

**xsens**

Xsens  
3D Motion  
Tracking



# Xsens MVN used to control Siemens Jack in real time

'Where do you want to measure?'



**xsens**

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- Topics

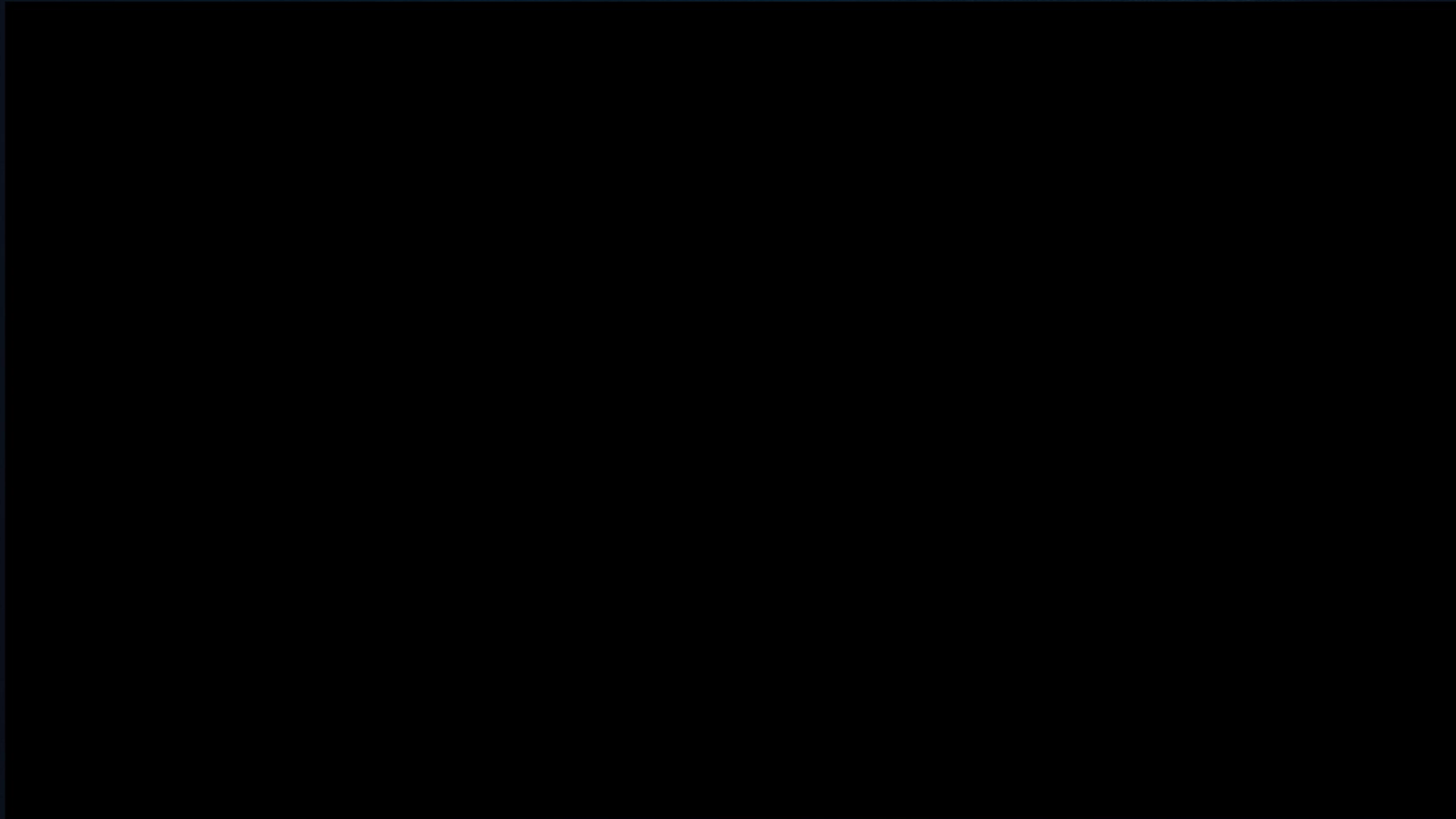
- Xsens
- Inertial Sensor Technology
  - Inertial measurement unit
  - Next step development
- Xsens MVN Analyze
- Xsens & Siemens Tecnomatix
- Demonstration

“Make Your Move”

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# xsens MVN Analyze



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- Xsens is the leading innovator in 3D motion tracking technology and products
- Founded in 2000
- HQ in Enschede, The Netherlands  
US office in Los Angeles, CA
- 80 employees
  
- As of October 2017, part of mCube  
mCube is the provider of the world's smallest MEMS motion sensors, key enablers for the Internet of Moving Things

