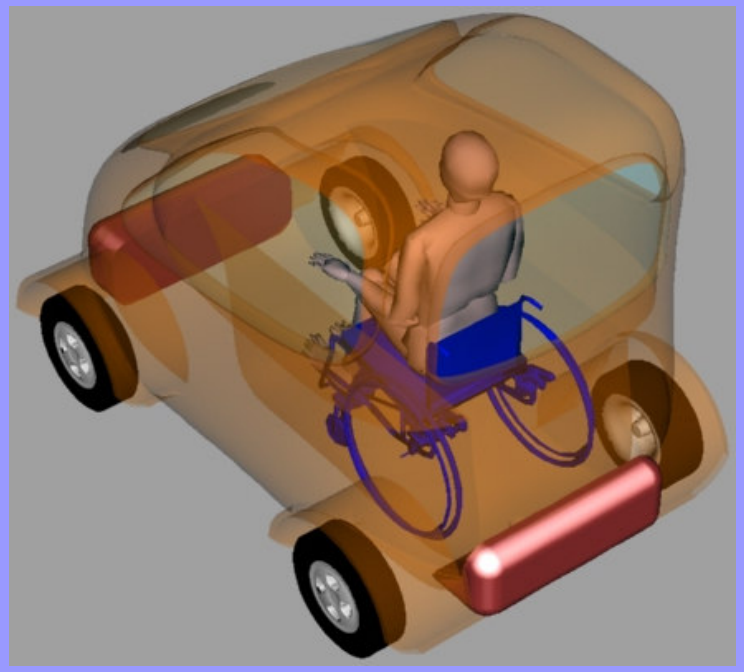
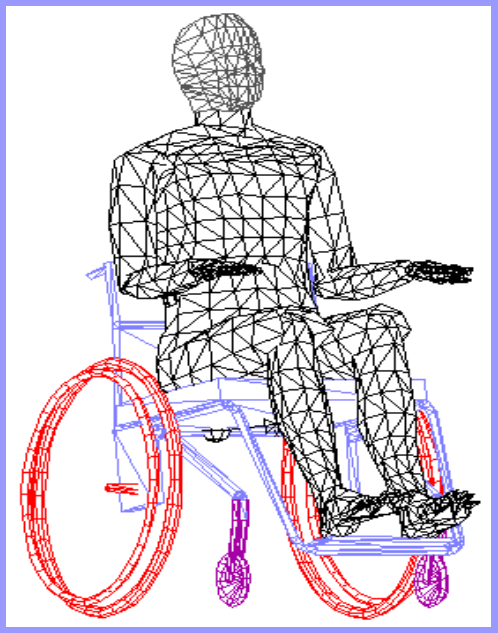
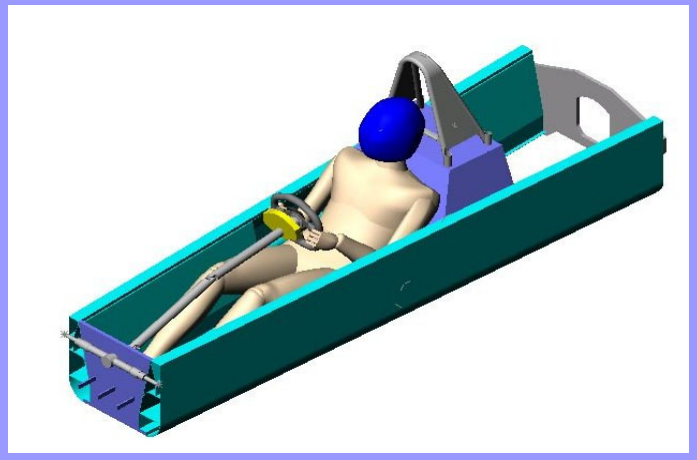
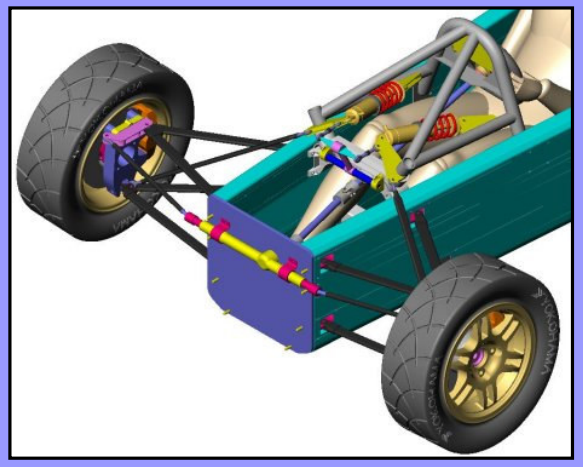
SVILUPPO DI METODOLOGIE INFORMATICHE PER IL REVERSE ENGINEERING DEL CORPO UMANO

A) Disegno di macchine con importante interfaccia con l'uomo



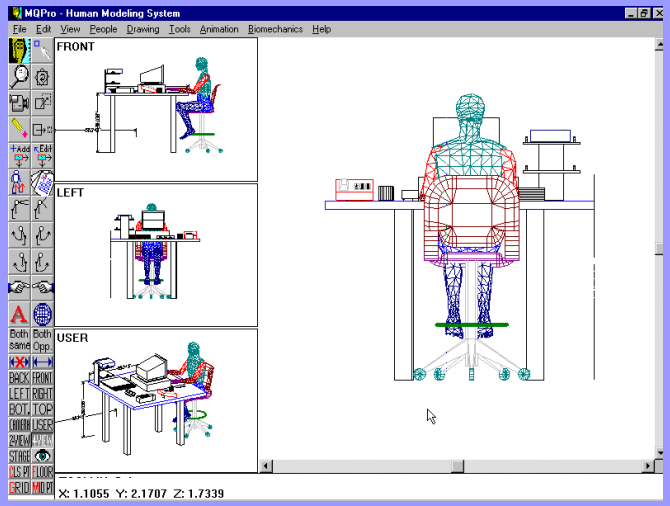






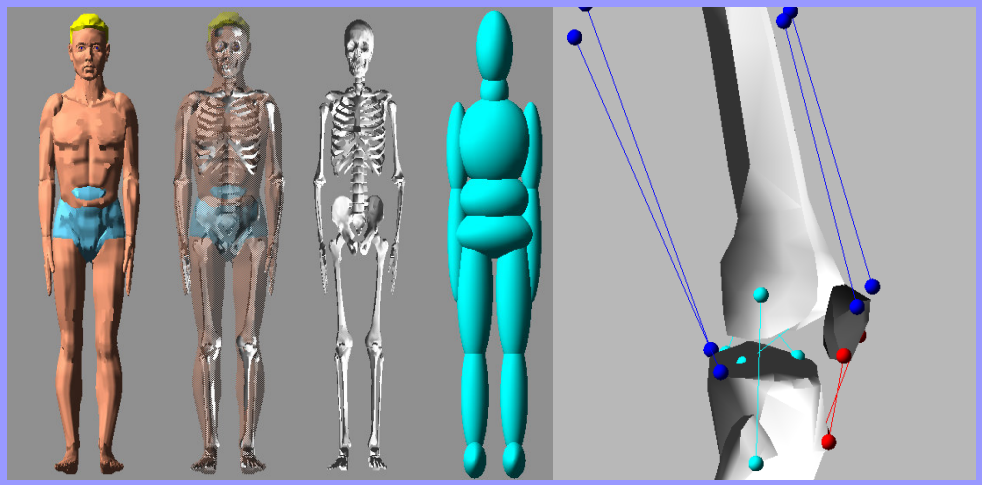
A) Solidworks Add-in: Software in Commercio

Modelli per animazione
(Poser,3DStudio, ecc.)



