

PPP: FoF Topic FOF NMP - 2012- 6

Title Ergo Lean: design stage lean ergonomics

FOF NMP 6 Knowledge based tools and approaches for process planning and integrated process simulation at factory level.

Objectives:

Integrated ergonomics process simulation for human System interaction

Early stage ergonomics simulation tools

Knowledge based tools for production planning

Predict production ergonomics design issues at **planning stage**

Process behaviour: Productivity losses, quality losses, injuries

Expected results:

Productivity: Higher value added jobs: human effort (lean ergonomics)

Quality: Reduction in human related quality problems from design stage

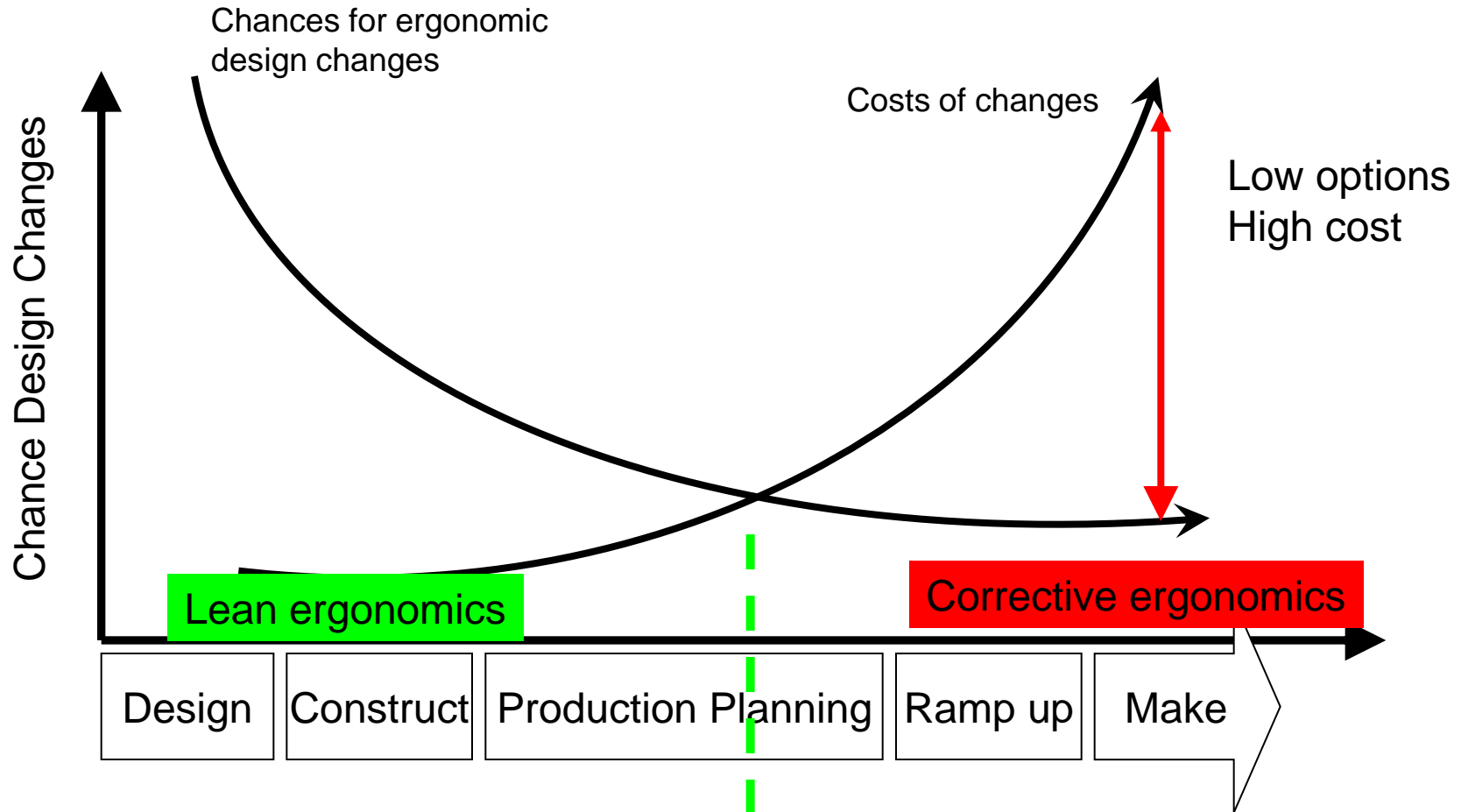
Injuries: Lower injuries through better quality ergonomics

Ergonomics @ University of Limerick

- Chairman of the Irish Ergonomics Society
- Manufacturing ergonomics & human robotic interaction
- Financial modelling of ergonomics

- Collaborative work with industry
 - Meat deboning, heavy processing, Automobile, electronics & many more.....
 - Human robotics
- Streamlined ethics procedures for testing

Lean Ergonomics



ErgoLean: Large and SMEs

Safety: Posture and psychosocial simulation

Task planning details (MTM and task details)

Posture simulation & evaluation

Psychosocial prediction: Job demands & control

Quality prediction

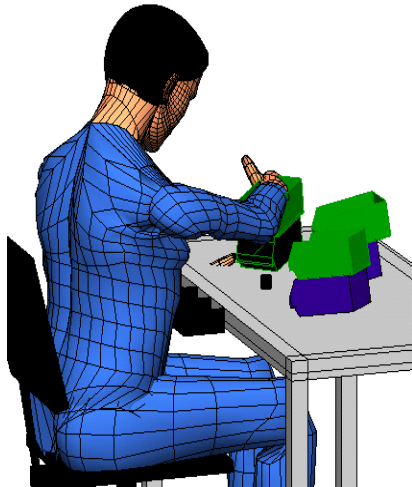
Human error FMEA

Integrated with task design

Effort/precision assessment

Job demands/control

Design guide



Ergo Productivity optimisation

Human motion analysis

Effort value analysis

Ergonomics productivity analysis

Productivity optimisation

FOF ICT 7.1 Smart Factories: novel processes

a) Demonstration, benchmarking of process automation & control (IP)

Objectives:

ICT methods to predict and monitor human aspects of productivity and quality

Expected results:

Productivity: Higher value added jobs: human effort (lean ergonomics)

Quality: Reduction in human related quality problems from design stage

Injuries: Lower injuries through better quality ergonomics

PPP: FoF/EeB/EGCI

Topic FOF ICT -2012- ICT 7.1

Title Smart Factories: Energy aware, agile mfg, & cust.

FOF ICT 7.1 Smart Factories

b) Large-scale validation of advanced industrial robotics systems

Objectives:

User friendly human robotic interaction

Human effort and human effort sustainability

Expected results:

Productivity: Higher value added jobs: human effort (lean ergonomics)

Quality: Reduction in human related quality problems from design stage

Injuries: Lower injuries through better quality ergonomics

- Energy efficiency
 - Energy expenditure analysis
 - Whole body & localised body region
 - Performance shaping factor for human motor control
- Force application in interaction
 - Electromyography methods to monitor and record physical interaction
 - Feedforward loop for robotic control
- Productivity & Quality modeling