

Breaking down walls.....

The role of technology in evolving
an industry



Who am I?

This is what we know..

This can be scary

Banker

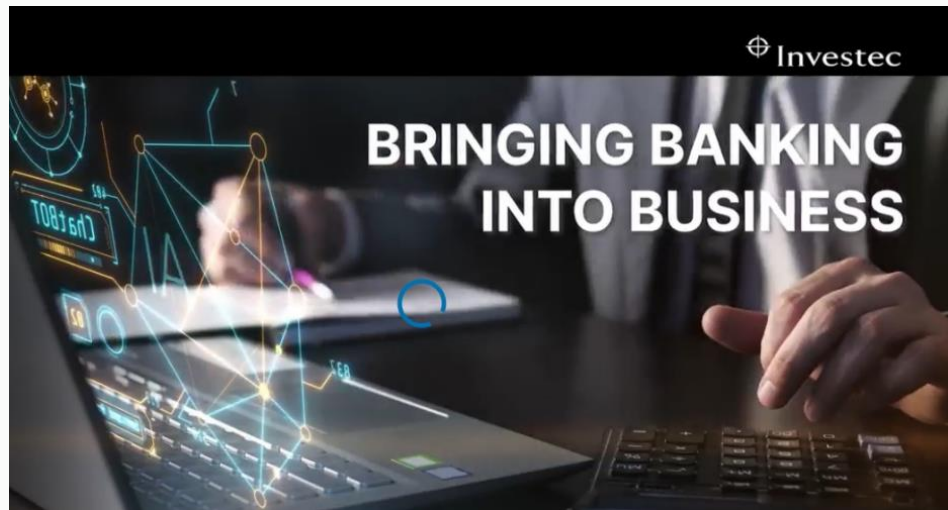
CSC

Web

Mobile

API

Real time connectivity for our clients increases



Investec 2023



Not to be confused with... 😊



12 reasons why I choose to be in CIVIL ENGINEERING

1. I hate sleeping.
2. I have enjoyed my life in childhood.
3. I can't live without tension.
4. I wanted to have disturbed family life.
5. I hate to look like a smart person.
6. I wanted to take revenge from myself.
7. I love dreaming and see client dream come true.
8. I wanted social boycott.
9. I wanted to break up with my friends.
10. I love to work on holidays.
11. I can't live without mobile.
12. I love begging for payment.

Disclaimer.. I am not a civil engineer☺ but I like to build things

CIVIL ENGINEER

noun

1: A person who gets excited about things that no one else cares about.

CIVIL ENGINEER:

(noun)

A person who does precision guesswork based on unreliable data provided by those of questionable knowledge

See also: wizard, sorcerer

Engineers solve and think differently...



What does banking have to do with Civil Engineering?

Workforce issues

Deteriorating Infrastructure

Resource limitations

Population growth

Climate Change

“ the species that survives
is the one that is best able
to adapt and survive to their
changing environment”

Building sustainable solutions that scale

“We live in a very different world to our ancestors...be creative, innovative and not stuck in the past”

In a recent [webinar](#), a panel of industry thought leaders outlined a few key trends that are shaping the future of civil engineering and the necessary actions that the future-ready civil engineer should consider moving forward.

The first may seem obvious, but as panelist Dr. Dennis Truax, former Chair, Director & Professor of the Richard A. Rula School of Civil & Environmental Engineering at Mississippi State University and current ASCE 2022 President, noted, we must recognize that we live in a different world than our ancestors and adjust accordingly. He added, “With limited resources, advanced technology, and population growth, we’re looking at a very different future. I like to say preemptive maintenance versus preventative maintenance as a way to not just fix what we have, but look forward to what we need. Be creative, innovative and not stuck in the past.”

Tech-Enabled Dimensions

A recent report prepared by Altman Vilandrie & Co., a strategic consulting group for ASCE, identified six key trends – alternative energy, autonomous vehicles, climate change, smart cities, advanced materials, and policy and funding – that will transform our built environment. The

I'm here to tell you a story..

What I learnt from being part of an industry that
is disrupted by technology ...

12 years ago....digital revolution

Goldman
Sachs

PODCAST: EXCHANGES AT GOLDMAN SACHS

**“NEVER HAVE SO FEW
WITH SO LITTLE CAPITAL
DONE SO MUCH DAMAGE
TO SO MANY INDUSTRIES.”**

Hugo Scott-Gall, Global Investment Research, Goldman Sachs

Digital Transformation Driving Business Model Disruption and Customer Relationship Disintermediation

 Vs. Music 	 Vs. Online 
 Vs. Books 	 Vs. Electronics 
 Vs. Movies 	 Vs. Photography 
 Vs. Transportation 	 Vs. Hospitality 

Disruption of Banking

Startups Disrupting Retail & Commercial Banking

B2C - DEBIT

Underbanked/Unbanked



Blockchain



Students



Freelancers



Millennials



Kids



SMB/SMEs



Expense Management



Freelancers



Tech Startups



B2B - DEBIT

CREDIT

Students



Home owners



Tech Startups



Underbanked/Unbanked



SMB/SMEs



Created by You. Powered by CBINSIGHTS

The Bank of the Future: What Will It Be?

