

Low-Code Citizen Developer Programs

The Proven Benefits, Likely Challenges, And Emerging Governance Structures For Success

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Summary

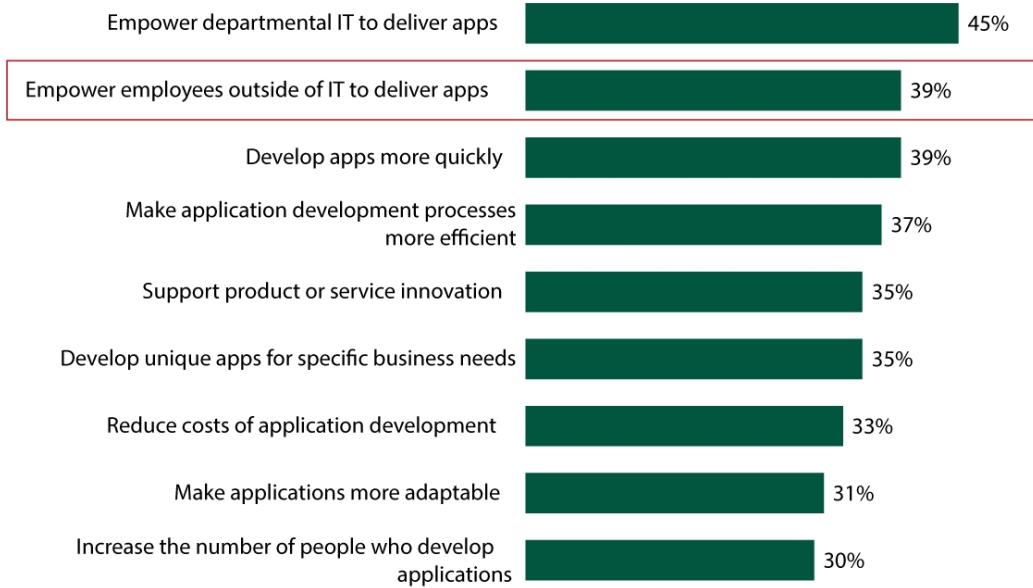
Citizen development is a logical evolution of how enterprises deliver apps and enable digital business. Formal programs for citizen development — using low-code platforms — are a growing trend among enterprises, but the key challenge is governance. Technology leaders should read this report to learn about some of the real-world benefits and problems of citizen development programs, along with the emerging approaches firms are using to tackle them.

Citizen Developer Programs Must Be Established — And Governed

The democratization of development is accelerating, and enabling developers outside of IT is one of the top reasons to adopt low-code platforms (see Figure 1). Anecdotally, the inquiry Forrester most often receives from enterprise clients on low-code development platforms is how to properly establish and govern citizen developer programs using these tools. Firms using low-code to establish formal citizen developer programs report a range of significant benefits: widespread automation, cost savings through replacing or avoiding the purchase of packaged applications, and dramatically improved relations between the business and IT. Most importantly, some firms report a change in culture, where “digital continuous improvement” and [creative](#) innovation become a normal feature of work.

Figure 1
Goals For Adopting Low-Code

“Which of the following were your organization’s goals for adopting a low-code platform?”
(Multiple responses accepted)



Base: 281 global developers who have the seniority level of manager or above and whose firms are planning, implementing, or expanding their implementation of a low-code platform

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Software Is An Expression Of The Business — So Businesspeople Must Do Software Work

Truly digital businesses “have technology at the core.” Practically speaking, this means the policies, processes, procedures, data, and all the relevant business qualities of a firm must be quickly codified and continuously improved in software. This requires an enormous number of new applications as well as constant change in those applications — and the most credible strategy to attack this long tail of development needs is through empowered citizen developers outside of IT. Thus, the proper goals for citizen developer programs are:

