GIO Roundtable:

Digital Health Ecosystems: Modelling the partnerships of future digital health ecosystems

In partnership with:

GLOBAL INDUSTRY ORGANIZATIONS

Tuesday, May 18th 2021

Participants

- Joann O'Brien, *Vice President, Digital Ecosystems,* **TM Forum**
- David Smith, *Head of Ecosystems*, **Huawei**
- David Mohally, *SPO Lab - Business Innovation,* **Huawei**
- Martin Creaner, *Centernode*
- Haiping Che, *CTO,* **Huawei**
- Saud A. Alsheraihi, *GM, New Business Development, Enterprise Business Unit,* **STC**
- Dr. Sharlene Thiagarajah, *CEO,* **TM Research & Development**
- Russel Duncan, *CTO,* **Telstra Health**
- David Thomas, *Managing Principal, Global Health Strategy,* **TELUS Health**
- James Hospedales, *Founder,* **EarthMedic and EarthNurse Foundation for Planetary Health**

TM Forum Welcome

Joann O'Brien, *Vice President, Digital Ecosystems,* **TM Forum**

Ecosystem Design - Health

David Smith, *Head of Ecosystems*, **Huawei**

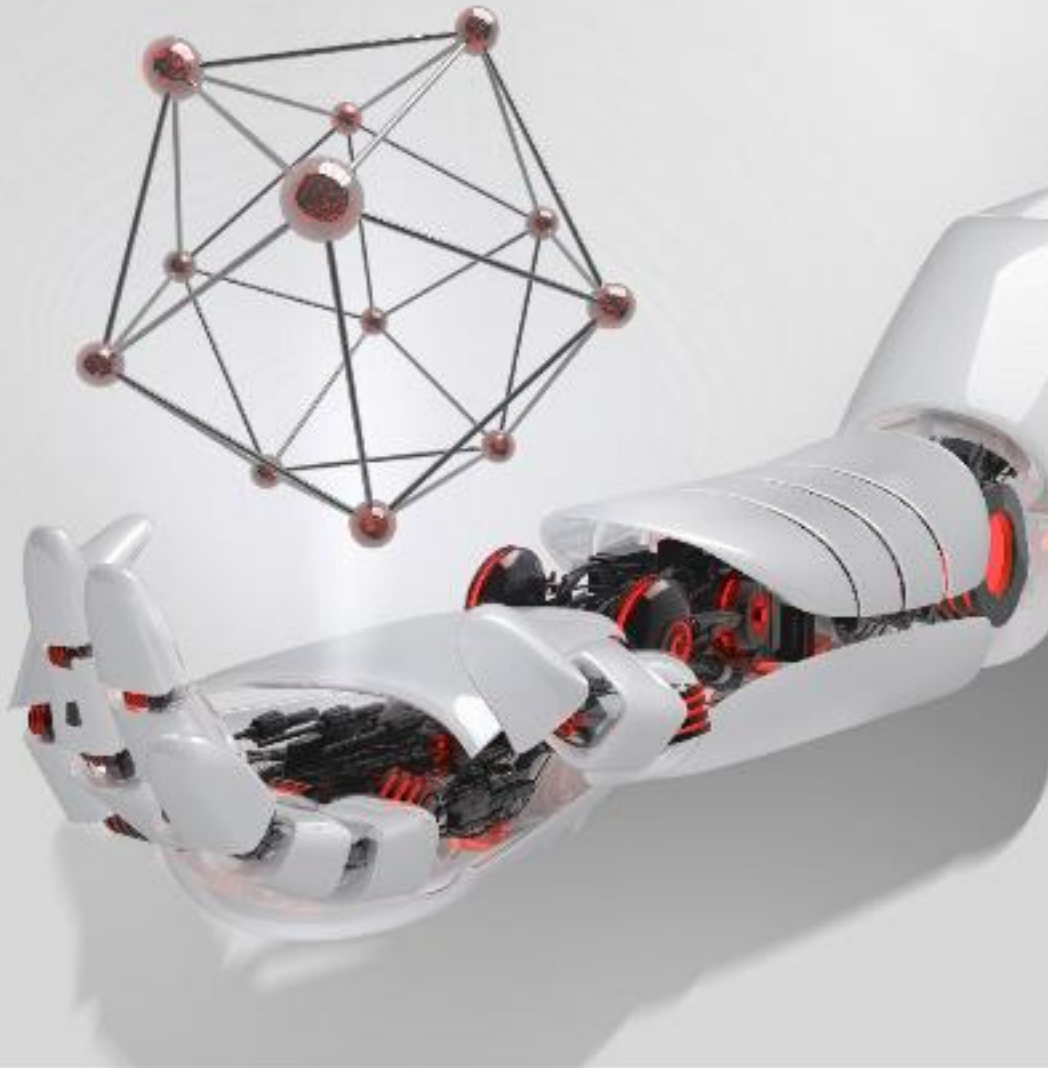
David Mohally, *Business Innovation,* **Huawei**

Martin Creaner, *Centre Node,* **Huawei**

GIO Roundtable

Ecosystem Design - Health

May 18th 2021



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Agenda

- Brief recap of Business Ecosystem theory
- Overview of the Ecosystem Framework methodology

David Smith
Huawei
Ecosystem Development

- Ecosystem Design Methodologies
  - Introduction to the Digital Service Innovation Framework
    - Methodology to explore new Digital Service Opportunities & Associated Business Models
    - Control Point Analysis (CPA) – Use-case evaluation and prioritization analysis

Dave Mohally
Huawei
Business Innovation

- Checklist to challenge yourself for Business Ecosystem Development
- Open Questions & Discussion – Business Ecosystem Development

Martin Creaner
Centre Node

Ecosystem framework - seven step iterative process and toolkit for business ecosystem development

Michael Jacobides – LBS (UK)

Understand ecosystem dynamics and where the firm could play

1 Potential scope of play within the Ecosystem

Understand the ecosystem landscape

2 Competitive landscape and stance

Analyse what role should the firm play and what is its strategic approach

3 Role of the firm in the BE

Analyse the potential value the firm could offer the ecosystem

4 Ecosystem value proposition

5 Partnering

Whom could the firm want to partner with and how could it attract them

6 Implementation

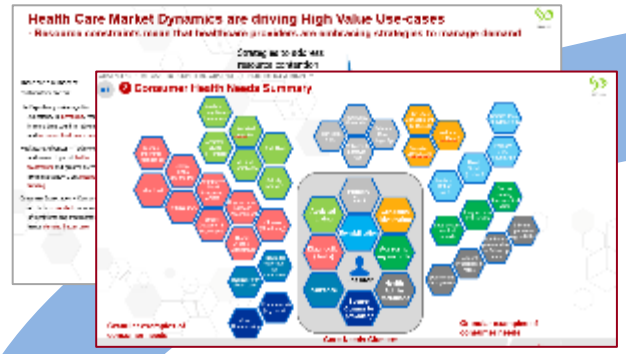
How should the firm run and govern the ecosystem