.....



SMART CITY:

ARTIFICIAL INTELLIGENCE AND ITS IMPACT
ON CIVIL ENGINEERING



Futuristic
Concepts
in

Civil Engineering



Lesson 1

*If you have a curious mind, and love learning,
you never have to be afraid of technology...*




Fast forward 5 years later.....

Investec

There's One Place™
you can bank locally
and internationally.

Now, that's Private Banking.



— OUT OF THE ORDINARY

High touch, high tech digital banking

Unlock a world of convenience with our state-of-the-art digital platform.

Apply for a Private Bank account



Lesson 2

You will struggle to keep pace with technology...

Tech provides access...democratises the world



INTRO TO EXPONENTIALS

What is driving this?

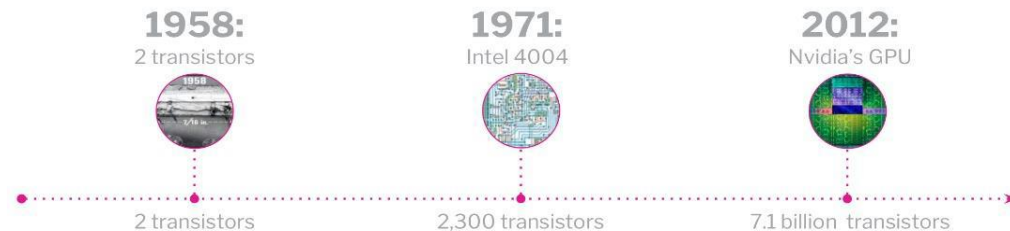
Moore's Law:

