



CESA

Consulting Engineers South Africa



Your Partner in Enabling Consulting Engineering Excellence

Engineering The Future I Want YPF Imbizo 2018


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CONTENT

- Why did I choose engineering
- Current statistics and challenges
- Transformation and what this means
- Digital Disruption
- What do I consider to be the future I would want?



PERSONAL PROFILE

- 47 years old, schooled in Chatsworth in Durban
 - Am married to my high school girlfriend (Kavenna) and have a son (Kimren) and daughter (Sirini).
 - Received a Bursary from Van Wyk & Louw (now Aurecon)
 - Graduated from University of Natal (1992)
 - Started working in 1993 in Pretoria (left family and friends behind in Durban)
 - Desperate to return to KZN
 - Joined PD Naidoo & Associates in 1997 – (small company)
 - Was the founding Chairperson of the YPF in 2003/2004
 - Sold business in 2013 to Mott MacDonald
 - Currently a Director at Mott MacDonald
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WHY ENGINEERING?

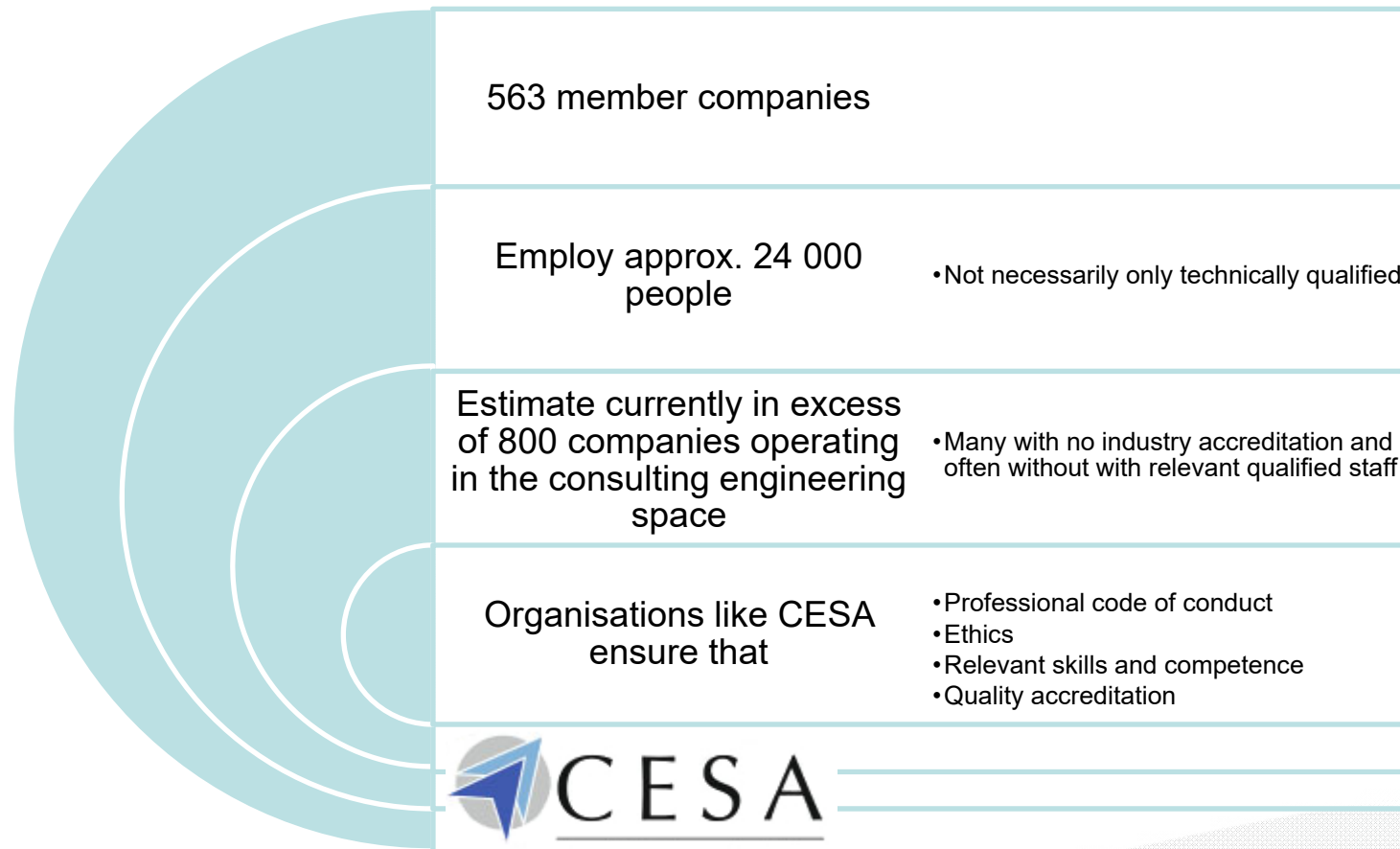
If any fact is twisted or falsified it is referred to as
DOCTORED

