

“How is digital innovation affecting the pharmaceutical industry?”

The GrowthEnabler InFocus reports uniquely address the top priorities for technology leaders and their teams; by recommending potential solutions, in the context of business growth. Each business priority is broken down to point level/function-specific solutions that are further linked to technologies with a list of vendors. Business Solutions are sourced from GrowthEnabler Pii, our intelligence gateway to over 525K high growth tech companies. This report is designed to navigate the ever-changing technology landscape, and enable more informed, and quicker, decision making.

3Step Guide
DocumentCreated for the:
**CIO, CDO, CTO,
CSO, CEO**Reading Time:
15 minutes

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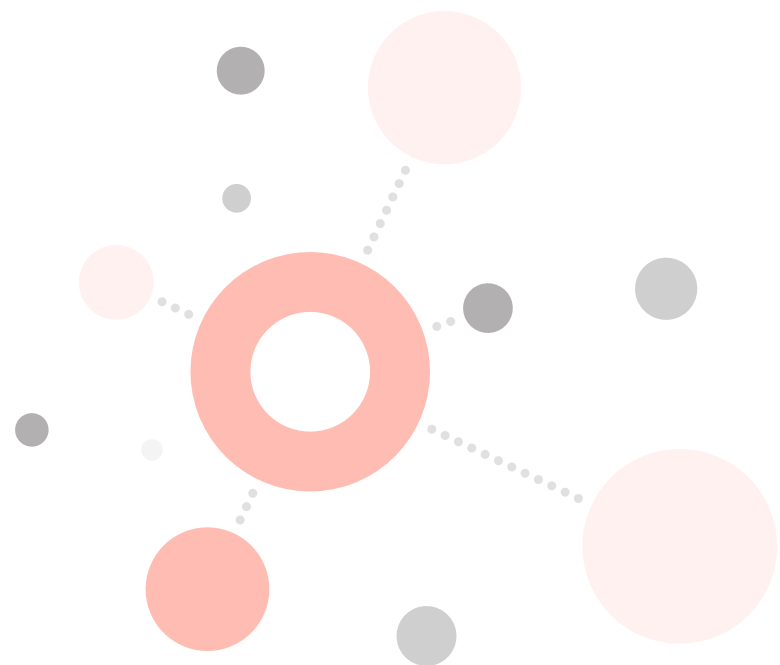
How will digital innovation impact growth?

An introduction

The changing demands of consumers is an important consideration and Precision medicine methods that drive personalized therapies are the way forward. Embracing RPA can help clinical researchers improve the quality and accuracy of research processes in R&D and drug safety monitoring activities. Additionally, cross-functional team structure will enable businesses to break down silos, allowing knowledge to be shared freely among various therapeutic areas. The increased access to such real-world data will allow companies to streamline the development process and drive down costs.

