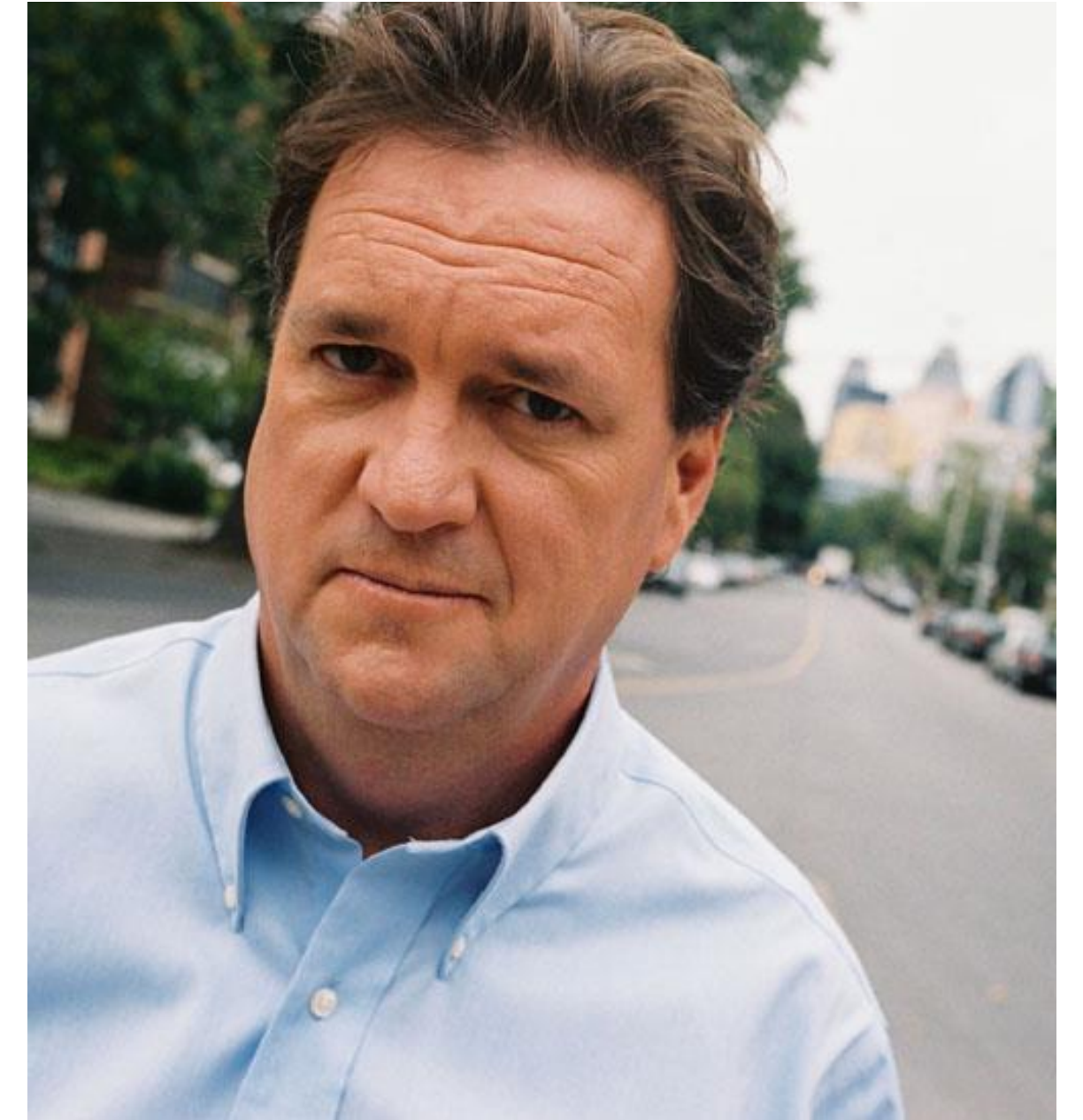




# Jim Carroll

Futurist, trends & innovation expert



**Achieving Agility: Aligning Ourselves  
for An Era of Accelerating Change**









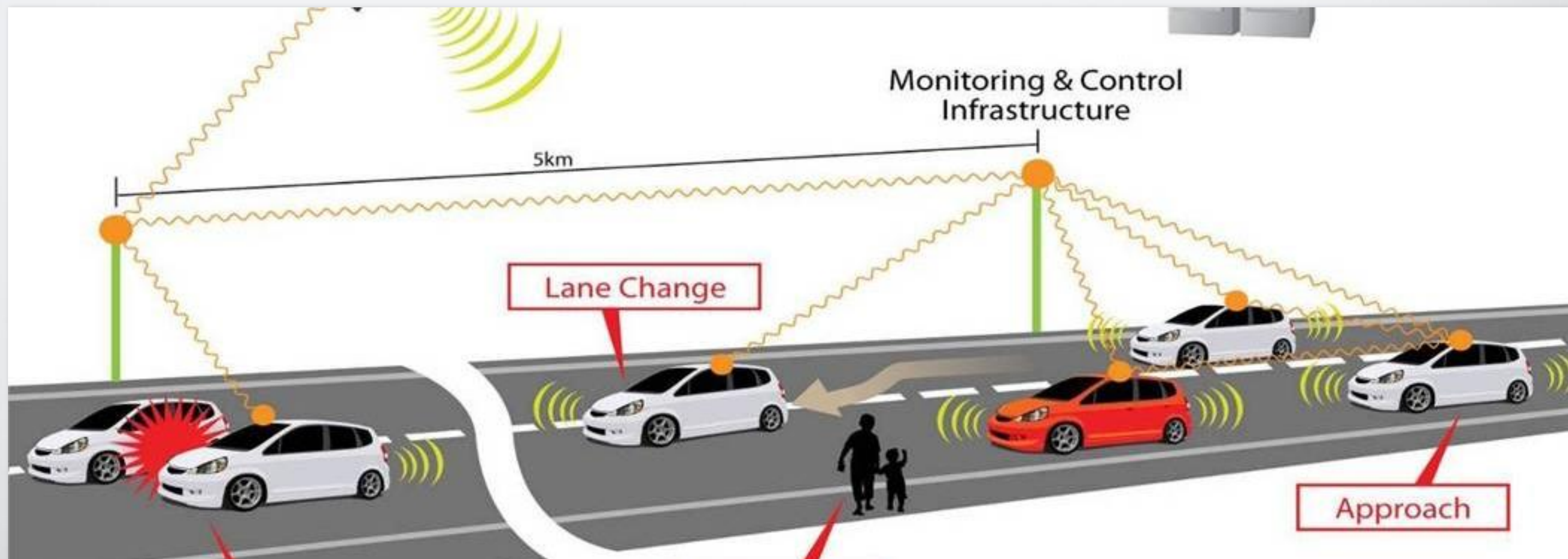


“The world is changing very fast. Big will not beat small anymore. It will be the fast beating the slow.”

***Rupert Murdoch***



“Today is the slowest day of technological change for the rest of your life — it is only going to get quicker”  
*Google’s UK Automotive Chief Hugh Dickerson*

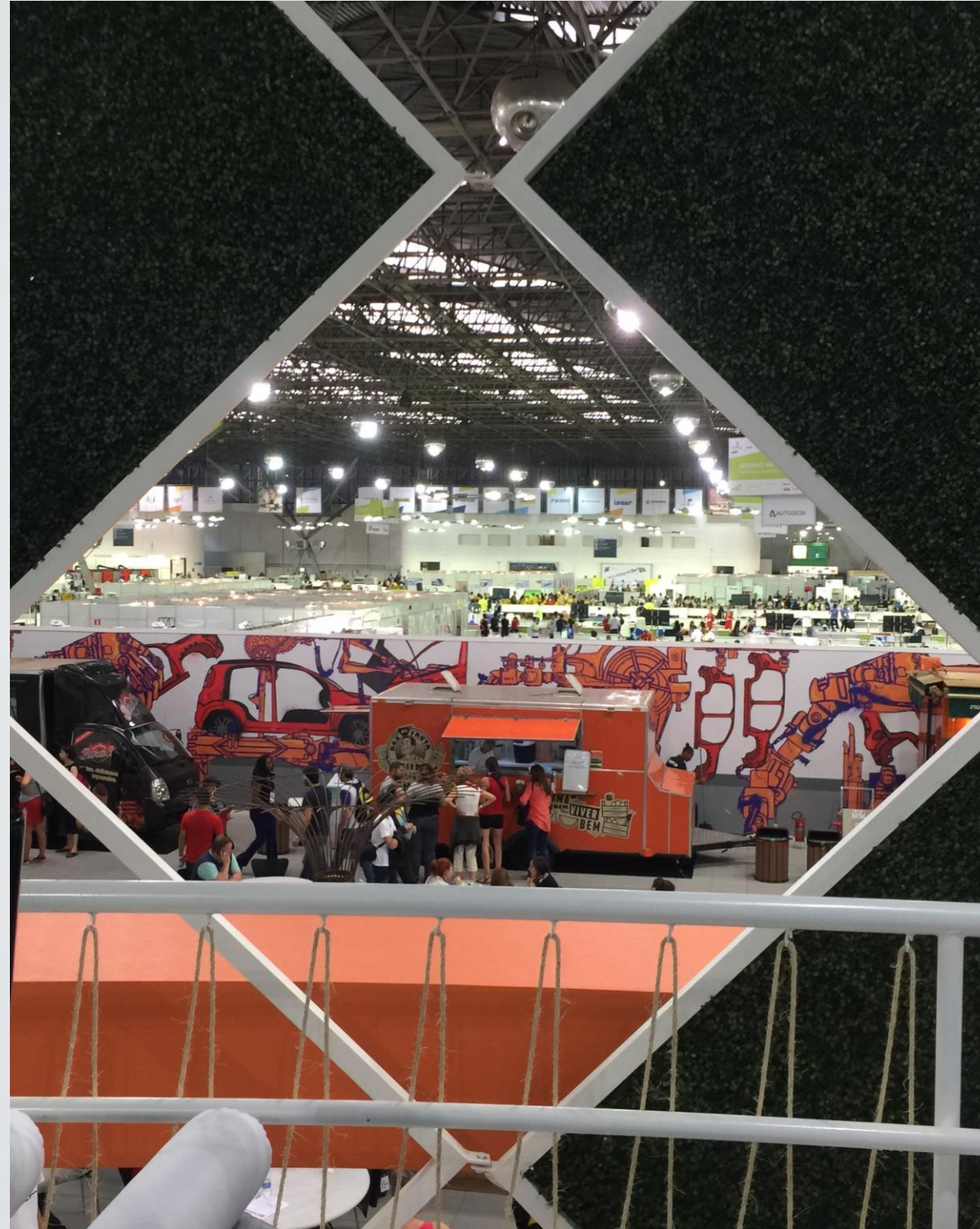




- ❑ **The Walt Disney Company**
- ❑ **PGA of America**
- ❑ **Swiss Innovation Forum**
- ❑ **World Pharma Innovation Congress**
- ❑ **Nestle**
- ❑ **Toshiba Australia**
- ❑ **Consumer Electronics Association**
- ❑ **ESPN**
- ❑ **Goddard Space Laboratory**
- ❑ **The GAP**
- ❑ **NASA**
- ❑ **IBM**







