Puerto Rico IT Sector Project Summary

July 2023

DEPARTMENT OF ECONOMIC DEVELOPMENT AND COMMERCE

accenture

Project Context



The Puerto Rico Department of Economic Development and Commerce sought to provide a current understanding of the Commonwealth's Information Technology (IT sector) and develop a strategic roadmap for its growth. Puerto Rico's economy is undergoing a transformation driven in large part by a large increase in federal funds to the island, a commitment from DDEC and the larger government organization to grow Puerto Rico's economy in key areas, and an increasingly digital global economy that can enable IT sector work to be exported from Puerto Rico. Expediting this transformation required a plan that integrated Puerto Rico's strengths, such as an educated and motivated workforce and a robust small business environment, with broader market dynamics including the advantages of being a U.S. territory.

Through quantitative (BLS, Census, OECD, Accenture Internal Data, State Department, DDEC, etc.) and qualitative (27 interviews with 23 stakeholders) across the Puerto Rican IT sector ecosystem) research, we uncovered the following...



Most of Puerto Rico's IT companies are young (established <7 years ago), **small** and of **local origin**.



Puerto Rico's current IT ecosystem design **does not enable** agility to address rapid market developments and emerging technology like generative AI.

Puerto Rico's core IT sector ecosystem can be strengthened

by designating champion organizations to preside over

specific areas of the overarching vision and strategy.



Puerto Rico has 260+ companies developing core IT goods and services, most of which are concentrated in IT Services.



The core IT sector employs around 5K Puerto Ricans. ~14K work in IT occupations and ~30K work in IT-related sectors.







Puerto Rico faces challenges in a competitive global IT market, as it ranks ranks less favorably to US states and international comparators on various IT-relevant benchmarking dimensions, particularly human capital.



The lack of a convening body and standard definition for the IT sector have made it difficult to enact meaningful large-scale change.



In the near term, Puerto Rico's highest-potential IT growth opportunity is likely in IT Services, Software, and Cybersecurity for the mainland US market.

Executive Summary Contents

This executive summary report includes a high-level overview of content from the project's deliverables.

O1 Understanding Puerto Rico's Core IT Sector

How is the IT sector defined and what does it look like in Puerto Rico? **02** Benchmarking Puerto Rico's Performance

Where does Puerto Rico's IT sector capabilities stand compared to structural peers, US states, growing international hubs, and aspirational targets? **O3** Opportunities for Growth

Which Puerto Rican IT subsectors are best positioned for growth and why? What are long-term requirements for the success of the sector? **04** Educational Model Supplements

How can Puerto Rico improve IT sector skills and interests in youth from K – University? 05

Puerto Rico's IT Sector Strategic Plan and Roadmap

What is the vision and mission to guide Puerto Rico's IT sector? What are the initiatives that Puerto Rico should embark on to accomplish its vision?



1 Understanding Puerto Rico's Core IT Sector

The Core IT-producing sector is the focus of this analysis but IT outputs and IT professionals are demanded throughout the economy

Core IT Sector vs. IT-Enabled economy



A range of traditional IT goods and services and new/emerging technologies comprise the core IT sector

Scope of Core IT sector Software Consumer Device Development **Business** IT Consulting Blockchain Production Process Software Services Distribution Hardware & Robotics Infrastructure Network Information Data Equipment AR & VR Management Management Production & Analytics Software **IT Services** Software Sales IoT Data Center Electronic Systems Platform Equipment, Services Machinery, & Parts Cybersecurity Internet Service Infrastructure Providers Services Telecom **Services** IT Disaster Recovery & Broadcasting Business Application Data Service Major Continuity Security subsectors Providers Education & Training Subsector segments

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Puerto Rico's Core IT sector is concentrated in the IT services subsector

Relative size of IT subsectors by number of companies & estimated employment



Commentary

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- With 58% of the total number of companies active in Puerto Rico's estimated core IT sector, the IT services subsector is both the main employer and the highest grossing sector by total estimated revenue.
- The software subsector is the next largest by total employment and number of companies, representing approximately 30% of total companies in the core IT sector.
- Together, hardware & infrastructure and telecommunications services account for about 9% of total core IT sector employers in Puerto Rico.

Puerto Rico's Core IT sector is centered in and around San Juan



Number of Core IT firms by municipality



Puerto Rico's IT Sector Ecosystem Performance Across Areas

The lack of a primary convener and/or changemaker within and between each area of the ecosystem has created fragmentation, duplication in efforts, weak relationships, and a lack of mobilization.