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- **Digitize everything — always.** Mere digitization is still a challenge for most businesses — to say nothing of tech-driven operations excellence or business model transformation. In Forrester’s Q2 2021 Global Digital Process Automation Vision Survey, 80% of businesses had at least some known dependencies on paper-based processes, and 99% had at least some known dependencies on manual electronic routing (like Excel-plus-email) (see Figure 2). Citizen developer programs should execute a firm policy of digitizing all the messy, analog, invisible DNA of work and data in the organization — most particularly, by killing the paper and spreadsheets. While automation may not always be the best answer (common sense and user experience considerations still apply), digital solutions to operational process and data problems should become reflexive.
- **Create a digital problem-solving culture.** The business principles of continuous improvement are well established. Mike Rother, continuous improvement expert and author of Toyota Kata, summarized them as “improving all processes every day ... at every level of the company.” These principles are fundamentally incompatible with the common enterprise approach of inflexible software controlled by a siloed development team. Low-code and citizen development allow firms to bring true continuous improvement into the digital age, where app ideas flow freely, experiments are normal, and a question routinely asked is, “Can we make or improve an app for this?”
- **Develop the digital workforce.** Many digital leaders of the future will start in business roles. Building low-code applications naturally leads to a basic understanding of fundamentals such as data models, workflow, UI, reporting, security, etc., and citizen developers cite these benefits. Similarly, creating concrete workflows and user experiences in an application tends to teach the developer to think in terms of process and interconnected systems, where business outcomes are deliberate and designed. We have met dozens of businesspeople whose job satisfaction and career paths were

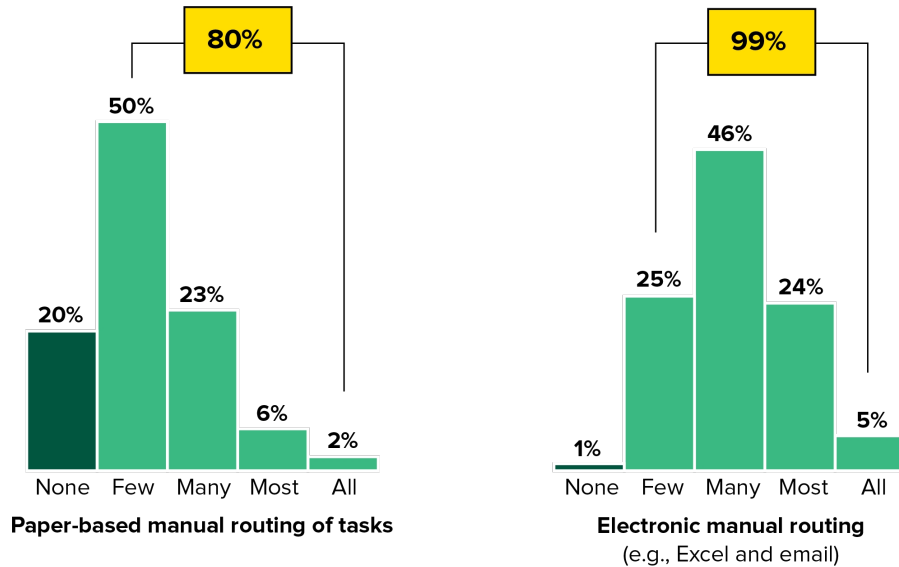
transformed by this experience, and many go on to become full-time technologists. One operations director we interviewed described the process as her “eyes being opened.”

“By experimenting with these no/low-code platforms, you will start to implicitly think in terms of algorithms, data structures, and digitization in general.” (Maarten Truyens, CTO at ClauseBase)

Figure 2

A Problem To Solve: Manual Processes Are Still Extremely Common

“To what extent is each of these technologies used to automate business processes within your organization?”



Note: Percentages do not total 100 because of rounding.

Base: 118 global business technology decision-makers

Source: Forrester’s Q2 2021 Global Digital Process Automation Vision Survey

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Real-World Challenges To Citizen Development

Without exception, every firm we interviewed was highly pleased with the results of its citizen developer strategy and planned to expand further. However, several problems were consistently cited — some of which will require vendor investment to completely address.

- **“Anyone can be a developer” is a myth — but attitude is most important.** While a technical background isn’t required to be a citizen developer, every firm we spoke with cited the benefits of a “logical mind” and a “problem-solving” attitude. Technical skills help but don’t guarantee

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success; the citizen developer is a hybrid of business and (developed) technical skills, with a willingness to lead projects and drive change. This means that finding early adopters to build momentum for the program must be a thoughtful process, aimed at uncovering the true problem solvers of the organization who will become the program's future leaders and champions. Trying to empower everyone all at once will fail.

“What you're really looking for is a problem solver, someone who is a self-starter, people who research solutions to problems themselves ... they may not necessarily stand out ... attitude is more important than aptitude.” (Mike Moore, principal at Mike Moore & Associates)

- **Governance of integrations and strict SDLC processes are too manual at scale.** While some platforms offer role-based access control (RBAC) for data connectors and integrations, as well as configurable software development lifecycle (SDLC) processes, these features can be half-baked. For example, providing developer access to a specific connector is often an all-or-nothing proposition, with no granular control over use of the connector's included actions (such as the ability to read vs. write against a given data source). Similarly, required SDLC stages may be configurable but only applied at the role or environment level — instead of a dynamic combination of role, data sources used, risk and size attributes of the app, etc. Manual processes and audits are typically used to close these gaps — which affects firms' ability (and willingness) to scale.

