Hiving

Enabling my World

Smart Education

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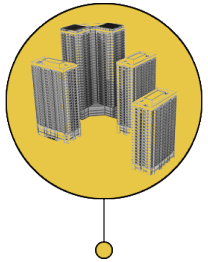
Company in a Nutshell



The Company

Established the **UAE in 2015** with head-office in Dubai

Presence in:
The UK - London
Ireland - Dublin
South Africa – Johannesburg

Team

Strong **visionary team** with the vision and the ability to take the technology to Market.

Partners

Strong sales and implementation partner network in Europe, South East Asia and Southern Africa.

Advisors

Security and IoT Strategy Advisor:
Prof Jon Howes
Go to market Advisor:
Used Gartner as a go-to-market advisor in our start-up phase

Patents

PCT Patents with final patents in progress in **38 countries**.

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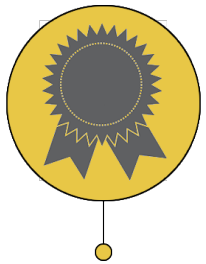
Company in a Nutshell

Product

- Hive One ID™ is a single wireless identity with a Root of Trust and **state of the art security features**.
- The One ID transmits instructions to the wireless reader that allow the reader to transmit **data to multiple applications**.
- The One ID is ideally suited for Decentralized **Self-Sovereign Identity** enabling privacy and security of personal data.
- The One ID can be used as a **single identity for multiple applications** as per the next slide.
- All **data is authenticated** as it is recorded with every event or interaction, ensuring trusted data.
- Ideally suited to **analyze the movement** and likely contact of people in public places for **pandemic control**.



Track Record

- Product currently deployed in **large retail solutions in Europe** – Identifying Shoppers and enhance their shopping experience by providing information according to the shopper's preferences as they move through different zones.
- The UAE – National Identity Authority demonstrate the Hive One ID as the **identity of the future** at GITEX 2018 in Dubai.
- First comprehensive **Decentralised Self-Sovereign Identity Solution**.
- Various **IoT Awards** and recognised as a **Gartner Cool Vendor**.

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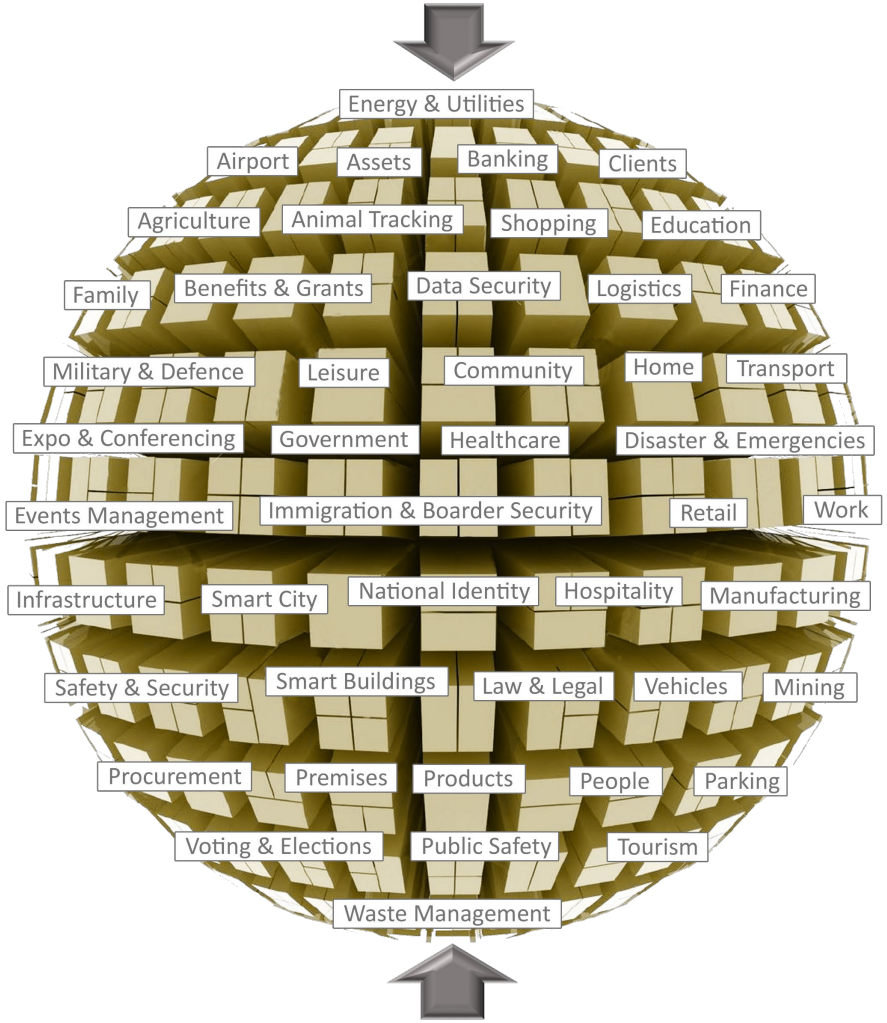
Use Cases