Mind-boggling!



worldskills

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# ESCOLHA FUTURO

*CHOOSE  
YOUR FUTURE*



world **skills**  
São Paulo 2015 

Presented by

**SAMSUNG**





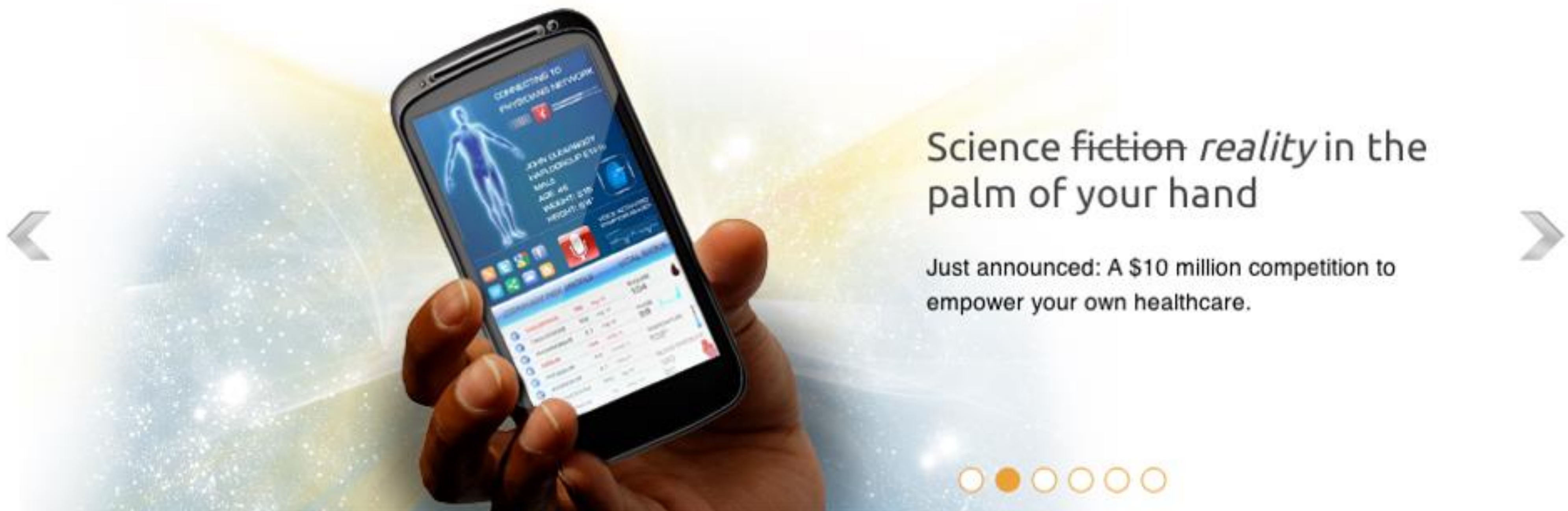


In *The Jetsons*, the 1960s cartoon classic, George Jetson and his family lived in a futuristic society with housecleaning robots and programmable appliances. (**George also logged on to FaceTime chats with his boss, and he read his news from a screen.**)

*Popularity surging for smart-home technology*  
*15 March 2013, The Philadelphia Inquirer*







Science fiction *reality* in the palm of your hand

Just announced: A \$10 million competition to empower your own healthcare.

## **Introducing the Qualcomm Tricorder X PRIZE.** **A \$10 million competition to bring healthcare to the palm of your hand.**

Imagine a portable, wireless device in the palm of your hand that monitors and diagnoses your health conditions. That's the technology envisioned by this competition, and it will allow unprecedented access to personal health metrics. The end result: Radical innovation in healthcare that will give individuals far greater choices in when, where,





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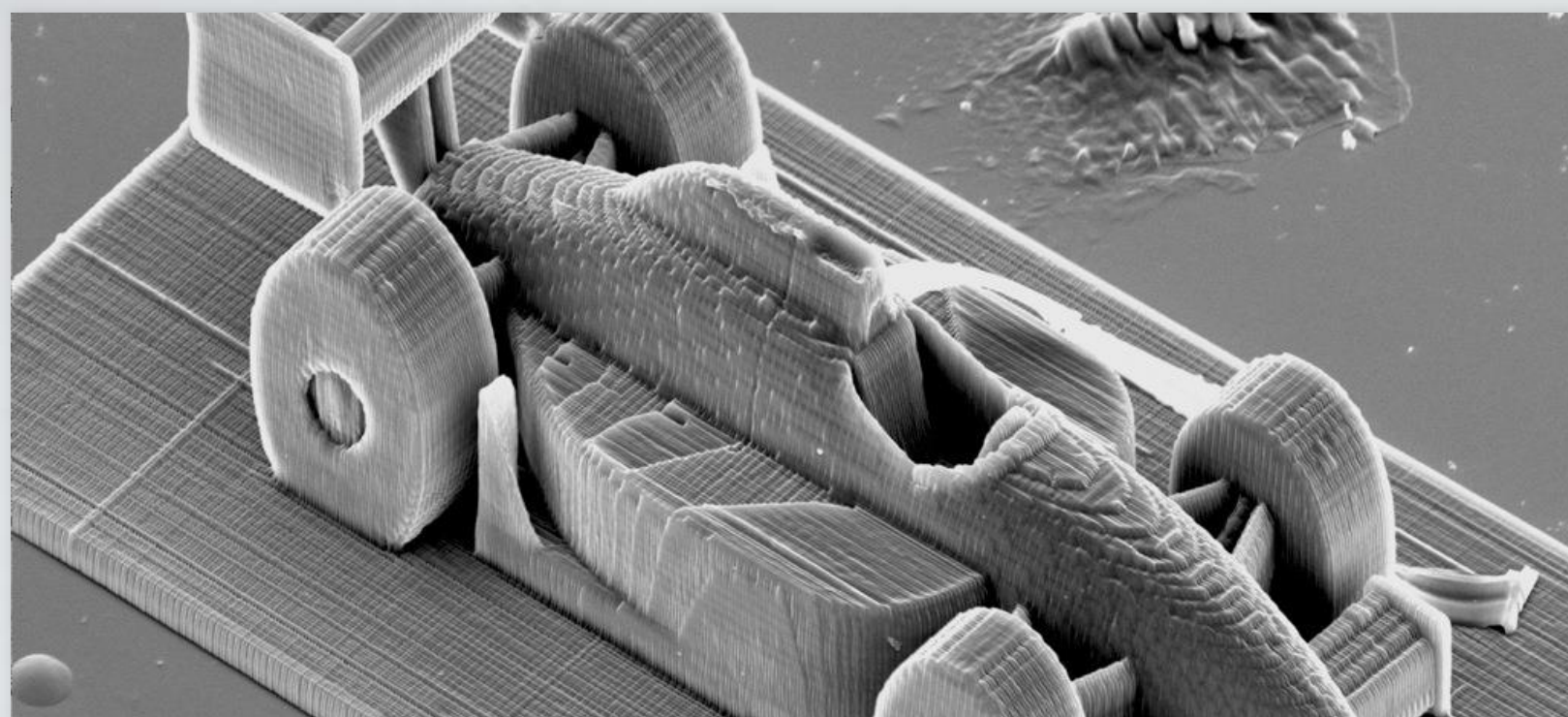
*Introducing Scanadu Scout™*

Finally, you can know yourself best.



 **indiegogo**

Reserve your Scanadu Scout™



# 3D Printing!





# National Association of Dental Laboratories!





# continuum

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## STEP BOLDLY INTO THE FUTURE.

"Myth" is our ongoing collection of 3D printed shoes for 2014.

[LEARN MORE](#)

[SHOP THE COLLECTION](#)

Follow us on Twitter [@continvum](#) for the latest.



## **The Big Question:**

What's happening to our world?

And what's the impact on skills and trades?





