

Emerging Framework for Digital Opportunity

From Broadband to Belonging

Digital Opportunity is not achieved when broadband becomes available, affordable, and of sufficient quality for meaningful use. It emerges where a resident's journey of adopting technology-mediated practices meets the conditions and actors of the surrounding community. Our working hypothesis is that placing that intersection within a system framework can show where lasting value is created for residents and communities, and where investment in advocacy, funding, and program models can best sustain it.

Why now. Federal policy language has moved from access to inclusion to digital opportunity just as funding has become unstable. The Affordable Connectivity Program, which helped about 23 million households, ended in June 2024; Digital Equity Act grants were terminated and Medicaid guidance on health-related social needs was rescinded in 2025. The framework is intentionally emerging. Its seven elements are:

1. **Resident Opportunity Journey:** a recursive, often concurrent journey of adopting technology-mediated social practices to use, participate, and contribute.
2. **Conditions & Place:** what is possible, practical, and sustainable at every stage of the journey.
3. **Community Opportunity Ecosystem:** the people, institutions, and resources that work together to enable participation.
4. **Ecosystem Roles & Collective Functions:** complementary roles and shared functions that support residents across the journey.
5. **Meaningful Participation & Sector Value:** the value created across sectors when residents participate meaningfully.
6. **Investment, Sustainability & Reinvestment:** ongoing and catalytic investment, with some value captured and reinvested where feasible.
7. **Emerging Markers:** an evaluative lens for whether the ecosystem is becoming more inclusive, effective, and sustainable.

Digital Opportunity Framework: Elements and Relationships

Digital Opportunity emerges when individuals, families, communities, institutions, and sectors collectively create the conditions through which residents can participate fully, exercise agency, experience belonging, and contribute to thriving communities.



A CONNECTED AND REINFORCING SYSTEM

These elements are interdependent and mutually reinforcing. Progress in one area strengthens the others, creating the conditions for residents to thrive in their social, cultural, institutional, economic, and place-based contexts.

Resident Opportunity Journey

Journey	Conditions	Ecosystem	Roles & Functions	Participation & Value	Investment	Markers	Whole
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A simplifying metaphor for repeated, recursive, and often concurrent encounters with technology-mediated social practices.

A person may be at different stages of the journey in different domains of life, such as learning, work, health, family, civic, and community life. The six stages describe recurring encounters with practices, not a single pass through a fixed sequence (Rogers, 2003; van Dijk, 2005; Venkatesh et al., 2003).

Situated social practice is central: the unit is the practice, not a device or a person in isolation. Examples include enrolling a child in school online, refilling a prescription through a patient portal, or joining a parent-teacher conference by video. A resident may have broadband and a device yet still lack a workable practice when support, language, accessibility, or institutional processes are missing (Neufeld & Delcore, 2018; Schatzki, 2001).

Critical Judgment & Choice and Feedback & Iteration span the journey rather than sitting at a single stage. Critical Judgment & Choice describes the ongoing decisions residents make about whether a practice is relevant, valuable, trustworthy, and a good fit for their lives, including the choice not to adopt one. Feedback & Iteration describes what happens as residents use a practice over time: they adapt it, discontinue it, return to it, or reconsider it as their circumstances, skills, and the practice itself change. Agency and Belonging are emerging outcomes, not final stages.



Conditions & Place

Journey	Conditions	Ecosystem	Roles & Functions	Participation & Value	Investment	Markers	Whole
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Foundational and enabling conditions shape what is possible, practical, and sustainable at every stage of a resident journey.

Six groups of conditions interact: infrastructure and service availability; affordability and total cost of participation; devices and technical requirements; reliability, quality, and accessibility; support, institutions, and local ecosystems; and place-based realities.

Foundational Security is the threshold condition: available, affordable, reliable, sufficient-quality connectivity with appropriate devices and support. It looks different by place. In rural areas, it often means infrastructure absence (Ali, 2021); in low-income urban neighborhoods and MDUs, service may be present but underperforming, unaffordable, or underinvested (Neufeld, 2024). Both reflect the same problem.

Conditions can enable or hinder a practice, and they are rarely neutral. UTAUT identifies facilitating conditions, the organizational and technical infrastructure that supports use, as a direct predictor of adoption (Venkatesh et al., 2003). The capability approach extends this point: the same resource yields different opportunities depending on personal, social, and environmental conversion factors (Robeyns, 2005; Sen, 1999). Many of these conditions are set by institutions, not residents. Providers, agencies, schools, and health systems decide how services are designed, what language and support are offered, and what a resident must do to participate (Eubanks, 2018; Helsper, 2021). The framework therefore treats conditions as relationships of power as well as resources, and asks who sets them and who bears their costs.