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2 Benchmarking Puerto Rico's Performance

We compare Puerto Rico to four groups of jurisdictions for insights into current IT competitiveness and potential future growth opportunities

Structural Peers

This grouping is composed of **structurallysimilar peers** with growing IT sectors or who are currently looking to boost their IT sectors. These structural peers are **generally islandnations** with governments that actively support IT sector growth. Structural peers should be thought of as either **competitors for similar markets or nations in similar positions** as Puerto Rico.

Growing International Hubs

The international grouping consists of countries across the world, at **different levels of IT-sector and developmental maturity**, with targets to grow their IT sectors. This group is important to extract insights into common IT sector growth requirements across countries, regardless of underlying conditions. They also **suggest requirements for subsector success** and provide **insight into Puerto Rico's relative global positioning**.



US States & the US Overall

As an important player in the internal market of the United States, **Puerto Rico competes with states for demand of services, goods, and labor**. Several states are at somewhat comparable levels of IT sector maturity and serve as guidelines for success and highlight relative strengths.

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Aspirational Targets

Countries with thriving IT sectors as a fundamentally major part of their economy provide **insight into what is required to become an IT champion**. They act as a **"North Star" for long-term directional planning**, to compare Puerto Rico's current state, and to assess feasible avenues for growth.

Overall, Puerto Rico ranks in the bottom half among comparators



Summary of benchmarking results

	Geographic	Benchmarking Dimensions										
Regions		Overall Economic Rank Background		Governance Quality	Science & Innovation	Human Capital	IT Infrastructure	Cybersecurity				
Αŝ	Puerto Rico	10	11	11	11	13	9	10				
n n	US Average	2	2	6	4	1	4	2				
ers	Cyprus	9	9	7	10	3	8	8				
Pee	Malta	8	3	10	8	8	7	8				
ural	Fiji	15	12	12	14	16	15	16				
ruct	Costa Rica	11	10	14	13	10	12	12				
Sti	Jamaica	15	15	8	16	13	17	16				
S	Czechia	7	6	9	3	9	10	5				
Hub	Argentina	11	12	16	9	11	11	12				
ing	Colombia	13	16	13	15	12	14	11				
row	Mexico	13	12	17	12	15	13	12				
U U	India	17	17	15	17	17	15	12				
ers	Singapore	3	1	2	6	7	1	4				
al Pe	Sweden	1	5	1	1	2	6	1				
iona	Finland	3	7	3	1	5	3	2				
oirat	Israel	5	8	5	5	4	2	7				
Asp	Ireland	5	4	4	6	6	5	6				

Note: Numbers indicate relative rank of out the total group off 17 comparators. Green colors are associated with high ranking; red colors are associated with poor ranking.

Source: Accenture Strategy analysis

Summary of Puerto Rico and comparators' IT market presence by region

Relative	e value of IT exports a	across regions		E	xport Value <\$100M	\$100M-\$500M \$500I	M-\$5 <mark>B</mark> \$5B+
Gro	up Jurisdiction	North America	Central & South America	Europe	Asia	Middle East & Africa	Australia & New Zealand
	Puerto Rico						
ral	Malta						
uctu	Cyprus						
Str	Costa Rica						
	Florida						
U G	North Carolina						
Stat	Colorado						
	Oklahoma						
	Georgia						
ving	Mexico						
Grov	Czech Republic						
nal	رم ۱reland						
iratic	D Finland						
Asp	Sweden						

Note: data captured based on information availability for ICT goods and services exports

Source: UNCTAD, Eurostat, US Camber of Commerce, International Trade Administration, Accenture Strategy Analysis

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Benchmarking to US states suggests Puerto Rico has adequate IT infrastructure but could struggle to develop a mature innovation economy





HUMAN CAPITAL

Puerto Rico has good baseline education capacity compared to the rest of the United States and selected peer states. Puerto Rico outperforms in the concentration of associate's degrees in technology fields. Puerto Rico struggles when it comes to higher levels of education, with relatively low concentrations of science & engineering bachelors and very low concentrations of doctorates in these fields.



Puerto Rico is not currently nurturing an innovation and scientific ecosystem compared to its peers and the rest of the United States. The commonwealth receives low amounts of Venture Capital and Federal funding, allocates relatively low amounts of resources to R&D, and outputs relatively little academic research.



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While Puerto Rico could benefit greatly from increasing access to internet, broadband, data plans, and reducing associated prices, the Commonwealth has adequate internet infrastructure to support its IT sector. In some parts of the island, internet speeds are extremely high and overall upstream speeds are the best of selected peers.