Everyone can use it

Governments



Verticals

Digital Trust
Security & Privacy
Data Integrity

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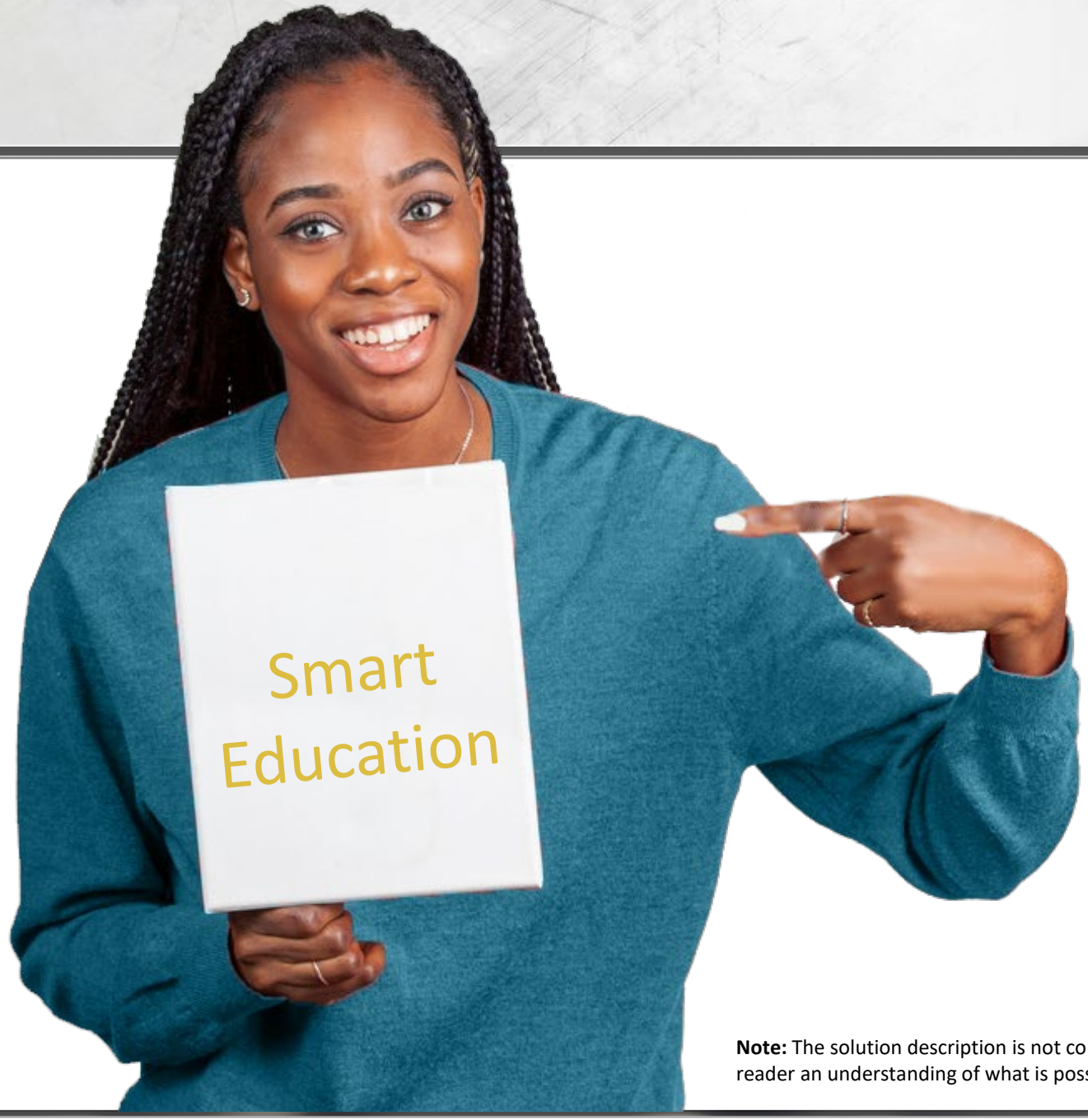

