

# **10<sup>th</sup> SPINE MEETING**

Open source strategy for SPIS project  
SPIS Business Plan

2005/12/07

ESA/ESTEC

# Introduction

- **Co-development / community based allows :**
  - ✓ Fruitful collaboration to improve validation of S/C charging soft.
  - ✓ Leaving the model one expert - one program, ...
  - ✓ Make available an alternative to NASCAP2K
  - ✓ Ease num. model improvement based on tech. Transfer
  
- **Important goals for the SPIS**
  - ✓ Reach the critical mass – (reach with SPIS 3.2)
  - ✓ Set up of / appropriation by the community (in progress)
  - ✓ “Self supported” and “self funded” (expected)

## Business Plan (1/5)

### → A software is an OSS

- ✓ Freedom to read and modify the source code
- ✓ Freedom to redistribute and use the software for any purpose
  
- ✓ May include constraint like contamination
  - work based or derivative work
  - Restriction on commercial exploitation

### → Open Source does not mean free !

- ✓ Appropriation cost
- ✓ Data and specific tools migration
- ✓ Support with guaranteed answer time may not be free

### → Open Source cost money

- ✓ Community support and management
- ✓ Web site hosting ...

## Business Plan (2/5)

Through an appropriate development strategy

**Get enough funding and resources back from SPINE members**  
*at least those having commercial activities*  
**to sustain community activity and SPIS maintenance**

## Business Plan (3/5)

Next year cost to cover

- Community activity
- SPIS maintenance

	min	max
→ First level support and maintenance (no answering time guaranty)	40 ke	60 ke
→ Community webportal (hosting and tech. administration)	10 ke	20ke
→ SPIS SDAB and SPINE meeting	10 ke	20 ke
<hr/>		
→ Total (keuros)	60 ke	100 ke
→ Total (Men-Months)	6 MM	10 MM

## Business Plan (4/5)

### → Potentially covered through

- Direct funding from
  - Agency
  - Community members promoting its skills (cash or MM)
- Indirect funding from
  - Members activity who could dedicated 10 % of their SPIS related incomes to Community support
- Entrance fee if a consortium is set up to structure the community
- Direct or Indirect license fees from derived work or work based on SPIS Community Edition
  - if LGPL, QPL or BSD open source license, not allowed with current GPL license

## Business Plan (5/5)

### Methodology / Results BP V0.9.2

#### → Identify

- Product & Services related to SPIS
- Strength/Weakness/Opportunity/Threat Analysis (SWOT)

#### → Propose appropriate development strategies

- “State of Art”
- “Multi-physic”
- “Open Standard”

#### → Evaluate for each of them

- Recommendation and associated cost
- Appropriate IPR policy

#### → Open Question !

## Commercial Activities (1/3)

### Services oriented activities

- **Extended support**
  - HelpDesk (guaranteed confidentiality)
  - Training course
  
- **Consulting / mission support**
  - SC / instrument design
  - In flight malfunction and disturbance study
  
- **On demand development**
  - Sub contracting of specific development



## Commercial Activities (2/3)

### Product oriented activities (1/2)

- **Community edition** (could be defined as)
  - Open to all contribution
  - Short life cycle
  - Validation process based on
    - Contributions
    - Automatic test
    - Release
    - Bug report
  
- **Core edition** (could be defined as)
  - Contribution validated by consortium
  - Extended validation through tests and simulations
  - Certified/packed version ? license fees as for Linux Distribution ?
  - Support and maintenance provide
    - HelpDesk : guarantied answer time
    - Upgrade of the core edition

## Commercial Activities (3/3)

### Product oriented activities

#### → Specific Module

- Extra tools support (CAD / Mesh Tools)
- Specific solver / model implementation
- Post processing filter or advanced visualisation
- Could be sub contracted to third parties
- Concern potentially framework, pre-pro., post-pro. and NUM

#### → Framework customisation

- Extension to other simulation fields
  - Thermal space analysis,
  - Mechanical analysis,
  - Hydraulic, etc.

## Development Strategies (4/4)

3 different strategies proposed

### → STATE OF ART

- SPIS as the reference software for SC/Plasma Interaction
- Through continuous integration of the last improvement
- Continuous technology transfer channel (Academic/R&D)

### → MULTI PHYSICS

- SPIS seen as the first customisation of a simulation platform
- Generic framework including pre and post processing capabilities
- Derived edition to other application fields