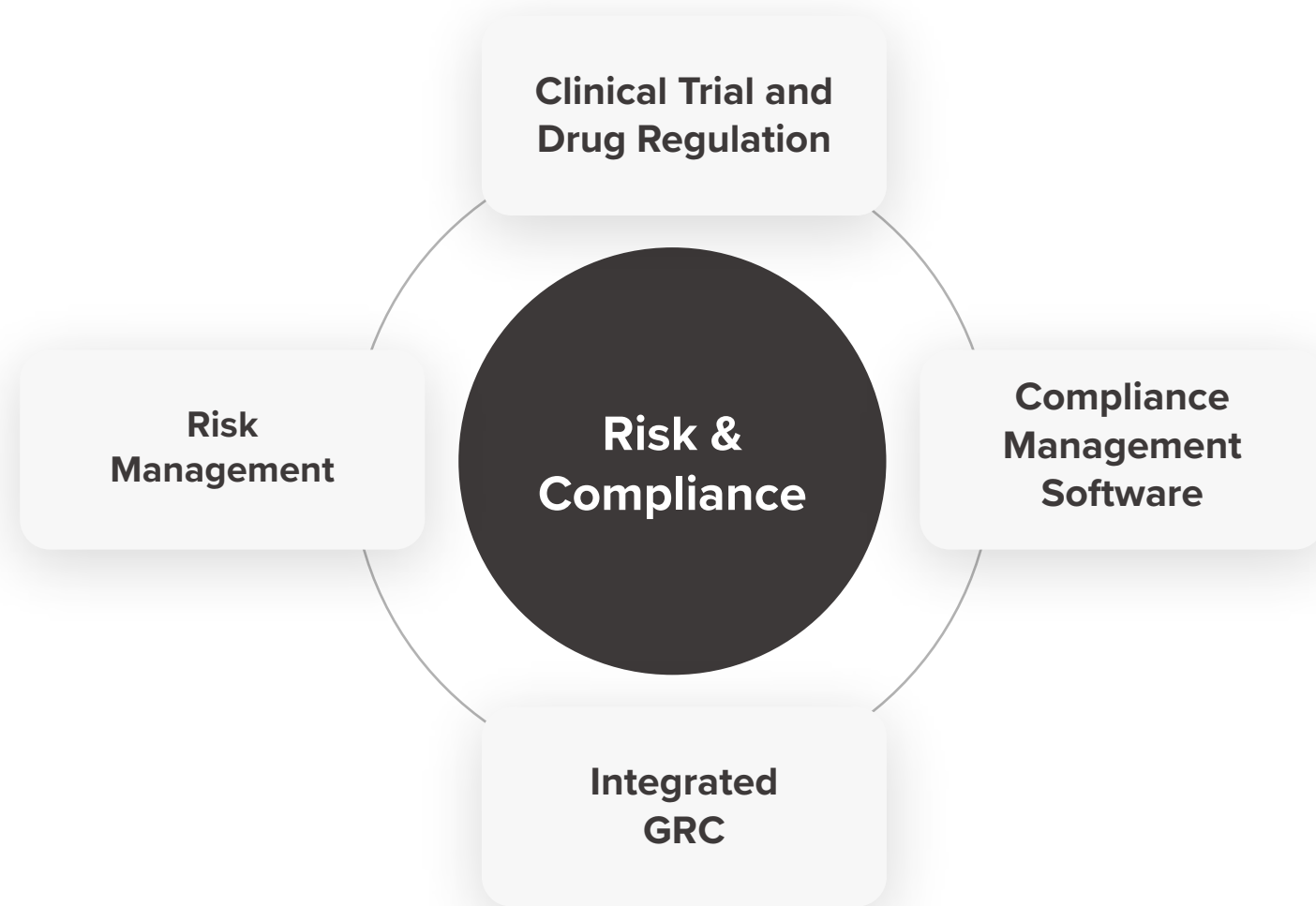
Clinical innovation, operational efficiencies, customer engagement, cost/pricing and regulatory compliance requirements will continue to be top business priorities within LifeSciences.

As the pace of innovation gathers steam, companies should actively manage and capitalise on opportunities in areas such as Regulatory Enhancements and Value-based contracting. They should also assess the impact of emerging technologies such as Artificial Intelligence (AI), Robotic Process Automation (RPA) and Predictive analytics on their core business functions. For e.g. Businesses can streamline the drug discovery process by deploying AI algorithms to analyse large data sets from clinical trials and genetic profiles.



Business Priorities

Sub-segments



From Sub-segments to Solutions

The 3 Steps.



Startup Growth Stage Definitions

EMERGING:

Early stage startups typically at beta product stage and seeking investment capital

SCALING:

Typically funded, with a market ready product and revenue positive

MATURE:

Established product, exploring new growth markets and partnerships

Risk & Compliance Management



Clinical Trial and Drug Regulation



Drug Safety Monitoring

Compliance Management Software

Integrated GRC

Risk Management



PrimeVigilance

Guildford, United Kingdom

primevigilance.com

Provides comprehensive pharmacovigilance services and medical information support for pharmaceutical and biotech companies.

