Research Project Writing - "Absolute Beginners"

IMPLEMENTATION

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Part 3 – 18/06/2019

Course Programme

Tuesday **11 June**, 09:00-10:00 – **Scientific Proposal - Excellence**

- *How to structure the excellence part of the proposal*
- *How to define Objectives*
- *State of Art and beyond*
- *Methodology and Approach*

Thursday **13 June**, 09:00-10:00 – **Impact**

- *Scientific, economic and societal Impact*
- *Dissemination & Communication (open access, data management, outreach)*
- *Exploitation of research results, IPR and Technology Transfer*

Tuesday **18 June**, 14:00-15:00 – **Implementation**

- *Definition of Work Packages*
- *Deliverables and Milestones*
- *Graphical representation of project activities*

Tuesday **25 June**, 14:00-15:00 – **Project Management**

- *Temporal assessment of project activities (e.g Gantt Chart)*
- *Project Management Structure*
- *Risk Analysis*

UNIVERSITÀ di VERONA
Direzione GENERALE

Implementation

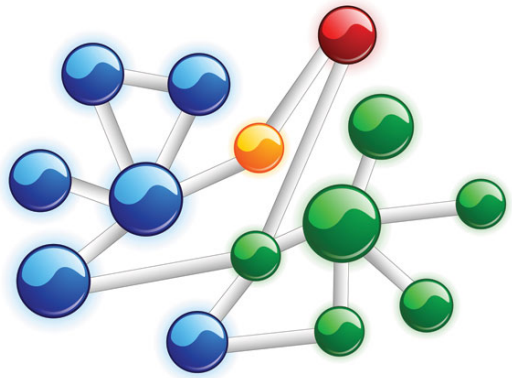
- ✓ Work Packages
- ✓ Deliverables and Milestones
- ✓ Graphical representation of project activities

Work Plan

The work plan shall include **interconnected Work Packages** (WPs) with defined **deliverables and milestones**

Research, knowledge transfer, communication and dissemination, management activities

WPs' objectives consistent with project's objectives



Structure of the Work Plan

- Brief presentation of the **overall structure** of the work plan
- **Detailed description** of
  - each work package
  - each deliverable
  - each milestone
- **Graphical presentation** of the components showing how they inter-relate (PERT diagram or similar)
- **Timing** of the different work packages and their components (Gantt chart or similar)

Structure of the Work Plan

Objectives WHY?	• Work plan objectives, not results!
Define results WHAT?	• Measurable Deliverables
Plan activities WHEN?	• Work Packages, Gantt Chart, PERT Chart, etc.
Responsibilities WHO?	• Each partner: role and responsibilities
Resources HOW MUCH?	• Costs and staff commitment

Work Plan

*SARAS' workplan is decomposed into **four clusters of WorkPackages** (WP1-2, WP3-6, WP7 and WP8-9) […]:*

- ***Surgical knowledge, specification and validation (WP1-2)**, where medical specifications and requirements are settled and translated into engineering specifications;*
- ***System architecture (WP3-6)**, in which the technologies enabling the abilities needed by the SARAS system are developed;*
- ***System integration (WP7)**: here SARAS' innovative tools, algorithms, methodologies and hardware are integrated in a seamless way, and validated by surgeons in real-world clinical scenarios.*
- ***Communication/Exploitation (WP8) and Management (WP9)** complete the picture.*

SARAS
SMART AUTONOMOUS ROBOTIC ASSISTANT SURGEON

https://saras-project.eu

Work Packages

Work package: a major sub-division of the proposed project

- Coherent set of activities contributing to expected results that will lead to the achievement of the specific objectives of the project

For each WP: **short title**, **period**, description of the **activities**

- Specific WPs for Management, Dissemination and Communication

Work Packages

The **number** of work packages should be **proportionate** to the scale and complexity of the project

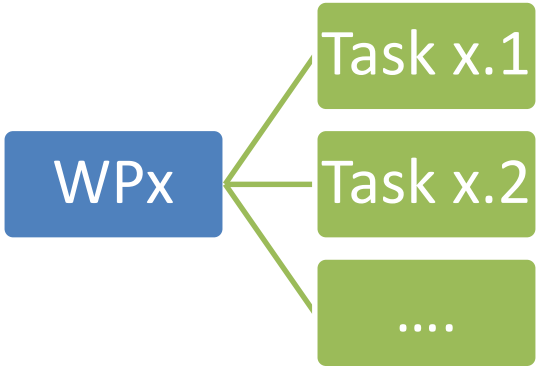
You should give enough detail in each work package **to justify** the proposed **resources** to be allocated and also quantified information so that progress can be **monitored**