3 Opportunities for Growth



It is less complex to grow existing markets & offerings than to develop new competencies & markets

IT Growth Opportunity Framework For Puerto Rico



Expected challenges to growth

Commentary

- Concentrating on growth in existing markets with existing competencies reduces risk and minimizes necessary investments. Puerto Rico has existing competencies in the IT Services, Software, & Cybersecurity subsectors.
- Developing additional competencies in the telecoms & hardware subsectors requires substantial investments that may not pay off.
- Attempting to enter non-US markets while developing new competencies in the telecoms and hardware & infrastructure subsectors is the most complex approach to growth with the greatest uncertainty.

Puerto Rico should grow its IT Services, Cybersecurity, and Software presence in mature markets





Existing Competencies

Puerto Rico has existing labor, business specialization, and exposure in the IT Services & Software subsectors. Educational opportunities & capital availability could be improved for both subsectors.



Puerto Rico has comparatively high exposure to the IT Services subsector. Across underlying domains that influence success, Puerto Rico particularly struggles in the human capital dimension. Puerto Rico is relatively well positioned to grow its IT Services subsector vis a vis US States thanks to lower wages but compatible culture.



Puerto Rico faces the least resistance to grow its IT Services and Cybersecurity subsectors. It faces moderate difficulty in growing its Software subsector. Puerto Rico will struggle to expand in the hardware & infrastructure sector and the telecommunications services sectors.



The mainland United States is the greatest source of demand for IT goods & services followed by mature APAC economies and Western Europe. These markets are also the likeliest sources of higher returns for PR's IT sector. LATAM should be a medium to long-term opportunity given the relatively small market & relatively high PR wages.

IT Services is expected to be the subsector with the largest amount of absolute growth.

Puerto Rico should focus on developing its IT Services, Cybersecurity, and Software sectors. Puerto Rico should target growth in the mainland United States in the short term and consider growth into highly developed APAC & Western European in the longer term.

The IT Services subsector is the largest IT subsector with the easiest pathway for growth



SWOT for the IT Services Subsector

Potential for development: high

Strengths

- Puerto Rico has approximately 150 core IT sector firms providing IT Services.
- A comparatively high percentage of IT professionals work in IT Services, suggesting a skills specialization in this subsector.
- Lower PR wages support sectoral growth. Favorable tax regime supports non-island companies.
- IT Infrastructure is conducive to sector operations.

Opportunities

- The IT Services market is the second largest source of global spend today and expected to be the largest in the near future.
- By far the largest source of IT Service demand is the United States.
- Puerto Rico's wages are competitive in the US, developed APAC & Western Europe.
- South America could present opportunities for expansion and sourcing of labor.



Weaknesses

- Educational pathways could be improved to provide higher-value IT labor.
- Relatively poor financing sources limit growth.
- Relatively low productivity negatively affects 'bang for buck.'
- Worsening economic environment drags on sectoral growth.
- Focus on lower-value services create vulnerabilities to lower-priced offerings.

• Threats

- Technological developments (i.e. AI) could threaten offerings like BPO.
- Lower priced hubs can compete to steal market share.
- Natural disasters could affect the subsector.
- Reverse of the offshoring trends.
- Outmigration of trained IT Professionals.
- Dependence on US market render PR vulnerable to domestic shifts in demand.

The cybersecurity subsector has high potential for future growth by capitalizing on Puerto Rico's strengths



SWOT for the Cybersecurity Subsector

Potential for development: high

Strengths

- High overlap with IT Services and Software subsectors where Puerto Rico has existing competencies.
- Low wages compared to US States a priority for companies seeking to outsource Cyber IT Services.
- Ability to access sensitive material
- Cultural overlap with source of demand.

Opportunities

- Estimated global 2022 spend on cybersecurity at nearly 175 Billion USD.
- High competition between geopolitical entities boosts demand for cybersecurity solutions globally.
- Increasing IoT & connectivity leaves room for greater non-state cybersecurity concerns.
- US States & companies recognize cybersecurity as a growing and important concern.



Weaknesses

- Limited core company dedication to Cybersecurity services.
- Software cybersecurity solutions tend to be dominated by big multinational software and hardware companies.
- Gap in education pipeline for highspecialization cybersecurity professionals.

• Threats

- Comparatively low Puerto Rican wages could hamper sector development; trained labor may be incentivized to leave the island.
- Other entities may choose to develop cybersecurity services in house or closer to home.
- Natural disasters may negatively affect service offerings.

Software is the second largest core IT subsector, with a complicated path for future growth



Potential for development: medium

Strengths

- Existing competencies with nearly 80 core software companies on the island and a burgeoning tech scene.
- Lower wages reduce offering prices.
- Government support for the sector.
- Favorable tax treatment of non-domestic companies & labor.
- Relatively good IT infrastructure.

