	Os	801	Os	802	Os	803	Os	804	Os	805	Os	806	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In short ...



Salesforce Metadata Behind the Scenes

The screenshot shows the Visual Studio Code (VS Code) interface with the following details:

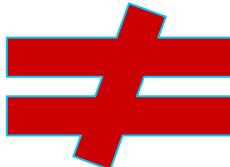
- Title Bar:** SLCA2__CA_Calendar_c.object — apo
- Left Sidebar (Explorer):**
 - OPEN EDITORS: SLCA2__CA_Calendar_c.object obj...
 - APPO (expanded):
 - SLCA2__CA_LM_LastPayment_c.object
 - SLCA2__CA_Sites_c.object
 - SLCA2__CA_test_c.object
 - SLCA2__CA_UserSettings_c.object
 - SLCA2__CA_WebCalendar_c.object
 - SLCA2__CalendarSettings_c.object
 - SLCA2__Default_Standard_Objects_Li...
 - SLCA2__TestObject_c.object
 - SocialPersona.object
 - SocialPost.object
 - Solution.object
 - spo4_Call_Plan_c.object
 - spo4_Call_Plan_Attendee_c.object
 - spo4_Call_Plan_Labels_c.object
 - spo4_Call_Plan_Question_c.object
 - spo4_Call_Plan_Template_c.object
 - spo4_Call_Plan_Token_c.object
 - spo4_Opportunity_SPOOutcomeAto...
 - spo4_SalesProcess_c.object
 - spo4_SPOComplianceValues_c.obj...
 - OUTLINE
 - TIMELINE
 - NPM SCRIPTS
 - XML DOCUMENT
 - RUNNING TASKS
 - SONARLINT RULES
 - SONARLINT ISSUE LOCATIONS- Central Area:** The main editor window displays the XML code for the SLCA2__CA_Calendar_c.object. The code includes various configuration elements like action overrides, deployment status, and sharing models.
- Bottom Status Bar:** feature/US-0018373* | 0 △ 0 | Konstantin Heidt, 2 years ago | Ln 159, Col 13 | Spaces: 4 | UTF-8 | LF | XML | 🔍

Salesforce XML must be parsed to be merged properly

```
1  <xml_merge>
2    <how/>
3    <hard/>
4    <could/>
5    <it/>
6    <be/>
7  </xml_merge>
```



```
1  <xml_merge>
2    <you/>
3    <dont/>
4    <want/>
5    <to/>
6    <know/>
7  </xml>
```

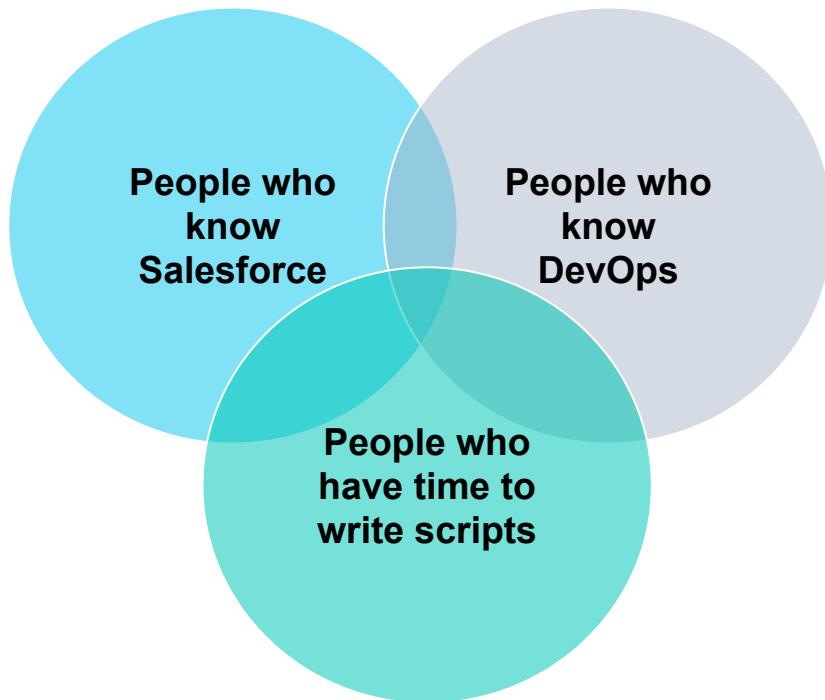


```
1  <xml_merge>
2    <how/>
3    <you/>
4    <hard/>
5    <dont/>
6    <could/>
7    <want/>
8    <it/>
9    <to/>
10   <be/>
11   <know/>
12  </xml>
```

