IBM: Carbon
UI: Concepts and Design

By

Student Name and ID

ABUBAKKAR SIDDIQUE (011201329)

Course Code: CSE 4945

December 12, 2023

Department of Computer Science and Engineering
United International University

Abstract

This research paper investigates the meticulous choices behind the elements comprising IBM's Carbon Design System. Focusing on critical design components such as color, iconography, illustration, typography, copy, animation, elevation, and layout, the paper dissects the specific choices and applications within IBM's UI/UX framework. By closely examining the selection of icons, color schemes, typography styles, and other design elements, the paper unveils the thought processes and strategies that drive IBM's visual language. Design professionals and enthusiasts will gain valuable insights into the practical implementation of these elements through the lens of IBM's Carbon Design System.

Keywords: UI/UX design, IBM, Carbon Design System, design elements, color, iconography, illustration, typography, copy, animation, elevation, layout.

Acknowledgements

This work would have not been possible without the input and support of my honourable UI: Concepts and Design instructor Mir Moynuddin Ahmed Shibly, Sir. This report is a reflection of the knowledge and skills gained under his mentor ship. Thank you for your dedication to the field of UI design and for imparting valuable lessons that will undoubtedly shape my future endeavors in this dynamic field. I would like to express my gratitude to everyone who contributed to it in some way or other.

My sincere gratitude goes to Mir Moynuddin Ahmed Shibly, Sir.

Last but not the least, We owe to our family including our parents and wife for their unconditional love and immense emotional support.

Table of Contents

List of Figures

List of Tables

Chapter 1

Introduction

Welcome to the realm of IBM, where a legacy dating back to 1911 continues to influence technology. Headquartered in Armonk, New York, IBM is renowned for its pivotal role in computer hardware, middle ware, and software solutions.

This individual project explores IBM's singular design system – Carbon. Delving into its color palette, iconography, illustrations, typography, copy, animations, elevation principles, and layout strategies, the report highlights their role in ensuring a consistent, accessible, and engaging digital experience for the individual user.

Carbon stands as a testament to IBM's commitment to excellence in design and user satisfaction. Meticulously addressing each design element, IBM ensures a seamless alignment with its brand identity. This exploration into Carbon unfolds the unique narrative of how IBM, as an individual entity, crafts a digital landscape that is not only visually captivating but also user-centric and trustworthy. Welcome to a personalized journey through the intricacies of Carbon, where IBM's design principles converge with individual experiences.

1.1 Project Overview

IBM, or International Business Machines Corporation, stands as a technological titan with a legacy dating back to 1911. Headquartered in Armonk, New York, IBM has been a driving force in the evolution of computer hardware, middle ware, and software solutions. From pioneering mainframes to contributing significantly to the personal computer revolution, IBM has consistently played a pivotal role in shaping the tech landscape.

1.2 Motivation

The computational motivation that encourages me to solve the problem should be stated here clearly. I want to solve this problem because it will help. As a Computer Science and Engineering (CSE) student, I am driven to tackle this problem because it directly impacts the efficiency and functionality of software systems. Solving this challenge will be

instrumental in benefiting software developers and the IT industry at large. The goal is to make things easier and better in this area.

1.3 Objectives

Define the Problem: Understand exactly what I'm trying to solve. Learn from Others: See what solutions already exist by reading about them. Figure Out How to Solve It: Make a plan on how to fix the problem.

1.4 Methodology

I am going to: Understand the Problem: Clearly define what I am dealing with. Read a Lot: See what smart people have already said about the design. Make a Plan: Decide on the steps to solve the problem. Do the Work: Build what I planned.

Chapter 2

Product Line

Think of Carbon Design System like a magical kit that IBM uses to make all sorts of digital things. It's not the thing itself but has tools and tricks inside to create cool stuff. IBM uses this kit to build things like cloud apps IBM Cloud Pak for Applications, smart apps like Watson Assistant, apps for dealing with lots of information IBM Cloud Object Storage, business apps, and even special solutions for different needs IBM Cloud for Financial Services and IBM Cloud for Healthcare. So, even though Carbon isn't the final product, it's the secret sauce helping IBM create a bunch of amazing digital tools for us to use.

