ID4EV – 3rd "European Green Cars Initiative" Projects Clustering Event

Project Name	ID4EV - Intelligent Dynamics for Fully Electric Vehicles
Project Number	260070
Date	2012-July-11 & 12
Meeting Venue	Fondation Universitaire, Rue d'Egmont 11, 1000 Brussels, Belgium
Project Manager	Patrick Spall (Continental)
Project Team Members	Continental, fka, Renault, ZF, IDIADA, Chalmers, TNO, ICOOR
Funding Authority	European Commission
Programme	7th Framework, Information and Communication Technologies

ID4EV
Intelligent Dynamics for fully Electric Vehicles

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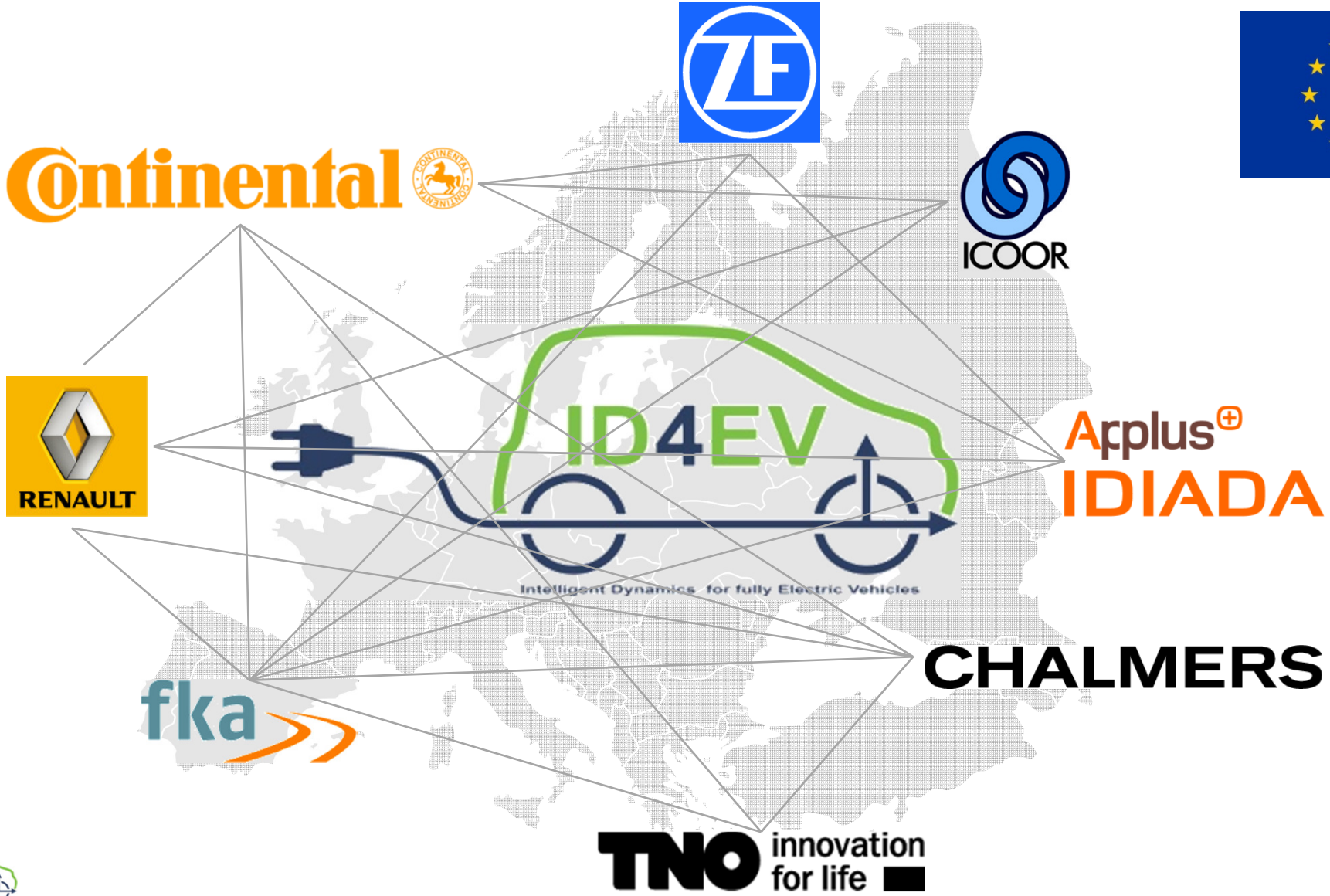
Participating Partners



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Project Objectives

Automotive Megatrends

Sustained mobility
Zero Emission

ENERGY EFFICIENCY
- Recuperation
- Minimized emissions and lightweight

Intelligent energy control
through recuperation, navigation and routing information