ManneQuin Pro - NexGen Ergonomics
Software CAE per analisi di ergonomia

Figure - MDI; Software CAE per analisi di ergonomia, cinematica e dinamica

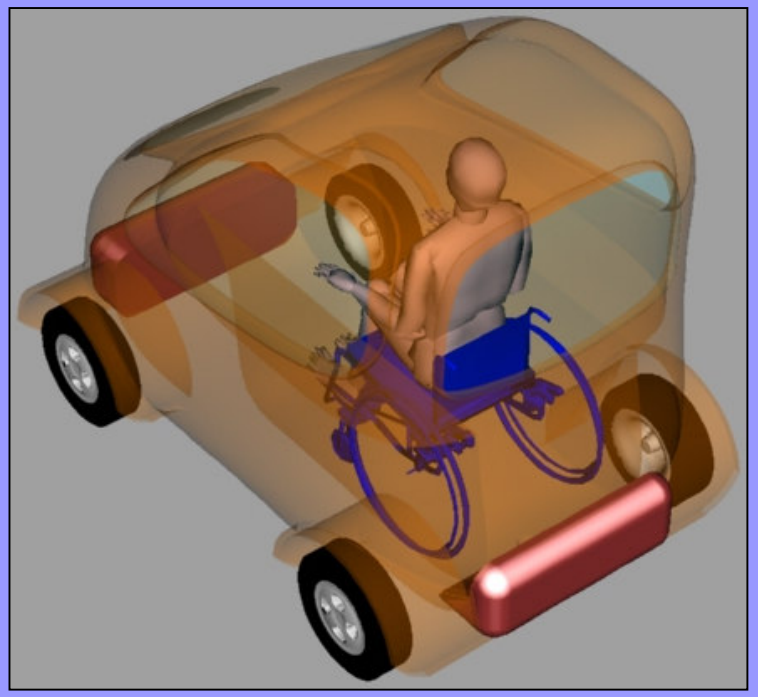


A) Solidworks Add-in: IDEA

Non creare un programma di ergonomia, ma definire uno strumento implementabile all'interno di un normale CAD 3D.

A) GENERATORE DI MODELLI UMANI

B) CAD 3D PARAMETRICO

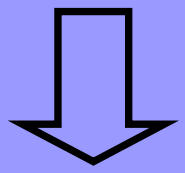


C) PROGETTO COMPLETO

A) Solidworks Add-in: Caratteristiche

Realizzazione di un tool integrato in SolidWorks:

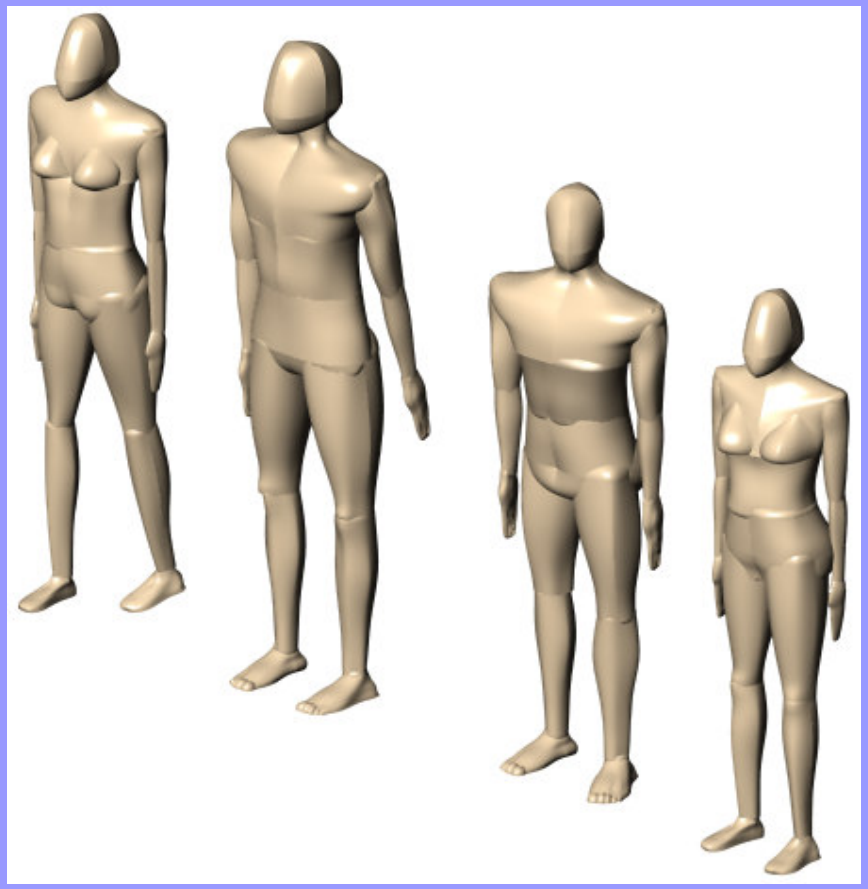
1. **Flessibile**
2. **Robusto**
3. **Di facile manutezione (correzione errori e inserimento nuove funzioni) anche da un NON programmatore.**

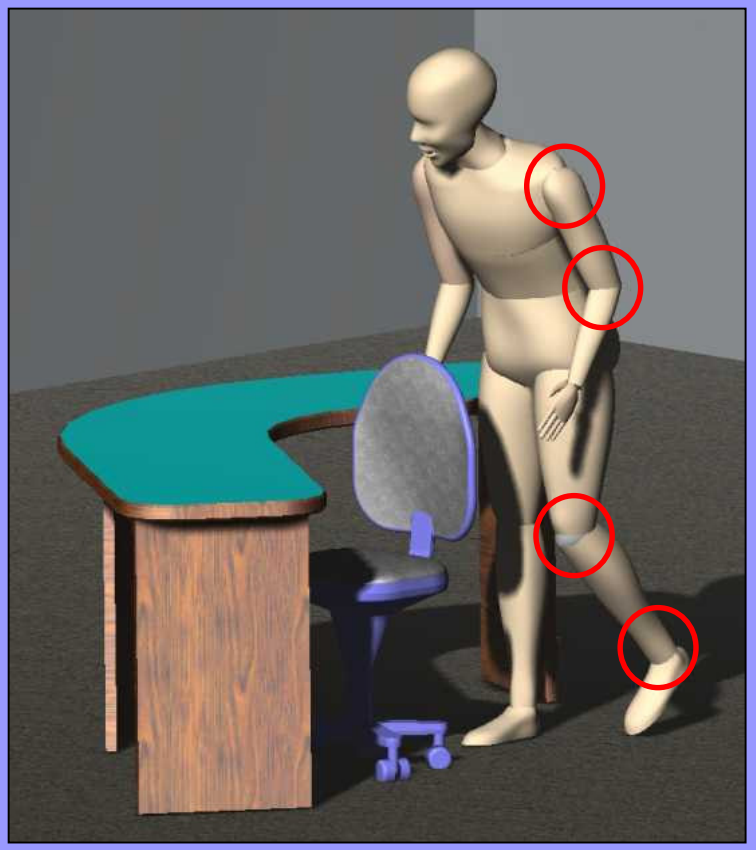


Soluzione :

Creazione del manichino attraverso un add-in che richiama una macro implementata in Visual Basic

