

Galileo Information Day: CELESTE

**Support to Regional Plan:
Scenarios Identification**

1. Background
2. Celeste Scenario Identification
3. Conclusions

- Provision of regional integrity is an essential service
 - Safety critical applications and services
 - Liability critical applications and services

- Regional integrity needs
 - Technical performance
 - Sovereignty

- Type of regional integrity was still under evaluation
 - Galileo global integrity, Galileo ERIS, SBAS, ...

- Purpose of scenario identification is to analyse potential concepts for provision of Regional Integrity in Latin America

Galileo Information Day: CELESTE

Scenario Identification

- Leader contractor: **GMV**; Other contractors: **INDRA SI**

- **Scenario identification breakdown**
 - Definition of Scenarios (GMV)
 - Reviews of Scenarios Identification (INDRA SI)

- **Objectives:**
 - Description of ERIS and Updated SBAS concept
 - Technical and non-technical aspects
 - Identification of technical options
 - Go beyond standard ERIS and SBAS in the potential solutions to analyse.
 - Determination of a set of comprehensive configurations/scenarios
 - Review of scenario identification

■ Document Description

- Background on GNSS
 - SBAS System Description
 - Galileo System Description
- GNSS Navigation Integrity Concept
 - SBAS Integrity Concept
 - GALILEO Integrity Concept
 - SBAS and Galileo Integrity Concept Differences
- CELESTE Scenarios Assumptions
- CELESTE Scenarios Identification
- Conclusion

■ Scenario Identification Assumptions

- The scenarios has been defined taking as initial point:
 - **MRS** conclusions/recommendations and
 - scenarios defined in the **proposal**
- Special care in reorganisation of information => Improve concepts understanding

Celeste Scenario Criteria:

Integrity Concepts

SBAS

Galileo

Dissemination schemes

via GEO

via Galileo MEO

Types of Coverage

Global

Regional

Satellite Constellation

GPS

Galileo

Celeste
Scenarios
Identification

Scenarios	Integrity Standard		Broadcast by		Coverage	
	SBAS	SISMA/IF	GEO	MEO	Global	Regional
<u>Scen. 1</u>		GAL		X	X	
<u>Scen. 2</u>		GAL		X	X	
	GPS		X			X
<u>Scen. 3</u>	GPS/GAL		X			X
<u>Scen. 4</u>		GAL		X	X	
	GPS/GAL		X			X
<u>Scen. 5</u>	GPS/GAL		X			X
		GAL		X		X
<u>Scen. 6</u>	GPS/GAL		X			X
	NOF GPS/GAL			X		X
<u>Scen. 7</u>		GAL		X	X	
	GPS/GAL		X			X
		GPS/GAL		X		X
<u>Scen. 8</u>	GPS/GAL		X			X
		GPS/GAL		X		X
<u>Scen. 9</u>		GPS/GAL	X			X

- Nine scenarios identified for CELESTE project

SCEN 1: GGI

SCEN 2: GGI + SBAS GPS via GEO

SCEN 3: SBAS GPS/GAL via GEO

SCEN 4: GGI + SBAS GPS/GAL via GEO

SCEN 5: SBAS GPS/GAL via GEO + SISMA/IF GAL via MEO

SCEN 6: SBAS GPS/GAL via GEO + NOF GPS/GAL via MEO

SCEN 7: GGI + SBAS GPS/GAL via GEO + SISMA/IF GPS/GAL via MEO

SCEN 8: SBAS GPS/GAL via GEO + SISMA/IF GPS/GAL via MEO

SCEN 9: SISMA/IF GPS/GAL via GEO

Note:

- GGI= Galileo Global Integrity
- SISMA/IF= Galileo Regional Integrity (ERIS in Latin America)