Opportunities

- High potential markets include the US, Western Europe, and developed APAC – by far the largest 3 demanders of software products & services.
- Increasing funding for critical skills across the educational spectrum could help address the labor shortage.
- Puerto Rico could act as a gateway for virtual South American labor, relative to which Puerto Rican wages are highly competitive.



Weaknesses

- Lack of strong science & innovation ecosystem.
- Relatively low wages incentivize high performers to emigrate.
- Relatively low productivity creates 'less bang for one's buck.'
- Lack of capital and financing opportunities.

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• Unfavorable tax treatment of domestic companies and domestic labor.

• Threats

- Continual outmigration of talented labor.
- Emerging software sectors across the Caribbean & Latin America could increase competition.
- Major natural disasters.
- Instability of legislative regime.
- Financing shortage to support sectoral growth.

Long-term requirements to enable the success of Puerto Rico's IT development

To reach Governor Pierluisi's goal of generating 50,000 additional digitally-skilled workers in the next 10 years and carry out the initiatives developed through this project- Puerto Rico should look to strengthen its performance across these four areas.



Digital Inclusion

Utilizing Puerto Rico's Broadband program for digital inclusion efforts will enable citizens to have better access to opportunities to IT-based education, skills training, jobs, and IT-based business scalability.

Operational Resilience

Ensuring that Puerto Rico is fully prepared for the next pandemic, natural disaster, or cybersecurity event will help ensure the continuity of IT operations and provide assurances to investors.



Government Operating Model

Aligning people, processes, and technology within and across government departments will enable the government's maximum efficiency and effectiveness- allowing for the timely and sustainable execution of IT sector initiatives.

Access and Availability to Capital

Increasing the availability and access to public and private investment pathways is key for the long-term growth and sustainability of Puerto Rico's IT sector.



Educational Model Supplements

4

Education is the foundation of the IT sector, high quality and relevant courses enable sectoral growth & boost productivity



The IT sector requires high-quality, welltrained workers. These workers are equipped with specialized skills that are required to deliver valuable work. A good education model will support the growth of the labor pool available to employers by delivering knowledge & skills in demand, enable reskilling & upskilling, and boost productivity. Having adaptable educational opportunities is a must-have for the IT-sector.



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Puerto Rico's K-12 system is experiencing the brunt of the stressors hitting the island



Commentary

- Over the last 15 years, about 1 in 2 schools have closed, concentrated in the rural parts of the commonwealth. The number of teachers has likewise decreased proportionally to school closures.
- Enrollment in schools has also declined by about 50%. The proportion of students in private K-12 schools has increased reflecting strained public resources.
- Measures of quality include proficiency in English, mathematics, and science, as well as graduation rates. All have dropped in the recent past.

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While not as dramatic as the K-12 system, the postsecondary public education system has also suffered





— Full Time Public School Faculty



- Over the last 15 years, enrollments have dropped by about 25%.
- The number of faculty tends to vacillate around 5,000. Given that the UPR system receives a significant proportion of its funding from tuition, and given the increasingly rapid decline in enrollment, it would take significant supplementary resources to maintain faculty numbers & reverse the decline in numbers that began in 2017.
- Students are reporting faculty shortages, even in key required subjects.

Five sources of qualitative and quantitative data suggest UPR's CS^{development} department & curriculum are not cutting edge



Demand-side suggests employers undervalue UPR quality

Starting salaries for UPR graduates are ~40% lower than the average starting salary across the USA.

Salaries for IT-professions are likewise ~30-50% lower than average mainland U.S. salaries.



UPR tends to perform poorly in rankings

World Universities Rank UPR in the 1001-1200 band. QS WUR ranks UPR in the 1201-1400 band.

US News ranks UPR-Rio Piedras as #250 in the US.

CWUR ranks UPR-Rio Piedras as #1729 in the world and #322 in the US.

Stakeholder interviews indicate curriculum & quality can be improved

Both direct and researchsupplemented interviews suggested faculty were not at the forefront of research and that students could be better prepared by the school in terms of courses and transition post-college.



With only 27 faculty, it is difficult for UPR's CS department to stay abreast of emerging technology developments. The majority of the faculty received their PhD's before 2005. Puerto Rico in general outputs little research or patents.



UPR's CS Curriculum would benefit from adjustments

UPR is constrained to round out PR K-12 system weaknesses at the expense of a comparatively longer pathway, the curriculum for CS majors is highly structured and would benefit from more CS & math focus.



