

# Photonic Computing for Smart Cities

 by Derek Bailey

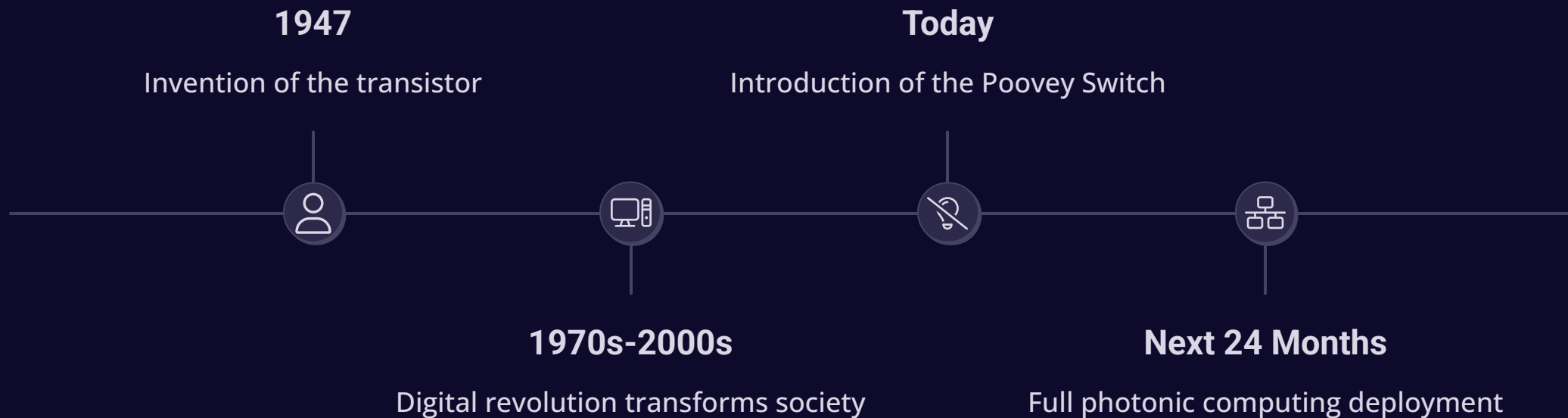


# The 1947 Moment — Again

In 1947, the transistor was invented — and the digital world we know today began. But many infrastructure projects failed to anticipate the impact of that breakthrough.

Today, **True Photonic, Inc.** is not only introducing the **Poovey Switch** — the first **light-actuated light switch** — but a **full suite of patented photonic logic gates and computing peripherals** (NAND, NOR, OR, Flip-Flops, etc.).

This isn't a single innovation. It's a comprehensive leap into **pure photonic computing** — with the potential to **replace electronic systems at every level** of data infrastructure. And it's going live within **24 months**.



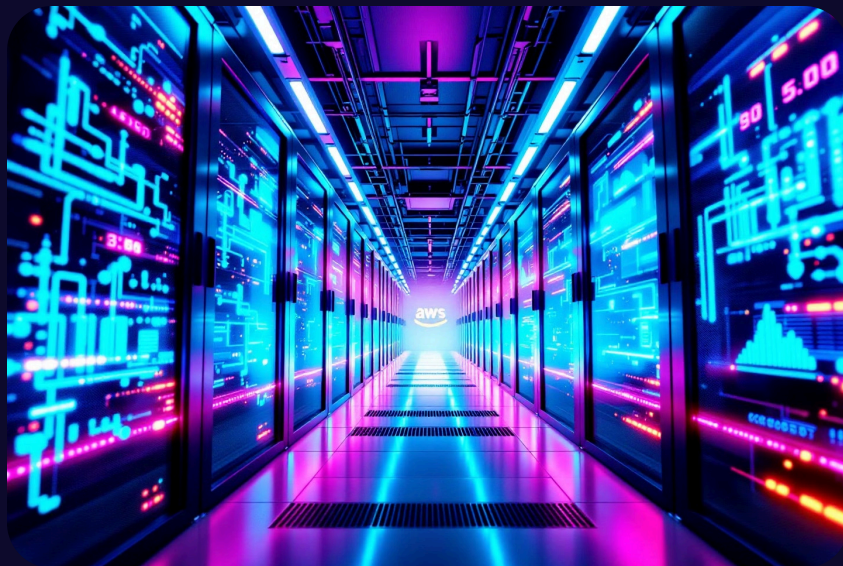
**Why This Matters Now:** Cities that finalize plans without accounting for this disruptive capability risk locking themselves into obsolete infrastructure before deployment even begins.



