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6th CSIR Conference –
Ideas that work for Industrial Development

**IDC perspectives on
biotech SMME development**

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5 October 2017

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Overview of IDC



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- **Established:** 1940
- **Type of organisation:** Development Finance Institution (DFI)
- **Ownership:** State owned company, 100% owned by the SA government
- **Total assets:** R129.8 billion (31 March 2017 - group)
- **Total liabilities:** R41.5 billion (31 March 2017 - group)
- **Main business area:** Providing funding for entrepreneurs and projects contributing to industrialisation
- **Geographic activities:** South Africa and the rest of Africa
- **Products:** Custom financial products above R1m to suit project's needs including debt, equity, guarantees or a combination of these
- **Stage of investment:** Project identification and development, feasibility, commercialisation, expansion, modernisation
- **Number of employees:** 850 (December 2016)



Operational Footprint:

- Head Office - Sandton
- 20 Regional and Satellite offices

IDC Focus Areas

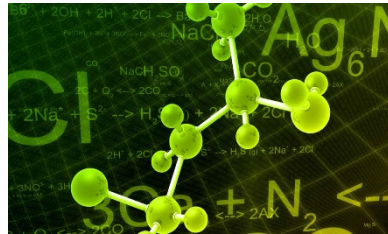


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Metals Value Chain

- Basic Metals and Mining
- Machinery and Equipment
- Automotive and Transport Equipment



Chemicals Value Chain

- Basic and Specialty Chemicals
- Chemical Products and Pharmaceuticals

Special High Impact Sectors

- Clothing & Textiles
- Media & Motion Pictures



Agro Value Chain

- Agro-processing and Agriculture

Enablers

- Industrial Infrastructure
- **New Industries**



High Impact Sectors

- Heavy Manufacturing
- Light Manufacturing & Tourism

Value Chains are earmarked for special attention including proactive project development, whilst High Impact Sectors are exclusively reactive

What has the IDC done in the past with respect to biotechnology development & commercialization?



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Supporting new technologies (including biotech) is not new to IDC (1)

- Under the **Wholesale Venture Capital Department** IDC invested **R20m** in the Biotech Venture Partners Fund during the **early 2000s**
 - Total fund size was **R80m** from which **9 investments** were made
 - 4 sold, 3 liquidated and 2 distributed in specie
 - Idea was to prove that SA has a rich biotech industry and that biotech investments can be profitable
 - Fund life was too short (7 years) and had to be extended twice to 12 years and at the end all the investments were still not mature enough for divestment
 - Key lesson learnt was that **biotech investments take a long time to mature, mainly due to regulatory requirements**

What has the IDC done in the past with respect to technology development & commercialization (including biotech)?



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Supporting new technologies (including biotech) is not new to IDC (2)

- From 2007 to 2015 the **IDC Venture Capital (VC) SBU** invested >**R900m** in **39 new tech startups**
 - **R76m** of which was invested in **6 biotech-related companies**
(1 emanated from the CSIR and 1 from UCT)
 - 1 exited to date (at below cost 😞)
 - 1 in process of being wound down (full-write-off 😞😞😞)
 - 1 mature investment ready for exit (prospect of good capital gain 😊😊)
 - 1 self-sustainable (achieving good global market traction 😊😊)
 - 1 achieving first sales (might become the star in our portfolio 😊😊😊)
 - 1 still in development (could either be a big loss or a massive success)
 - No different to the rest of the VC portfolio
- The **IDC New Industries SBU** inherited the old VC portfolio and continue to support these companies in their technology development and commercialization efforts
 - Follow-on funding since 2015 increased exposure **from R76m to R136m**
 - No new biotech investments have however been made since 2015...

QUORUS BIOTECH



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Product name : Quorus Bioreactor

Technology description

A range of **single-use disposable bioreactors and related control systems** that enable the growth of difficult-to-culture organisms and the efficient production of otherwise difficult-to-produce biological compounds on a continuous basis

Lessons

- **Using external service providers** to fulfil admin functions **can be more of a burden** than internalizing functions. Decision to internalize all functions resulted in improved financial control and overall governance.
- **Availability, quality and delivery of components are essential** and remains problematic for speciality SMEs in SA. **Don't compromise** on quality and reliability of supply in favour of cost. Find the right suppliers to partner with.
- **Evaluating the market** for speciality products targeting large and complex markets **is extremely difficult**. **Dedicate sufficient resources** to this task at an early stage as this will form the foundation of your business' strategies going forward.