Resources assigned to work packages should be in line with their **objectives and deliverables**

Notice that WPs can be carried out **in sequence** or **simultaneously**

Work Packages

A Work Package can be **split** in more activities (tasks)



Tasks are connected activities **necessary** to reach WP objectives and results

Each task has allocated resources: **timing is fundamental!**

Work Packages - Tasks

*"(WP1; **Months 1–20**) **Achieving GO1**: This work package is dedicated to fulfilling GO1 (Section 1.1.5) and so will incorporate SROs 1, 2 and 3. The time frame of the work package is split into two parts (referred to as Tasks 1.1 and 1.2): months 1–9 will be spent laying the foundations of the functorial approach to silting theory (**Task 1.1**) and months 14–20 will be spent developing theory based on this foundation (**Task 1.2**).*

[…]

*(WP4; Months 1-24) **Management, Dissemination and Communication**: This work package contains the activities constituting the communication and dissemination of the ideas in the project (outlined in Sections 2.2 and 2.3). The management activities include checking the deadlines for the Milestones (below) and reviewing the work program based on how the research progresses."*

WP Description

Example table from EU template

Main participant in charge of the WP: be coherent with the expertise!

WP Number	7			**Lead participant**	UNIVR					
WP title	Management									
Participant number	1	2	3	4	5	6	7	8	9	10
Short name of participant	UNIVR									
PMs per participant:	12	2	1	2	0.5	4	1	3	1	1
Start month	M1				**End month**	M36				

Effort in terms of number of Person Months (PM) per each participant

Be coherent with the other connected WPs!

WP Description

Example table from EC template

Objectives

- …
- …

Description of work

T7.1 – Consortium Administration (**UNIVR**, all) [M1—M36]

This task covers all administrative efforts in consortium general management […]

T7.2 – Financial administration (**UNIVR**, all) [M1—M36]

This task covers all aspects of consortium financial administration […]

T7.3 – Activity planning, activity re-alignment and reporting

This task mostly concerns general project development […]

Deliverables

D7.1 – Project Management Handbook [M6] This deliverable will be the Project Management Handbook […]

D7.2 – Data Management Plan [M6] This plan will report about the use of data […]

Clear, feasible, measurable WP objectives. Be coherent with project objectives!

Use tasks to specify WP activities to reach WP objectives

Specify the participant leading each task, the other participant involved and the duration of the task
Be coherent with the whole structure of the WP!

Specify number, title, month of delivery and a short description

Deliverables and Milestones /1

To write a strong proposal it is essential that the project plan, including the deliverables and milestones is **solid, but also achievable**.

But what is the difference between a deliverable and a milestone?

Deliverables and Milestones /2

Deliverables are **tangible or intangible objects produced** as a result of the project that is intended to be delivered to a stakeholder (either internal or external).

Milestones are **scheduled events** signifying the completion of a deliverable or set of related deliverables. There is no work associated with a milestone; it is a flag in the work plan to signify some other work has been completed.

A deliverable differs from a project milestone in that a milestone is a measurement of progress toward an output whereas the deliverable is the result of the process.

E.g. a milestone might be the completion of a product design while the deliverable might be the technical diagram of the product.

Deliverable

A distinct **output** of the project, meaningful in terms of the project's overall objectives

Each WP ➔ one or more deliverables (only main outputs!)

Deliverables - Types

Type of Deliverables – examples:

- Report
- Document
- Technical diagram
- Software
- Video
- Demonstrator
- Pilot
- Prototype
- Plan designs
- Websites
- Patents filing
- Press & media actions

Deliverables summarizing table /1

You can insert a **table summarising the deliverables**

- numbering convention <WP number> <number of deliverable within that WP>
- short description of the deliverable - Avoid any generic description such as "publication", "report"... but prefer a more explicative wording ("Report on xxx", "Publication of yyy"), stressing the real content of the deliverable.
- Insert the WP number
- Type: R (Document, report - excluding the periodic and final reports) / DEM (Demonstrator, pilot, prototype, plan designs) / DEC (Websites, patents filing, press & media actions, videos, etc.) / OTHER (Software, technical diagram, etc.)
- Dissemination level: PU (Public, fully open, e.g. web) / CO (Confidential) / CI (Classified information)
- "Month 13" to refer to the 13rd month of the project
- Do not list too many deliverables, but focus on the main outputs
- Include the main deliverables also in the Gantt chart