7 Business Case

What is the case for investment

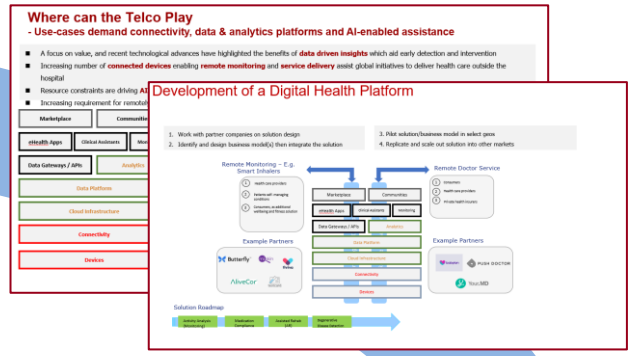
Example: Ecosystem Framework applied to the Healthcare Market

1 Understand market needs



2 Complementor Analysis

3 Lead or join an ecosystem: understand the role you should play within the ecosystem (e.g. Digital Health Platform)



A1 Where do we want to play? (scope)

A2 Who else covers similar needs to the end user?

A3 Do we want to be? (i.e. solo orchestrate or Partner?)

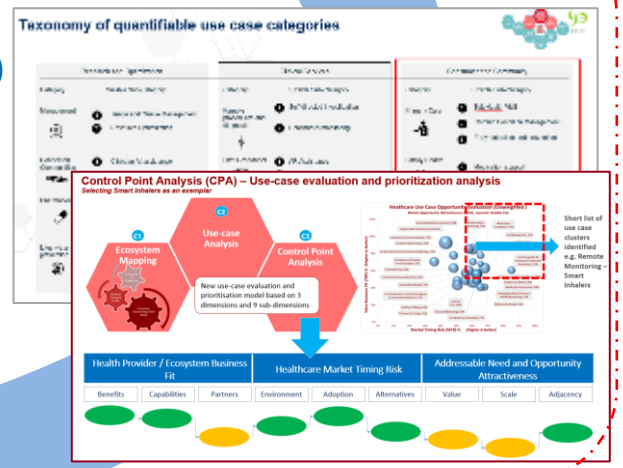
B1 What do we offer? (Ecosystem product offering)

B2 Whom do we want to engage with? (complementors)

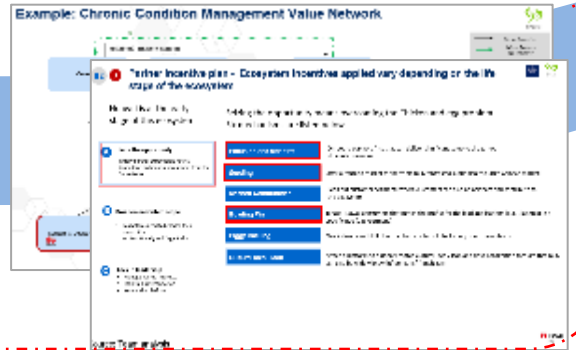
B3 How do we make this work? (Ecosystem implementation)

B4 What will we get? What's the investment case? (benefits)

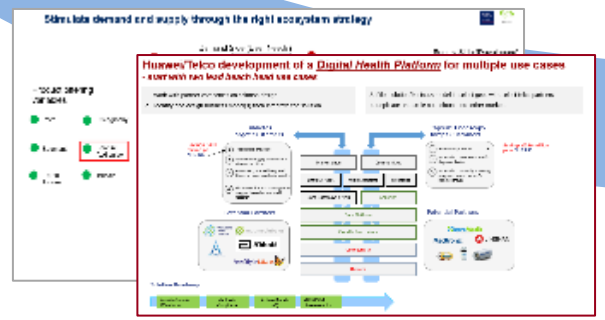
4 Offerings: Target leading use cases with the biggest impact & select partners (Prioritize)



5 Partner Onboarding: Develop value propositions for leading use cases



6 Launch a Digital Health Platform for multiple use cases – Platform Governance



7 What is the case for investment

Ecosystem Design Methodologies

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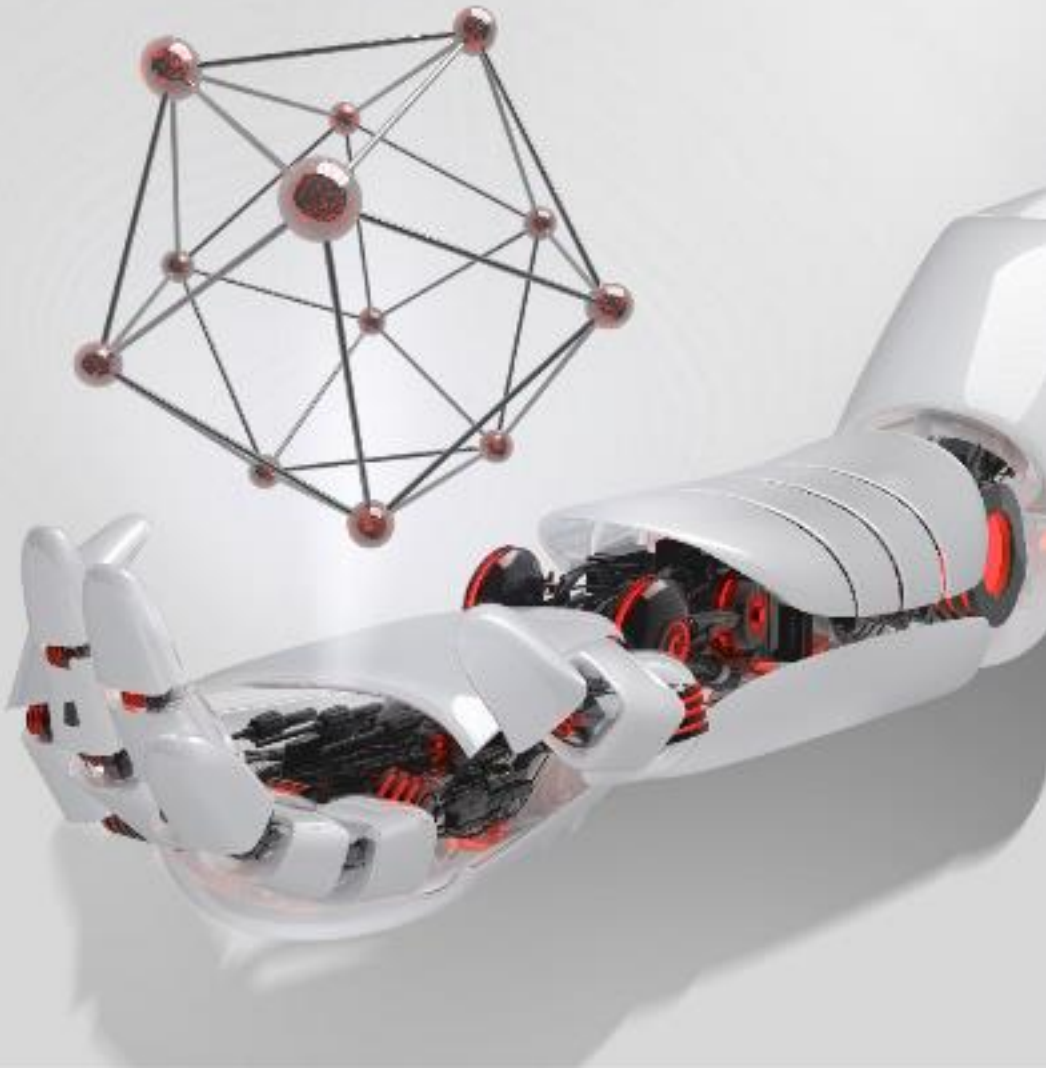
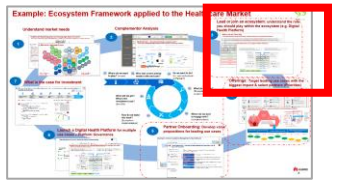


