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StratusLab Proposal
Enhancing Grid Infrastructures with Virtualization and Cloud Technologies

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StratusLab: Enhancing Grid Infrastructures with Virtualization and Cloud Technologies

Vision

- Grid and cloud embody **complementary computing models** that will coexist and cooperate in existing and future e-infrastructures

Aim

- Incorporate **cloud/virtualization innovation into existing Grid infrastructures** to:

  - **Simplify** and **optimize** its use and operation, providing a more **flexible**, **dynamic** computing environment for scientists.

  - **Enhance existing computing infrastructures with "IaaS" cloud paradigms**
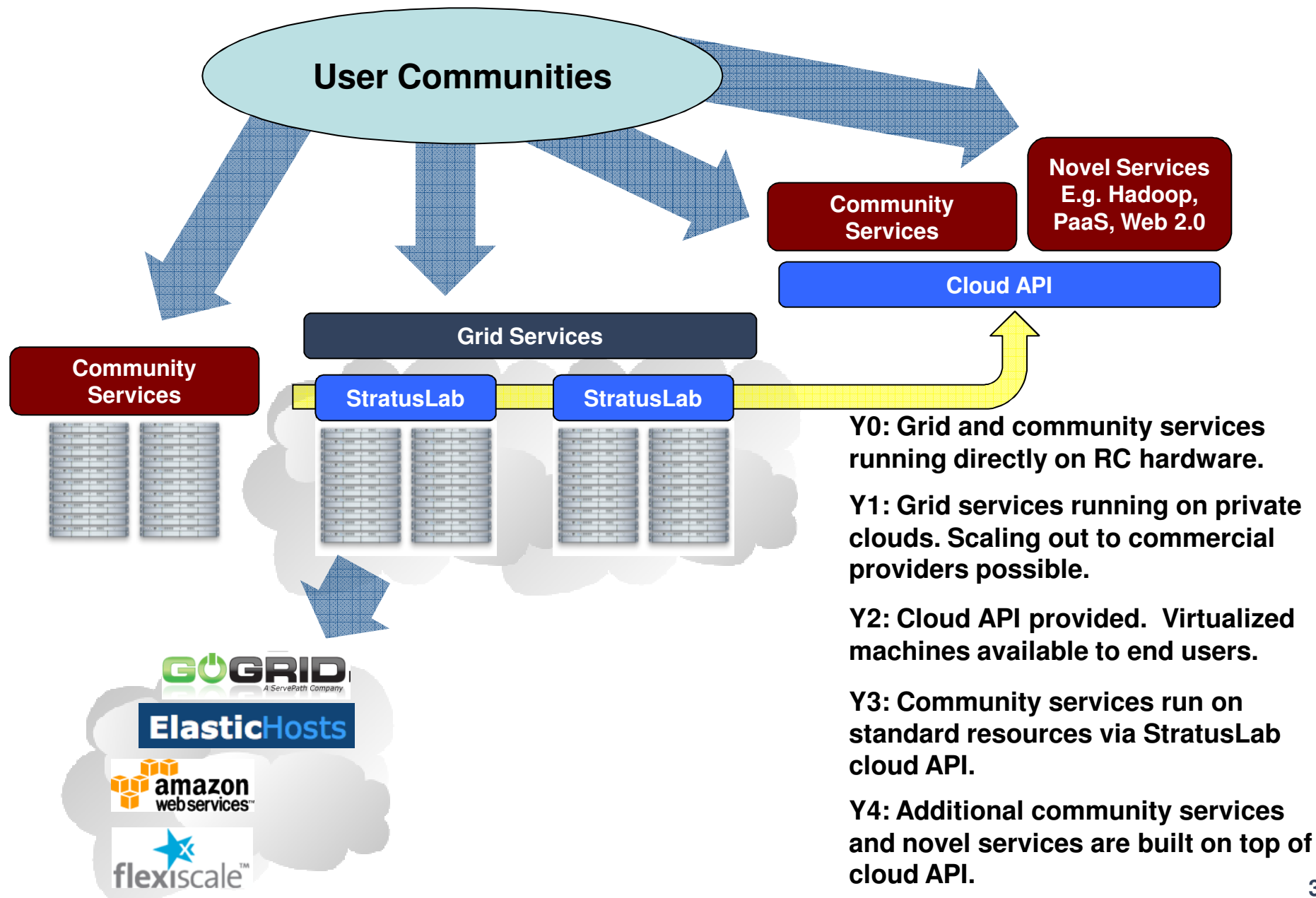
Evolutionary Approach

- **Complement existing middleware services**, being fully transparent to upper layers