Deliverables summarizing table /2

Deliverable (number)	Deliverable name	WP	Type	Dissemination level	Delivery date
(1)	(2)	(3)	(4)	(5)	(6)
D1.1	Questionnaire grid	WP1	R	CO	Month 3
D4.1	Career Development Plan	WP4	R	CO	Month 3
D5.1	Data Management Plan	WP5	R	PU	Month 6
D5.3	Project website online	WP5	DEC	PU	Month 2
D3.1	Final Policy Brief	WP3	R	PU	Month 24

Deliverables – Examples

- ✓ D1.1 Requirements for …
- ✓ D1.2 Experimental tests and validation activities on the platform
- ✓ D2.1 Model of …
- ✓ D4.1 Tasks mapping
- ✓ D4.2 Algorithms for …
- ✓ D4.4 Implementation and verification of the system
- ✓ D6.1 … detection and recognition
- ✓ D6.2 Prediction of future actions and decision making policy for …
- ✓ D6.4 Software/Hardware architecture for the platform
- ✓ D7.1 Technical specifications
- ✓ D8.1 Plan for communication activities
- ✓ D8.2 Plan for exploitation and dissemination
- ✓ D8.4 Business analysis
- ✓ D8.5 Report on legal issues

Deliverables

Delivery date	Label	Deliverable name	WP	Type	Dissemination Level
Month 3	4.1	Website containing project details	WP4	DEC	PU
Month 6	3.1	Career development plan	WP3	R	PU
Month 8	3.2	Invitations sent to speakers for forthcoming workshop.	WP3 WP4	DEC	PU
Month 9	1.1	Review status of Task 1.1	WP1 WP4	R	CO
Month 12	1.2	Annual research progress report	WP1 WP2 WP4	R	CO
Month 14	3.3	Announcement of programme of forthcoming workshop	WP3 WP4	DEC	PU
Month 14	2.1	Review status of Task 2.1	WP2 WP4	R	CO
Month 19	1.3	Review status of Task 1.2	WP1 WP4	R	CO
Month 24	2.2	Final report on research program	WP1 WP2 WP4	R	CO

Milestones

MILESTONE

a critical **moment** in time, like a go/not go moment:

- Completion of a key deliverable, allowing next phase of the work to begin → **not every delivery date is a milestone!**
- Intermediary point so that, if problems have arisen, corrective measures can be taken

- Fewer than deliverables!
- Crucial moments in the work flow

They are used to check the advancement of the project and verify whether and how to continue the work plan

Milestones summarizing table

You can use a **table to summarise the project's milestones**:

- Number the milestones as M1, M2, etc
- Provide a **short description** of the milestones in terms of an **outcome to be reached**
- Indicate which are the WPs interested by the milestone (i.e. the WPs that could be affected by the delayed or incomplete achievement of the milestone)
- When do you expect to achieve the milestone? Use "month 3" or similar expression
- Show how you will confirm that the milestone has been attained. Refer to **indicators** if appropriate. For example: a laboratory prototype that is 'up and running'; software released and validated by a user group; field survey completed and data quality validated

Milestones summarizing table

Number	Milestone name	Related work package(s)	Estimated date	Means of verification
(1)	(2)	(3)	(4)	(5)
M1	All data collected	WP1	Month 6	D1.2
M2	First version of the Policy / protocol / algorithm / tool / system / software	WP2, WP3	Month 12	The policy / protocol / algorithm / tool / system / software has been validated and stored in the online database

Milestones – Examples

Milestone number	Milestone name	Related WP	Estimated date	Means of verification
MS1	Preliminary data collected	1	M6	D1.1
MS3	Model of …	1, 2	M12	D1.2 and D2.1
MS4	PROTOTYPE X	1, 3, 4, 5, 7	M12	D1.2, D3.1, D4.1, D5.1, D7.2 and working prototype
MS5	Advanced Model of …	1, 2	M24	D2.2 and physical model
MS6	PROTOTYPE Y	1, 3, 4, 5, 7	M24	D1.3, D4.1, D4.2, D4.3, D5.3, D6.2, D7.3 and working prototype

Milestones

"(M1; month 9; Deliverable 1.1) Culmination of Task 1.1: The following list of research activities should have been addressed at this point in the project:
(F1) Investigate finiteness properties of the cosilting hearts (including locally Noetherian, locally coherent); (F2) Set up framework for silting epimorphisms to be considered as rings of definable scalars. In particular, determine "universal property" description of silting epimorphisms.