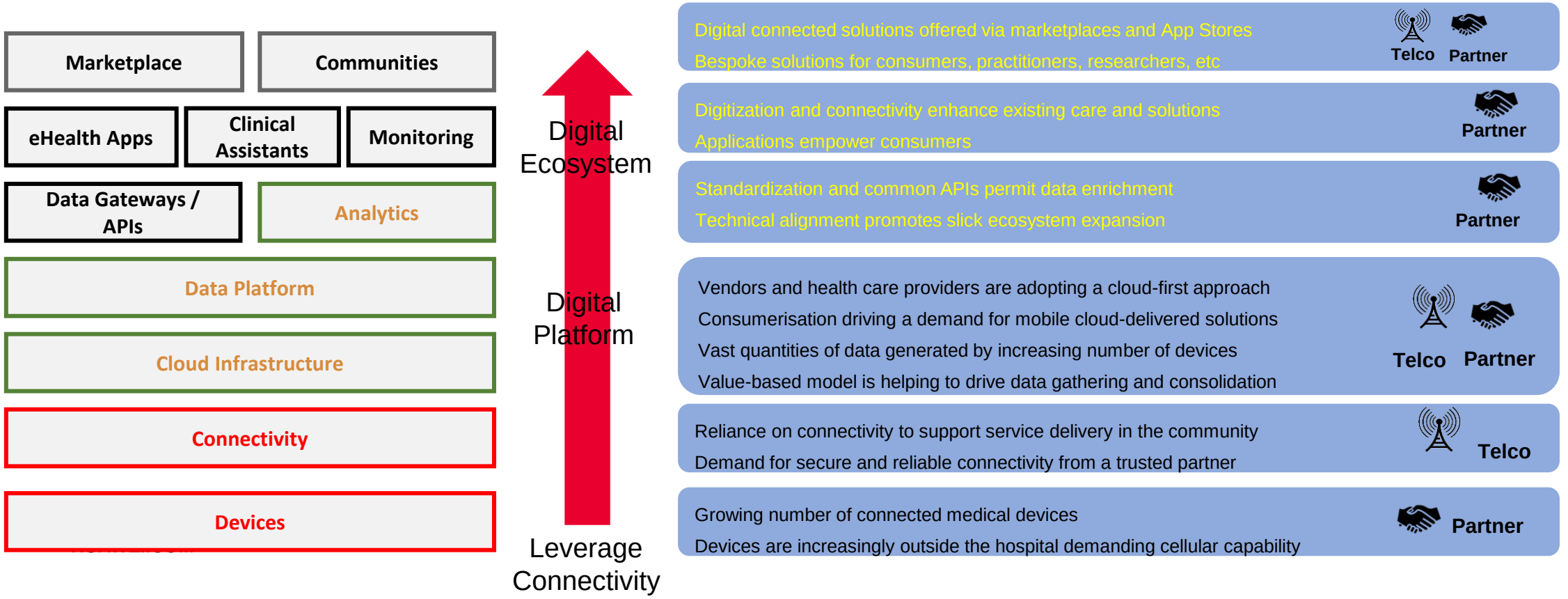
Understand role in ecosystem



Where can the Telco Play

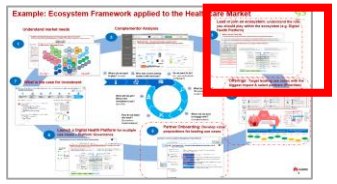
- Use-cases demand connectivity, data & analytics platforms and AI-enabled assistance

- Increasing requirement / strategy / initiatives for **remotely-delivered services**
- Accelerated as a result of the **impact of the pandemic** (ultimate impact to be determined)
- **Increasing number of connected devices** enabling remote monitoring and service delivery assist global initiatives to **deliver health care outside the hospital**
- **Digitization** means we can avail of **data-driven insights**, plan, etc.



Development of a Digital Health Platform Ecosystem

Understand role in ecosystem

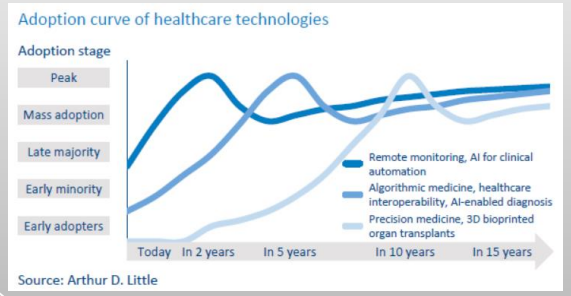


- A Telco looking to target the Healthcare market can leverage their technology capabilities (e.g. connectivity, edge, cloud, …) to bring a Digital Health Platform combining their capabilities with a rich partner ecosystem

1. Work with partner companies on solution design
2. Identify and design business model(s) then integrate the solution
3. Pilot solution/business model in select market segments
4. Replicate and scale out solution into other markets

COVID-19 Accelerating Tech Adoption

- COVID-19 has accelerated the adoption of technology like remote tele medicine among others.
- Having the ability to bring digital services to market quickly leveraging the best of ecosystem partners is key.

