Technical Design Document

# Merrill Edge Home Page - Retirement Calculator: Investment Chart Helper Integration

## 1. Task Reference

Jira ID: CFSSCDWARS-1081

Title: Merrill Edge Home Page - Retirement Calculator Updated Functionality Analysis Technical Design

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Target Fix Version: 2025.PI.02

Due Date: 2025.08.15

## 2. Overview

This document outlines the technical implementation of the Investment Chart as a shared helper module within the Merrill Edge Retirement Calculator project. The component is developed as a Web Component using Highcharts and is exposed via a shared helper that is consumed inside the Bootstrap Sparta module.

## 3. Functional Objective

The goal is to visualize long-term investment and savings projections using an interactive chart. This will help users understand retirement fund growth based on configurable monthly contributions.

## 4. Architecture Overview

- A Web Component <investment-chart> is created using Shadow DOM and JavaScript ES6.  
- Highcharts is loaded via CDN for rendering the chart.  
- The component logic resides inside a helper module under: @sparta.wealth-shared.helpers/investment-chart-helper.  
- This helper exposes a function that registers the Web Component.  
- The Bootstrap module registers the helper in its config.json and invokes it on module initialization.  
- The <investment-chart> tag is added in the .hbs template of the Bootstrap module to render the chart.

## 5. Technical Details

- Web Component file: investment-chart.js  
- Helper wrapper file: investment-chart-helper/index.js  
- Helper method exported: registerInvestmentChart()  
- In Bootstrap module:  
 - The helper is added in config.json under "helpers".  
 - index.js of the Bootstrap module calls registerInvestmentChart() in its constructor.  
 - The template includes the <investment-chart></investment-chart> tag.

## 6. Sample Code Snippets

Helper function (investment-chart-helper/index.js):

export function registerInvestmentChart() {  
 if (!customElements.get('investment-chart')) {  
 class InvestmentChart extends HTMLElement {  
 // chart logic  
 }  
 customElements.define('investment-chart', InvestmentChart);  
 }  
}

Bootstrap module config.json:

"helpers": {  
 "@sparta.wealth-shared.helpers/investment-chart-helper": [  
 "registerInvestmentChart"  
 ]  
}

Bootstrap module index.js:

import { registerInvestmentChart } from '@sparta.wealth-shared.helpers/investment-chart-helper';  
registerInvestmentChart();

Bootstrap module HBS template:

<div class="investment-chart-wrapper">  
 <investment-chart></investment-chart>  
</div>

## 7. Acceptance Criteria

- Investment chart loads and displays correctly using the Web Component.  
- Highcharts renders within the Shadow DOM.  
- Monthly contribution can be adjusted dynamically.  
- No duplicate registration or global conflicts.  
- Component is decoupled and reusable via the helper.