**“We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don’t let yourself be lulled into inaction.” Bill Gates**





# Six big issues

- BIG transformation
- 2025 happening NOW!
- rapid emergence of new skills and trades
- acceleration by technology
- generational impact





# **1. An Era of Major Transformation and the Supremacy of Big Ideas**









**“That’s the dumbest  
thing I have ever heard!”**





ROADSTER

MODEL S

GO ELECTRIC

ENTHUSIASTS

ABOUT TESLA

BUY

# 2012 THE YEAR OF MODEL S



BLOG POST / OCTOBER 19, 2011

## GOING ELECTRIC IN TEXAS

Tesla's Texas community couldn't be more enthusiastic and diverse. [Read More →](#)

### NEWSLETTER SIGNUP

Your email address

SIGN UP





**“Business model  
disruption!”**



### Join the Campaign

Investment in water infrastructure means jobs

## WEF Spotlight

### May 22 Webcast: Construction Inspection for Trenchless Rehab

Trenchless technology is rapidly becoming the preferred choice for pipeline rehabilitation because of its lower cost, less disruption, lack of excavation, and environmentally sound approach to pipeline reconstruction. This webcast on May 22 from 1-3 p.m. EDT will provide a wealth of information on construction inspection and its applicability to the installation of trenchless technologies. The webcast is brought to you by NASSCO with the support of LMK Technologies. [Register here.](#)

## Are you a WEF Member?

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**JOIN NOW**

### WaterBlog

### WEFCOM

### About WEF

### Water News



### Join the Cycle!

(POSTED 2013-05-16)

### By Mark Jockers

Clean water is everyone's right and everyone's responsibility. Every day Clean Water Services encourages residents to recognize that we all have a lasting impact on our water quality through the small steps we take at home. Clean

## Tweets

Follow



### Water Environment Fd

@WEForg

14h

New report offers steps to revitalize water industry [ow.ly/lfpzd](http://ow.ly/lfpzd) via @FierceEnergy

Expand



### Water Environment Fd

15h

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**16% of the water supply in the US is lost due to leaky pipes, and goes back in the ground — and only 7 percent of wastewater is recycled!**




**In India, demand will soar 1.65 times the current levels by 2050, all while fresh water sources dwindle**





**Industrial demand in India will go from 50 billion cubic meters of water annually to 120 billion by 2025**





What happens in the next 40 years when another three billion people come into the world? Imagine adding **75 million people every year, six million a month, 200,000 every day, all demanding more and more water to drink, to shower, to cook, to everything.** All guzzling down the New Gold that's getting ever scarcer.

*Water is the new gold*

*Marketwatch, 24 July 2012*

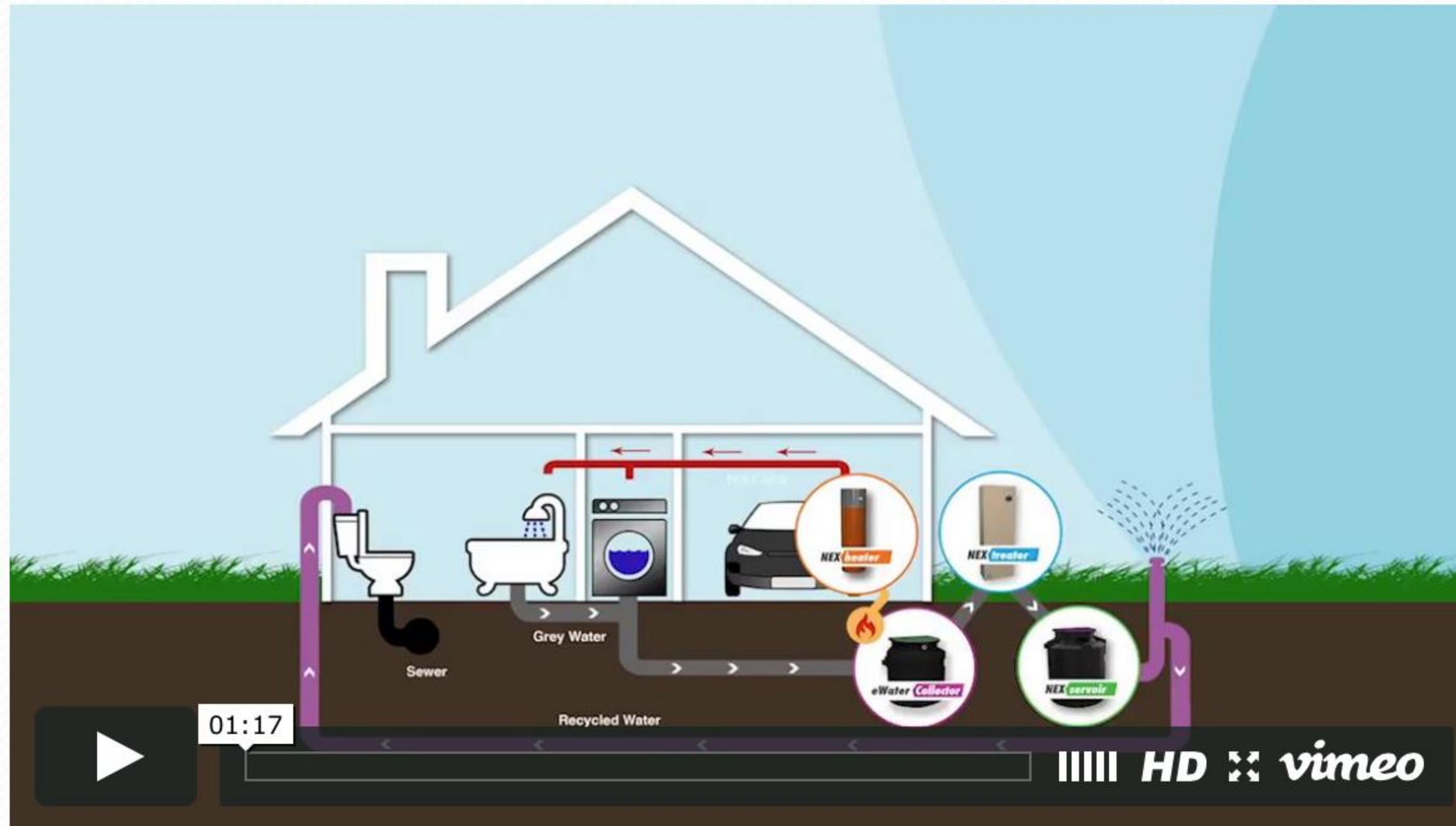


**In Israel, more than 80% of household wastewater is recycled, 1/2 going to irrigation**





## The Home Water & Energy Recycler



**The Power of Grey Water**

**How does it work?**


## The Nexus eWater App



Through the Nexus eWater smartphone application, users of the NEXtreater and NEXheater have easy access to their Nexus product usage information and much, much more.

[>>read more...](#)

**Download to learn more!**



Nexus eWater, maker of the world's first home water and energy recycler, today announced that it is the **first company ever to receive certification** to the NSF/ANSI 350 global standard for residential grey water treatment for its 'NEXtreater' home water recycler.

*Nexus eWater is World's First Company to  
Obtain Certification for Residential Grey Water Treatment  
13 March 2015, Business Wire*





# Nexus goals - Single family homes

- ❖ reducing water into the home by up to 40%
- ❖ reducing sewage from the home by 70%
- ❖ reducing water heating energy by 75%
- ❖ reducing home energy use by 15-25%
- ❖ generating total savings of up to \$50-\$200 per month per home for water, sewer and electric bills
- ❖ and harvesting rainwater





# Impact of transformation on skills and trades?

- ❖ **the era of BIG THINKING is leading dramatic transformation and new solutions in every industry**
- ❖ **existing skills and trades will need to more quickly ingest new knowledge and capabilities**









**2. The infrastructure of our world of 2025  
is being built around us right now**





## By 2020?

- ❖ a SIRI button in every car
- ❖ augmented reality screens with heads up display
- ❖ intelligent LED networked streetlights with proximity sensors that indicate open parking spots
- ❖ interactive in-car billboards (“take me there!”)
- ❖ payment technology embedded into the vehicle....






# Self-driving car trains!





# Self-driving road trains!





“We are rapidly approaching the point at which no trucks will ever really be ‘offline’”

*Olof Persson,  
President of AB Volvo*





# Elements of autonomy

- ❖ collision avoidance
- ❖ pedestrian and object detection
- ❖ spatial awareness and GPS
- ❖ V2V (Vehicle to Vehicle) communications for lane, distance, time compression
- ❖ remote vehicle control
- ❖ predictive fuel efficiency routing
- ❖ intelligent highway technology
- ❖ lane, distance, time compression



“We think that a few years from now the vehicle will have a 360-degree ‘awareness’ of what’s going on around it, and will even be able to predict what the moving entities it is scanning might do next.”





# A Simply Defined Transportation Trend

**2014  
Diagnostics**

**2015  
Predictive  
diagnostics**





# What's the impact of "high velocity" on professionals, trades, skilled and unskilled workers?

- ❖ it speeds up the volume of knowledge they are expected to master
- ❖ it speeds up the pace of new developments that impact their careers
- ❖ it leads to massive career and professional skill fragmentation
- ❖ it leads to an increased need for "multi-skilling"





# Impact of 2025 on skills and trades?

- ❖ compared to past transition of knowledge base of any trade — i.e. vehicle maintenance - there's a lot more yet to come!
- ❖ “learning is what most adults will do for a living!”







### **3. Rapid emergence of new skills and new trades**





By 2050, 70% of the world's population will be living in cities

Africa is urbanizing so fast that by 2030  
it will cease to be a rural continent





## Rapid Growth of “Urban Farming”

- already there are 800 million ‘city-farmers’ according to UN statistics
- 25% of population of Burkina Faso, 35% in Cameroon, 63% in Kenya, 68% in Tanzania
- 90% of the fresh vegetables in Accra, Ghana come from farming within the city



# “Vertical farming infrastructure!”

- ❖ year-round crop production
- ❖ 1 indoor acre is equivalent to 4-6 outdoor acres or more
- ❖ no weather-related crop failures due to droughts, floods, pests
- ❖ VF virtually eliminates agricultural runoff by recycling black water
- ❖ VF adds energy back to the grid via methane generation from composting non-edible parts of plants and animals







## The BIG evolution of new skills and trades!

- vertical farming infrastructure managers!
- robotic pharmaceutical therapy monitors
- water footprint analysts!
- drone helicopter insurance crop risk managers!
- manure managers!



