GIO White Paper:

Industry-Specific Ecosystems

TEMPLATE AND EXAMPLE USE CASE

- Case Study Template
- Case Study Example: Smart Inhaler

GLOBAL INDUSTRY ORGANIZATIONS

GIO White Paper:

Industry-Specific Ecosyst

Case Study Template

Version: 1

SCOPE: This case study should relate to the digital transformation of a vertical industry through the convergence of OT and ICT. Of particular interest are case studies that illustrate the benefits/challenges of engagement with an ecosystem of companies, even a superior ecosystem including multiple domain-specific digital platforms.

GLOBAL INDUSTRY ORGANIZATIONS

1 Case Study: Title / Submitted by:

Which vertical industry does this Case Study relate to? (e.g. Healthcare)

One or two sentences describing the case study idea at a high level.

Please insert a small list of appropriate # KEYWORDS / #TAGWORDS for this case study that will help in database searching

1.1 Submitted by:

Name or organization of the submitter and date of submission

1.2 Context

Describe the background and context for the case study. This could include the following:

- *An existing problem that has been identified within the industry, which is addressed by the initiative*
- *An opportunity for improvement in (e.g.):*
    - *Improvement of a procedure through implementation of a new technology*
    - *Improved level of service offered to a patient*
    - *Implementation of a new technology to treat a patient*
    - *Societal or environmental benefit*
- *A legal or regulatory need which is addressed by the initiative*

The context should be sufficient for someone who is not an expert in the particular industry vertical to grasp the essential problem or initiative being addressed.

1.3 Benefits

Describe the benefits to the patient or the healthcare provider that the initiative has achieved (or could ultimately be delivered if it is successful)

Describe any other benefits, e.g. to the solution partners or society at large.

Outline (in qualitative or quantitative terms) the cost/benefit analysis for investment in the activity,

1.4 Solution or Innovation Detail

Describe the case study or use case in detail. This could include some or all of the following:

- *What was or will be implemented to address the opportunity?*
- *If this is an early trial or proof of concept, describe the envisioned full solution*
- *Include illustrative diagrams where appropriate such as a high-level block diagram or images relevant to processes outputs*
- *Highlight the key technical innovations – what makes this case study special? Identify any research or academic input that is relevant.*
- *What stage is the initiative currently at (e.g. paper exercise, technology trial, full deployment)?*
- *What were the results of the initiative – costs savings, improved patient outcome, safety improvements, etc..*

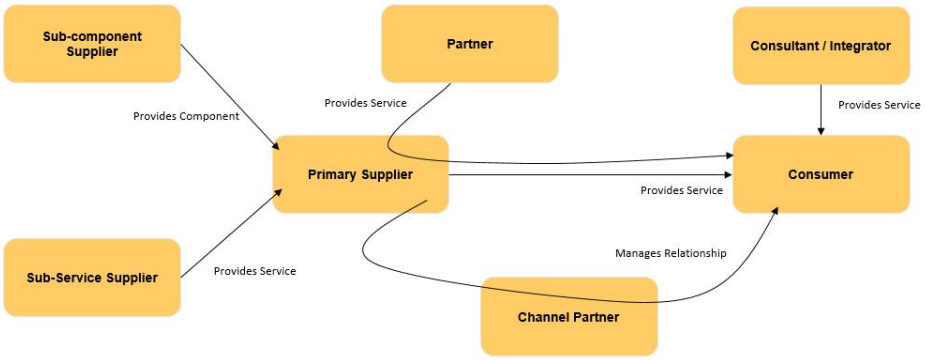
1.5 Ecosystem

Identify the main players involved in the case study. If this is a trial or proof of concept, who is involved at this stage, and who would be the main players if the initiative was brought to full deployment?

Does this case study demonstrate the value of an ecosystem approach, e.g. through the need for multiple cooperating partners, or leverage common capabilities or services which could be generically provided by a third party?

If possible, provide a high-level value network showing how the various parties interact within the ecosystem in order to deliver and consume the overall initiative.

Example value network:



1.5.1 Cost/Benefit Analysis or Business Case (optional)

What are the main costs of the initiative and the resulting benefits. Is there a business case for this initiative.