Celeste Scenario



Detailed description



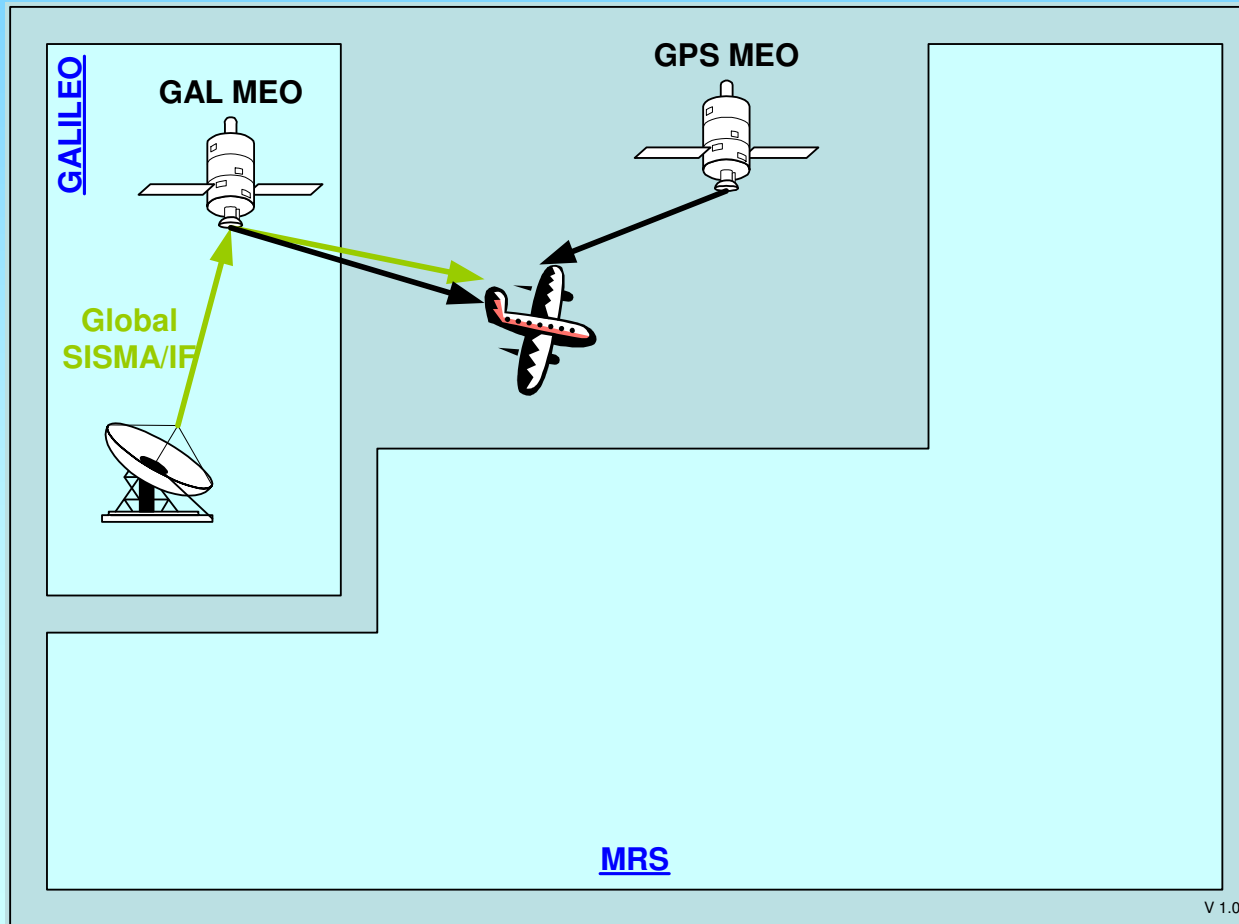
Input to evaluation

- Descriptionn
- Details
- Infrastructure needs
- Sovereignty
- Compatibility with existing systems
- System failure tolerance
- Redundancy of information
- Galileo Services use
- Bandwidth
- L5 implications