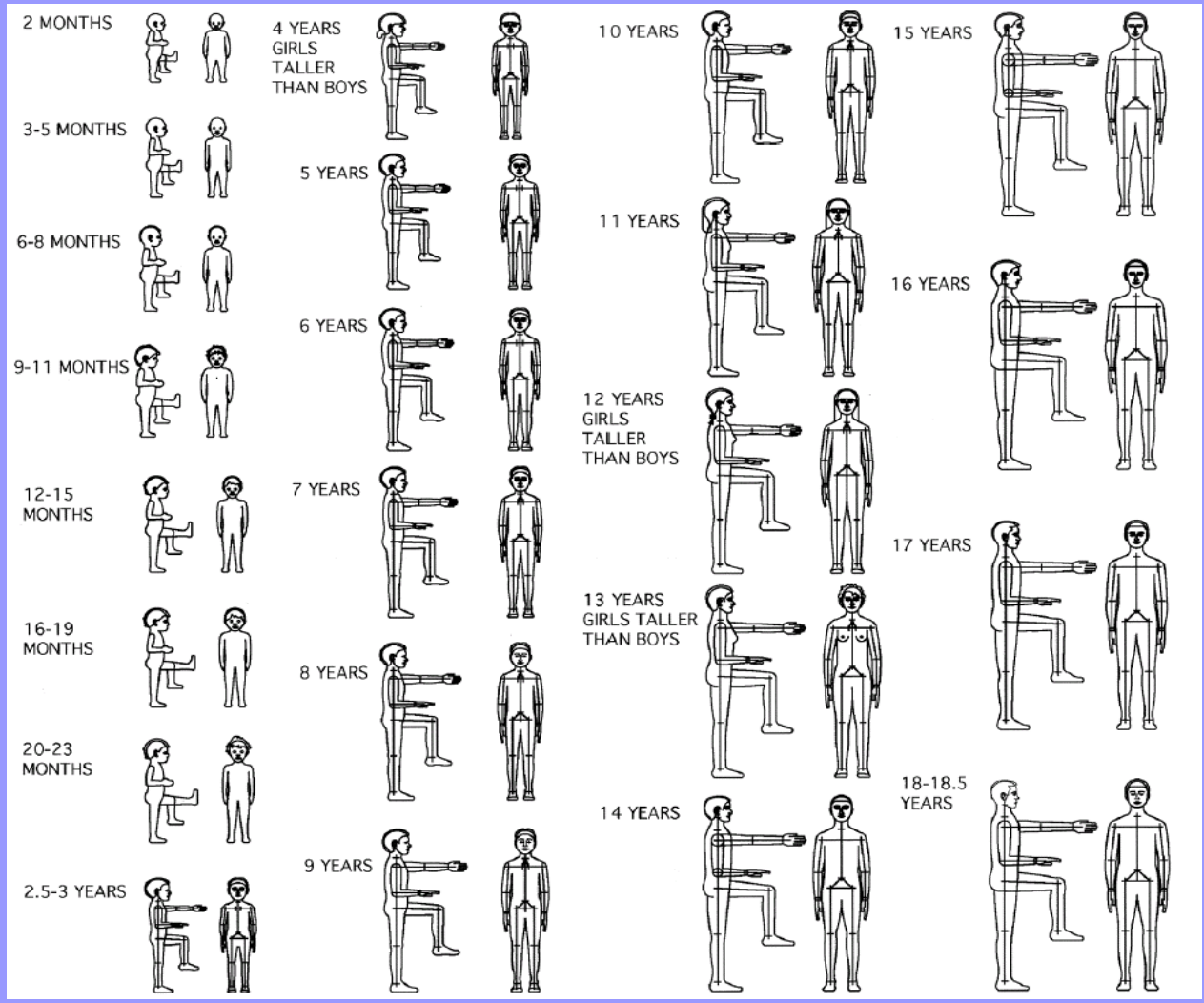
A) Solidworks Add-in: Limitazioni del modello esistente



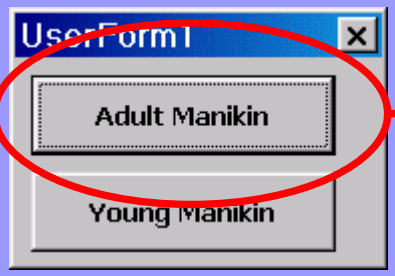


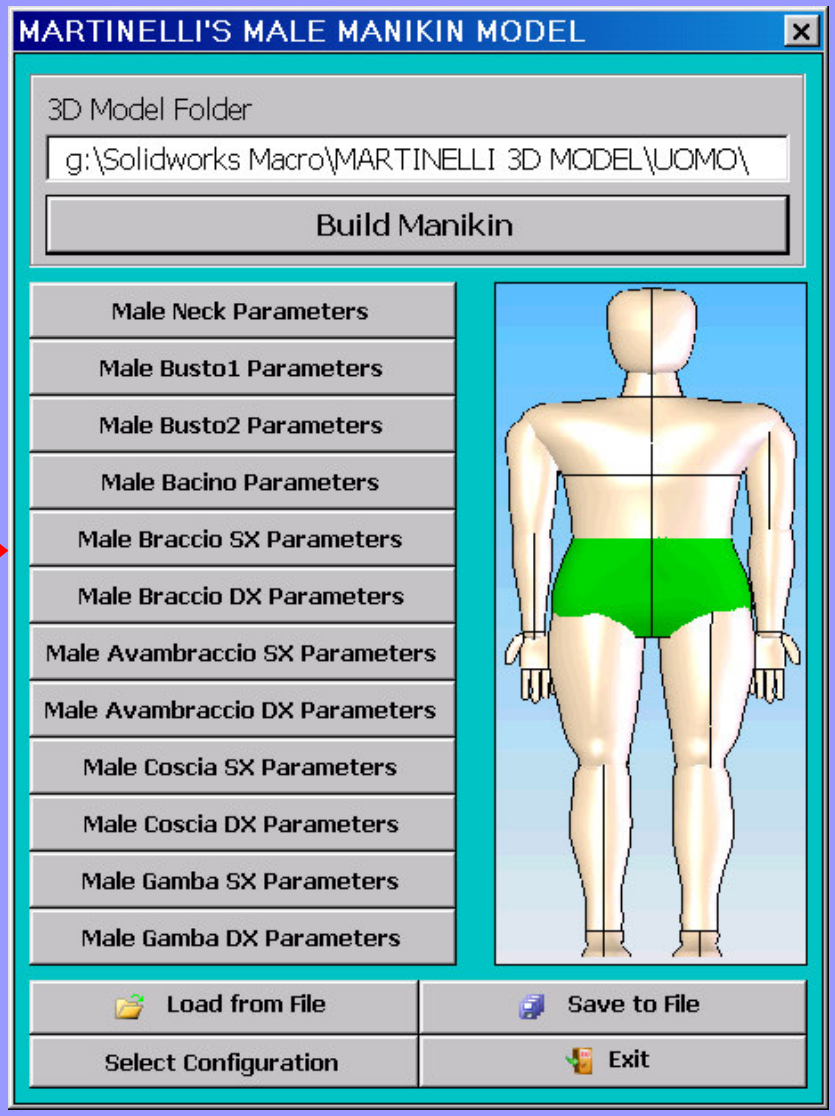
A) Solidworks Add-in: Riferimenti per il nuovo modello

