



Challenges of WF Portability

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Wireless Innovation Forum
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Thales

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- ***Portability : what and why ?***
- ***Technical perspectives***
- ***THALES assets***
- ***Conclusions***

Status of deliveries for US Market

- ◆ **First Generation : NB capabilities : 350 000+**
 - AN/PRC-152 – 160,000 Units Deployed
 - AN/PRC148 - 200,000 Units Deployed
- ◆ **Second Generation : towards WB capabilities : 50 000+**
 - AN/PRC-154 Rifleman Radios – 19,000 Units Ordered,
 - AN/PRC-155 – 3700 Units Ordered
 - AN/PRC-117G – 30,000 Units Deployed

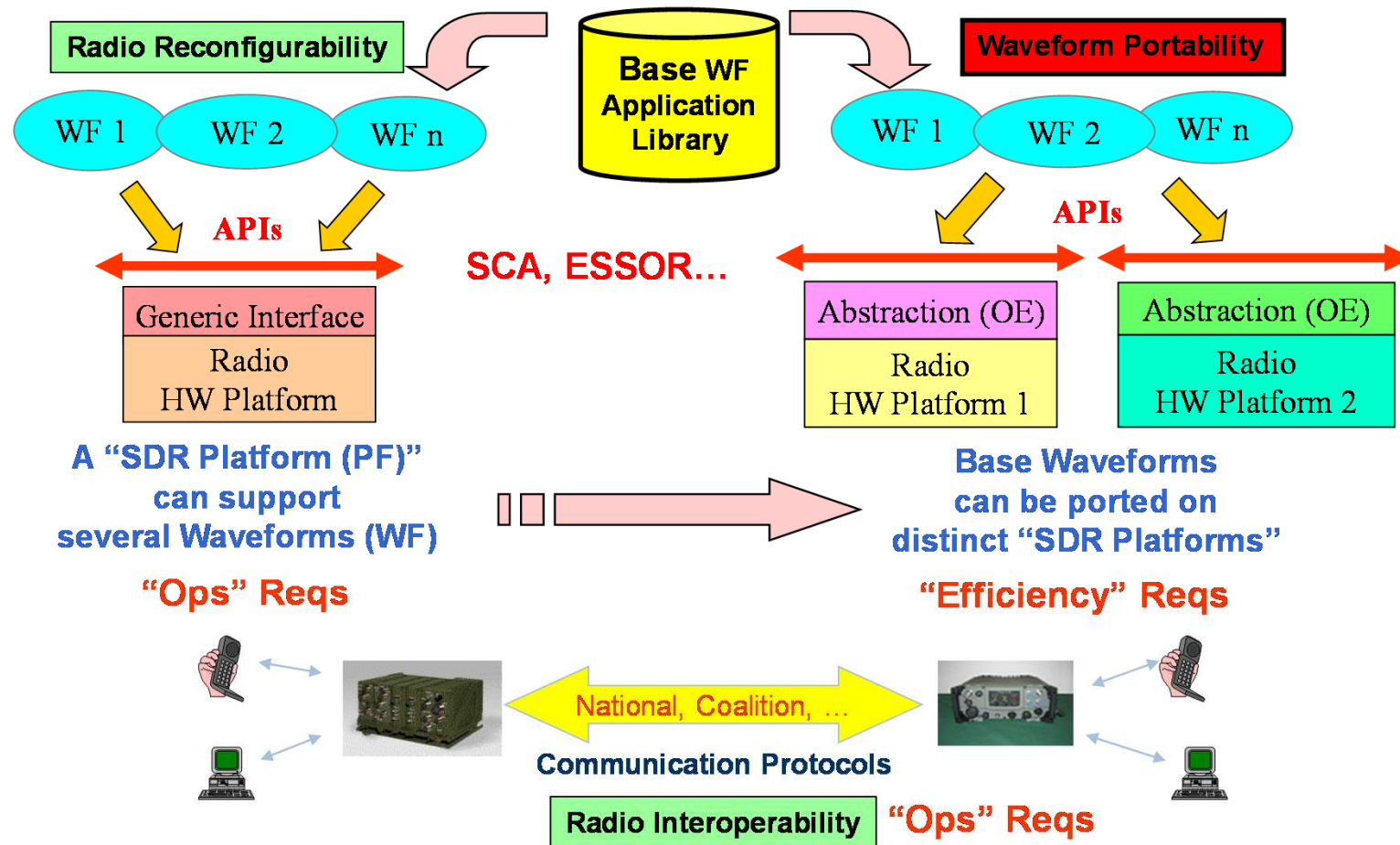
Status of Platforms and Waveforms

- ◆ **34 Waveforms (US and International Market)**
- ◆ **41 platforms (US and International Market)**
 - 18 platforms listed by JTNC for US
 - 23 platforms from 14 vendors for international market

Interoperability, International Coalition Waveform

- ESSOR HDR, Coalwnw, Nato etc..