# Impact of rapid new skills and trades?

- ❖ **industries and government will need to ensure good, supportive foundation education / training facilities are put in place at a faster pace**







## **4. The acceleration of all skills and trades through information technology**



■ device IP  
location intelligence  
sensor awareness







## “The Internet of Things!”

- ❖ garage doors that open or close based on owner proximity (mobile or in-car)
- ❖ ceiling fans that slow down when owners go to sleep
- ❖ smart locks enabled by cell-phones





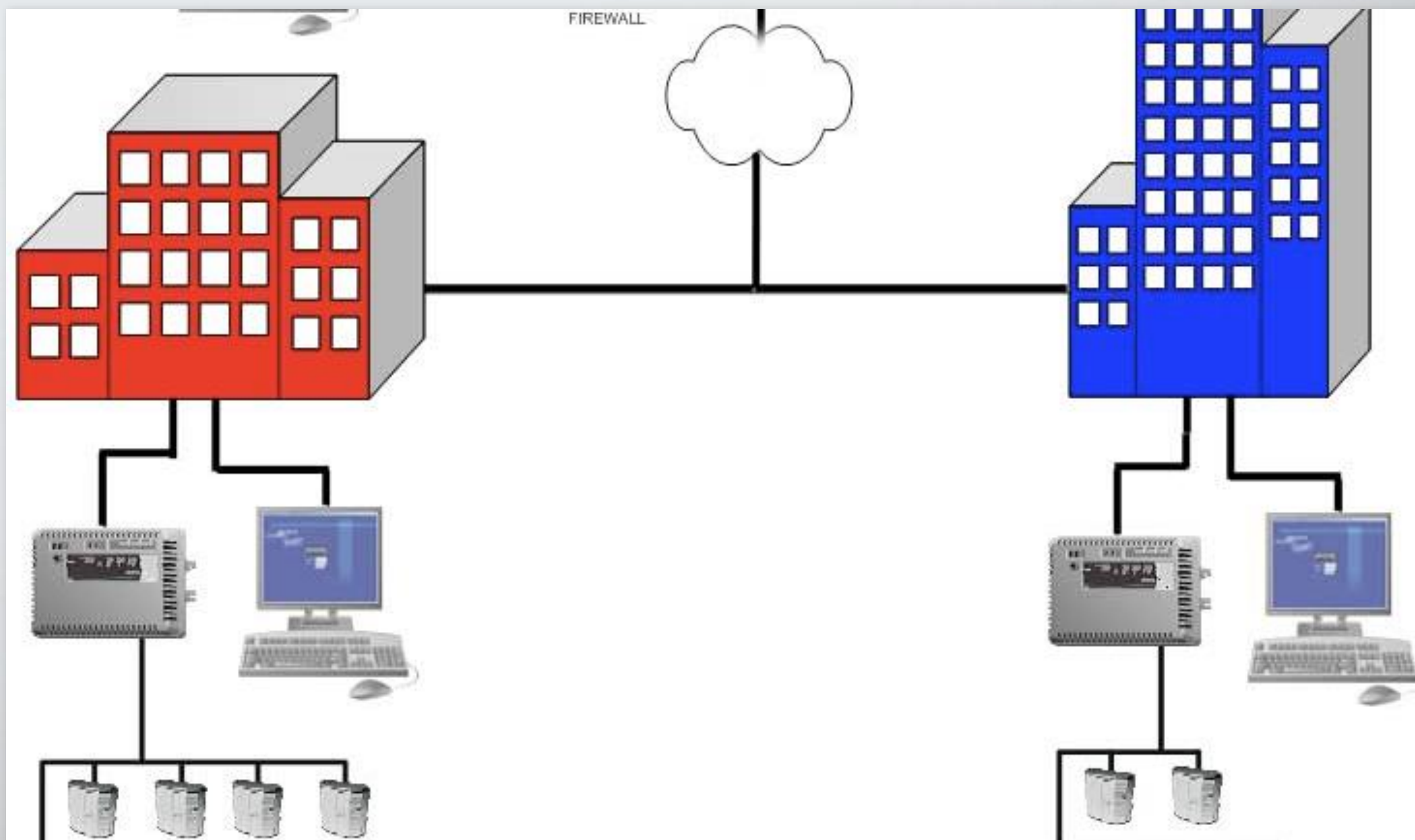
Grills that send a text message  
when the meat needs to be flipped!







# “HVAC 2.0”







## Industrial design


- Rapid concept generation
- Rapid concept development
- Rapid prototyping



“The education level of our workforce has increased so much....The machinists in this industry do trigonometry in their heads.”


**GENESIS SYSTEMS GROUP**, the largest robotic arc welding workcell manufacturer in the U.S and North America, is hosting our 7th Robotic Automation Seminar. This *free* 2-day educational seminar enables our attendees to gather knowledge on multiple robotic





Utilizing 3D printing, some companies had new iPad covers out to market 4 days after the release of the new iPad 2!





“Imagine a far more extreme transformation, in which advances in IT, biology and engineering allow us to **move much of health care out of hospitals, clinics and doctors offices, and into our everyday lives.**”

*Our high-tech health care future*  
*New York Times, 10 Nov 2011*









Optimal water consumption.  
A greener yard. Fun & easy to use.

RESERVE NOW FOR \$249



# Impact of hyper connectivity on skilled trades

- fascinating new collaborative partnerships emerging that are challenged by different cultures, innovation style, velocity-of-change ability (tech companies)
- more organizations in every industry now required to step outside of their 'innovation comfort zone' through technology oriented partnerships



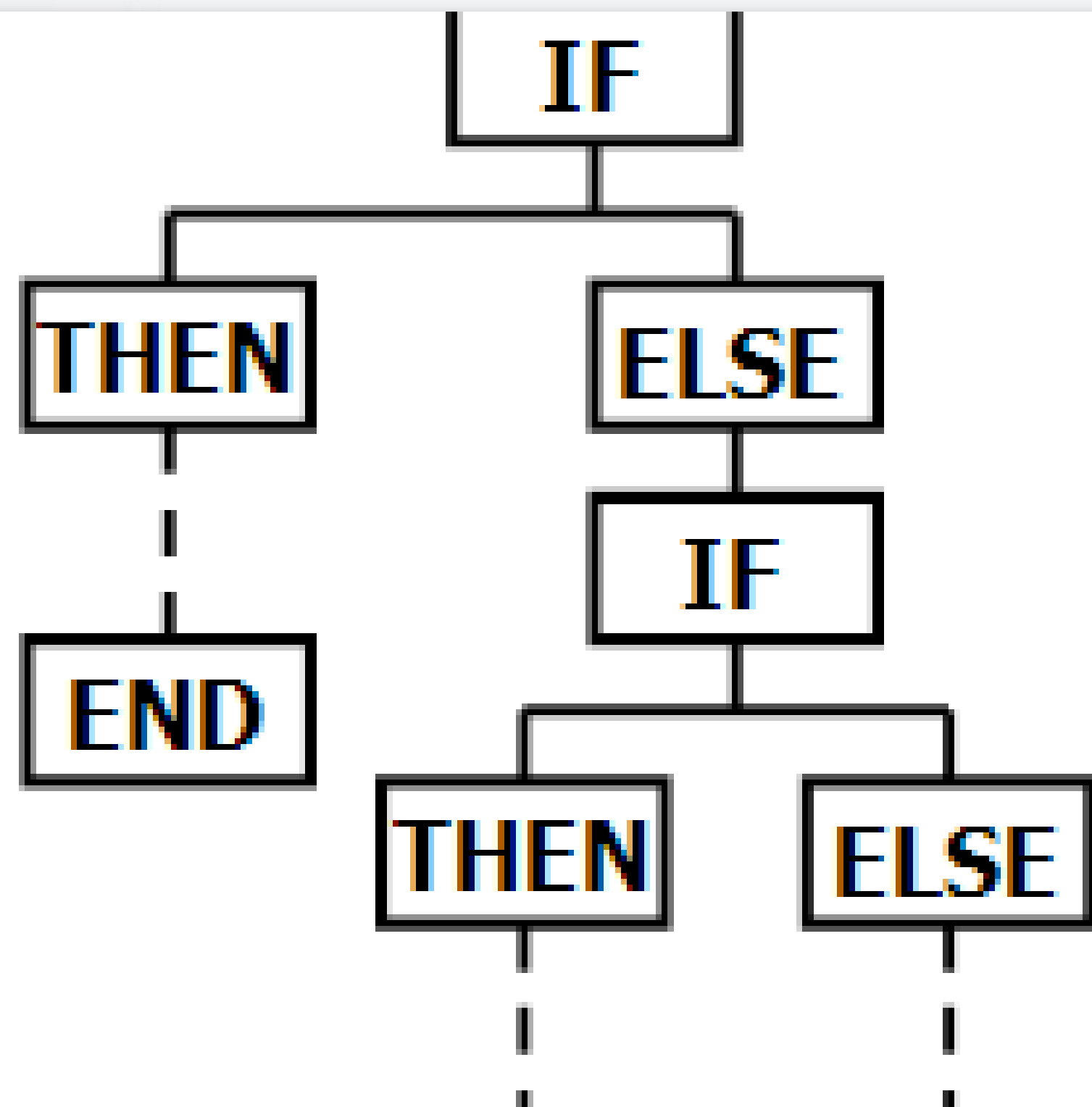


**5. It accelerates even more  
with the next generation**





??????



