

Hawkrose

Portfolio Benefits Optimisation

Service Definition





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1 Portfolio Benefits Optimisation

1.1 Service Description

Portfolio Benefits Optimisation is a decision support tool which uses Bayesian Networks to show how multiple projects in a portfolio interact with each other. By doing so, this allows the user to quantitatively assess the financial and performance impact of different projects in a portfolio.

1. Hawkrose Data Scientists have generated novel approaches to predicting next events given prior match events (working with the FA and RFU). This approach was behind the inspiration for the X_i concept for our Portfolio Benefits Optimisation work.
2. Expected “Portfolio benefit (X_i) can be used by anyone who runs a complex portfolio of projects, with interdependencies between projects. The Bayesian Network underpinning the analysis can link the causality of different projects and show how they interrelate and whether, through project delivery, they help or hinder the desired outcomes of the Portfolio.

This software is currently being used in the following areas:

- i. At a large, capacity constrained industrial site where 106 “Efficiency Projects” have been implemented. Hawkrose Xi tool has examined which of these projects offer the best Value for Money and deliver the most effect in meeting the Portfolio’s desired outcomes – and which projects outputs are actually counter to the outcomes required of the portfolio.
- ii. To assess the optimum recruitment and retention incentives for a xxx,xxx public sector workforce. The Xi concept can be used to forecast the expected remaining years’ service of different cadres of employees – thereby providing a data-driven mechanism to assess the impact of different personnel recruitment and retention incentives.

For more information see the Hawkrose website: www.hawkrose.com

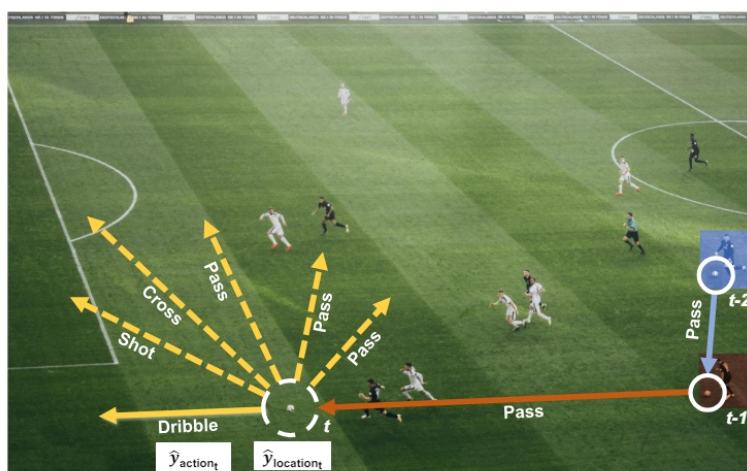
1.1.1 Expected Goals and Possession Utility in Sports Analytics

Hawkrose Data Scientists have generated novel approaches to predicting next events given prior match events.

The utility of these models is that they can be used to generate Expected Goals (X_G) for a given action (i.e., shot, cross, pass, dribble) based context, game state and a sequence of previous actions.

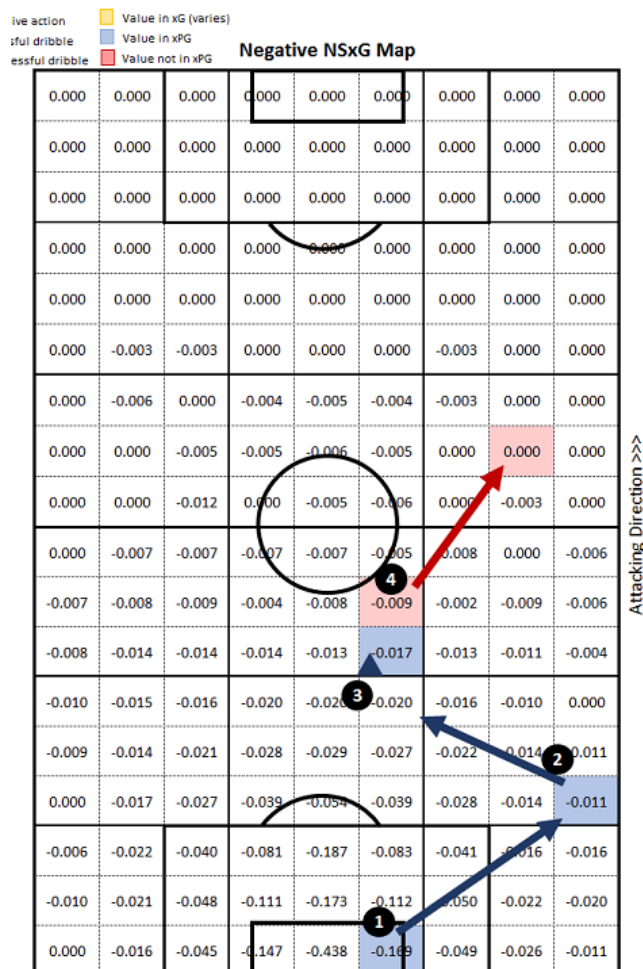
This is particularly useful for devising strategies for game play and extends well to games where the sequencing of events matters (American football, Rugby Union, Rugby League)