Chapter 3

Project Design

3.1 Color

The Carbon design system by IBM employs a thoughtfully crafted color palette, with IBM Blue taking center stage. This deep and reassuring hue embodies trust and reliability.

Primary color: IBM Blue (00509e) The hexadecimal color 00509e has RGB values of R:0, G:80, B:158 and CMYK values of C:1, M:0.49, Y:0, K:0.38. Its decimal value is 20638.

Secondary color:

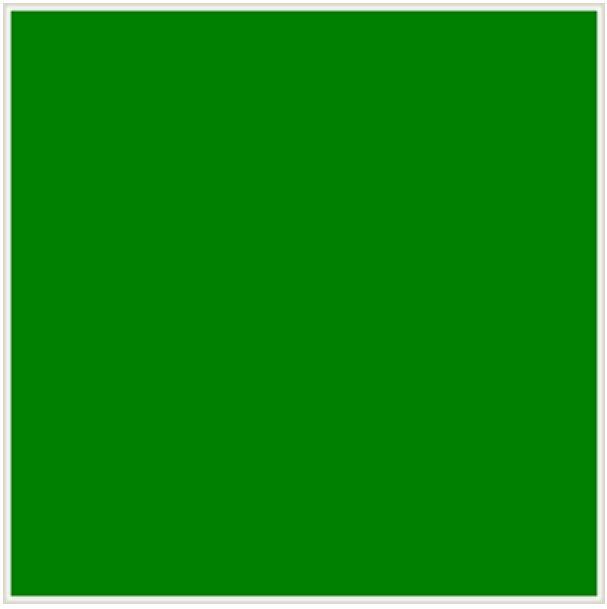
Charcoal (333333), The hexadecimal color 333333 has RGB values of R:51, G:51, B:51 and CMYK values of C:0, M:0, Y:0, K:0.8. Its decimal value is 3355443.

White (ffffff), The hexadecimal color ffffff has RGB values of R:255, G:255, B:255 and CMYK values of C:0, M:0, Y:0, K:0. Its decimal value is 16777215.

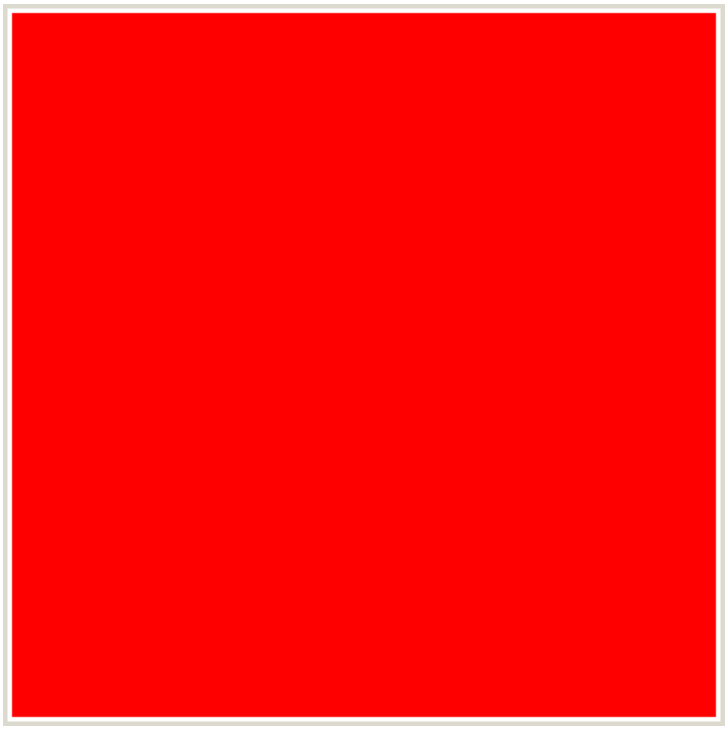
Gray (f0f4f7) The hexadecimal color f0f4f7 has RGB values of R:240, G:244, B:247 and CMYK values of C:0.03, M:0.01, Y:0, K:0.03. Its decimal value is 15791351.

Additional colors: A limited palette of other colors for specific use cases, such as green for success and red for warnings.