And

Whenever a task is skillfully accomplished, it is called
ENGINEERED



CONSULTING ENGINEERS SOUTH AFRICA



INFRASTRUCTURE ASSETS

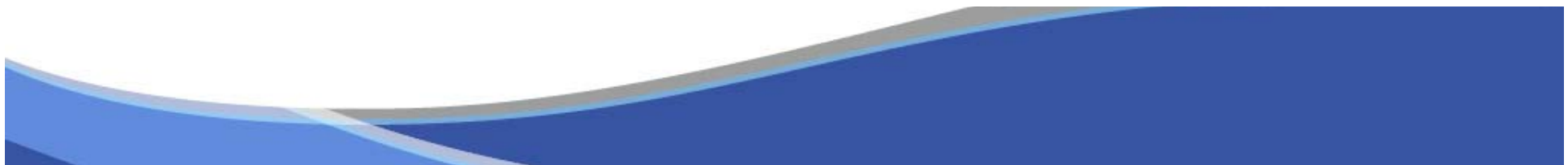
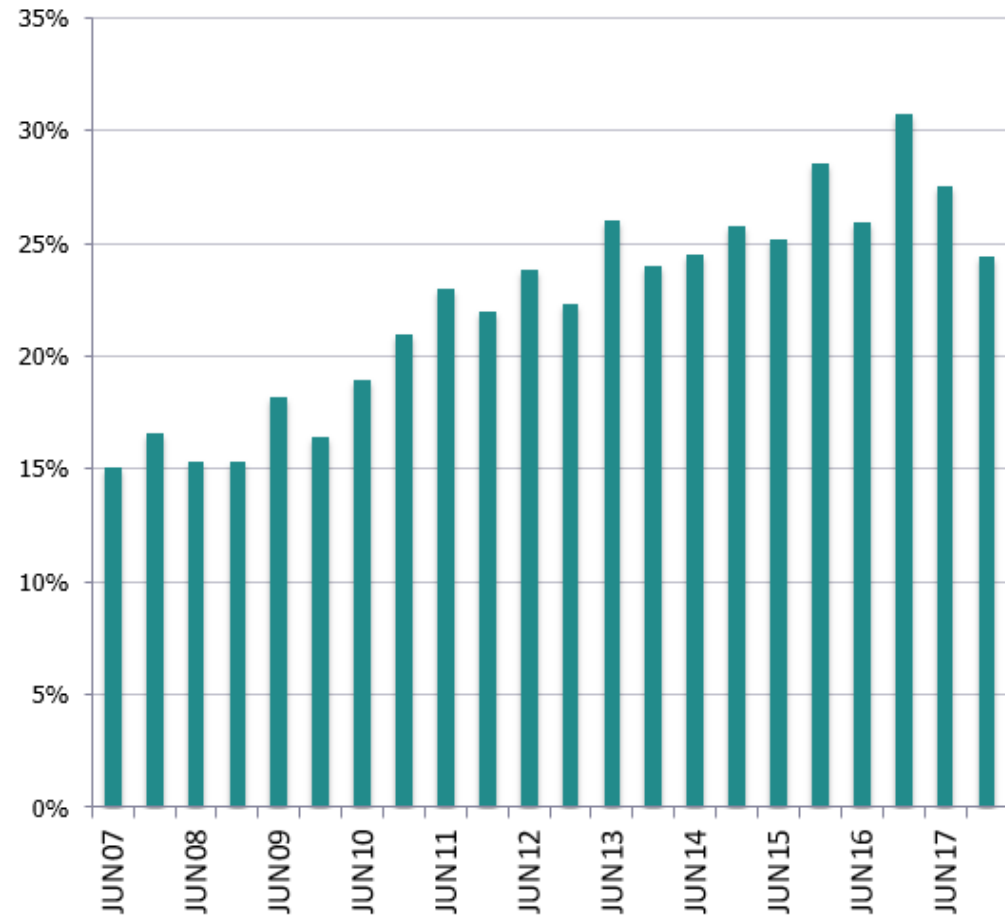
FIGURE 1: LIFE CYCLE COSTS



