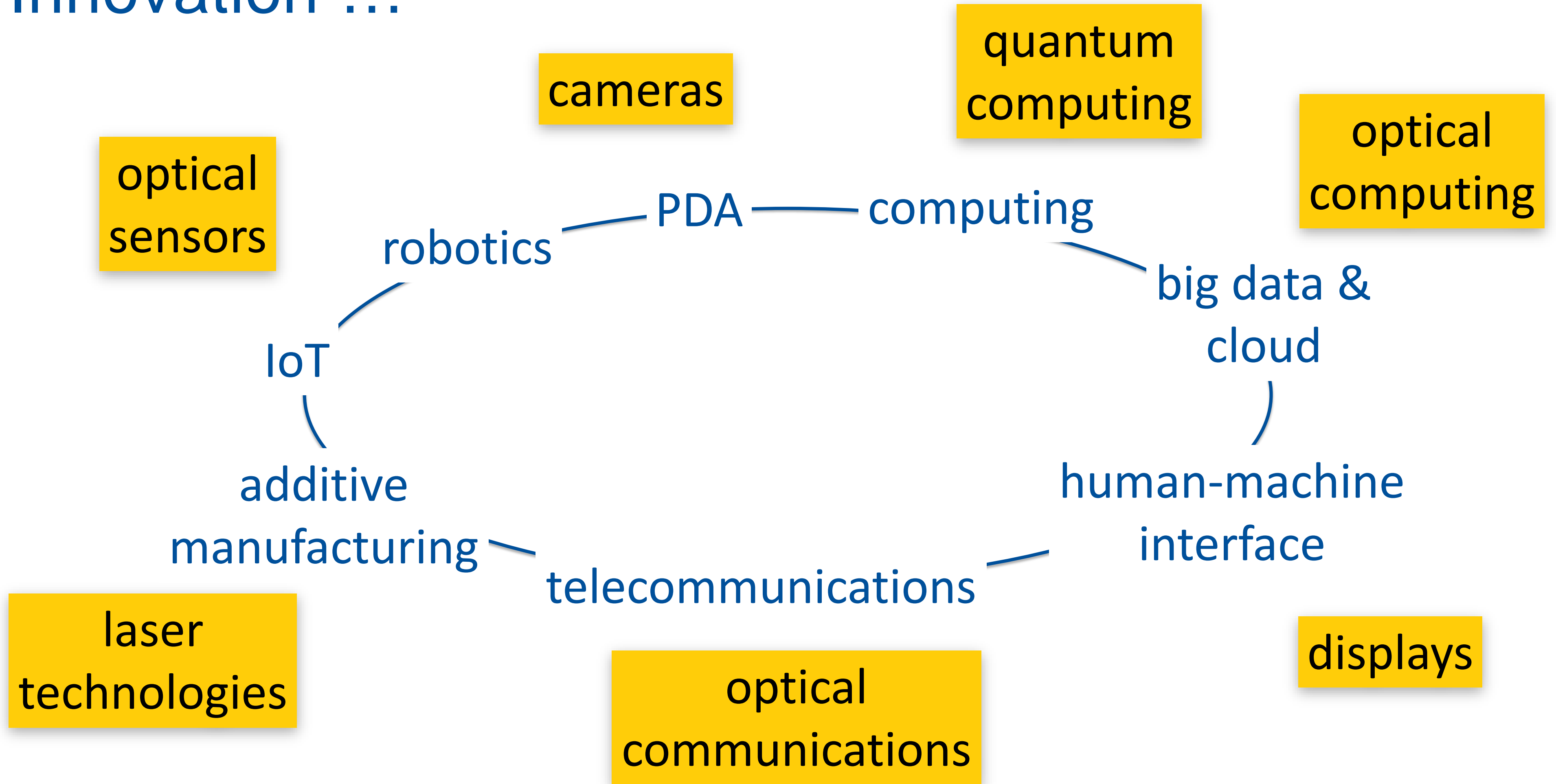


Research Data Management in the Cluster of Excellence PhoenixD

Reinhard Caspary



Innovation ...