008000 Green Color Conversion: The hexadecimal color 008000 has RGB values of R:0, G:128, B:0 and CMYK values of C:1, M:0, Y:1, K:0.5. Its decimal value is 32768.



ff0000 Red Color Conversion: The hexadecimal color ff0000 has RGB values of R:255, G:0, B:0 and CMYK values of C:0, M:1, Y:1, K:0. Its decimal value is 16711680.



3.2 Iconography

3.2.1 Icon library

Carbon Design System includes its own icon library with hundreds of icons for common actions and objects.

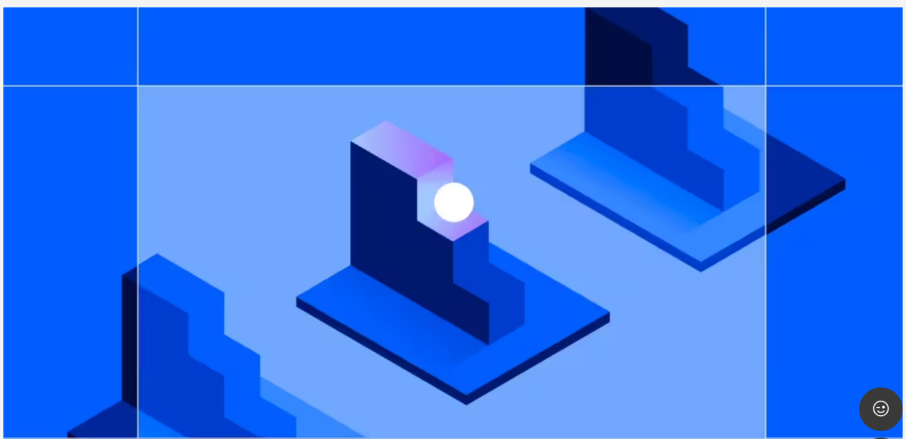
Carbon's iconography is a testament to simplicity and consistency. The icons are meticulously designed to be easily recognizable, contributing to a seamless user experience. The uniformity in style across the icon set enhances the overall good of the design system.

3.2.2 Style

Simple, line-based icons that are consistent with the overall design language.

3.3 Illustration

Introducing a human touch to interfaces, Carbon's illustrations are friendly and approachable. Aligned with IBM's branding, these illustrations are strategically placed to convey concepts and guide users through various processes, adding a touch of warmth to the digital experience.



3.3.1 Limited use

Illustrations are used sparingly for specific purposes, such as visualizing complex concepts.

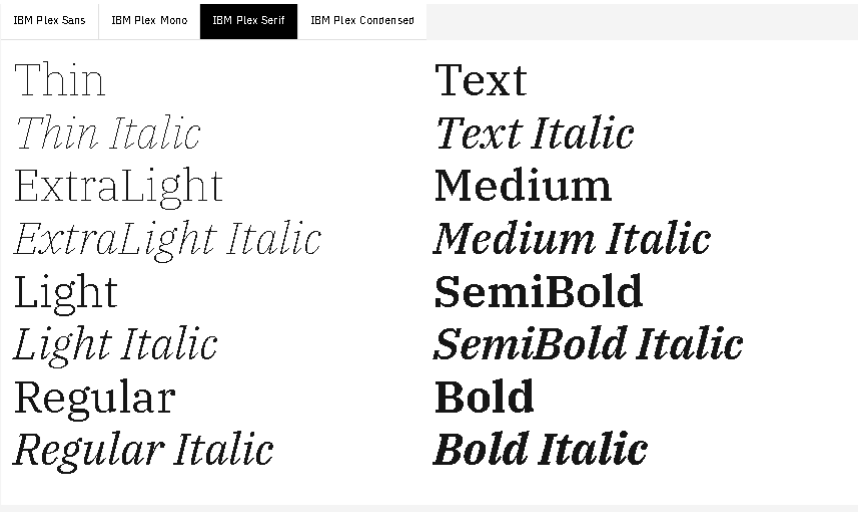
3.3.2 Style

: Flat, modern illustrations that are consistent with the overall design language.

3.4 Typography

Primary font: IBM Plex Sans (Open Source)

Secondary font: IBM Plex Mono (Open Source) Font sizes and weights: Consistent use of font sizes and weights to create a clear hierarchy of information.



3.5 Copy

Concise and clear writing: Emphasis on clarity and ease of understanding.

Accessible language: Avoiding technical jargon and complex sentence structures.