MATURE



Numerate

San Francisco, United States

Numerate.com

AI based molecule drug discovery. Developed ToxTool system: a computational assessment tool determining potential compound toxicity, and guiding the laboratory characterization of new chemical threat agents.

MATURE



DWL Consulting

New Jersey, United States

Dwlconsult.com

Provider of expert safety consulting specializing in Quality Management Pharmacovigilance and Drug Safety for pharmaceutical companies and Contract Research Organizations.

SCALING

Find more solutions on GrowthEnabler Pii...

www.growthenabler.com

A. Risk & Compliance

B. Research & Development

Risk & Compliance Management



A. Risk & Compliance

Clinical Trial and
Drug Regulation

Compliance
Management Software



LifeSciences
GRC / Pharmaceuticals
Regulation Software

Integrated GRC

Risk Management



NextDocs

Austin, United States

nextdocs.com

Cloud based compliance document management software for LifeSciences firms enabling businesses in regulated industries to achieve compliance with FDA, EMA and other agencies.

MATURE



TrialScope

Jersey City, United States

trialscope.com

Cloud based clinical trial transparency and integrated compliance management solutions.

SCALING



Complion

Cleveland, United States

complion.com

Software solutions for clinical trial regulations that can be used by both organizations and trial sites.

SCALING

Find more solutions on
GrowthEnabler Pii...

www.growthenabler.com

B. Research & Development

Risk & Compliance Management



A. Risk & Compliance

B. Research & Development

Clinical Trial and Drug Regulation


Compliance Management Software

Integrated GRC


Risk Management




LifeSciences GRC / Pharmaceuticals Regulation Software



Rsam
Secaucus, United States
rsam.com
Integrated GRC solution to automate governance, risk and compliance procedures in an organization to create a central risk depository to gain insights into business risks.
MATURE



LogicGate
Chicago, United States
logicgate.com
Workflow automation software for enterprises to automate the business processes, mitigate risks, reduce costs and ensure compliance.
EMERGING



iGRC
Austin, United States
intelligent-grc.com
Web-based integrated GRC solution to manage risk and ensure compliance for LifeSciences vertical.
EMERGING

Find more solutions on GrowthEnabler Pii...

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Risk & Compliance Management



A. Risk & Compliance

Clinical Trial and Drug Regulation

Compliance Management Software

Integrated GRC

B. Research & Development

Risk Management



IT security & Risk Management

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UpGuard

San Francisco, United States

upguard.com

Provides hosted/on-premise software solution to enhance visibility into the server configuration, network devices and cloud apps within the enterprise premises.

SCALING



SecurityScorecard

New York, United States

securityscorecard.com

Provides threat intelligence and risk awareness by automated real-time risk monitoring to safeguard data privacy and health provider infrastructure.

SCALING

Research & Development Enhancement



A.
Risk & Compliance

New Product Development




Gene Editing / Gene Therapy

Faster Drug Design



AI for Drug Discovery and Diagnosis

Improve Clinical Trial Cycles



Recursion
Salt Lake City, United States
recursionpharma.com

Drug discovery platform involving millions of rapid, automated experiments and analysis to discover new therapeutics for rare genetic diseases.


SCALING



Peptone
Amsterdam, Netherlands
peptone.io

Helps predict protein features and characteristics that help researchers reduce complexity in protein design, detect production and characterisation issues, and discover novel drug designs.

EMERGING



Homology
Lexington, United States
homologymedicines.com

Develops gene therapies for rare genetic diseases through a proprietary technology based on gene editing.