LINKS TO WEBSITES AND OTHER SOURCES OF INFORMATION

Note: Any intellectual property rights relating to the submitted case study are unaffected and unchanged by the submission of this case study for potential inclusion in the GIO Ecosystems White Paper.

Smart Inhaler

Case Study Example

Version: 1

GLOBAL INDUSTRY ORGANIZATIONS

Case Study: Smart Inhaler

This use case relates to the application of Smart Inhalers for the treatment of asthma as a common chronic disease

1.1 Submitted by:

SPO Lab / June 29th 2022

1.2 Context

Asthma is a major non-communicable disease (NCD), affecting both children and adults, affecting an estimated 262 million globally people in 2019 and causing 461,000 deaths. Asthma is the most common chronic disease among children.

According to the World Health Organization (WHO): "Asthma is a long-term condition affecting children and adults. The air passages in the lungs become narrow due to inflammation and tightening of the muscles around the small airways. This causes asthma symptoms: cough, wheeze, shortness of breath and chest tightness. These symptoms are intermittent and are often worse at night or during exercise. Other common "triggers" can make asthma symptoms worse. Triggers vary from person to person, but can include viral infections (colds), dust, smoke, fumes, changes in the weather, grass and tree pollen, animal fur and feathers, strong soaps, and perfume."

Asthma cannot be cured, but good management is essential. Inhaled medications can control the disease and enable people with asthma to enjoy a normal and active life.

But there are challenges with the traditional model, including the scale of incorrect inhaler use. This has been well documented; with less than one-half of the patients used their inhaler correctly.

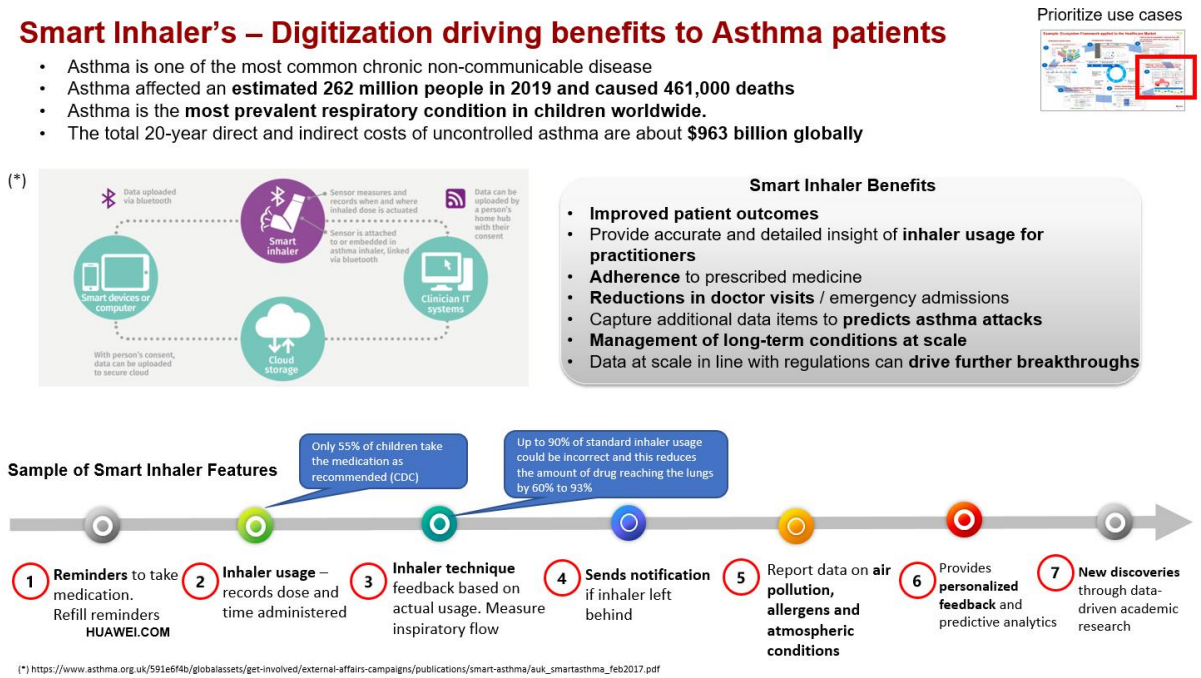
1.3 Benefits

Smart inhalers have the potential to improve adherence, providing more information on their patterns of usage. Smart Inhalers and their supporting platforms, can help digitize a parts of the asthma management value chain, to open up significant value to the stakeholders within this ecosystem.

