

Pharmaceutical product design goes digital



Hartree Centre
Science & Technology Facilities Council



Working with major names in the industry, the Hartree Centre is a partner in the powerful ADDoPT collaboration that aims to secure the UK's place at the forefront of new pharmaceutical development.

Challenge

£31 billion of turnover, £24 billion in exports, around 400 companies – the pharmaceutical industry makes a crucial contribution to the UK's manufacturing performance and economic health. Sustaining success against global competition and rising patient expectations requires a relentless drive to bring innovative pharmaceuticals to market more quickly and cost-effectively. This is a real challenge for a sector built on a time/resource-hungry 'make and test' research model. The question is: can the UK transform the way it develops and manufactures pharmaceuticals, using the huge potential of advanced digital techniques to progress product and process design?

Solution

Bringing together government, industry and academia – with a mission to revolutionise the journey 'from molecules to medicines' – ADDoPT (Advanced Digital Design of Pharmaceutical Therapeutics) is an initiative involving pharma giants Pfizer, GSK, AstraZeneca and Bristol-Myers Squibb plus key SMEs, universities and research centres. The Hartree Centre is providing its supercomputing infrastructure and cutting-edge expertise in big data analytics, modelling, simulation and computational chemistry to help propel pharmaceutical product development beyond physical experimentation and traditional manufacturing techniques. Exploiting big data, in particular, offers vast potential to save time and money by integrating and mining highly diverse datasets to inform formulation and optimise manufacturing processes.

Benefits

This £20.4 million, 4-year collaboration aims to generate a top down, knowledge-driven digital design & control approach that reshapes the way the industry innovates. ADDoPT builds on UK excellence in big data, mechanistic modelling, process optimisation and control to establish a highly competitive UK knowledge value supply chain for the pharmaceutical sector that will seek to protect UK drug manufacturing and support future growth; encourage reshoring of existing pharmaceutical production; contribute to job creation and safeguarding in the pharmaceutical supply chain; enhance UK skills and capabilities through the training of operators and scientists in new design and control tools and methodologies; and get new innovative medicines to market as efficiently as possible to ensure access for patients.

"The race is on to equip the UK pharmaceutical industry to thrive and grow in the decades ahead. The Hartree Centre's involvement in ADDoPT is vital to bringing within reach a revolution in UK pharmaceutical development and manufacture."

– Sean Bermingham, ADDoPT Project Co-ordinator

Work with us

We collaborate with industrial clients and research partners on projects that create insights and value using high performance computing, big data analytics, simulation and modelling.

By combining our world-class facilities with access to our specialists and computational scientists, we can enable your organisation to produce better outcomes, products and services more quickly and cost-effectively than through conventional R&D workflows.

With our partners we are developing the next generation of supercomputing architectures and software, combining existing best practice with innovation to deliver faster, cooler and more sustainable solutions capable of meeting the challenges of data intensive computing.

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