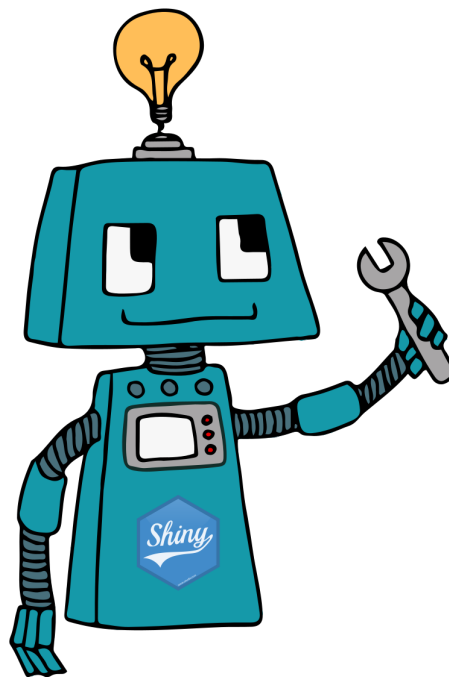


# Shiny in Production 2022

Schedule and Abstracts



6 - 7 October 2022

The Catalyst, 3 Science Square, Newcastle Helix, Newcastle, NE4 5TG

# Schedule

## Day 1 - Thursday 6th October

Time	Title	Room
13:30 - 17:00	Introduction to RStudio Connect	Faraday
13:30 - 17:00	Introduction to Tableau	Electra
13:30 - 17:00	Automated Reporting with Quarto	Gargon

## Day 2 - Friday 7th October

Time	Title	Room
09:00 - 09:30	Registration	Foyer
09:30 - 09:45	Welcome	Theatre
09:45 - 10:25	Colin Fay	Theatre
10:25 - 10:55	Caterina Constantinescu	Theatre
10:55 - 11:25	Coffee	Foyer
11:25 - 11:55	Chris Beeley	Theatre
11:55 - 12:25	Andrew Patterson	Theatre
12:25 - 13:40	Lunch	Foyer
13:40 - 13:45	Welcome from NICD	Theatre
13:45 - 14:15	Nic Crane & Mark Sellors	Theatre
14:15 - 14:45	Theo Roe	Theatre
14:45 - 15:15	Coffee	Foyer
15:15 - 15:45	Gareth Burns	Theatre
15:45 - 16:15	Mike Smith	Theatre
16:15 - 16:30	Close	Theatre

# Abstracts

## Day 1 - Thursday 6th October

### Workshop 1: Introduction to RStudio Connect - Time: 13:30 - 17:00

RStudio Connect is a hosting platform which makes publishing your shiny applications; plumber APIs; R Markdown documents, and many other content types, painless and easy. In this workshop we will demonstrate a few different workflows which allow you to host, share, and scale content on RStudio Connect.

### Workshop 2: Introduction to Tableau - Time: 13:30 - 17:00

Faster and more capable of handling larger datasets than Excel, Tableau is quickly becoming a valuable tool for individuals and organisations who want to leverage their data. It's more user-friendly and simpler to learn than programming languages, but still allows a high-level of customisation. This workshop is designed for people with no prior experience of Tableau, who want to get to grips with the basics of summarising and interactively visualising their data.

### Workshop 3: Automated Reporting with Quarto - Time: 13:30 - 17:00

Quarto is a brand new open source publishing system that allows you to dynamically create static or interactive documents and automatically update reports when data changes. Whether you are hoping to generate HTML, PDF or Microsoft Word like documents, or even slides for a presentation, Quarto tailors to your needs. This workshop will demonstrate how to make a range of outputs, from simple documents, to presentations and dashboards.



