

Mile stones of Real Innovation: **I3D Industrial services** (Workforce Investment)

I3D Workshop, Košice
21st November, 2017

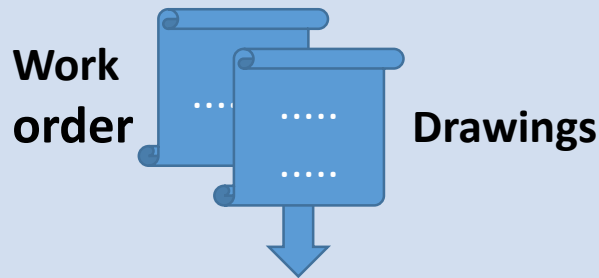
info@novitech.sk



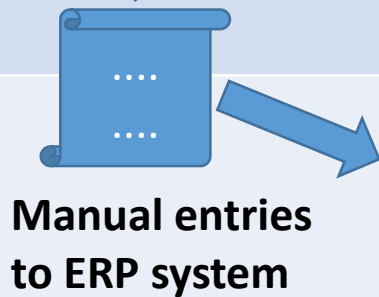
The Change

Today	Tomorrow (I3D)
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Work instructions



Work report

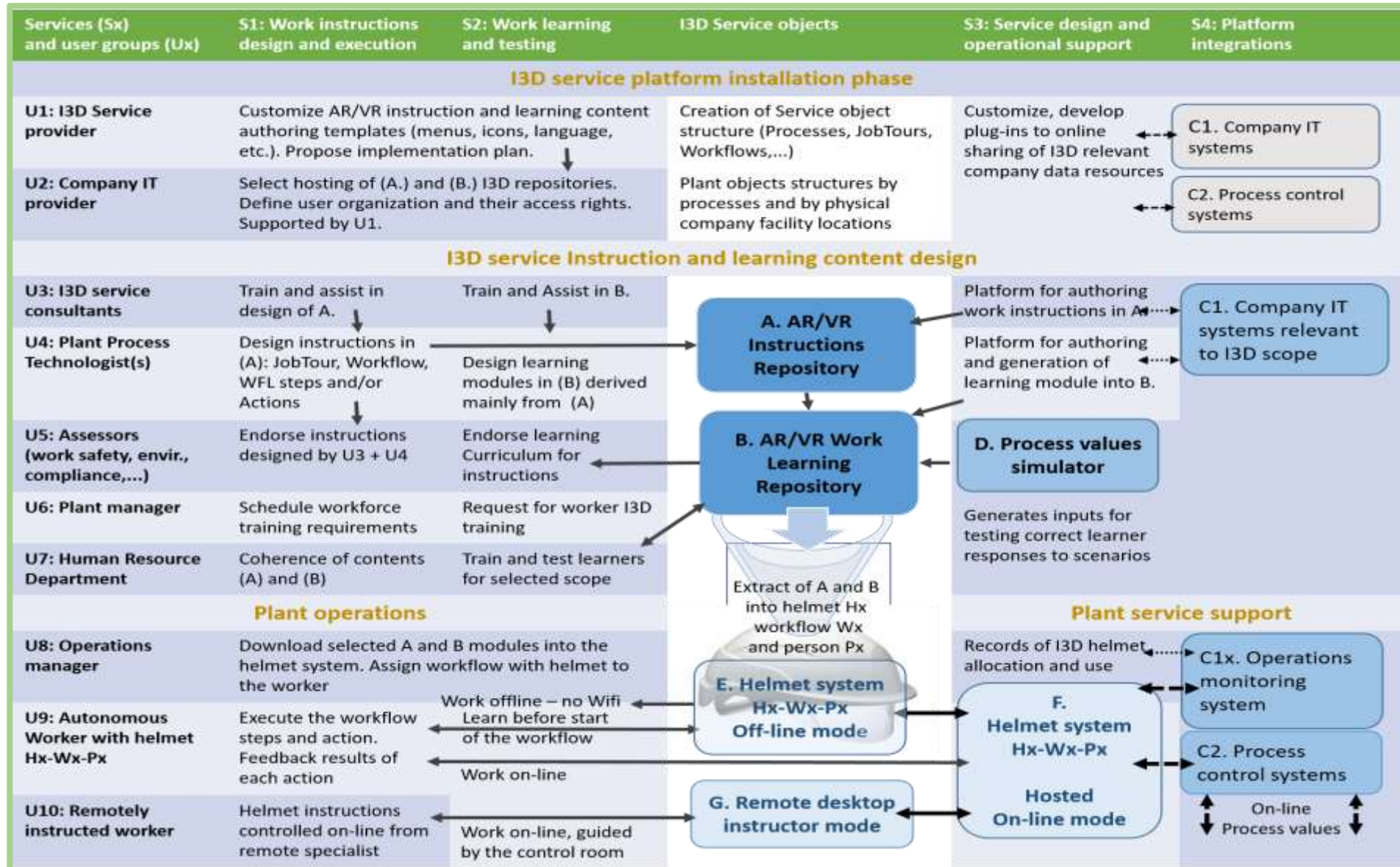


Work instructions



Online Communication: data, voice, picture, video

The overall I3D service architecture

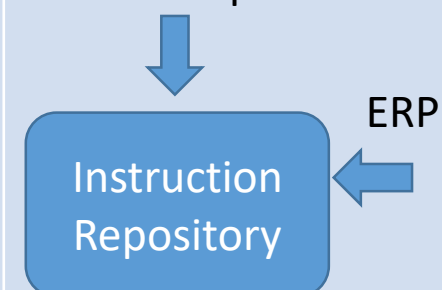
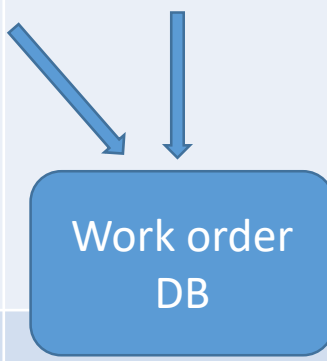



The heavy Industry Workplace Innovation

Worker Today (Key issues)	Worker tomorrow
<p>New work learning (change): Limited resources, not up-to-date observations, verbal guidance</p>	<p>Learn work to be done in a virtual reality session (VR glasses)</p>
<p>Work execution:</p> <ul style="list-style-type: none"> - Detailed work instructions missing - Work done is not documented - Remote worker assistance complicated 	<p>Use Augmented reality glasses:</p> <ul style="list-style-type: none"> - Online support info for work: text, voice, picture, video input/output - Work done recorded online