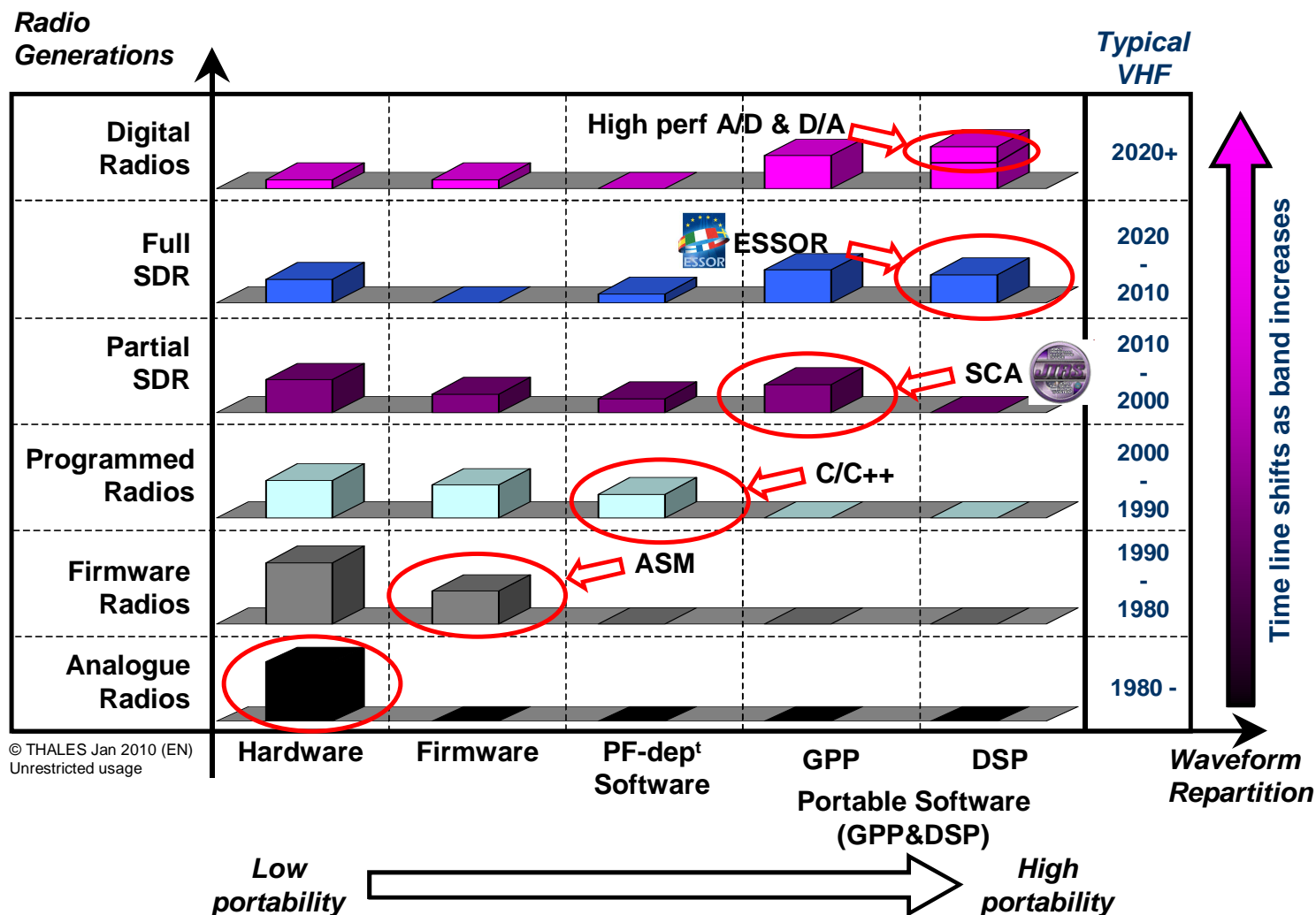
Waveform Portability is concentrating increasing expectations from cost efficiency and procurement model viewpoint

- ◆ **The extent to which a SDR Waveform available from one party can be efficiently implemented on the SDR Platform from another party**
- ◆ **Expected benefits of high Waveform Portability**
 - Cost of ownership reduction
 - Easier to achieve interoperability
- ◆ **Main challenges of Waveform Portability**
 - Technical challenges: making portable Waveforms (the core of this talk)
 - Business challenges: IPR ownership and licensing options, incentives vs. rules enforcement balance to achieve highest portability, ...
 - Security challenges: security evaluation issues, coalition agreements, ...
- ◆ **Known cases of limited Waveform Portability**
 - Efficient porting of few layers, while most needs full redevelopment
 - The WF of a same vendor on several of its own SCA platforms