Price performance
of computers doubles
every 18 – 24 months

– Gordon Moore

INTRO TO EXPONENTIALS

Integrated circuits



**10K (faster) & 10M (cheaper) →
100 billion-fold improvement (40 years)**

@singularityiu

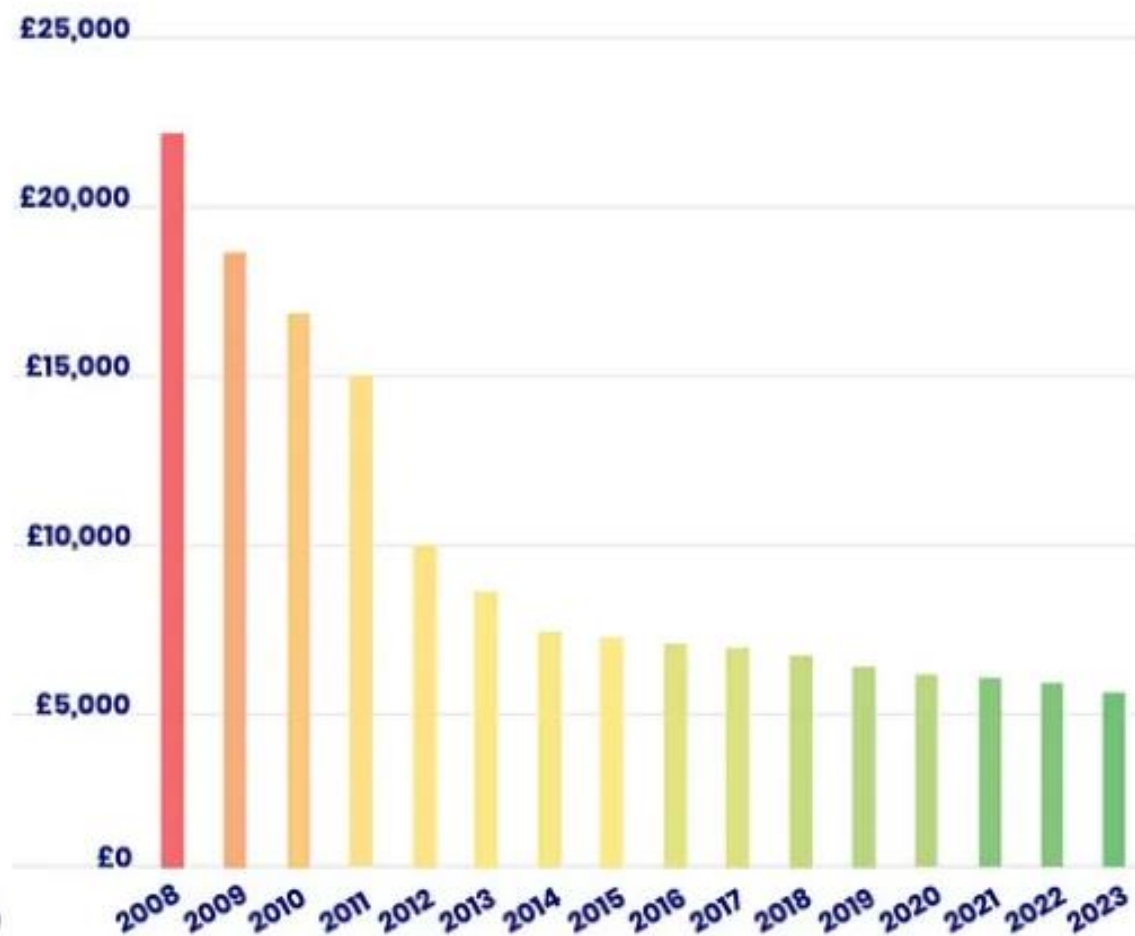
2023

THE AVERAGE
COST OF
INSTALLING
SOLAR PANELS
HAS REDUCED

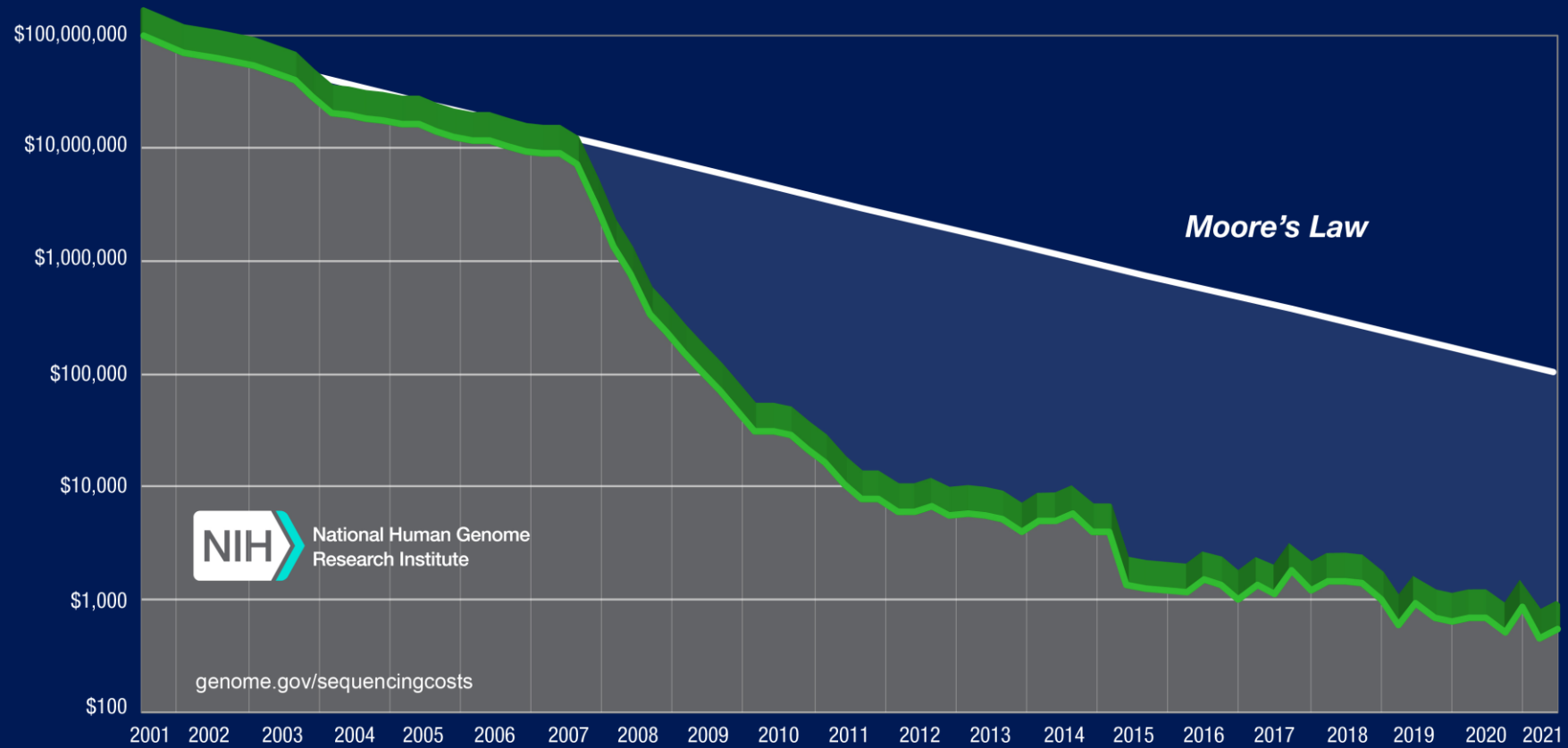
80%

SINCE 2008

Source www.makenergy.com



Cost per Human Genome





SCARCITY VS. ABUNDANCE

In only 20 years...