Inclusive voice: Using gender-neutral language and avoiding stereotypes.

3.6 Animation

Minimal use: Animations are used for specific purposes, such as providing feedback or highlighting interactive elements.

Subtle and purposeful: Animations are not distracting and enhance the overall user experience.

Productive and expressive Their approach to animation is guided by two essential types of motion: productive and expressive. The distinct impression created by each type offers a clear means of creating contrast, but also a sense of cooperation—man and machine, organic and engineered.

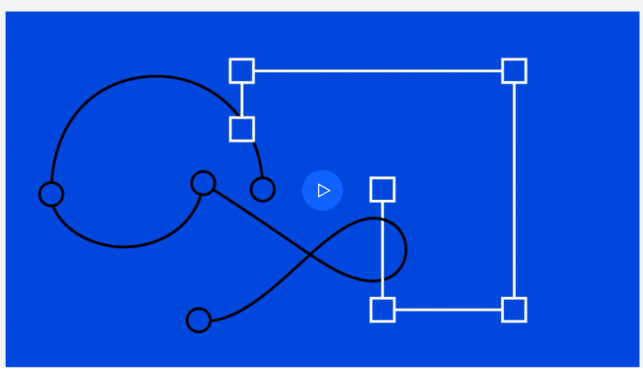


figure: Animation-1 of IBM

Applications Animation can help recognize moments throughout the user interface experience. For example, you might use productive motion to confirm completion of

tasks, or expressive motion to mark the beginning of a process. Animation can help guide users through complex experiences, or highlight progress through a process.

