



**Thomas Hock**  
Business Development



**Steven Pickardt**  
Scientific & Technical Assistant

New methods in machine vision and artificial intelligence in 3D Markerless Motion Capture Technology enable more easy, detailed and enhanced Analysis of athletes in various sports. Especially sports with a high demand on the individual technique like track & field or gymnastics will benefit from these new technologies. Performance Center like the Institute of Applied Training Science Germany (IAT) shows new ways in using new technology for athlete development for the future.

Key points from the session:

- Markerless motion capture is key for obtaining detailed movement analysis without an obstructive setup that may alter the athletes movement patterns
- IAT utilize markerless capture in both training and competition
  - Training capture enables on-going performance management throughout the year
  - Competition capture enables analysis of performance under the pressure of competition
- Mobile markerless motion capture systems are what enables the in-competition analysis, or variations in training environments
- The only requirements for analysis is for the camera system to be setup, which is done in advance. Athletes simply train, or compete as normal and the recorded video is analyzed in real-time

- Simi's markerless system can analyze video based on a variety of parameters, depending on what is deemed 'important' for a particular sport e.g. should-to-shoulder elevation, or center of gravity in discus throwing
- Markerless video analysis can enable you to monitor metrics that typically are measured in a lab e.g. acceleration, loading etc.
- Simi's system removes the manual processing of video, enabling large volume processing, and increasing the size of database for relevant comparisons