*An entire store's worth of
electronic products all fit in
your pocket...*

*...and come for free on your
phone as apps!*

Lesson 3

You must sometimes break down walls to see beyond your current space...



"Possibly the most common error of a smart engineer is to optimise a thing that should not exist." - Elon Musk

First principles engineering

1 **Question constraints**
and requirements. Make
them less dumb.

2 **Delete the part or step.** If
you aren't adding back 10%
of the things you delete, you
aren't deleting enough.

3 **Optimize**

4 **Go faster**

5 **Automate**

Do it **in that order**, and
do it **recursively**

--Elon Musk



*We believe that we can make a difference
in growing the SA economy by growing the
engineering and technology sector.*

Engineers scale 10x

One fateful day..

In late December 2019, a band of brave souls* decided to take a leap into the unknown...

- We had a new product called programmable banking that we thought could add value to the tech segment (and maybe to business clients too..)


* Lourens, Cumesh, Wouter, Keith, Devina, Wayne.... ☺






Investec *Developer*




A hosted code editor




Notifications (1)  Logout  Menu 

Simulator ▾402167xxxxxx8016Back

Cents amount 110

Currency

 South African Rand ▾

Merchant category

Grocery Stores, Supermarkets ▾

Merchant nameSpar

Merchant cityCape Town

Run in Sandbox

ConsoleBefore transactionAfter transaction

No output yet, [run a test](#)

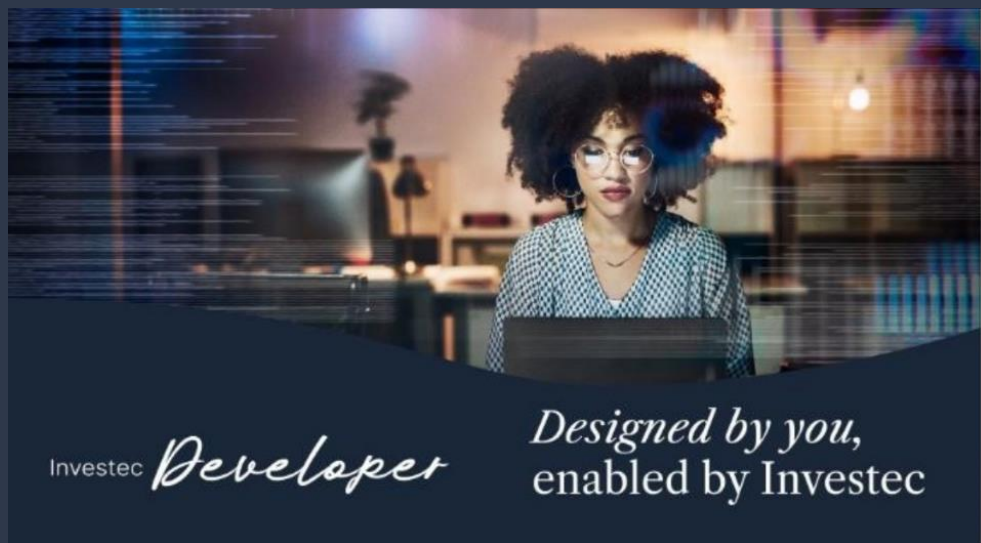
Script is: **Active** | PublishedDeactivatePublish

```
1 // This function runs during the card transaction authorization flow.
2 // It has a limited execution time, so keep any code short-running.
3 const beforeTransaction = async (authorization) => {
4   /** Example declining a transaction */
5   // if (authorization.merchant.category.key === 'fast_food_restaurants') {
6   //   return false; // Decline the transaction
7   // }
8
9   console.log(authorization)
10
11   // Convert rands to cents
12   const randAmount = authorization.centsAmount / 100;
13   // If my transaction category is equal to 'Travel Agencies, Tour Operators' or less than R500
14   if (authorization.merchant.category.key === 'Travel Agencies, Tour Operators' || randAmount < 500)
15     return true; // Approve the transaction
16   } else {
17     // Send myself a sms reminding us why it was declined
18     const sms = await notifications.sms({
19       mobile: '+27831234567',
20       body: 'Fraudulent transaction'
21     })
22     sms.send();
23     return false; // Decline transaction
24   }
25 }
26
27
28 // This function runs after a transaction was successful.
29 const afterTransaction = async (transaction) => {
30   /** Example notifications */
31   // const amount = formatCurrency(authorization.centsAmount, authorization.currencyCode);
32   // const message = amount + ' spent at ' + authorization.merchant.name;
33   // notifications.sendSMS(message, '+27821234567');
34   // notifications.sendEmail(message, 'example@example.com');
35   // notifications.sendPush(message);
36 }
37
```