Performing a large Git merge in Salesforce



The limiting factor on homegrown Salesforce DevOps tools



Two CI/CD and testing options for any Low Code platform

Build

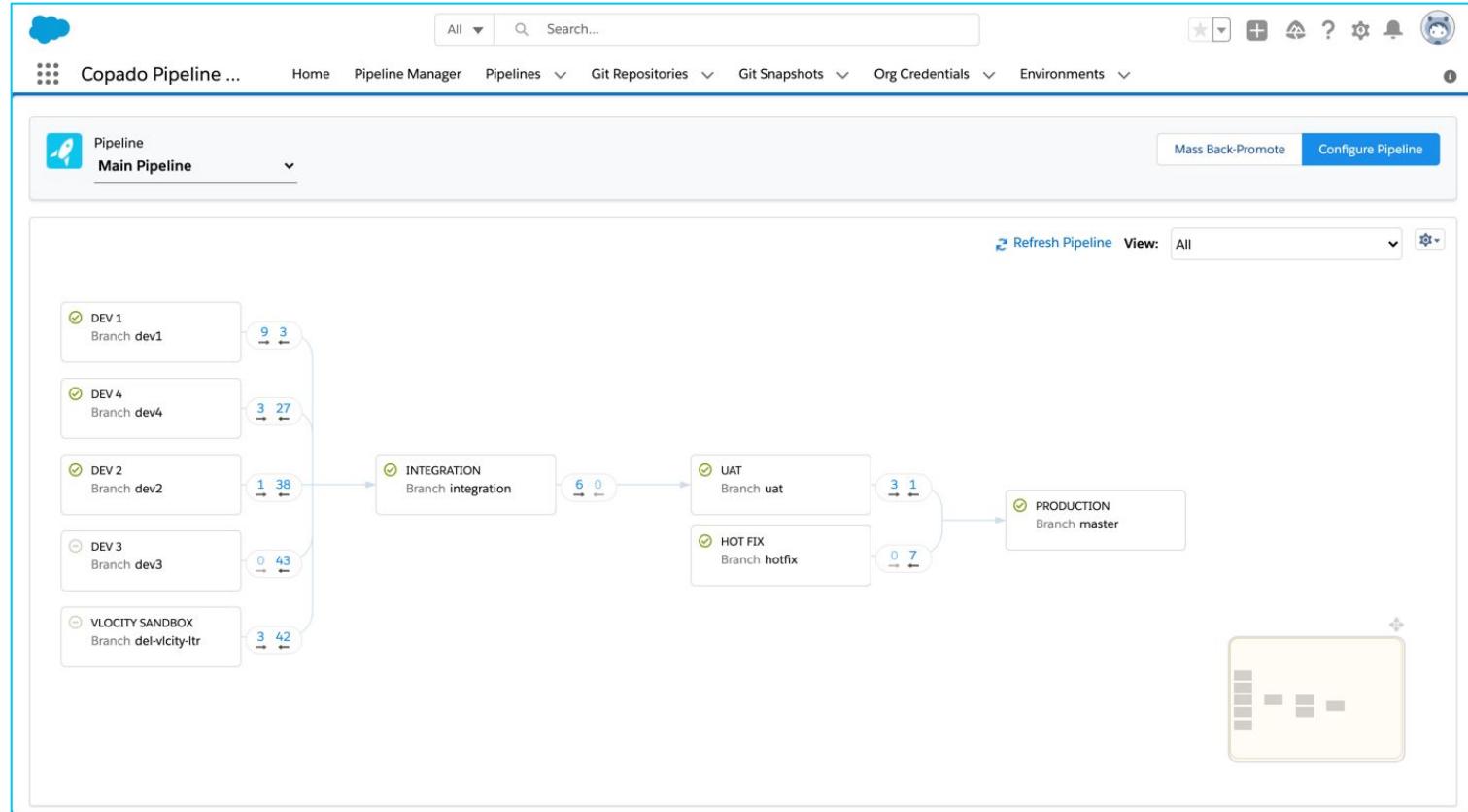
- Dev tools have improved greatly
- Commit time to building scripts
- Costs are hidden
- Easier for teams with many coders
- Brace yourself for merge conflicts
- Train non-coders in Git

Buy

- Growing number of commercial options
- Still requires **process** training
- Costs are explicit
- Easier for teams with fewer coders

Collaboration: Centralize on a Common Platform

The Salesforce Platform is a perfect place for DevOps collaboration too!!