... Across Disciplines

	experimental	→	theoretical
Mechanical Engineering	match/LUH	IMPT/LUH	IPeG/LUH
	IFUM/LUH	IFW/LUH	ITA/LUH
		IDS/LUH	IKM/LUH
		IFA/LUH	
Electrical Engineering	IHT/TUBS	IHF/TUBS	
Material Science		IW/LUH	
Chemistry	ITC/TUBS	PCI/LUH	ACI/LUH
Physics	HOT	PTB	LZH
		AEI/MPG	IQO/LUH
Computer Science		IPI/LUH	ICG/TUBS
			tnt/LUH
Mathematics			IfAM/LUH

Chemistry

Example: **Material synthesis**

Preparation

Literature research, prepare recipe

Processing

Setup, settings, in-line measurements

Post-Processing

Product analysis, material extraction, yield

Application

Comparison, next experiments → **provide material parameters**



Physics

Example: **Laser writing of optical waveguide**

Preparation

Functional design, calculations, simulations

Processing

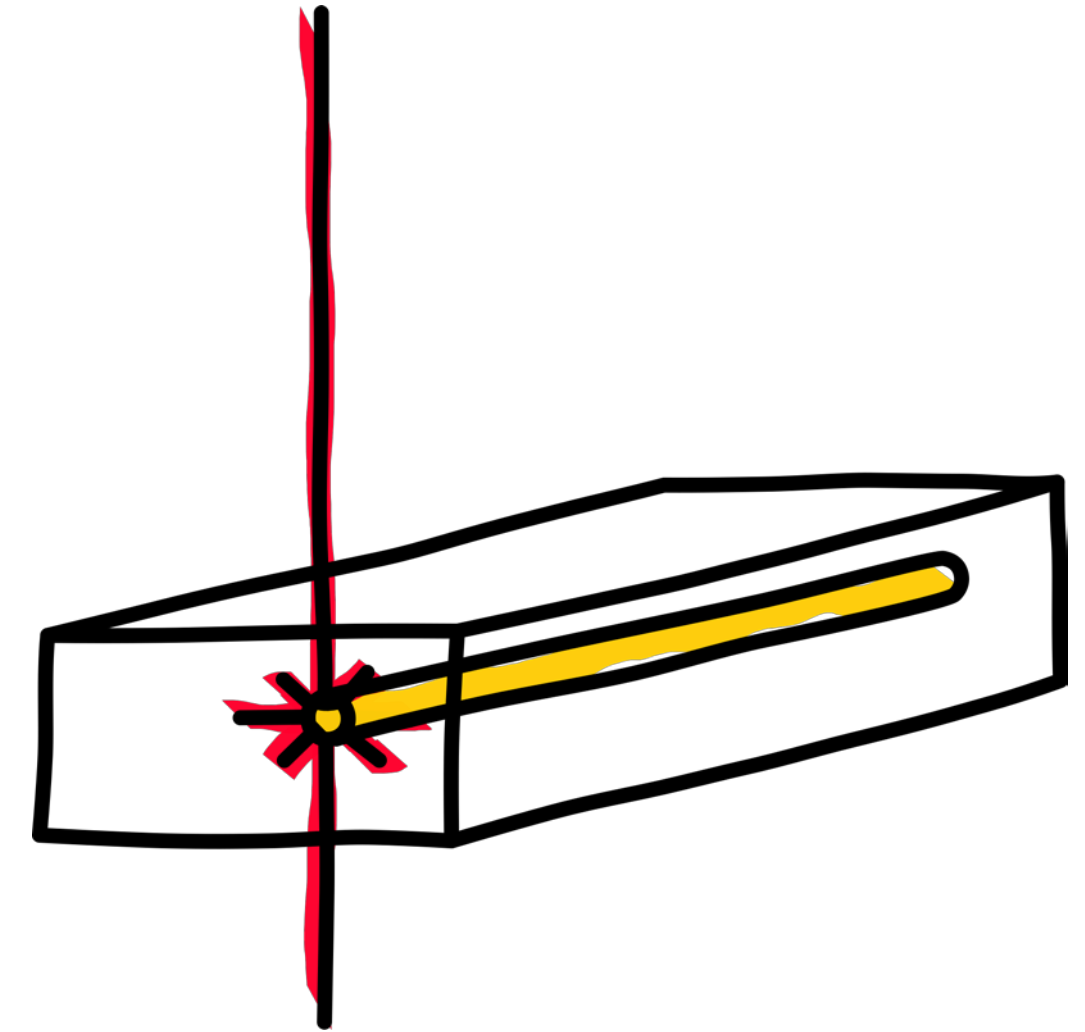
Setup, settings, in-line measurements

Post-Processing

Off-line measurements, evaluation, visualisation

Application

Comparison, next experiments → **provide process recipe**



Simulation

Example: **Simulation of laser writing process**

Preparation

Case definition, algorithms, software development

Processing

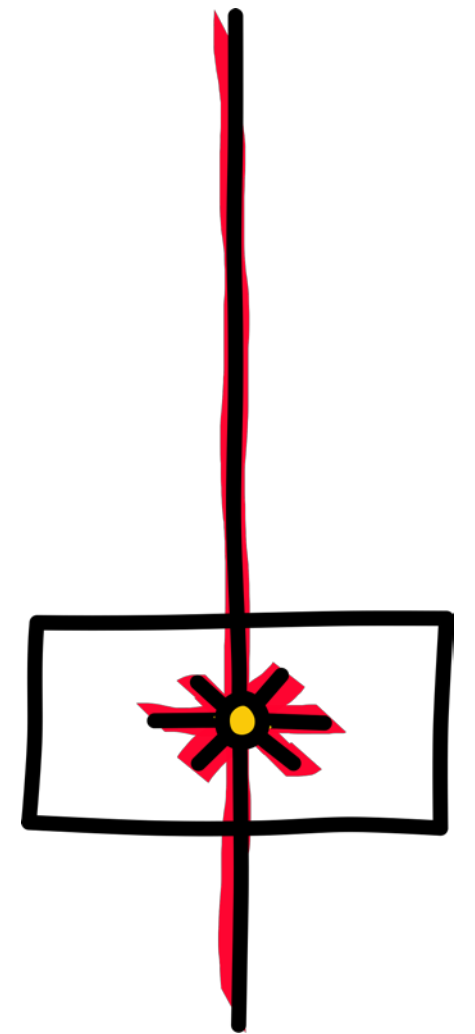
Small scale runs, high-performance computing, data collection