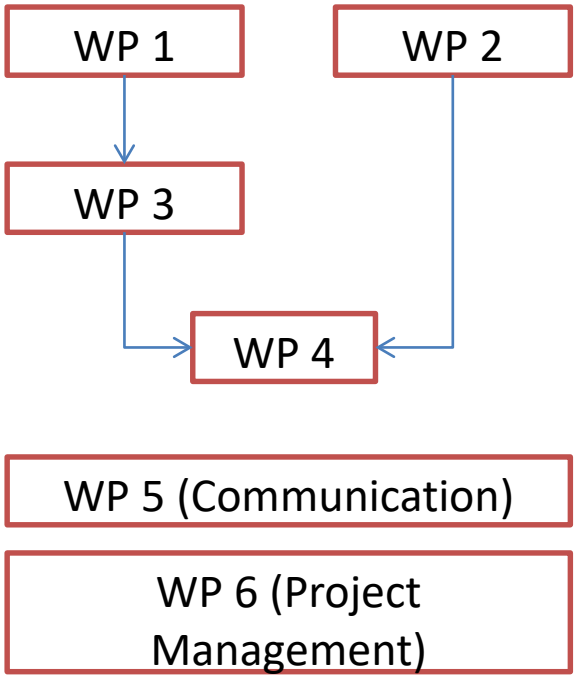
(M2; month 14; Deliverable 2.1) Culmination of Task 2.1: The following list of research activities should have been addressed at this point in the project:
(G1) Classify cosilting modules over gentle algebras (using (F1)); (G2) Classify silting modules over gentle algebras (using (G1))."

Graphical representation of the project structure

The structure of the work plan can be represented through **a graph**

The graph represents **connections** among WPs and tasks
Not necessarily according to time relation

NB: WPs dedicated to project management and communication / dissemination are considered transversal



Program Evaluation and Review Technique Diagram

Network diagram showing the **chronological/causal sequence** of events to accomplish the project