- Question elaborate tendering for Services
- Value for Money vs Lowest Cost
- Attention focused on solutions to address Construction and the Operations & Maintenance

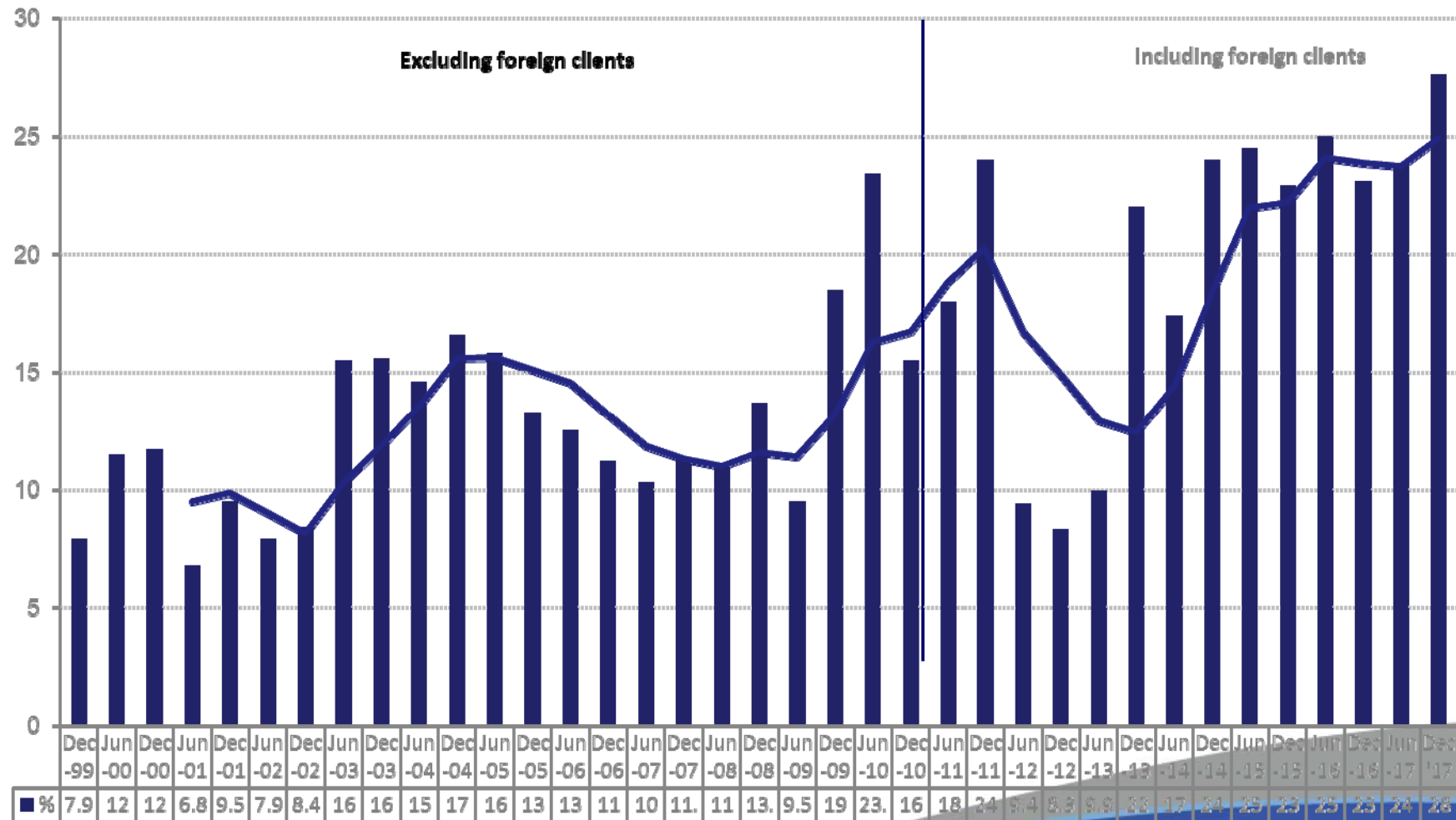
AVERAGE DISCOUNTING BY FRIM

BY FIRM CATEGORY



Total fee income outstanding for longer than 90 days

Percentage of total fee income earned



INDUSTRY CHALLENGES

Challenges

Lack of work

Retrenchments, downsizing

Reduced training, lack of internships

Emigration as other countries offer more opportunities

Migration away from our industry

Results in reduced competence in companies and clients

KEY 2018 OBJECTIVES

Procurement policy changes

- Questioning elaborate tendering for professional services
- Value based evaluation as opposed to lowest cost
- Framework agreements for certainty for work tenure