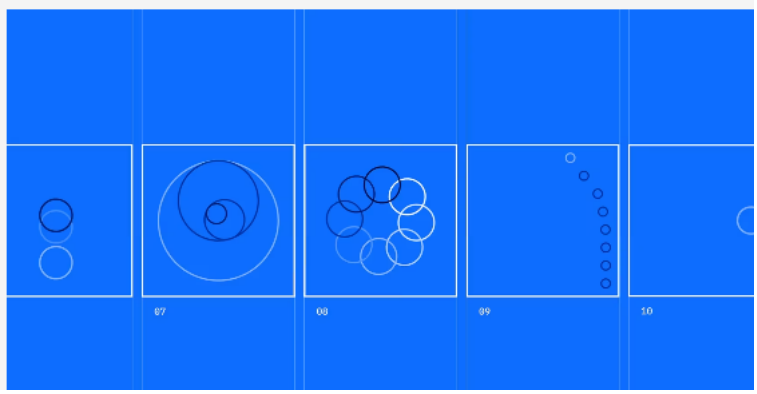


figure: Animation-2 of IBM

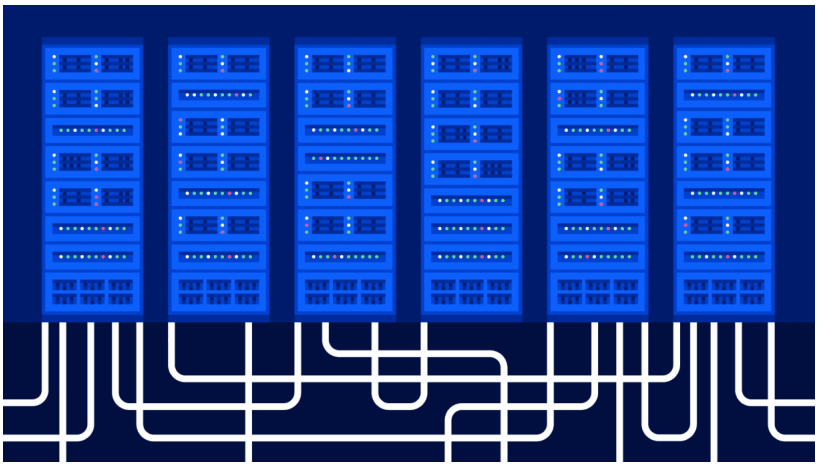


figure: Illustration

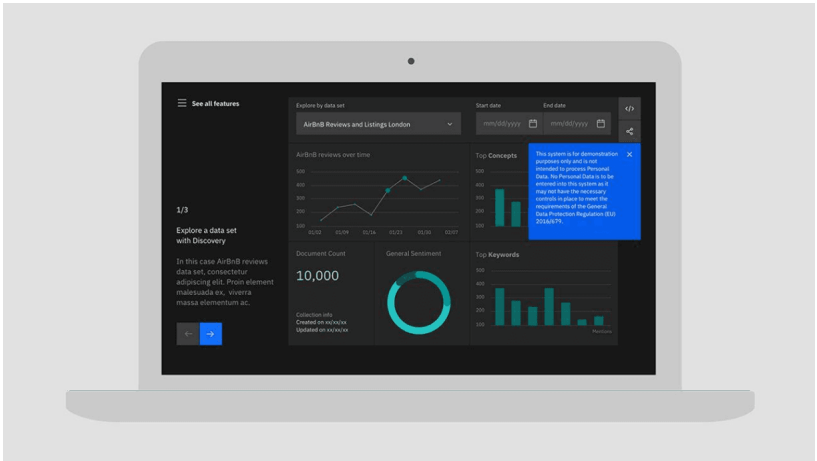


figure: User Interface

3.7 Elevation

Shadows and layering: Used to create depth and hierarchy in the interface. Consistent application:
Elevation values are used consistently across different components

3.8 Layout

Grid system: Based on a 12-column grid system for consistent layout across different screen sizes.
Responsive design: Adapts to different screen sizes and devices.
White space and spacing: Used effectively to create clear and uncluttered interfaces.