Both the K-12 and higher education systems can be modified to increase awareness and teaching of technical skills

Call to Action on Primary and Secondary Improvements

To enable the IT workforce and leaders of tomorrow and empower the citizens of Puerto Rico broadly, we recommend seven initiatives to develop the island's STEM & digital teaching capacities. A good basic education system equips children with the knowledge and skills to navigate the world effectively, it supports cognitive and social development, promotes meritocratic equality, and enables economic growth. Dividends from these initiatives are therefore expected to be felt across the island as people make better choices, the digital divide is reduced, and workers are more productive. We take into account industry-leading research and expected costs when making recommendations to ensure initiatives will support long-term development at reasonable costs.

Call to action on high-level overview of postsecondary augmentation improvements

The IT sector is dependent upon highly trained and proficient professionals. In order to complement UPR's existing curriculum and the initiatives of the 21st century fund, we recommend that two technology education programs be deployed to improve technology literacy among all higher-education students, raise awareness, improve employability, and support specialization. We consider employer trends and occupational research when developing these two programs to ensure that the augmentation adds significant value to students. We also consider expected complexity and costs of implementation to increase the probability of high return on investment for the University of Puerto Rico.

Opportunities to improve K-12 STEM & digital proficiencies revolve around adjustments to curriculum, teaching structure, and resource allocation

Seven summary initiatives to improve or develop STEM & digital skills in primary and secondary education



Adjust STEM initiatives & curriculums Teach Tech & Digital Skills in Schools

Create standardized, expert-driven curriculums; support teachers with the resources and professional development they need. Create focused classes and apply digital and technical skills across existing subjects.



Support the creation of accessible and affordable programs for specialized STEM schools on the island. Deploy ITfocused summer camps

Enable continuous learning during the summer to avoid summer learning loss & develop new skills.

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Improve electricity, broadband, and IT device access for schools, teachers, and pupils.



Hire and develop the college counseling departments at school to prepare students for the next phases of their journeys.



Create publicprivate partnerships

Integrate K-12 with the private sector to develop an understanding of how the world works and foster feelings of mutual connections.

Two suggested programs revamp teaching technology literacy & improve the Computer Science curriculum at UPR



Summary of the two programs to enable digital literacy and improve UPR CS curriculum offerings

Develop foundations for all

All students are expected to take the basic technology curriculum which introduces them to major tech topics, how technology is applied & applicable to their fields of study, and to understand technological trends. The goal is to ensure every student is aware of the technological environment, to apply innovations to their own lives, and to be conversant in some of the foundational issues that are shaping their world.

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	Total	Studer	nt Popi	ulation	1]	Comp	uter Maioro
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	Ø	娿	娿	娿	娿	娿	Ø	Ø			
	娿	娿	Q	Ø	Q	Ø	娿	Ø			
	Ø	Ø	Ø	Ø	Ø	Ø	Q	Ø			
	Ø	Ø	娿	Ø	娿	Ø	Q	Ø			
	Q	娿	Ø	Ø	Ø	Ø	Q	$\overline{\mathbb{Q}}$			
	Ø	Ø	Q	Ø	Ø	Ø	Ø	Ø			
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Improve specializations

To augment UPR's computer science capabilities and curriculum in a highly adaptable and valuable way, we recommend deploying a supplementary set of courses from an established massive open online course provider. The goal is to provide opportunities for Computer Science majors to deepen their knowledge, access content otherwise unavailable, and demonstrate employability in a cost-effective manner.



5 Puerto Rico IT Sector Strategic Plan and Roadmap

Puerto Rico's IT sector....

Vision

Puerto Rico will be an innovative regional technology hub that supports the global economy, enabled by a highly skilled workforce and a resilient IT ecosystem.

Mission Puerto Rico will support the growth of its IT sector and generate high-quality jobs by aligning fiscal incentives, developing policies conducive to growth, making education & infrastructure investments, and encouraging investments in Puerto Rico.