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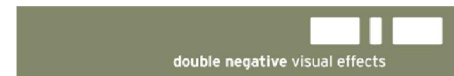
 Xsens office

 Xsens Distributor



## 3D Character Animation

- Full-body inertial motion capture
- 500+ studios worldwide
- 3D Character animation
  - Film
  - Game
  - Animations
  - Live Entertainment

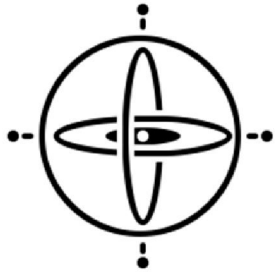




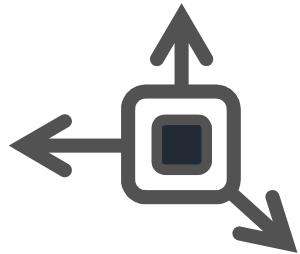
## Human Motion Measurement

- Full-body systems and Development Kits
- 300+ universities and institutes worldwide
- Human Motion Measurement
  - Ergonomics
  - Sports Science
  - Rehabilitation
  - Biomechanics





**Gyroscope**  
Primary source



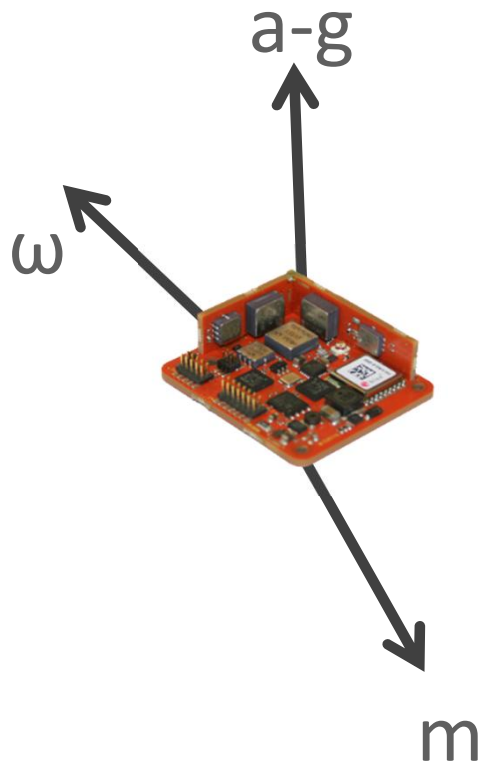
**Accelerometer**  
Secondary source



**Magnetometer**  
Secondary source







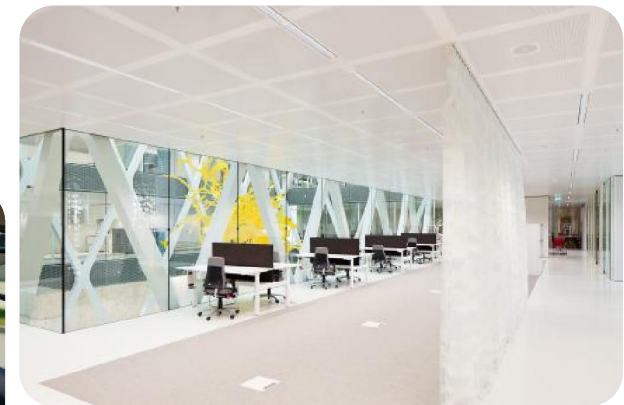
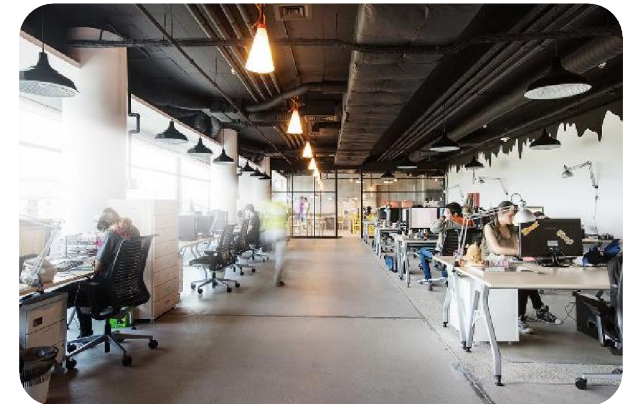
## Sensor Fusion

### Measure

- 3D angular velocity (rad/s)
- 3D acceleration ( $m/s^2$ )
- 3D earth magnetic field (mGauss)

### Calculate

- Drift free 3D absolute orientation



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# Fundamental Technology Breakthrough

- We've solved it!
- ✓ Fully magnetic immune
- ✓ 10 man years of development
- ✓ Beta program (30+ users)