EMERGING

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B.
Research & Development

Research & Development Enhancement



A.
Risk & Compliance

B.
Research & Development



BenevolentAI
London, United Kingdom
benevolent.ai
Developer of core deep learning based AI which is used to process medical data to aid in the process of drug discovery and development.
SCALING

Freenome
South San Francisco, United States
freenome.com
Deep learning platform for detecting circulating cancer-related markers in patient blood samples.
SCALING

OWKIN
New York, United States
owkin.com
Machine learning based solutions for drug discovery and precision medicine.
EMERGING

Find more solutions on GrowthEnabler Pii...
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Research & Development Enhancement



A.
Risk &
Compliance

New Product
Development

Faster Drug Design

Improve Clinical
Trial Cycles



Aggregate &
Synthesize Information



 **BioSymetrics**
Boston, United States
biosymetrics.com
Uses AI to process raw phenotypic, imaging, drug, and genomic data that allows researchers to integrate rapid analytics and machine learning capabilities into existing business processes.
EMERGING

 **ThoughtSpot**
Palo Alto, United States
thoughtspot.com
AI based natural language search on billions of rows of data from any source for speed analysis of clinical trial results and historical genomics data.
SCALING

 **Nference**
Cambridge, United States
nference.ai
Helps researchers identify competitive white space, eliminate blind spots in research, and discover disease similarities by phenotype for clinical trial design using AI.
SCALING

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GrowthEnabler Pii...**
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B.
Research &
Development

Research & Development Enhancement

1.
SUB-SEGMENTS OF BUSINESS PRIORITY



2.
SOLUTIONS TO CONSIDER



3.
STARTUPS TO EVALUATE

A.
Risk & Compliance

New Product Development

Faster Drug Design

Improve Clinical Trial Cycles

Genome Informatics / Sequencing Data Analysis

Clinical Trial Data Collection and Management

Clinical Decision Support

Robotic automation / Remote Cloud Labs

WuXi NextCODE
Cambridge, United States
wuxinextcode.com
Global platform for sequence analysis of genomic data with data architecture optimized specifically for massive genomic data.
SCALING

DNAexus
Mountain View, United States
dnanexus.com
Offers cloud-based genome informatics and data management tools for enterprises and organizations that are engaged in the development and delivery of genomic medicine.
MATURE

Bionano Genomics
San Diego, United States
bionanogenomics.com
Developed a platform for imaging single molecules of DNA at megabase lengths which can be used to detect structural variations and mutations in the sample DNA with a high level of precision.
MATURE

