

# SACAP

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architecture  
rising



South African Council  
for the Architectural Profession

# About SACAP

The South African Council for the Architectural Profession (SACAP) is legally charged to regulate the architectural profession in South Africa in terms of the Architectural Profession Act No. 44 of 2000 (the Act). The architectural profession includes professional *architects, senior architectural technologists, architectural technologists, architectural draughtspersons* and *candidates* in each of the categories of registration, all of whom are required to be registered with SACAP before they can practice architecture.

SACAP regulates the architectural profession by setting up standards for registration, education and training, professional skills, conduct, performance and ethics. SACAP also keeps a register of candidates and professionals who meet the standards; approve programmes at higher institutions of learning which persons must complete to register; and take action when professionals on our register do not meet the standards.

**More information about SACAP is available on**  
**[www.sacapsa.com](http://www.sacapsa.com) or call 011 479 5000.**



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# THE SACAP JULY - SEPTEMBER NEWSLETTER

The SACAP Newsletter is published quarterly and distributed to the database of SACAP and other stakeholders. Should you wish to contribute to SACAP newsletter please liaise with the Content Co-ordinator.

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## Editor's Note

On the 26 August SACAP hosted first on its kind online Soaring21 stakeholder convention, which brought together various stakeholders under built environment. As SACAP we wish to thank all the countries, government entities, Registered Persons, facilitators, speakers, Voluntary Associations, private sector and media who participated at Soaring21

Stakeholder convention. We are also grateful to all our sponsors who supported the convention.

The highly targeted Public Relations campaign delivered the right audience to the Soaring21 Stakeholder Convention and gave additional coverage and exposure in industry publications to bring together over 425 architectural professionals. In this edition of our newsletter, we have several contribution from industry professional on matter around built environment and sustainability.

*Our quarterly newsletter is evolving, we want to feature more genuine news. Tell us the content you want to read. Send us a line with your comment to: [Manoko.makumula@sacapsa.com](mailto:Manoko.makumula@sacapsa.com).*

*- Ntokozo Masango: Stakeholder Relations manager*

**HAPPY Reading!**

*"We are a regulator that is inclusive and transparent"*



Charles Ntsindiso Nduku

*“One of the key priorities that SACAP has tasked itself with is to accelerate efforts to transform the architectural profession. As a regulator that is inclusive and transparent.”*

**O**n behalf of The South African Council for the Architectural Profession (SACAP), in partnership with dmg events, we'd like to thank you for joining us at the SOARING 21: SACAP Annual Stakeholder Convention.

On 26 August 2021 we were privileged to have some of the most influential speakers from across globe who shared their insights into the opportunities and challenges facing rebooting and repositioning the architectural profession.

Discussions showcased the role of Architectural professionals as thought leaders in matters of the built environment and addressed urgent interventions to revitalize the built environment and grow the economy, the need for private and public sector to partner on infrastructure projects to create sustainable jobs and work together to transform the profession through skills development. How Architecture should be used as a driver of social change and transformation redefining the role of architecture in society. One of the key priorities that SACAP has tasked itself with is to accelerate efforts to transform the architectural profession. As a regulator that is inclusive and transparent.

SACAP remains committed to not only ensuring that the council remains considerate and relevant to our stakeholders, but also that we protect the public by supporting the regulation of the profession!

**We thank you for joining us, and we look forward to hosting you live, and in person in 2022.**

## PRESIDENT'S WELCOME NOTE: **REBOOTING AND REPOSITIONING THE ARCHITECTURAL PROFESSION SOARING21**



## FROM THE REGISTRAR'S DESK

# 1<sup>st</sup> AND 2<sup>nd</sup> QUARTER REPORT ON THE PROTECTION OF THE PUBLIC MANDATE

The Architectural Professions Act 44 of 2000 enjoins the South African Council for the Architectural Profession to take any steps it considers necessary for the protection of the public in their dealings with Registered Persons and to take any steps which it considers necessary, where, as a result of architectural related undertakings, public health and safety is prejudiced. The objective is to maintain the integrity and the enhancement of the status of the architectural profession.

To that end, complaints of improper conduct against Registered Persons are lodged by aggrieved members of the public in an Affidavit form, under oath or affirmation. Additionally in cases where the Council has reasonable grounds to suspect that a Registered Person has committed an act which may render him or her guilty of improper conduct, the Council has powers to initiate and investigate such a complaint.

The Investigating Committee has been delegated by Council to investigate all complaints of improper conduct and to obtain evidence to determine whether or not a Registered Person may be charged with improper conduct for contravention of the Code of Conduct.

Below are the first and second quarter complaints of improper conduct that served before the Investigating Committee and subsequent actions against Registered Persons. Furthermore, we set out below complaints against unregistered persons which were referred to the South African Police Services for Investigation and Prosecution.

1 <sup>st</sup> Quarter complaints of improper conduct	
1. Number of complaints investigated	<b>34</b>
2. Number of complaints dismissed due to lack of evidence of improper conduct.	<b>04</b>
3. Number of complaints the Investigating Committee decided that sufficient grounds exist for charge(s) to be preferred against a Registered Person	<b>28</b>
4. Number of complaints referred to the South African Police Services	<b>2</b>

### Complaints dismissed

The Investigating Committee dismissed 3 complaints mainly due to lack of evidence of improper conduct and 1 complaint was due to lack jurisdiction to deal with the complaint.

### Complaints referred to the Disciplinary Tribunal

Furthermore, the Investigating Committee decided that sufficient grounds exist for charge(s) to be preferred against 28 Registered Person. The charges are as follows:

- a) making changes on the works without the approval of the client;
- b) Undertook to perform professional work without entering into a written agreement with the client setting all the requirements set out in Rule 4.1 (a) – (i) of the Code of Conduct.
- c) Entering into a professional relationship or association with a person who is not a registered person or a registered professional of a closely allied profession without the permission of the Council.
- d) Failure to attend to the referrals from the local authority and make corrections within a reasonable time.
- e) Failure to submit drawings to the local authority for approval.
- f) Failure to notify the Council within 30 days of establishing an architectural practice.
- g) Failure to perform architectural work for a client within a reasonable time.
- h) Failure to adequately communicate with the client regarding architectural work undertaken.
- i) Performing architectural work for the public during the period the registration is suspended/cancelled.
- j) Failure to perform architectural work under the direction, control and/or continual supervision of a registered professional entitled to perform such work and who must assume responsibility for any such work performed by the candidate.
- k) Failure to ensure that the letterhead of the practice displays the names of principals, registration numbers and category of registration of principals.

- l) Recommended to a client to commence with the erection of a building without the approval of the local authority.
- m) Failure to ensure that the practice name is in accordance with the registration category of the registered principal of the practice.
- n) Failure to regularly undertake continuing professional development activities in order to ensure that they keep up to date with developments in the practice of architecture and to enhance and maintain their professional expertise and competence.
- o) Failure to supervise the works of the contractor as per the appointment.
- p) Unauthorised use of a registered principal's registration number to submit applications to the local authority for approval.
- q) Leasing a title block and providing professional indemnity insurance details to an unregistered person to submit drawings to the local authority for approval.
- r) Unauthorised use of another registered professional architectural work. (Copy rights infringement)
- c) Failure to adequately communicate with the client regarding architectural work undertaken.
- d) Failure to ensure that the letterhead of the practice displays the names of principals, registration numbers and category of registration of principals.
- e) Undertook to perform professional work without entering into a written agreement with the client setting all the requirements set out in Rule 4.1 (a) – (i).
- f) Failure to perform architectural work for a client within a reasonable time.
- g) Recommended to the client to commence with the erection of a building without the approval of the local authority.
- h) Failure to charge a client in accordance with the agreed project fees.
- i) Failure to adequately supervise the work of the contractor in that a registered failed to ensure that the contractor attends to the repairs which required on two apartments.
- j) A registered person giving out his registration number to a family to design and submit building plan applications to the local authority for approval.
- k) Failure to attend to the amendments on the drawings as requested by the local authority.
- l) Failure to submit drawings to the local authority for approval.
- m) Unauthorised use of another registered professional architectural work.
- n) Failure to attend to the referrals from the local authority within a reasonable time.
- o) Failure to perform as per the appointment by the client.
- p) Failure to set out terms of appointment in writing prior to undertaking architectural work. (Written agreement)
- q) A Registered person deliberately misrepresented information to the client regarding the submission of the building plan application to the local authority.
- r) Failure to notify the Council within 30 days about the establishing an architectural practice.
- s) An employee of an architectural practice unlawfully gained access to the principal of the practice's server during the time he was no longer an employee and deleted architectural work from the server before leaving the practice, and took some of the clients.

## Complainant referred to the South African Police Services

There were two complaints against unregistered persons. In the main, the complaints relate to performing architectural work without a license. The complaints were referred to the South African Police Services for further investigation and prosecution.

2nd Quarter complaints of improper conduct	
1. Number of complaints investigated	30
2. Number of complaints dismissed due to lack of evidence of improper conduct.	03
3. Number of complaints the Investigating Committee decided that sufficient grounds exist for charge(s) to be preferred against a Registered Person	20
4. Number of complaints referred to the South African Police Services	7

## Complaints dismissed

The Investigating Committee dismissed 3 complaints mainly due to lack of evidence of improper conduct and 1 complaint was dismissed due to the fact that the Registered Person passed away.

## Nature of charges against Registered Persons

- a) Entering into a professional relationship or association with a person who is not a registered person or a registered professional of a closely allied profession without the permission of Council.
- b) Performing architectural work for the public during the period that the registration is suspended/cancelled.

## Complainant referred to the South African Police Services

There were 7 complaints against unregistered persons. In the main, the complaints relate to performing architectural work without a license. The complaints were referred to the South African Police Services for further investigation and prosecution. A case has been opened with the South African Police Services under CAS 496/9/2021.

