

Technical meeting ISSS

User tests for development and evaluation of artificial turf: a necessity

TNO Industrial Technology



John Willems

May, 2004



SOCRATURF project

European CRAFT project 2002-2004



Consortium

- **Fibre manufacturer**
 - Ten Cate Thiolon (NL)
- **Tufter**
 - Edel Grass (NL)
 - Poligras (ESP)
 - Saltex (FI)
- **R&D performers:**
 - IBV (ESP)
 - TNO (NL)

Goal

SOCRATURF project:

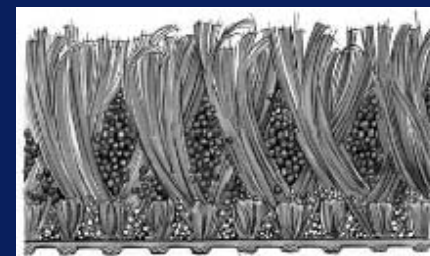
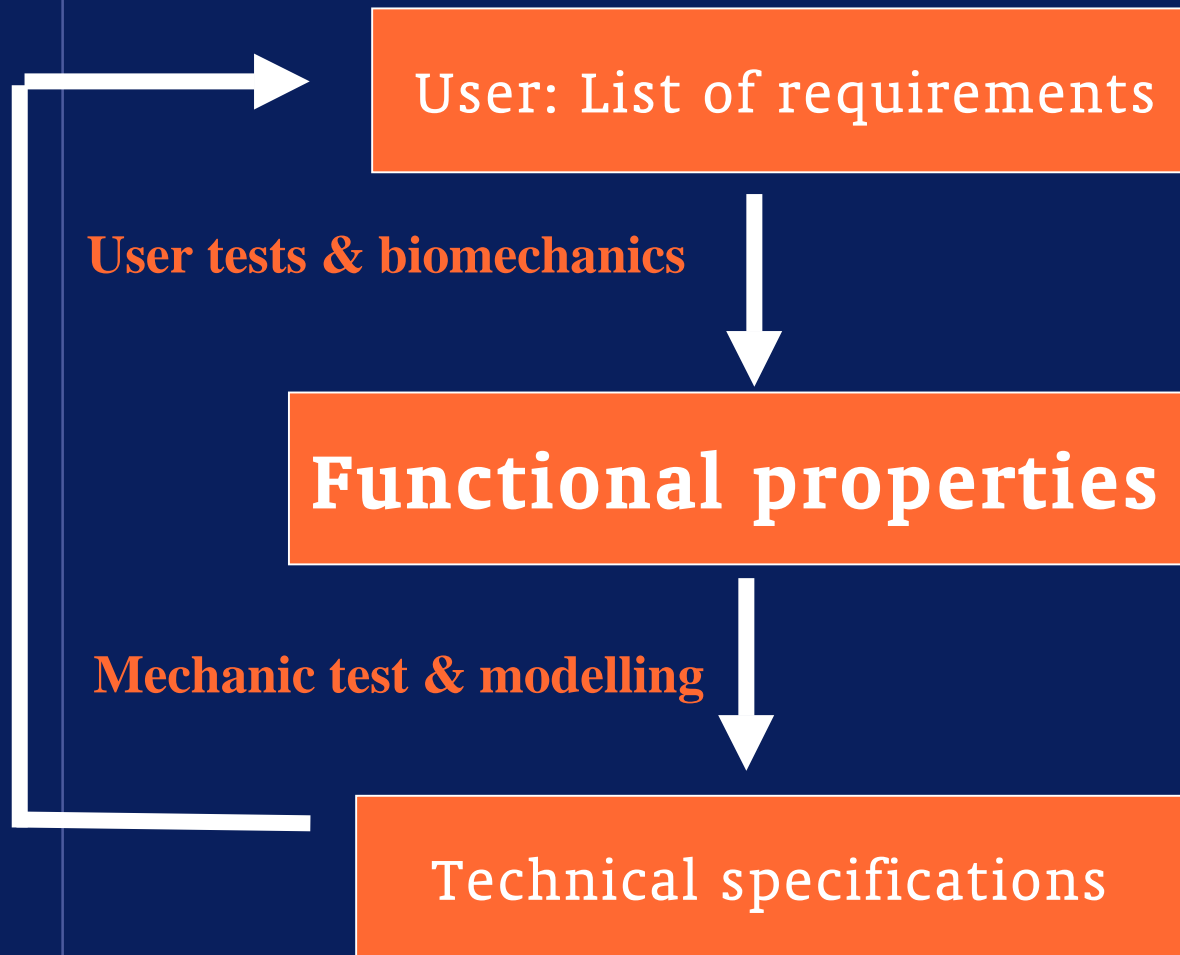
**User oriented product development of artificial turf
with optimal functional performance**

ISSS (1985):

**achievement of optimal and consistent conditions for
playing surfaces, technical control for manufacturers**

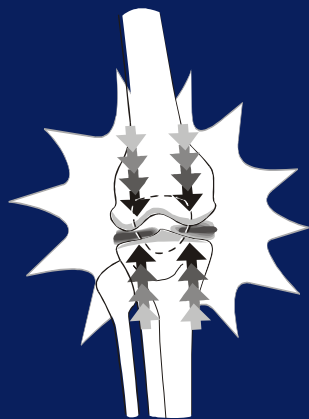


Our approach: User oriented product development

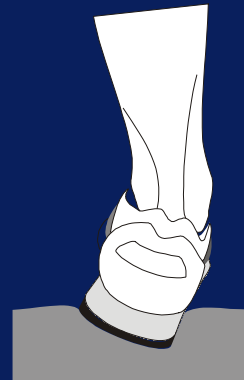


Main sport technical aspects

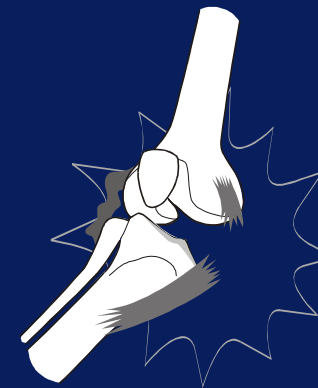
- Shock absorption and elasticity
- Stability
- Sliding friendliness
- Grip (linear and rotational)
- Ball behaviour and interaction



Low shock absorption



Uneven deformation



Excessive fixation



Circuit with soccer specific exercises



Critical properties of fields in general

Property	Current fields (5)	New type fields (3)
Hardness	good/too hard	good
Linear grip	high/too much	high/too much
Sliding	bad	bad
Ball control	good	good
Ball chipping	reasonable/bad	reasonable
Ball bounce	high (not too high)	high (not too high)
Ball rolling	fast/too fast	fast (not too fast)

and...

Conclusions (I)

User test provides useful information

- Validity of mechanical test methods
- Direction for improvement
- When mechanical tests are not available

User test shows:

- Not always consensus
- Reference of the player is important
- Players like what they are used to

 **Trained panel of players**



Conclusions (II)

- Critical aspects are shock absorption, grip, ball chipping & speed, sliding (and wear of shoes)
- New prototype fields (just installed) perform better (shockabsorption, ball chipping and -speed)



There is no standard method for several critical aspects which can be improved !

Statements

- **User tests are necessary to evaluate and develop new fields**
- **Improvement of standard methods and criteria should be done by multi disciplinary teams**
- **Development of pitches and shoes should be done together**

Next step in the evolution of soccer...

