The document discusses a new recommendation system using reinforcement learning, particularly for e-commerce and e-business applications. The system aims to help users find products or information that match their preferences. The approach differs from traditional systems by utilizing reinforcement learning, specifically the SARSA prediction method, along with an ε-greedy policy. The system comprises two models: a global model to understand overall user behavior and a local model to track individual user browsing history. The system collects explicit feedback from users through product ratings and implicit feedback from their browsing behavior.

Reinforcement learning is a powerful machine learning algorithm that involves trial-and-error learning. The system learns to perform appropriate actions by receiving evaluation feedback and aims to maximize the expected sum of future values for each state. The SARSA method, a type of on-policy TD control, is a major component of the reinforcement algorithm. It involves updating state-action pairs to capture the changing values between states, enabling the system to predict the next action or product of interest.

The system architecture includes a global model to understand overall user behavior and a local model to track individual user browsing history. The global model helps identify trends and popular products, while the local model records individual user behavior and makes personalized recommendations. The system uses Q-matrices to capture the changing values between states and update them based on user feedback.

One of the challenges highlighted in the document is the need to balance exploration and exploitation in the recommendation system. The ε-greedy policy is used to balance these aspects, allowing the system to explore new products while also exploiting the trends in user behavior. The document also discusses the space requirements for maintaining global and local state information for all users and suggests exploring data structure improvements to reduce space requirements.

To further improve the current methods and techniques, it is essential to address the challenges of maintaining global and local state information for all users. This could involve optimizing the weight for the Qtotal calculation and exploring data structure improvements to reduce space requirements. Additionally, further research could focus on finding the optimal ε value for balancing exploration and exploitation in the recommendation system.

In conclusion, the document presents a comprehensive overview of the new recommendation system using reinforcement learning, its architecture, and the results of experiments, providing valuable insights for the development of advanced recommendation systems in e-commerce and e-business. The application of reinforcement learning in this context offers a promising approach to personalized recommendations and user satisfaction. However, addressing the challenges and continuing to improve the methods and techniques will be crucial for the future development of recommendation systems.