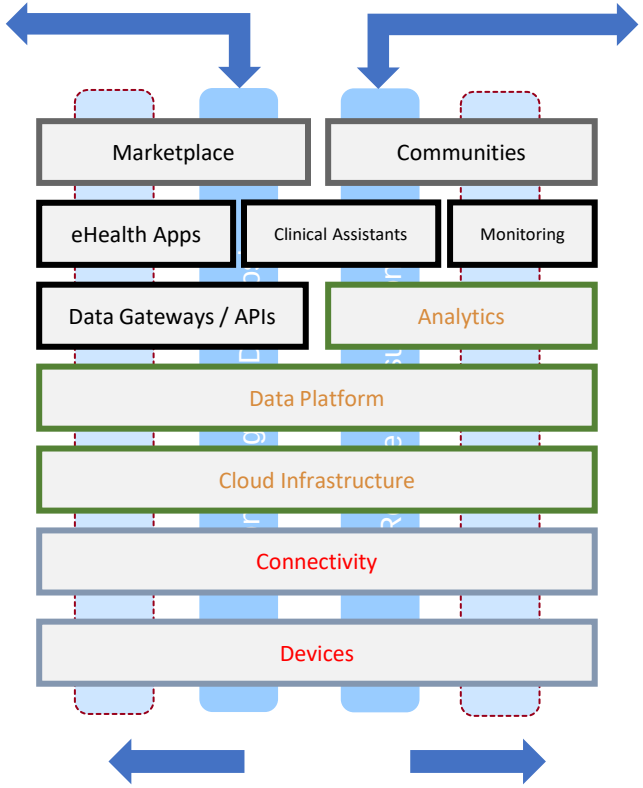


Remote Doctor Service

1. Consumers
2. Health care providers
3. Private health insurers

Example Partners

babylon · PUSH DOCTOR · Your.MD



Remote Monitoring – E.g. Smart Inhalers

1. Health care providers
2. Patients self- managing conditions
3. Care givers/ Guardians for children/elderly

Example Partners

Propeller · hailie · teva · CapMedic

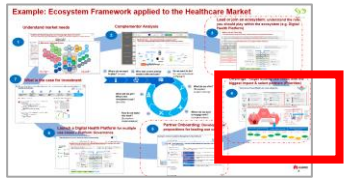
Solution Roadmap (Clusters)

Medication Compliance → Childhood Wellbeing → Chronic conditions → Mental Health

Ecosystem Expansion
Adding value to the ecosystem

Note: Partners and solutions are illustrative examples only.

Understand role in ecosystem

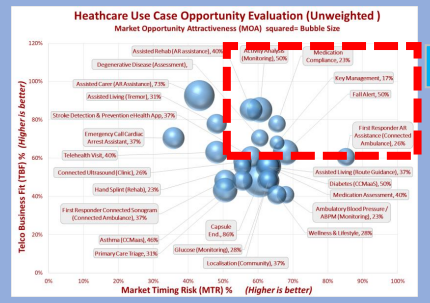


Digital Service Innovation Framework
- Methodology to explore new Digital Service Opportunities & Associated Business Models

C1) Ecosystem Mapping

C2) Use-case analysis

C3) Control Point Analysis



Short list of use case clusters identified. These short list clusters can then be deep dived.

We will select Smart Inhalers as an exemplar.

1 Design Thinking Ideation

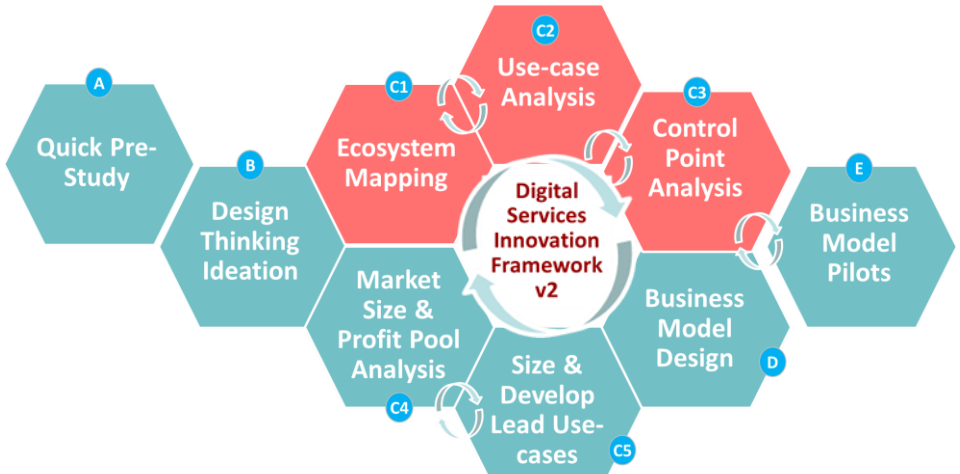
2 Market Opportunity Analysis

3 Business Model Design

4 Business Model Pilot

DSIF v2

A) Quick Pre-study	B) Design Thinking Ideation Workshop (optional)	C) Market Opportunity Analysis					D) Business Model (BM) Design		E) BM Pilot
		C1) Ecosystem Mapping	C2) Use-case analysis	C3) Control Point Analysis	C4) Market Sizing & Profit Pool Analysis	C5) Sizing & Developing Lead Use-cases	D1) BM Design	D2) BM Design Workshop	



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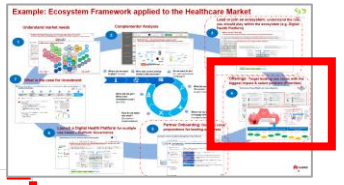
Manual Step