- **Existing Grid middleware would continue** to provide the glue to federate the distributed resources and the services for high-level job and data management

- **Address the emerging IaaS cloud-like usage patterns**

Service Centred Project driven to support production infrastructures

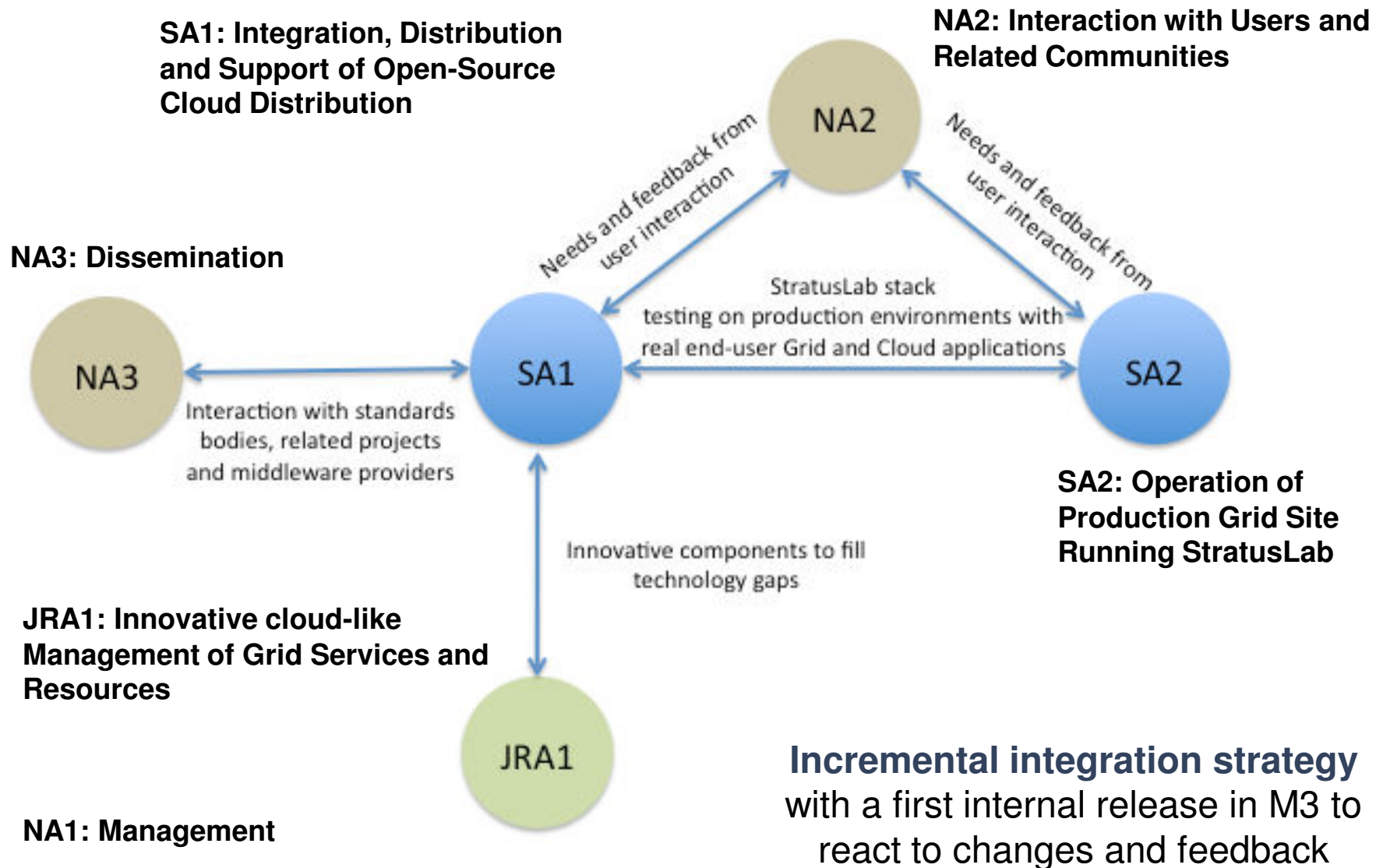- Integration, distribution, testing and maintenance the **StratusLab Toolkit**

Project's Vision over a Medium to Long-Term Timeframe

User Communities

Community Services

Novel Services E.g. Hadoop, PaaS, Web 2.0

Cloud API

Grid Services

Community Services

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Y0: Grid and community services running directly on RC hardware.

Y1: Grid services running on private clouds. Scaling out to commercial providers possible.

Y2: Cloud API provided. Virtualized machines available to end users.