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www.growthenabler.com

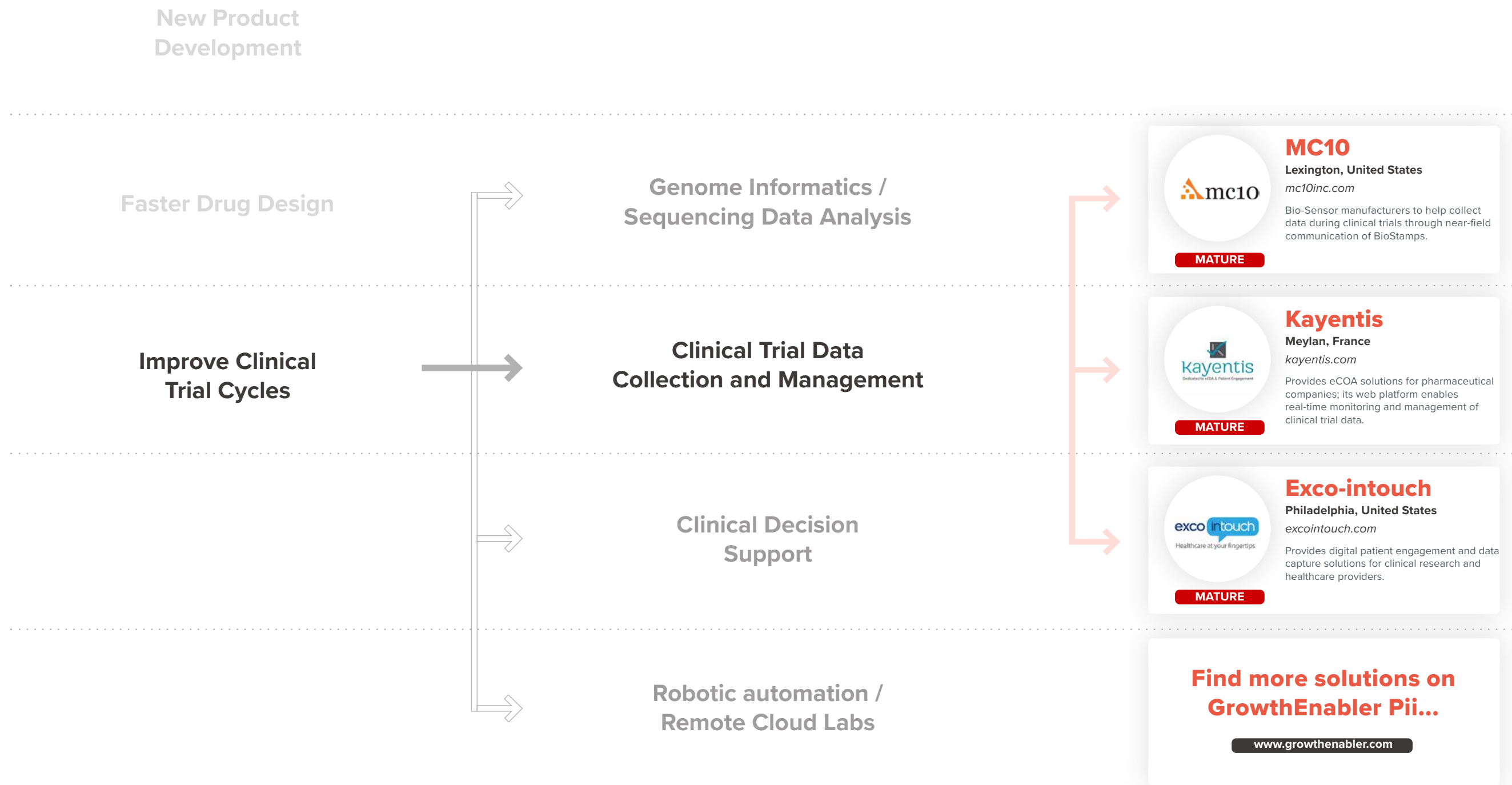
B.
Research & Development

Research & Development Enhancement



A.
Risk & Compliance

B.
Research & Development



Research & Development Enhancement

1.
SUB-SEGMENTS OF
BUSINESS PRIORITY



2.
SOLUTIONS TO
CONSIDER



3.
STARTUPS TO
EVALUATE

New Product
Development

Faster Drug Design

Genome Informatics /
Sequencing Data Analysis

Improve Clinical
Trial Cycles

Clinical Trial Data
Collection and Management

Clinical Decision
Support

Robotic automation /
Remote Cloud Labs

Find more solutions on
GrowthEnabler Pii...

www.growthenabler.com



Cota

New York, United States
cotahealthcare.com

Data and technology platform for value-based precision medicine allows physicians to analyze and visualizes data to gain insights into real-world practice patterns, outcomes, costs, and quality across patients.

SCALING



InsightRX

San Francisco, United States
insight-rx.com

Its software platform provides an informed patient-specific dose by leveraging machine learning, patient demographics, physiological characteristics, pharmacogenomic data, drug concentrations and biomarkers.

EMERGING



Emedgene

Tel Aviv, Israel
emedgene.com

Knowledge management platform to support genetic tests' decision to support the full workflow of diagnosing patients and generates clinical insights for unknown genetic variants.