# SOARING21 STAKEHOLDER CONVENTION, 26 AUGUST 2021

architecture  
rising



soaring  
THE SACAP STAKEHOLDER  
CONVENTION



The South African Council for the Architectural Profession (SACAP) in partnership with dmg events hosted the Stakeholder Convention under the theme rebooting and repositioning the architectural profession. The Convention took place alongside dmg events' 9th Annual African Construction and Totally Concrete Expo. The Exhibitions offered 360-degree solutions for the Southern Africa's built environment all over the world who have an interest in South Africa's construction sector.

The SACAP Stakeholder Convention 2021 was one of the many intervention programmes that SACAP has been mobilizing in its mission to re-brand the architectural profession. By showcasing the talent, skills and enormous contributions that the profession makes to the South African built environment. Soaring21 marked as an important milestone in the roadmap towards building relations with stakeholders. Soaring21 provided a forum where all stakeholders under architectural profession engaged on critical issues pertaining to the profession and built environment. The convention was attended by 425 delegates from 17 different countries.

The Deputy Minister of Department of Public Works and Infrastructure Ms. Noxolo Kiviet graced us with her presence. In her speech the deputy minister indicated that "in ensuring that projects become bankable, it is very clear that architectural professionals, as part of the teams in the conceptualisation and design of projects, play a critical role in this regard." The Deputy Minister furthermore indicated that "it is therefore crucial to have people that share the same vision as Government, who will come on board to share ideas and assist the country to set it on a path to economic recovery". The stakeholder convention event involved the most seasonal and influential speakers from across globe who shared their insights into

the opportunities and challenges facing rebooting and repositioning the architectural profession.



**Click here to access the full speech of the Deputy Minister.**

"One of the key priorities that SACAP has tasked itself with is to accelerate efforts to transform the architectural profession. As a regulator that is inclusive and transparent. SACAP remains committed to not only ensuring that the council remains considerate and relevant to our stakeholders, but also that we protect the public by supporting the regulation of the profession" said SACAP President Mr Charles Nduku in his opening speech.

Soaring21 curated programme agenda outlined the impact and the role the architectural profession has played in the built environment, and unpacked how SACAP would charter a course for the rise of a profession. The session themes were:

- **HOW FAR WE HAVE COME:** The architectural profession is one of the most influential professions in humanity that offers opportunities to shape and transform the society we live in.
- **WHERE WE ARE:** Rethinking the future and ensuring the transformation of the profession.
- **HOW FAR WE'LL GO:** Forging ahead - harmonising product, nature and life within the built environment and pushing beyond the constraints.

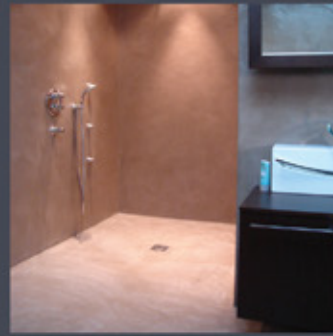
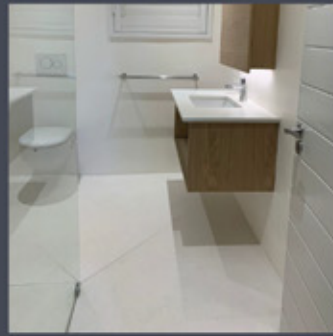
As SACAP we wish to thank all the countries, government entities, Registered Persons, facilitators, speakers, Voluntary Associations, private sector and media who participated at the convention. We are also grateful to all our sponsors who supported the convention.



# **SYNOPSIS OF THE STAKEHOLDER CONVENTION**

**Soaring21 Stakeholder Convention Inspiration hub banner**

**Soaring21 Stakeholder Convention Flex, bespoke poem called Sketches**



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# FRAUD ALERT

In terms of section 18 (2) of the Architectural Profession Act read with section 26 (3) (b), (c) and (d), of the Act, a person may not practise in any of the categories of registration, unless he or she is registered in that category.

A person who violates section 18 (2) is guilty of an offence and may be liable to a fine equal to double the remuneration received by him or her for work done in contravention of section 18(2) of the Act or to a fine equal to the fine calculated according to the ratio determined for three years imprisonment in terms of the Adjustment of Fines Act, 1991.

Practising architecture without appropriate registration is a serious offence. Below is the list of persons who practise architectural work without appropriate registration in

contravention of section 18(2) read with section 26 (3) (b), (c) and (d), of the Act.

**Kindly take notice that these names are issued and disseminated solely for the purpose of protecting the public from using any of the persons listed below for architectural work until they are registered in terms of the Act:**

1. **Fhulufhelo Victor Munano** -Not registered
2. **Moses Malatsi** – Not registered
3. **Rowan van der Merwe** – Not registered
4. **Terence Booy** – Not registered
5. **Pietro Russo** – Not registered
6. **Mark Mahlekete** – Not registered
7. **Tau Motlatsi** – Not registered
8. **Samson Skosana** – Not registered



# INSIDE A HEALTHIER CONSTRUCTION ECONOMY

By Dr Tshidi Gule

*Do swimming pools have a future in a world of social distancing? Will robotics build roads and fix potholes? Will my smartphone get smarter at running the house? Will airport toilets flush automatically? Will new offices offer workspaces that resemble glass cubicles?*

## What will be the defining milestones of a Healthier Construction-led economy?

Much has been deliberated on the past few months regarding what a post-pandemic environment will look like across the globe. Debates on redesigning residential and commercial properties that reflect a sensitivity towards hygiene and health are heating up in boardrooms as much as they are hot topics at home.

Human beings are now conscious that the world can both predictable and unpredictable. Which begs the question - what defines a safer world today? And how does the built environment make a positive and lasting contribution towards manifesting this safer world?

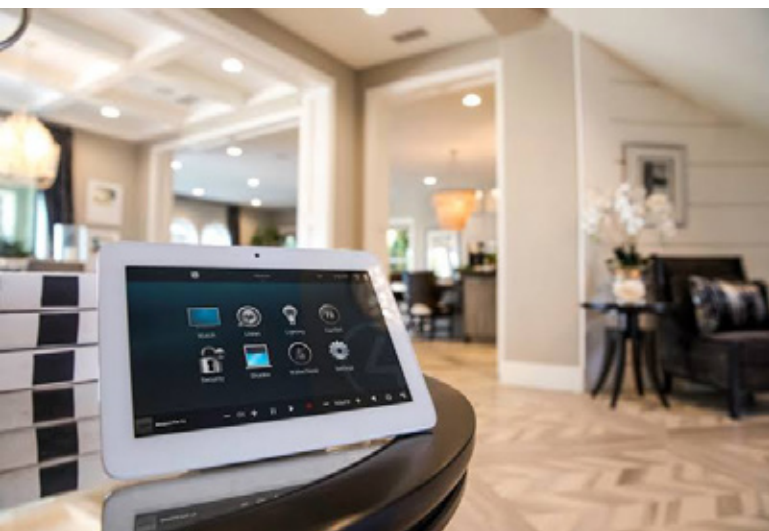
## A Health-Conscious Paradigm Shift

There is no doubt that industries are more committed to re-assuring stakeholders that health is now a valuable driver of quality. Architects, engineers, construction project managers have always paid attention on the integration of health and safety regulations throughout a typical project journey. Hence, the biggest transformation that is shaping the built environment is not in project execution per se, but in re-imagining an environment where citizens FEEL safer. Whether it's a visit to the local hospital, a trip to the mall, a quick dash to the airport or a playdate for kids with neighbours, being safe is now part of the design experience, making innovation the most compelling

discussion for architects and investors to consider when shaping the world today. Innovation has always involved disruption, and the industry is about to undergo perhaps the most defining chapter of disruption, one that will likely impact it for many years to come. Here are four key areas that the built environment will experience the most convincing positive shifts. The interesting thing to note is that the individual and collective consciousness towards health will play the quiet common denominator in each one of these areas.

## Technology Migration & Integration

The prospect of an indefinite hybrid off-site and working from home model is a real possibility for the built environment. Many operational elements of project management have undergone digitization and the next five years will see many more of this trend. The computer, once seen as a simple administration device, is now evolving into a communication hub that contractors and designers will need to use as the main method to plan, collaborate and execute project objective and operational tasks. Teleworking and telecommuting is here to stay in many departments and productivity will need to be measured by outputs as well as wellbeing parameters. Many companies are investing in online data and project tracking systems to oversee large scale projects and operations will evolve to include more digital models. One of the areas that will need to experience a digital overhaul will be the transport and manufacturing industries. According to the Robotics Industry Review report back in 2019, Tractica projected a \$226 million revenue market by 2025 for the construction robotics space, and this projection is estimated to have increased by at least double due to the influence of the pandemic. Robotics will definitely become quite an eye-catching disruption for the built environment and hopefully a smart option for many small and large firms handling large scale operations.



## Communication

How business is conducted has changed drastically in these past eighteen months. The conversations in many boardrooms in the past year have had to include the inevitable transition of face-to-

face communication to virtual management of teams, projects and stakeholders. Tricky scenarios such as generating new client relationships, keeping current ones healthy and letting go of cost-intensive relationships are undoubtedly being pondered by decision makers of the built environment as with all other sectors. Re-evaluating communication policies, managing client needs virtually, smoothing over communication hurdles during project management are some of the priorities facing construction project managers. The construction economy will not recover without sound communication models, and understanding the balance of personal touch and health-compliant networking is going to be a discussion that continues to be thrashed out in many committee meetings. The world cannot stay virtual forever, and construction companies will need support in designing business development, marketing and communication strategies that are low-risk in health and safety, but high-yield in revenue generation.