- **Interested businesspeople may not have the time to develop and support apps.** One team lead we spoke to had already attempted to scale out citizen development beyond his group by training departmental champions — but the effort stalled. Why? Because the trainees were “too busy doing their day jobs” and the firm's culture wasn't “lean enough.” If individual process improvement is not a part of the business culture — and an expected part of employees' jobs — expecting many of them to find time to learn the required skills and develop apps can be unreasonable.

- **Informal development can create key person dependencies.** The most successful citizen developers grow into skilled practitioners who create solutions of significance. The problem? Important apps must still be owned and supported after the creator has moved on, and the developer's backfill or team may not want the responsibility. Cross-training and broad use of the platform can mitigate this problem, but the critical notion of the business permanently owning technology solutions can be a difficult cultural shift.

Emerging Governance Structures Set Up Enterprises For Success

The most thoughtful firms approach citizen developer programs as a long-term initiative that will evolve with learnings over time. However, some guiding principles are clear to start. Proper governance:

- **Must balance autonomy with control.** Citizen development is not simply a matter of delegating traditional development processes. Businesspeople will not willingly participate in citizen development programs if processes are onerous or overengineered — they will go back to their spreadsheets and invisible ungoverned platforms — and shadow IT will continue to grow.

“Going through approvals [to deploy an app] every time defeats the purpose of citizen development. What central IT should consider to enable citizen development at scale is providing more guardrails at the onset of development on a consistent platform, ideally reducing the many development and manual governance patterns that exist today.” (Karen Odegaard, managing director for internal IT at Accenture)

- **Must embrace the changing role of IT — balanced against culture and risk tolerance.** Adaptive enterprises require fewer org silos and more autonomous, well-rounded technology teams — putting central IT in an increasingly supporting role. This principle meshes perfectly with citizen development, but each firm's starting point in org structure, culture, and risk tolerance will be different. While some firms can take a laissez-faire view (“We can only get better from here!”), others have cultural or legal constraints. The most successful leaders we spoke to pragmatically

structured their citizen development strategy to balance both the ideal principles and their constraints.

"The value proposition of my organization is less about holding the keys to the kingdom and more about the data and business process. It's a mindset shift and a paradigm shift on the role of IT ... [It's a] balancing act — trying to find that sweet spot where the business is happy and we move quickly, but we're secure. We're getting there ... I'm trying to figure out how to keep IT relevant." (Chris Avery, director of enterprise architecture solutions at General Atomics)

Three Org Models Are Common — One Points The Way Forward

While the details (and challenges) vary, our research identified three consistent approaches to formal citizen development currently applied by enterprises (see Figure 3):

- **The privateer: an autonomous team of developers embedded in the business.** One executive described his low-code team as “a pirate ship within the organization” — hence, the privateer: a legally sanctioned pirate. In this model, a small semidedicated business team uses a low-code platform to develop apps ranging widely in scope, from small and situational to large and critical. IT scrutinizes or prescribes the team’s tech and processes, but the team is largely autonomous, often reporting directly to a business executive. The main challenge of this model: Over time, the capacity of a small privateer team will eventually max out.

Robins & Day, a large dealer group owned by Stellantis, applied the privateer model with its process excellence team. The team assembled a no-code automation stack to replace dozens of disconnected legacy apps and digitize many of the firm’s paper-based processes — including large, complex processes integrated to legacy and third-party systems. David Male, lean project manager, noted, "This is a whole new level of agile — this is super sprints."

- **The democracy: Anyone can develop, but primarily for smaller use cases.** In this model, enterprises target widespread self-service and focus on eliminating spreadsheets and paper forms. An IT center of excellence (COE) provides platform training and support. Platform guardrails restrict integrations, coded extensions, user counts, counts of objects, etc. The challenge is finding early adopters with the time and willingness to learn the new tech, then building momentum to scale.