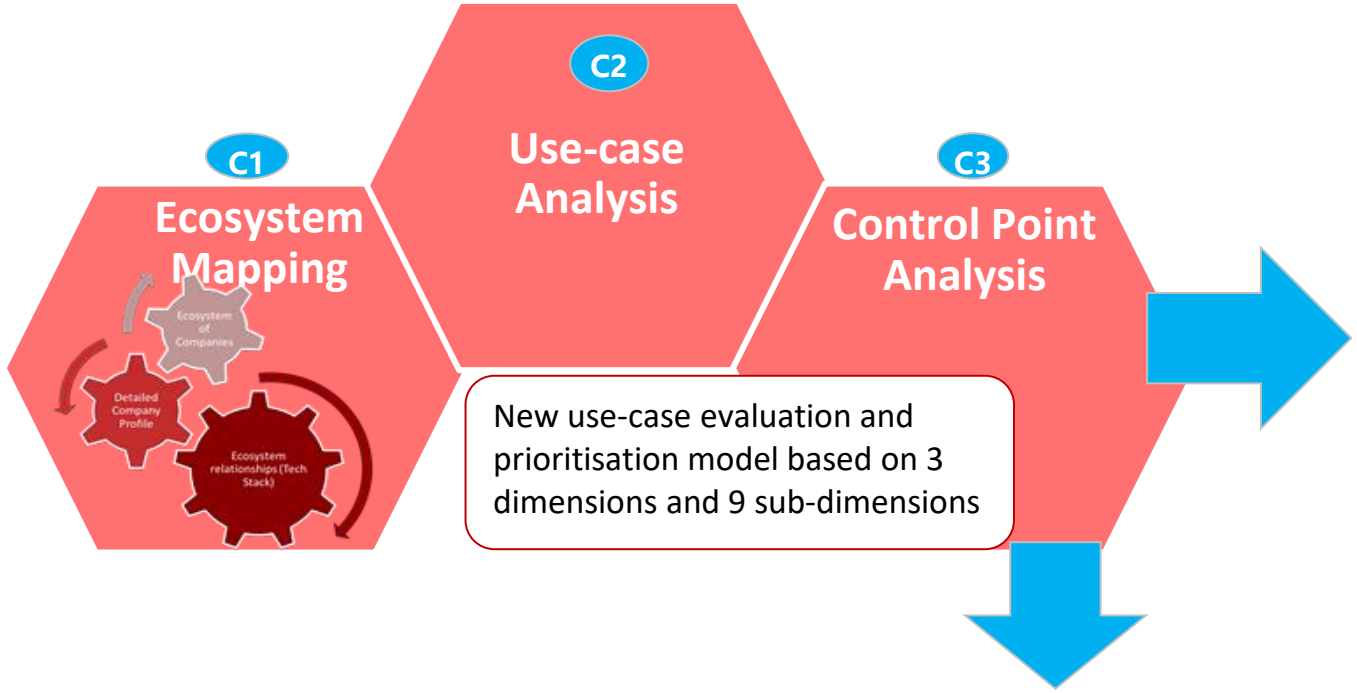
Online Tool

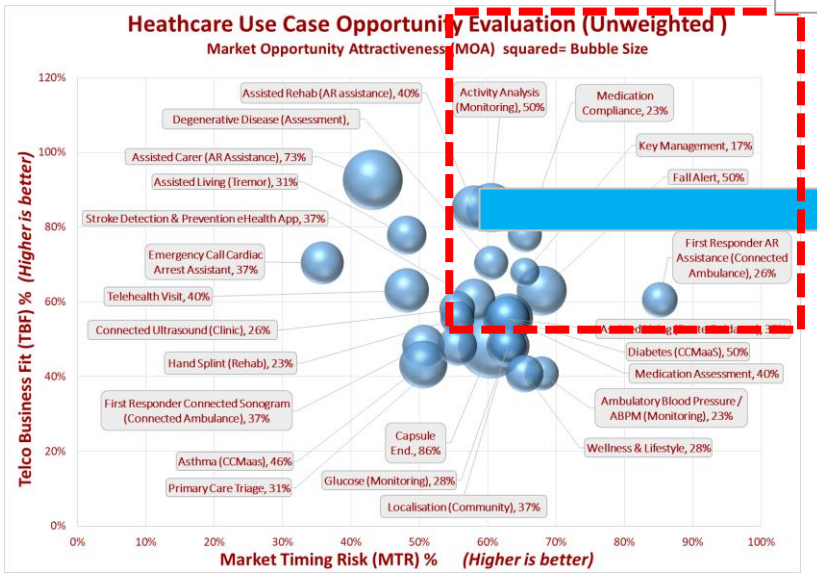
Control Point Analysis (CPA) – Use-case evaluation and prioritization analysis

Selecting Smart Inhalers as an exemplar

Prioritize use cases







Short list of use case clusters identified e.g. Remote Monitoring – Smart Inhalers

Health Provider / Ecosystem Business Fit			Healthcare Market Timing Risk			Addressable Need and Opportunity Attractiveness		
Benefits	Capabilities	Partners	Environment	Adoption	Alternatives	Value	Scale	Adjacency
Does the use-case deliver significant ***benefits for the consumer and / or society?***	*Does the* ***health provider have the resources*** *(funding, time, skills, etc.) to leverage the full benefits of the use-case if it is delivered?*	*Are the* ***technology partners ready*** *and able to deliver the solution?*	*Encompasses* ***regulators, care commissions, ministerial / governmental healthcare strategy and societal factors.***	*Adoption – Is the* ***market receptive*** *to the use case?*	*What are the* ***primary alternative solutions?*** *Could the 'status quo' be maintained?*	*What is the* ***quantifiable value*** *as a result of the use-case delivery?* *1.The consumer / society* *2.The provider* *3.The vendors*	*What is the* ***potential scale and growth rate*** *for the use-case?*	*How could the* ***use-case dove-tail with other healthcare solutions*** *and potentially 'lifestyle' applications?*

Poll - Quick Questions on Use Case selection

Start a poll, and open questions to panelists while audience answer poll for 5 mins.

Use Case Selection

- How do you select lead use cases in your organization and market?
  - Are all use cases evaluated against a common set of criteria?

