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Proposal 2
EGEA Net based on vNext

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What is vNext?

vNext is the working title for a new solution using up-to-date **internet technologies** driven by mobile equipment.

- Communication is based on simple HTTP and **RESTful** web services using JSON as data format.
- The web service implementation (ENC server) will be done with **node.js**.

Building block: REST

"REST (Representational state transfer) is a way to create, read, update or delete information on a server using simple HTTP calls.

It is an alternative to more complex mechanisms like SOAP, CORBA and RPC. A REST call is simply an HTTP request to the server." (Wikipedia)

Building block: JSON

"JSON or JavaScript Object Notation, is an open standard format that uses human-readable text to transmit data…

It is used primarily to transmit data between a server and web application, as an alternative to XML." (Wikipedia)

```
{
   "firstName": "John",
   "lastName": "Smith",
   "isAlive": true,
   "age": 25
}
```

```
<xml>
   <firstName>John</firstName>
   <lastName>Smith</lastName>
   <isAlive>true</isAlive>
   <age>25</age>
</xml>
```

Building block: node.js

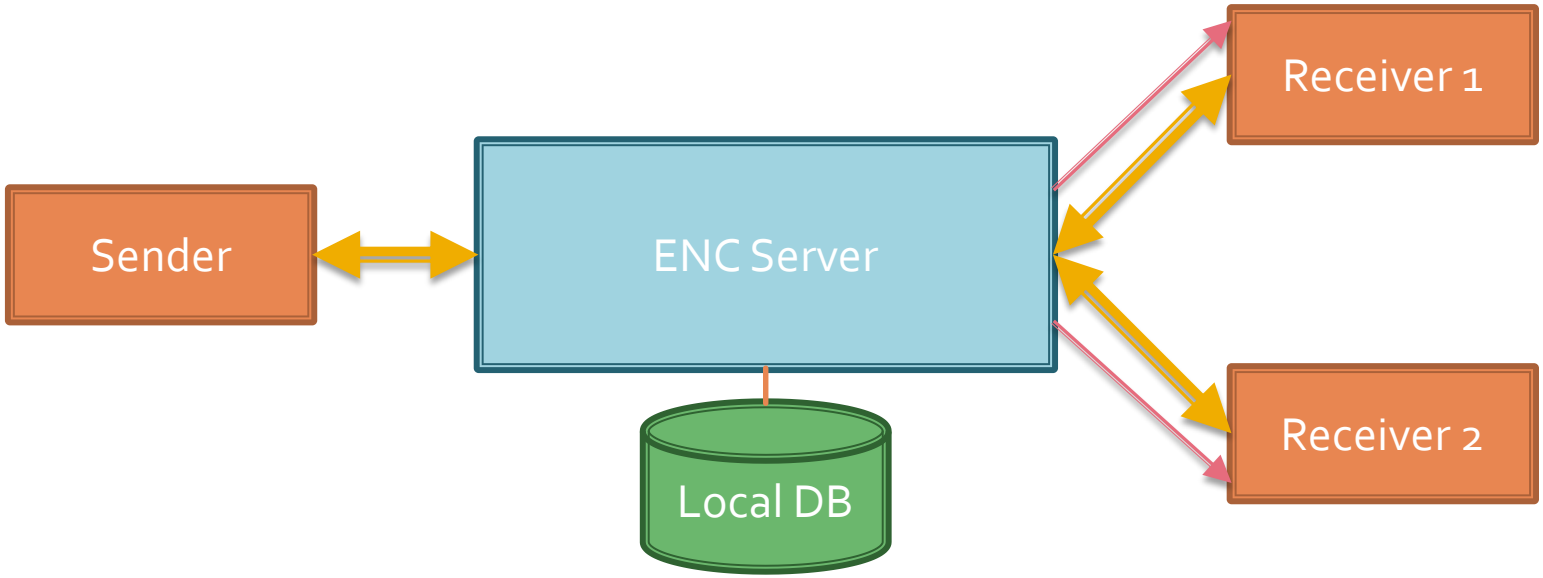
*"Node.js is a **software platform** for scalable server-side and networking applications. Node.js applications are written in **JavaScript**.*

*All of the popular server operating systems are supported, including **Windows** and **Linux**.*

*Node.js applications are designed to **maximize throughput and efficiency**, using non-blocking I/O and asynchronous events." (Wikipedia)*

Data flow

- Request-Response
- Optional notification



What is a service?

- A service in vNext is a lightweight web service and supports 4 possible HTTP methods:
  - GET (retrieve information)
  - PUT (modify information)
  - POST (create information)
  - DELETE (delete information).

- A RESTful web service is defined with a base URI such as http://encserver.local/orders.

Data definitions

vNext will use two formats, XML and JSON.

- XML will be used for test results based on open, well established asanetwork definitions
- JSON will be used for order and vehicle data (lightweight and widely supported)
- Data fields and data types will be similar to asanetwork definitions

Sample session: Login

CLIENT ACTION

Client logs into server

http://encserver.local/login

Post

```
{
    "client":"Bts100",
    "type":"brake_tester",
    "time":"2014-07-08T10:03:20",
    …
}
```

SERVER RESPONSE

Server responds with a token. This token has to be used in create/change requests.