This approach was behind the inspiration for the X_i concept.

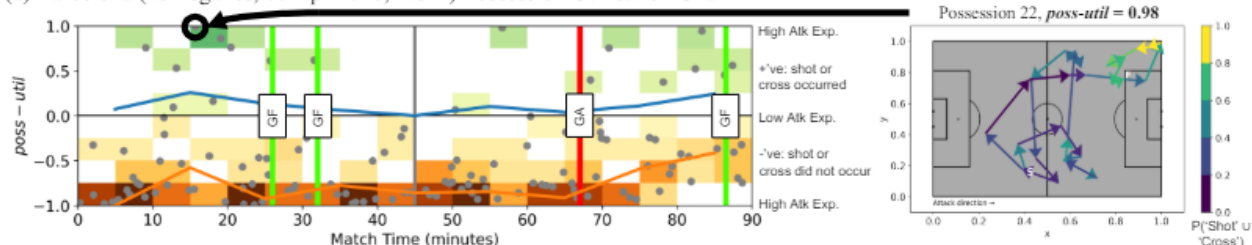


$$\hat{y}_{action_t}, \hat{y}_{location_t} = f(X_{t-40, \dots, t-1})$$

$$X = \underbrace{\{x_{action}, x_{location}\}}_{\substack{\text{Event data} \\ \text{(empirical)}}} \underbrace{\{x_{\Delta T}, x_{\Delta x}, x_{\Delta y}, x_s\}}_{\substack{\text{Inter-event data} \\ \text{(engineered)}}} \underbrace{\{x_{sgoal}, x_{\theta_{goal}}\}}_{\substack{\text{Goal Center } s, \theta \\ \text{(engineered)}}} \underbrace{\{x_T, x_{score\ advantage}\}}_{\substack{\text{Match Context} \\ \text{(empirical)}}}$$



(a) Barcelona (vs Leganes, 07 Apr 2018, W3-1) Possession Utilisation Chart



1.1.2 Customisation

Portfolio Benefits Optimisation is designed to be highly customisable and configurable. Customisable elements include:

- Assets
- Reference data
- Data structure
- Page flow
- Optimisation constraints
- Scenarios, scenario scoring
- Scenario linkages and nested scenarios

The platform is designed to be reconfigured and customised for each decision, transformation programme analysis or investment evaluation.



New data can be configured through the UI or uploaded via CSV.

1.1.3 Onboarding

Portfolio Benefits Optimisation can be delivered as a hosted managed service or deployed into a customers' hosting environment. If deployed into a customer hosted environment a deployment guide is provided and training given to support system upgrades.

User guides are provided as standard, and training can be purchased as an additional service. This can be online or onsite, depending on customer requirements. Hawkrose also offer continuous user support packages where Hawkrose consultants can act as expert users.

1.2 Service Support

1.2.1 Support Levels

Support models are tailored to customers' requirements and based on agreed SLA's. Response times and support coverage is agreed and documented in a managed service agreement and tailored to the requirements of each customer and system deployment.

The Hawkrose standard approach is to offer three levels of support:

- **Bronze** – UK Office hours support with email-based fault notification
- **Silver** – Extended hours (7:00 – 22:00) 7 days per week with email-based fault notification and trouble ticketing system
- **Gold** – 24/7 support 7 days per week with email and phone-based fault notification and trouble ticketing system

Bespoke support packages can be agreed based on a Service Level Agreement with time to respond targets if required.

All customers are allocated a technical account manager to act as a point of escalation if required.