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Puerto Rico's IT sector strategic goals



Strat	tegic Goals	Suggested Metrics
Improve Education	Align the K-20 education system to meet the supply and demand of the IT sector	 STEM associate's & bachelor's degrees as a percentage of conferred degrees Third party educational offerings (i.e., cybersecurity & ethical hacking bootcamp) subscription & graduation rates Rates of digital literacy by education group
Address Outmigration	Develop long-term incentives to encourage citizens to remain in Puerto Rico to study and work in the IT sector	 Percent of foreign workers in IT-related occupations Relative percentage of population out-migrating per year Improving rates of optimism vs. pessimism about the economy in polls
Grow Wages & Productivity	Close the gap between Puerto Rico IT sector wages and US mainland median wages over the next 5-10 years to coincide with the 21 st Century Fund	 Spread between average PR IT sector & occupational wages and mainland median sector & occupational wages is dropping Reduction in gap with mainland US in mean nominal hourly labor cost per employee in IT industry (as defined by the ILO)
Increase Capital	Improve the availability of private and public financing to support the IT sector	 Number of VC and Angel deals per year Size of locally based & globally sourced VC and Angel deals per year Ratio of total household credit to business credit is increasing Financial sector wages are increasing
Put Puerto Rico on the Data Map	Coordinate with government departments, statistical agencies, and third parties to include Puerto Rico in IT sector datasets and report	 Presence on major third-party or government publications like WEF, NRI, IMD, International Property Rights Index, IDEA Up to date presence in supranational org data sets like the IMF, UN, ILO, & World Bank
Become a Tech Hub	Rank top 5 for IT sector start-up ecosystems in Latin America	 Number of active tech startups Volume & growth of early-stage funding rounds Number of local & global investors Patent activity
Government Contracts	Become a leader in IT services and software development for United States government contracting	 Number of government contracts awarded to PR firms Size of government contract awarded to PR firms Density of employed IT Service workers relative to population

High-level description of initiatives (1 of 2)



#	Initiative Name	Owner(s)
1	Invest in an existing organization or create a new convener for Puerto Rico's IT sector: The lack of a primary convener and/or changemaker within and between each area of the IT sector ecosystem has created fragmentation, duplication of efforts, weak relationships, and a lack of mobilization. This process includes compiling existing feedback on the sector's ecosystem, understanding what a high-performing convening body looks like versus what Puerto Rico has, setting up a non-government led structure that can serve this purpose.	DDEC, Industry
2	Connect Puerto Rico with International Data Registries: By creating a data-centered culture in government, increased data availability can help the Puerto Rican government to refine incentives, track progress, and craft policies. Working to include Puerto Rico in reports and data registries would also help attract more partnerships and investment.	DDEC
3	Assess and make improvements to the Federal Contracting Center (FeCC): The capabilities of Federal Contracting Center (FeCC) across APEX / PTAC service areas efforts should be analyzed and improved in order to more effectively serve the IT sector. Further, the FeCC should also enhance its promotion strategy so that IT sector businesses and others who are interested in federal contracting work are aware of the FeCC and the services it offers.	DDEC
4	Match funds allocated to recipient IT sector companies from local entrepreneurship programs: DDEC can provide a level of matching funds to IT companies who have successfully been accepted and / or completed certain entrepreneurship / business development programs under a vetted institution. This helps IT businesses, enhances the partnerships between DDEC and the organizations hosting the programs, encourages collaboration, and encourages programs to better measure their impact.	DDEC
5	Expand B2B IT sector mentorship to promote sectoral cohesion and growth: B2B mentorship that pairs leaders (C-suite or executives) of large and/or established businesses with those of small and/or new businesses was one of the recurring suggestions from stakeholders. Either by expanding SCORE's Puerto Rico Chapter or creating a new model, promoting B2B mentorship can increase sectoral cohesion and enable IT sector growth.	DDEC
6	Assess the feasibility of the Santurce Innovation District development: The Santurce area of San Juan has been proposed as a potential innovation district for the better part of the last decade, with a particular interest (and funding) from Universidad de Sagrado Corazon. This initiative involves analyzing the feasibility of its development- including current state analysis, future state design, and implementation planning to enhance capabilities to implement (if determined to be feasible).	DDEC and others
7	Create a 21st century fund supplemental educational model: In support of the 21 st century fund & the revamping of Puerto Rico's formal educational system geared towards the IT sector, several programs should be deployed across the island. Certifications and training programs across primary, secondary, higher education, and for the workforce would serve to skill, up-skill, and re-skill Puerto Rico's citizenry.	DDEC, DOE
8	Create pipeline between education services and employers seeking labor: Creating the pipeline would involve supporting a partnership between employers, laborers, and education service providers where employers will contractually agree to hire labor that demonstrates proficiency in high demand skills, and that proficiency will be demonstrated by a successful completion of a preselected vendor solution.	DDEC, DOL
9	Assess the performance of and make improvements to the Permits Management Office: Stakeholders have expressed that obtaining the varying business permits involve a lengthy and complicated process. The lifecycle of permitting processes should be analyzed for potential improvements to decrease complexity (for applicants and office staff) and increase timeliness. This may include allocating more staff or resources to meet the demand of the permitting management office.	DDEC
10	Deploy Skyhive's digital skill passport to reduce labor market frictions: By providing a Skill Passport to residents through existing public assistance, workforce development, and education infrastructure- DDEC can identify the skills of its labor force today, the skills needed to support the IT sector and island employers, the specific skills gaps that exist, and the training needed to efficiently close those gaps.	DDEC, DOL