"The Measure of Man & Woman", Henry dreyfuss Associates

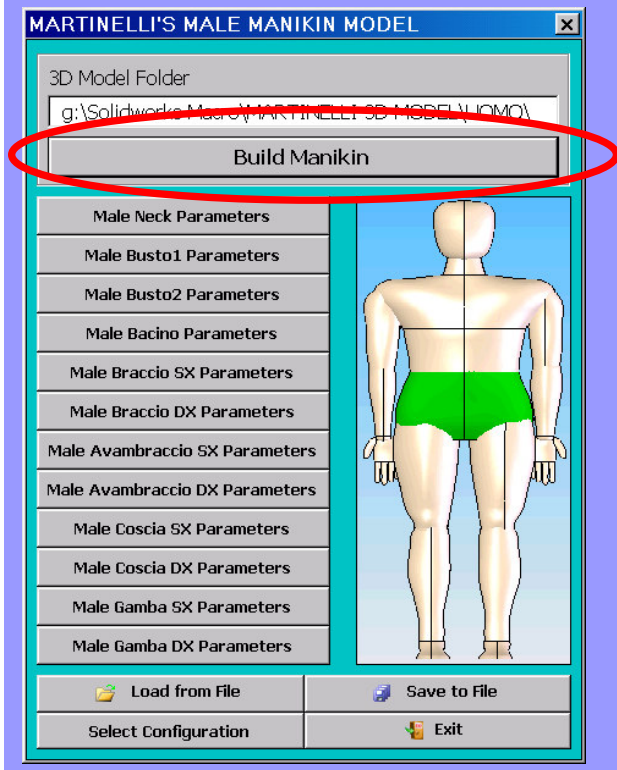


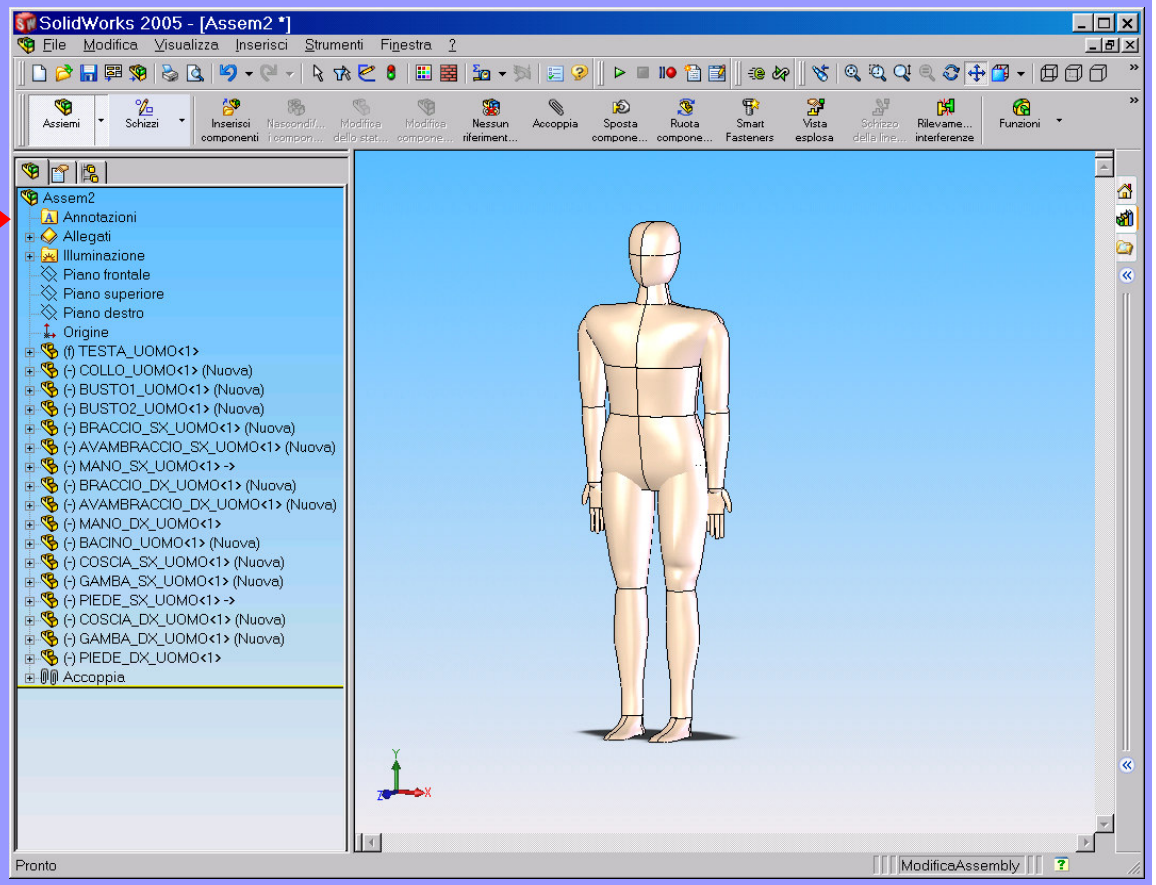
A) Solidworks Add-in: Selezione del modello iniziale



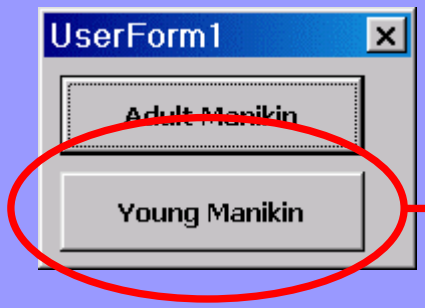


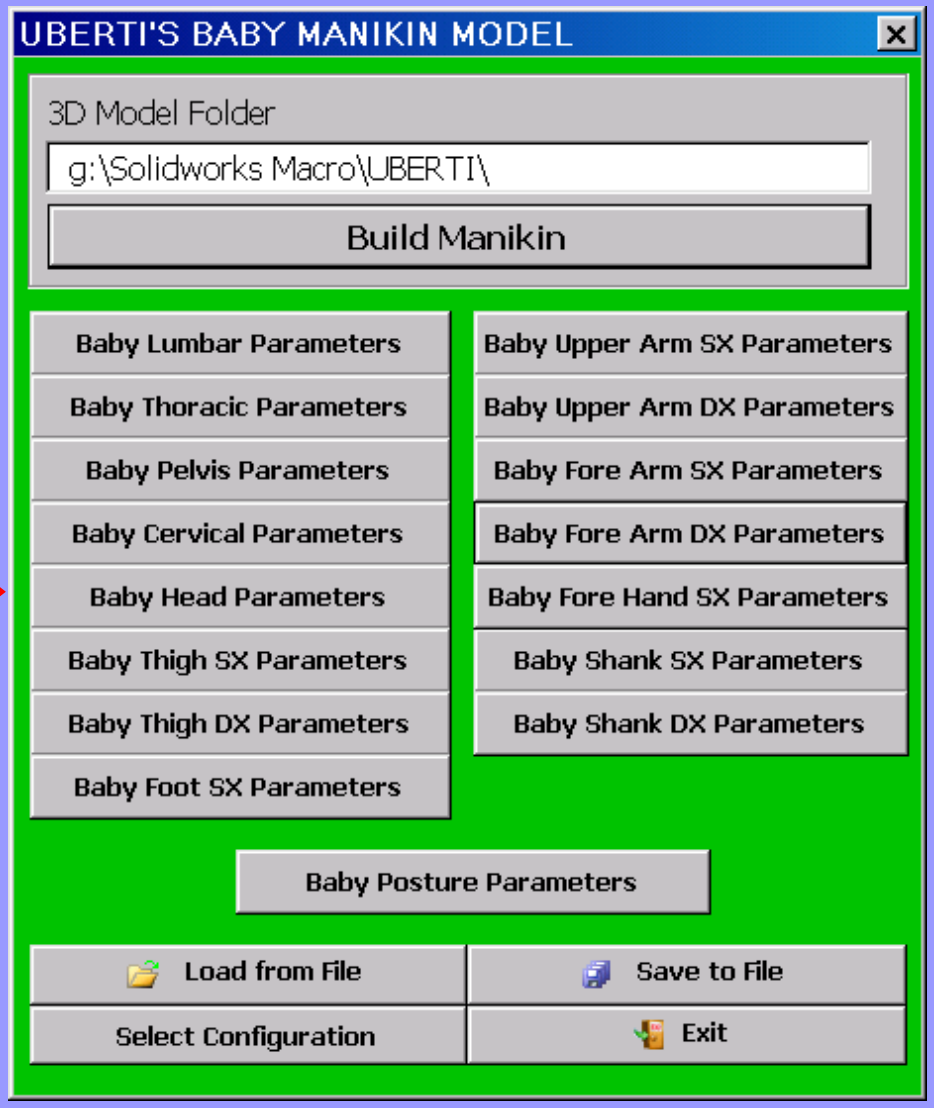
A) Solidworks Add-in: Creazione del modello Iniziale