## Design

When the pandemic began, very few construction professionals could visualize what buildings in the “new economy” needed to look like. Eighteen months later, that picture is starting to look a little clearer. In addition to the greater emphasis on safety, architects have become sensitive to the need of incorporating freedom of movement (space) with the power of blending outdoor and indoor space. Outdoors offers the perception of bring less infectious a space, creating the impression that one is safer in spaces that offer as much open ventilation as possible. This new model of spacious design is significant in driving home the consciousness of social distancing, and special attention will be paid to how this mindset affects communal areas such as restaurants, cafeterias, gyms, airports, shopping malls, religious facilities and more. Being creative with space whilst encouraging connection is a dance that architects will find both rewarding and challenging, and one that is sure to introduce breakthrough design gems.



## Sustainability

A safer world starts with perception. While the focus of property in particular has loan towards sustainable eco-friendly living, an added dimension to design will now factor contactless design. Life indoors



the built environment to prioritize. The domino effect will go a long in reshaping citizens' feeling of safety and peace of mind.

The economy supporting of contactless products may have started off small, but it is rapidly emerging as a much larger contributor towards sustainable design. There's no doubt it, automation is here to stay and devices that are durable, eco-friendly and prove harmless to the environment will be the big global winners of the day.

Whether your perception of healthier world includes an automated office with spacious design and a new appreciation of outdoor breaks, the pioneering leaders of this new economy will undoubtedly include architects. The ever present anxiety induced by the pandemic is unlikely to abate in the next five or ten years and how the built environment can make use of its voice is by offering solutions that are as appealing as they are sustainable. More importantly, construction companies and contractors will need to re-structure off-site and on-site activity more attentively, paying attention to how working from home affects the timelines and deliverables of projects. Designing effective wellness programs and touchpoints for construction workers will impact the company's ability to attract and retain its best talent, on the ground and in the boardroom. Because however you believe the new world should be, the one fact that Covid-19 has left us to contend with is that our world will never be the same again. How we navigate this change will require collaboration, innovation and an extraordinary amount of patience for the inevitable journey of trial, error and success ahead. Let the new economy begin.

has taken over life outdoors, prompting disruptions in product and space design.

The buzz word is without a doubt contactless living. In 2020 alone, Amazon reported a staggering search increase of contactless products that exceeded 2000% pre-pandemic. From soap dispensers, to storage units, home medical devices, the demand for a contactless lifestyle is definitely an economy-defining one. Companies who meet this demand with well considered designs are going to see sales spikes and become leaders in the pandemic-proof movement. The built environment offers many advantages in this movement, and real investment into contactless experiences must be considered in real estate, healthcare, retail and hospitality design. The slightest change, i.e. changing a manual door to an automated one, will create more comfort in the user than before, and it's ultimately these smaller changes (e.g. automated dispensers) scientists encourage experts of



## **CLICK TO VIEW THE COMPLETE BENCHMARKING SURVEY RESEARCH REPORT**

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**Benchmarking Survey  
- Research Report -  
2021**

Prepared for

**SACAP** | The South African Council for the Architectural Profession



AT A GLANCE

# 3 Ways Design Can Take the Lead for Project Success

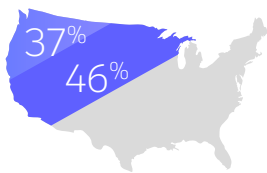
The AEC industry is faced with more pressure than ever before. Not only is there a growing demand for more buildings and infrastructure, but aging assets across the globe are in dire need of retrofit and repair. At the same time, professionals in the industry must meet these goals with less: less waste, less reliance on finite natural resources, less energy to operate the built environment, and less dependency on a shrinking workforce.

Design is undergoing its own changes to meet demands. Three design advancements are transforming design practice today, providing new competitive advantages and placing design squarely in the leadership role.



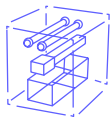
## Generative Design

- Generating and exploring more design alternatives that produce better, more functional final solutions
- Improved quality, budget control, documentation, and constructability
- Valuable ability to automate routine tasks



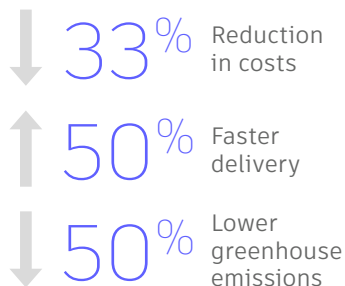
About half (46%) of surveyed U.S. architects and engineers are aware of generative design tools and practices, and over one-third (37%) of those are currently using them.

SOURCE: Dodge Data and Analytics "SmartMarket Brief: Leading the Future of Building: Connecting Design Intent"



## Design for Manufacturing & Assembly

- Optimize prefabrication and the productization of traditional construction processes
- Bring manufacturing, construction, and operation logic into the design phase
- Improve construction speed, quality, construction certainty, and sustainability



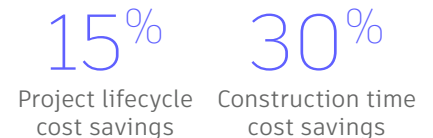
SOURCE: Building Engineering Services Association (BESA) "Design for Manufacturing and Assembly (DfMA) – Just what the built environment needs?"



## Digital Project Delivery

- Integrate design and construction teams throughout entire project lifecycles
- Simplify collaboration and data management, streamline reviews and approvals, and comply with key industry standards
- Work from anywhere, on anything, and with more data and insights

### Cloud Technology Benefits



SOURCE: Boston Consulting Group "Shaping the Future of Construction: A Breakthrough in Mindset and Technology"

Discover how innovative firms are embracing new design approaches by leveraging generative design, DfMA, or project delivery in their projects.



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## **PROFESSIONAL ARCHITECT, AVELA MAGQASHELA TAKES US THROUGH HIS INSPIRING JOURNEY OF BECOMING A PROFESSIONAL ARCHITECT**

**B**orn in Ngcele, a village in the Eastern Cape, Avela Magqashela is a professional architect with over 10 years in the profession, he obtained a Bachelor in Architectural Technology from the Cape Peninsula University of Technology in 2009, completed his Masters in Architecture at the University of Free State and he is now currently doing his PhD. In 2015, he co-founded Collective Studio Africa alongside his partner and friend Benjamin Kollenberg, “the studio was established to utilise architecture as a vessel and departure point for an interdisciplinary practice”.

Avela’s interest in architecture started back when was in high school, he saw an architect in the movie *The Matrix* and he got curious about what architects do and began his research about the profession, he decided from then that is what he wanted to become. Inspired by indigenous everyday life patterns, nature landscapes, research, art, Xhosa morphology and indigenous knowledge systems, he strives for human based design approach. Some of the highest moments in his career included the completion of the National Council Chambers in Johannesburg with StudioMAS - an architectural firm in Cape Town which both he and Ben used to work at also the completion of the Oracle Office Complex with Empowered Spaces Architects – located in the Woodmead North Office Park, City of Johannesburg, a 4-Star Green Star Office Design that showcases a symbiotic relationship between innovation, connectivity and distinctive design and establishing Collective Studio Africa.

His prospects as an architect is to create African conceptualised designs; architecture in an African perspective, his vision is to utilise architecture in a way that it tells indigenous African stories.



To get in touch with Collective Studio Africa visit their company website <https://collectivesa.co.za/>



# SACAP HOSTED THE WOMEN IN ARCHITECTURE WEBINAR, 6 AUGUST 2021



**W**hile the transformation agenda is a national strategic imperative and it is a fundamental tenet in the vision and strategy of the South African Council for the Architectural Profession (SACAP) 5th term Council. One of SACAP's major objective is to transform the architectural profession and in pursuance of its transformation objective and in celebration of Women's Day, SACAP hosted the Women in Architecture webinar on Friday, 6 August 2021, under the theme; *Advocating for gender equality in the Built Environment*"

The purpose of this event was to create a platform for students to engage with architectural professional women in meaningful conversations about the role and challenges women face in the architectural profession as well as other issues relating to transformation. This platform fortified that student's voice out the challenges they face at the Architectural Learning Sites (ALSs) as young women/ challenges they experience in navigating the architectural profession.

The webinar was attended by 260 delegates both Females and Males, the event was chaired by Transformation Committee interim chairperson Cllr Mandisa Pepeta Daki. The webinar further entailed most seasonal and influential speakers who shared their insights into the opportunities and challenges faced by women in the built environment.

The Deputy Minister of Department of Public Works and Infrastructure (DPWI), Ms Noxolo Kiviet graced us with her presence and in her speech, *"she indicated that the DPWI is playing its part*

*in addressing the skills pipeline? the department implement a Skills Pipeline Strategy, with the intention to ensure that the creation of a pool of professionals that will enable the department and the public works sector at large to deliver on the Infrastructure Cycle, which is Planning, Acquisition, Operation & Maintenance and Disposal"*

*"Through the strategy, the department was able to award 14 bursaries to learners who pursued architecture, of which 13 have completed their studies and joined the Candidacy Programme. One of DPWI Architectural Young Professionals in particular, successfully participated in the South Korean Scholarship and successfully completed his Master's Degree. The Department's Candidacy Programme has so far produced 34 Professional Architects, some of whom are employed within the Department"* the Deputy Minister further said.



**Click here to access the full speech of the Deputy Minister.**

*"The South African Council for the Architectural Profession (SACAP) wishes to extend its sincere gratitude and gratefulness to the Deputy Minister of DPWI, speakers and facilitators for sharing some insights at the women in architecture webinar. Their thoughtfulness and attention to detail on the topics that were discussed will assist SACAP and its stakeholders in making targeted and impactful interventions that will genuinely assist to change the make-up of the profession and ensure gender representatively. We further wish to thank the Voluntary Association, registered persons and all the stakeholders who attended the event"* SACAP President, Mr Charles Nduku said.

# APPLYING FOR A CONSTRUCTION WORK PERMIT



**T**he Construction Regulations require that the client applies for a construction work permit if the construction work is going to exceed R60m or exceed 365 days and 3600 person days.

These values make reference to the Chief Inspector Exemption promulgated in July 2018 Exemption and the revised Construction Industry Development Board threshold.