Community Opportunity Ecosystem

Journey	Conditions	Ecosystem	Roles & Functions	Participation & Value	Investment	Markers	Whole
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Residents do not make these journeys alone. The ecosystem is the network of people, institutions, and resources that enable or hinder opportunity.

It is both social and technical, and residents are participants, not only recipients. Four diagnostic questions:

- Conditions: What must exist?
- Actors: Who participates?
- Roles: What does each actor contribute?
- Functions: What must the system accomplish together?

The questions reveal missing conditions, absent actors, role gaps or duplication, weak handoffs, and functions no one performs reliably.



Ecosystem Roles & Collective Functions

Journey	Conditions	Ecosystem	Roles & Functions	Participation & Value	Investment	Markers	Whole
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Different organizations contribute complementary capacities; one organization may perform multiple roles, and one role may be shared by many actors.

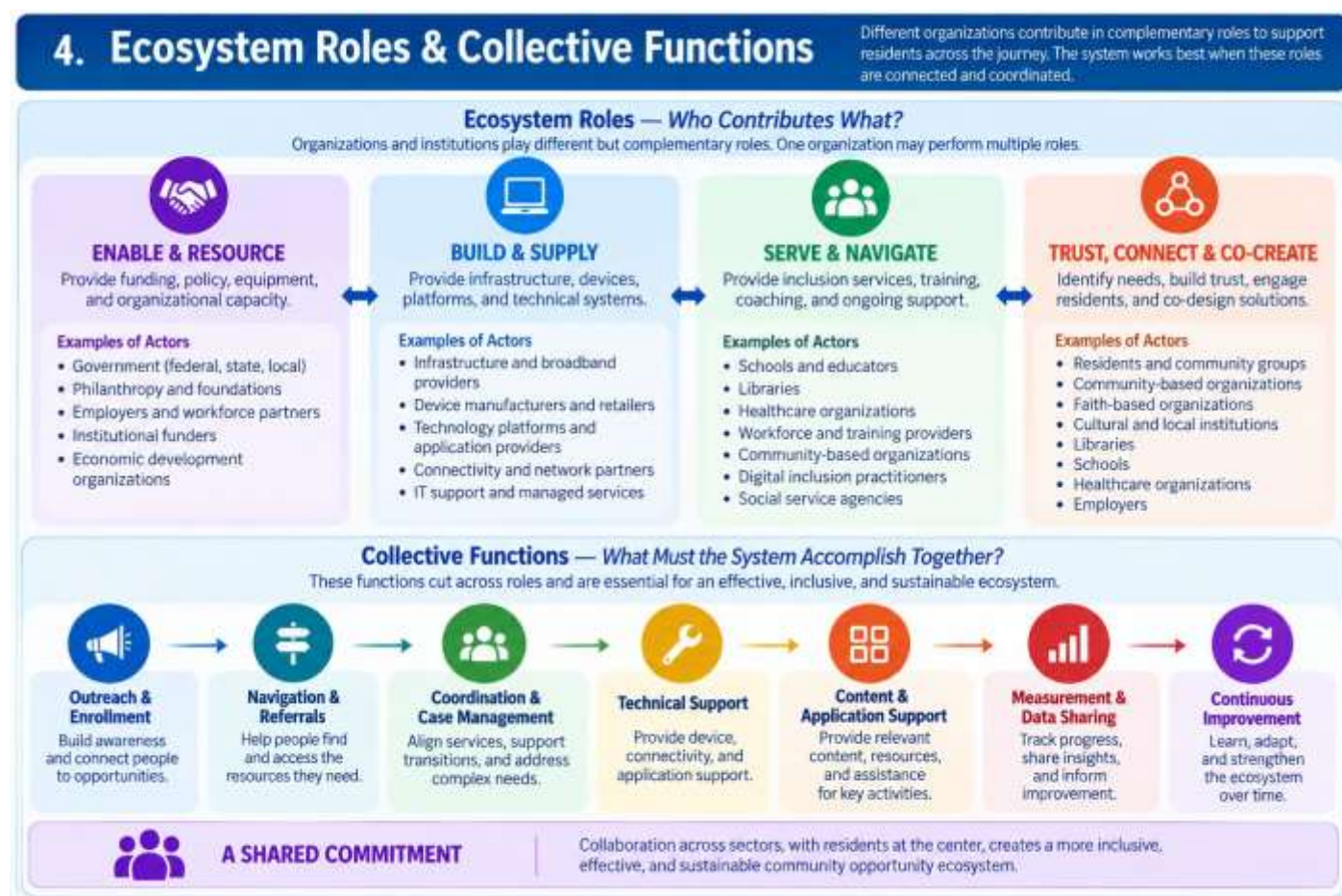
The ecosystem includes four role families:

- **Enable & Resource:** Set policy, fund programs, and allocate the public and private resources that make digital opportunity possible.
- **Build & Supply:** Provide the networks, devices, platforms, and services residents rely on.
- **Serve & Navigate:** Deliver services and help residents find, learn, and use the practices that matter to them.
- **Trust, Connect & Co-create:** Build relationships, bridge communities and institutions, and work with residents to design solutions.