Response

```
{
    "token":"x7Gn8l",
    "time":"2014-07-08T10:03:21",
    …
}
```

Sample session: Get list of orders

CLIENT ACTION

Client requests list of orders

http://encserver.local/orders

GET

SERVER RESPONSE

Server responds with list of orders.

Response

```
{
   {"order":"1","vehicle":"AABB212"},
   {"order":"2","vehicle":"BBCC323"},
   {"order":"3","vehicle":"CCDD434"},
   {"order":"4","vehicle":"DDEE545"},
    …
}
```

Sample session: Get orders details

CLIENT ACTION

Client requests order 1

http://encserver.local/order/1

Get

SERVER RESPONSE

Server responds with order details

Response

```
{
   "order":"1",
   "vehicle":"AABB212",
   "vin":"WF0MXXGBWM8Y55432",
   …
}
```

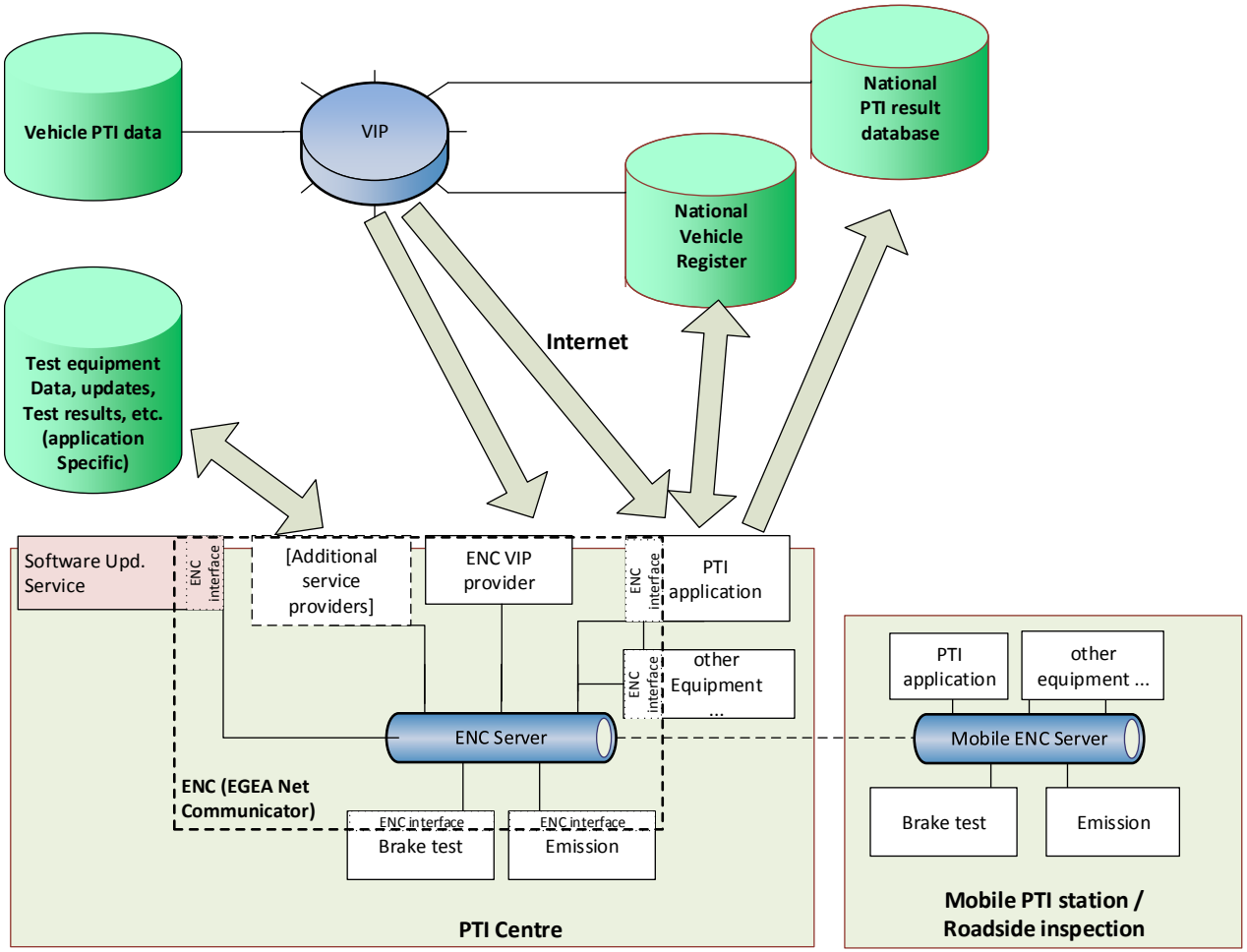
Infrastructure

- vNext does **NOT** use (and depend) on
  - File sharing
  - Data base replication on DB Level
- vNext only requires TCP/IP and HTTP(S)
  - Port 80 or 443, other ports possible

EGEA Requirements

- vNext fulfills all EGEA requirements
- Some requirements are better implemented as separate application
  - Software update service

PTI network architecture



Design principles

- Avoid all-in-one solutions!
- Difficult to maintain and difficult to enhance

Foto: thinkgeek.com

vNext Strengths

- Plug'n Play
- Will **fulfill all** requirements
- **Modern, up-to-date** platform
- True **cross-platform** solution