A: We use ad-hoc analysis among team

B: Engage with internal stakeholders, and use their input to drive priorities

C: We use a repeatable methodology with a common set of criteria

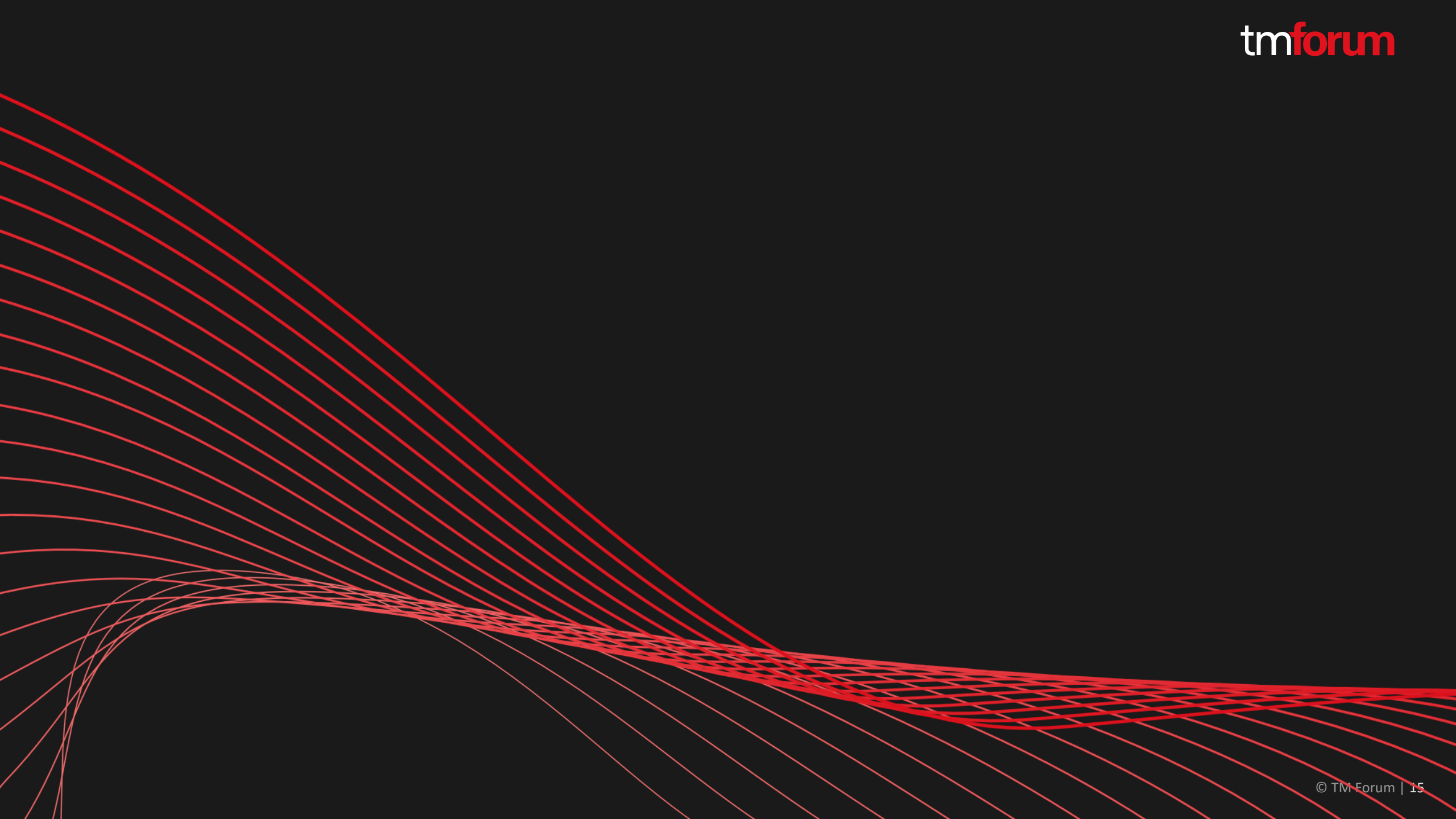
Test Value Propositions

- How do you test value propositions and go to market options with ecosystem stakeholders?
  - When do you engage potential solution partners, channel partners …?

A: We always engage early in the process with prospective partners to test and validate use cases

B: We engage with partners once we have selected a short list of priority use cases

C: Engage with prospective partners when we are at a pilot/prototype stage

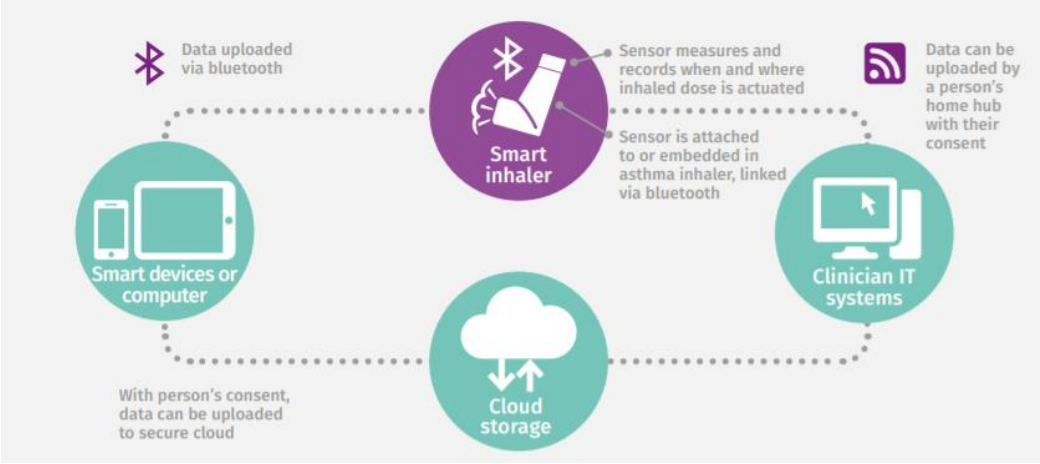


Smart Inhaler's – Digitization driving benefits to Asthma patients

Prioritize use cases

- Asthma is one of the most common chronic non-communicable disease
- Asthma affected an **estimated 262 million people in 2019 and caused 461,000 deaths**
- Asthma is the **most prevalent respiratory condition in children worldwide.**
- The total 20-year direct and indirect costs of uncontrolled asthma are about **$963 billion globally**

(*)



Smart Inhaler Benefits

- **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**

Sample of Smart Inhaler Features

Only 55% of children take the medication as recommended (CDC)

Up to 90% of standard inhaler usage could be incorrect and this reduces the amount of drug reaching the lungs by 60% to 93%

1. **Reminders** to take medication. Refill reminders
2. **Inhaler usage** – records dose and time administered
3. **Inhaler technique** feedback based on actual usage. Measure inspiratory flow
4. **Sends notification** if inhaler left behind
5. Report data on **air pollution, allergens and atmospheric conditions**
6. Provides **personalized feedback** and predictive analytics
7. **New discoveries** through data-driven academic research

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(*) https://www.asthma.org.uk/591e6f4b/globalassets/get-involved/external-affairs-campaigns/publications/smart-asthma/auk_smartasthma_feb2017.pdf

Prioritize use cases

High Level Evaluation of Smart Inhalers against Prioritization Criteria

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Potential (Indirect):
1.Reliable and accurate data
3.Assist with Research
4.Potentially enables preventive steps

Improved adherence	Digitization	Nascent Traction	Receptive	Clients appear Receptive	Digitization	Adherence	Uptake	Adjacent Applications
Better managed	Refinement	Continuing Development	Data benefits / privacy	Practitioners	Status Quo	Reduced Cost	Growth	Data-fusion
Fewer GP visits				Payers?	Game Changer? (cure)	Better Managed		
Reduced Hospitalizations						Research		

Not disrupting the existing process as it is broadly a 'digitization' of an existing and well known process.

The aspects of the use-case that pertain to consumer data collection and use may require investigation for each region.

Consumers appear receptive, as do practitioners – however the Payer perspective requires investigation for each region.

Value may be quantified on a regional basis once business model designed/identified.

Consideration of indirect/secondary business model regarding data.

Legend

- *No blockers*
- *Challenges (quantified)*
- *Unquantified*
- *Blocker*

Traditional Inhaler – Value Network

Consumer
Initial Diagnosis

Diagnosis and initial consultation

Inhaler

Consumer
Inhaler Usage

Routine check-up / GP Visit

Revise care plan based on data gathered.