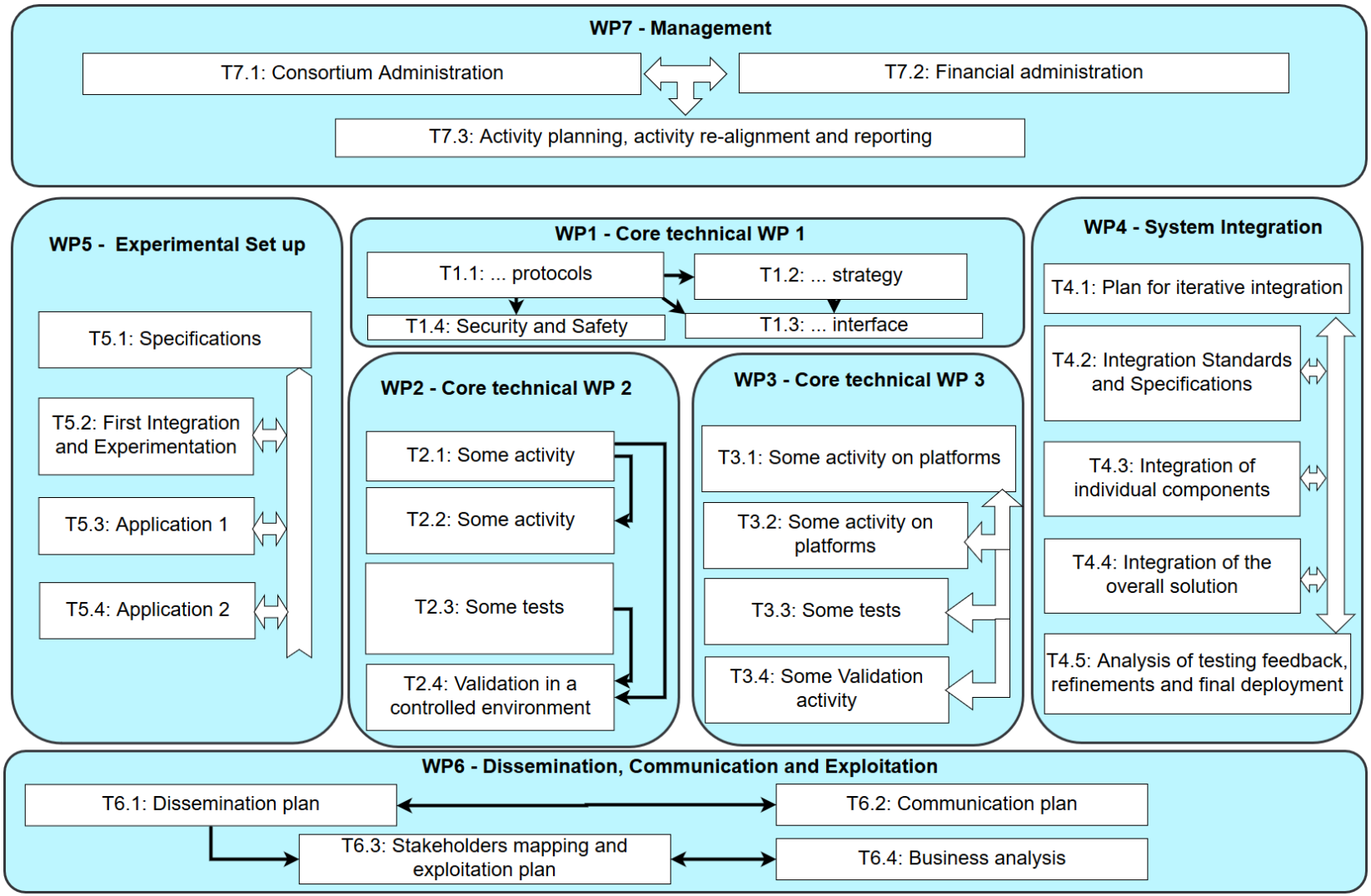
It is composed of

- Nodes representing **activities** to be accomplished to achieve final results
- Lines connecting nodes representing **connections** between activities

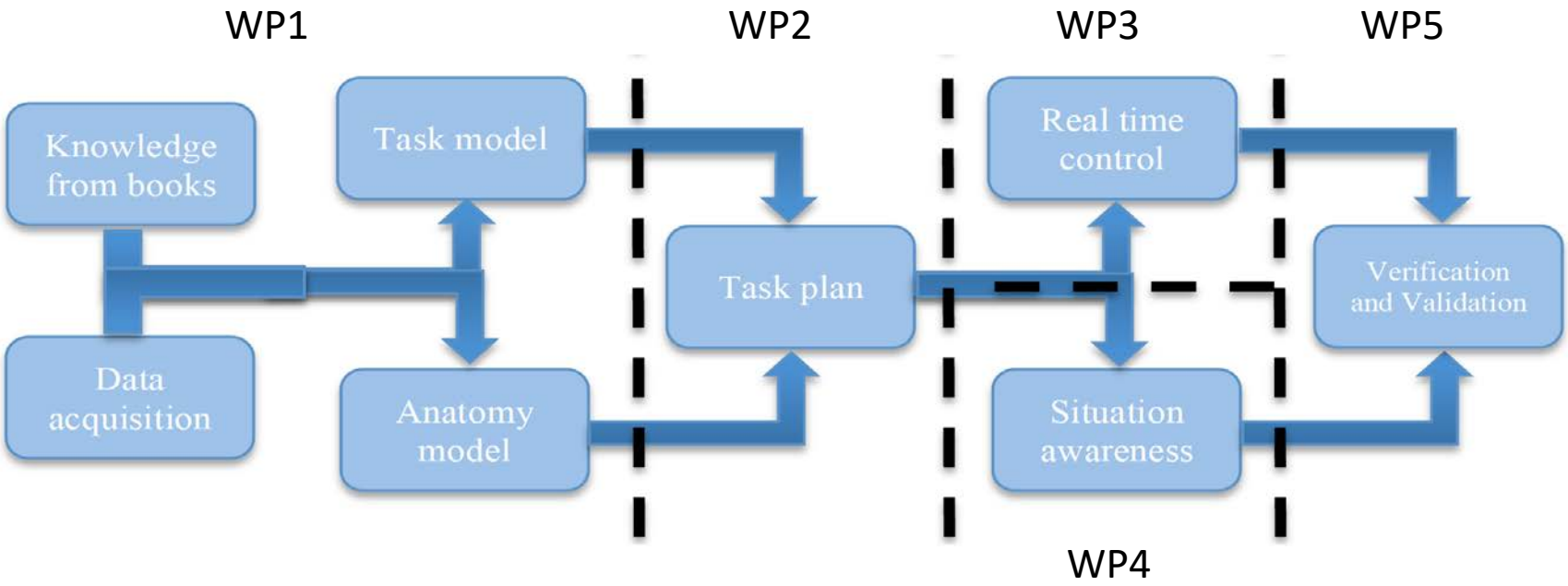
The **estimated time** to accomplish such activities is indicated in the diagram