***Trusted Waveform Portability is difficult to achieve,
and tricky to evaluate***

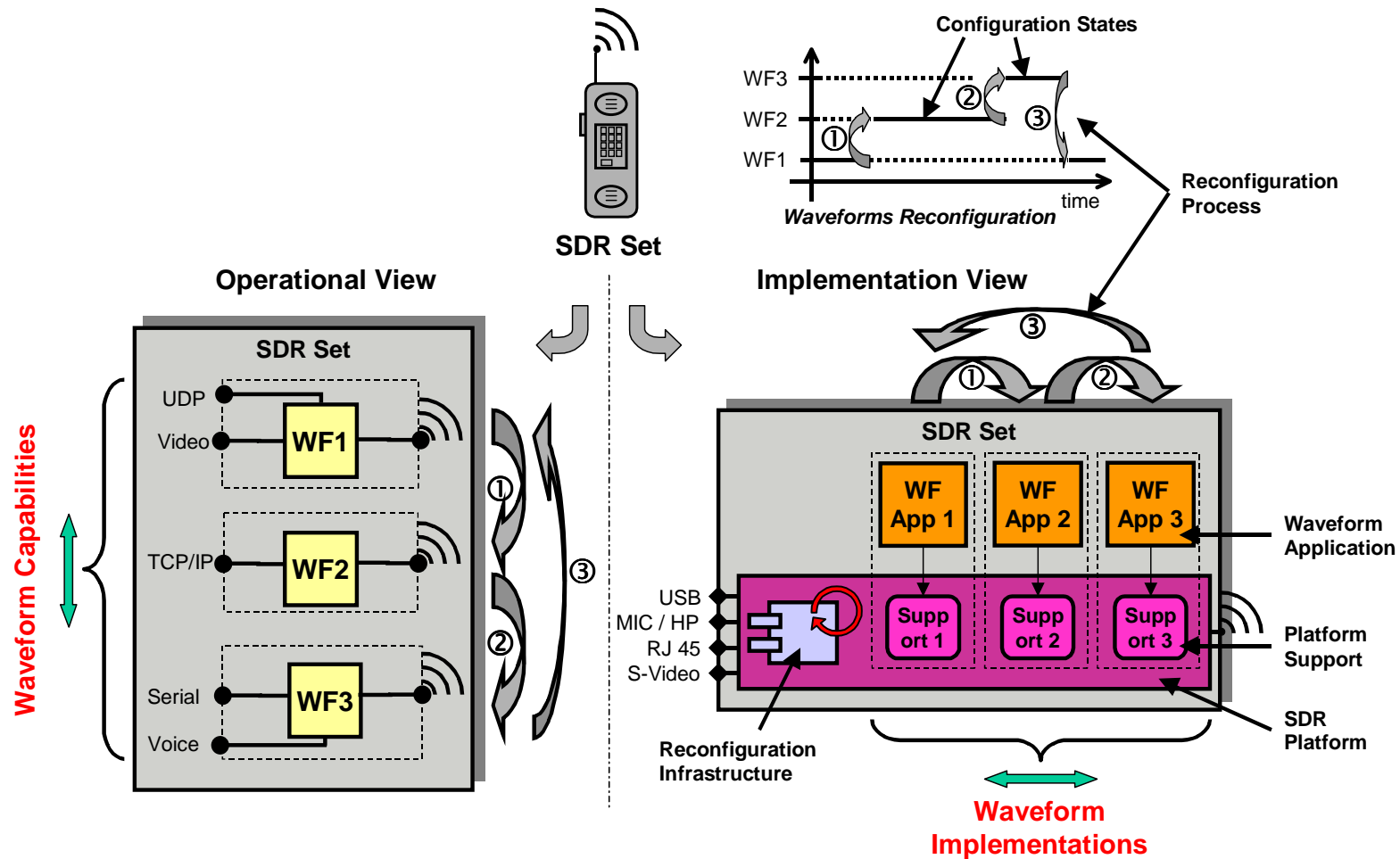
- **Portability : what and why ?**
- **Technical facts and perspectives**
- **THALES assets**
- **Conclusions**