Order prescriptions

Medication

Health Practitioner(s)

Prescription

Prescription

Pharmacy

Research / Health Provider

Purchase

Inhaler

Purchase

Medication

Pharmaceutical vendor

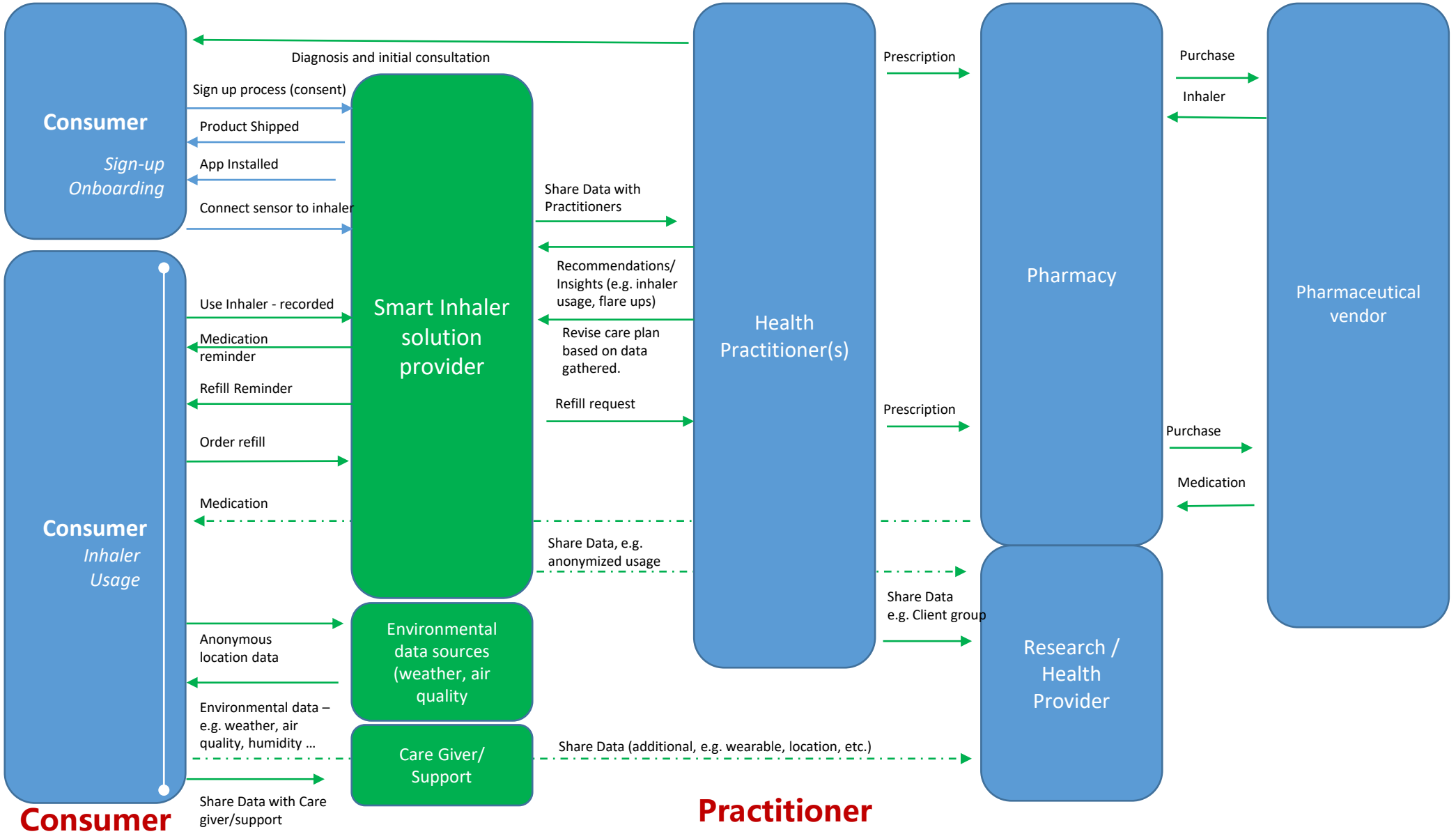
Example value gaps due to lack of digitization

Manual recording of medication	*No data for GP/Health Practitioners*
Manual reminders	*Personalized Care, Recommenders*
Manual technique optimization	*Lack of detailed data for research*

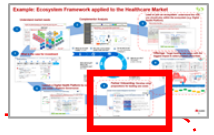
Consumer **Practitioner**

Smart Inhaler Example – Value Network (Direct to Consumer)
- New opportunities opened up due to digitization

Not disrupting the existing business model, but enriching it.



Develop value propositions



Smart Inhaler – Mapped to a Technology stack & Stakeholders

Diversity in how health systems are organized and structured

Government | Quality | Public Health | Regional/Local | LTC/Social

Diversity in funding: A combination of factors may determine where the ultimate funding for each initiative originates

BUPA | Anthem BlueCross | NHS | HSE Health Service Executive | NIH | asthma UK | aafa Asthma and Allergy Foundation of America

Insurer | Client | National / Regional Service | Philanthropic | Other

Different requirements in different settings

Consumer (wellbeing)

App Store | Communities

eHealth Apps | Assistants | Monitoring

ORCHA | Propelle | hailie | teva | CapMedic

Community

App Store | Communities

eHealth Apps | Assistants | Monitoring

Propelle | hailie | teva | CapMedic

Clinical

App Store | Communities

eHealth Apps | Assistants | Monitoring

emis health | Propelle | hailie | teva | CapMedic

Digital Ecosystem

Data Gateways / APIs | Analytics

Digital Platform

Data Platform

Cloud Infrastructure

Leverage Connectivity

Connectivity

Devices

Digital Health Technology platform, providing a platform for multiple digital services