It is important to note that the construction work permit application must be lodged by the client and not by the Contractor. The client must appoint a competent person to act as his or her representative and must ensure that the appointed person is registered with a statutory body approved by the Chief Inspector as qualified to perform the required functions.

The requirements of the construction work permit are not only limited to the 3 documents listed on the Annexure 1 application namely:

1. Health and Safety Specification
2. Health and Safety Plan
3. Baseline Risk Assessment

Construction Regulations 3 expand on the full requirements for a construction work permit which is linked to Construction Regulations 7 and the June 2017 Construction Regulations Guideline provide a

detailed list of a minimum of 13 items required to be accompanied with a construction work permit application.

The application timeframe has a legislative period of 30 days to be processed by the Department of Employment and Labour. The 30 days required to issue a construction work permit is on condition that the all correct and fully completed documents are submitted. If the required documentation is not submitted the application is either declined or a request is communicated to the applicant to submit the outstanding documents within a specified period.

No construction work may commence or be carried out before the construction work permit have been issued and assigned. Once a construction work permit is granted the client is required to adhere to the conditions listed on the permit and comply with the legislative requirements under the Construction Regulations.

The construction permit number must be displayed at the main entrance and principal contractor must keep a copy of the permit in the occupational health and safety file for inspection by an inspector, the client, the client's authorised agent or an employee. The site specific number issued on the construction work permit is not transferrable and is applicable for the listed location.

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## 1. SUSTAINABILITY HANDBOOK

The Sustainability Handbook covers all the challenges, complexities and benefits of sustainability for businesses, governments and other organizations.

It provides a blueprint for how organizations can reach or exceed economic, social and environmental excellence.

The South African Council for the Architectural Profession (SACAP) as a media partner presents to you the current edition of the handbook.



**Please click on the link for happy reading:**

**<https://indd.adobe.com/view/a7e9b215-37da-48fe-9492-87e0ef4c7c53>**

## 2. AMENDMENTS TO THE PROFESSIONAL PRACTICE EXAMINATION (PPE)

All registered candidates in all categories of registration shall be required to complete the pre-determined Practical Training programme prior to the application of the PPE.

SACAP has made the following amendments to the PPE policy to allow candidates an equal opportunity to upgrade to a professional;

The requirements for passing the PPE are revised as follows:

- i. Paper 01 A minimum of 50%
- ii. Paper 02 A minimum of 50%

Condoning and /or adjusting of the results will only be allowed up to 2 percent (%) to provide reliable and fair measures of the achievements. Any candidate who receives a percentage (%) of between 45-47% is permitted, on request, a supplementary oral examination should the language of the paper/s not be in their mother tongue.

### Language Policy

The 11 official languages are isiNdebele, isiXhosa, isiZulu and siSwati (referred to as the Nguni language group); Sesotho, Sepedi and Setswana (referred to as the Sotho language group); Tshivenda, Xitsonga, English and Afrikaans. SACAP emphasises that all official languages must be treated equitably, thereby enhancing the status and use of all official languages. SACAP takes “legislative and

other measures” to regulate and monitor the use of disadvantaged languages. Therefore any candidate who wishes to write the PPE papers in their own official language should notify SACAP of this request upon registration for the PPE.



**For more information please refer to the PPE Policy which can be found on the SACAP website: <https://www.sacapsa.com/>**

## 3. SOUTH AFRICAN BUREAU OF STANDARDS (SABS) TRAINING ON BUILDING STANDARDS

The South African Council for the Architectural Profession (SACAP), is currently working with the South African Bureau of Standards (SABS) on building standards training.

The training modules will be offered to SACAP registered persons at a discount of 20% to 60%. The survey went out to registered persons three weeks ago, however, we received insufficient participation on the survey.

We request all registered persons to please take part in the survey and provide constructive feedback regarding their level of access to online learning or whether classroom-based training will be preferred.



**Please take part in our online survey, by following this link [https://sacap.site-ym.com/surveys/default.asp?id=SABS\\_ONLINE\\_TRAINING](https://sacap.site-ym.com/surveys/default.asp?id=SABS_ONLINE_TRAINING).**

## 4. BENCHMARKING SURVEY RESULTS

The South African Council for the Architectural Profession (SACAP) in partnership with Voluntary Associations undertook a benchmarking survey conducted by Leading edge for the year 2021. The survey results from a sample of architectural practices that completed the survey gives a more comprehensive view of the profession. The benchmarking survey focused on project types, stages worked on, project value, fee charged, and the impact of covid 19 on the architectural work.



**Please click on the link to access the survey results.**

Again SACAP would like to thank all architectural practices that participated in the survey.

## 5. KEY MILESTONES ACHIEVED BY SACAP DURING 2020/21

### *Key milestones achieved by SACAP during 2020/21*

#### **Introduction**

The South African Council for the Architectural Profession (SACAP) is a statutory body established in terms of section 2 of the Architectural Profession Act 44 of 2000. The Act prescribes various mandates that must be fulfilled by SACAP. We are proud to announce that SACAP has fulfilled several notable mandates in 2020. This is despite the severe challenges due to the novel coronavirus pandemic and the subsequent restrictions in movement and interpersonal activity imposed by the government. May 2021 marks 2 years since the fifth term Council was appointed by Minister of Public Works and Infrastructure.

#### **Guideline professional fees**

Section 34 of the Act mandates the Council annually, after consultation with the voluntary associations, to determine guideline professional fees and publish those fees in the Gazette. The guideline professional fees were published on 7 August 2020.

#### **Identification of Work (IDoW)**

Section 26 of the Act read with section 20 of the Council for the Built Environment (CBE) Act enjoins the SACAP and the CBE to determine the IDoW. Following extensive consultation with registered persons, voluntary associations, CBE and the Competition Commission, the IDoW was published in a Government gazette on 30 April 2021.

#### **Code of Conduct**

Section 27 of the Act mandates Council in consultation with the CBE, voluntary associations and registered persons to draw up a code of conduct for registered persons. Following extensive consultation with the above-mentioned stakeholders, the Code of Conduct was published in a Government gazette on 19 February 2021.

#### **Professional Practice Examination (PPE)**

Section 19 (1) (b) (iii) mandates the Council to register candidates with educational qualifications and who has passed the PPE as determined by Council. On 15 July 2020, SACAP introduced the first online PPE. The introduction of the online PPE has eased the burden

on candidates to travel to various venues to sit for the examination. All candidates can write PPE at the comfort of their homes or offices.

#### **South African National Standards**

In terms of section 14 (h) of the Act, SACAP is mandated to take any steps it considers necessary for the improvement of the standards of services rendered by registered persons. In order to improve the standard of service by registered persons, SACAP entered into a Memorandum of Understanding with the South African Bureau of Standards (SABS) to ensure affordable access to national standards by all registered persons. On 30 September 2020, SACAP availed all applicable standards to the profession for free. Furthermore, SACAP is currently working with the SABS Academy to tailor make training and mentoring on the interpretation and application of requirements contained within SANS 10400 for the architectural profession.

#### **Education Fund**

In terms of section 15 (5) of the Act, the Council is enjoined to establish and administer an education fund for the purpose of education, training and continuing education and training of registered persons and students in the architectural profession. SACAP has established an education fund. This year SACAP distributed R 40 000.00 to 11 deserving students across various educational institutions. Furthermore, SACAP is currently in discussions with Construction Education and Training Authority (CETA) for the funding of the SACAP mentorship program for candidates. Furthermore, SACAP obtained a full bursary on behalf of a girl child from the Department of Public Work & Infrastructure.

#### **License to practice/Privy Seal**

In terms of section 18 (2) of the Act, a person may not practise in any of the categories contemplated in subsection (1), unless he or she is registered in that category. In order to ensure that only registered persons submit building plan applications at the Local Authority, SACAP introduced a Privy Seal, a real time registration verification mechanism. Privy Seal is an assurance to the public that the registered professional has met the standards of registration.

#### **Continuing Professional Development (CPD)**

In terms of section 13 (k) of the Act, SACAP is enjoined to determine, after consultation with the voluntary associations and registered persons, conditions relating to and the nature and extent of

continuing education and training. On 28 November 2019, SACAP conducted a survey on the **quality, accessibility** and **affordability** of CPD offerings. Following the survey, on 31 October 2020, a CPD webinar was held with registered persons and voluntary associations to discuss the findings of the survey. The next step is to engage voluntary association about the way forward to improve the quality and accessibility of CPDs in the architectural profession.

## Public protection

In terms of section 14 (g) of the Act, SACAP is mandated to take any steps it considers necessary for the protection of the public in their dealings with registered persons for the maintenance of the integrity and the enhancement of the status of the architectural profession. SACAP received 127 complaints from members of the public in 2020/21. All complaints were handled in line with the Act. Further, SACAP continues to receive a high number of complaints against persons who are not registered but performs architectural work for the public. Although these complaints are reported to the South African Police Services for investigation and prosecution, not much progressive has been achieved. To that end, SACAP intends to prosecute unregistered persons directly through the courts for bringing the profession into disrepute.

## Competition Commission South Africa

In May 2021, the Memorandum of Understanding between SACAP and the Competition Commission was approved following extensive consultation between the two regulators. The MoU seeks:

- to effectively coordinate exercise of the Competition Commission's and SACAP's jurisdiction and powers when taking decisions on competition matters within the architectural profession.

- timeously provide each other with necessary information in respect of the investigation of anti-competitive practices, regulation of mergers and acquisitions, as well as research developments or studies within the built environment.
- Advocate for SACAP to promote compliance with competition law principles including on regulatory policies such as the IDoW and Guidelines Professional fees.