Some of these smart inhaler benefits include:

- Improved patient outcomes
- Provide accurate and detailed insight of inhaler usage for practitioners
- Adherence to prescribed medicine
- Reductions in doctor visits / emergency admissions
- Capture additional data items to predicts asthma attacks
- Management of long-term conditions at scale
- Data at scale in line with regulations can drive further breakthroughs

Note: Any intellectual property rights relating to the submitted case study are unaffected and unchanged by the submission of this case study for potential inclusion in the GIO Ecosystems White Paper.



1.4 Solution or Innovation Detail

A smart inhaler is an inhaler that integrates connectivity with a mobile app. These devices have sensor technology (inbuilt in some cases or sensors can be connected externally in others) that helps record data about the time and date of use, and the location of the patient.

This then opens up capabilities such as reminders to take your medication, reminders to bring the inhaler with you when leaving home, refill reminders and proactive recommendations on when you should take the inhaler based on your personal data. With the patient's permission the data can be shared with health practitioners, so enabling healthcare providers to react when needed based on data from the device. Also combining the data with third party data such as weather, pollution levels, allergens etc. enables highly personalized recommendations to the specific patients.

The Telecoms industry can leverage their technology capabilities (e.g. connectivity, edge, Cloud…) to enable a Digital Health Platform combining their capabilities with a rich partner ecosystem. Increasing number of connected devices enabling remote monitoring and service delivery assisting global initiatives to deliver health care outside the hospital.

An example of the technology stack, where a number of services could be deployed is shown in the figure below.