High-level description of initiatives (2 of 2)



#	Initiative Name	Owners
11	Enable LATAM IT labor to work remotely for PR companies without relocating to PR: Puerto Rico faces a high-quality IT labor shortage because high quality labor is incentivized to seek mainland U.S. wages. Without this labor, PR businesses will struggle to deliver valuable services. Puerto Rico can pass legislation allowing LATAM workers in critical IT sector professions without relocating to Puerto Rico. They would earn PR salaries, pay taxes in PR, and be subject to PR labor legislation- but still reside in their home countries.	DDEC
12	Enable Puerto Ricans to work remotely for mainland employers: If Puerto Ricans can tap into mainland opportunities without leaving the island, it would reduce the incentive to depart. Agreements should be struck with select states, and the executive and legislative branches to enable Puerto Ricans to work remotely including possible sharing of tax revenues & provisions for regulatory oversight either shared or passed onto another state.	DDEC
13	Form partnerships with high-performing IT sector and innovation district models: Exposing key stakeholders in Puerto Rico's IT sector ecosystem to high-performance examples of IT sector ecosystems and innovation districts, can enable these groups to understand the building blocks of success and craft actionable plans to skyrocket growth. This can include creating partnerships with targeted locations to create site visit programs or other partnership opportunities.	DDEC
14	Launch coordinated marketing campaigns to attract IT sector investment and workers: There are several stakeholders that engage in promotional efforts on behalf of the island- Discover Puerto Rico seeks to attract visitors, InvestPR and PRelocate seek to attract investment and entrepreneurship activity, and El Comeback seeks to attract people to join the workforce. If these efforts could be combined and coordinated, their reach and capacity would be amplified, especially for the benefit of the IT sector.	DDEC, InvestPR, others
15	Align tax structures with needs of Puerto Ricans to enable domestic growth: Puerto Rico's Act 60 and previous laws push the island towards tax haven status that benefit mainland-oriented entities with limited impact on the domestic economy. Tax policies should be written to drive domestic economic growth and increase local employment by adjusting total economy taxes.	Fortaleza
16	Improve business incentives processes and information accessibility: The DDEC website lacks a digestible high-level summary of the available incentives as well as an easy way to find the portal for application. Having this information more readily available and promoted throughout the IT sector community would help ensure that qualifying businesses are able to benefit. Further, process flows associated with the incentive application process should be created to identify areas for improvement.	DDEC
17	Revitalize OMB's Office of Federal Funds to improve access IT sector development funds: If OMB revitalized the Office of Federal Funds, not only would the island be able to more effectively access funds- but also appropriately manage and administer the funds to support projects that otherwise may be difficult to fund. This includes finding additional pockets of money that DDEC could use for initiatives to support the development of the IT sector.	ОМВ
18	Encourage venture capital in PR by updating the tax regime, hosting pitch competitions, and supporting business literacy: To attract venture capital, Puerto Rico should develop well-marketed & supported pitch competitions, support initiatives to teach business & analytical literacy, and ensure the tax regime for high-risk early stage investments are favorable.	DDEC
19	Create a government-sponsored mainland higher education program: As Puerto Rico begins to address formal educational shortcomings, it can leverage existing mainland schools to train its workforce of tomorrow. Puerto Rico should set up a grant and assistance-ship program to support bright students to travel & study at schools on mainland United States.	DOE
20	Digitize government services to improve efficiencies and free up IT sector labor Assess current state processes across government functions and determine which require human touch, which can be performed by leveraging more technology, and which can be automated. Deploy IT across administrative occupations, develop supporting legislation to require digitization (i.e., require that schools be capable of hosting remote learning, that some government functions can be performed from home, etc.).	PRITS