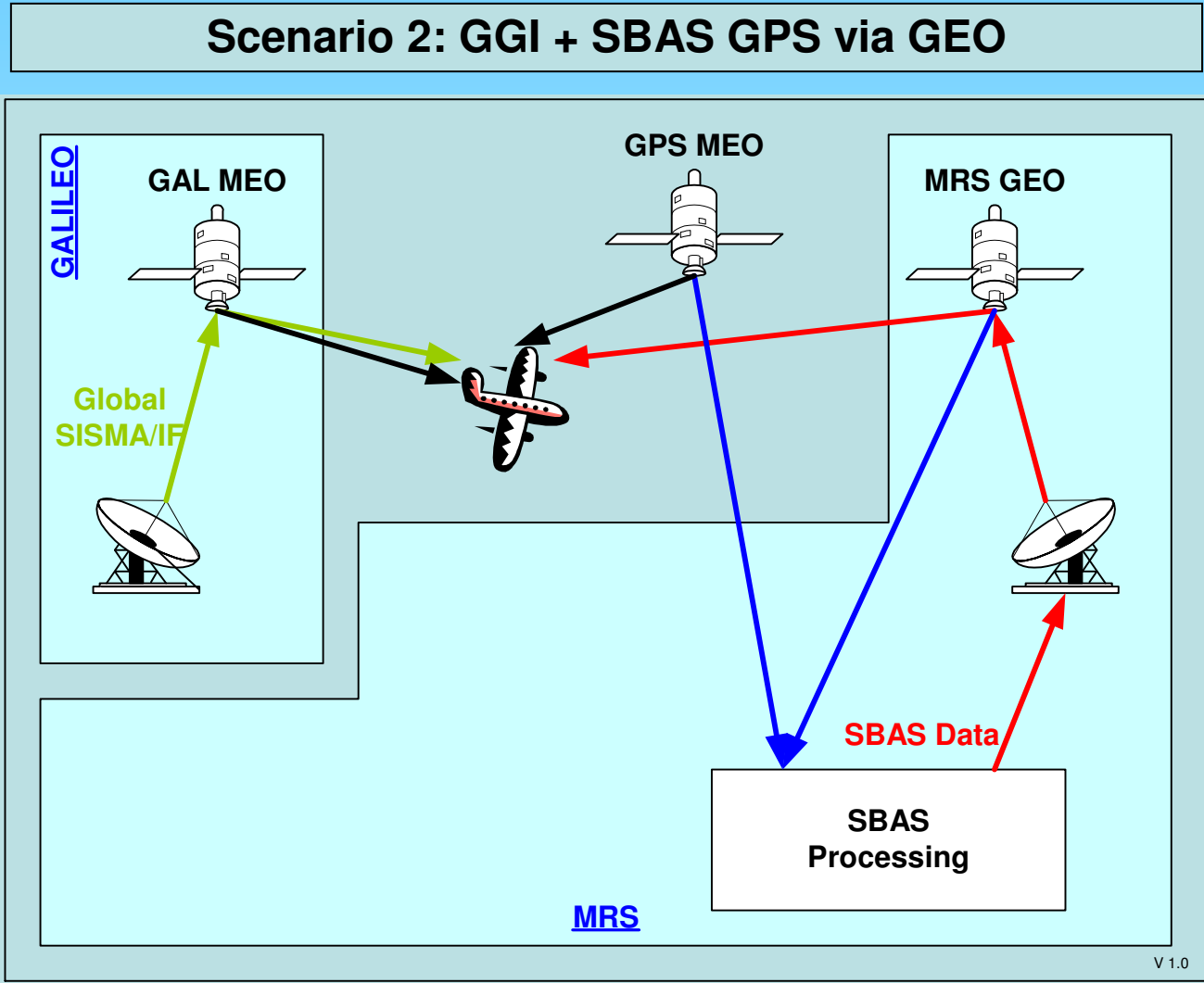
- Dissemination
- Advantages
- Disadvantages
- ERIS Region capabilities
- System complexity
- Technical Performances
- Operational aspects
- Implementation risks
- Standardisation aspects
- MRS type solution