NB: in our projects we do not usually present a real PERT diagram

Example of Graphical representation



Workflow Diagram

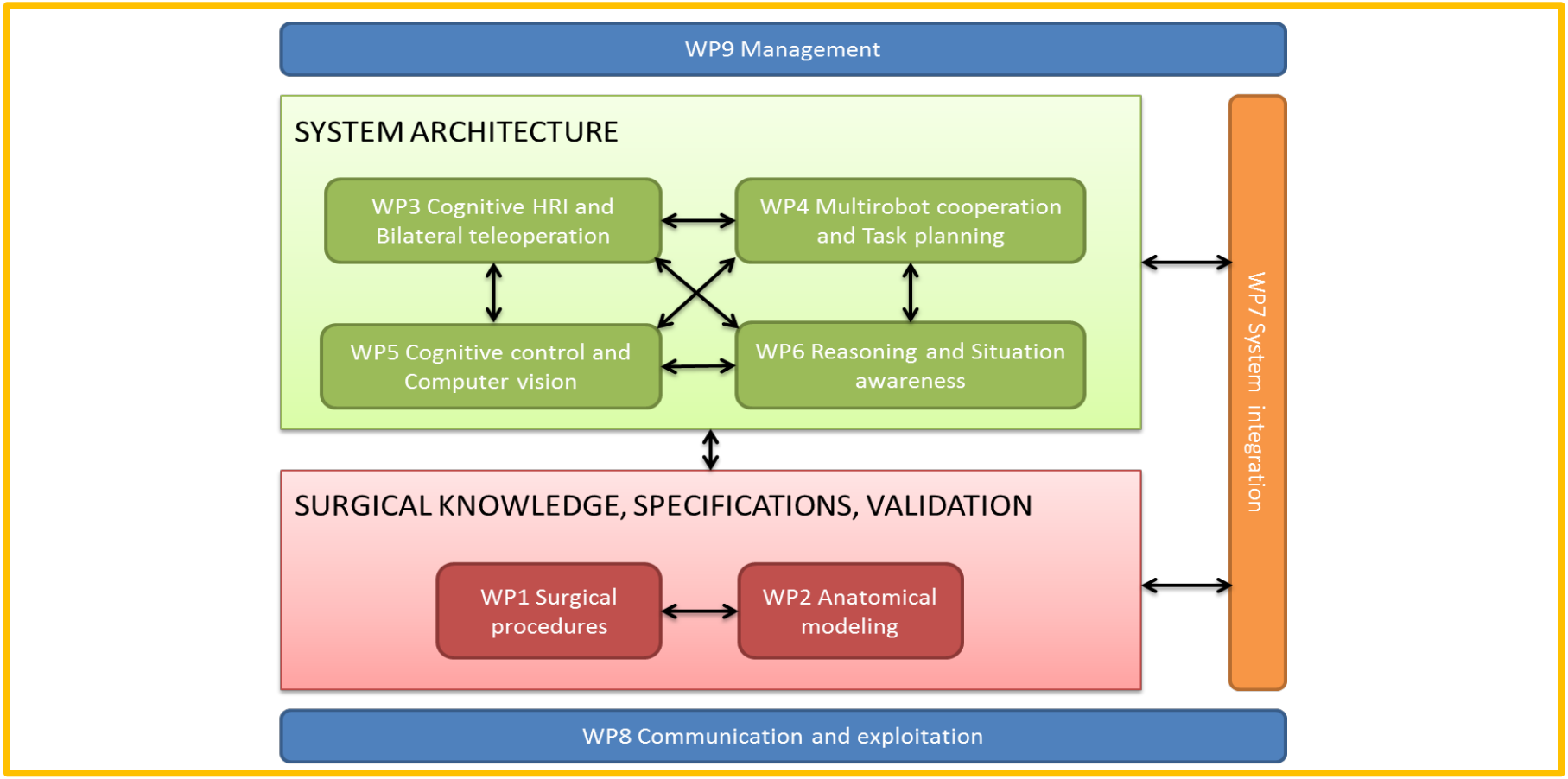


ARS
Autonomous Robotic Surgery

http://www.ars-project.eu/

Smart Autonomous Robotic Assistant Surgeon SARAS H2020-ICT-2016-2017

Workflow Diagram



SARAS SMART AUTONOMOUS ROBOTIC ASSISTANT SURGEON

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