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Quantum Computing Market in Drug Discovery: Distribution by Drug Discovery Service Offered (Target Identification / Validation, Hit Generation / Lead Identification and Lead Optimization), Therapeutic Area (Cardiovascular Disorders, CNS Disorders, Dermatological Disorders, Endocrine Disorders, Gastrointestinal Disorders, Immunological Disorders, Infectious Diseases, Musculoskeletal Disorders, Oncological Disorders, Respiratory Disorders and Others), and Key Geographical Regions (North America (US and Canada), Europe (UK, France, Germany and Rest of the Europe), Asia-Pacific (China, Japan and Rest of the Asia Pacific), Latin America and Middle East and North Africa): Industry Trends and Global Forecasts, 2023-2035

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Abstracts

The quantum computing in drug discovery services market is expected to reach USD 411 million in 2022 anticipated to grow at a CAGR of 16% during the forecast period 2022-2035.

During the early stages of drug development, the identification of a pertinent biological target and a promising lead compound plays a pivotal role in determining the subsequent success of a drug candidate throughout preclinical and clinical studies. The

journey from the inception of a pharmacological lead to the eventual market launch spans approximately 10 to 15 years and requires substantial financial investments ranging from USD 4 billion to USD 10 billion. Notably, the complexities associated with drug discovery have intensified, particularly concerning large molecules, which inherently possess greater intricacies compared to their smaller counterparts.

To overcome the inherent challenges in drug discovery, such as escalating capital requirements and high attrition rates in late-stage programs, numerous pharmaceutical entities are currently exploring the integration of quantum computing into their discovery processes. Quantum computing leverages the principles of quantum mechanics to solve extensive and intricate problems within considerably shortened time frames compared to conventional computer-aided drug discovery methods.

Presently, various quantum computing approaches are employed in the realm of drug discovery, encompassing methodologies like structure-based drug design, fragment-based drug discovery, and ligand-based drug discovery. The predictive capabilities inherent in quantum computing have demonstrated a notable reduction in complexity, costs, and time investments throughout the entire drug discovery continuum. This breakthrough allows researchers to circumvent the laborious task of randomly screening billions of molecules, thereby significantly expediting the process.

Consequently, stakeholders in the pharmaceutical industry are increasingly relying on companies offering quantum computing software and hardware to bolster their drug discovery endeavors. Moreover, given the active initiatives undertaken by quantum computing entities, there exists a strong conviction that the prospects within this nascent, yet burgeoning industry segment will steadily expand in the foreseeable future.

Report Coverage

An executive summary of the key insights captured in our report. It offers a high-level view of the current scenario of quantum computing in drug discovery services market and its likely evolution in the short term to mid-term and long term.

Overview of quantum computing, along with information on its business and platform capabilities with respect to its use across various industries Additionally, it highlights the application of quantum computing, specifically in drug discovery. Further, the chapter features a discussion on the challenges, key growth drivers, and future perspectives associated with the use of quantum

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computing in drug discovery services.

A detailed assessment of the overall market landscape of quantum computing software providers, based on several relevant parameters including year of establishment, company size, location of headquarters, business capabilities, platform capabilities, type of drug discovery service(s) offered, type of molecule(s) supported, compatible computational approaches, end user(s) and therapeutic area(s)

An insightful company competitiveness analysis of quantum computing service providers based on company strength (in terms of the years of experience), portfolio strength (in terms of type of drug discovery services offered, type of molecule(s) supported, type of computational approaches and type of end-user(s)), and portfolio diversity (in terms of business capabilities).

Elaborated profiles of quantum computing software providers . Each profile includes a brief overview of the company, financial information (if available), details on service portfolio, recent developments and an informed future outlook.

A detailed assessment of the overall market of quantum computing hardware providers based on various parameters including year of establishment, company size, location of headquarters, type of offering(s), data storage on cloud and compatible computational approaches.

Detailed profiles of quantum computing hardware providers. It includes a brief overview of the company, financial information (if available), details of service portfolio, recent developments and an informed future outlook.

Detailed review of academic grants related to research on quantum computing in drug discovery, based on several relevant parameters, such as year of grants awarded, amount awarded, support period, type of study section, administering institute center, type of grant, activity code, funding mechanism and amount granted, funding institute and support period, prominent program officers (by number of grants), location of recipient organizations, popular recipient organizations, organization type and amount granted to popular recipient.

An in-depth analysis of the various collaborations and partnerships that have been inked by stakeholders engaged in this domain, during the period 2017-2022. It includes a brief description of the partnership models adopted by

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stakeholders in this domain.

A detailed use-case study on the applications of quantum computing across various industries, such as chemical industry, cybersecurity, financial modeling, space sciences, oil and gas industry and weather forecasting, and its likely evolution in the foreseen future.

Information on five competitive forces prevalent in this domain, including threats for new entrants, bargaining power of buyers, bargaining power of suppliers, threats of substitute product and rivalry among existing competitors.

The detailed analysis of the current and future market based on blue ocean strategy, covering a strategic plan / guide for emerging players in this domain to help unlock an uncontested market, featuring thirteen strategic tools that can help software providers to shift towards a blue ocean strategic market.

An insightful market forecast, highlighting the likely growth of quantum computing in drug discovery services market till the year 2035. In order to provide details on the future opportunity, our projections have been segmented based on relevant parameters, such as drug discovery services offered (target identification / validation, hit generation / lead identification and lead optimization), type of therapeutic area (cardiovascular disorders, CNS disorders, dermatological disorders, endocrine disorders, gastrointestinal disorders, immunological disorders, infectious diseases, musculoskeletal disorders, oncological disorders, respiratory disorders and others), and key geographical regions ((North America (US and Canada), Europe (UK, France, Germany and Rest of the Europe), Asia-Pacific (China, Japan and Rest of the Asia Pacific), Latin America and Middle East and North Africa).

Key Market Companies

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Atos

Fujitsu

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Huawei

IBM

Microsoft

Xanadu

XtalPi

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