WF Portability progresses in decades



**Thales is leading migration towards the next step
Full SDR with large portability coverage**

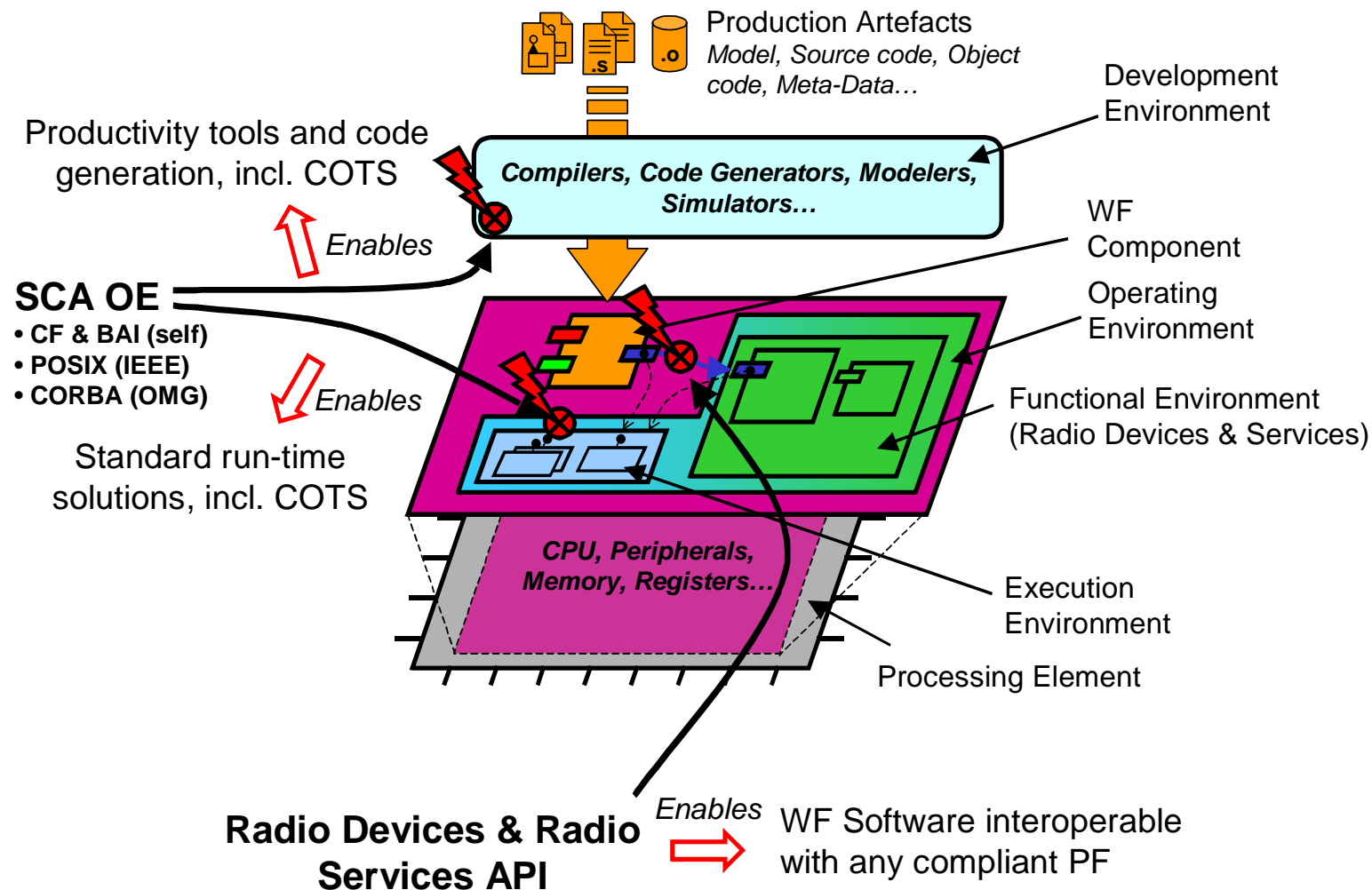
Waveform Portability is more than a SW issue