## Local Authority

A number of Registered Professionals have complained to SACAP about the significant delays they experience at various Local Authorities on the approval of building plan applications. SACAP engaged eThekweni, City of Johannesburg and Mangaung metros amongst others to raise concerns about delays to approve building plan applications. Furthermore, SACAP engaged the South Africa Local Government Association (SALGA) and Cooperative Governance and Traditional Affairs (COGTA) to address these concerns at a high level. The 5th term Council encourages all local authorities to come on board to address the delays in the approval of building plan applications and Fasttrack the improvement of the country's infrastructure to improve the economy as mention by honourable the President Mr Cyril Ramaphosa on the economic recovery plan speech.

## Conclusion

SACAP has weathered a difficult storm very well. Although many challenges still face both the Council and architectural professionals, the Council has achieved many successes. This is borne out by the many letters of appreciation the Council receives from registered persons. The Council looks forward to welcoming greater numbers of registered persons and transform the profession.

## ALLEGATIONS OF POOR LEADERSHIP AND ABUSE OF POWER

Following various allegations of poor leadership of the Council, abuse of power by Council President, poor administration by the Registrar, harassment of Female Council members by their male counterparts and corporate governance lapse in the Council, the Minister of the Department of Public Works and Infrastructure launched an independent investigation into these allegations.

We received the outcomes of the investigation from the Ministry of Public Works & Infrastructure on communication dated 17 September 2021, we are pleased to inform Registered Persons that all the allegations against the 5th term Council members,

the President of the Council and the Registrar were found to be baseless and without merit. The findings demonstrate that these allegations were made in bad faith and infer an objective to tarnish the image of the 5th term Council, the President and the Registrar.

We acknowledge all the messages of support received from Registered Persons during the trying time.

SACAP is fully functional, and continues to follow good corporate governance principles with good controls in place and continues to meet its mandates in order to regulate the architectural profession effectively.

# THE PREPAREDNESS OF MASTER OF ARCHITECTURE GRADUATES FOR THE FOURTH INDUSTRIAL REVOLUTION (4IR)

Mr Kevin Bingham and Ms Ginny Porter

## ABSTRACT

The study investigated the relevance of the current architecture curriculum in the context of the Fourth Industrial Revolution (4IR) and whether the National Qualifications Framework (NQF) Level 9 Master of Architecture (M.Arch.) graduates have the required skills for the future. Artificial intelligence (AI) has impacted many careers, with some employee functions being replaced by automation. Using a mixed research approach, the perspectives of 17 M.Arch. graduates from four educational institutions in South Africa considered whether tertiary education provided a solid foundation for work in the field of architecture. The study showed how, by embracing AI technology and using heuristic techniques for understanding client requirements, the role of the architect in person is still relevant, although radically altered. One key finding was that students are ill-equipped to run architectural practices and more emphasis on the administration and solving of entrepreneurial challenges in architectural practices will address this issue. Critical cross-field outcomes (CCFOs) were revealed as being increasingly important, but the list of outcomes should emphasise creative and entrepreneurial skills. The significance of this study is undisputed as there are extensive debates concerning the 4IR and its influence in all aspects of life. The research will contribute to academic debates and be of value to practising architects and tertiary institutions.

## INTRODUCTION

The 4IR has transformed the way we live and work with AI, the Internet of Things (IoT), virtual reality (VR) and robotics, according to a definition by Rouse (2017). The Internet's Big Data has grown exponentially, and the prospect of robots performing many more human jobs is of concern to workers from diverse disciplines. The profession of architecture is not spared. According to Reif (2018), writing for the World Economic Forum (WEF), by 2020 creative thinking will be third on the list of the most important skills needed for people to survive and thrive in the 4IR world. Therefore, the discipline of architecture's demise is not foreseen to be imminent for at least another decade. Reassuringly, as reported by David and Cope (2015:2) in *The Guardian*, Michael Osborne, Associate Professor in Machine Learning at the University of Oxford says, "creativity is arguably the most difficult human faculty to automate. Robots are unlikely to be fully creative any time soon." Nevertheless,

academics will be compelled to reformulate numerous curricula and reassess their content to ensure that students obtain employment when they graduate and that their skills are valued.

### *The South African Architectural Professions context*

Taking into account that a Professional Architect<sup>4</sup> has, in most instances, completed eight years of training before practice, and accepting that architects and Architectural Learning Sites (ALS) are validated cyclically by the South African Council for the Architectural Profession (SACAP) and that M.Arch. programmes currently meet the international Canberra Accord (CA) on architecture education standards of substantial equivalency; Professional Architects should be well-equipped for the world of practice.

Introduced in 2008, the CA considers the portability of university degrees amongst the accreditation agencies that signed the Accord. Countries subscribing to the CA include China, Mexico, South Africa, Canada, Korea, the USA and selected universities validated by the Commonwealth Association of Architects (CAA). The Canberra Accord recognises the substantial equivalency of accreditation/validation systems in the architectural education of its signatories. These equivalencies are reviewed cyclically by international validation boards appointed by the CA.

The dawn of the 4IR has been a progressive one for architects. Architectural practice has, for some decades, addressed the computerisation of drawing production and three-dimensional (3D) visualisation through life-like renderings and fly-through animation. More recently, portable viewing devices such as 'goggles', enable viewers to immerse themselves within a computer-generated constructed space and navigate within a representative virtual reality world. Building Information Management (BIM) has also in recent times added to the efficiency of the consultant teams' access to information, with the possibility of simultaneously sharing a computer model at a variety of remote locations. BIM is a collaborative technological tool, which enables multiple stakeholders to work on the design, planning and construction of a building project. As an example, the United Kingdom (UK) Government mandates that BIM is utilised for all construction contracts from 2016 to deliver more sustainable buildings faster and more efficiently.

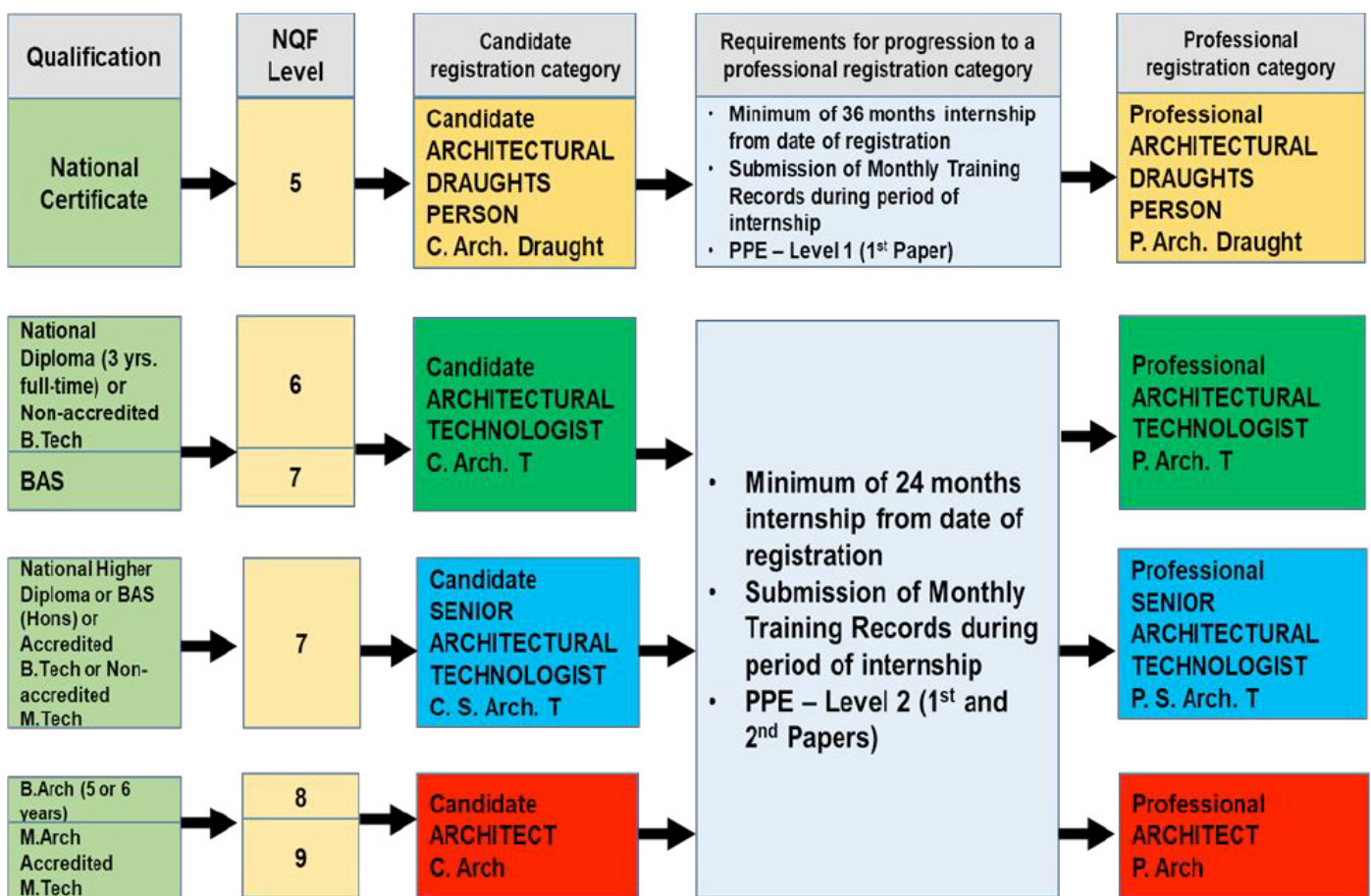
<sup>4</sup> The professional designations of the SACAP are capitalised.



The progression to and engagement of architectural practitioners with computer tools is a natural process. A variety of computer graphic programs is introduced to architecture students at most ALS, but with limited tuition. The access to such programmes is determined by the willingness of computer suppliers to offer free or limited licences to students or the ALS, which may also purchase some licences. These software tools require extensive tutorials, and frequently the features are not fully explored, but they are worth the commitment to keep skills at the cutting-edge. As CO Architects' principal, Eyal Perchik, commented in Kilkelly's (2017) article, not everyone can read drawings, but everyone can relate to virtual reality. Exploring a concept model enables architects and clients to experiment with different options before the expense of printing large-scale drawings.