## Day 2 - Friday 7th October

### Chris Beeley

*Senior Data Scientist at Nottinghamshire Healthcare NHS Foundation Trust*



### Next level Shiny- R, Python and JavaScript

R and Shiny are a great team and they enable data scientists to produce attractive and easy to use applications with the powerful analytics and visualisations that R makes possible. As great as R and Shiny are, sometimes there are things that can be done more easily or more quickly in other languages, and indeed there are some things which are not possible at all using just Shiny and R. This talk will discuss the past, present, and future of a Shiny application which uses both Python and JavaScript to improve the back-end and frontend of the application. The application uses reticulate to interface with a Python package which was written as part of the work, which allows the Shiny application to access the wide suite of tools within Python for processing and classifying text using machine learning. We are also currently working on adding JavaScript to the application in order to improve the appearance and responsiveness of the application. JavaScript naturally has a lot of packages which are ideal for producing attractive, interactive visualisations and other interface components. Using JavaScript in Shiny applications can also make the application itself more performant by running code (for example, to highlight text) on the client side, in the user's browser, instead of making repeated calls to the R code running on the server.

## Gareth Burns

*Data Strategist at Exploristics*



### Seamlessly integrating Shiny applications into KerusCloud; a cloud-based, clinical trial simulation platform

Exploristics has developed KerusCloud, a cloud-based computing (AWS) platform that optimises clinical trial study design and analysis by simulating realistic virtual patient populations. The KerusCloud platform uses a range of cutting-edge technologies to produce an enterprise grade Software as a Service (SaaS) simulation tool allowing users to leverage cloud-based computing.

Within the KerusCloud platform there are several Shiny applications designed for specific use cases:

**Prototyping:** Exploristics develops new software creating an ecosystem of applications for simulating accurate and realistic virtual populations. These often require advanced statistical techniques and alignment with existing products. Exploristics uses Shiny as a technology to prototype applications and the presentation will discuss the lessons learnt in transitioning from initial concept to “Shiny in Production”.

**Stand-alone Applications:** Prototype software are further developed into stand-alone applications. The Data Model Builder is a Shiny application which combines complex statistical algorithms, data visualization and data wrangling to seamlessly allow a user to transform their existing data resources into a template for a KerusCloud simulation.

**Integrated Applications:** Shiny applications for Data Visualisation are embedded as iFrames within the user interface. Proprietary commercial software products were previously used to visualise these data but limitations meant Exploristics migrated to Shiny for Data Visualisation. The data produced from KerusCloud is bespoke and highly complex reflecting the range in potential virtual populations a user can create. Integrated Shiny applications enable users to dynamically view multi-dimensional data interactively, allowing users to explore and make data-driven decisions without having to export data and perform time-consuming external analysis.

## Caterina Constantinescu

*Principal Data Consultant at GlobalLogic*

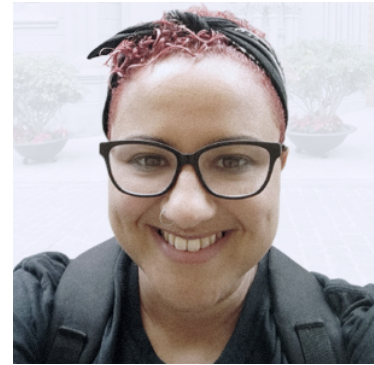


### **Journey through a landscape of options: Choosing among web app frameworks for your project**

What happens when you begin a new project as part of a team with a diverse skill set of tools/languages? Within data science teams in particular, R and Python are very likely to be (among) the options, and that already leads to a fairly complex palette of web app frameworks to decide among. In this talk, I will present a variety of web apps which will help showcase your work to end users, by running the same example through these different alternatives. As we progress through our discussion which will include Shiny, Streamlit, Gradio, Dash and more, I will point out differences and decisioning points which may make some preferable to others, depending on the project in question. This talk is intended as a high-level overview, and arrives at a time when Shiny for Python has also been released, which further broadens the possibility space.