Balanced Workload

- Increased project pipeline based on increasing planning
- Stage gates approvals to either accelerate or stop projects
- Move away from feast or famine cycles in the Infrastructure industry

Client Competency

- Technical skills and competency in client departments
- Good understanding of roles and responsibilities to be played by all (Client team, Delivery team and Assurance teams)
- Infrastructure Directorate at Treasury for infrastructure decision making
- Presidential Advisory committee on Infrastructure

TRANSFORMATION

- Demographic - embracing differences between us and being considerate and respectful regardless of race or religion
 - Gender – address the inclusivity and consideration and agree to the freedom of choice that our democracy allows us all
 - Age – There industry requires a relook at how young and older engineers interface to create a sustainable industry
 - Accepting new business models and new ways of offering sustainable engineering services
 - Technology - new ways of working, new tools, greater automation and reliance on AI
- 

OUR WORLD IS CHANGING

WORLD POPULATION

7,572,737,939 Current World Population

108,237,382 Births this year

200,748 Births today

44,831,090 Deaths this year

83,148 Deaths today

63,406,291 Net population growth this year

117,600 Net population growth today





“Resource constraints continue to push the need for effective sustainable solutions in the face of growing urban pressures”

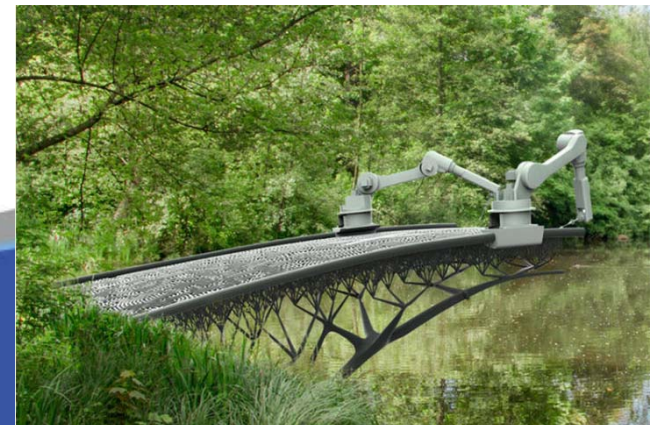


DIGITAL DISRUPTION

- Advanced analytics and AI
- Asset management using Sensors and information collected
- Robotics & 3D Printing
- 5D Building Information Modelling (BIM)
- Online document control and data management

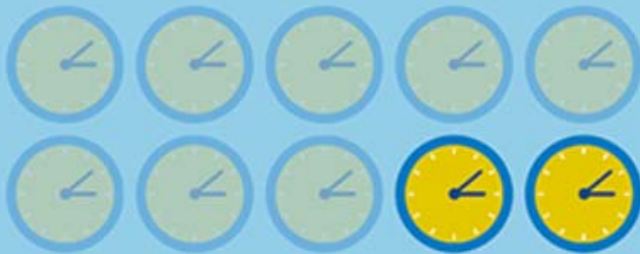
Gauteng launches its first drone programme: here's what they're being used for

Staff Writer 21 May 2018



THE CONSTRUCTION INDUSTRY IS RIPE FOR DISRUPTION

Large capital projects typically take



20% longer to finish...

...and are up to



80% over budget,

and R&D spending in construction runs well behind other industries.