Note: The solution description is not complete but aimed at giving the reader an understanding of what is possible using the technology.

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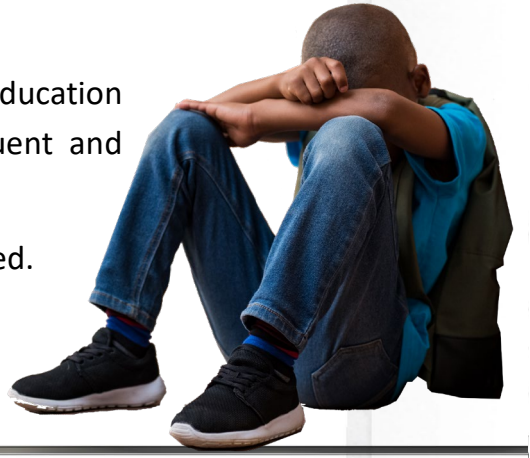
Current Education Challenges

Education has several well-documented challenges that are outside the scope of this document. One of the biggest problems in most organizations are the lack of real-time information. This means that feedback on the success of an intervention only becomes available well after the intervention, where with real-time information, adjustment and corrective action can be taken immediately.

The following challenges can be addressed with a wireless identity solution:

- Lack of real-time information on class attendance (for both educators and children) and the utilization of facilities.
- Movement data of students and educators to determine who has been in close proximity with the potential of being infected with a disease.
- Teachers are not all equally well qualified to teach the subjects they are required to teach.
- The lack of a student identity means that all administration process relies on visual identification of students by educators. Thus, not allowing for any automation.
- Student education records are recreated at different educational institutions as the student progress. Losing valuable information and duplicating effort.
- Parents and caregivers have no visibility of when children arrive or leave school. It is difficult to involve parents in student education as communication with parents is manual and relying on educator's communication with parents are mostly infrequent and informal.
- Moving Education into the Digital Era (4IR) will be problematic, costly, and very high risk unless a phased approach is followed.



