26th annual INCOSE international symposium
Edinburgh, UK
July 18 - 21, 2016

Reinventing the ConOps for Innovative Systems Development

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Current State

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- ConOps and OpsCon

  OpsCon - user-oriented document that describes system characteristics of the to-be-delivered system from the user's viewpoint.

  ConOps - describes the organization's assumptions or intent in regard to an overall operation or series of operations of the business with using the system to be developed, existing systems, and possible future systems.

  (INCOSE Handbook v4 / ISO/IEC/IEEE 29148:2011)

Current State

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- Needfinding

  the **critical** part of the **human-centric** innovation approach ”Design Thinking”, **empathy** of users/stakeholders/teammemebers, enabling activities across the early phases from problem re(definination) til the system validation (Leifer and Steinert, 2011)

NIX

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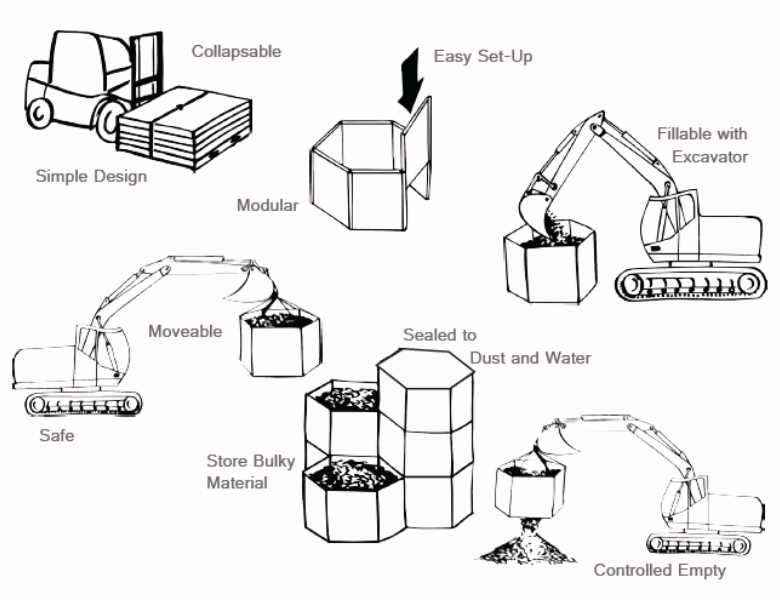
URBAN MINING

ME310 DESIGN INNOVATION



SARPA

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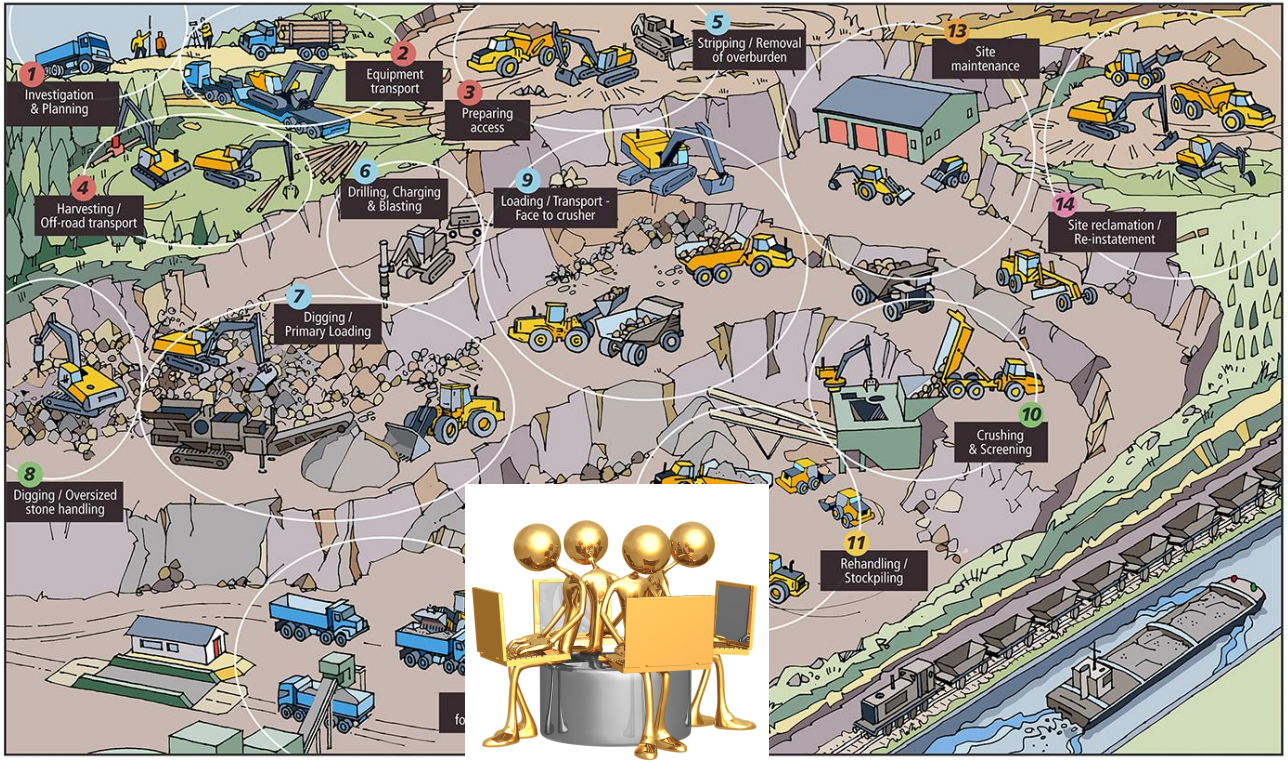
Safe and Robust Platform for Automated Vehicles

SARPA


1 Investigation & Planning
2 Equipment transport
3 Preparing access
4 Harvesting / Off-road transport
5 Stripping / Removal of overburden
6 Drilling, Charging & Blasting
7 Digging / Primary Loading
8 Digging / Oversized stone handling
9 Loading / Transport - Face to crusher
10 Crushing & Screening
11 Rehandling / Stockpiling
13 Site maintenance
14 Site reclamation / Re-instatement

SARPA

There can be only one…
Well defined

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User focused ConOps

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- User-oriented document that describes system characteristics of the to-be-delivered system and the system of systems from the user's viewpoint.