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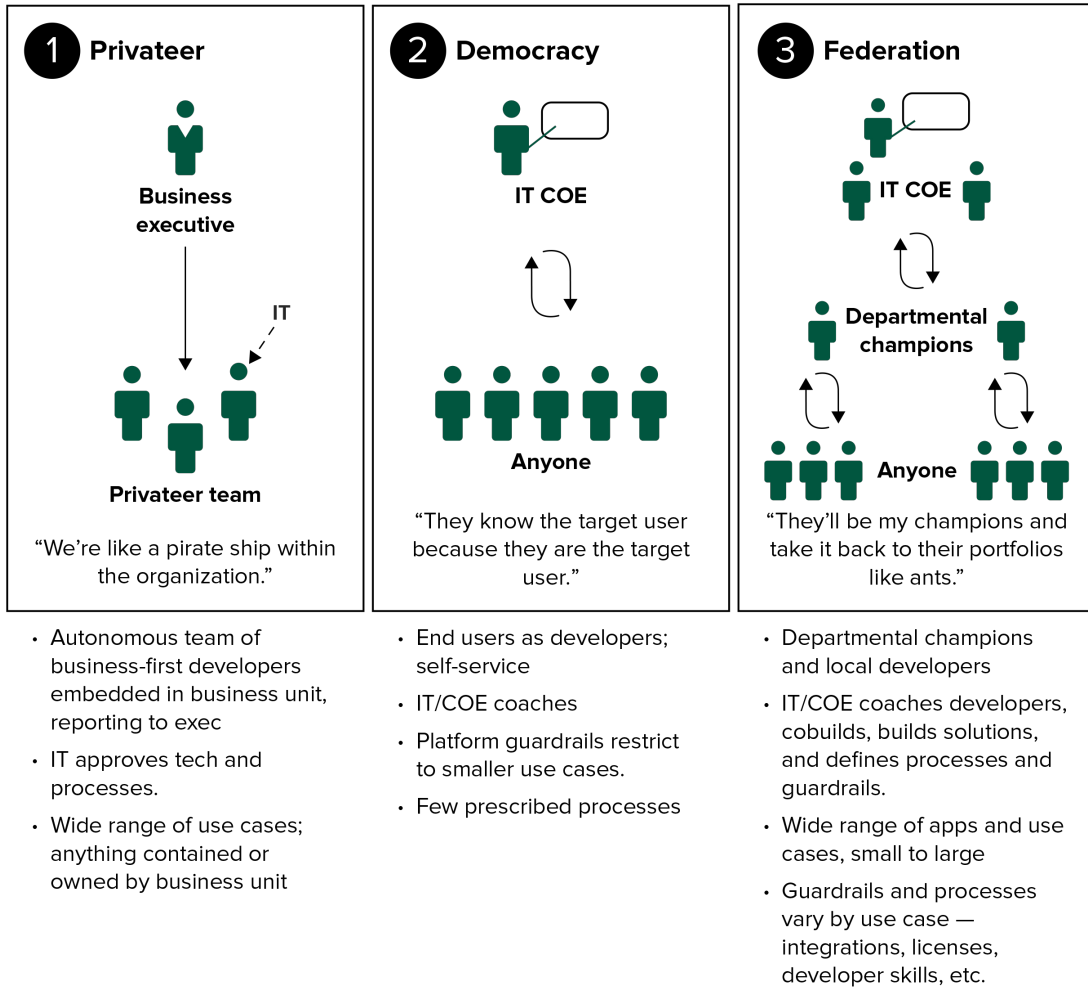
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Globe Telecom targeted early adopters in early 2020 through a companywide hackathon where tech coaches taught design thinking and app dev. The event produced 59 apps; the number has since grown to 162, and the firm estimates an overall reduction in process time of 79.8%. It now plans to support more critical apps through a federated structure, with the goal of enabling every employee as a developer over the next three years. Francis Pugeda, head of emerging tech, commented: “[We targeted] the people who are the front-liners; the ones who do the dirty job. They know the target user because they are the target user.”

• **The federation: A central COE supports a structured spectrum of use cases and devs.** In this model, a central COE manages the platform and its guardrails, defining multiple dev processes for different use cases and personas. Pro devs, local champions (or teams), and self-service devs all use the same platform. In this way, the federation likely represents the ideal low-code model, with a spectrum of developers collaborating on a wide variety of use cases. It is a logical evolution, combining the privateer and democracy models.

Standard Bank formed a low-code COE that builds, cobuilds, and coaches interested devs, with departmental champions seeded through the firm. The program has grown to 1,200 devs (80% businesspeople) and 2,500 active apps. Reported results: 1) reduced spend on packaged apps; 2) much faster app delivery; 3) increased collaboration and respect between business and IT; and 4) a cultural shift toward digital problem-solving, experimentation, and innovation.