**What counts is the complete *Waveform Implementation*,
not only the *Software Part***

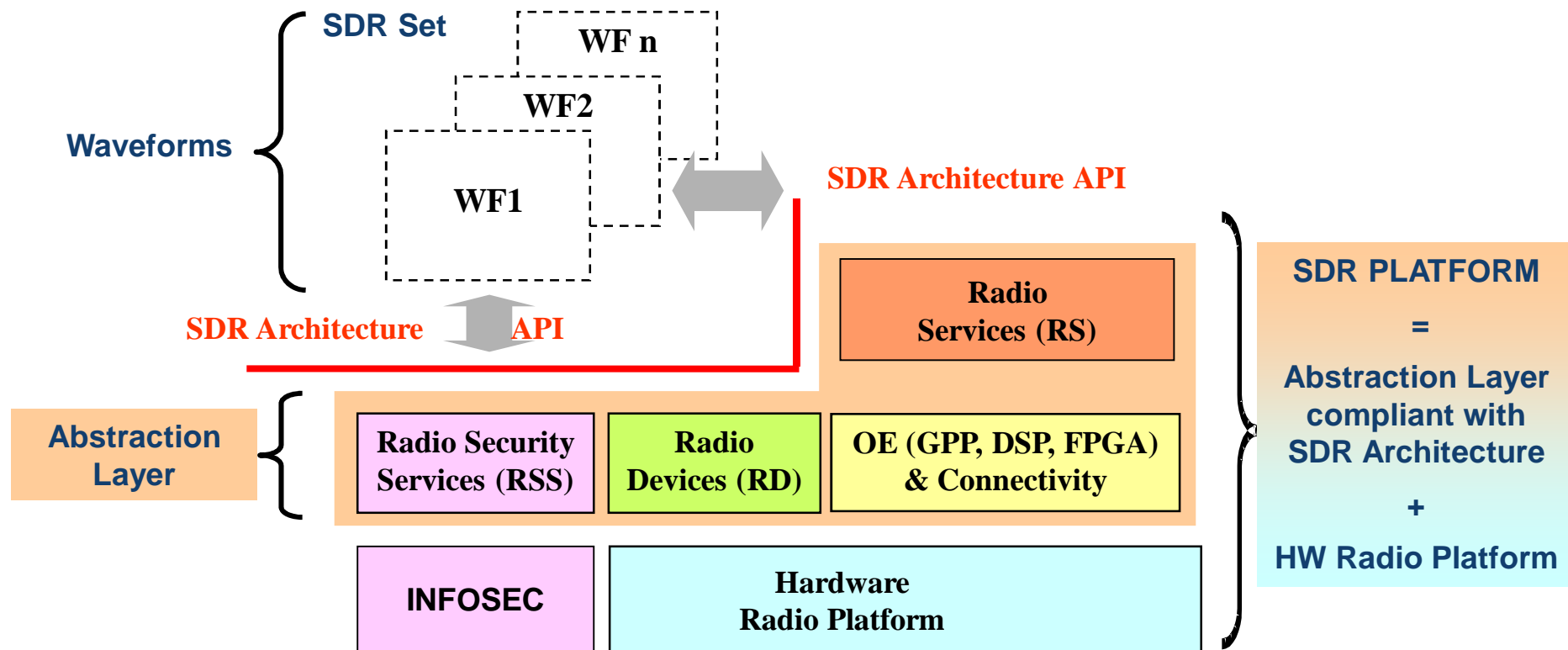
- ◆ **Having a strategy covering more than the next step**
 - Mid/long term portability objectives
 - Which WF to run on which PF
- ◆ **Take fundamental engineering decisions**
 - Select applicable SDR Architecture – Preferably standards-based
 - Favour usage of most portable SW technologies (flex/perf trade-off)
- ◆ **Apply coherent implementation strategies**
 - Efficient porting of the WF Application
 - Efficient configuration of the PF Support
 - Efficient integration of the complete WF Implementation
- ◆ **Achieving high WF portability may never prevent**
 - From system/field qualification of the WF once integrated
 - From interoperability assurance with legacy WF implementations
 - From conducting WF standard compliance certification procedure

Clear procurement roadmap with coherent implementation choices are essential to benefit from WF Portability



