

CITY 2.0: HP'S VISION FOR A SUSTAINABLE FUTURE

Responding to population, resource and climate issues presents unprecedented challenges and opportunities for governments and businesses. As urban infrastructure is replaced or built anew, HP believes information technology will be key to sustainability, fueling growth while decreasing environmental impact.

Worldwide, cities are expanding by 60 million people annually—the equivalent of adding another Paris, Beijing or Cairo every other month—putting increasing pressure on natural resources.¹¹ Forecasted population relocations from areas afflicted by natural disasters and resource shortages caused by climate change will further compound the problem.

Reinventing cities for scalability and sustainability

As a result, according to Chandrakant Patel, HP fellow and director of HP's Sustainable IT Ecosystem Laboratory, "We must create a sustainable model for cities that takes full advantage of the technologies of the Information Age." HP refers to this model as City 2.0.

Every aspect of City 2.0—from energy, water and waste to buildings and transportation systems—will be designed with the life cycle in mind. HP applies this "cradle-to-cradle" concept in developing products and services, and envisions scaling this concept to entire cities.

Another key will be integrating IT into the fabric of cities to better match supply with demand. Patel describes deploying systems of resource micro-grids, a widespread, interconnected IT network made up of sensors, handheld devices and data centers, to deliver resources according to the ebb and flow of urban needs. "These intelligent technologies would ensure precise availability where and when resources are needed, reducing unused surplus and waste," Patel says.

Opportunities for the public sector and enterprises

HP foresees helping governments design and adopt City 2.0 infrastructure that would support and stimulate business. Running a city-wide

grid of integrated data centers as a utility, for instance, could create large economies of scale. "Low-cost energy and IT services would be great catalysts for business," Patel says.

According to Prith Banerjee, senior vice president, research and director of HP Labs, public and commercial sectors will be under pressure to streamline operations and minimize costs. "Organizations will need to deliver more resources and products with the least energy and carbon footprint," he says. "In meeting this challenge, City 2.0 will create tremendous opportunities for responsible innovation and growth."

Putting HP's vision to the test

HP Labs is using its data center facilities in Bangalore, India, and Palo Alto, California, as a test bed for core aspects of City 2.0. Thousands of sensors in each of these data centers monitor the demand and flow of resources in real-time. HP Labs is exploring opportunities to deliver these solutions on an unprecedented scale.

"HP has the breadth and depth to provide all aspects of the City 2.0 IT ecosystem, including the billions of service-oriented client devices, thousands of data centers and print factories needed to implement the vision." Patel says. "And we have a legacy in measurement, communication, and computation. Now we need to leverage the past to create the future, one where we meet society's needs by 'right-provisioning' resources so future generations can have the same quality of life we enjoy today."

Learn more about City 2.0 and the HP Sustainable IT Ecosystem Lab by visiting hpl.hp.com

HP AND WWF

HP and **World Wildlife Fund (WWF)** are collaborating to combat climate change, and are jointly focused on reducing greenhouse gas emissions, improving energy use, using technology in conservation, and educating and inspiring others to take action.

"**World Wildlife Fund** envisions a future in which business makes a positive contribution to the well-being of society and the planet. To achieve this, **WWF** engages in challenging and innovative partnerships with companies to drive change. **WWF** has a long-standing relationship with HP. In 2008, HP and **WWF** completed a joint research initiative to identify potential IT applications that can help save more than a billion tonnes of carbon dioxide emissions."

—DENNIS PAMLIN, GLOBAL POLICY ADVISOR, WWF

Download HP's Climate Strategy Whitepaper at hp.com/go/customer/URLs