Construction



Auto



Aerospace

Note: Figure represents average percent of revenues

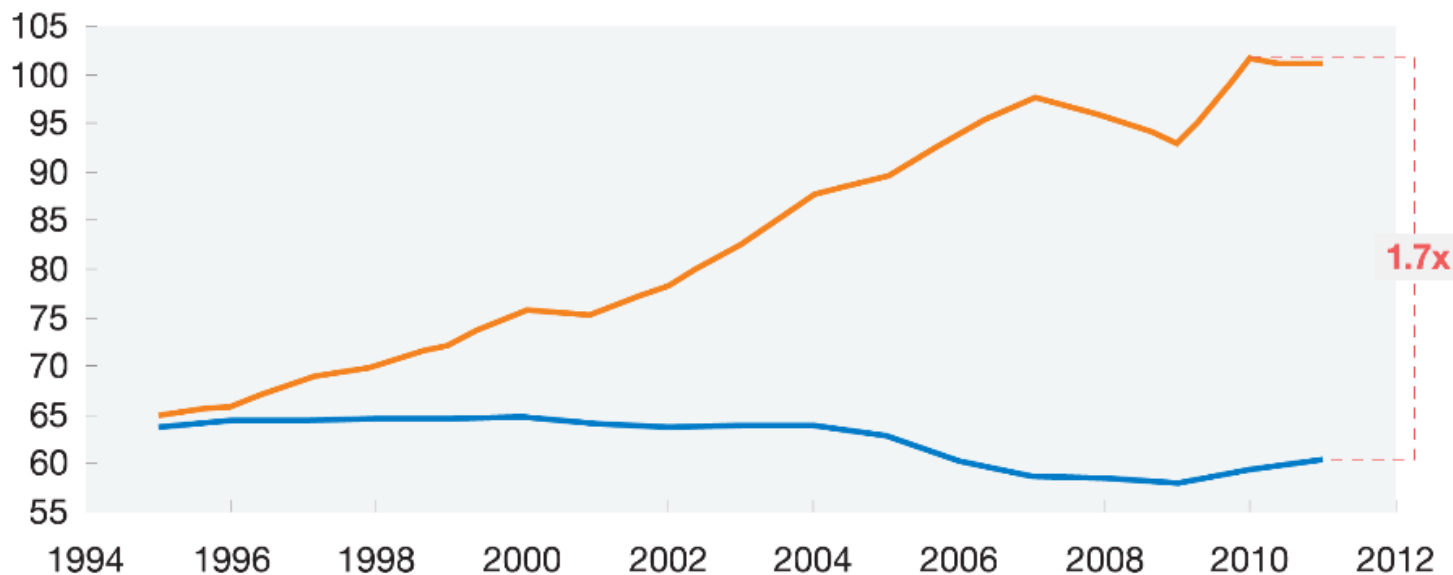
PRODUCTIVITY

Productivity in manufacturing has nearly doubled, whereas in construction it has remained flat.

Overview of productivity improvement over time

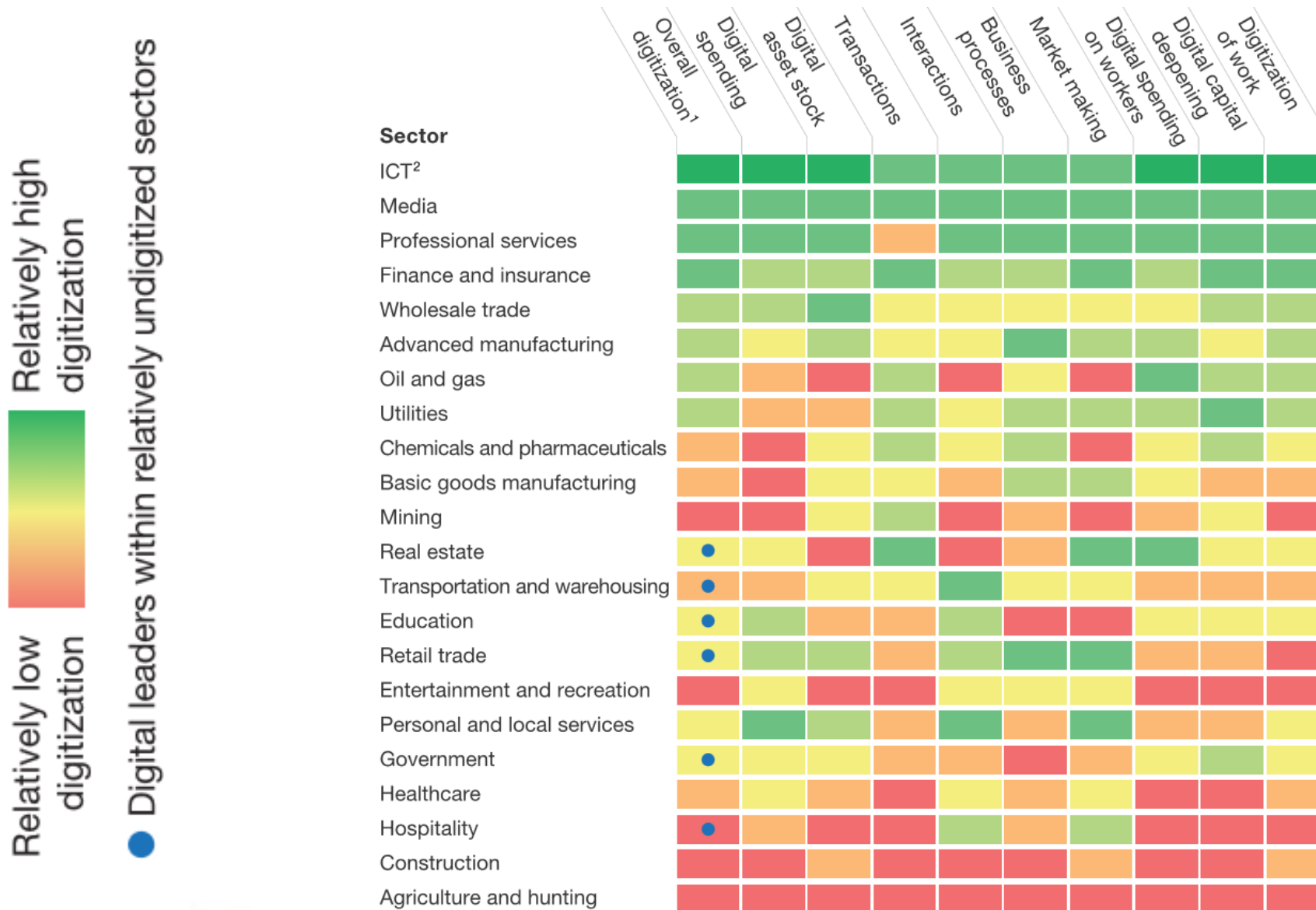
Productivity (value added per worker), real, \$ 2005