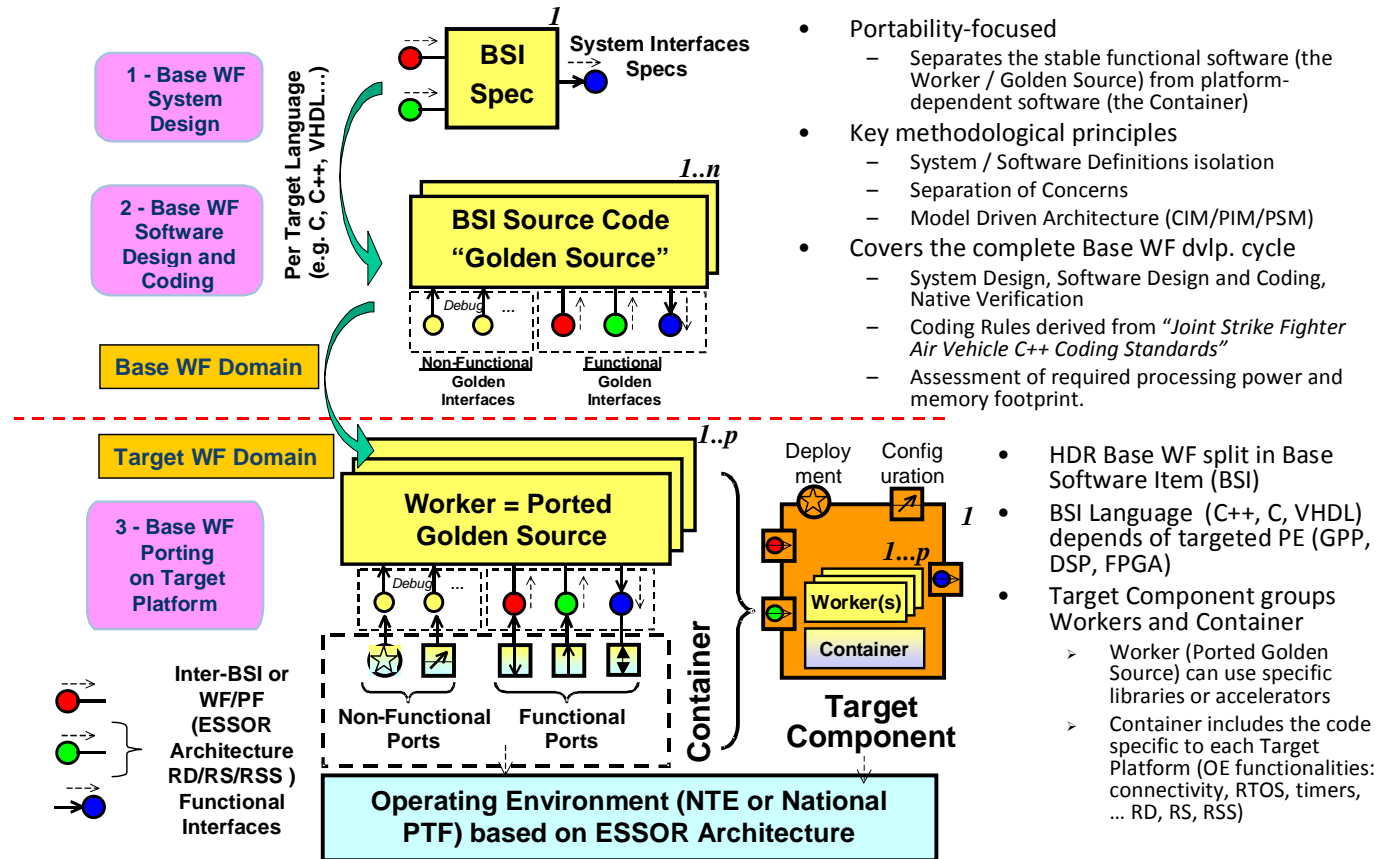
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ESSOR Architecture is a cornerstone reference for Standard Functional (RD/RS/RSS API) and Execution Environments (GPP/DSP/FPGA OE)



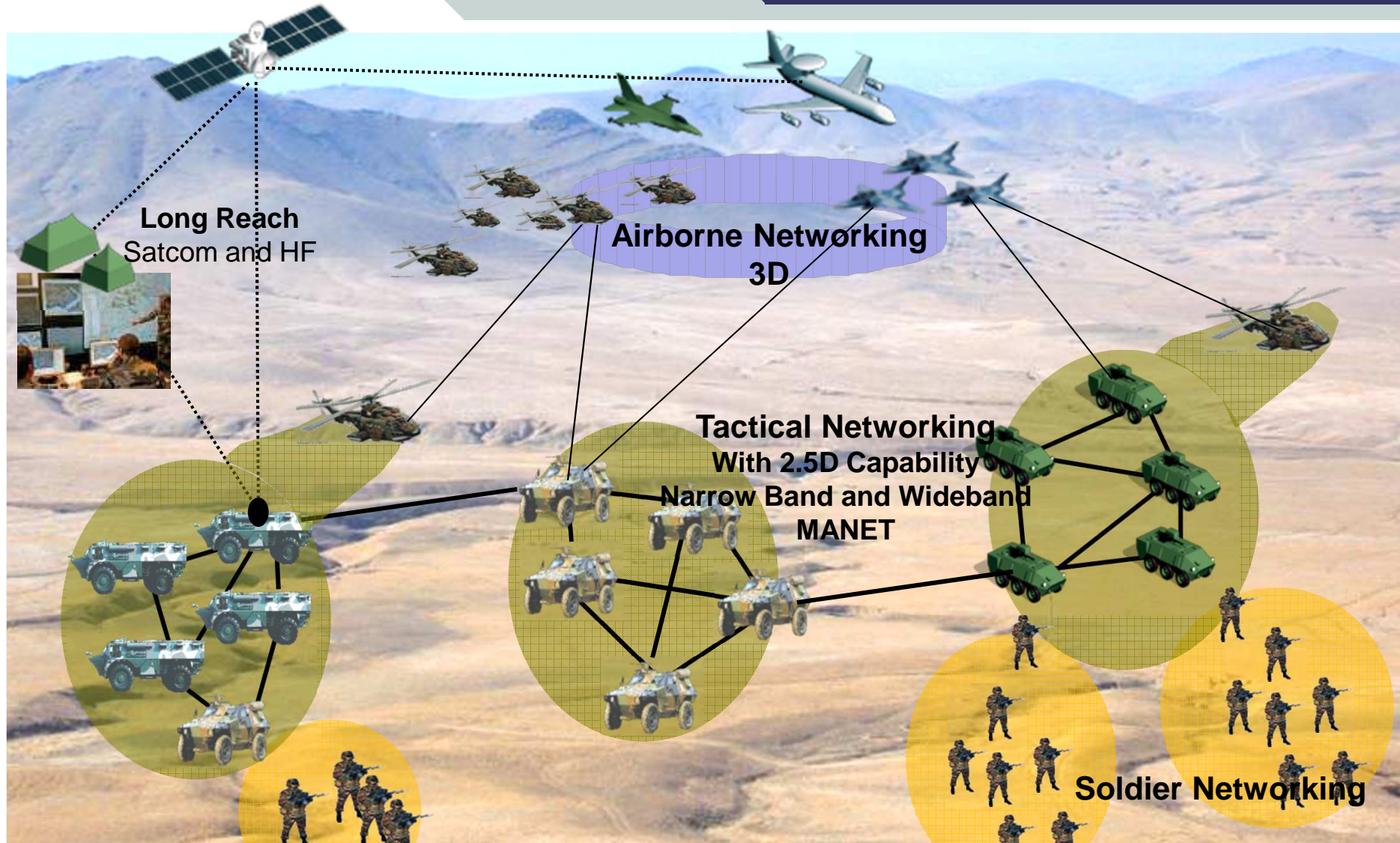
The ESSOR Architecture provides a full architecture covering all the Functional and Execution support needs