Intelligent control
through recuperation, brake stability and driving support

Intelligent mobility
Always On

NETWORK
- Closed loop control
- Cooperative interaction

SAFETY
- Fail safe
- Robustness

Intelligent active safety and comfort
through centralised coordination of electrified auxiliaries

Safe mobility
Zero Accidents

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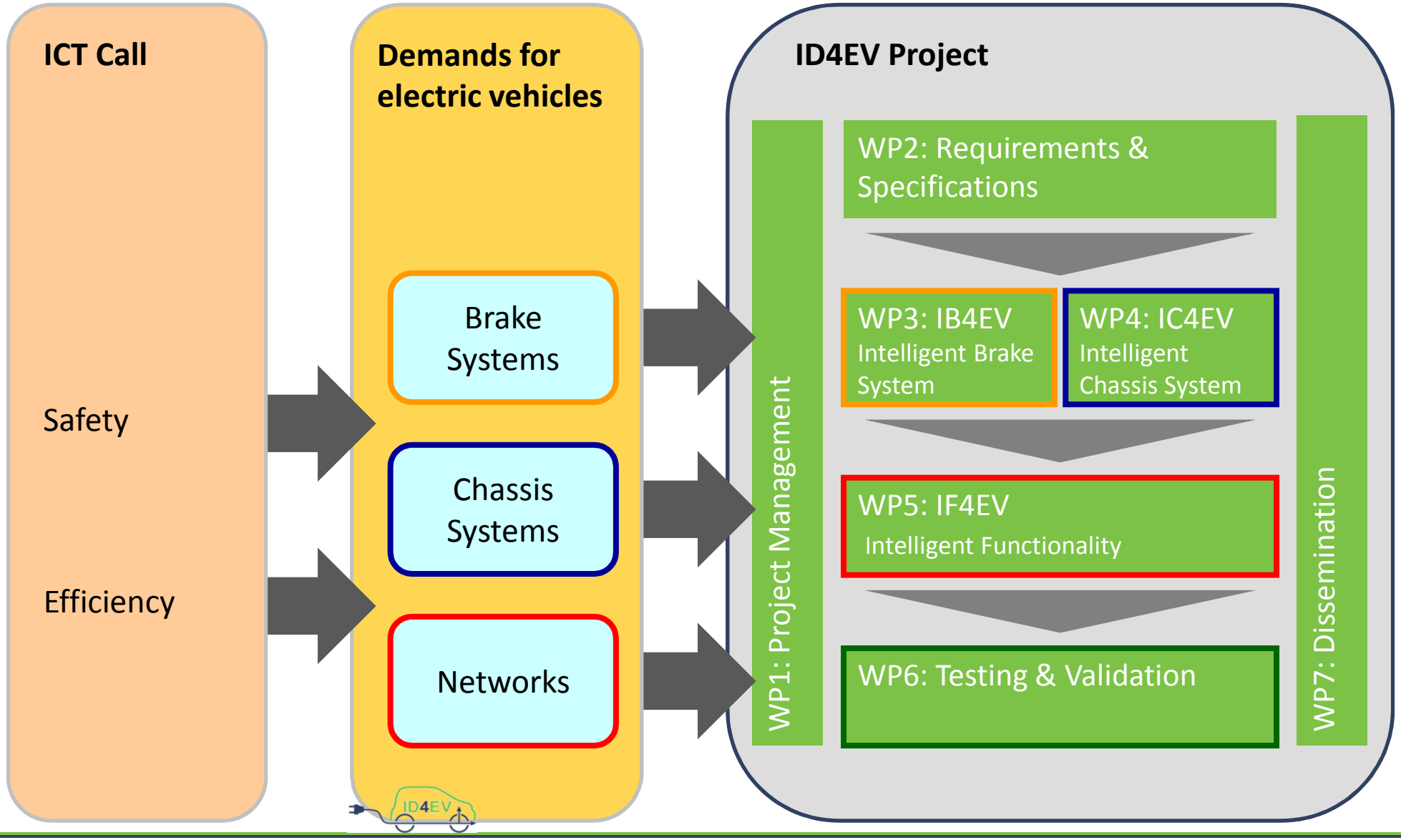
Project Technical Challenges and Approaches



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Intelligent Brakes for full Electric Vehicles (IB4EV)

Work Package Scope

Development of a regenerative brake system for FEV's

- Realization of energy savings (low drag, light weight, recuperation)
- Cooperative vehicle dynamic control system using brake system and electric motor
- Build up of a demonstrator vehicle with central e-motor