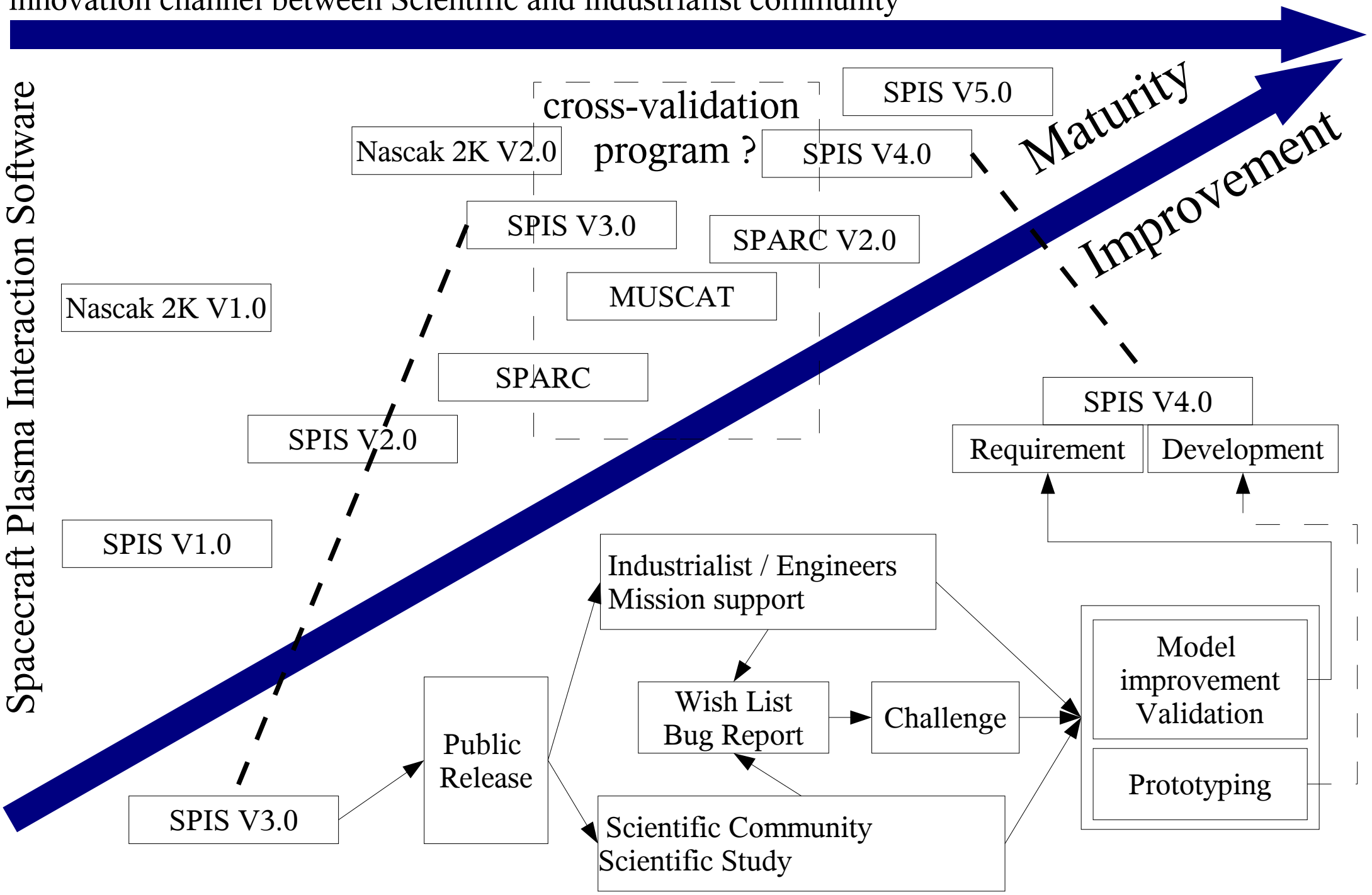
### → SCC OPEN STANDARD

- SPIS as a mutualised platform used by other SCC software
- SPARC, MUSCAT which could implement their own models and solvers
- Ease validation process if standardised I/O (pre/post)

# State Of Art : Continuous Improvement based on open innovation channel between Scientific and industrialist community

Time

Spacecraft Plasma Interaction Software



## Development Strategies (4/4)

Focus / STATE OF ART

Recommendation : estimated cost

<b>State of Art strategy</b>					
Training session	10 attendees beginners session (2 days), 5 attendees advance session (2 days)		30	750	22 500
Improve SPIS efficiency	2/3 men month		2.5	10 000	25 000
Improve the scope of the cross validation program	Direct study to ease comparison and define relevant benchmark	33.33%	4	15 000	60 000
				<b>SUB TOTAL</b>	<b>82 500</b>
<b>Options reducing time to achieve goal</b>					
1 PHD funding	To address challenge requesting long term work. Only direct cost considered but for 3 years.	300.00%	36	2 500	90 000
2 PostDoc/engineers	To implement academic community results or address challenge. Only direct cost considered for 1year position.	200.00%	24	3 500	84 000
				<b>SUB TOTAL</b>	<b>174 000</b>
				<b>TOTAL</b>	<b>256 500</b>

## Development Strategies (4/4)

Focus / STATE OF ART

Recommendation (not yet funded yet)

- **Organise free training session dedicated to academic scientists**
- Launch asap the cross validation program to “certified” SPIS and other software (with probably different validity domain)
- Check (through **benchmark**) and improve, if necessary, SPIS capabilities / dedicated proprietary software (**memory resources & simulation time / Large model**)
- Funding of PHD and postdoc using UE funds for instance

## Development Strategies (4/4)

Focus / STATE OF ART  
 Recommendation : IPR Policy

	<i><b>BSD</b></i>	<i><b>LGPL</b></i>	<i><b>GPL</b></i>	<i><b>QPL</b></i>
Derivative work has to be under the same license	No	Yes	Yes	No
Derivative work has to be under open source license	No	NA	NA	<b>Yes</b>
Integration is possible within proprietary software	Yes	<b>Yes</b>	<b>No</b>	<b>Yes/No</b>
Control on further developments	Low	Low	Medium	High

- Open Source licence
- Derived work has to be at least under open source licence  
 Compliant licences : GPL, QPL, LGPL
- No integration within proprietary software unless feed back  
 Compliant licence : QPL
- No integration at all within proprietary software (all users have the same source code available) / Services oriented model.  
**Compliant license : GPL (current licence)**

## OPEN QUESTION

- Availability/Need for a community and a core edition ?
- Availability/Need for professional “HelpDesk”
  - Confidential / data exchanges
  - Guaranteed answer time
- Does SPIS really reach the critical mass ?
  - IGES/STEP capabilities
  - memory/simulation time / other software
- Do you agree with the “state-of-art” development strategy ?
- Consortium Set up ?
  - Probably too early
  - How to extend SDAB and WG activity
- Use all kind of funds to support community activity
- Do you need a forum dedicated to IPR/BP issues ?