# How 7.5 Minutes of Photonic Compute = 1 Month of AWS HPC

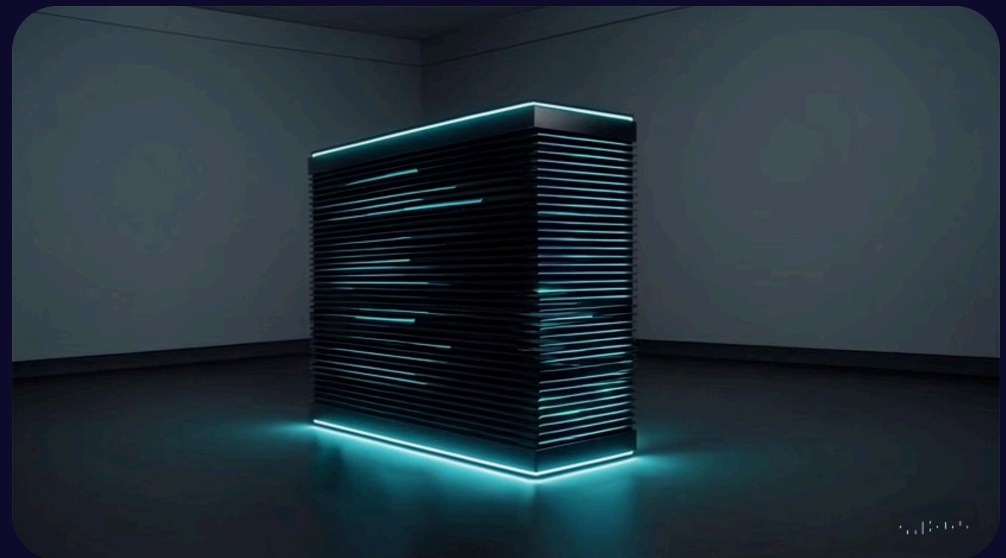
## AWS HPC Performance

AWS HPC (High Performance Computing) typically operates at ~1 nanosecond ( $10^{-9}$  s) logic speed.



## True Photonic Performance

True Photonic computing operates at 175 femtoseconds ( $1.75 \times 10^{-15}$  s) per logic operation.



1,000,000

Femtoseconds

equals one nanosecond

5,700X

Speed Increase

So 175 Femtoseconds is Much Faster

7.5

Minutes

To complete a 30-day AWS task

## Workload Example:

- A complex high-performance task (AI Modeling) that takes **30 days (720 hours)** on AWS
- On a True Photonic node, the same task completes in **~7.5 minutes**

**Conclusion:** What AWS processes in a **month**, Photonic systems process in a **coffee break** — at a fraction of the energy.



# Specialized Urban Capabilities Enabled by Photonic Computing

Photonic computing doesn't just accelerate performance — it unlocks entirely new capabilities for urgent urban problems:



## Crisis Management

Real-time simulation and coordination across emergency agencies during disasters



## Disaster Relief Logistics

Track aid, deploy autonomous drones, monitor needs via wearables, and allocate resources within seconds



## Intelligent Transportation

Dynamic traffic optimization that eliminates congestion through predictive algorithms, reducing commute times by up to 70%



## Energy Grid Optimization

Microsecond-level load balancing that integrates renewable sources seamlessly, cutting carbon emissions while preventing brownouts



## Resilient Infrastructure

Optical sensors can feed into photonic AI systems for predictive maintenance, water/gas leak detection, and energy optimization



## Criminal Casework & Client Management:

Enable secure, AI-supported case tracking across jurisdictions — reducing delays and errors



## Predictive Policing & Public Safety:

Real-time data correlation for surveillance, geofencing alerts, and autonomous threat recognition

**Why This Matters:** No traditional system can support this level of **real-time, encrypted, multi-departmental processing** — but Photonic compute can.



# For Planners & Developers — Why This Cannot Be Overlooked

Why Finalizing Smart City Plans Without Photonic Infrastructure Would Be a Missed Opportunity - *Within 24 months, cities will:*

## Unprecedented Speed

Have access to cloud compute  
**5,700X faster than AWS**

## Energy Efficiency

Run AI infrastructure for a  
**fraction of today's energy cost**

## Smart Environments

Design around **low-power, smart-connected environments**

**Why This Matters:** Any smart city blueprint finalized today without photonic infrastructure consideration may soon be outdated. Integrating now ensures future relevance, resilience, and performance:



## Standardize

Around PCC-based compute access



## Building Codes

That allow node-edge integration



## Future Planning

Factor in future faster, less-expensive '**thin-client**' devices in urban deployments and next-gen IoT architectures



## Enable

Real-time AI services and highly secure, super-fast, public cloud operations



# A Legacy Built on Foresight

The most future-ready cities will be those **brave enough to plan beyond what's already visible.**



## Visionary Leadership

Advocating for empowering systems



## Technological Leap

Photonic computing deployment within 24 months



## Collaborative Future

Partnership to build photonic foundations

Visium has been a visionary voice in smart city transformation, advocating for systems that empower, protect, and connect communities. We believe that **photonic computing represents the next critical leap** in that mission.

To finalize infrastructure plans today without acknowledging a technology just **24 months away from deployment** — and capable of reshaping **cost, security, speed, and scale** — would repeat the same oversight made when cities failed to anticipate the rise of the transistor.

We would be honored to collaborate with you and your partners to ensure Photonic computing becomes a foundational layer of tomorrow's cities.