Post-Processing

Evaluation, visualisation

Application

Comparison, next simulation → **provide algorithm and data**



Engineering

Example: **3D Glass printing**

Preparation

Functional design, machine construction

Processing

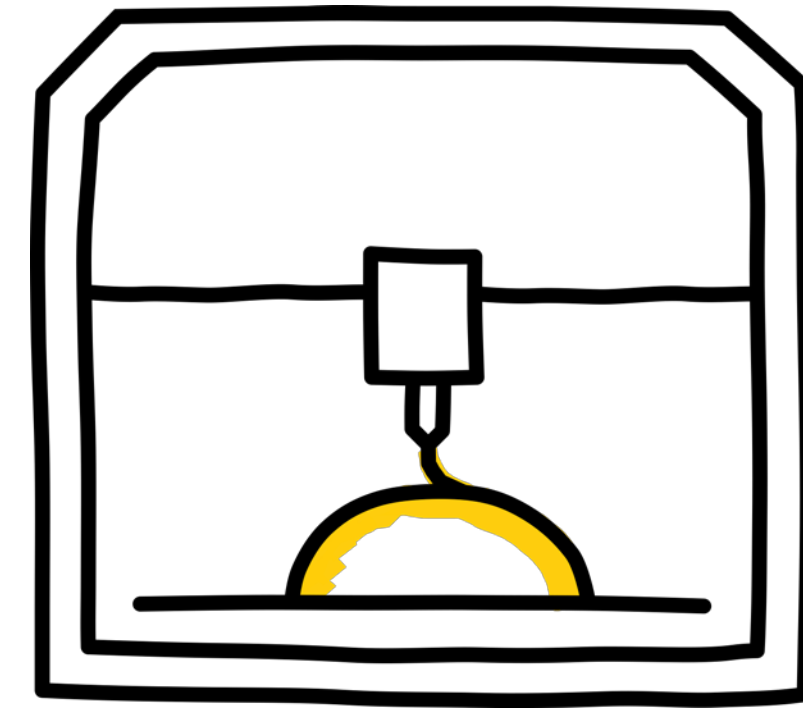
Settings, sensor data

Post-Processing

Off-line measurements, functional evaluation

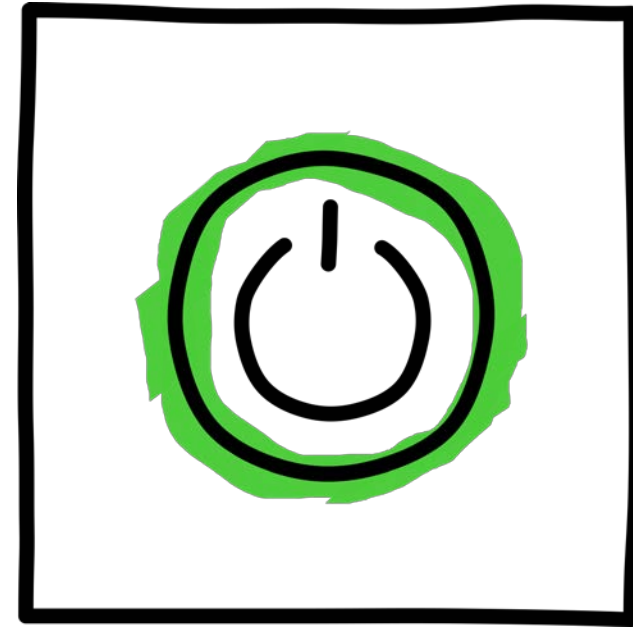
Application

Comparison, next run → **provide fabrication system**

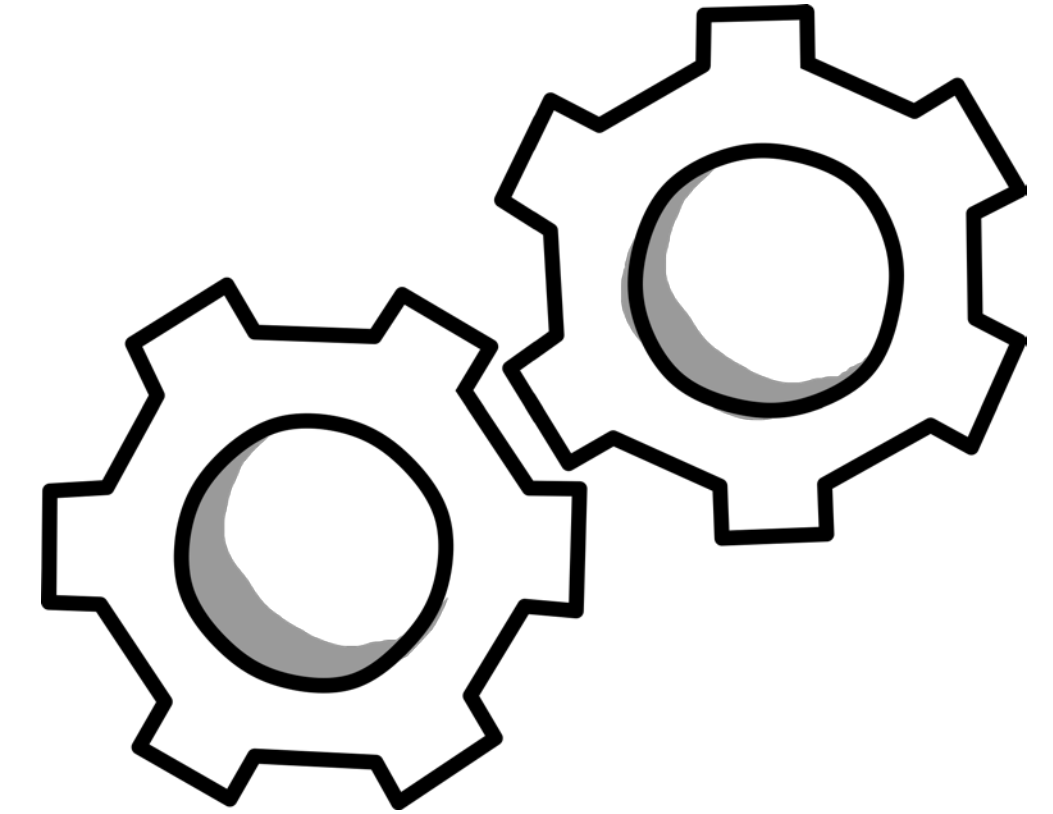


Starting Conditions

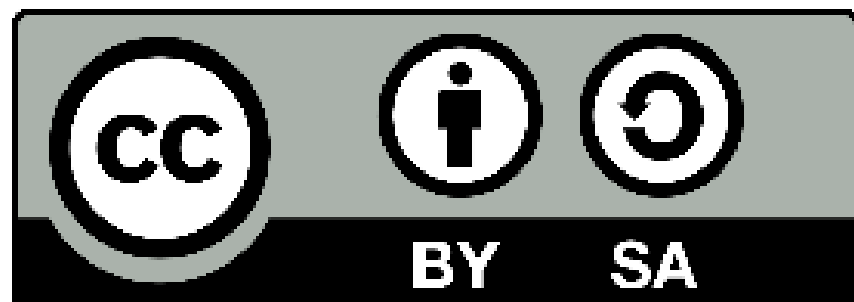
- Broad range of data types
 - Analog data (lab book)
 - Parameter data (text files)
 - Images (tiff, jpg, png, ...)
 - Numerical data (csv, tsv/tab, xls, hdf5, numpy, ...)
 - Construction data (dxf, step, dwg, ...)
 - Source code (text files)
- Individual local data management by each scientist
- Different backup solutions
- Data exchange on a personal base without standards
- No standard for storage of publication data



Activities



- Networking: RDM@LUH, NFDI4Ing, NFDI4Phys
- Research data management policy for PhoenixD
- Identification of first low-threshold steps (partly FAIR)
- Research data management plans
 - Data exchange between researchers
 - Storage of publication data
 - Storage of project or PhD data
- Support standardisation activities in NFDI4Phys and NFDI4Ing (+ NFDI4Chem?)



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