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SIGMAX

SEMER

Wie zijn we?  
A-Team van 2020  
Kom jij ons team versterken?  
Bij ons werken betekent:

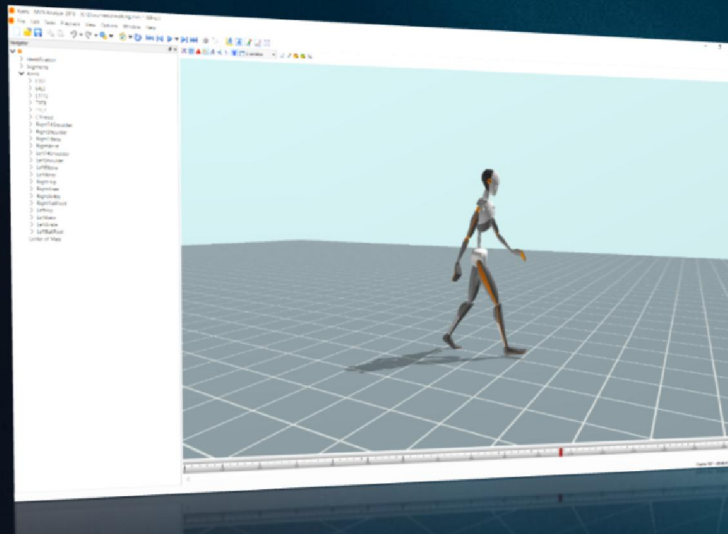
Wij zoeken:  
• Senior Software Developer  
• Project Manager  
• Full Stack Developer  
• Senior QA Specialist  
• IT Business Analyst  
• Product Manager  
• Product Owner  
• Business Development



PS-927-L



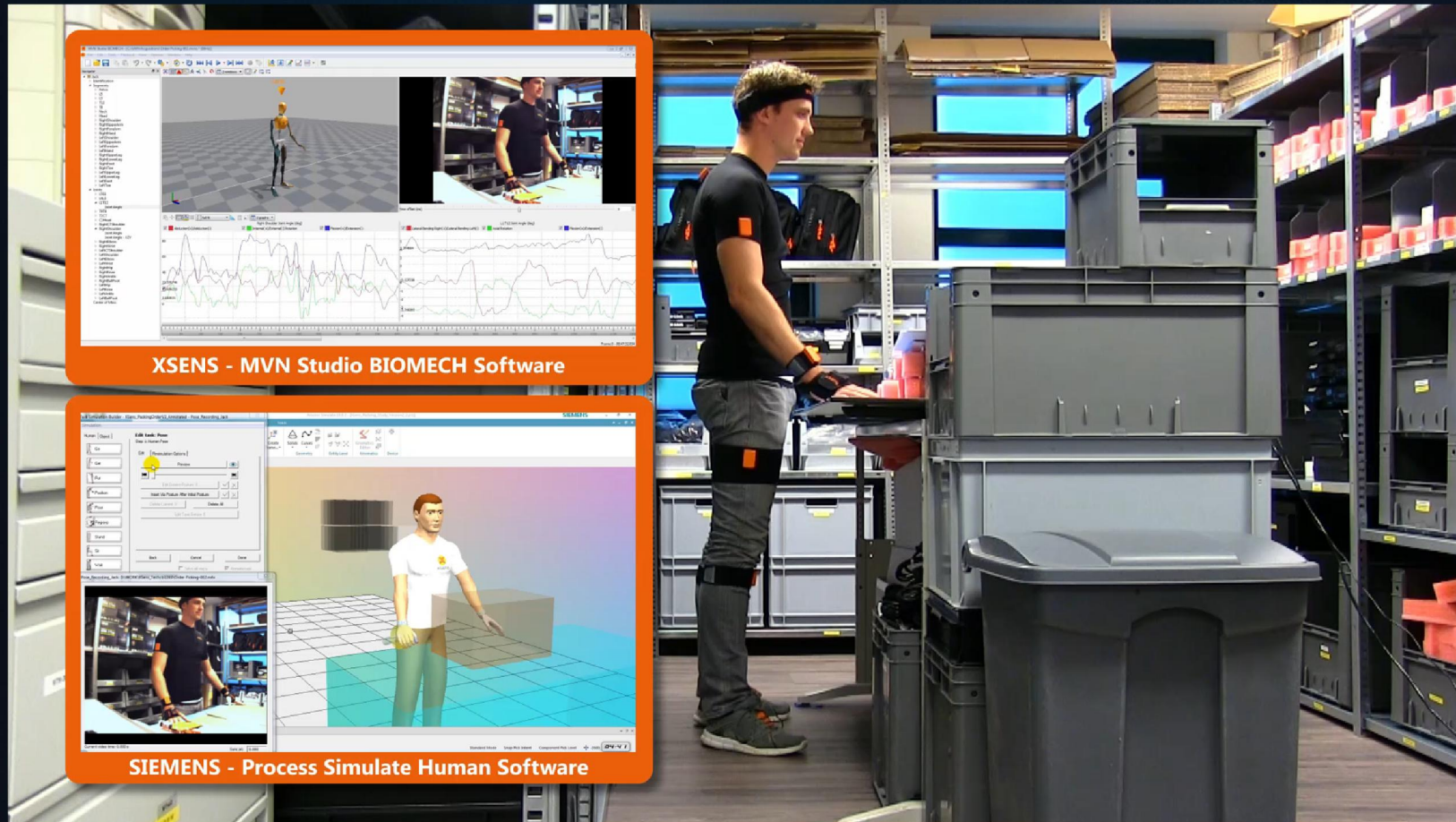
Hardware		Software
<b>MVN Link</b>	<b>MVN Awinda</b>	<b>MVN Animate</b>
Lycra suit	Strap-based	Production quality data
20 ms latency	30 ms latency	Animation Solver
17 wired trackers	17 wireless trackers	Multi person capture
9.5 hours battery life	6 hours battery life	Works with all 3D packages
240 Hz update rate	60 Hz update rate	Export in all formats