\$ thousand per worker



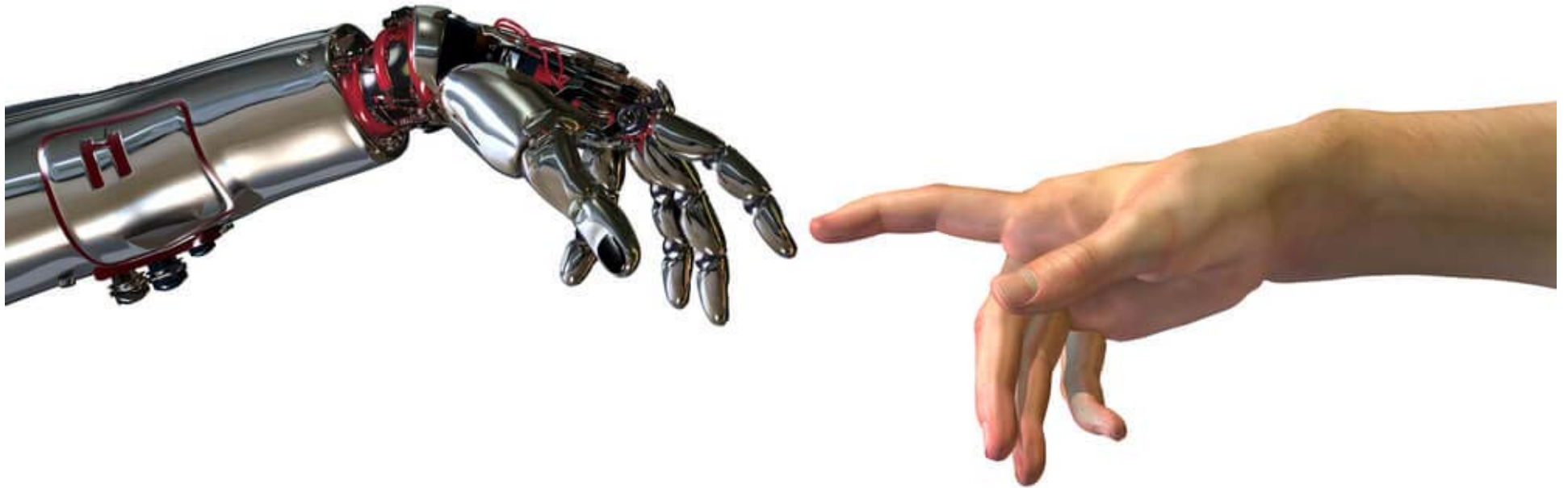
Source: Expert interviews; IHS Global Insight (Belgium, France, Germany, Italy, Spain, United Kingdom, United States); World Input-Output Database