Conclusions

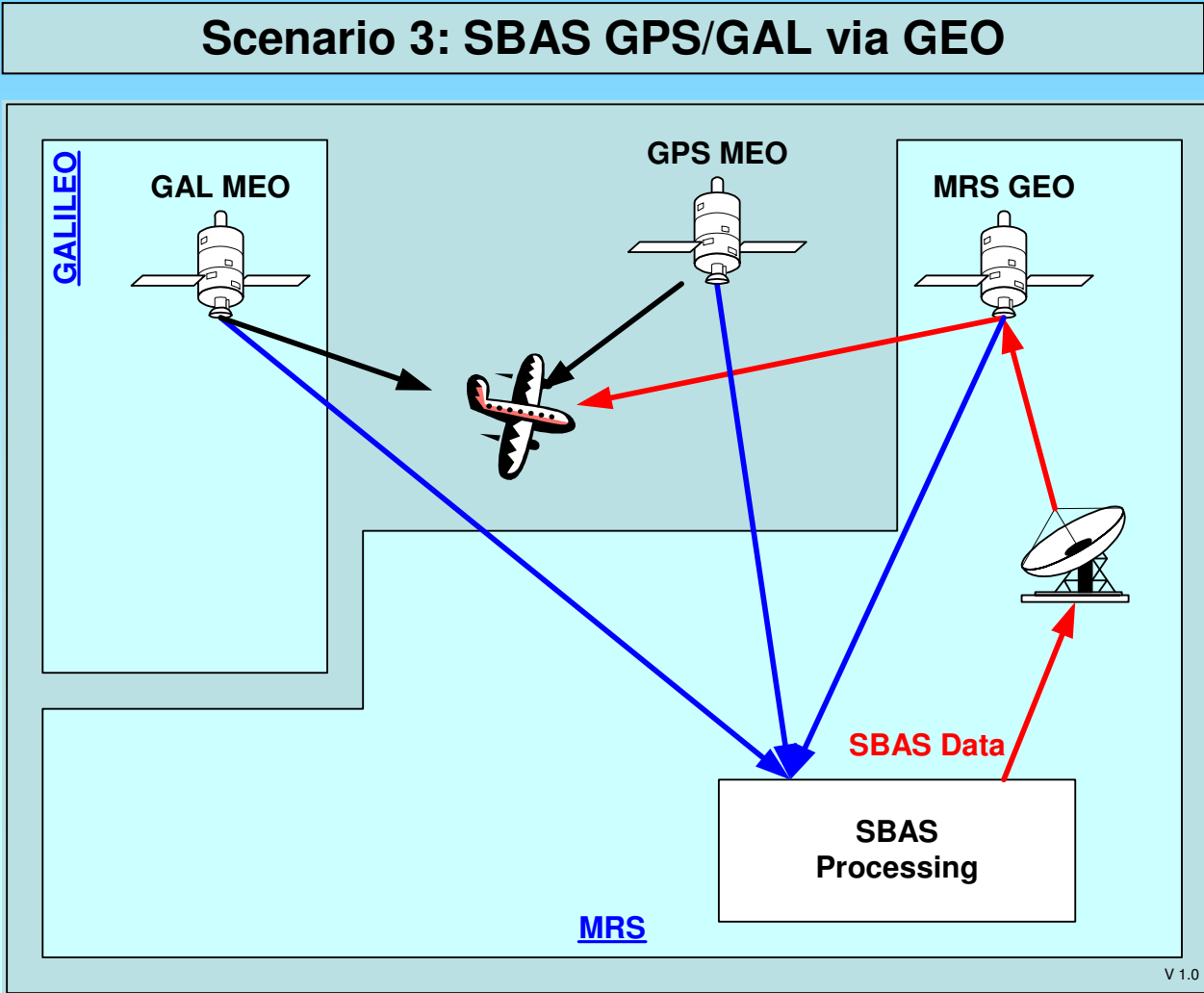
Scenario 1: GGI



Conclusions

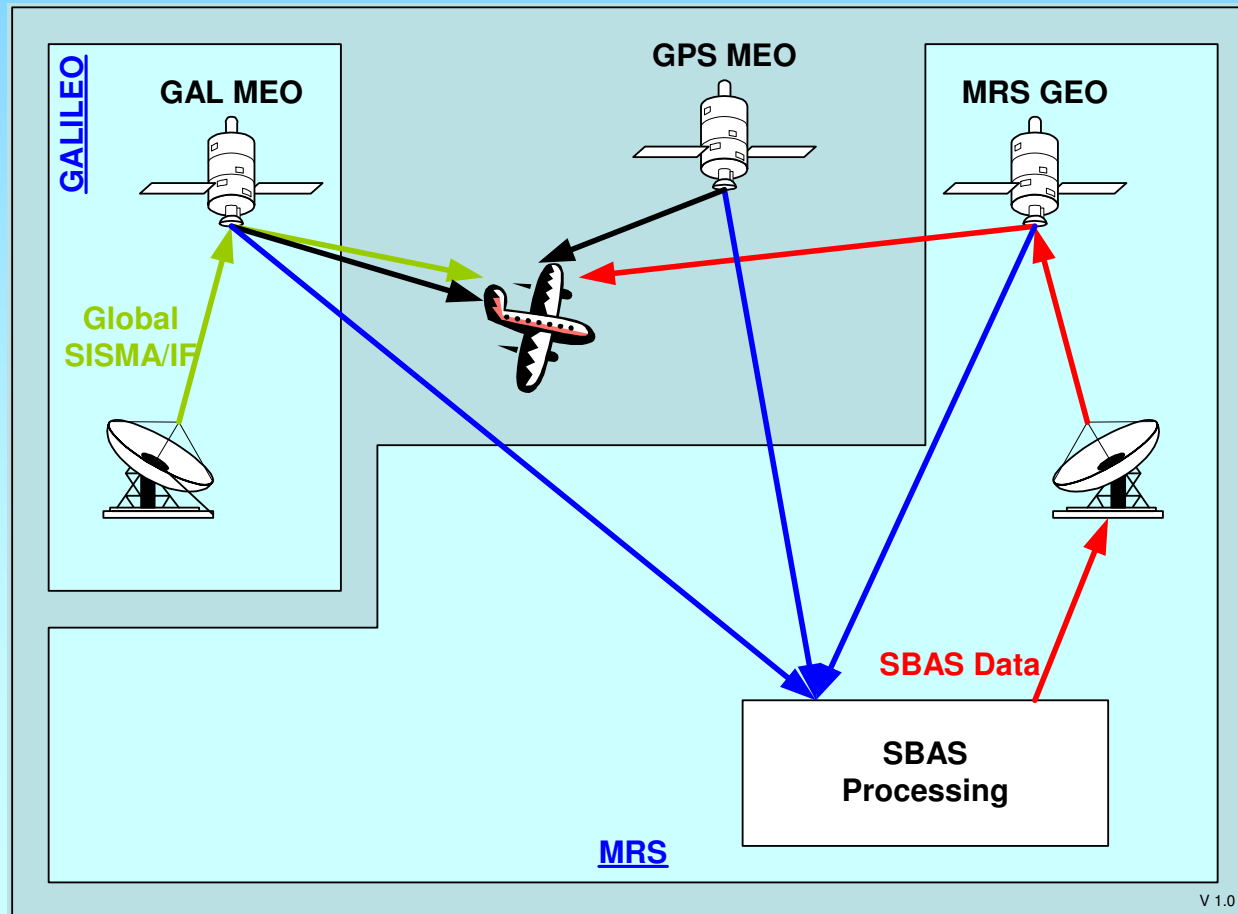