Libraries and other anchor institutions often play several roles, and residents help identify needs and shape solutions.

Collective functions cut across roles: outreach and enrollment, navigation and referrals, coordination and case management, technical support, content and application support, measurement and data sharing, and continuous improvement.

Actor presence is not the same as ecosystem performance.



Meaningful Participation & Sector Value

Journey	Conditions	Ecosystem	Roles & Functions	Participation & Value	Investment	Markers	Whole
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Digital Opportunity becomes consequential when residents use technology-mediated social practices to pursue goals, participate, and contribute.

Seven sector contexts: education, health, employment, public services, civic life, community, and libraries, which serve both as anchor institutions and as places where residents get help and build connection.

Value is plural and distributed: individual, community, institutional, and societal. Not all of it can or should be monetized or captured; much is diffuse, long-term, cross-sector, or public.

5. Meaningful Participation & Sector Value		
When residents participate meaningfully, value is created across multiple sectors.		
Sector	Examples of Meaningful Participation	Examples of Value
 Education	Access learning, complete assignments, engage with teachers, pursue credentials.	Improved attendance, learning, graduation, and career readiness.
 Health	Access care, use telehealth, manage health information, engage in prevention.	Better access and continuity, improved health outcomes, lower avoidable utilization.
 Employment	Search and apply for jobs, develop skills, participate in training, work remotely.	Job access, skill development, career advancement, and productivity.
 Public Services	Access and complete applications, manage benefits, interact with agencies.	More efficient service delivery, greater take-up of benefits, and reduced administrative burden.
 Civic Life	Access information, participate in civic processes, engage with local government.	Stronger voice, participation, and trust in institutions.
 Community	Connect with others, access community resources, contribute time and knowledge.	Greater social connection, belonging, and community resilience.
 Libraries	Use library services, access digital resources, participate in programs, get help with information, skills, and technology.	Greater access to information and learning, digital skills development, work and education support, and stronger community connection.

Investment, Sustainability & Reinvestment

Journey	Conditions	Ecosystem	Roles & Functions	Participation & Value	Investment	Markers	Whole
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The sustainability logic begins with ongoing and catalytic investment, not with value capture.

Investment → Strengthen Conditions & Ecosystem → Enable Meaningful Participation → Create Sector Value → Selectively Capture Value → Reinvest. Reinvestment is a possible feedback loop, not the justification for investment or a substitute for continuing support. Capture is most plausible where one payer already bears downstream costs, as in some health and workforce settings; Panel 2 takes up that question.



Emerging Markers of Digital Opportunity

Journey	Conditions	Ecosystem	Roles & Functions	Participation & Value	Investment	Markers	Whole
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The markers provide an evaluative lens across the whole framework — for learning, adaptation, improvement, and accountability within local context and over time.

The seven markers are Foundational Security, Effective Participation, Trust & Support, Agency, Belonging, Institutional Responsiveness, and Sustainability. They are lenses for discussion, not journey stages, a required set, or a scorecard for ranking communities. States and localities differ in ecosystem maturity and in what matters most to their residents, so each ecosystem can choose which markers to emphasize and how to define them in its own context.

Critical Judgment & Choice is not a marker because it operates within the journey itself. Foundational Security is both a condition the system must create and a measure of whether it has.

7. Emerging Markers of Digital Opportunity

These markers provide an evaluative lens to assess progress toward a more inclusive, effective, and sustainable digital opportunity ecosystem. They reflect outcomes for residents, communities, and institutions, and should be considered together over time.