ESSOR Base WF Methodology for Portability



The ESSOR Base WF paradigm enables the ESSOR HDR WF development to pioneer realization of highly portable WF applications

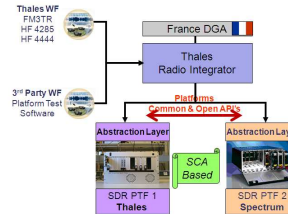
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Multi-WF SDR Platforms capability is a key requirements for NCO transition
Efficiency gains required in R&D and programs to meet end users expectations

R&T Experiences

- * *Fostering the WF Portability vision and roadmap*
- * *France advanced projects*
- * *European Projects*
- * *Transceiver Facility API*



ESSOR Programme

**Thales as a major participant*



Thales Product Lines

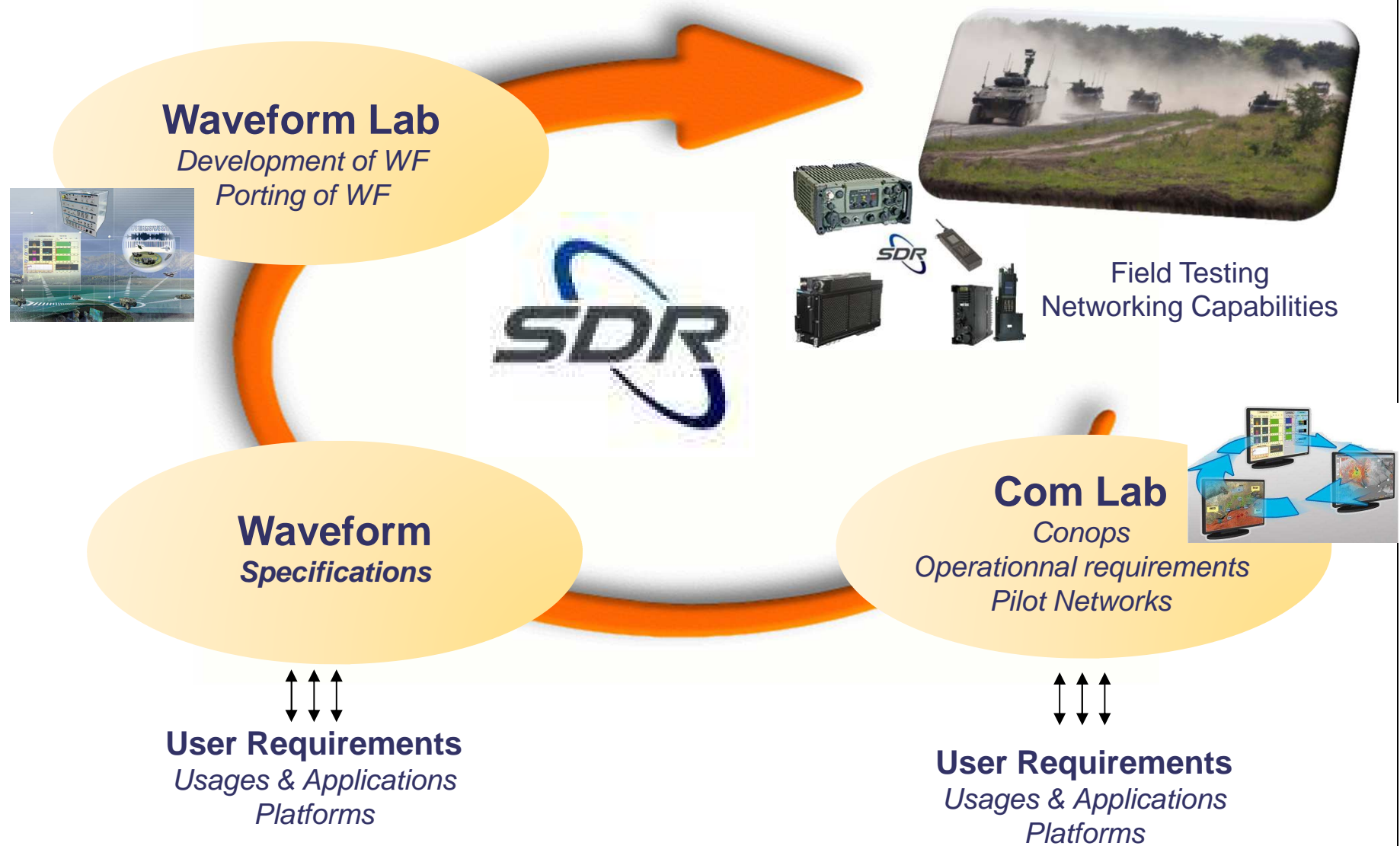
WF : PR4G-Fastnet, FlexNet, ESSOR HDR, Airborne SWN
PF : FlexNet, Nextwave, Fastnet
SDR Labs