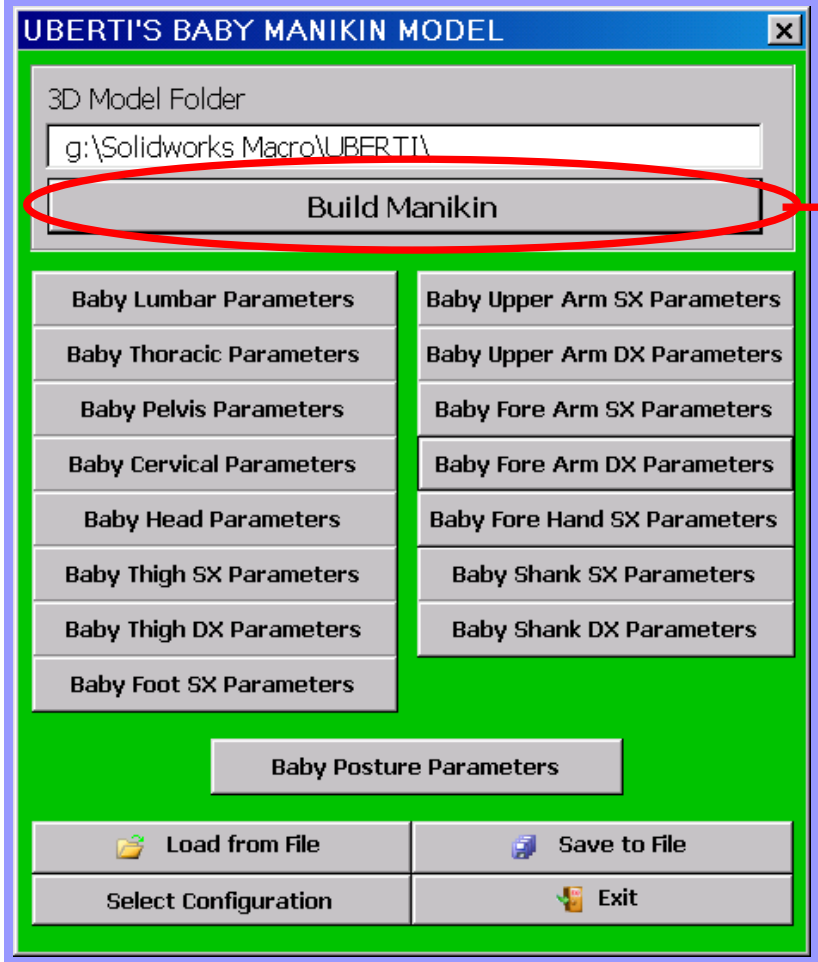


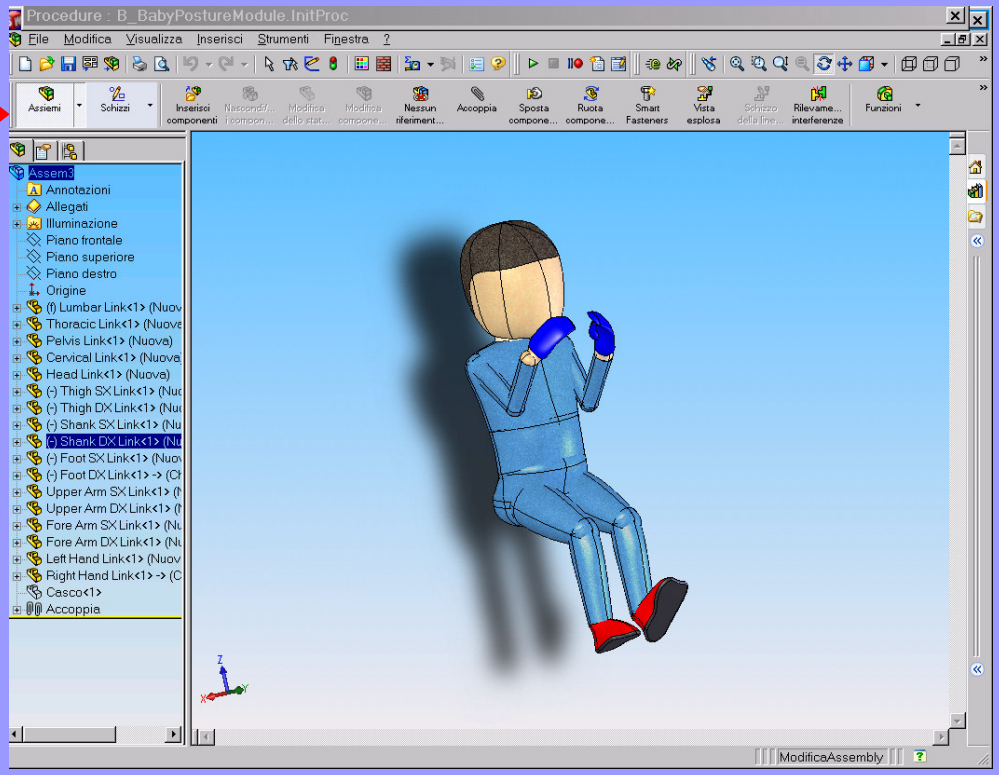
A) Solidworks Add-in: Selezione del nuovo modello