Traditionally, expertise in technology was reserved for the Architectural Technologist, and university studies focused more on the theories of architecture and its implications on design. However, because of the cross-disciplinary opportunities provided by BIM, these technologies are now used by architects, engineers, construction managers, quantity surveyors and project managers.

Figure 1, acquired with permission from SACAP, illustrates the qualifications and professionalisation pathways from NQF Level 5 needed as a draughtsperson, to those at NQF Level 9 needed as a Professional Architect. The requirements for progression are shown. Beyond these levels is the NQF Level 10 for a Doctorate in Architecture.



**Figure 1:** Qualifications and professional development for Architectural Professionals (Source: SACAP, 2020)<sup>5</sup>

A Candidate Architectural Technologist will have studied at a tertiary institution for at least three years at NQF Levels 6 or 7 and will have gained the required competency to practise in the built environment after a supervised internship of two years as specified by SACAP. Those who have completed the fourth year of architectural study, resulting in an accredited Bachelor of Technology (B. Tech) Degree or an Advanced Diploma, will be at NQF Level 7, while the fourth year Honours Degree is set at NQF Level 8. The NQF Level 8 qualification is seen as the stepping-stone to the Master's programme at NQF Level 9. Should the appeal of academia be relevant, students could move up to NQF Level 10 for doctoral studies.

<sup>5</sup> BAS means Bachelor of Architectural Studies and PPE means Professional Practice Examination.

According to Wood (2017:2), Nick Bostrom, an Oxford academic and philosopher, believes that the world is at the cusp of an AI explosion, which will drive the design industry. Wood asks: “*Will the Internet of Things create a socially adaptable and responsive architecture?*” Creating a socially adaptable and responsive architecture would entail considering the population growth and its effect on the environment, as an example. Wood spoke to Michael Bergin from the Computer-Aided Design (CAD) software supplier, Autodesk, who suggests that the architect would be less involved in drawing, and more in specifying and problem-solving. This is a key critical cross-field outcome (CCFO) used daily by practising architects. The Internet of Things (IoT) is an ideal tool to gather information and Mahsa and Mohammed (2017) explain how, by using information received via BIM’s connectivity, construction challenges such as crisis management, energy management and disaster prevention can assist in the efficient management of these issues. Wood (2017) comments how 3D printing and AI can offer architects a new aesthetic language and with AI-driven robots on construction sites soon expanding into bricklaying, welding and other tasks, the architect’s role will dramatically differ. A paradigm shift in revising the curricula is required to remain relevant in practice.

Peerutin (2019), Chair of the South African Institute of Architects’ (SAIA) Practice Committee, cautioned that only a fraction of the power of BIM is utilised due to a lack of expertise and that there will have to be fundamental changes in the course content of the architecture curriculum to take advantage of the offerings of technology such as BIM. Also, he stresses that “... *the importance of developing a BIM strategy (BIM Execution Plan and Employers’ Information Requirements) on a project-by-project basis cannot be overstated*” (Peerutin, 2019:5).

### Focus of the study

The study on which this paper is based aimed to describe how particular CCFOs are necessary for recently graduated students in architecture during the 4IR. These are important at all NQF levels and include those found in the essential part-qualifications (unit standards) as per the South African Qualifications Authority (SAQA) guidelines. The research proposed suggestions for the development and implementation of an informed architectural pedagogy that will require a paradigm shift if graduates are to compete in the context of the 4IR.

### Research objectives

The research objectives, which considered the preparedness for M.Arch. graduates for the 4IR, guided the development of the quantitative questions, headed under issues concerning technology, CCFOs, entrepreneurship, social awareness and cultural responsiveness in the curriculum, and commitment to lifelong learning.

Many academic disciplines in South Africa and abroad address the universal issues raised by Finch and Melvin (2017). These issues

have been gleaned from the United Nations Educational, Scientific and Cultural Organisation’s (UNESCO’s) Sustainable Development Goals (SDGs) (UNESCO, 2019). Particularly relevant is the link between social justice and climate change because of the move to green technologies by architect designers.

## LITERATURE REVIEW

Is a machine able to create an iconic masterpiece such as Le Corbusier’s *Notre-Dame du Haut* at Ronchamp and evoke feelings of reverence in people from all spiritual backgrounds? Although an old source, this quotation is relevant to the discussion - Cotterill (1989:23) comments, “*I would defy even the most hardened criminal to sit alone in Le Corbusier’s masterpiece and not feel the presence of something larger than man.*” We ask, in this paper, ‘Do polymathic architects need to be developed and encouraged for similar creations to occur?’

Cramer (2012), the founding editor of *Design Intelligence* and co-chair of the Design Futures Council, feels that communication skills and business leadership should be taught before graduation. He stresses the importance of keeping the curricula current and enabling interactions with industry professionals. He recommends an experiential, cooperative, educational approach where students learn first-hand about building procedures with on-site supervision and day-to-day project management challenges.

Etherington’s (2011) provocative title “*Will architects exist in 2025?*” which was posed at the Royal Institute of British Architects’ think tank, *Building Futures*, provided feedback after a year-long study where the key questions of who will design our built environment, how will practices change by 2025, and what role architects will play in these changes, were addressed. Financial literacy and problem-solving were focus areas where the architect was recommended to be client-savvy and see beyond the building. According to Etherington (2011), a time is envisaged when practices will be known as ‘spatial agencies’ or ‘design houses’ with the name ‘architect’ no longer used. Etherington’s view omits to consider the full suite of training afforded to the architecture student and its importance in ensuring an environment well suited to human habitation, and the sustainability of the planet.

### Historical background

Polymath Sir Christopher Wren (1632–1723) is regarded as one of the greatest English architects in British history (Curl, 2005:742). He was a recognised architect, mathematician- physicist, astronomer, scholar, anatomist, astronomer, and geometer. Wren gained a reputation as an architect through his creation of the Sheldonian Theatre in Oxford. The design is based on the classical design of the Roman Theatre of Marcellus. Wren is best known for his restoration of buildings in London after the Great Fire in 1666 that put paid to his reconstruction of St. Paul’s Cathedral in London, which then had to be rebuilt. Wren’s English Baroque design, with

its distinctive dome, is said to be his greatest achievement (Curl, 2005:742). Wren designed and supervised 51 uniquely different city churches. According to Tinniswood (2001), Wren's success lay in his involvement in each stage of the work. He was pedantic about workmanship, insisting on the finest of materials. A polymath such as Sir Christopher Wren may not be readily available today in many architectural firms but, certainly, soft skills such as problem-solving, communication, project management and systems thinking are essential for Professional Architects today. Also, innovation and creativity, with a solid foundation in theory, will enable graduates to compete in the ever-changing 4IR.

### Modern-day polymaths

Dickinson (2018), an architect for more than 45 years, believes that architects should be polymaths and not just specialists. He discusses the work of polymath Michelangelo and believes that, because of the avalanche of technology, which we are compelled to master, we are losing touch with reality because of the 'CAD Monkeys'<sup>6</sup> the architect has to now contend with. He believes a 'Balkanisation' of architecture has emerged with many architects splitting off into areas of specialisation.

There are a number of modern-day polymaths. Gerfen (2018), for example, discusses David Benjamin, and how his architectural practice, *The Living*, blends the topics of biology, computer science, and design, intending to augment architecture. During an interview with Benjamin, Gerfen commented on how the discipline had been defined in academia and in professional practices, which may be outdated, and the increasing pressure to take a more interdisciplinary approach.

It cannot be disputed that world-renowned entrepreneurs such as Elon Musk, Mark Zuckerberg and Bill Gates are polymaths who take full advantage of technology offerings in the 4IR. Further, according to Simons (2018), several research studies have revealed that people who enjoy broad interests are more likely to succeed in life.

Not everyone can become a polymath, but there are opportunities for joint research studies where multi-disciplinary contributions lend a polymathic approach to the study. Simmons (2018) reports how researcher Professor Brian Uzzi from Northwestern University in the United States (US), for instance, examined copious papers going back hundreds of years. He found that when teams collaborated, their output was more impactful and attracted numerous citations. In building construction, people from a variety of disciplines work together as a team, each bringing their skills to the collaborative work. Graduates in architecture are predominantly trained to be generalists within their fields.

The issue of social justice was championed by polymath architect, Michael Sorkin, who recently died of the Covid-19 virus. Smith (2020) explains that Sorkin's forthright manner sometimes caused conflict, but his insights into social justice and the influence of politics in architecture will always be remembered.

Charles Jencks (1939-2019), a prodigious polymath, was known for his skills in 'breathing life into buildings'. He launched a second career in landscape architecture where he incorporated ideas on mythology, cosmology, symbolism and science. He used the land to explore subatomic physics and chaos theory.

### Social skills

Reif (2018), President of the Massachusetts Institute of Technology (MIT), advises that to survive in the 4IR, social skills need to be developed and improved. He explains that it is important for people to be proactive in reinventing the future of work.

According to Deming (2015), computers are poor at simulating human interaction and, therefore, communication skills are another key CCFO in the 4IR context. His research found an increasing emphasis on the importance of social skills which technology cannot emulate with ease. This emphasis he said is particularly relevant in high-paying jobs. Deming (2015:1598) explains, "this literature shows a clear link between the computerisation of the labour market and the decline of routine work. Yet the link between the increased variability of workplace tasks, team production, and social skills has not previously been explored." Deming (2015) cites Heckman and Kautz (2012) who discuss the importance of non-cognitive or soft skills and, in particular, the ability to work with others.