Conclusions



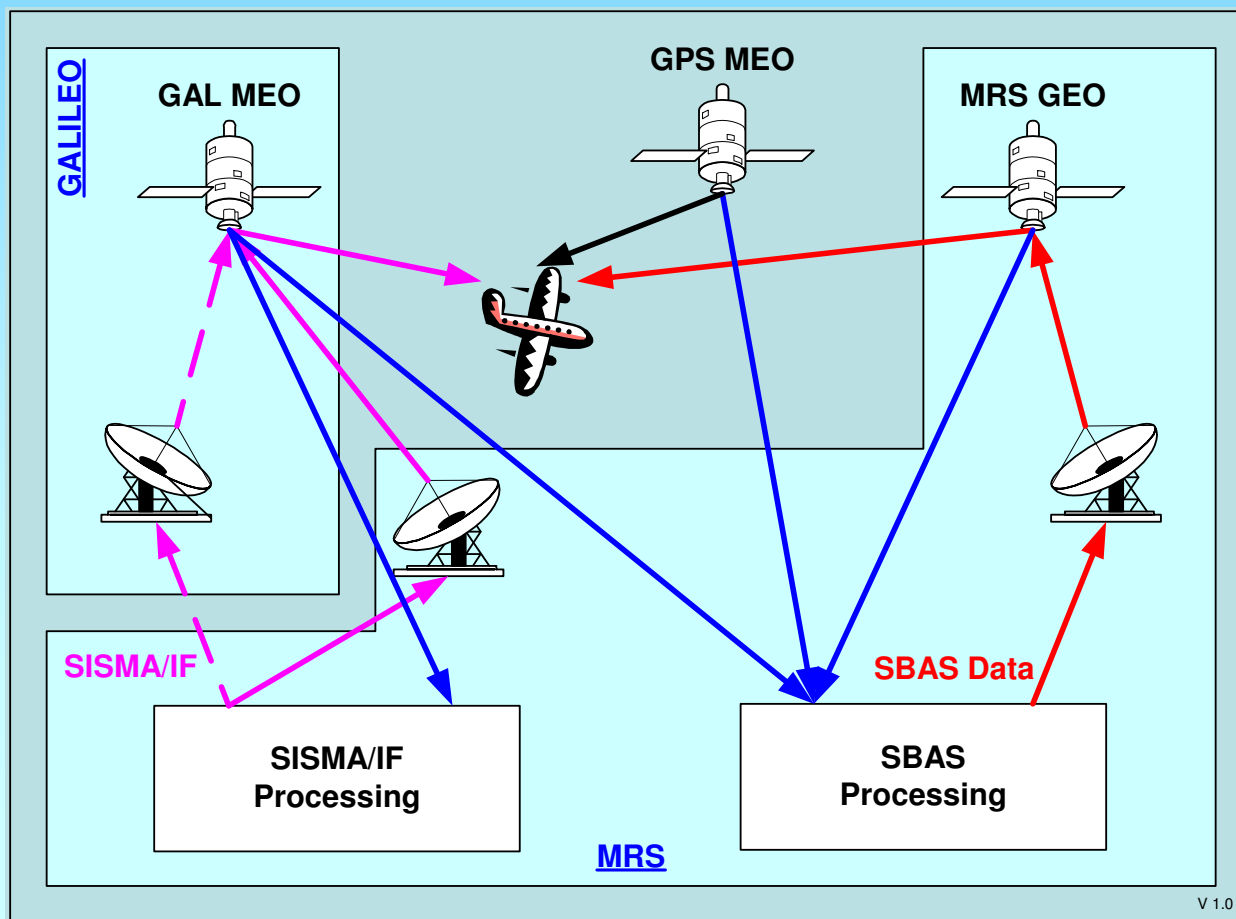
Conclusions

Scenario 4: GGI + SBAS GPS/GAL via GEO