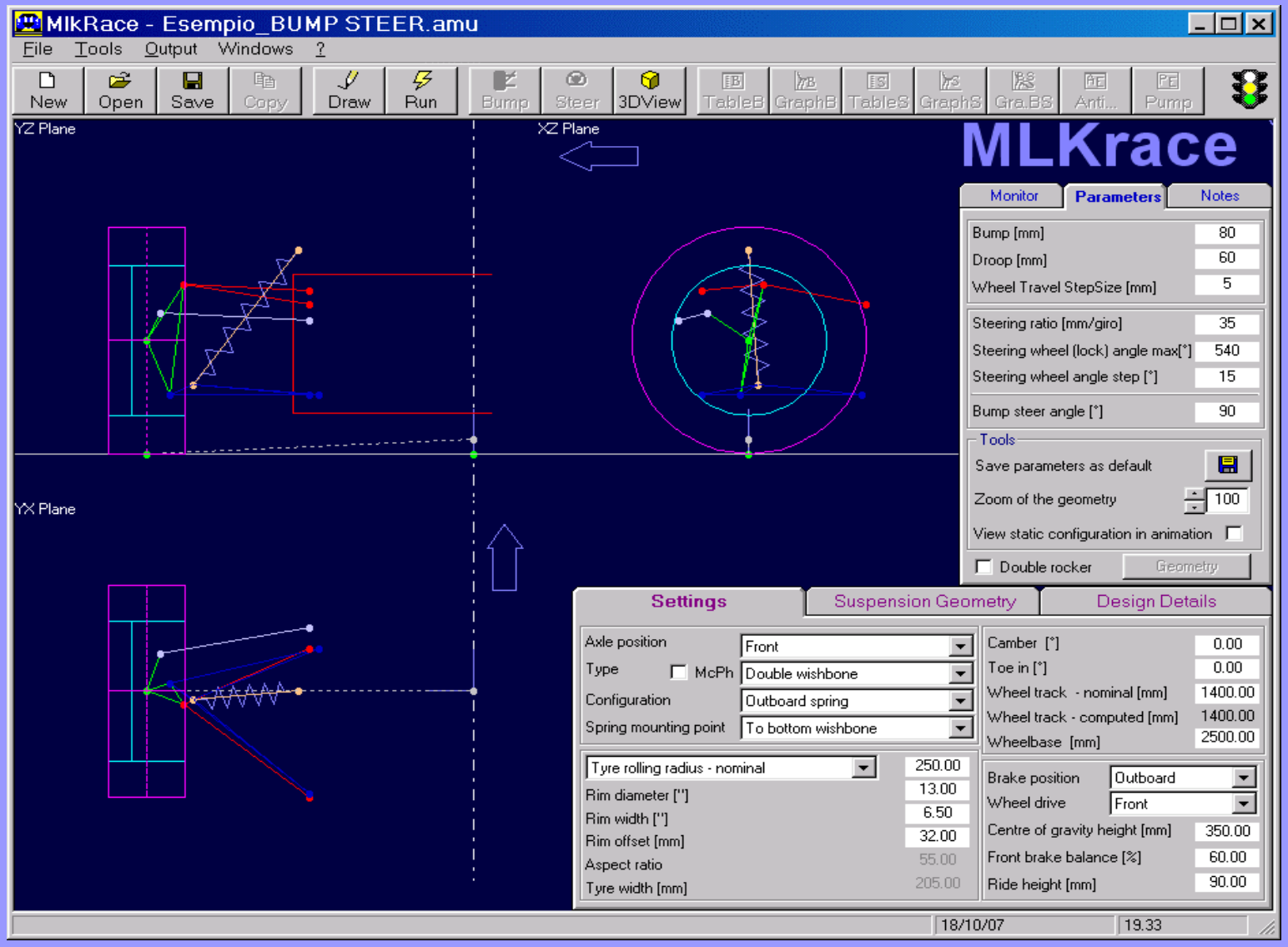


A) Solidworks Add-in: Nuovo Modello

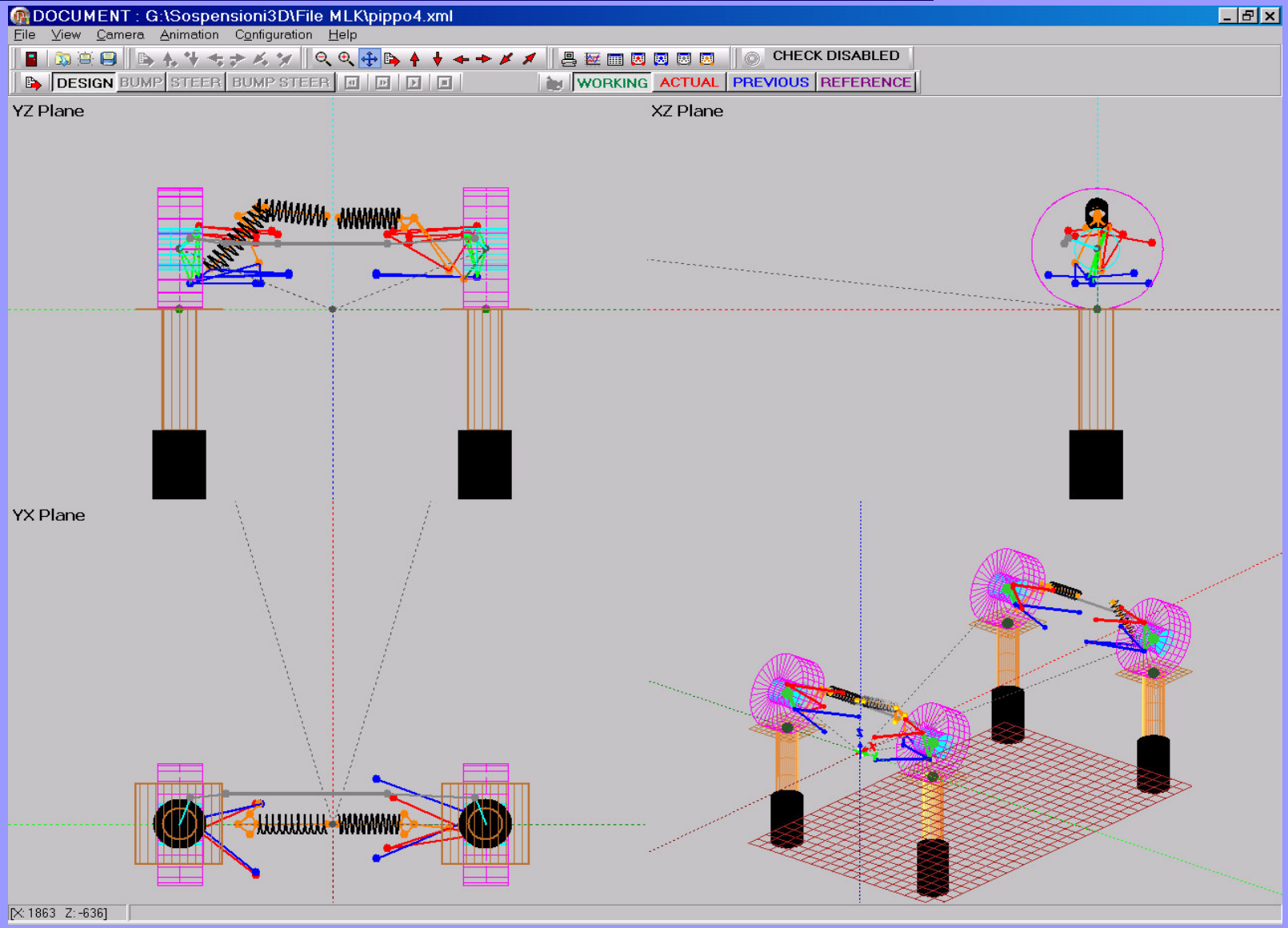




B) Elaborazione MLKRace: Stato Iniziale



B) Elaborazione MLKRace: Nuova Interfaccia



B) Elaborazione MLKRace: Strutture Dati

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  + <suspension></suspension>
  − <suspension>
      <iD>RearRight</iD>
    + <settingData></settingData>
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  − <steering>
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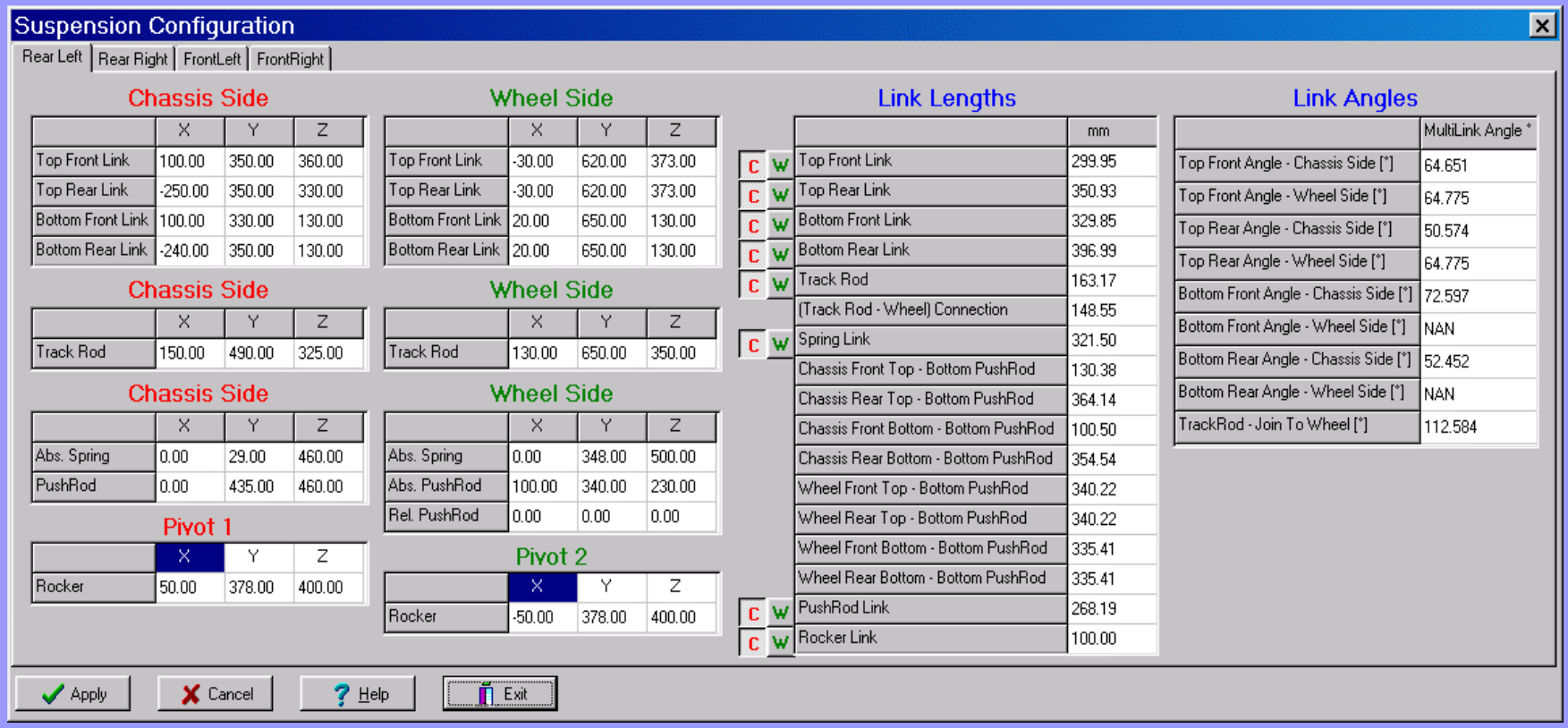
B) Elaborazione MLKRace: Geometria della Sospensione 1/2