Y3: Community services run on standard resources via StratusLab cloud API.

Y4: Additional community services and novel services are built on top of cloud API.

StratusLab Users and Means of Interaction

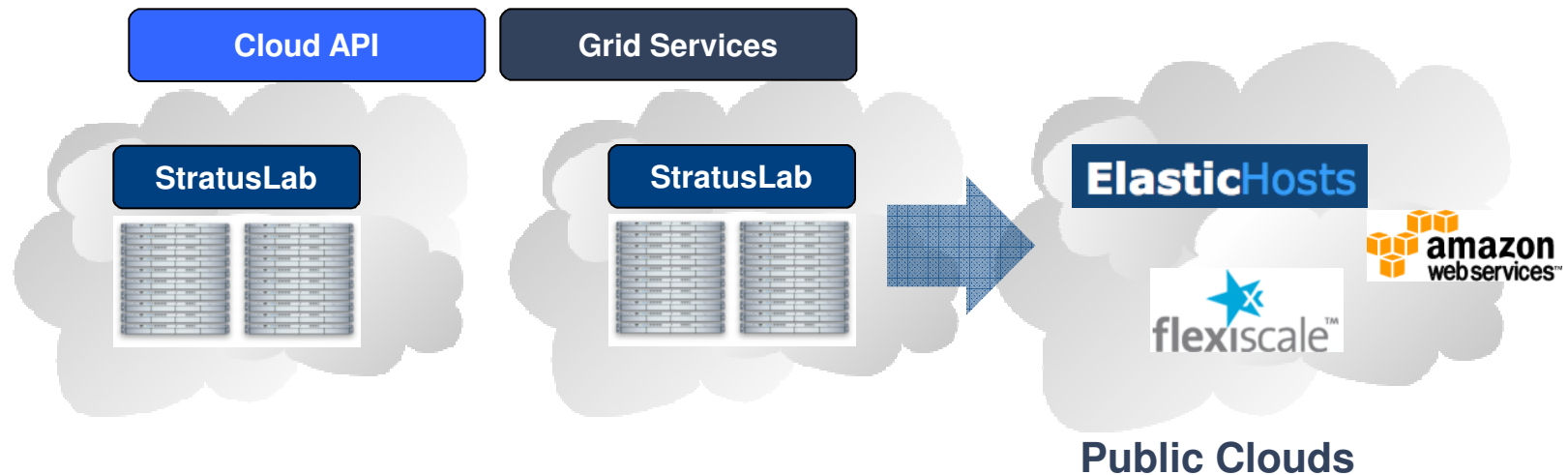|			
User Community	**Scientists**	End-users that take advantage of existing machine images to run their scientific analyses.	Tutorials and presentations at EGI-related events. Use of cloud API in Y2. Direct contact and support through NA2.
	Software Scientists & Engineers	Scientists and engineers that write and maintain core scientific community software and associated machine images.	Intensive contact through NA2 via Virtual Research Communities (VRCs) in EGI.
	Community Service Administrators	Scientists and engineers that are responsible for running community-specific data management and analysis services.	Communicate through both VRCs (NA2) and via system administrators (SA2). Intensive contact especially for cloud deployment of community-specific services.
Resource Centers	**System Administrators**	Engineers or technicians that are responsible for running grid and non-grid services in a particular resource center.	Contact via system administrators involved in project (SA2) and targeted through Quattor and Operations workshops (NA2).
	Hardware Technicians	Technicians that are responsible for maintaining the hardware and infrastructure at a resource center.	Primarily indirect contact through network of system administrators in contact with project.

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SA1: Integration, Distribution and Support of Open-Source Cloud Distribution

NA2: Interaction with Users and Related Communities

NA3: Dissemination

NA2

Needs and feedback from user interaction

Needs and feedback from user interaction

StratusLab stack testing on production environments with real end-user Grid and Cloud applications

NA3

SA1

SA2

Interaction with standards bodies, related projects and middleware providers

SA2: Operation of Production Grid Site Running StratusLab

Innovative components to fill technology gaps

JRA1: Innovative cloud-like Management of Grid Services and Resources

JRA1

Incremental integration strategy with a first internal release in M3 to react to changes and feedback

NA1: Management

Extensibility and Interoperability

The Role of Public Clouds in our Vision

Grow a Resource Provider on-demand to **meet a peak demand** and so to enable highly scalable computing environments

Cloud API   **Grid Services**

StratusLab   StratusLab

ElasticHosts

flexiscale™

amazon webservices™

Public Clouds

www.StratusLab.org

Thank you for your attention