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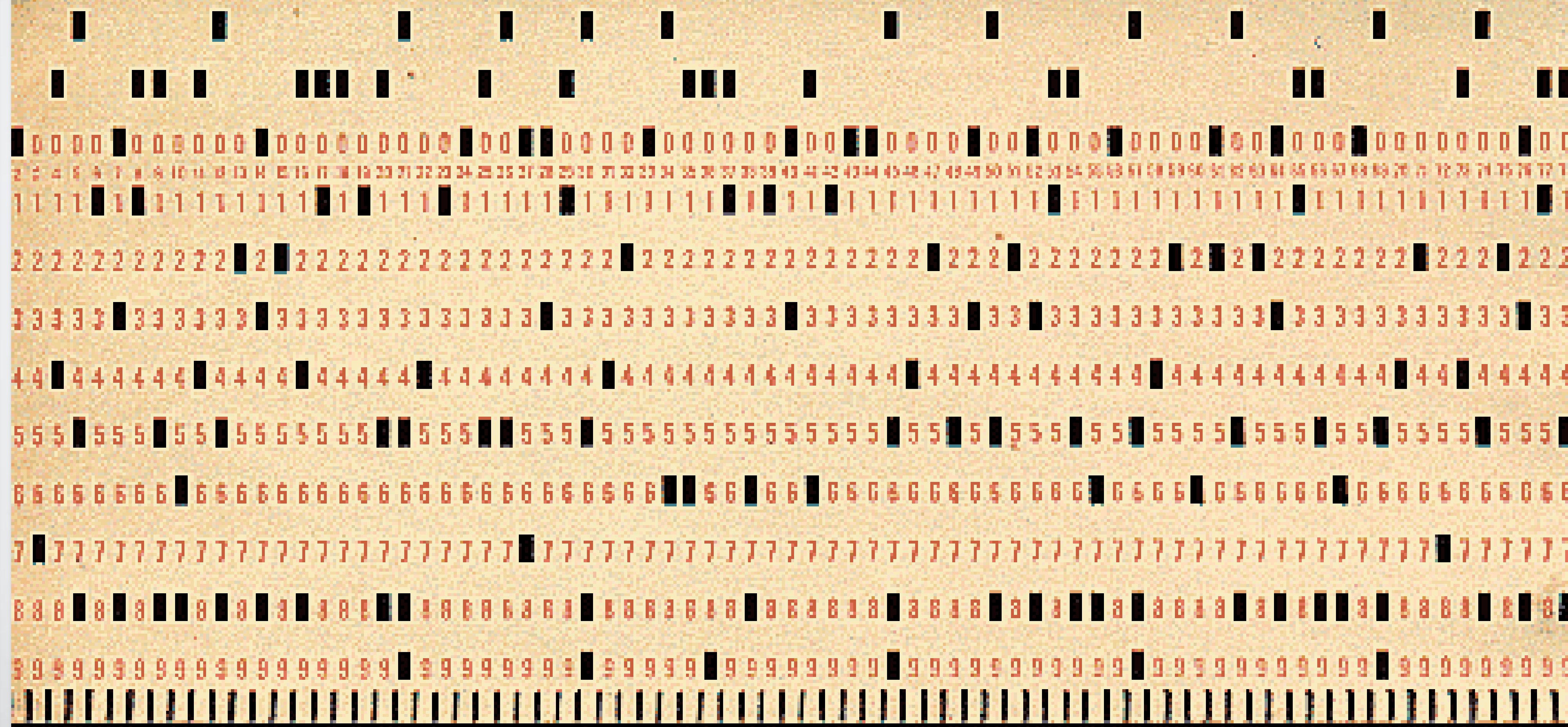
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RM Cobol Data Entry Program Generator  
Ver. 1.0 - Rafael Mota  
DEMO VERSION. Visit <http://www.mota.info>

Template filename (see example.txt for a template example)  
[example.cbl ]  
Output filename  
[.....]



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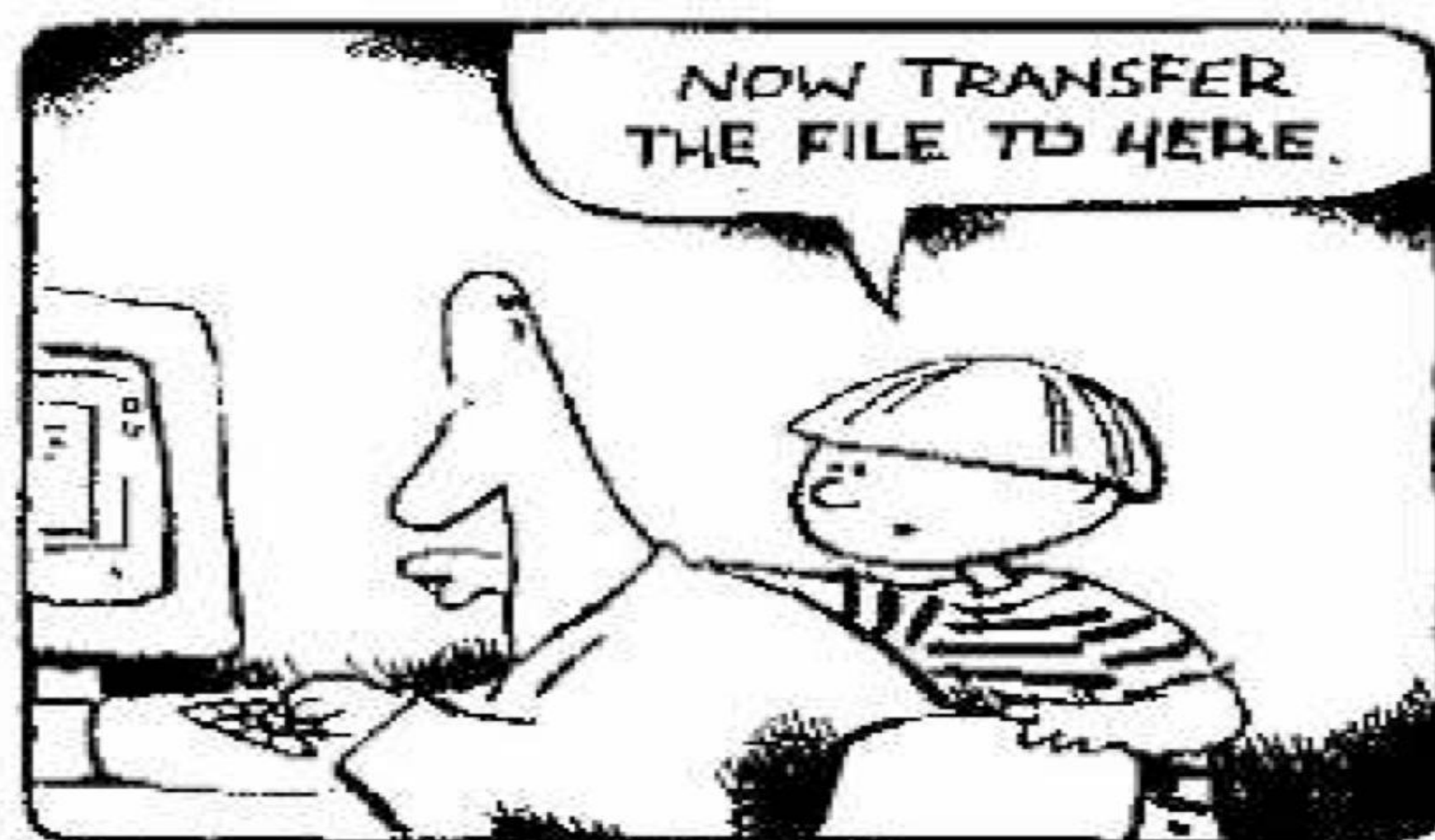
“Progress is great, but  
it's gone on far too long”  
Ogden Nash