## Nic Crane

*Working on Apache Arrow at Voltron Data*



## Mark Sellors

*Head of Data at Data Orchard/RStudio PBC*



### **Firing an Arrow into the internet of things: combining the power of Arrow, Raspberry Pi & Shiny**

Raspberry Pis are very cheap and very small computers, and one of their uses is allowing data to be collected from sensors in different locations without the need for specialist hardware or expensive machinery. You can supercharge projects like these by taking advantage of Arrow's capabilities for analysing larger-than-memory data directly on the Pi, made even easier by using the pre-built R packages provided by the R4Pi project to get everything set up. Even more exciting is that when you aggregate the data across multiple instances, combining Arrow and Shiny means that you don't have to worry about overloading your Shiny app with too much data. In this talk, we present a proof-of-concept for an IoT project and demonstrate how this would work in practice.

## Colin Fay

*Data Science and Engineering at ThinkR*



### DESTROY ALL WIDGETS!

One of the joys of developing with {shiny} is that it's easy to add new widgets to an app — maps, graphs, tables... Combined with reactivity, widgets make an app move and change in a blink of an eye. Is this a good thing, though? Should an app change in a blink of an eye? What if we've all been carried away by the joy of widgets and forgotten what it's like to be a first-time user?

In this talk called “DESTROY ALL WIDGETS!”, Colin will discuss why it's crucial, as an app developer, to have a user-centric approach, what are the things to think about when starting a new application projects, and what are the best practices when it comes to building a good user experience with {shiny}.

About: Colin works at ThinkR, a company focused on building tools and teaching the skills for doing Data Science with R. He's the lead developer of the {golem} project, and the author of the Engineering Production Grade Shiny Apps book.

## Andrew Patterson

*Infrastructure Lead at Jumping Rivers*



### Dockerising a Shiny App

Shiny doesn't package or deploy itself. At least to many of the platforms available to you or your organisation. For Shiny, Docker provides a standard for packaging applications for massive interoperability between platforms as well as a gateway to repeatable, scalable deployments and more reliable Shiny apps in production. In this talk we work through the why and how of dockerising and deploying Shiny apps, as well as working through many considerations and gotchas along the way.

## Theo Roe

*Data Scientist at Jumping Rivers*



### Expect the Unexpected - {Shiny} & {htmlwidgets}

Utah Tech University came to Jumping Rivers wanting to build two R Shiny applications. The applications would be to help the university understand their student retention and admission. In particular, the client had scoped that the most beneficial way to visualise the data would be using interactive sankey and sunburst diagrams. These widgets somewhat existed within the D3 framework for JavaScript but had not been built within R as htmlwidgets yet. The client needed guidance on what a technical description of these widgets would look like, as well as how they would fit into a shiny application. This talk aims to give insight into some of the smaller technical oversights when working on such a project.

## Mike Smith

*Senior Director Statistics at Pfizer*



### Offload data manipulation from your Shiny apps and dashboards using {pins}

Many data workflows involve data wrangling - fetching data then merging, joining and filtering before the user can work with it in the Shiny application. But this data wrangling is often time consuming and adds overhead and complexity into your app. {pins} is a package that allows you to pin content on a server, which can be written to or fetched from through a simple function call. In this talk I'll show how we used scheduled markdown reports and pinned data via RStudio Connect to offload data wrangling from our Shiny application. The application then reads the pinned data and can get the user working with the app very quickly. The code used in the app is much simplified since we just read the current data and present this to the user. In this presentation I'll demonstrate how to achieve this with an example Shiny app.

## Sponsors



The National Innovation Centre for Data (NICD) was created in 2019 with £30 million of funding from the government and Newcastle University. Based in the state-of-the-art Helix science district in Newcastle, our mission is to transfer data skills to the UK workforce. Our team of PhD and Masters-level data scientists work to ensure that organisations across the country are equipped to reap the benefits of the global data-driven revolution.



Newcastle University Solve (NU Solve) has been helping businesses, public sector organisations and industries to find answers to complex challenges for more than three decades. We emerged out of the Industrial Statistics Research Unit, which had successfully engaged with enterprises since 1984.



Founded in 1834, we are one of the world's leading organisations advocating for the importance of statistics and data. We're a professional body for all statisticians and data analysts – wherever they may live.

We have more than 10,000 members in the UK and across the world. As a charity, we advocate for the key role of statistics and data in society, and work to ensure that policy formulation and decision making are informed by evidence for the public good.