The logo for Quorus biotech features the word 'Quorus' in a large, blue, sans-serif font with a green and blue circular graphic element to the left of the 'Q'. Below it, the word 'biotech' is written in a smaller, green, lowercase sans-serif font.



SYNEXA LIFE SCIENCES



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Technology description

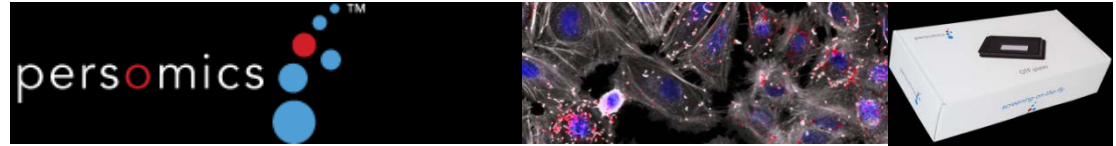
Synexa has built a leading position in the provision of biomarker services to the global biopharma industry. Biomarkers are biochemical signals emitted by the body in response to a disease or drug intervention. In the context of a clinical trial for a new drug, identifying the correct biomarkers and measuring changes in their level over time can assist biopharma companies in ascertaining the safety and efficacy of the drug and therefore aid in earlier and more accurate decision making about how to proceed with the drug.

Lessons

- **The most important strategy competence is flexibility.** Companies have to be good at dealing with continuous uncertainty and complexity and have to learn to handle an environment where completely unpredictable things happen all the time.
- **Don't add any overhead that does not bring you closer to your customer.** Operate a lean organisational structure with majority of staff doing client related work or interacting with clients and avoid unnecessary expenditure (e.g. personal assistants, flying business class etc.)
- **South African technology-based companies can compete very well globally; but competing in a global marketplace is extremely difficult, for reasons unrelated to location.** South African companies should not use their remote location as an excuse for under-performance. Instead, they should stay focused on what it takes to be the best in the world and get on with delivering it, day in and day out

PERSOMICS

Product name : Persomics



Technology description

High Throughput Screening (HTS) technology: Persomics is a newly formed CSIR spinout targeting the international biosciences sector. The company has developed a novel printing press and process that promises to drop HTS costs by upto 90%. The technology facilitates miniaturisation, broad diagnostics, and process optimisation in HTS.

Lessons

- Engage with all stakeholders in as much detail as possible in the early stages of the spinout conversation to **ensure the alignment of all interests/expectations, timing and priorities.**
- **Bridge Board/Executive skills gap with necessary complimentary skills** (ie financial, marketing and/or additional technical skills) to accelerate development, quality of management and lower risk.
- Having **external mentorship** (e.g. entrepreneur in residence support as is the case here with CSIR), can add value.

AZARGEN BIOTECH



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Technology description

The Azargen technology is focused around **genetically modifying a plant species to enable it to be used as a "bio-factory" for the production of plant made pharmaceuticals.**

Lessons

Building a strong board and advisory team with excellent corporate governance goes a long way to creating a stable and effective 'thought leadership' capacity.

I-SLICES



Technology description

A unique water-based cryogel technology, used for producing cosmetic products to treat a variety of eye related symptoms.

Lessons

Getting to an efficient manufacturing process can be a protracted and time consuming process. Factor in contingencies (time and costs) in your budgeting process. This will ensure that you raise enough funding to see the company through any potential delays and/or overexpenditure



Your All-In-One Quick Fix
Combining the natural essence of nature with Bio-Innovation to target puffiness, dark circles, tiredness, redness & wrinkles within minutes.

eyeSlice Professional

PATENTED CRYOGEL
AWARD-WINNING
TECHNOLOGY



Top 5 lessons from direct biotech investments



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- **It will take longer and it will cost more, much more**
 - You therefore need an investor/s with lots of patience and deep pockets
- **The regulatory environment is not conducive**
 - At times it is can be destructive (even if you have done your utmost to comply)
- **Securing necessary certifications and remaining compliant with regulations**
 - Admin intensive (heaps of paperwork; not once-off, but on-going)
 - Consumes a lot of time and is very costly (ideally requires a dedicated specialist resource)
- **Sometimes the technology development will fail, but this is not the challenging part**
 - Commercialising your product is much more challenging
 - It could take 5-10 times longer and cost you 5-10 times more to develop your market than what it took to develop your product
- **Good / well-balanced management is key to success**
 - Scientists often don't make good CEOs
 - Business / sales acumen needs to be brought in earlier rather than later

What will the IDC do in future with respect to new industry development, including technology development & commercialization (including biotech)?