Suspension Configuration

Rear Left | Rear Right | FrontLeft | FrontRight

Chassis Side

	X	Y	Z
Top Front Link	100.00	350.00	360.00
Top Rear Link	-250.00	350.00	330.00
Bottom Front Link	100.00	330.00	130.00
Bottom Rear Link	-240.00	350.00	130.00

Wheel Side

	X	Y	Z
Top Front Link	-30.00	620.00	373.00
Top Rear Link	-30.00	620.00	373.00
Bottom Front Link	20.00	650.00	130.00
Bottom Rear Link	20.00	650.00	130.00

Chassis Side

	X	Y	Z
Track Rod	150.00	490.00	325.00

Wheel Side

	X	Y	Z
Track Rod	130.00	650.00	350.00

Chassis Side

	X	Y	Z
Abs. Spring	0.00	29.00	460.00
PushRod	0.00	435.00	460.00

Wheel Side

	X	Y	Z
Abs. Spring	0.00	348.00	500.00
Abs. PushRod	100.00	340.00	230.00
Rel. PushRod	0.00	0.00	0.00

Pivot 1

	X	Y	Z
Rocker	50.00	378.00	400.00

Pivot 2

	X	Y	Z
Rocker	-50.00	378.00	400.00

Link Lengths

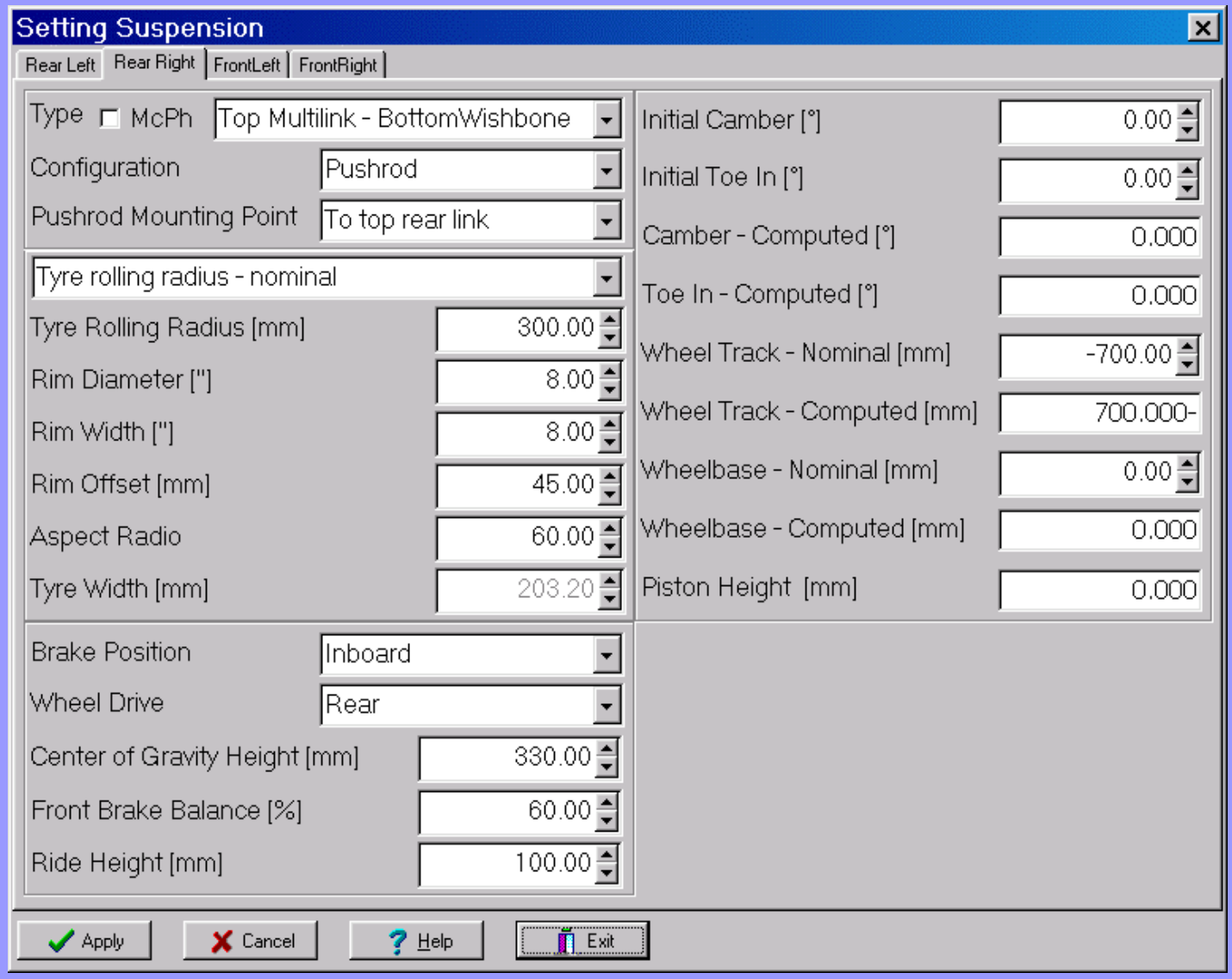
	mm
Top Front Link	299.95
Top Rear Link	350.93
Bottom Front Link	329.85
Bottom Rear Link	396.99
Track Rod	163.17
(Track Rod - Wheel) Connection	148.55
Spring Link	321.50
Chassis Front Top - Bottom PushRod	130.38
Chassis Rear Top - Bottom PushRod	364.14
Chassis Front Bottom - Bottom PushRod	100.50
Chassis Rear Bottom - Bottom PushRod	354.54
Wheel Front Top - Bottom PushRod	340.22
Wheel Rear Top - Bottom PushRod	340.22
Wheel Front Bottom - Bottom PushRod	335.41
Wheel Rear Bottom - Bottom PushRod	335.41
PushRod Link	268.19
Rocker Link	100.00