THE DIGITAL COMPARISON



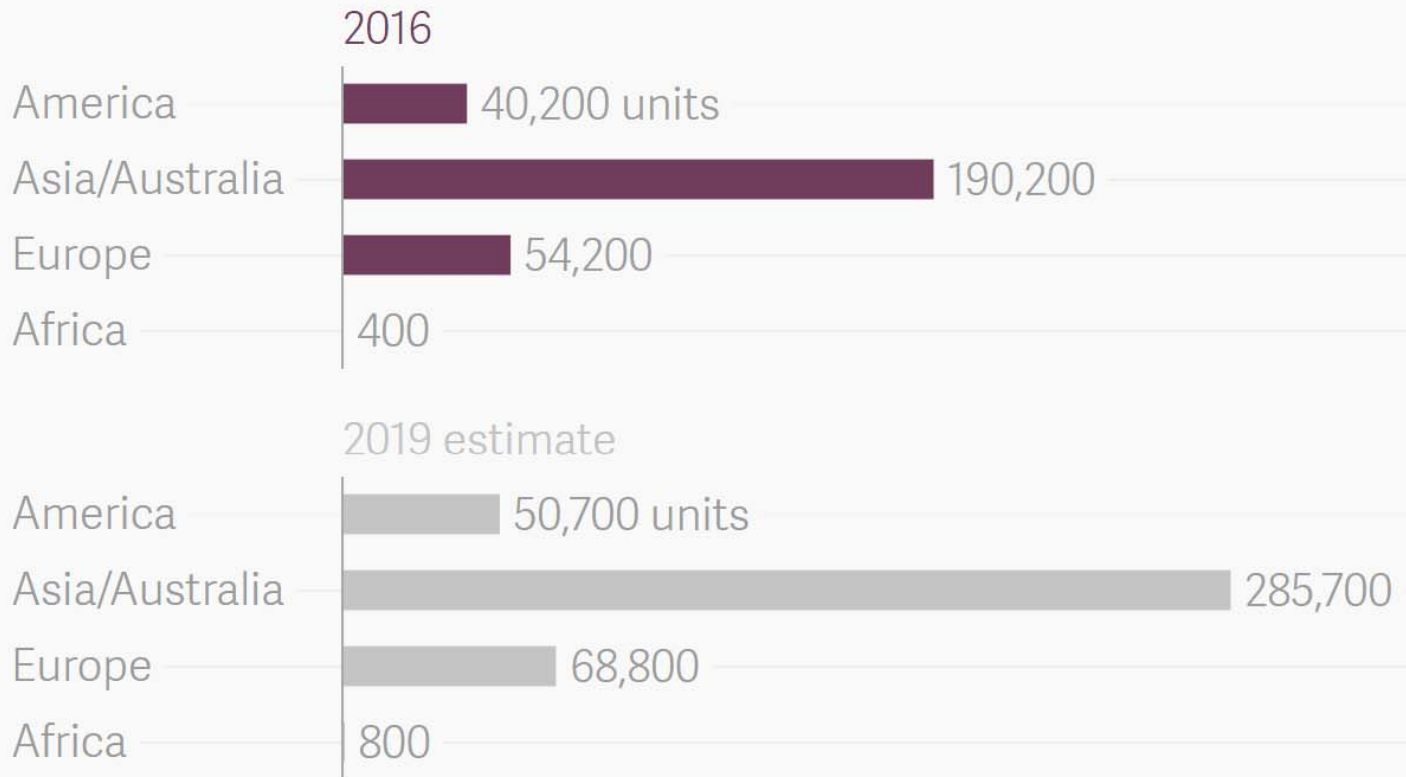
WHAT CAN WE EXPECT?





DO YOU SPEAK ROBOT ?

AUTOMATION IN THE WORLD



△ T L △ S | Data: International Federation of Robotics

Share

WHAT IS THE FUTURE I WANT?

- Balance and shared skill levels between client and service providers
- Mutual respect for engineering professionals
- Value for money procurement systems allocating the correct emphasis to various elements
- Fair compensation based on value add
- Adequate planning work for stability to consultants
- Collaborative working between Client, Engineer and Contractor such that focus is on successful completion of project.
- Embrace Change, don't fear it!!!