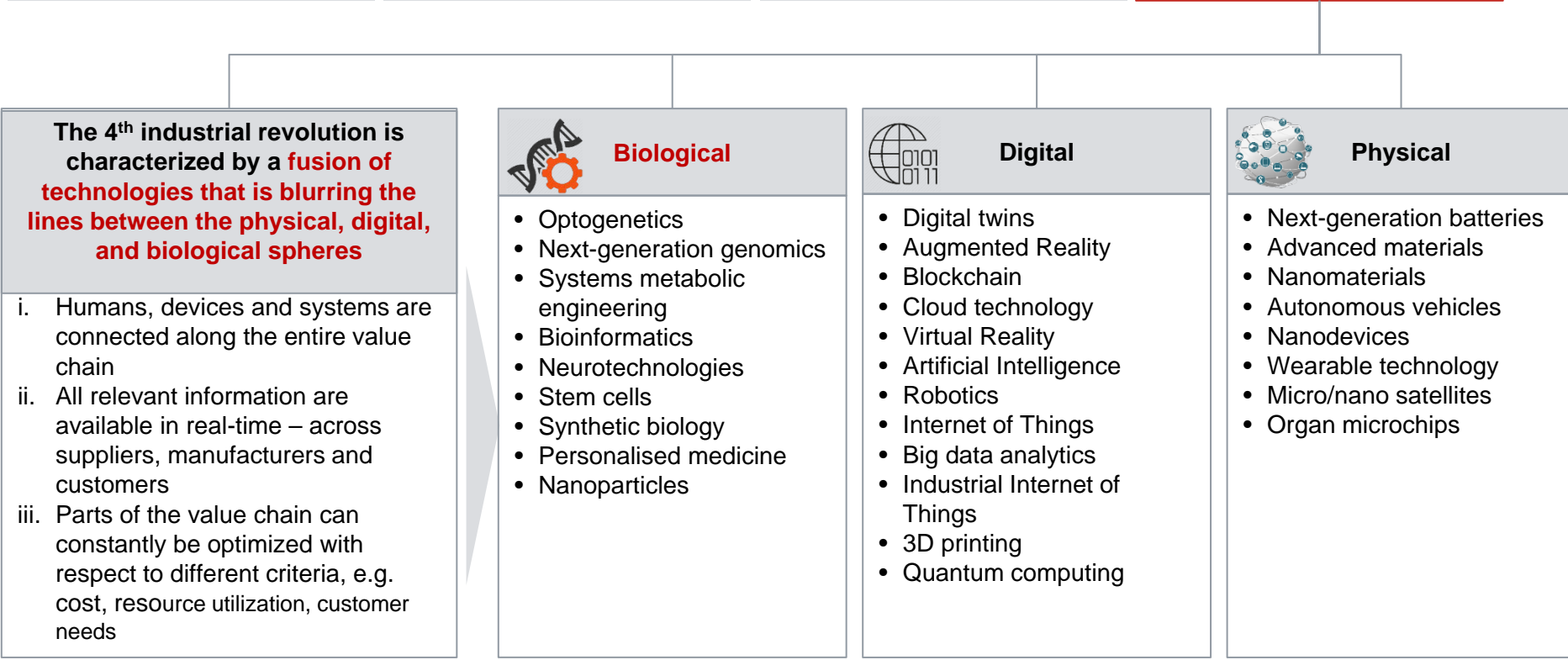
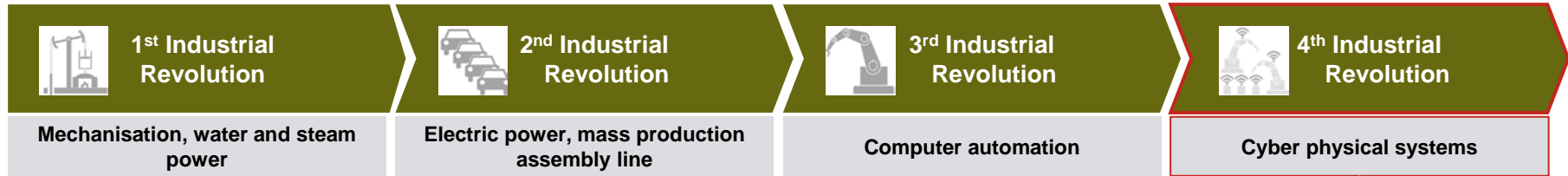