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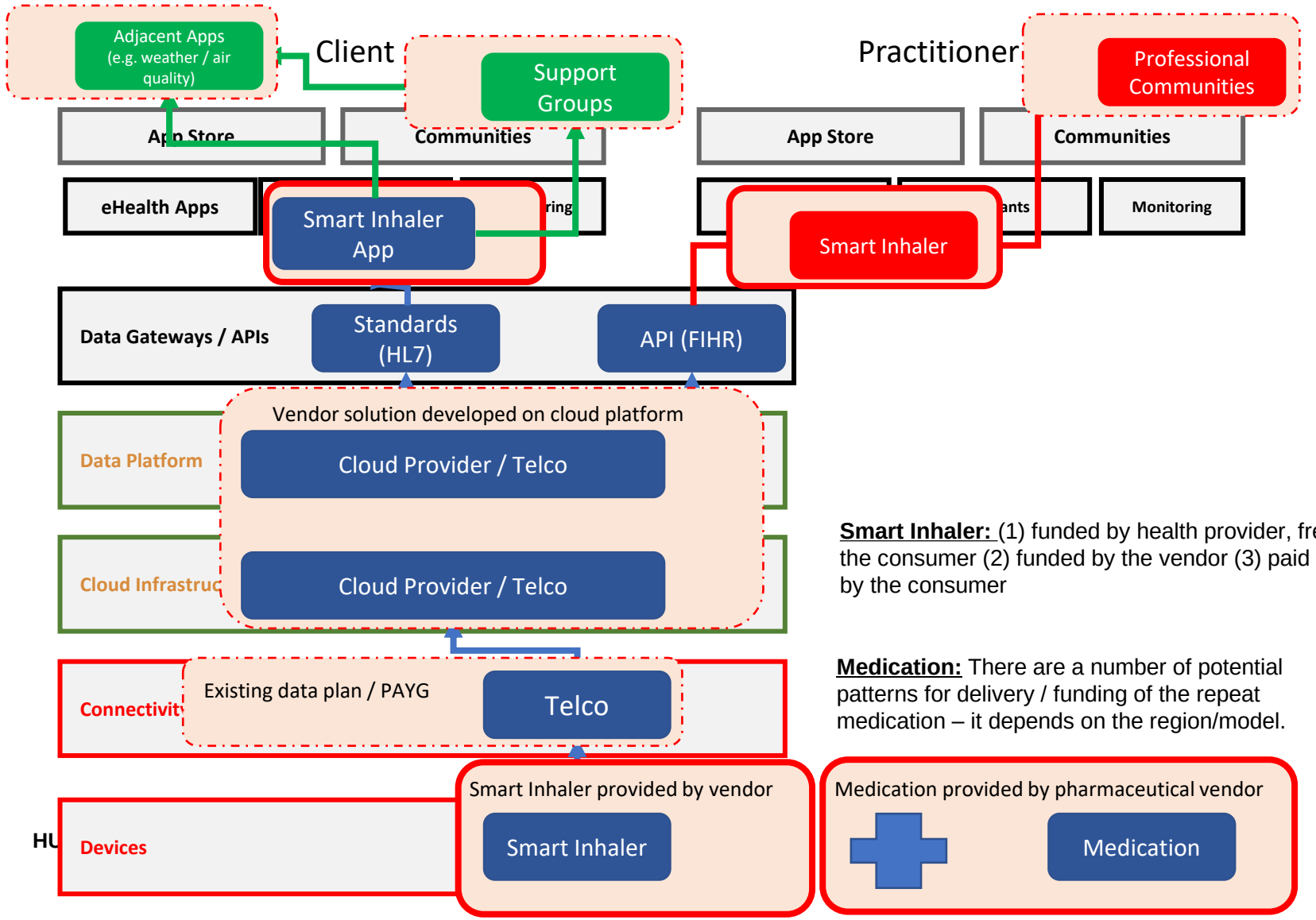
Note: Partners are illustrative examples only.

Smart Inhaler – Ecosystem Tech Stack Mapping

In this view, the inhaler and medication are at the core of the solution – similar to the traditional non-digital solution. Key difference vs traditional is the inclusion of the connectivity aspect and the cloud compute platform – essential tiers to achieve the higher-value functions at the top of the stack.



Digitization Visibility: To the consumer/patient and the Health practitioner these layers expose the benefits of the digitization of the application

Smart Inhaler: (1) funded by health provider, free to the consumer (2) funded by the vendor (3) paid for by the consumer

Medication: There are a number of potential patterns for delivery / funding of the repeat medication – it depends on the region/model.

Client	Apps – freemium, in app purchase Groups – in-group purchases
Practitioner	Communities – free from vendor Practitioner App - subscription
National / Regional Service	Inhaler App - subscription
Vendors	Cloud platform subscription
Client	Existing data plan / PAYG
National / Regional Service	Inhaler – single time purchase Medication – recurring prescriptio
Vendors	Pharmaceutical medication Smart Inhaler solution vendor

Smart Inhaler – Opportunity for data enrichment as ecosystem evolves

- Wearable may introduce more data items, such as sleep time/quality, activity, and biometrics.
- This rich set of accurate and reliable data, potential across a large population, may be useful if channeled to strategy and policy-makers to enhance service design, strategy decisions, etc.

Adjacent Apps (e.g. weather / air quality)

Client

Support Groups

App Store

Communities

Monitoring

Health App

Smart Inhaler App

Practitioner (GP)

Professional Communities

App Store

Communities

eHealth Apps

Assistants

Monitoring

Smart Inhaler

Research

Service Development

Strategy & Policy

Data Gateways / APIs

Standards (HL7)

API (FIHR)

Analytics

Cloud Provider / Telco

ISV

Data Platform

Cloud Provider / Telco

PDR

Health App (activity, etc.

EHR

Adjacency (Air quality)

Data Platform

Cloud Infrastructure

Cloud Provider / Telco

Connectivity

Telco

Devices

Wearable

Smart Inhaler

Medication

Data Enrichment

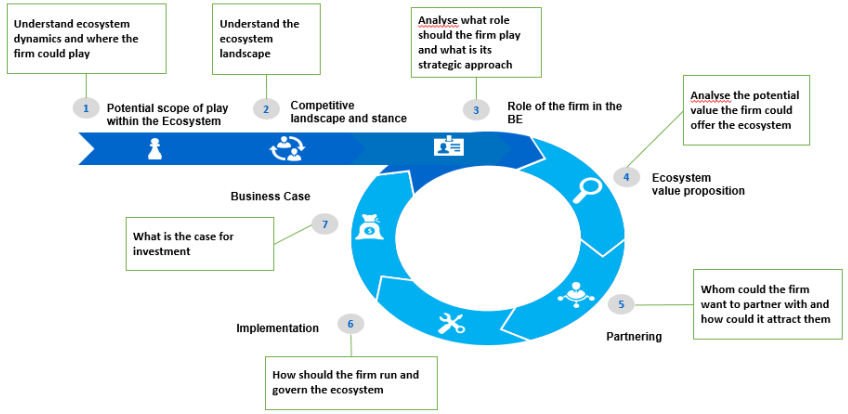
Research and strategy

Solution Enhancement

Service Development

Checklist to challenge yourself for Business Ecosystem Development

- ✓Understand ecosystem dynamics and **where your company could play?**
- ✓Understand the **ecosystem landscape**
- ✓**What role your company should play** and what is its strategic approach?
- ✓**What potential value can your company offer** the ecosystem?
- ✓**Who would you want to partner with** and how could it attract them?
- ✓What **other ecosystems** will you need to interface to?
- ✓How should the you **run and govern the ecosystem?**
- ✓What **tools and skills do you need** for business ecosystem development?
- ✓What is the **case for investment?**



Open Questions & Discussion – Business Ecosystem Development

Use Case Selection

- **What use cases** should be prioritized for Business Ecosystem Development?

Beyond connectivity

- **Beyond connectivity** what opportunities should the Telco target?
- What value can the Telco bring beyond Connectivity?

Platform Business

- What is your **preferred Go To Market** for new opportunities?
- **Who is best positioned to orchestrate** a vertical industry platform?

Biggest Challenges

- What are the **biggest challenges in creating a business ecosystem?**
  - E.g. Skills, Organization & Culture, Regulation, Investment strategies …
- **Are Telco's investing in the skills and structures** needed to drive business ecosystems and platforms?

Closing Remarks

Joann O'Brien, *Vice President, Digital Ecosystems,* **TM Forum**

Thank you for attending

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