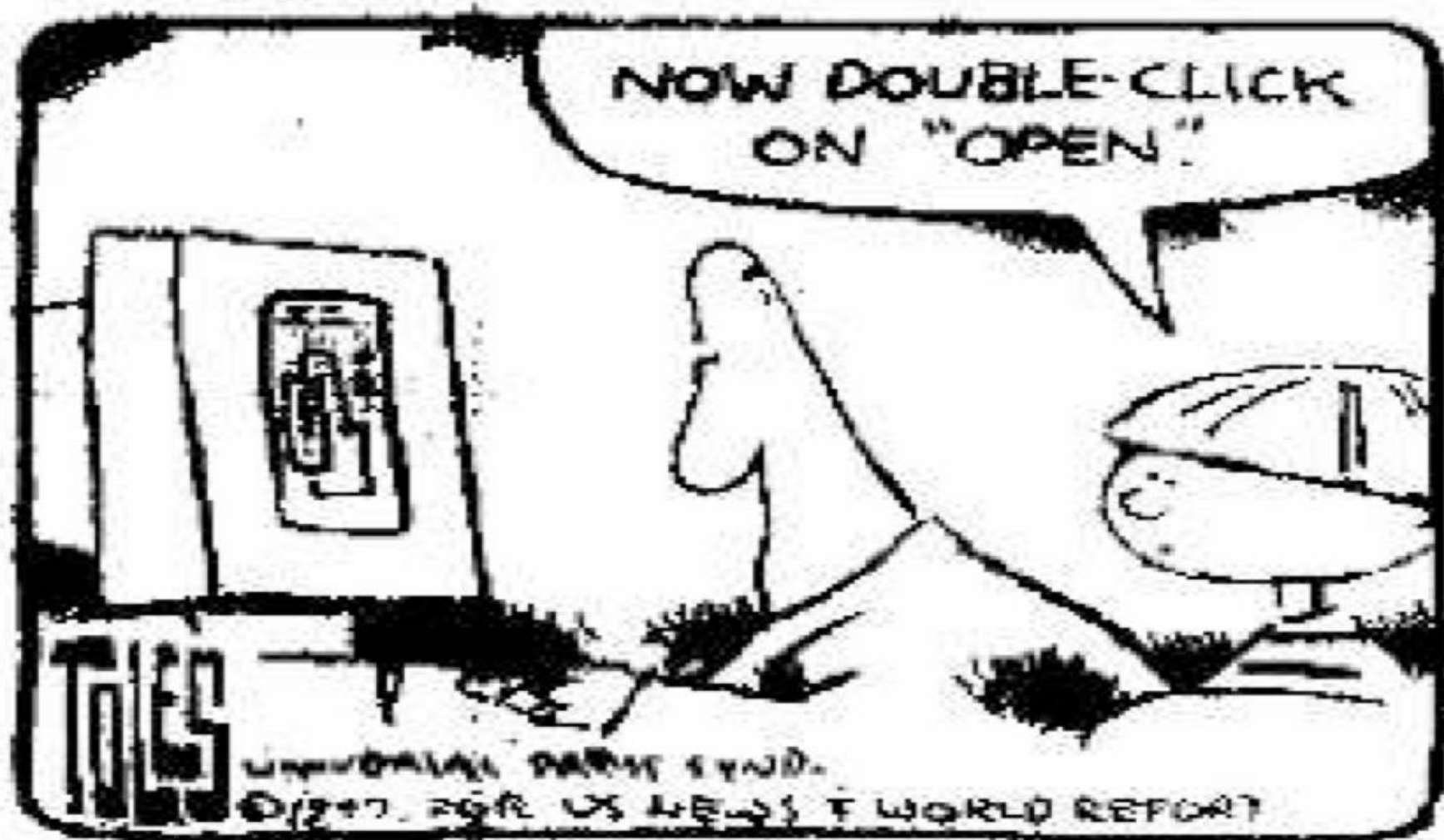
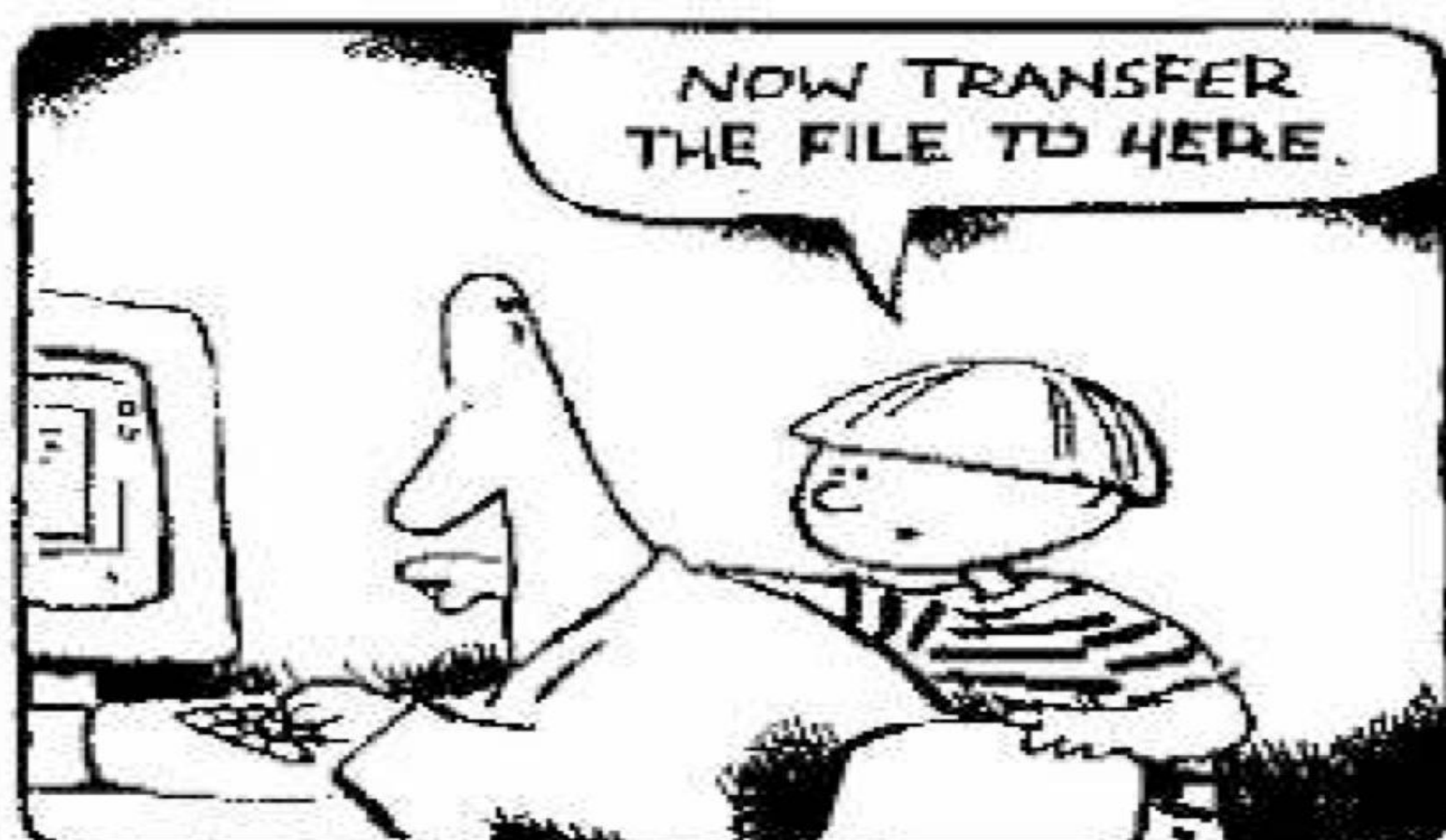
## Computers at a glance



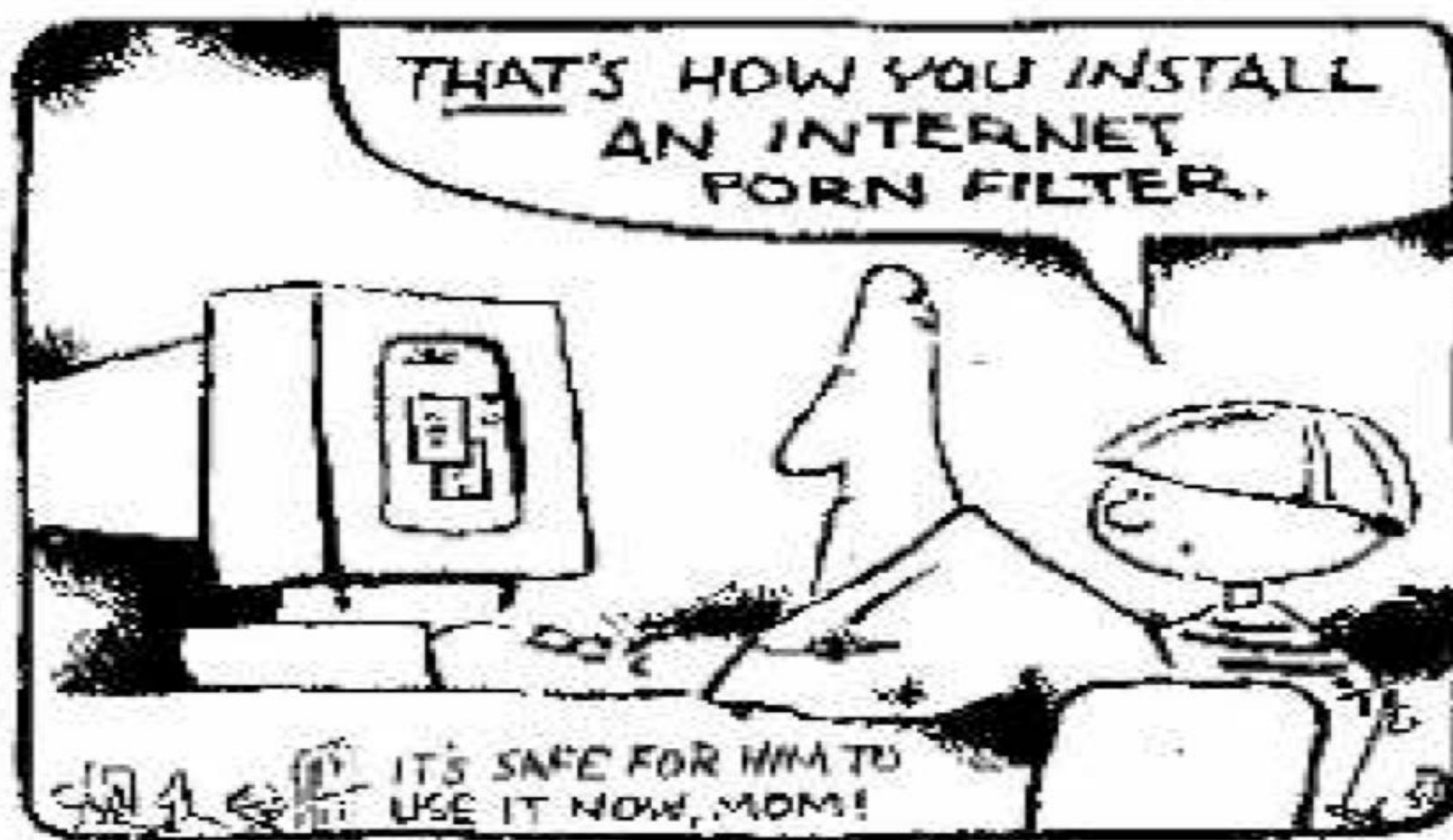
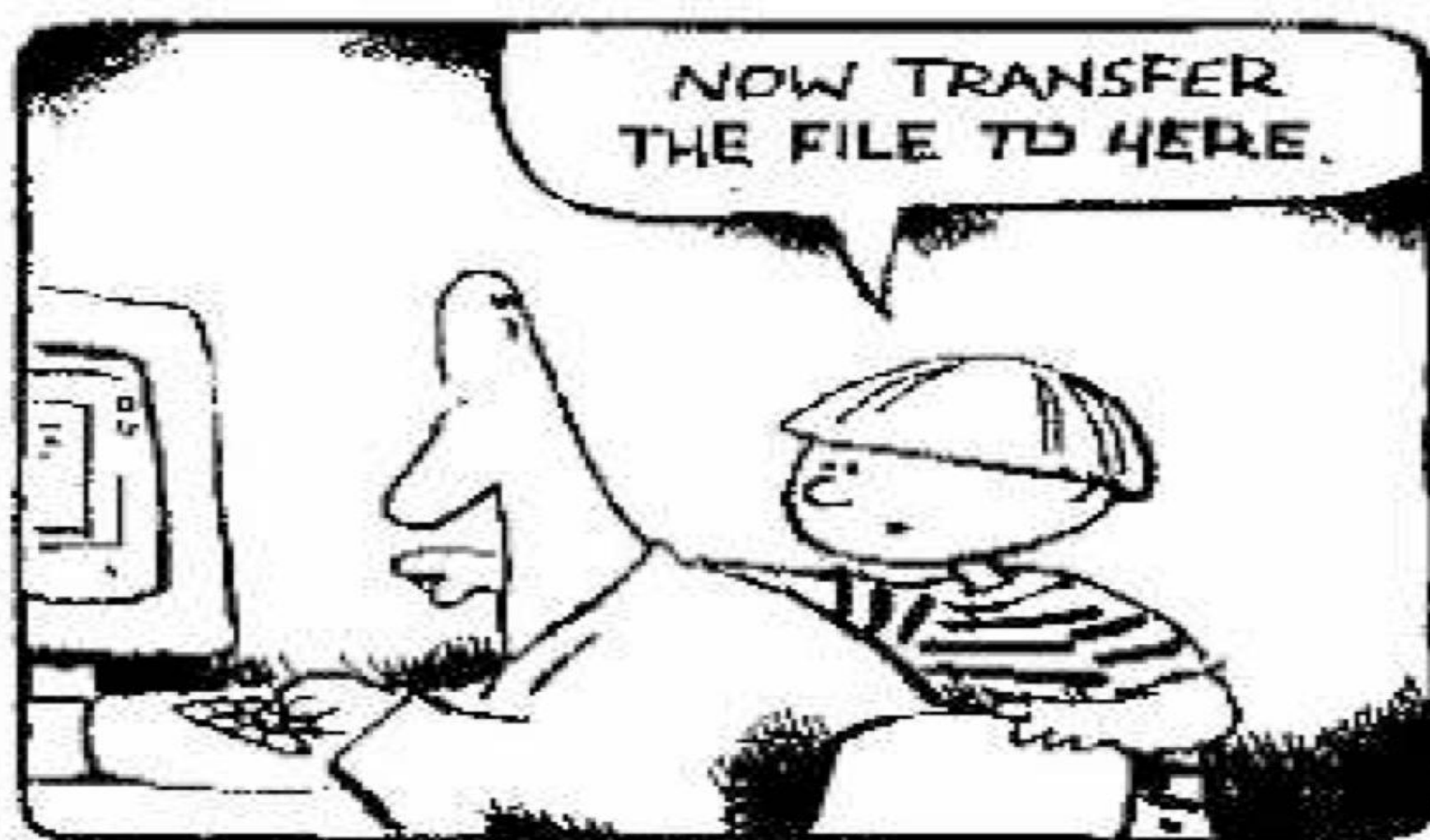
## Computers at a glance



