

THOUGHTS ON THE ESD CONCEPT

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Scale and value for money

- Different amounts of money for each ESD have been discussed – from €25m - €50m per ESD
- These are large amounts of taxpayers money
 - Such funding needs to be used appropriately
- Exascale systems in themselves have no value to society
- Value accrues from the modelling and simulation results produced by them
- Need to be very clear why we are building them and what scientific and industrial research will be enabled using them

Research & Innovation Action?

- Proposed to have two stage projects
 - Stage A – R&D with focus on integration and testing (18–24m)
 - Stage B – Deployment and use
- Not obvious this fits with a traditional R&IA project model
- Looks more like PCP to me
 - But PRACE has shown how difficult PCP is to make work
- Stage A cannot just be integration
 - Has to involve some research and design activities
- If EC sees this as purely demonstration of innovative results from other projects – Innovation Action – 70% funding to industry

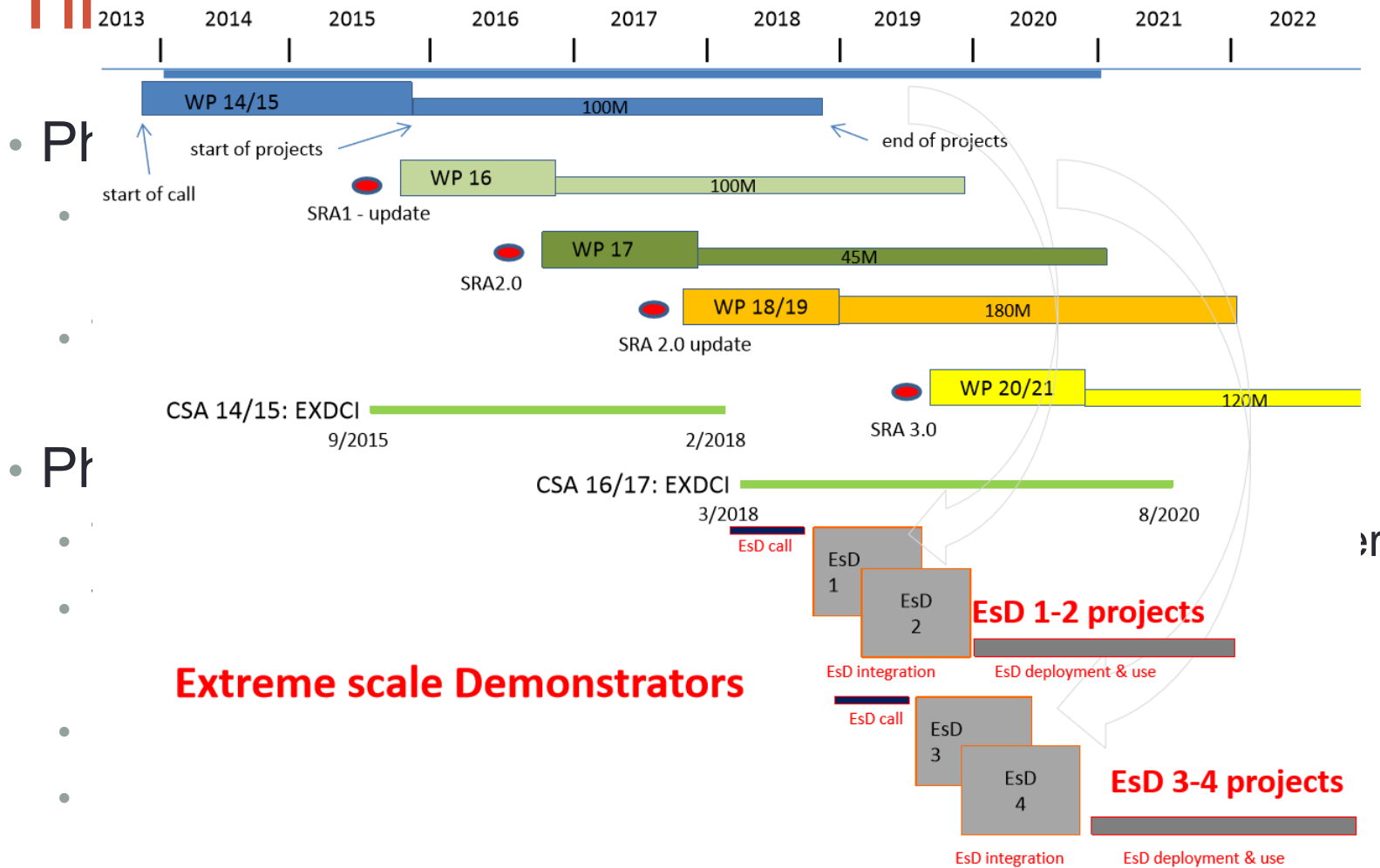
What does €30m buy?

- Assume we're going to spend €30m on hardware
- A typical system might be (using today's hardware)
 - 6 login nodes
 - 5 Pb fast lustre storage
 - 2,560 36 core nodes with 256Gb memory – 92,160 cores in total
 - Software, 3-year warranty and installation etc
- Performance would be comparable to a modest Tier 0 system today ~ Rmax = 2.8 petaflops
- Power usage 1MW
- This is today's technology of course ... R&D integration costs might reduce total by €5m

The remaining €20m ...

- These costs are very dependent on lifetime of machine
- Power costs €1.53 million annually
 - 3 years = €4.5 million
- System support and helpdesk
 - 3 years = €2.4 million
- System software development (10 FTEs)
 - Difficult to estimate
 - 2 years €2.6 million
- Applications porting and science support (20 FTEs)
 - 3 years €7.7 million
- TOTAL = €17 million + contingency etc

Timeline



Extreme scale Demonstrators

Other thoughts

- We need to be very clear why we're doing this – is it:
 - Support to the nascent European HPC industry?
 - Development of world beating new HPC system technologies?
 - Provision of small number of EC-funded Tier-0 machines in Europe?
- Two key questions
 - Do we need such large scale demonstrators?
 - Is there a difference between a €10m or €30m system?
- Key is user requirements
- What other programmes – both EC and MS will be sacrificed to fund this?