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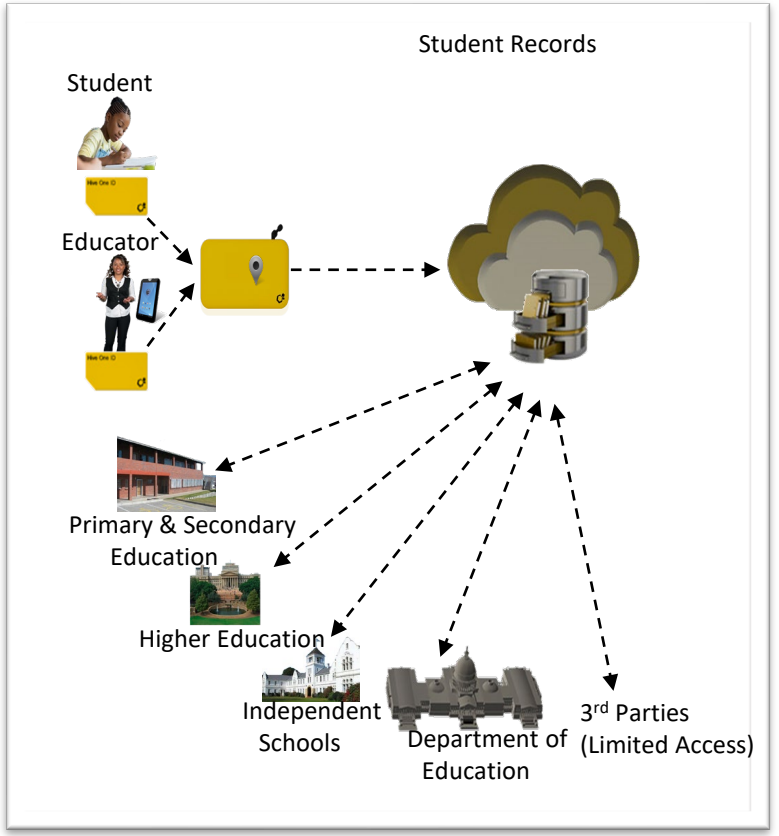
Integrated Education System

The Hive One ID's identify people and objects wirelessly as they enter a zone. This non-intrusive, rule-based architecture collects data about the student and educators in the zone even if just presence. Once identified student interactions are based on real-time student data, the following can be enabled:

- One digital education record that is linked to the student for life that moves with the student as they progress or transfer to other institutions, work with professional service providers or eventually apply for employment.
- Artificial Intelligence (AI) can be used to guide educators in adapting the way they teach or deal with specific students.

- With the understanding of which students are present the AI could guide the educators on teaching the group or the AI can compile lessons from the curriculum that could be delivered through multimedia, relying less on the educator's subject knowledge and teaching skills. The student record of each student can be updated with the content of the lecture they attended. Should students miss lectures on specific topics it will be indicated on their record. Students can catch up on these lessons in a multimedia centre where they can attend the lectures they missed.
- Independent Schools are included in the system giving the visibility of students across the education system.
- Limited 3rd party access to data only by invitation of the student or educator. Student can typically only grant access to an employer to verify qualifications obtained.
- Management and access to student accommodation should that be provided by the institution.
- Provide real-time information about the utilization of capital equipment and facilities.



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WHY IS SMART EDUCATION NEEDED?

- Smart Education takes a holistic approach to Education by tearing down the silos, connecting all the different education service providers, public and private.
- Smart Education supports a wide variety of features while ensuring the security and privacy of student information, making secure up to date education records available when required.
- Presence of both students and educators are automatically tracked.
- Provides a framework that uses a phased rollout approach that provides visible improvement with every additional layer.
- Reduce the administrative burden and enable automation of processes on identifying a student and / or educator.
- Creates real-time visibility enabling management to act as problems occur rather than retrospectively.
- Provides the platform to swiftly implement additional functionality when needed like, for example, managing a pandemic like COVID-19.
- Provides real-time visibility. Ensure that standard education protocols are followed, and corrective action is taken when deviations occur.
- Artificial intelligence can be deployed to automate and guide educators as they educate students.
- Enable the base platform required to move Education into the rapidly changing digital era (4IR).
- Enables compliance with government initiatives and mandates.