Tucker and Neda (2019), writing for The Architectural Science Association (ANZAScA), explain how they found a clear knowledge gap in terms of the inclusion of teamwork in the curriculum of architecture and related design disciplines. This knowledge gap could be easily addressed by closer interactions with government, academia and practising architects. Osman (2018) feels that cross-disciplinary communities are crucial in the 4IR, and spaces should be created for conversations across community, industry, social and academic precincts.

Soft skills, according to Cimatti (2016), indicate personal transversal competencies like teamwork, communication and language skills, and social aptitudes. A blog team with broad-spectrum skills and commitment to collaboration used the social media platform, LinkedIn to analyse 50,000 professional skills most in demand by employers. The number one skill being sought in 2019 was creativity. LinkedIn indicated that creativity is the single most important skill in the world for all businesses today to master.

<sup>6</sup> CAD Monkey is a programme created by an Architect and a Programmer to automate key processes. The 'CAD Monkeys' term used by Dickinson typically refers to people who have gone through years of difficult and strenuous education in engineering, architecture, or a similar field only to end up with a repetitive job where they do one task on a computer drafting program over and over again.

## Predictions from the World Economic Forum (WEF) and futurists

Schwab (2016), Founder and Executive Chairman of the World Economic Forum (WEF), has been at the centre of global affairs for over four decades. He is convinced that the world is at the beginning of a revolution that is fundamentally changing the way people live, work and relate to one another, which he explores in his new book, *The Fourth Industrial Revolution*. Schwab (2016) points to real evidence that technologies are having a major impact on businesses and roles, as robots replace people. One technology that has become accessible is the 3D printer, which is said to be replacing some employees formerly in the production/assembly line.

In a WEF online article (2020:1), Erik Brynjolfsson, Director at the Massachusetts Institute of Technology (MIT) Initiative on the Digital Economy, commented that *“The future is not preordained by machines. It’s created by humans.”* The late Stephen Hawking, rated as one of the world’s greatest physicists, and whose views on the future of the world are highly regarded, once commented in an interview with *Wired* that robots could, with the help of AI, supersede humanity. Brynjolfsson (2020) does, however, say that it would be best to not compete with machines, but rather to outdo them. He believes that creativity in schools is being stamped out and that schools should consider investing in this skill. Other ‘soft skills’ he mentions are leadership, teamwork and interpersonal skills.

## Preparedness of architecture graduates for 4IR innovations

The SACAP registers architectural practitioners across four categories viz. Professional Draughtsperson, Professional Architectural Technologist, Professional Senior Architectural Technologist and Professional Architect. As shown in Figure 1, to attain registration as a Professional Architect, the current South African model requires five years of full-time tertiary study. This sees the graduate attain a Master’s degree (NQF Level 9), and after an additional two years of Internship as well as successful navigation through professional practice examinations, SACAP registration is enabled.

Architecture programmes are offered in traditional universities as well as in Universities of Technology (UoTs) in South Africa. SACAP has annual Continuing Professional Development (CPD) requirements for the Professional Draughtsperson, the Professional Architectural Technologist, the Professional Senior Architectural Technologist as well as the registered Professional Architect. The registered Professional Architect has full licensure to tackle any projects of all complexities. Until the advent of the Covid-19 pandemic, most CPD courses were offered by building suppliers,

attempting to promote their wares. The pandemic has brought to life daily online CPD offerings, made available internationally and in some cases, collaboratively. The topics are wide-ranging, including the Sustainable Development Goals and architecture after Covid-19.

## The role of education in the 4IR

In the current fast-changing world, what is taught will soon become obsolete, and to address this, inter and multi-disciplinary learning opportunities should be offered at the tertiary level.

The South African Qualifications Authority (SAQA, 2018) in its NQFPedia Glossary of Terms<sup>7</sup> defines CCFOs as “the generic outcomes that inform all teaching and learning” (2017:19). Qualification and part-qualification developers must consider CCFOs in the development of qualifications. Such skills are not simply ‘nice-to-have’, but essential to prepare students for their future roles in fast-changing environments.

Hattingh (2016) believes that the Sector Education and Training Authorities (SETAs)<sup>8</sup>, the government, and other policymakers, need to plan for the eventuality of changes arising from the 4IR. No education system can keep up with these changes and curricula need to be reformulated to include topics such as creativity, problem formulation (rather than problem-solving), economic citizenship, emotional intelligence (empathy, intercultural sensitivity etc.), and the ability to adapt. Creative skills are useful in careers that are complex, fragmented, ever-evolving and collaborative and should be a requirement at any NQF level.

Marr (2018:4), who wrote for *Forbes*, advises that any jobs requiring true creativity are probably safe for the foreseeable future. He commented that,

Many jobs require additional and very human qualities like communication, empathy, creativity, strategic thinking, questioning, and dreaming. Collectively, we often refer to these qualities as ‘soft skills’, but don’t let the name fool you; these soft skills are going to be hard currency in the job market as AI and technology take over some of the jobs that can be performed without people (Marr, 2018:4).

Webber-Youngman (2017) lists ten skills, other than those previously mentioned in this article, highlighted by the WEF (2017) as namely, emotional intelligence, service orientation, negotiating, and judgement/decision-making.

Educators are not spared from being replaced, as according to Dvorsky (2017), the host of massive open online courses

<sup>7</sup> The NQFPedia was accessed at <https://hr.saqqa.co.za/glossary/pdf/NQFPedia.pdf#>, on 06 August 2021.

<sup>8</sup> The main purpose of a SETA is to improve and develop skills within its sector, to identify skills development needs, and to ensure that national standards are maintained.

(MOOCs), Apps, and computer-aided instruction will soon eliminate teaching positions. VR technology is useful in the studio environment, where, according to Powers (2001), the constructivism ideology teaches students about built environment challenges without real-world repercussions. Webber-Youngman (2017) feels that Inquiry-based Learning (IBL) is a crucial component in getting projects completed. This theory has the locus of control with the student who is encouraged to ask questions. IBL emphasises constructivist learning, first put forward by David Kolb (1984), who introduced experiential learning from a constructivist viewpoint. Essentially this means 'learning by doing' from people, incidents and resources, reflecting and building on prior knowledge. In the architecture studio environment, the lecturer is the Master, and there is a longstanding tradition of learning-by-doing (Moore, 2001) where the apprenticeship model is in place.

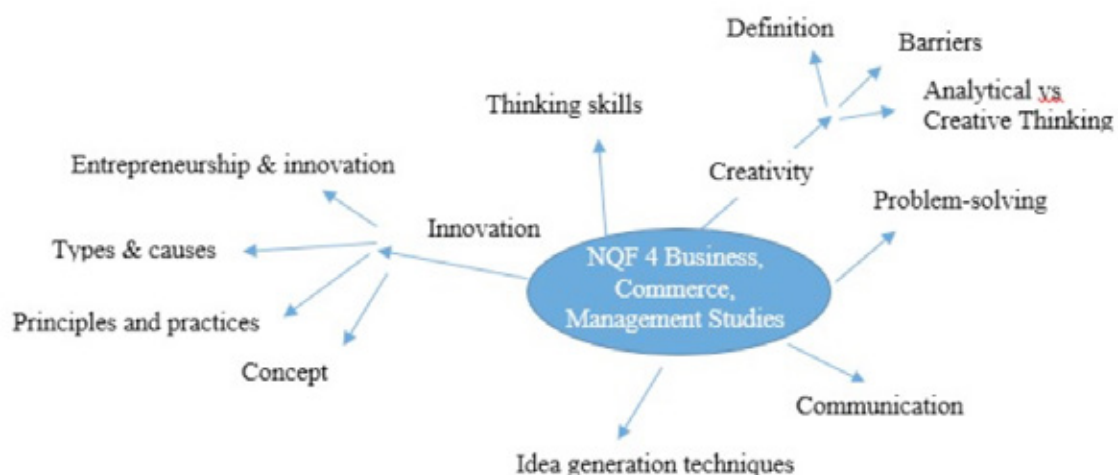
During the third year of the Bachelor of Architecture degree at the University of KwaZulu- Natal (UKZN), students engage with environmental and social influences in architecture, preparing them for their internship year. This concept embraces Vygotsky's (1978) social- cultural theory, which conceives of human learning as a social process. After graduating, what Kolb (1984) refers to as experiential learning in the internship year takes effect where environmental factors, cognition and experiences influence the learning process, better- preparing students for their Master's degrees. During the Honours and Master's programmes, urban design and community engagement are emphasised and therefore, should their experiential learning have been effective, this would benefit students' ultimate progress. Also, elective courses from other disciplines, as well as interactions with established local communities with intrinsic issues, ensure a multi-disciplinary approach and the continuance of experiential learning.

Built environment higher education programmes at all NQF levels have traditionally encouraged experiential learning with a hands-on approach through visiting building sites and interacting with professionals in this field. This approach has blended with the studio- based pedagogy and the encouragement of reflective practice. As observed by professors of architecture education, Kolhe and Tarar (2017), experiential learning has a key role to play in the education of the builders of the future and these include planners, architects and engineers. They commented on how this theory of learning moves away from the traditional 'chalkboard' approach leading to change and the enhancement of communication and teamwork skills, ultimately encouraging lifelong learning.

In architecture tertiary studies, studio work also exemplifies this theory of experiential learning as students learn by experiencing and experimenting with different materials and theories. Kolb's (1984) experiential theory, and constructivism, where students construct their understanding of the world with real-world problem-solving, applies in the studio as well. This theory of learning by doing has its historical roots in the work of Dewey (1929) and Bruner (1961) as well as Vygotsky (1978) and is still relevant in many paradigms of education. However, a reassessment of how these theories work in the 4IR should be considered.

### Entrepreneurship and innovative thinking

The 'SAQA Unit Standard Identity (ID) 114600' at NQF Level 4 applies to the development of innovative thinking in small businesses. Accredited providers who offer this unit standard include training companies, filmmaking organisations, consulting engineers and transport firms. Figure 2 illustrates the importance of creative skills as part of the soft skills to be developed for business management and is pertinent, as many architecture graduates will establish their own businesses. Figure 2 also illustrates how creativity in business management links with other soft skills such as problem-solving and its importance in innovative practices.