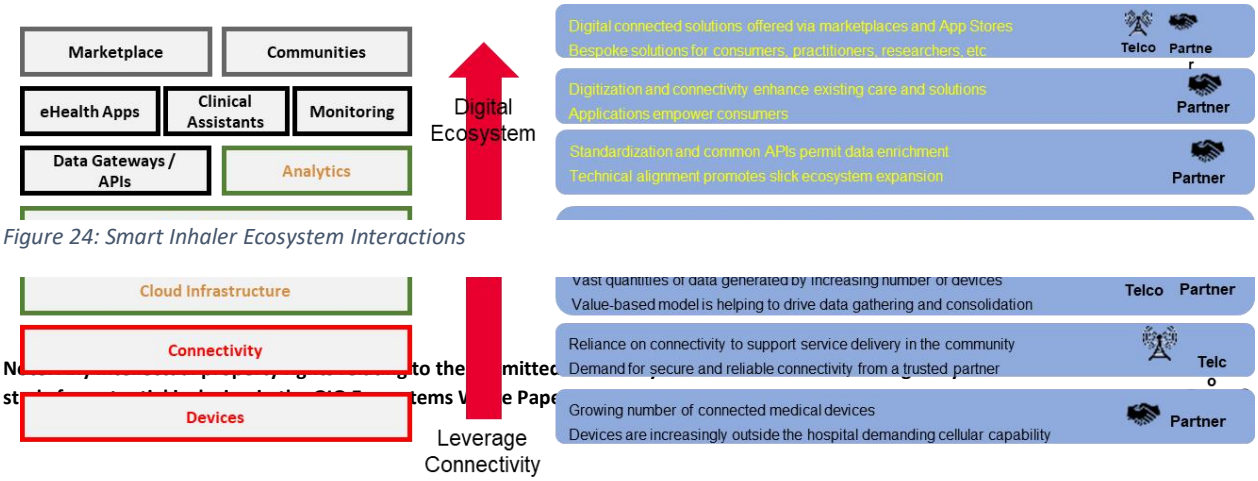
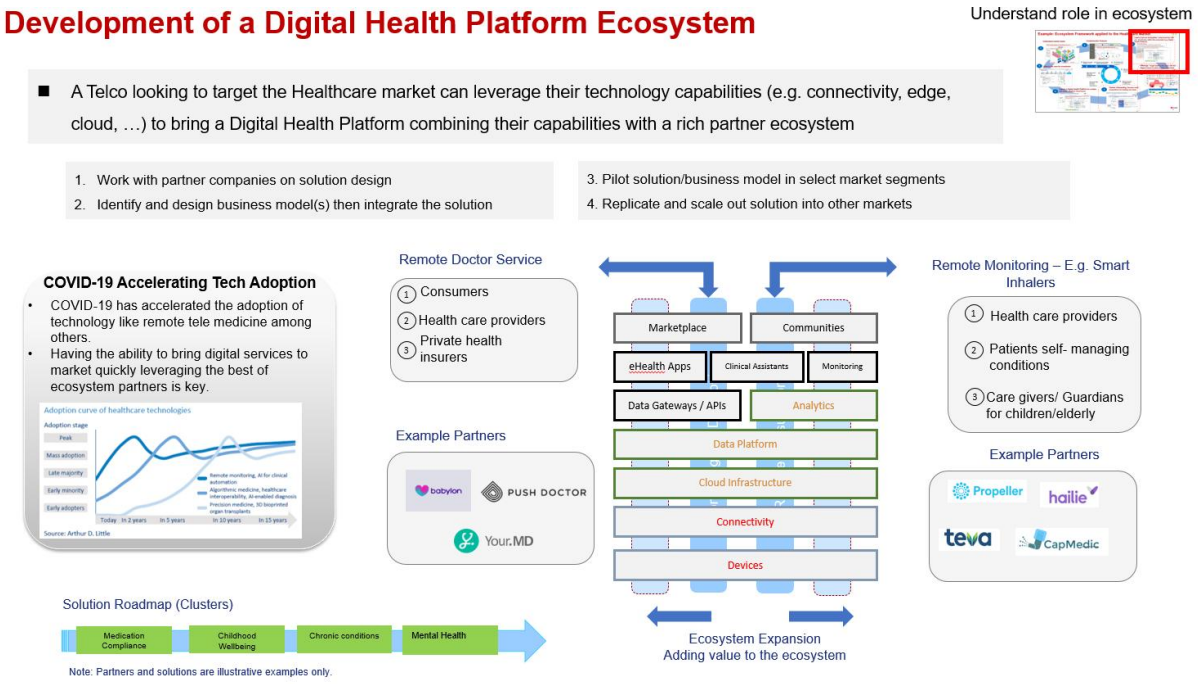
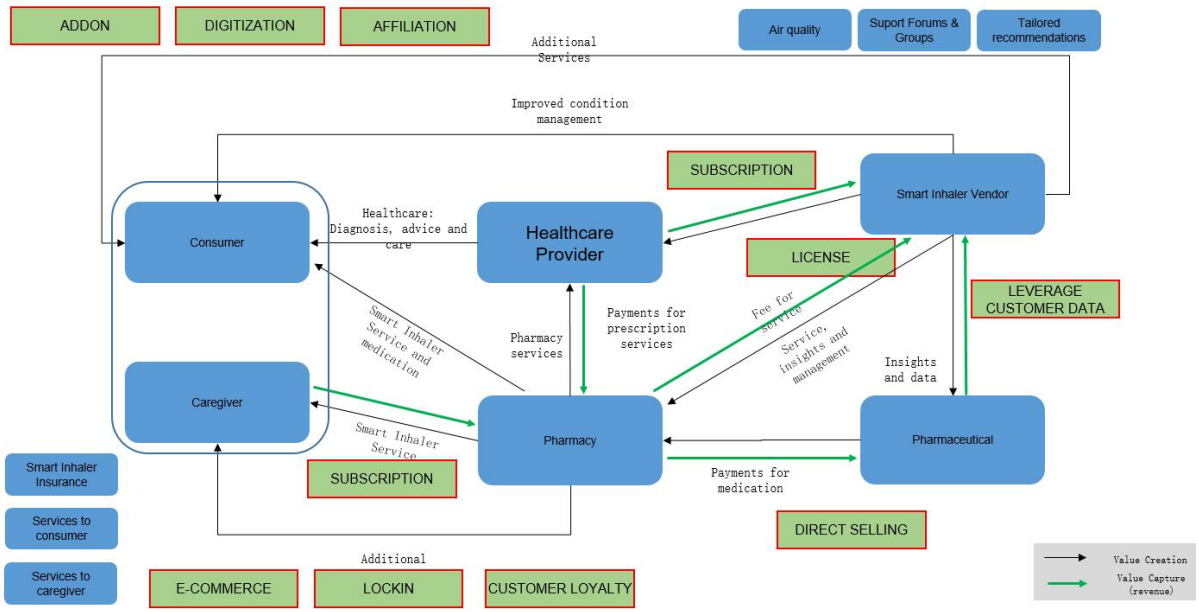