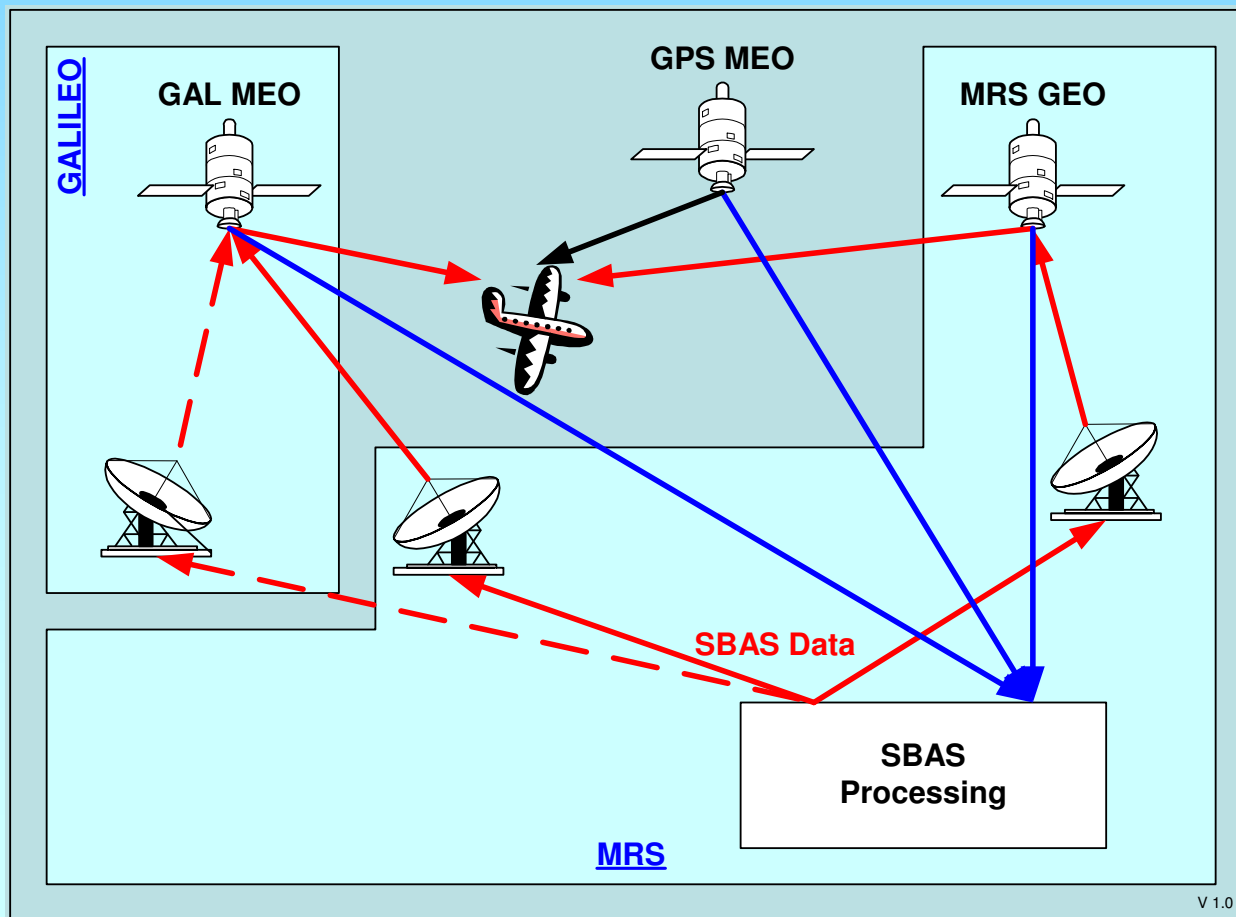
Conclusions

Scenario 5: SBAS GPS/GAL via GEO + SISMA/IF GAL via MEO