Challenges

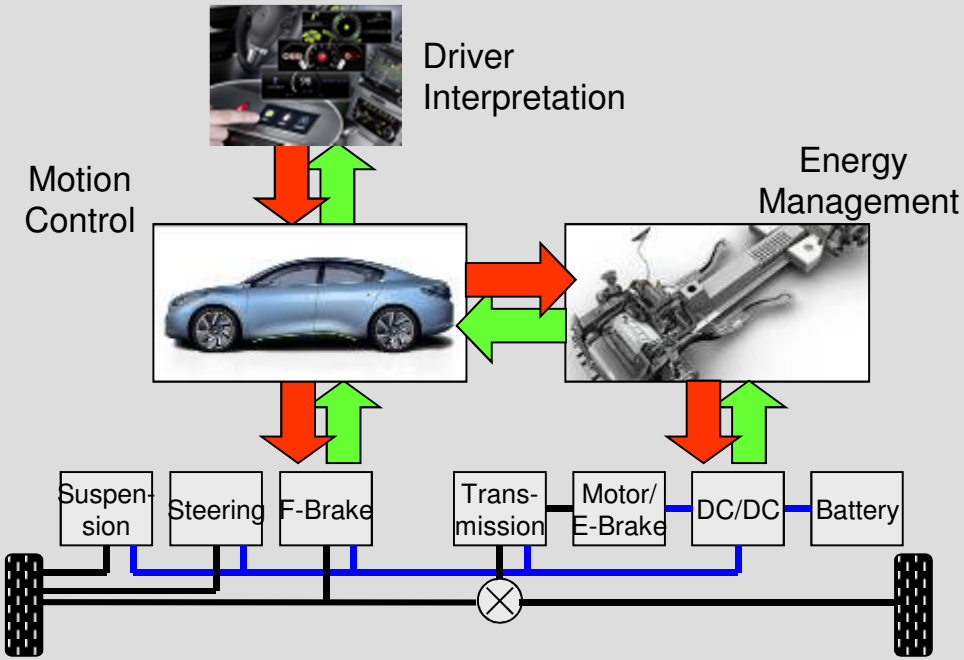
Regenerative brake systems have to fulfill requirements in terms of

- safety: Co-operative e-motor & friction brake
- comfort / HMI: sensitive, fast (haptic) feedback
- efficiency: energy on demand & low consumption

Technical Solutions

- Electro-mechanical brake system
- Intelligent motion control

Sketch



Exploitation Potential

- Technology: Foster the roadmap of electrified braking.
- Market: Electrified auxiliaries act as a market enabler for FEV
- Dissemination: Sharing of project results with other automotive suppliers by close networking e.g. with CLEPA, ELVIRE

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Intelligent Chassis for full Electric Vehicles (IC4EV)

Work Package Scope

- Design of weight and comfort optimized adaptive suspension system
- Design and implementation of an in-wheel corner module integrating e-motor and suspension
- Investigation on the effect of in-wheel motors on chassis system