Figure 24: Smart Inhaler Ecosystem Interactions



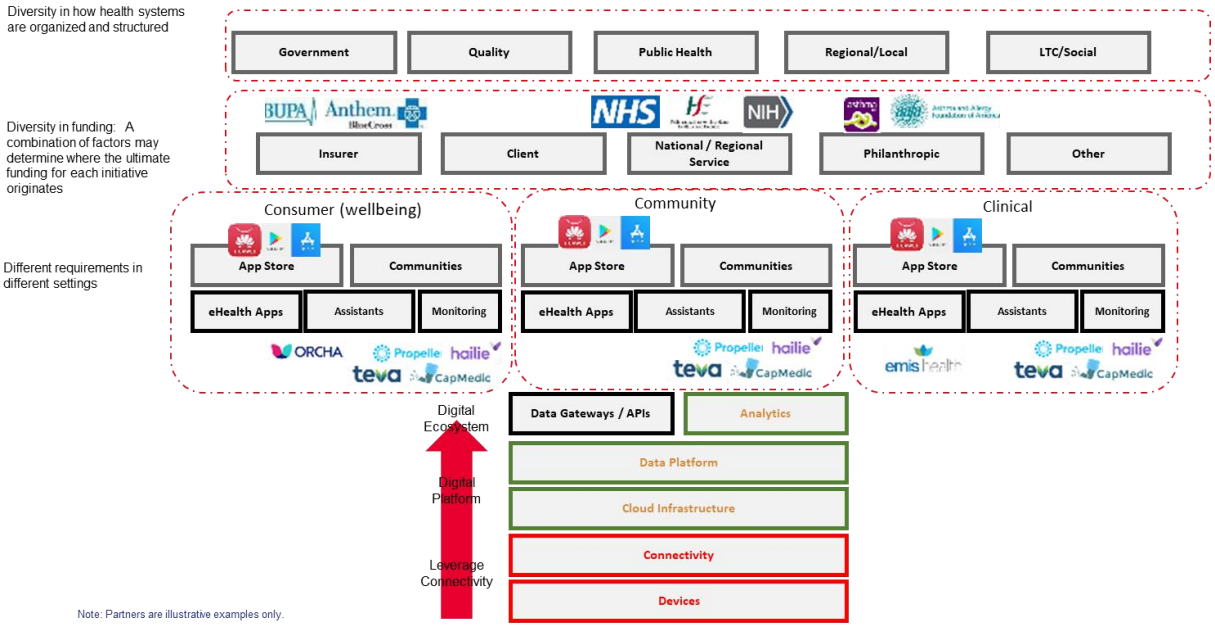
1.5 Ecosystem

Healthcare ecosystems will vary in different geographies, for example there are different regulatory and funding models in different countries. The value network below shows one example, where the delivery of the smart inhaler solution is fulfilled via a pharmacy network.



1.5.1 Business Model (optional)

A number of different business models are possible for this kind of service, which involve the ecosystem participants playing different roles. In order to understand how an industry ecosystem can be facilitated it is necessary to think through the different roles that each stakeholder can play within the ecosystem.



These business models differ primarily in terms of which stakeholder takes the lead role in bringing the overall service to market.

- **Option 1:** Telco resells Smart Inhaler product from third party direct to customer (where permitted) – many markets will allow fulfillment of these services through designated Health Providers.
- **Option 2:** Telco works with the Health Provider as a partner for Smart Connected Health products (e.g. asthma, diabetes) in a specific market.
- **Option 3:** Telco offers Smart Inhaler via its Digital Health platform as a part of a wider Health Ecosystem, including integration to national health providers, insurers, device manufacturers, solution providers.