## MVN Analyze



# XSENS Xsens MVN Analyze & Siemens Jack



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Make your move!

What would you like to see?



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- Hardware:
  - MVN Link
  - MVN Awinda
- Software:
  - MVN Analyze
- Software licensing:
  - Annual subscription license
  - Lifetime license

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## TITLE



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## Back-up slides

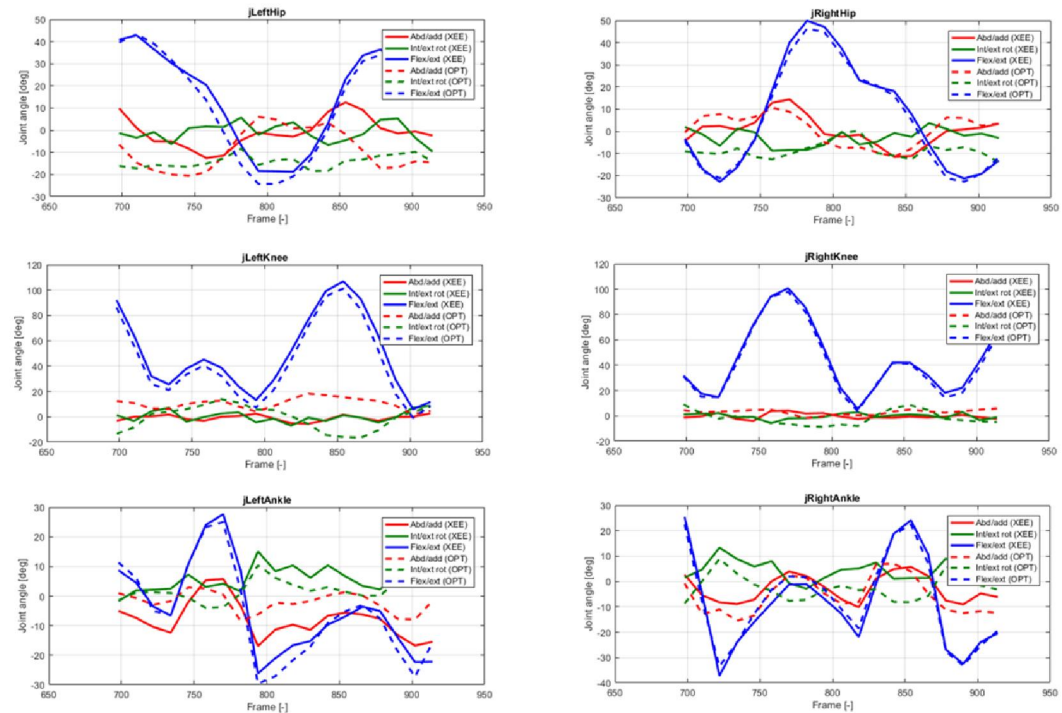
Comparison study  
MVN Analyse vs Optical





- Comparing Xsens New Engine to Optical
- Joint angle comparison of hip, knee and ankle joint

Comparison Study



	Abd/Add	Int/Ext	Flex/Ext
Overall rms diff	4.1	5.8	3.9
Hip rms diff	5.3	6.8	4.1
Knee rms diff	3.8	6.4	4.0
Ankle rms diff	2.7	3.5	3.5

- Comparison of hip, knee and ankle angle
- 11 subjects
- Different types of walking/running
- 743 trials
- Pose calibration provided using optical data