# Computers at a glance

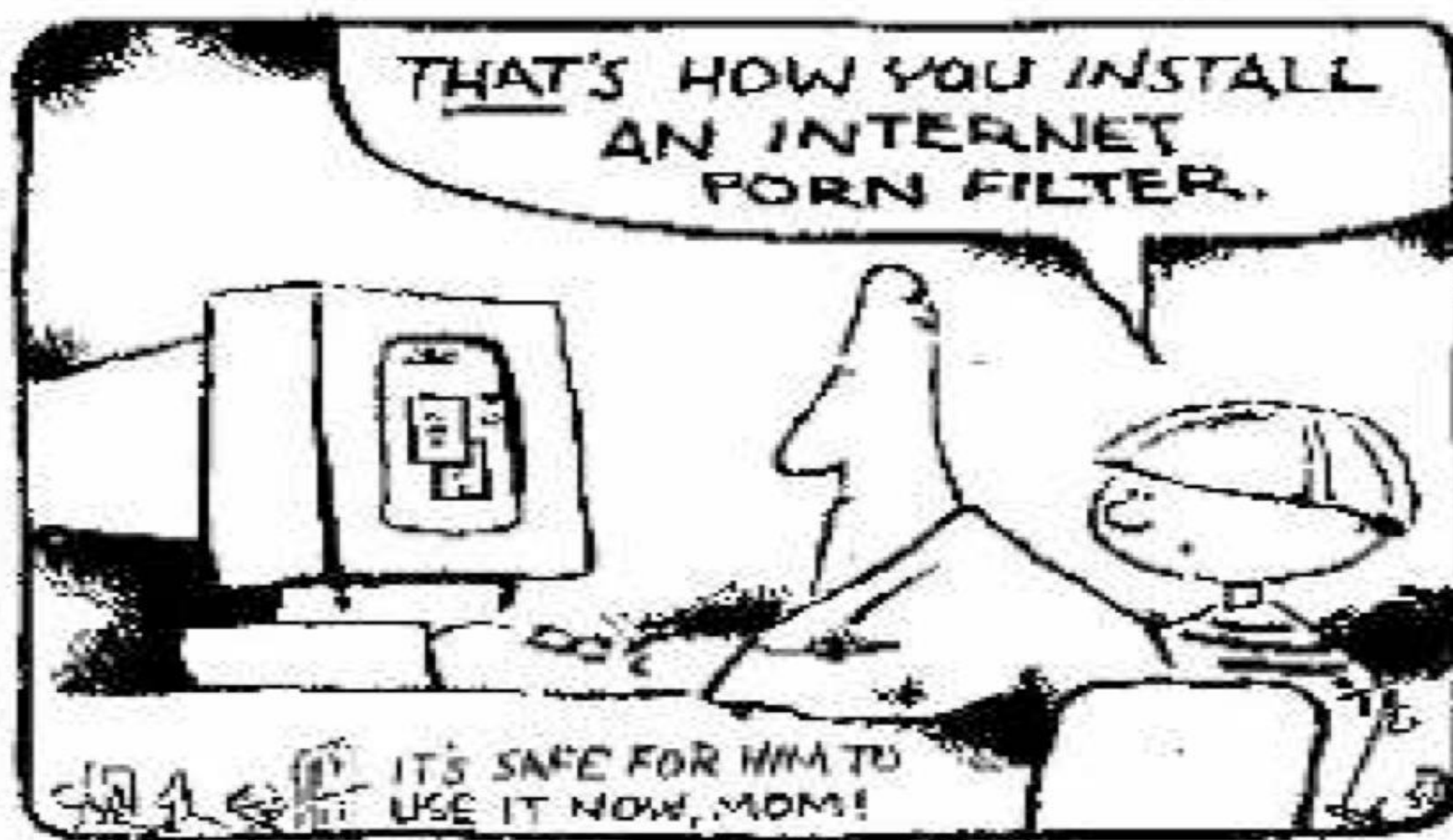
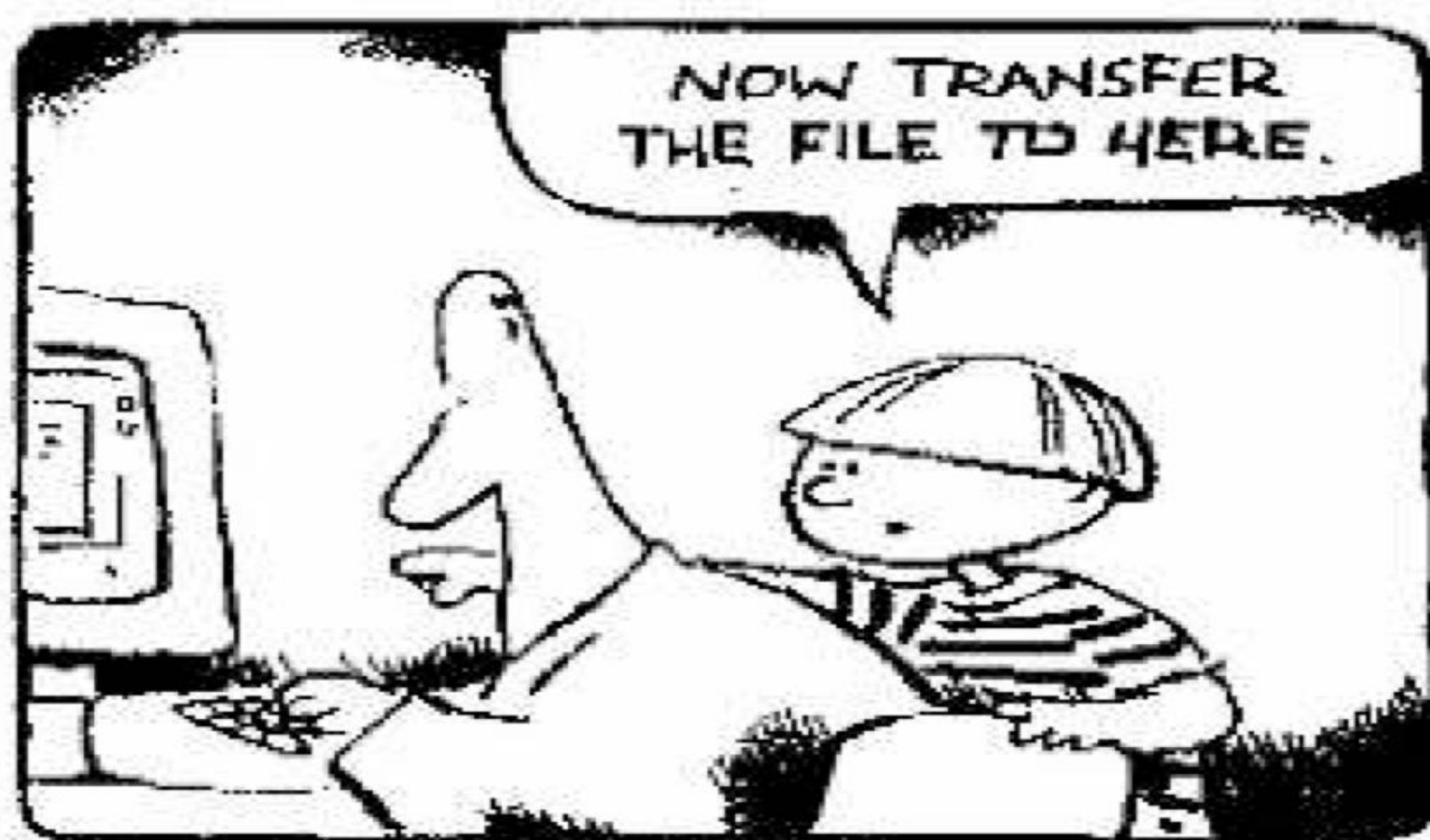