Usage

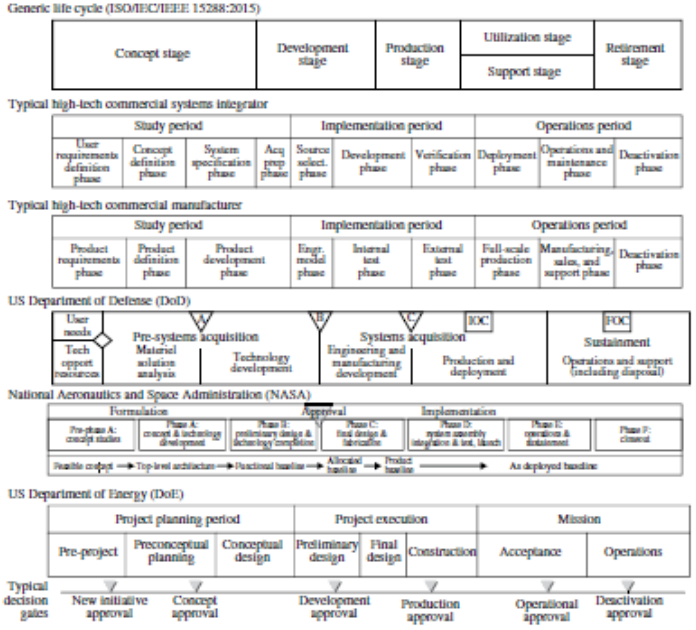
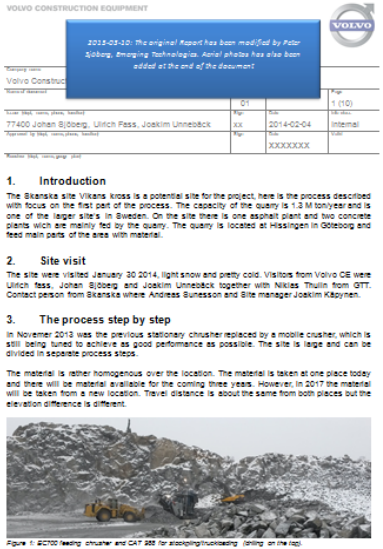


FIGURE 3.3 Comparisons of life cycle models. Derived from Forsberg et al. (2005), Figure 7.2. Reprinted with permission from Kevin Forsberg. All other rights reserved.

ALWAYS

Documenting

- Word or Models or whatever…



VOLVO CONSTRUCTION EQUIPMENT

2015-03-10: The original Report has been modified by Peter Sjöberg, Emerging Technologies. Aerial photos has also been added at the end of the document

Volvo Construc		Page 1 (10)
77400 Johan Sjöberg, Ulrich Fass, Joaklim Unneback	01 / xx	2014-02-04 / xxxxxxx	Internal

1. Introduction

The Skanska site Vikans kross is a potential site for the project, here is the process described with focus on the first part of the process. The capacity of the quarry is 1.3 M ton/year and is one of the lager site's in Sweden. On the site there is one asphalt plant and two concrete plants wich are mainly fed by the quarry. The quarry is located at Hisingen in Göteborg and feed main parts of the area with material.

2. Site visit

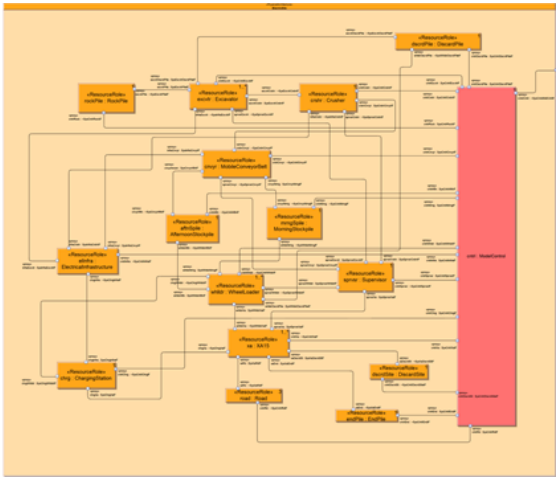
The site were visited January 30 2014, light snow and pretty cold. Visitors from Volvo CE were Ulrich fass, Johan Sjöberg and Joaklim Unneback together with Niklas Thulin from GTT. Contact person from Skanska where Andreas Sunesson and Site manager Joakim Käpynen.

3. The process step by step

In Novemer 2013 was the previous stationary chrusher replaced by a mobile crusher, which is still being tuned to achieve as good performance as possible. The site is large and can be divided in separate process steps.

The material is rather homogenous over the location. The material is taken at one place today and there will be material available for the coming three years. However, in 2017 the material will be taken from a new location. Travel distance is about the same from both places but the elevation difference is different.

Figure 1: EC700 feeding chrusher and CAT 988 for stockpiling/truckloading (drilling on the top).



Main take away

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- Use and update the ConOps/OpsCon, at the last, through the complete development life cycle
- Needfinding is an excellent way of gathering the information

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