Introducing

Investec *Developer*



A banner image for Investec Developer. It features a man with glasses and a blue shirt, sitting at a desk with a laptop. A zebra is superimposed on the image, standing in the foreground. The text "Investec *Developer*" is in the bottom right.

Banking Integration API's

Access your account data and transactional capability using Direct API's

Programmable Card Accounts

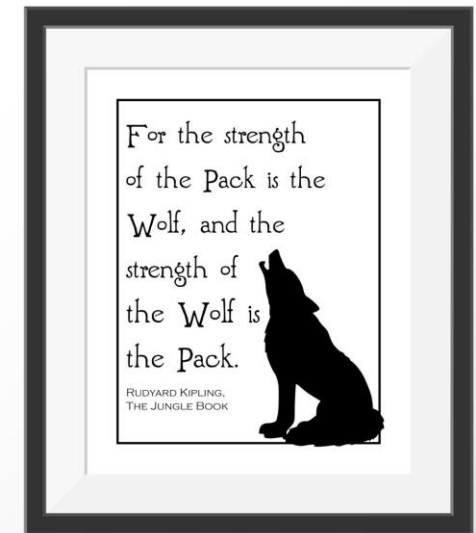
Deploy JavaScript code to program rules on cards, limit spend and track expenses.

Programmable Banking Community

Share ideas and co-create innovative solutions with other clients and developers across industries.

Lesson 4

Get comfortable with not being the most knowledgeable person in the room





Programmable Banking Community



The Investec Developer Community brings together software developers, innovators, and tech enthusiasts passionate about shaping the future of banking.

"I love the fact that I can ask questions and get help with problems, and help others as well."

Anri Goosen
Community Member



COMMUNITY EXPERIENCE

Get involved by participating in some of our community activities:

- **Monthly meetups:** See what community members are building at our [monthly demos](#).
- **Community chats:** Engage with other developers and be the first to know about new releases via the Investec Developer Community Slack.



"For us, it was a massive game-changer... We know at any time how much money we've made, or how much profit in that day instantaneously. A massive saviour. "

[Michael Louis](#) | Chief Technology Officer

Investec Developer Beta Programme

Join the Investec Developer Beta Programme and supercharge your finances with low-code tools.



Beta

Spreadsheet Banking

Get access to your Investec accounts and transactions inside an Excel spreadsheet.



OneCart



Spreadsheet Banking **BETA**

Download add-in

Get access to your banking transactions and accounts within Excel by downloading the Spreadsheet Banking add-in.



Disconnected

Corporate Business

Connect your Corporate Business account.

Connect



Connected

Private Bank accounts

Manage your Private Individual or Business connection.

Add or remove accounts

Disconnect



Disconnected

Investec for Intermediaries

Connect your Investec for Intermediaries account.