EMERGING

A.
Risk &
Compliance

B.
Research &
Development

Research & Development Enhancement



New Product Development

Faster Drug Design

Genome Informatics / Sequencing Data Analysis

Improve Clinical Trial Cycles

Clinical Trial Data Collection and Management

Clinical Decision Support

Robotic automation / Remote Cloud Labs

A. Risk & Compliance

B. Research & Development

Find more solutions on GrowthEnabler Pii...

www.growthenabler.com



Transcriptic
Menlo Park, United States
transcriptic.com

Develops cloud-based remote robotic bio-lab executing experiments with the help of their proprietary automated system.

SCALING



ECL
South San Francisco, United States
emeraldtherapeutics.com

Web-based lifesciences lab that scientists can remotely access via the Internet where automated robotics conduct experiments based on use specifications.

EMERGING

Research & Development Enhancement



A.
Risk & Compliance

Genome Sequencing
Data management



Genome Informatics /
Sequencing Data Analysis

Clinical Research
Intelligence Sourcing

Streamline research
knowledge management
in labs

Patient Recruitment
& Engagement



Seven Bridges
Cambridge, United States
sevenbridges.com
Cloud based platform to store and analyze genomic data aimed at researchers, labs, core facilities, and pharmaceutical companies to manage large amounts of NGS data.
MATURE



Repositive
Cambridge, United Kingdom
repositive.io
Web platform to facilitate data sharing for genomics research in cancer and other rare diseases.
EMERGING

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B.
Research & Development

Research & Development Enhancement



A.
Risk & Compliance

B.
Research & Development

Genome Sequencing
Data management

Clinical Research
Intelligence Sourcing

Streamline research
knowledge management
in labs

Patient Recruitment
& Engagement



LifeScience
Research Marketplace



Scientist
Solana Beach, United States
scientist.com

The company operates an online network of commercial suppliers and CROs to help life sciences companies in outsourcing biomedical research services and supplies.

MATURE



ZAGENO
Berlin, Germany
zageno.com

Marketplace and life science research community to search and buy biotech research kits.

EMERGING



Health Gorilla
Austin, United States
healthgorilla.com

Provides a marketplace for clinicians to order diagnostic tests and to get real-time access to results.

SCALING

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Research & Development Enhancement



A.
Risk & Compliance


Genome Sequencing
Data management

Clinical Research
Intelligence Sourcing

Streamline research
knowledge management
in labs

Patient Recruitment
& Engagement

Clinical Trial Data
Collection and Management




Quartzy
Palo Alto, United States
quartzy.com
Web based lab management platform for LifeSciences community.

MATURE



Elemental Machines
Cambridge, United States
elementalmachines.io
Offers lab management solutions for maintaining experimental reproducibility in life science research labs.

EMERGING



Labguru
Cambridge, United States
labguru.com
Web based lab management software that streamlines research logistics and knowledge management for life science labs.

MATURE

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B.
Research & Development

Research & Development Enhancement



A.
Risk & Compliance

Genome Sequencing
Data management

Clinical Research
Intelligence Sourcing

Streamline research
knowledge management
in labs

Patient Recruitment
& Engagement



Clinical Trial Enrollment Platform
/ Molecular Profiling Platform

B.
Research & Development

Find more solutions on
GrowthEnabler Pii...

www.growthenabler.com



Syapse

San Francisco, United States
syapse.com

Molecular profiling platform for diagnosing and treating patients.

MATURE



Antidote

London, United Kingdom
antidote.me

Meta-search engine for clinical trials that helps patients to explore, understand and access clinical trials.

SCALING



Deep 6 AI

Pasadena, United States
deep6.ai

Uses AI technologies to understand the unstructured data from medical records to find more patients for clinical trials easily.

EMERGING

Recommendations I

How is digital innovation transforming the Pharmaceutical industry?

Driving clinical innovation:

i.

Organisations should Invest in R&D for cost containment or partner with companies providing technologies to streamline R&D and make the process more efficient.

ii.

Organisations should collaborate with startups that provide solutions in automated analysis for discovering new therapeutics. By combining techniques of bioinformatics and machine learning algorithms, firms will be able to discover new therapeutic opportunities for rare genetic diseases.

iii.