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- **The IDC New Industries (NI) SBU was established in 2015 to support the development of new industries** in which SA has a comparative advantage and which has potential to make **meaningful contribution to SA economic growth and job creation**
- **NI's mandate was recently expanded to include all 4th Industrial Revolution ("4IR") enabling technologies** and not just the two (Additive Manufacturing and Nanotechnology) that it had focused on to date. Updated focus areas include **(with higher priorities in bold)** :
 - **Energy Storage**
 - **Fuel Cells**
 - **Gas Beneficiation**
 - Renewable inputs
 - Medical Devices
 - **Natural Products (strong biotech link in this focus area)**
 - **4th Industrial Revolution related technologies & business models:**
 - **Additive Manufacturing (3D printing)**
 - Nanotechnology
 - Robotics
 - Artificial Intelligence
 - Big data / Data analytics
 - Internet-of-Things
 - **Biotechnology, etc**

So what is 4IR?



The majority of technologies driving 4IR are key enablers to systems across sectors

What will the IDC do in future with respect to 4IR (including Biotech)?



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- **NI will play a leading role** in terms of IDC's response to the risks and opportunities presented by 4IR
 - **All IDC SBUs however will incorporate 4IR in their strategies**
 - 4IR can and should be used to create sustainable jobs (high skilled vs low skilled)
 - Existing clients will be encouraged to adopt 4IR to improve efficiencies / competitiveness
 - **NI will selectively support the creation and/or development of 4IR technologies where SA has a clear comparative advantage and which have the potential to be big, enabling and disruptive.**
- **All 4IR technologies are on NI's radar at the moment**, including Additive Manufacturing, Nanotechnology, **Biotechnology**, Artificial Intelligence, Big data analytics, Robotics, Drones, Autonomous vehicles, Internet-of-things, etc.
- **The list will be narrowed down in future based on** our evolving understanding of the **sources of competitive advantage** (or lack thereof) that South Africa has in respect of each of these technologies.
- If we (SA Inc) have **sustainable sources of competitive advantage** in biotech then IDC would be keen to learn about these and support the development and commercialization thereof

What differentiates the IDC New Industries SBU?



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- **NI initiates / stimulates / catalyzes the development of BIG ENABLING DISRUPTIVE industries with HIGH RETURN potential**
- **NI focuses more on the long term than the short term**
 - This will be emphasized even more going forward through more resources being dedicated to project ideation, origination and development
- **NI develops projects (pro-active approach) and funds deals (reactive approach)**
 - across the prioritized industry value chains
 - at all stages in a business' lifecycle (from start-up through to growth)
 - using any funding instrument (from high risk equity to secured debt and everything in between) or a combination thereof
- **NI plays a leading / co-ordination role in new industry development and the creation of a conducive environment for these industries, which involves:**
 - Lobbying & influencing public sector stakeholders regarding policies, legislation, regulations, incentives, required infrastructure, etc
 - Lobbying private sector stakeholders (local and international) to collaborate with us in co-developing / -funding IDC-initiated projects in the targeted industries

Future Outlook iro 4IR (including biotech)



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Massive opportunity exists in SA for 4IR technologies to be adopted (no need to re-invent the wheel when it already exists) within:

- **Services industries to:**

- Help to address our societal grand challenges in the most efficient way (poverty, unemployment, education, healthcare, etc)

- **Manufacturing industries to :**

- Ensure ongoing sustainability and improve global competitiveness of SA's existing industries
- Create new (knowledge-based) industries that can leapfrog the global competition

Longer term objective is to also develop 4IR technologies in SA for local adoption and export to the rest of the continent and the world:

- **SA needs to capitalize on its sustainable competitive advantages, eg**

- Access to unique / abundant natural resources (flora / minerals) presents further beneficiation opportunities (eg in **Natural Products**)
- Access to world-leading IP through our Universities and Research Councils (eg in **Biotech**)



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Thank You