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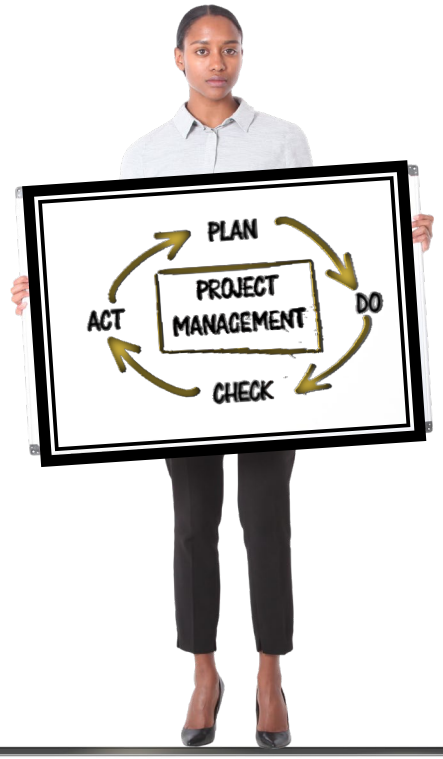
Phased Implementation

- **Phase 1:** Implement the Hive One ID™ foundation across all educational facilities. Enable the following:
  - Detail presence information of both students and educators. Placing educators in the zone with student teaching a specific subject and module of the curriculum.
  - Single education record linked to the student One ID.
  - Data for analytics providing:
    - Monitor learning progress. Actual versus planned in real-time.
    - Identify students that miss modules or fall behind in real-time.
    - Presence and movement data is ideal for monitoring and managing the spread of infectious disease like COVID-19.
  - Parent involvement on a real-time platform with push notifications on certain events.
  - Foundation for Phase 2.
- **Phase 2:** Add detail curriculum data with expert lectures to aid educators
- **Phase 3:** Provide students with a study tablet and evolve the content to include online learning and exams as part of lectures in phase 2.
- **Phase 4:** Make learning home-based for students without access to facilities.



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Educators and Service Providers

- The current administrative burden of educators can be significantly alleviated.
- The role of educators will look very different in the digital era. As technology evolves, people will be involved in:
    - Building technology solutions using highly automated tools;
    - transferring knowledge and creating content or;
    - facilitating people in using the already existing technology tools.
- Educators will fall in the second and third category. Facilitating the learning process either by creating the content or facilitating the learning, either in a classroom or online. In doing so all students will have the opportunity to be lectured by the best educators does not matter where they are.
- With the understanding of which students are present the Artificial Intelligence (AI) can compile lessons from the curriculum modules that could be delivered through multimedia, relying less on the educator's subject knowledge and teaching skills. The student record of each student can be updated with the content of the lecture they attended.
- Specialist tutors, occupational therapists and other professionals will be available to assist students with difficulties. Because all the data about the student progress is available, artificial intelligence can look for early signs that students are struggling or falling behind, and automated referrals can be generated.
- When students interact with the tutor or therapist, the student identity will unlock the detail student record, and the therapist can add a diagnosis and recommendations to the student record.
- As the student goes through the process, the student is authenticated, and data collected is automatically updated on the student record.

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FACILITY & ASSET MANAGEMENT

- Students that fall behind in some areas of their Education, once identified by the AI, can automatically be booked in a multimedia centre or even on a home computer to catchup on the missed modules.
- Similarly, students can be booked for laboratory time to perform practical components of their Education.
- Access to facilities can only be obtained via the student One ID with a valid booking.
- The student's access and time spent in the facility with the modules they utilized will automatically be recorded.
- Detail reporting about utilization of facilities will be available. This will allow the Dept of Education to determine how well the facilities are utilized, enabling the department to move under utilized equipment to areas where there is not sufficient capacity.
- Students will under all circumstances use their One ID to utilize facilities, not only for physical access but also to access the multimedia stations. Without the ID present the multimedia station can be hard-locked making the equipment obsolete as a theft protection method.
- Additional measures are possible where equipment can also be set to only operate in a designated One ID zone. Should the equipment be removed, it will become obsolete.
- Similarly, the use of sport and physical education facilities can be monitored and reported on.
- All equipment with One ID's built-in will automatically update the asset register. If the equipment is removed from the facility it will automatically notify responsible people.