Biopharma companies should use machine learning algorithms to achieve strategic design of drug compounds. Core deep learning based AI is able to help process medical data to generate insights and aid in the process of drug development.

iv.

Biopharma companies should use machine learning algorithms to achieve strategic design of drug compounds. Core deep learning based AI is able to help process medical data to generate insights and aid in the process of drug development.

v.

Partner with firms that provide clinical data reporting and visualization tools to achieve quality optimization and efficiency of clinical trials. There exist multiple platforms that use machine learning algorithms to process and analyze genomic data to arrive at clinical insights.



Recommendations II

How is digital innovation transforming the Pharmaceutical industry?

Lifesciences organisations should implement Artificial Intelligence for Drug Safety monitoring. They should partner with startups developing solutions/tools that help pharmaceutical companies detect the presence or absence of active ingredients in their medications leveraging mobile technology. A counterfeit drug detection solution through IT has experienced traction in the US market; the AI platform leverages deep learning and works through spectrometers and a cloud dataset of spectral signatures of medicines to carry out non-destructive product authentication. This serves as a major cost cutting solution to pharmaceutical manufacturers, distributors and wholesalers.

Organisations should partner with an integrated GRC platform vendor for clinical trial compliance management and compliance process integration: GRC software solutions for the LifeSciences industry enable businesses to achieve compliance with FDA, EMA and other agencies.

Some functionalities of the cloud based platform include:

Product Information Management solution for the electronic exchange of drug information in the context of marketing authorization applications

Enterprise-grade eCompliance and clinical trials management software products

Regulatory information solution platform for organizational-specific regulatory operations information

Clinical trial disclosure platform to manage authoring, reviewing, editing, approving and publishing the clinical trial application and disclosure data

BioPharma companies should focus on Regulatory Intelligence. Regulatory intelligence platforms combined with analytics provides features such as a 360-degree view of policy landscape, identify legal issues, analyze public sentiments, and augment decision making by a knowledge repository of federal regulations. Integrated Compliance Management is achieved through online compliance software that gives global compliance teams an all-in-one platform to manage compliance policies, train management systems and for policy document management, reporting & monitoring.



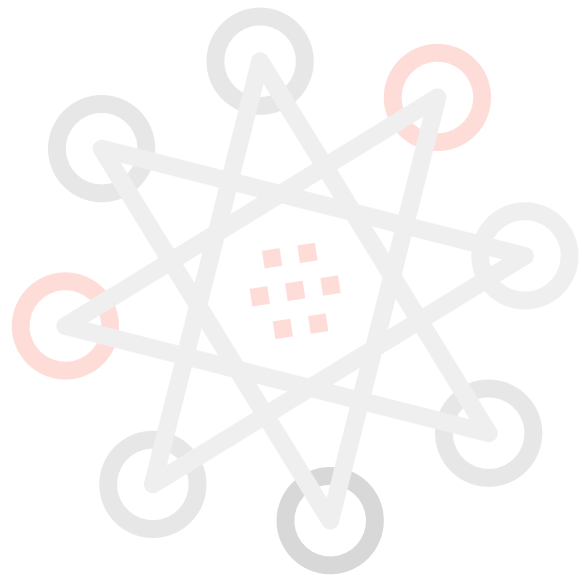
How should Corporates work with Startups?

Managing Risk and Compliance

Startups bring critical innovation, problem solving and the potential of entirely new markets to Corporates. Innovation is high on the CIO agenda today; however partnerships that drive this innovation are becoming harder to find. Creating real change by fighting against static bureaucracy is one such stumbling block in the success of startup-corporate collaboration.

Corporates can run accelerators and invest/partner with small firms directly. Through this initiative, big firms can offer startups professional operation management, programming resources and core research facilities. Firms can collaborate with academic institutions, biotech firms and pharmaceutical companies on drug discovery throughout the clinical deployment process.