1	2	3	4	5	6	7
Foundational Security	Effective Participation	Trust & Support	Agency	Belonging	Institutional Responsiveness	Sustainability
						
Reliable, affordable, adequate connectivity and devices are available where residents live, learn, work, receive care, and participate.	Residents can use technology-mediated social practices to pursue goals, participate in ways that matter, and contribute to their communities.	Trusted people, institutions, and ongoing supports are accessible across journeys, helping residents navigate opportunities, address challenges, and feel safe and confident.	Residents can make choices, solve problems, contribute, and influence decisions affecting their lives.	Residents feel recognized, valued, connected, and able to contribute as members of their communities.	Necessary roles are covered, collective functions are coordinated, handoffs work, and institutions learn and adapt to community needs.	Resources, capacity, partnerships, and systems can endure and adapt over time, supporting long-term digital opportunity for residents and communities.
Examples of indicators	Examples of indicators	Examples of indicators	Examples of indicators	Examples of indicators	Examples of indicators	Examples of indicators
- Household broadband availability and adoption - Device availability and adequacy - Affordability (cost as % of income) - Reliability and performance - Access in community locations (schools, libraries, public spaces)	- Use of digital tools for education, work, health, civic life, and services - Completion of key online tasks (e.g., applications, learning, telehealth) - Digital skills and confidence - Frequency and diversity of meaningful use - Participation in community and civic activities (e.g., volunteering, local initiatives)	- Access to trusted guidance (e.g., navigators, librarians, educators, community organizations) - Perceived safety, privacy, and data security - Confidence in institutions and digital services - Ongoing support and follow-up - Culturally and linguistically responsive services	- Ability to access and compare information - Use of options and exercise of choice - Problem-solving and self-advocacy - Participation in decision-making forums or feedback opportunities - Perceived control over one's digital participation and opportunities	- Sense of connection and inclusion - Participation in social networks and community activities - Representation of diverse groups in programs and leadership - Positive relationships with institutions - Self-reported sense of belonging in digital and in-person spaces	- Coverage of key roles (e.g., infrastructure, navigation, training, support) - Coordination and referral effectiveness - Timeliness and accessibility of services - Feedback from residents and community partners - Use of data to improve programs and policies - Evidence of continuous learning and adaptation	- Stable and diversified funding - Ongoing capacity of organizations and workforce - Policy support and institutional commitment - Integration into core programs and budgets - Long-term maintenance of infrastructure and services - Demonstrated reinvestment of captured value



USING THE MARKERS

The markers are interrelated and should be considered together, within local context and over time. They help assess progress, identify gaps, guide action, and support continuous improvement toward a more inclusive and sustainable digital opportunity ecosystem.

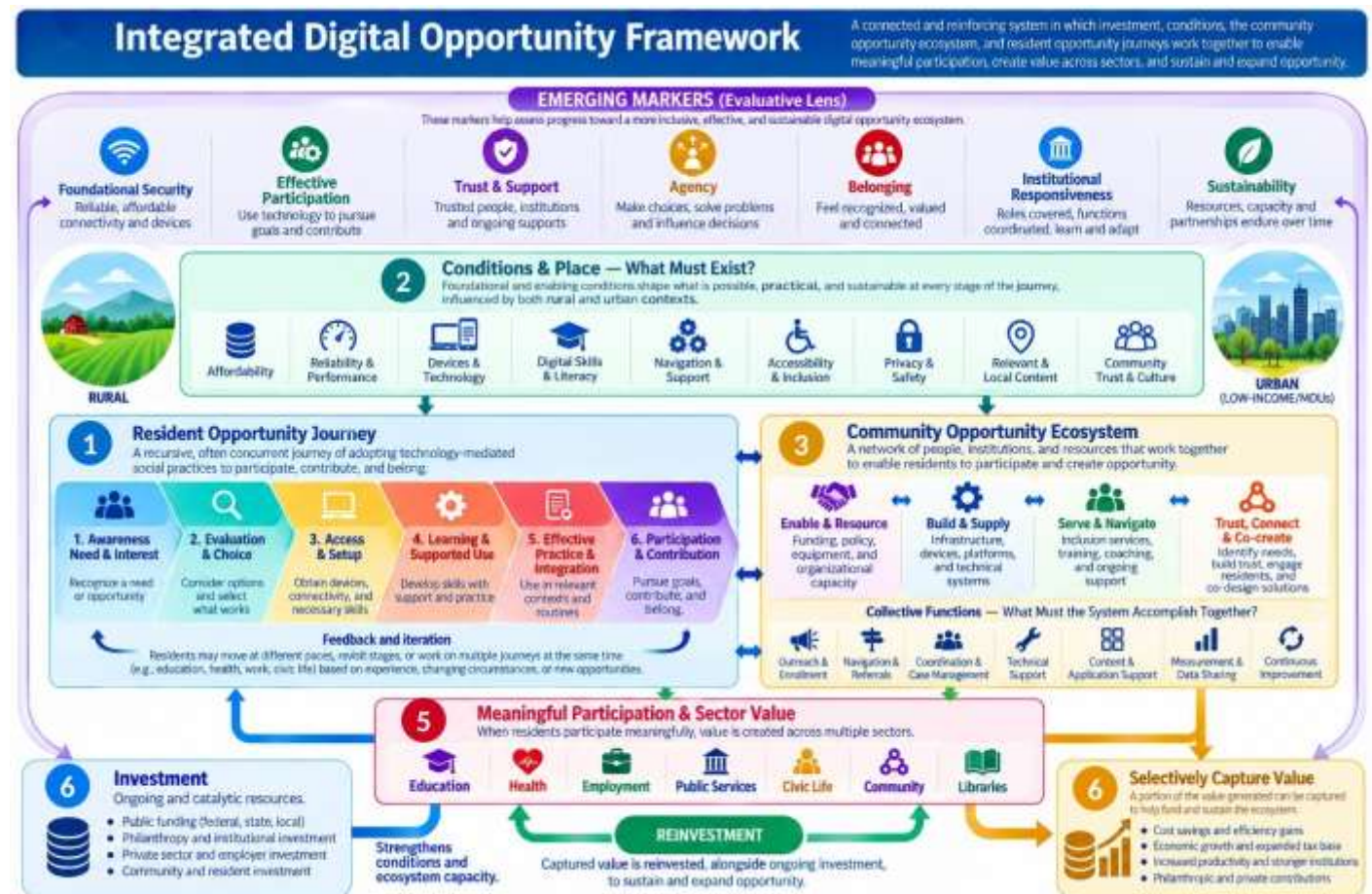
Integrated Digital Opportunity Framework