figure: Layout of IBM business card

figure: Layout of IBM field guides

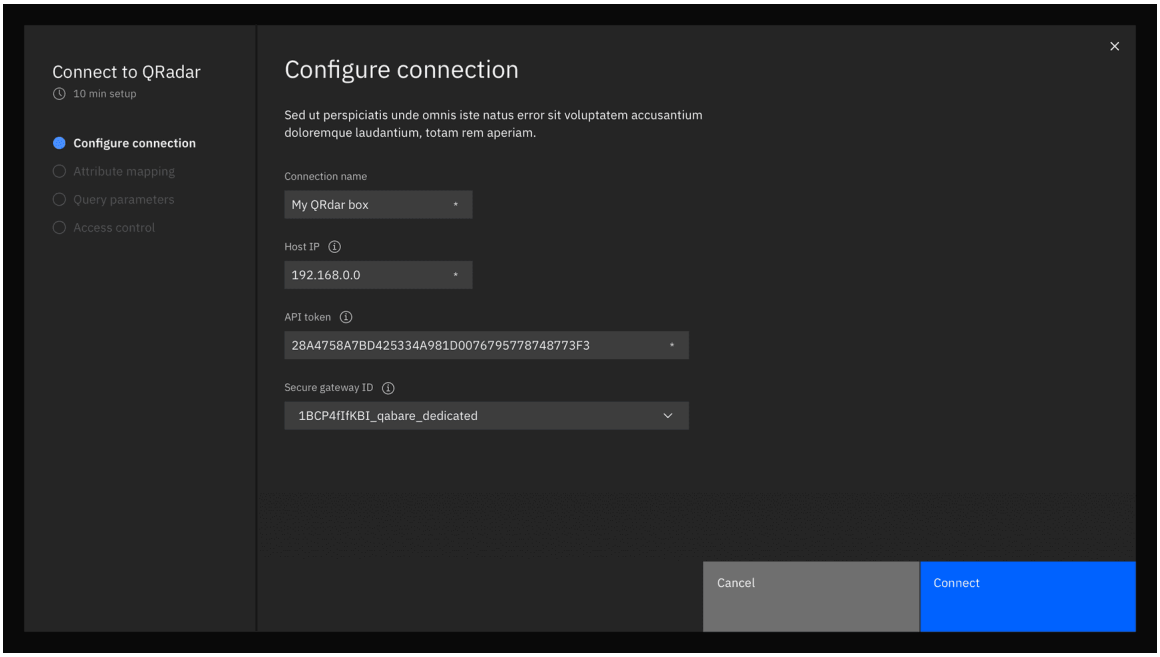


figure: Layout of IBM Security Connect

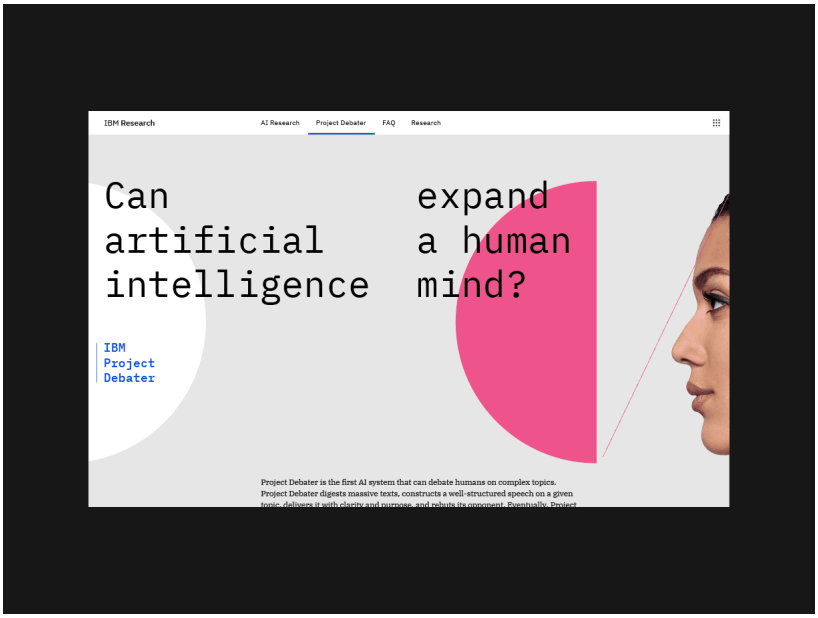


figure: Layout of IBM Project Debater homepage

figure: Layout of IBM Design philosophy cards

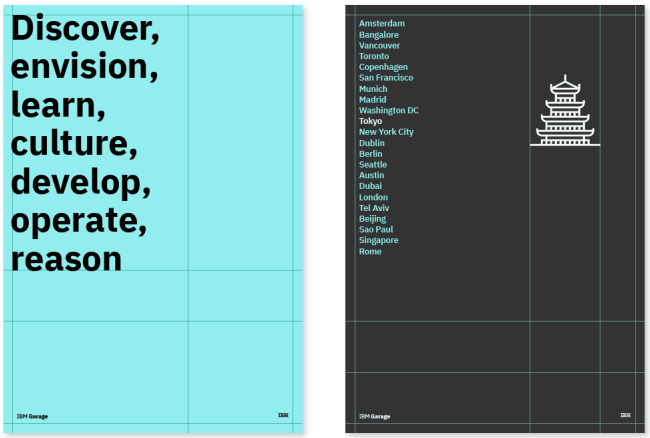


figure: Layout of IBM Garage posters

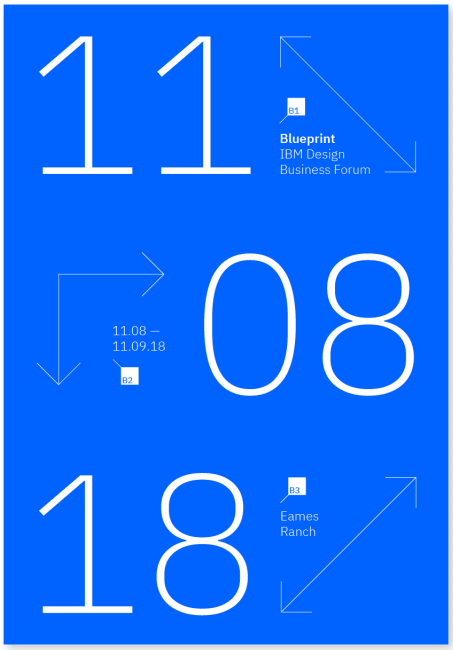


figure: Layout of Blueprint poster

Chapter 4

Conclusion

IBM's design system, Carbon, is a reflection of the company's dedication to delivering a consistent, accessible, and visually captivating user experience. By meticulously addressing color, iconography, illustration, typography, copy, animation, elevation, and layout, IBM ensures that its design principles seamlessly align with its brand identity. This attention to detail contributes to a cohesive and engaging digital experience, fostering trust and usability among IBM's diverse user base. In essence, Carbon exemplifies IBM's commitment to excellence in design and user satisfaction across its extensive product and service offerings.

References