Detailed Impleme	entat	ion R	oadm	ap	Initia	al Implementati	on Long	-term efforts				
Initiatives (shortened names)	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5+			
	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2 +		
1. Create convener org for Puerto Rico's IT sector	Review & Implemer Organizational Plar	t I	laintain Organizati	on								
2. Connect Puerto Rico with Data Registries	Implement Initiative	Maintain Effort						Wave 1 initiatives include a mix of high				
3. Improve Federal Contracting Center (FeCC)	Assess & Pla	Assess & Plan Implement & Adjust					Impact ai	nd medium i t and low im	to high effo nact initiati	high effort with		
4. Match local entrepreneurship programs funds	Plan 1	Disl	ourse Funds	$ \rangle$			Puerto Rico's IT sector goals					
5. Expand B2B IT sector mentorship	Assess & Adjust Model		Dep	loy & Maintain		\rangle						
6. Assess feasibility of Santurce District		Current state Future analysis / des	estate Implementation				Waya 2	nitiatives a	re of moder	ate impact		
7. Create a 21st century fund ed. Model*	Review, Budget for, & Deploy Run, Assess, Refine						and require partnerships with other					
8. Create pipeline b/w ed. services and employers	Explore Interest Prepare Program Deploy & Assess Run & Adju				Run & Adjust) organiza	ive 9) for					
9. Improve the Permits Management Office		Assess & Plan	Im	– plement & Adjı	Ist	>	planning	and impler	nentation.			
10. Deploy Skyhive's digital skill passport		Review, T	est, & Deploy				Maintain			$\langle \rangle$		
11. Enable LATAM IT labor to work remotely			1		Develop Legisl	ation & Partnerships	mplement	Assess, Communicat & Refine	e,			
12. Enable Puerto Ricans to work remotely		Wave 3	B initiatives a	re	Develop Legisl	ation & Partnerships	Implement	Assess, Communicat & Refine	•,			
13. Form partnerships with innovation district models		impactful but involve a Research Establish Deploy & Ru						Assess				
14. Launch coordinated marketing campaigns		modera	ate to high de	egree of —								
15. Align tax structures with needs of Puerto Ricans		Complexity (multiple partner organizations or a lack of DDEC ownership, lengthy Assess Develop Legi					islation Implement Assess & Refine					
16. Improve processes & info for incentives							and create Implement Changes Iteratively / Actively Promote					
17. Revitalize OMB's Office of Federal Funds		policy	processes, ac	lvanced —		Assess & Plan fo	r Improvements & Expa	nsion	Run Organiza	ation		
18. Encourage venture capital in PR		capabilities, or other				Prepare Legislation & Structural Program	Implement Imple	ment Pr	ovide Support as	Needed		
19. Create a mainland higher ed. program		onanon	500/1			Prepare	Program & Budge	t	Run Progra	am 🔷		
20. Digitize government services						Current State Deve Assessment Pla	elop Source an Labor	Imp	lement, Test, De	ploy		

Increase

Capital

ImproveMore GovEducationContracts

Put PR on the Data Map & Prod

Address Become a Outmigration Tech Hub *includes increasing international student enrollment

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1. Invest in an existing organization or create a new convener for **Puerto Rico's IT sector**





- The lack of a primary convener and/or changemaker within and between each area of the IT sector ecosystem has created fragmentation, duplication of efforts, weak relationships, and a lack of mobilization. An existing organization should be strengthened, or a new body should be created to serve as a convener and mobilizer of the IT sector holistically, including the representation across each area of the ecosystem. In order to be successful, this body should not sit within the government, nor be government-led.
- The government should support these efforts by providing suggested organizational charters, identifying funding sources, and offering forums for discussion. The government should also utilize feedback from the stakeholders (particularly research and innovation, IT Companies & Community) to revamp governmental policies / structures and inform investments into existing evidence-based programs.

How

- Consolidate feedback received on the IT sector ecosystem from past studies, roundtables, and other forums.
- Define a model of a high-performance convening organization (using success stories from aspirational targets, ٠ structural peers, etc.) Compare the high-performance model with existing organizations, identify organizations that have pieces that contribute to the vision of the high-performance organization.
- Invite a chair / co-chair or a group of leaders to make up a preliminary board of advisors (no more than 7) from ٠ different areas of the IT sector ecosystem to discuss and update the vision and mission of the IT sector, which will be the north star of the ecosystem and the organization. Predetermine seat allocation to maximize representation.
- The chairs / board (government can be a participant but not a primary driver) will create the organizational structure and outline the role of the convening body in the ecosystem.
- The chairs / board should identify / recruit professionals to staff the organization (DDEC can providing funding • for given period for staff compensation).

- Budget availability
- Committed leaders to drive the convening organization forward
- Staff to ensure continued progress, balance individual board interests with IT sector mission / vision

Impact Areas

- IT sector ecosystem, particularly organizations with a strategic role
- IT sector initiatives
- IT sector reputation

Metrics

- Representation of IT subsectors and IT ecosystem stakeholder types (nonprofit, education, domestic and foreign industry, etc.)
- Revenue (dues and non dues based)
- Net promoter score