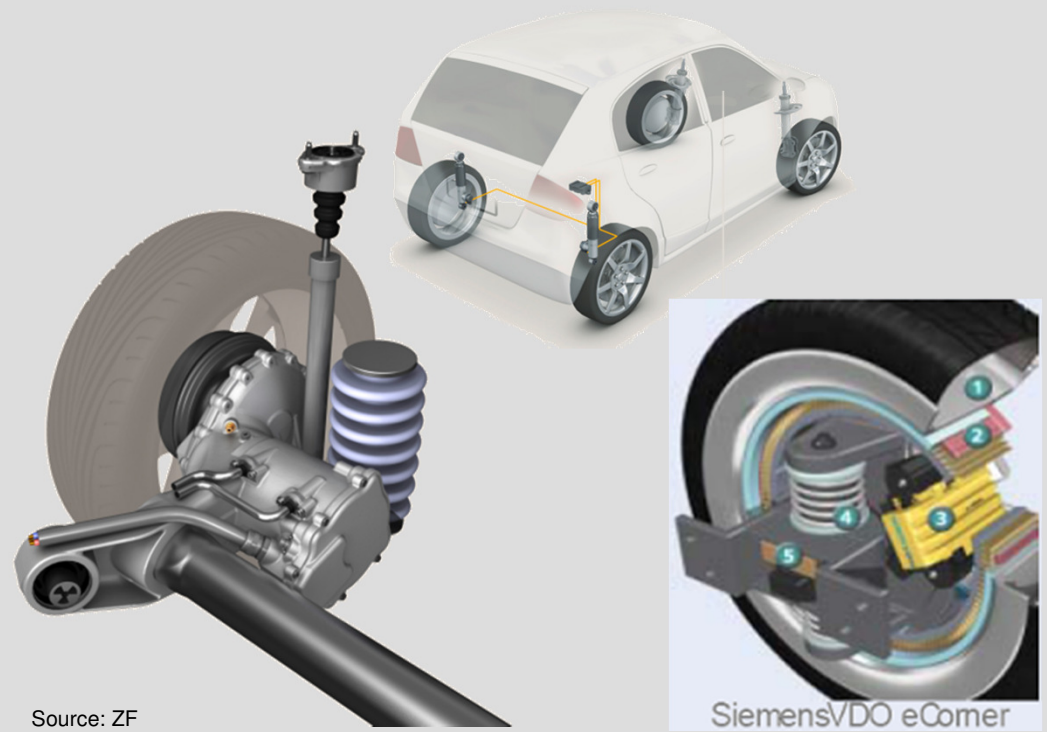
Challenges

- In-wheel drives and thus very close to the wheel need optimized suspension due to high unsprung masses
- In-wheel drives are especially challenging concerning durability (vibration, humidity, etc.)
- Local electric drives demand for new safety concepts

Technical Solutions

- Adaptive chassis systems allow optimization with low power-levels
- Consequent Deployment of Functional Safety Management Methods

Sketch



Source: ZF

Exploitation Potential

- Technology: Promote the development and the dissemination of alternative drive trains with in-wheel motors
- Market: Extend the market for FEV's by innovative drive train, and thus new chassis and vehicle concepts

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Intelligent Functionality for full Electric Vehicles (IF4EV)

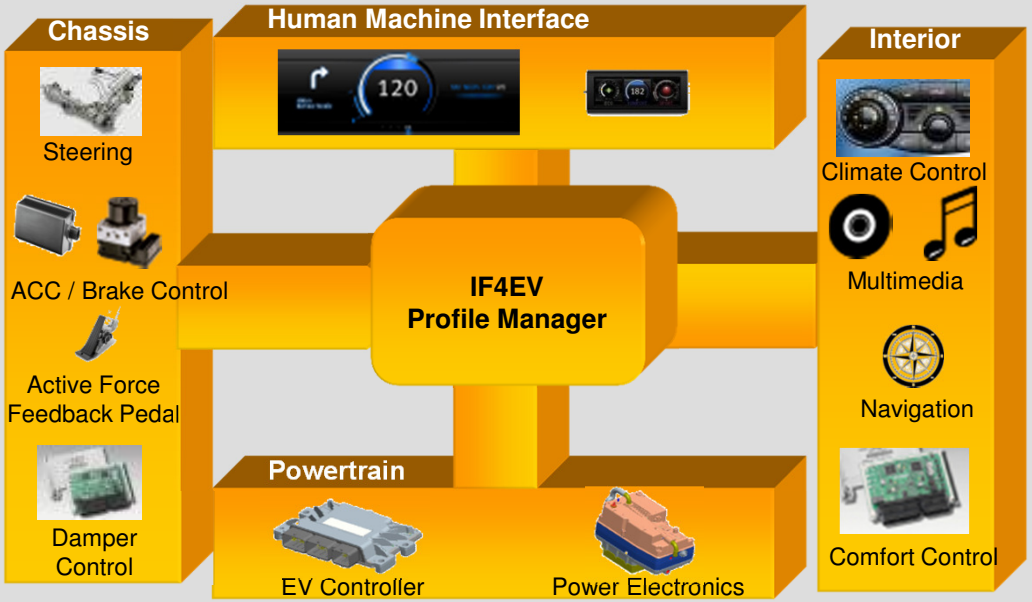
Work Package Scope

- Profile definition
- Advanced HMI for selected profiles
- Range calculation algorithm enhancement for vehicle internal energy management and profiles
- System networking and control for energy optimization
- Energy management by driver involvement

Challenges

- Finding the right balance between range, comfort and fun
- Usability of FEVs for mass market

Sketch



*displayed products only show a selection

Technical Solutions

- Profile Manager to adapt the FEV to the daily user needs
- Intuitive HMI concept
- Needed new and enhanced algorithms

Exploitation Potential

- Technology: Setting the footprint for EV optimized components like central gateway, instrument cluster and centre display
- Market: Promote the attractiveness of FEVs by driver focused profiles and control algorithms for energy efficiency

Benefit Potential from Cooperation

Technical Aspects

- Develop standardized E/E- and information exchange interfaces
- Develop common test methods and procedures for battery and high voltage circuit testing
- Develop emergency and assistance methods and tools not only for professional rescue workers in action but also for “normal” traffic participants to operate safely

Administrative Aspects

- Supporting standardization efforts in terms of technical and safety aspects for FEV
- Implementation of secured, easy-to-use pan-European cashless payment methods
- Triggering new thinking of ways for different individual passenger and freight transportation

- http://www.id4ev.eu

Thank you for your attention!

Continental

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