Connect



Lesson 4

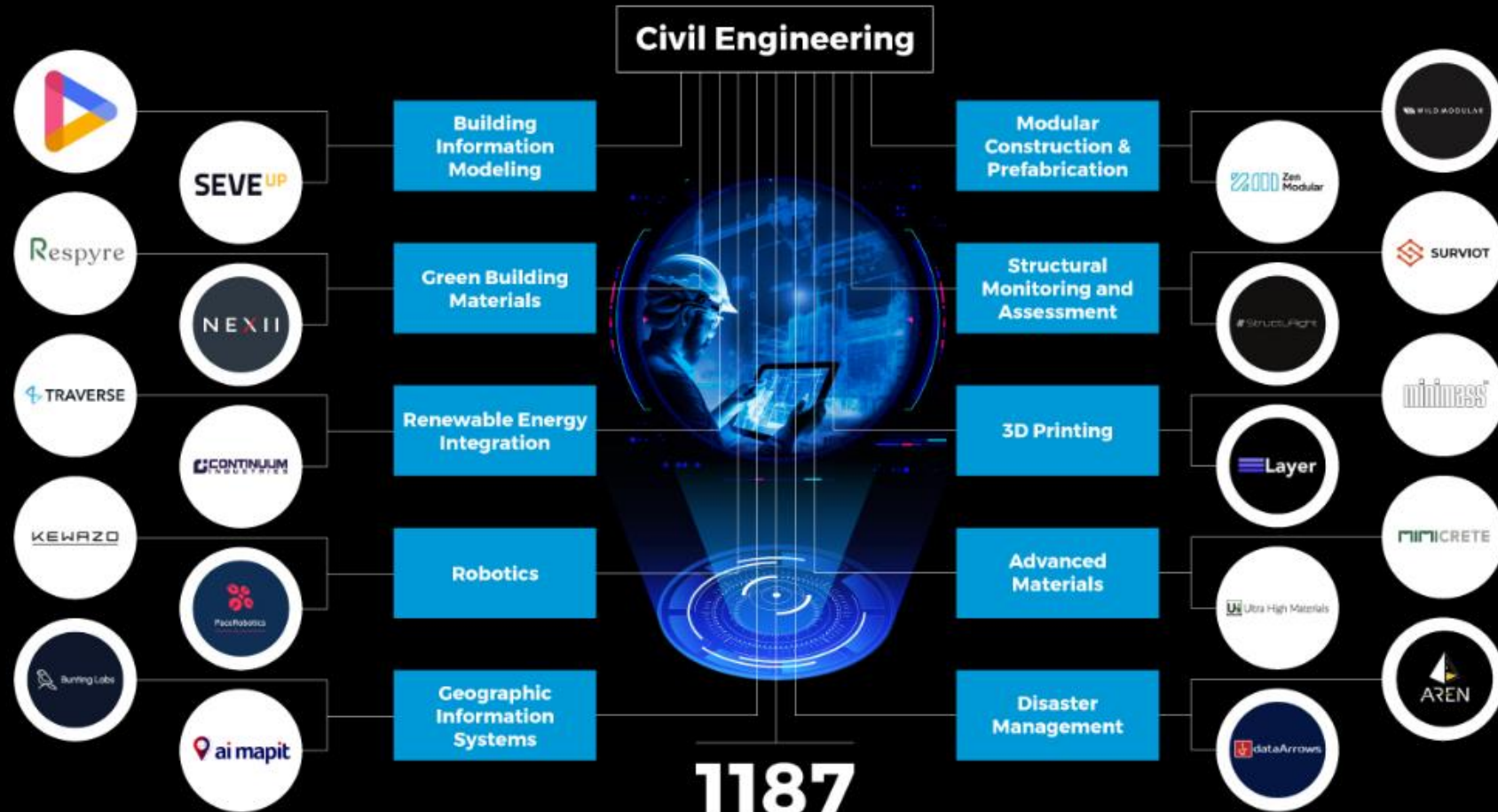
Your world as you know it is changing

Your career as you know it is evolving



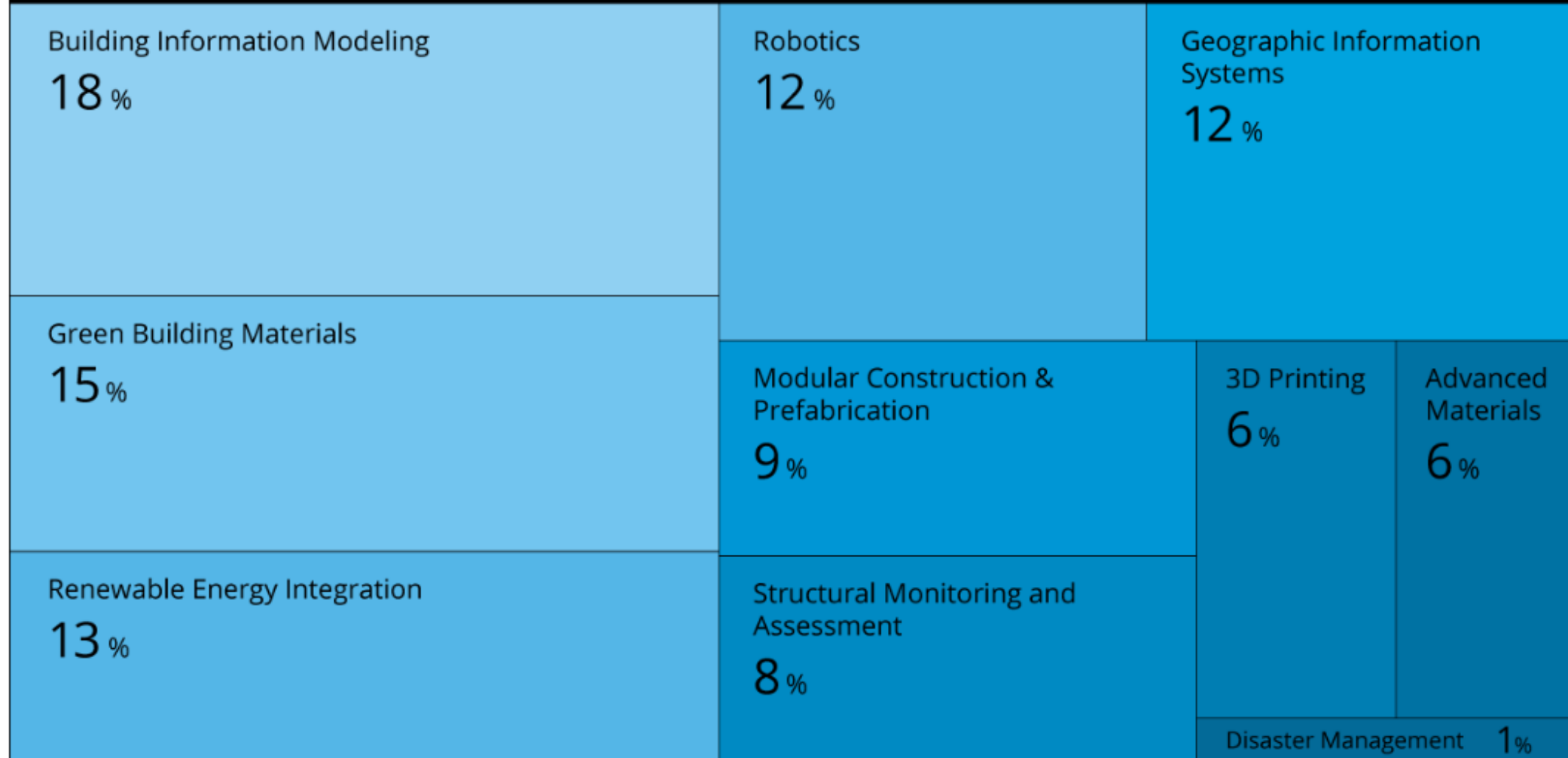
Top 10 Civil Engineering Trends in 2024

investec



Data provided by • **StartUs** insights • November 2023

Impact of Top 10 Civil Engineering Industry Trends



This tree map illustrates the top 10 innovation trends & their impact on Civil Engineering