France SDR Programme

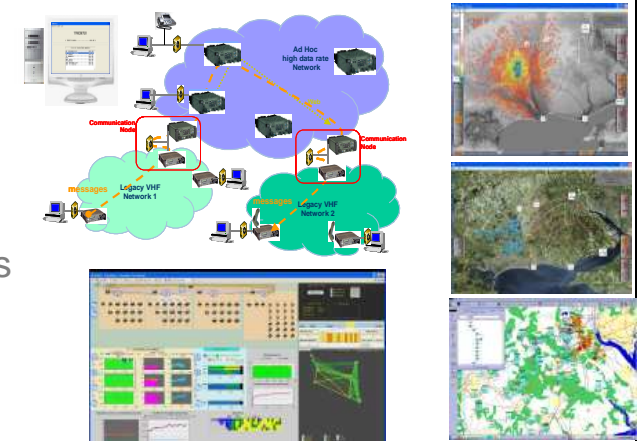
- * *Multi-services*
- * *Multi-waveforms*
- * *Multi-platforms*

Thales has a unique experience on the International Market
Multi-Waveforms and Multi-Platforms
Multiple SDR porting experiences



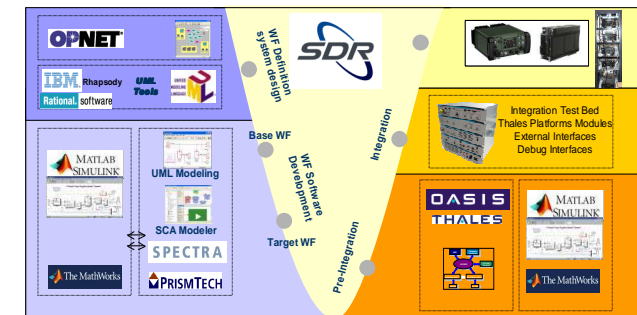
◆ SDR Com Lab

- Providing to the defense forces and industry a state of the art picture of the SDR technology benefits in the local context
- Demonstration of SDR capability in local facilities
 - demonstrations/evaluations/integration with local C4I systems
- Simulation tools for large deployment
- Training on an existing networking waveform
- Deployment and experimentation of communication node functions



◆ SDR Waveform Lab

- A waveform development framework and a toolbox
- Tools and assistance to port national crypto algorithm in the SDR
- Adapting off-the-shelf waveform for the security or specific needs and constraints
- Porting waveforms
- Developing a national waveform solution



**SDR technology is naturally opened for cooperation
Thales to provide the SDR Networking Communication Labs**

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- ◆ **Key progress being made on essential portability enablers**
 - E.g. ESSOR: SDR Architecture and Base WF Paradigm
 - Maturity gap between SDR Architectures and Portability Paradigms
 - Need to keep compliancy and coherence with legacy basis
- ◆ **Importance to better coordinate and harmonize**
 - Avoiding proliferation of SDR Standards
 - Converging towards broadly shared WF Portability Paradigms
- ◆ **WinnF a key place for further convergences**
 - Coordinating Committee on International SCA Standards
 - Project on WF Portability State-of-the-Art
- ◆ **THALES actively contributing to improve portability**