Journey	Conditions	Ecosystem	Roles & Functions	Participation & Value	Investment	Markers	Whole
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The integrated view brings the elements together without collapsing their distinctions.

Conditions & Place shape resident journeys and ecosystem action. The ecosystem organizes actors, roles, and functions around those journeys; participation creates value across sectors; investment strengthens conditions and capacity; and some value may be captured and reinvested. The markers surround the whole as an evaluative lens.

Read it as three flows, not one causal chain: opportunity flow (conditions, journeys, participation, value), resource flow (investment into conditions and capacity), and feedback loops (learning within journeys, ecosystem improvement, and selective reinvestment).



Questions to carry into the workshop

The goal is not agreement with the diagram. The goal is to improve what the framework helps us see, ask, and do.

- **Journey** — Does the six-stage journey clarify recurring adoption of technology-mediated social practices without implying a rigid or universal sequence?
- **Conditions & Place** — Which conditions are missing, overstated, or especially important in different local contexts?
- **Ecosystem** — Do Conditions, Actors, Roles, and Functions help reveal gaps, overlaps, weak handoffs, and opportunities for stronger coordination?
- **Participation & Value** — Where does meaningful participation create value, to whom does it accrue, and what should count as success even when no financial return can be assigned?
- **Investment** — When benefits are shared but costs are concentrated, what mechanisms can align investment and commitment?
- **Markers** — Which markers help us learn whether the system is working? What is missing, difficult to observe, or potentially misleading?
- **Whole system** — What are we missing, overstating, or getting wrong in the integrated framework?

Selected intellectual and empirical foundations

- Ali (2021). Place, rural broadband political economy, community and provider context.
- Eubanks (2018). How institutional and automated systems shape access to services and impose burdens on low-income residents.
- Gurstein (2003). Effective use beyond connectivity alone.
- Helsper (2021). Digital inequality as rooted in broader social, economic, and institutional inequality.
- Human-I-T; Rhinesmith & Siefer (2017). Practitioner ecosystem roles and outcomes-based evaluation.
- McMillan & Chavis (1986). Sense of community: membership, influence, shared needs, and emotional connection.
- Neufeld (2024). Device-level evidence that experienced connectivity differs from nominal availability in a large urban district.
- Neufeld & Delcore (2018). Situated adoption of technology practices; critical selection and effective use.
- Robeyns (2005); Sen (1999). Capabilities and conversion factors: the same resource yields different opportunities depending on personal, social, and environmental conditions.
- Rogers (2003). Innovation-decision process, adoption, reinvention, and discontinuance.
- Schatzki (2001); Reckwitz (2002). Social-practice theory: embodied, materially mediated activity, know-how, meanings, and context.
- Shove, Pantzar & Watson (2012). Practices change through interacting materials, competences, and meanings.
- van Dijk (2005); Warschauer (2004). Multidimensional access, resources, social inclusion, and meaningful use.
- Venkatesh et al. (2003). Performance, effort, social influence, and facilitating conditions in technology acceptance.