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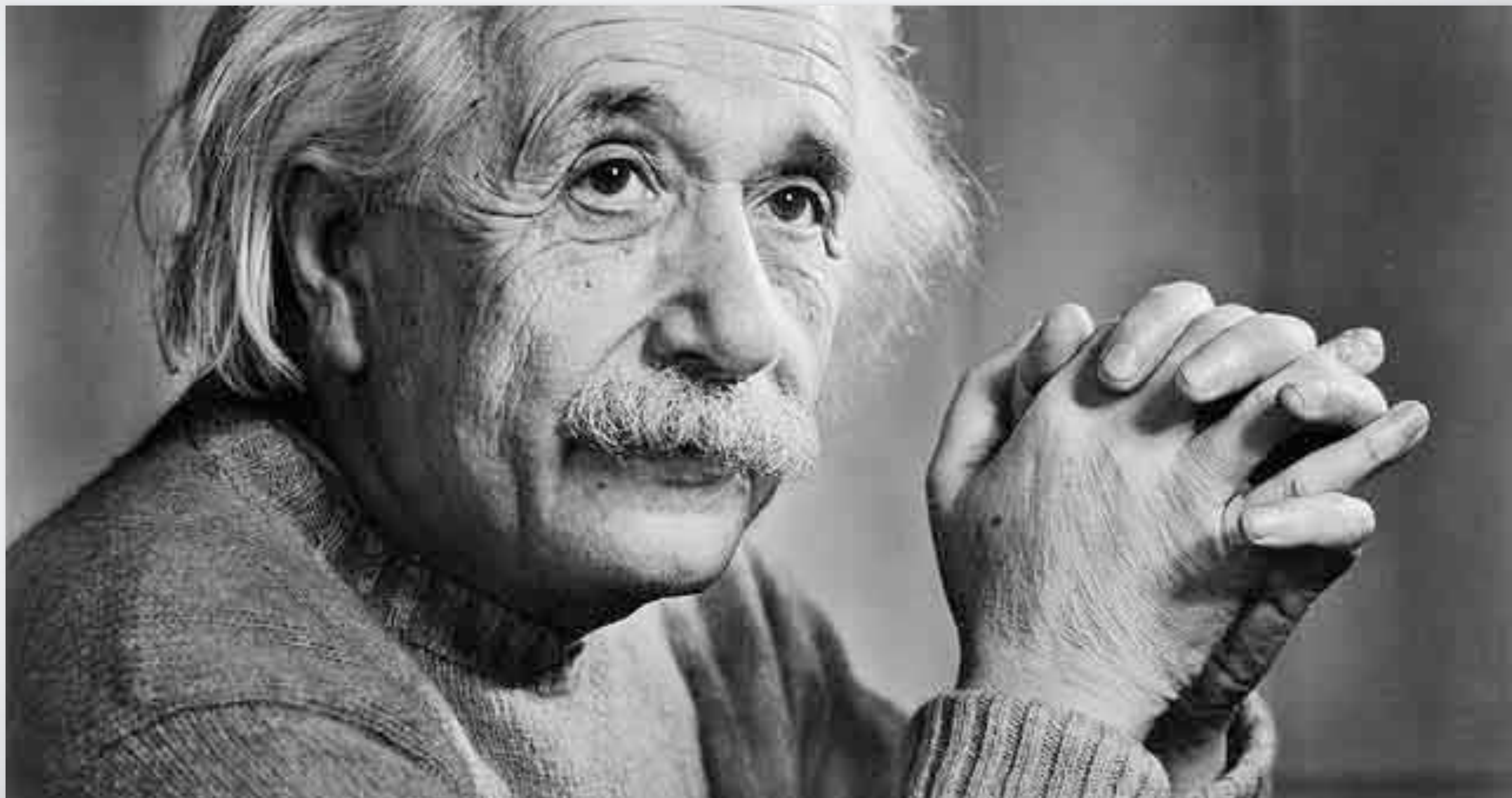


TOM TOLES

# Computers at a glance



TOM TOLES









- ❖ half of the global population <25
- ❖ globally wired, entrepreneurial, collaborative, change oriented
- ❖ now driving rapid business model change, and industry transformation as they move into executive positions





# The new workforce!

- ❖ **self-employment and job security: +50%**
- ❖ **2-5 years is a long term career!**
- ❖ **67% already thinking of another job on their first day in a new job**







# Key Realities About The Future of Skills and Trades

- ❖ rapid knowledge obsolescence
- ❖ rapid knowledge emergence
- ❖ disappearance of existing careers
- ❖ rapid emergence of new careers
- ❖ the fast emergence of new micro-careers
- ❖ “just-in-time knowledge” predominates
- ❖ an increase in the number of “nomadic workers”
- ❖ fundamental workforce / organizational assumptions challenged

“Some people see a trend, and see a threat.  
Innovators see the same trend, and see an  
opportunity”



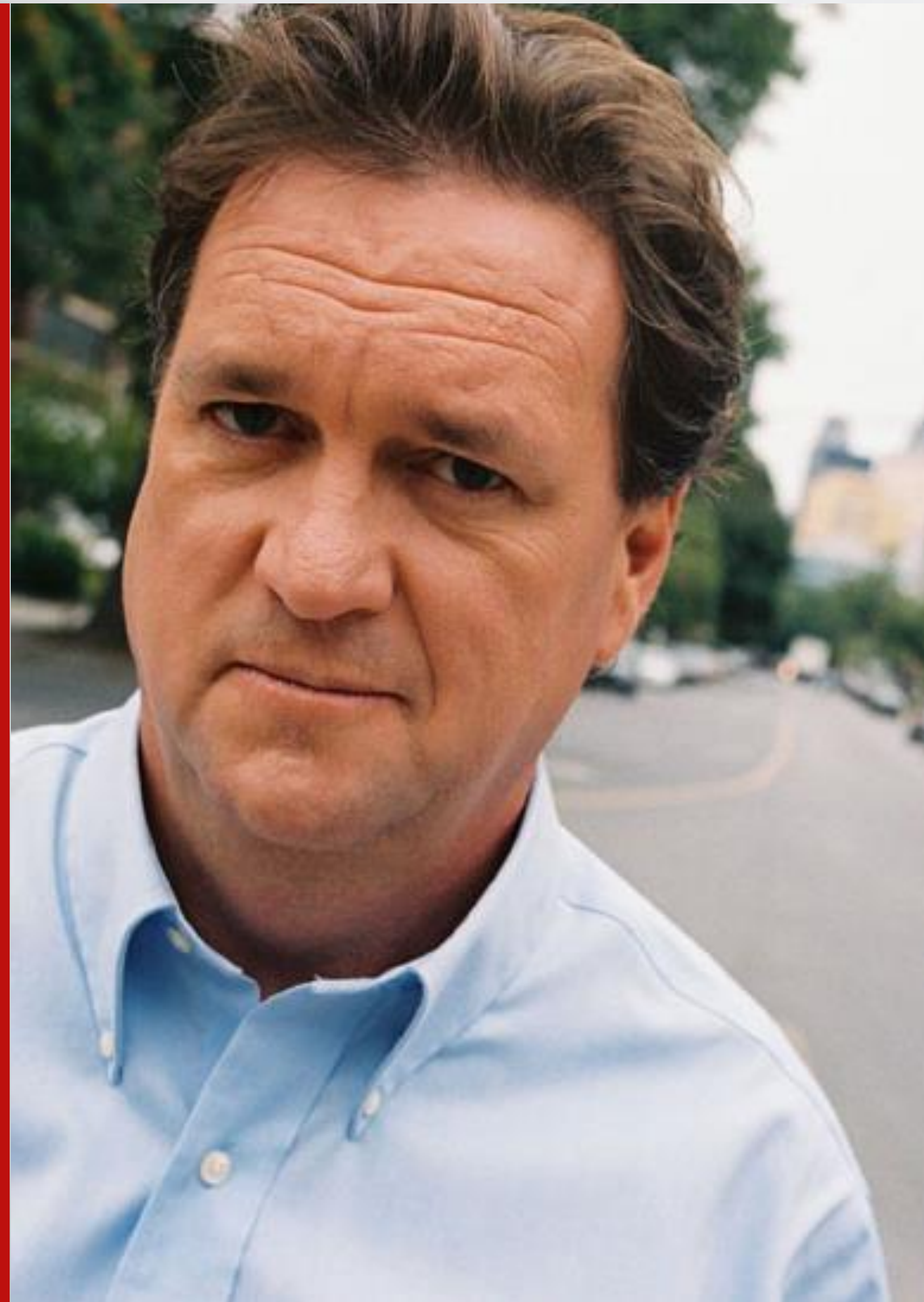


■ think big

■ start small

■ scale *fast*





- Observe
- Think
- Change
- Dare
- Banish
- Try
- Question
- Grow
- Do
- Enjoy!





# Jim Carroll

Author, Columnist, Nice Guy

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