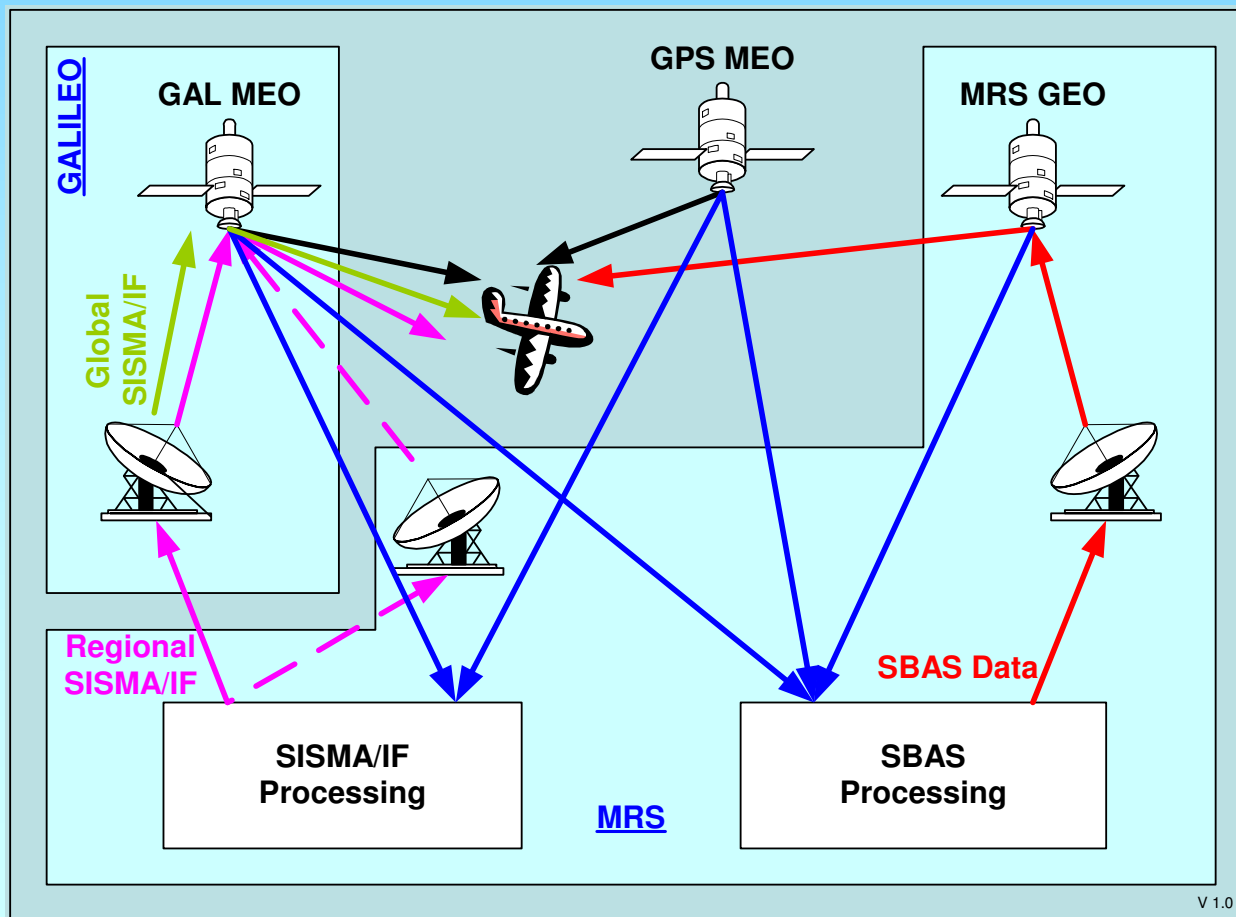
Conclusions

Scenario 6: SBAS GPS/GAL via GEO + NOF GPS/GAL via MEO

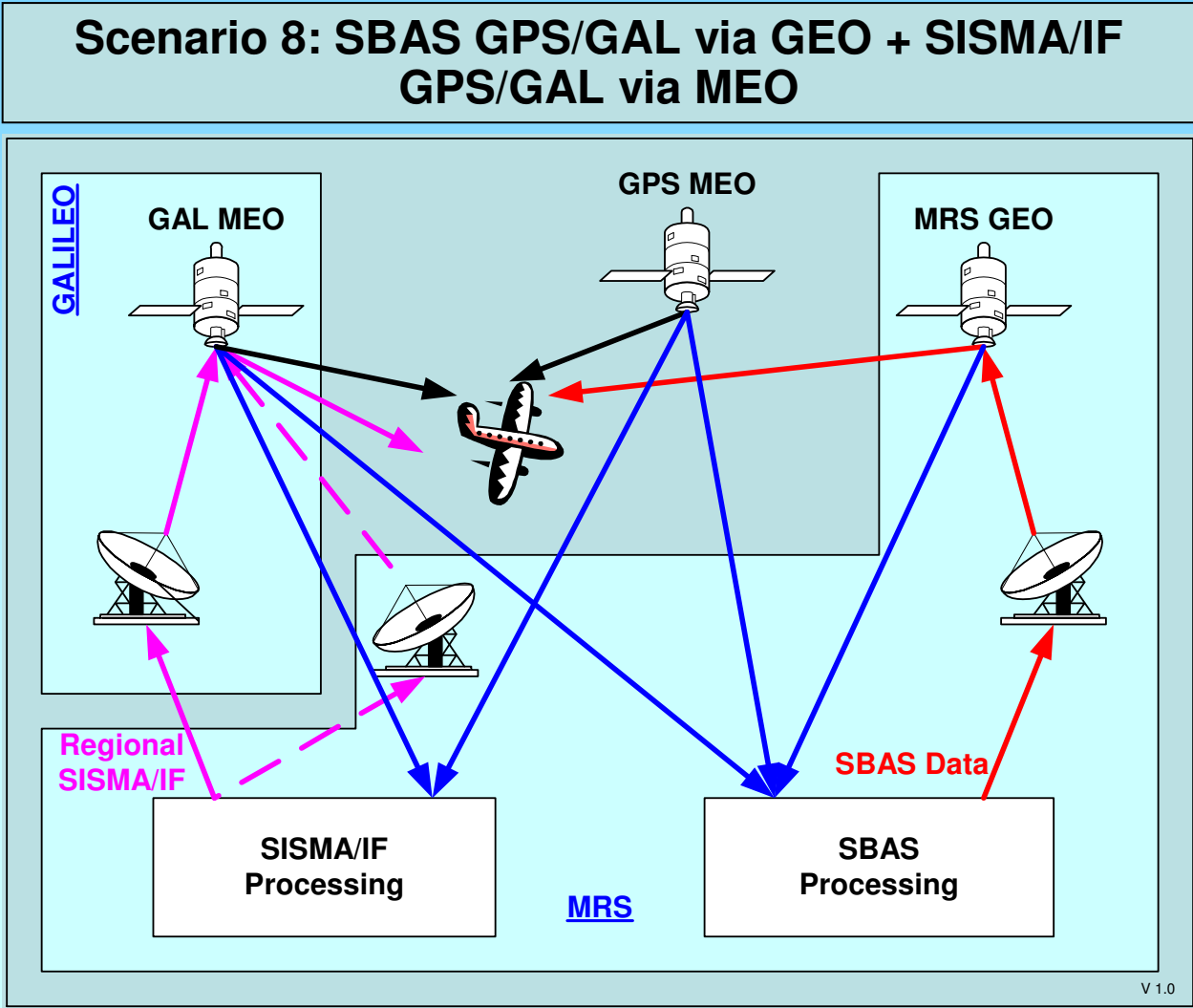


Conclusions

Scenario 7: GGI + SBAS GPS/GAL via GEO + SISMA/IF GPS/GAL via MEO



Conclusions



Conclusions