Figure 3
Three Common Models



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Create A Digital Problem-Solving Culture With Citizen Development — Led By IT

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It's likely that businesspeople somewhere inside your company are already using low-code. Rather than leaving such work to shadow IT, we recommend a proactive approach to citizen development, with the goal of enabling and accelerating a digital problem-solving culture led by tech architecture and delivery pros. Take these steps in the next six months:

- **At a minimum, adopt the privateer model — but evolve to democracy and federation.** Due to its focus on small and more specialized teams, the privateer approach brings great benefits and few risks. However, every firm we interviewed that applied the privateer model had either already started to expand toward democracy or was making plans to. Why? Because meeting the full pipeline of development needs in a truly digital business requires capacity and responsiveness beyond even what the most agile team can provide. Thus, for the most risk-averse firms, we recommend starting with the privateer model — but that the team should be tasked with developing a strategy for expansion.
- **Buy a low-code platform aimed at citizen developers — with strong governance features.** Ideally, a low-code platform for citizen developers should not only provide a gentle learning curve for a nontechnical beginner but also be powerful enough to expand beyond trivial use cases. Extensive materials for self-service training to learn new skills and features are also very important. To scale the program, the platform should also have mature governance features, such as granular RBAC (for integrations, data access, and use of different dev tools), the ability to configure multiple development processes and environments, and clear tools for managing platform costs as the program scales. We recommend hands-on evaluations of multiple platforms (with businesspeople as part of the evaluation team) to determine whether it will meet your needs.
- **Target real problem solvers with real problems as early adopters.** One practical approach we've seen work at multiple firms is by starting with a hackathon, where interested businesspeople are invited to bring their tech-suitable business problems and solve them using the low-code platform.

Citizen developers should learn low-code skills by doing — i.e., solving actual business problems, not theoretical ones. Another method is reaching out to professional problem-solver roles — variously labeled lean, Six Sigma, special projects, continuous improvement, and variations on “analyst” or “project manager” titles — especially if those same people have requested apps currently sitting in the IT backlog or already have a reputation for practicing shadow IT. One benefit of targeting workers in these roles: Learning new skills and practicing process improvement are usually an expected part of the job.

- **Provide mentorship, not just training.** Developing the digital workforce — rather than simply training employees — requires a mentoring relationship between technologists and businesspeople. When Globe Telecom organized its hackathon, approximately half the teams were assigned a coach to mentor on design thinking and app development, while the other teams were only given the (identical) training and materials. The result? Approximately 80% of the teams with a coach successfully produced an app during the event, while only 20% of the teams without a coach were successful. Members of your COE should seek to establish trust with program participants — with the ultimate goal of guiding early adopters to be program evangelists and mentors themselves.

Supplemental Material

Research Methodologies

The Forrester Analytics Business Technographics® Developer Survey, 2021, was fielded from March to May 2021. This online survey included 1,877 respondents in Canada, France, Germany, Italy, the UK, and the US.

Forrester Analytics' Business Technographics ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of business and technology products and services. Dynata fielded this survey on behalf of Forrester. Survey respondent incentives include points redeemable for gift certificates.

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Please note that the brand questions included in this survey should not be used to measure market share. The purpose of Forrester Analytics' Business Technographics brand questions is to show usage of a brand by a specific target audience at one point in time.

Forrester's Q2 2021 Global Digital Process Automation Vision Survey was fielded to 118 business technology decision-makers. For quality assurance, we screened respondents to ensure they met minimum standards in terms of content knowledge.

Forrester fielded the survey during Q2 2021. Respondent incentives included a summary of the survey results and a courtesy copy of the published research. This survey used a self-selected group of respondents (Forrester clients knowledgeable about business process improvement efforts taking place within their companies) and is therefore not random. This data is not guaranteed to be representative of the population, and, unless otherwise noted, statistical data is intended to be used for descriptive and not inferential purposes. While nonrandom, the survey is still a valuable tool for understanding where the industry is headed.

Companies We Interviewed For This Report

We would like to thank the individuals from the following companies who generously gave their time during the research for this report.

Accenture

Continental

General Atomic

Globe Telecom

Halfway Toyota

Microsoft

Robins & Day

Rogers Telecom

Safeguard Medical

Schreyer Honor College at Penn State

Standard Bank

Stearns Lending



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