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Integration of Student Tablets

- Providing students with tablets or notebooks in the suggested phase 3 will bring several challenges that can be significantly reduced by adding Hive One ID technology (OEM) on the mainboard of the device during manufacturing.
- The tablet, once issued to a student, can be linked to the students One ID and will only be operational when the designated student ID is present.
- The modules that the student complete on the tablet will automatically add to the student records.
- Because the tablet is linked to the student, content specific to the student will be available.
- Tests and exams can be conducted on the tablet in a controlled environment. AI can be used to rate the exam as the child complete the questions, making results available on completion.

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National School Nutrition Program

- Students that are authorized to use the National School Nutrition Program will use the One ID ad a coupon to obtain a meal.
- The data on utilization of the National School Nutrition Program will be available in real-time on dashboards.
- The solution will not only ensure that students get the food but payment to providers can be automated to only pay for actual meals provided.

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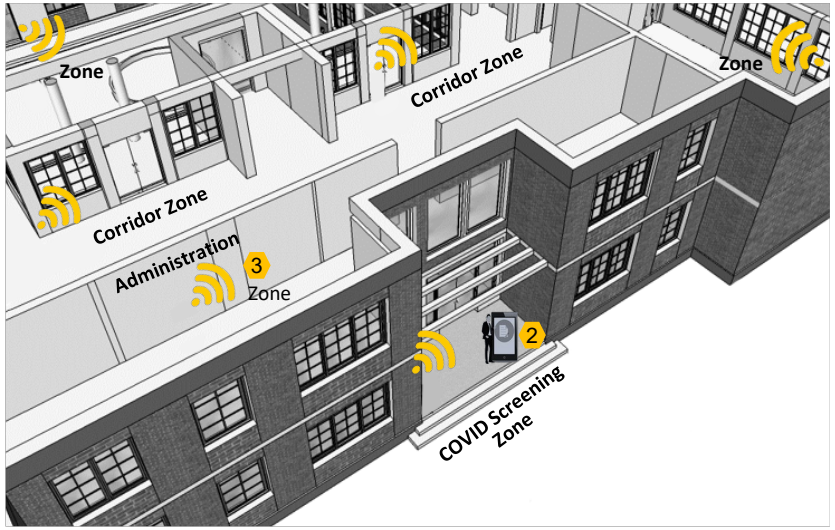
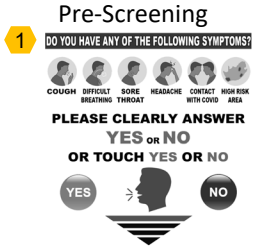
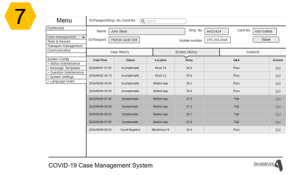
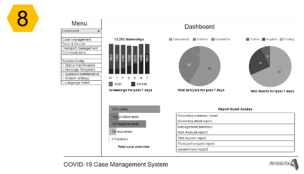
COVID-19 or Infectious Disease Tracking

1. Staff, students and visitors can answer pre-screening questions on a mobile application before they visit the education facility.
2. Anyone that did not pre-screen on the mobile application can do the pre-screening on arrival at a kiosk.
3. Staff and students with One ID's proceed. Once cleared, visitors receive a temporary One ID linked to their data. Anyone that shows symptoms is referred for testing.
4. While in the education facility, the One ID transmits data to the zone Wi-Fi readers every 3 to 5 seconds with data about approximately how close the person is to the reader.
5. This data collected in 4 is sent via the internet to a cloud database.
6. The data remains in the database for a predefined period. If a person that was in the facility contracts the virus, the analytic and artificial intelligence module will calculate who was likely to contract the virus based on predefined and learned rules.
7. The software module keeps a record of every entry and exit, and should a person show symptoms when screened the status will be cleared once a negative test result is received.
8. The software dashboard displays relevant summarised management information in real-time.
9. Anyone at risk of contracting the disease will be notified.









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