**Figure 2:** Creativity in business management (Source: Adapted from SAQA Unit Standard Identity [ID] 114600)

Creative problem-solving is key for the development of skills, and rote learning is a thing of the past. Robots are ideal for handling repetitive tasks. Gleason (2018) reports that experiential and problem-based learning are essential components of higher education pedagogy in the 4IR. Singapore's institutions of higher education, for example, aim to upskill and educate their citizens by shifting the population's skill sets.

### **An example worth emulating**

Singapore is well-known as a country that embraces technology. Gleason (2018), in referencing Singapore, believes that humans will always drive innovation and creativity and should learn to work alongside robots, which have been referred to as 'cobots'. Collaboration with government and business is recommended and, according to Gleason (2018), both should provide finance, with the former being committed to up-skilling its citizens. Adaptable and flexible mindsets mean cognitive agility that enables people to keep current in fast-changing environments.

Singapore has two large-scale initiatives, *SkillsFuture* and *Smart Nation*, which work alongside their institutions of higher education to prepare the population to live and work in the 4IR. The beneficiaries of these ventures include citizens of all age groups and the nation's economy.

The Smart Cities in Singapore, with the IoT and Wi-Fi-enabled devices, will see communication enhancing lifestyles for city residents. However, these citizens need to become digitally literate to take full advantage of these technologies. Gleason (2018:165) states "*In preparation of 4IR, Singapore is deploying a multi-faceted strategy that merits rigorous appraisal by other countries and institutions of higher education*". Perhaps, this example from Singapore is worth emulating by countries such as South Africa.

### **South Africa in the 4IR**

During the 2020 budget speech, Mr Tito Mboweni, South African Minister of Finance and former Governor of the South African Reserve Bank, spoke of South Africa's commitment to 'not being left behind' as far as 4IR is concerned (SA Parliament, 2020). He advised that schoolchildren, particularly those from disadvantaged communities, should learn robotics and coding skills. Smart cities, he said, are developing, and two examples are Oliver Tambo Airport and King Shaka International Airport – the international airports in two of South Africa's nine provinces. Education was given high focus in the budget, and there are plans to build a new university of science and innovation in the Ekurhuleni region of Gauteng, South Africa's most populous province.

### **Lifelong learning**

Architectural studies do not stop at tertiary level, as CPD ensures that architectural professionals are kept at the cutting-edge of

technology and has become essential for each professional's career requirements. Vestburg (2018) commented that 4IR needs to embrace the concept of lifelong learning:

There's something else we need from a Fourth-Industrial-Revolution education system: the full embrace of the concept of lifelong learning. I realise I'm hardly the first to espouse the lifelong-learning ideal, but we need to be more emphatic about making it a reality. Rather than a nice add-on to our current formal education system, it should be the concept around which the entire system is understood and organised.

Teamwork or group work is mentioned repeatedly by academics and practitioners as being advantageous in the workplace. Teamwork provides informal, formal and non-formal learning opportunities. The latter also includes social media. However, students are frequently resistant to teamwork where, for example, uneven workloads are experienced, as commented in the study on which this paper draws. As architectural professionals practise in multi-disciplinary environments, the groundwork for these aspects should take place at tertiary level although such skills are honed throughout the course of life. Peerutin (2019) comments that it is puzzling that more practices have not taken advantage of outsourcing highly skilled experts to form teams. Collaboration and communication are key CCFOs, and conflict management and cross-cultural awareness are important considerations in the built environment.

## **METHODOLOGY**

The quest was to examine how, by the introduction of CCFOs, architects can become multi-skilled, multi-disciplined and possibly even polymaths (whose knowledge spans a variety of topics).

An empirical, longitudinal combined research methodology was used for the study on which this paper draws to derive benefit from both the rich, interpretative, in-depth qualitative approach and the more scientific, generalisable quantitative approach. The rigorous and persuasive mixed methods project enabled insights from graduates from four tertiary institutions in South Africa in the discipline of architecture. Responses were evaluated from an architectural and an educational perspective.

Two instruments were formulated. The core considerations for assessing the CCFOs were addressed by a quantitative approach using a questionnaire submitted via email with Likert scale responses of 'Yes', 'No', and 'Sometimes', analysed in Microsoft Excel. Ethical considerations were adhered to as respondents were advised that all data would be kept confidential.

A sample of M.Arch. graduates from UKZN, University of Cape Town (UCT), University of the Free State (UFS), and Nelson Mandela University (NMU) participated in the study. The years in which the sample had graduated ranged from 2014 to 2018. The data were

acquired from 17 graduates with M.Arch. Degrees. The qualitative questions were devised using the broad, universal issues deemed important for the future of architectural practice, namely climate change, water security, an ageing population, social identity, an ethical and empathetic understanding of diverse perspectives, social justice, smart cities, building technologies, reuse of materials and virtual worlds, mentioned in Finch and Melvin's (2017) article concerning their vision for the architecture profession for the next 10 years.

## STUDENT FEEDBACK ON THE MARCH 2020 CURRICULUM

There were 17 responses to 45 requests made to the four educational institutions. The respondents highlighted the lack of guidance in their curriculum on the topics of new building technologies such as nanotechnology, smart cities and virtual worlds, all issues raised as important for future architects by Finch and Melvin (2017). The data revealed that M.Arch. graduates would thus be under-prepared, in terms of 4IR readiness, for practising as architectural professionals.

All responding students commented that their CAD skills were mostly acquired during their working experience and that their exploration of virtual space was self-taught. One student regretted the emphasis placed on hand-drawn work, as expert CAD skills were expected in the marketplace. She commented, "*Viscom<sup>9</sup> ended in undergrad and while I was studying the course never went into computer graphics, rendering/3D software and only focused on hand-sketching - a major stumbling block I now find in the workplace*".

Presentation skills were emphasised in the summative assessment stages of the architecture learning programmes, as this is where the students graphically display their design creations. Students print out large-scale drawings, sketches and 3D-rendered imagery. One student commented, "*Well presented schemes often masked their underlying architectural flaws*." Another said, "*Sometimes people passed because their presentations were flashy*." But virtual worlds are important in the workplace where the cost savings using this technology are considered essential. One student commented on how presentation skills were expected from students to communicate their design work, but no formal instruction on this aspect was received.

Another area needing development emerged, of curriculum coverage regarding running an architectural practice. Some Respondents pointed to a lack of understanding of the current metrics in finance, marketing, professional services and operations. One student said, "*Only the bare minimum was covered within certain courses*." Another commented, "*This would be highly beneficial if added to the curriculum*." However, in one institution, a module entitled

Simulated Office Practice does aim to introduce some of these skills. A graduate from another institution said, "*It was covered to a minor degree in a specific module*." Considering the importance of entrepreneurship, it is something that should be addressed in greater detail in the curriculum.

## Teamwork

Teamwork in the 4IR is essential, particularly as some projects are complex in concept, requiring multidisciplinary skills. Responses regarding the inclusion of teamwork in the curriculum were varied but it appeared that the students did not like it. One respondent said, "*Not everyone contributed equally to the team*." Another said, "*Mine was one of the very few teams that got along and worked together effectively, personalities were complementary, and this allowed me to enjoy it more than some of my classmates*."

Conflict resolution is something that frequently arises in the built environment profession, and teamwork, even if disliked, gives students insight into what could happen when they start working. For instance, one graduate said, "*A team's success or failure depends entirely on the individuals that make up the group. So, when one or two let you down, it constantly creates tension*."

## CONCLUDING OBSERVATIONS

Graduates in architecture can evolve into polymaths if exposed to wide-ranging learning opportunities and collaboration with stakeholders in business and government. The development of the architecture curriculum should be an ongoing exercise to ensure that students' skills are current and relevant in the context of the 4IR. Opportunities for multi-disciplinary relationships between Architecture, Information Technology (IT), Environmental Science, and Engineering would assist universities with the costs involved in obtaining suitable resources such as those required for 3D printing, smart cities, robotics, material fabrication and others.

A key question is, '*Can universities endure the fluidity of these changes?*' In this study, although the sample was very small, a key finding was that the responding graduates reported being ill-equipped to run architectural practices. A greater emphasis on the administration and solving of entrepreneurial challenges in architectural practices will address this issue. Furthermore, creativity and communication skills are emphasised in the literature, and such skills should not be neglected in the formulation and modification of curricula to prepare architecture students to work cooperatively in the context of the 4IR. Further research on other issues also described in the Finch and Melvin (2017) list need to be explored if future architects are to be viewed as polymaths in the true sense of the word, and again take their rightful places as project leaders.

<sup>9</sup> Viscom stands for Visual communication, which is a module in architecture studies that uses a variety of computer software and hand skills.

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Please note that any enquiries relating to Professional Registration, including Annual Fees, Registration, CPD etc may be directed to the following email addresses:

### CONTACT CENTRE

General enquiries - Registration, Upgrades, Professional Practice Exams (PPE), Continuing Professional Development (CPD), frequently asked questions (FAQ)

**Email: [info@sacapsa.com](mailto:info@sacapsa.com)**

### FINANCE UNIT

Account - Annual Fees and other fees accounts including CPD renewal fees, re-registration fees

**Email: [accounts@sacapsa.com](mailto:accounts@sacapsa.com)**

### IDOW - COMMITTEE

Identification of Work (IDoW) - Matrix and Exemptions

**Email: [idow@sacapsa.com](mailto:idow@sacapsa.com)**

### LEGAL

Filing a complaint and lodging an affidavit

**Email: [legal@sacapsa.com](mailto:legal@sacapsa.com)**

# SACAP NEWSLETTER

# THANK YOU