Link Angles

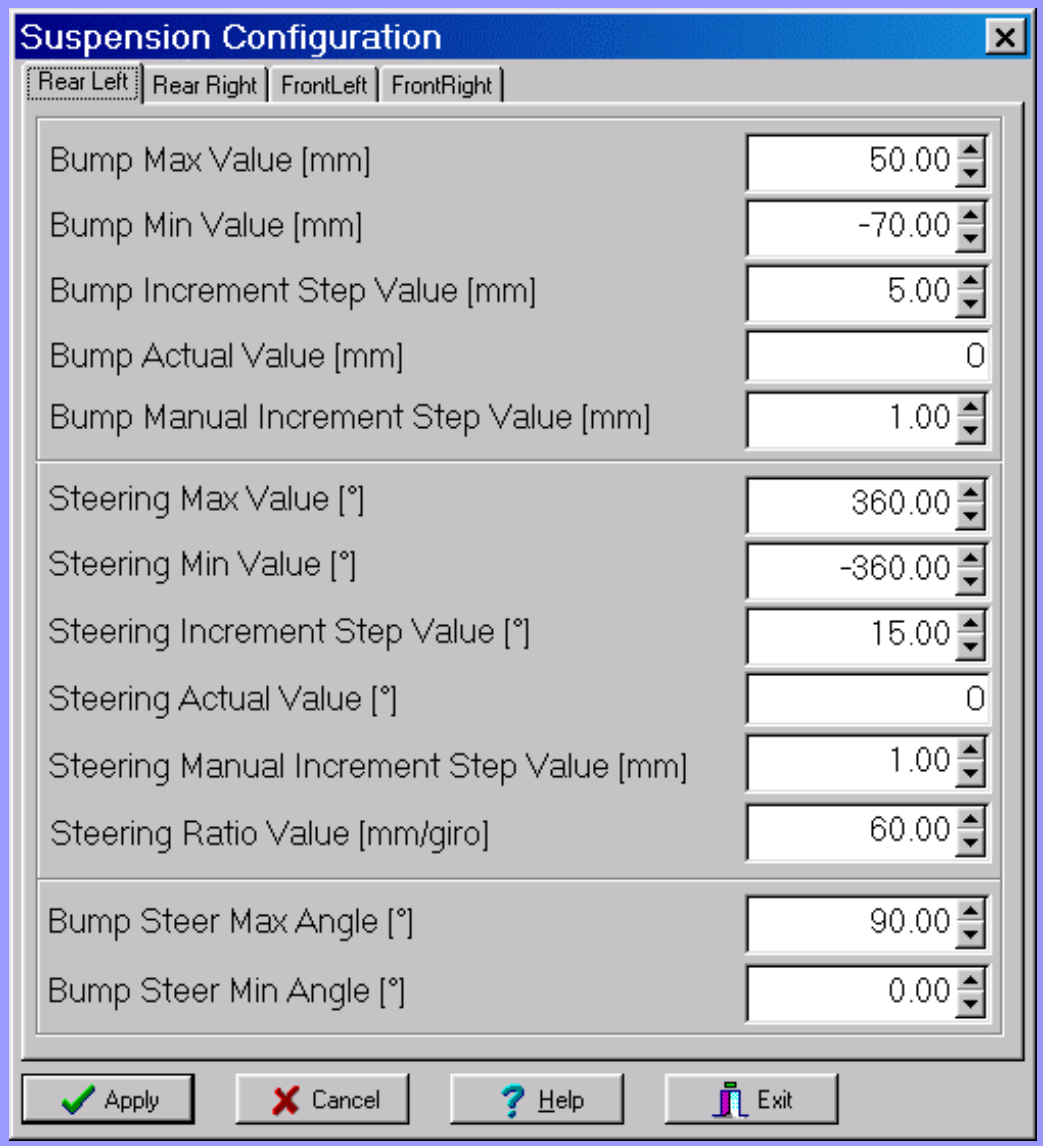
	MultiLink Angle °
Top Front Angle - Chassis Side [°]	64.651
Top Front Angle - Wheel Side [°]	64.775
Top Rear Angle - Chassis Side [°]	50.574
Top Rear Angle - Wheel Side [°]	64.775
Bottom Front Angle - Chassis Side [°]	72.597
Bottom Front Angle - Wheel Side [°]	NAN
Bottom Rear Angle - Chassis Side [°]	52.452
Bottom Rear Angle - Wheel Side [°]	NAN
TrackRod - Join To Wheel [°]	112.584

Apply | Cancel | Help | Exit

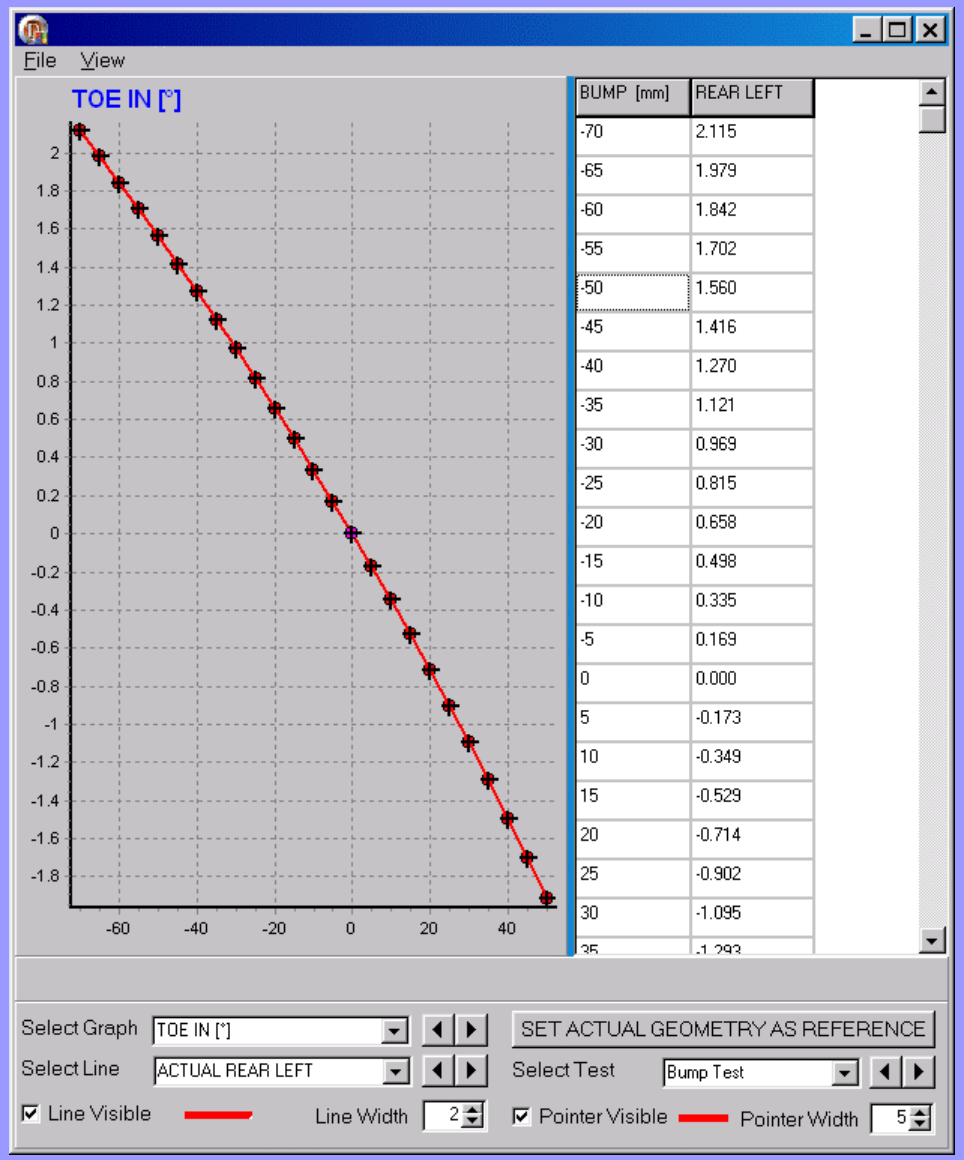
B) Elaborazione MLKRace: Geometria della Sospensione 2/2



B) Elaborazione MLKRace: Parametri di elaborazione



B) Elaborazione MLKRace: Grafici dei risultati



C) Corsi di formazione in B&R automation

- **MOTIVAZIONE: Entrare in contatto con una delle principali aziende nel settore dell'automazione industriale.**

- **CORSI FREQUENTATI:**

1. **Ambiente di sviluppo: Automation Studio**
2. **Visual Component: tool integrato per la realizzazione di scada**
3. **Motion: modulo per la gestione della movimentazione dei motori (CNC, camme…)**

... grazie

Università degli studi di Brescia