Large companies should look to nurture collaborations, where both the parties benefit - pharmaceutical companies receive the tech expertise of the startups while startups receive aid in their growth of business. One of the most effective way for a pharmaceutical company to benefit from digital innovations is to partner with multiple, compatible digital health startups, and to have these startups build innovative patient and provider-facing digital health solutions.



**Find out more about
GrowthEnabler Research
Methodology**

GrowthEnabler Research Methodology

Proprietary Research

INTRODUCTION

GrowthEnabler uses its proprietary research methodologies to analyse the business impact of disruptive technologies and digital innovations on the future growth of large corporations and their industries. GrowthEnabler applies its deep-data analysis tools, scoring logic and algorithms to create intelligence that enables senior executives to make informed business growth decisions. The GrowthEnabler Personalised Intelligence Interface (Pii) is an interactive platform that provides corporates the ability to Find, Select, Connect and Manage global Startups based on their business priorities and problems.

1. MARKET ANALYSIS



To create and report leading technology-related market trends and industry analysis with a focus on industry sub-sectors, real-life implementations, industry and market landscapes and competitor dynamics, GrowthEnabler analyses large sets of data and information aggregated from various private and public sources, including online databases, market reports, online surveys, journals, and in-depth phone interviews.

To further enrich the efficacy of analysis, GrowthEnabler undertakes formal and informal interviews and RFI's and surveys with key decision makers and executives in corporates, as well as founders and owners of Startups. Following this exercise, large volumes of data is categorised and curated, based on, industry and market drivers, risks, opportunities and challenges specific to an industry vertical or technology area, and then injected into a pre-configured regression model to forecast and predict market movements and trends.

2. STARTUP TECHNOLOGY LANDSCAPE & ANALYSIS



The Startup eco-system is built using an exhaustive primary and secondary research analysis model, led by dedicated team of tech analysts and subject matter experts (SMEs), who also use Machine Learning and Natural Language Processing (NLP) technologies for data mining and curation.

Primary Research – The Primary research data is sourced directly from GrowthEnabler Market Surveys, RFI's with Startups, One-on-One Interviews, Calls and Product briefings, including Startup and Client Registration Information available on the GrowthEnabler Pii platform.



Secondary Research – A team of Machine Learning and NLP experts scan thousands of private and public data sources using data scraping and crawling methods to extract relevant secondary data, which is then validated and verified using GrowthEnabler automated data-cleansing methods, industry and technology segmentation taxonomies and mapping protocols and core intelligence from pre-populated Startup profiles and reviews.



Analyst Validation – A team of Analysts and Subject Matter Experts validate both the primary and secondary data while using internal peer reviews to substantiate core assumptions and data points, and external discussions with senior decision makers to assess business relevancy, timing and need.



The major sources of Secondary research are:

- i. Global Startup websites
- ii. Data aggregators
- iii. VC and Investor portfolios
- iv. News Feeds
- v. Industry reports
- vi. Regional Company registration websites
- vii. Social Sources (Social Sites, Blogs, Articles, Media sites)

A total of 57 data-points and parameters are applied in analysing and predicting the growth potential and health of a Startup, including:

- i. Company information
- ii. Leadership Team
- iii. Business Model
- iv. Financial Strength/Funding/acquisition data
- v. Product Innovation - patent data and core features and functions analysis
- vi. Customer value & sentiments
- vii. Social Media and Branding coverage
- viii. Business Traction and progress

Out of the total 57, 30 parameters are classified under 5 broad categories used to calculate the GE Pii Score.

- i. Product & Innovation
- ii. Leadership Team
- iii. Market Traction
- iv. Financial Strength
- v. Social media and Branding



Further Resources:

01.

GrowthEnabler Tech Pulse Report
InsuranceTech 2018

02.

GrowthEnabler Tech Pulse Report
FinTech 2018

03.

GrowthEnabler InFocus Report
Insurance

Contact us for access to these reports:
www.growthenabler.com