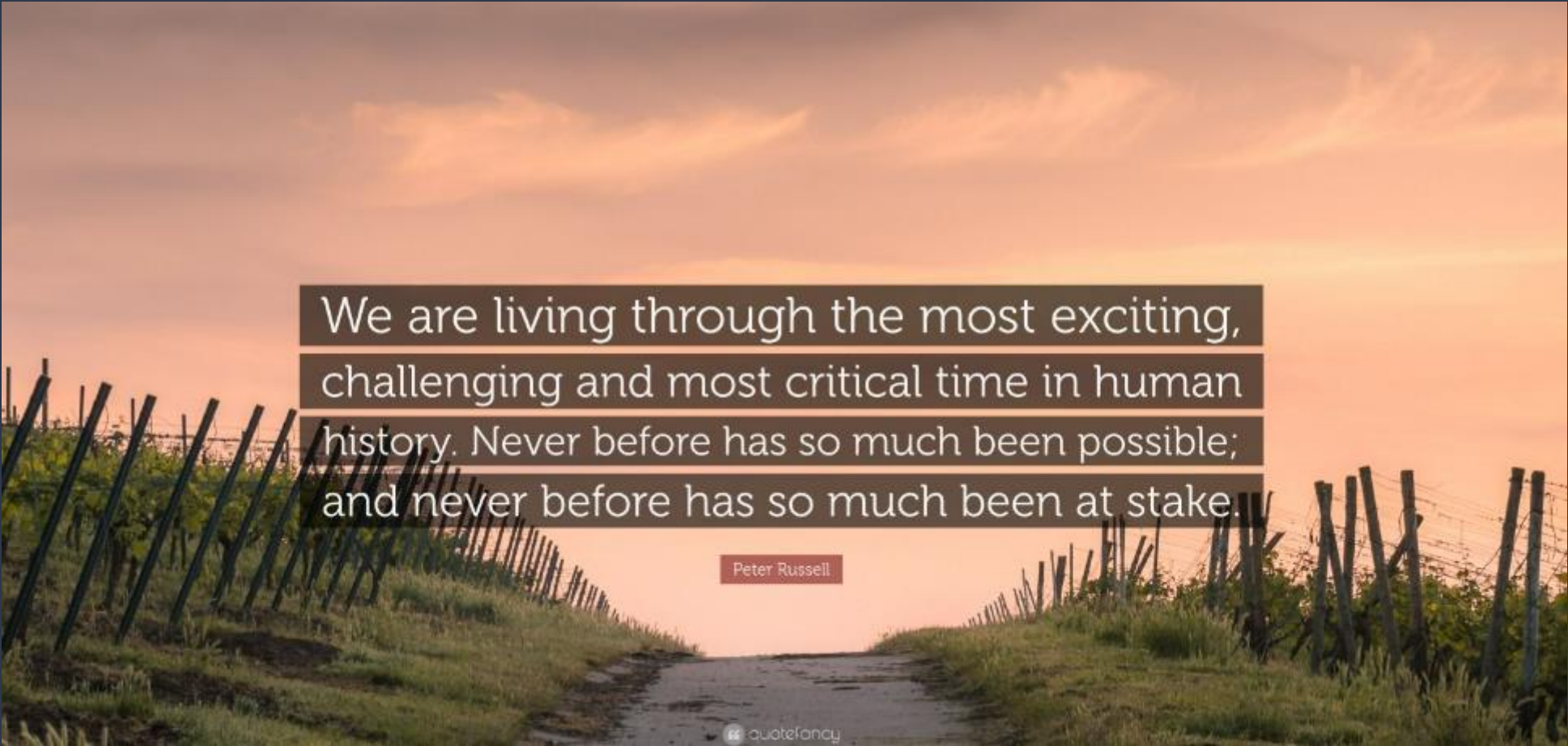
StartUs Insights

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November 2023



Lesson 5

Be ready to dream big again...



We are living through the most exciting,
challenging and most critical time in human
history. Never before has so much been possible;
and never before has so much been at stake.

Peter Russell

As a business have you ever wished that your bank was integrated directly into your business systems?

That you could track moneys flowing in and out in near real-time and reconcile your ledger as its created

What about initiating a payment from your systems, no more file downloads and uploads ...

Imagine a world where your bank feed could integrate with your spreadsheets and you could create rules on your corporate cards to manage your spend.

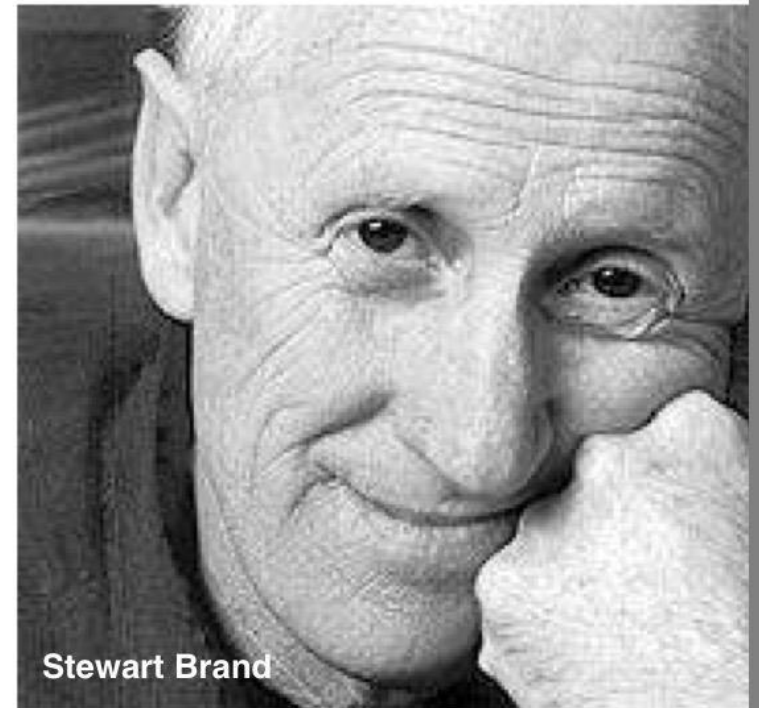
Explore the Cities of the Future

Imagine stepping 50 years into the future. Smart cities are designed to optimize sustainability and resilience. Innovation and automation are everywhere. Renewable energy is a primary power source. Space-based solar power provides energy all day. And transport is easy with personal travel pods and drone deliveries. This isn't science fiction. Engineers are making plans for this future world right now, and it's coming to the giant screen! "Cities of the Future" brings Future World Vision concepts to life as today's engineers work to solve the world's most pressing challenges for tomorrow.

[REIMAGINE THE FUTURE](#)

*Never doubt that you, and
your small team can create
the unimaginable future...*

“
This present
moment used
to be the
unimaginable
future.



Stewart Brand



THE MAN IN THE ARENA

It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat.

Theodore Roosevelt

Excerpt from the speech "Citizenship In A Republic" Paris, France. April 23, 1910

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Investec *Developer*



Thank you