Automated testing designed for low code apps

Easy to build, run, understand, and maintain

New Lead | Salesforce

Chrome is being controlled by automated test software.

Sales Home

Leads Recently Viewed

50+ items • Updated a minute ago

Name TEST ROBOT

Salutation Mr.

First Name Demo

Last Name McTest

Company ExampleCorp

Lead Status Open - Not Contacted

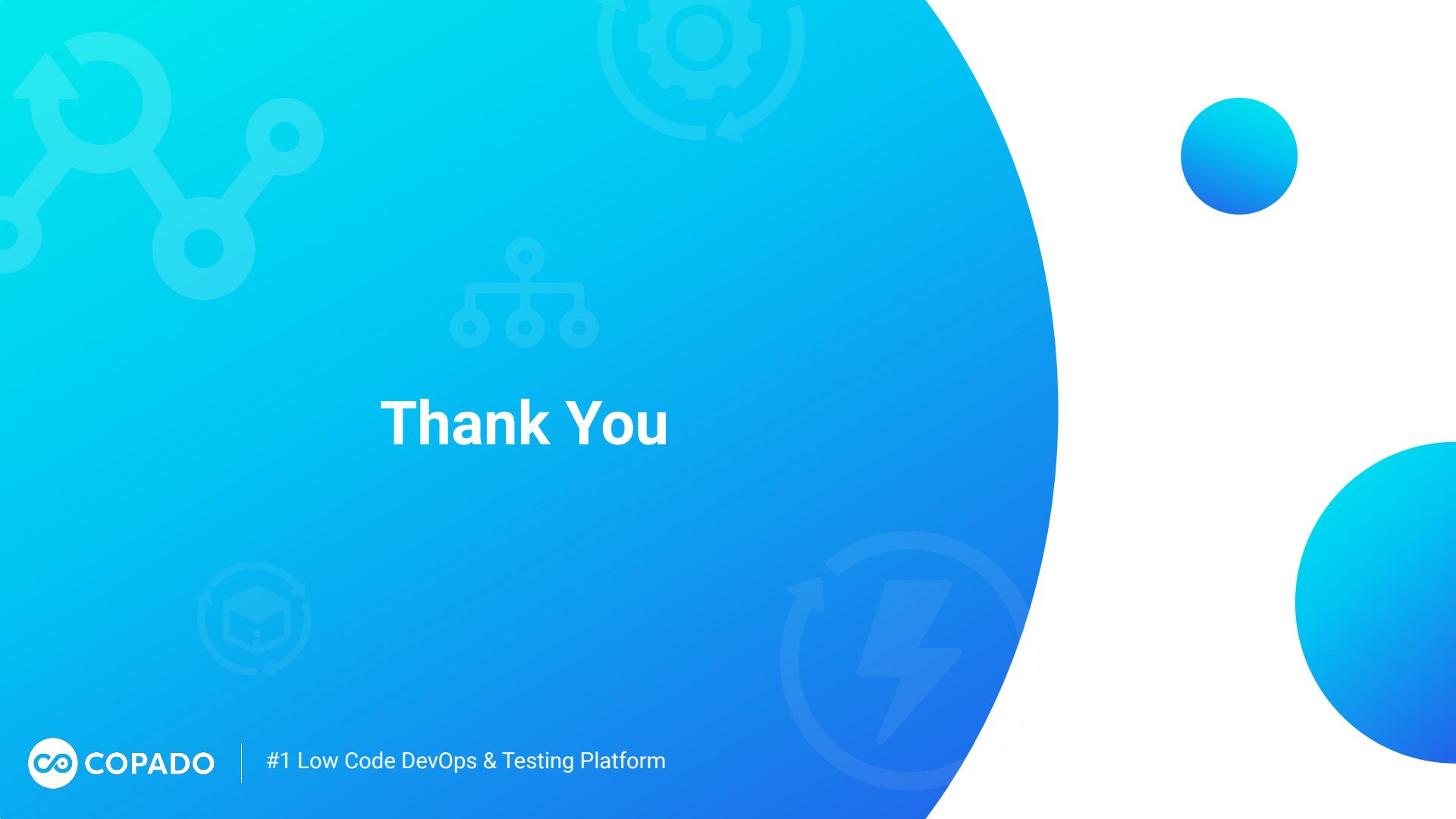
Save & New

Support

The Help I Need

- Are you working on other low-code platforms?
- If so, what challenges are you facing?
- If you're struggling with DevOps for Salesforce please get in touch!

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[@AndrewDavis_io](https://twitter.com/AndrewDavis_io)



Thank You