<p>Work reporting:</p> <ul style="list-style-type: none"> - Paper based orders and reports - Manual entry to company IT system 	<p>Smart Glasses connected to company systems. No additional reporting needed.</p>

Typical industry work places: heavy industry line maintenance, machine line operation (start/stop), work safety, device testing, assembly instructions, buildings utility statutory compliance checks (electricity, water, gas)
+ **Any important work** which requires to execute exact workflow of instructions.

The Scope of I3D

User	Services	Resources
Plant Technologists Work safety inspector (desktop)	<ul style="list-style-type: none"> Define work-instruction sets(workflow, steps, actions) Define/add work safety instructions New Provider/worker test 	Plant ISO specifications 
Plant manager (desktop)/Android	<ul style="list-style-type: none"> Issue work orders (WO) for service providers Download WO to smartglass Handover smartglass to provider 	
Provider(s) – workers EPSON BT2000 (Android app)	<ul style="list-style-type: none"> Execute WO (using smart glass) Report results of each instruction of WO (text, voice, picture taken) 	

Worker smart-glass view



2017-1204-001

5. Kontroly z mosta

1. Zistenie stavu lán

00:00

Hide Menu

Main Menu

Prev. Step

Next Step

Prev. Action

Next Action

Pred kontrolou

Po kontrole

Most

Vizuálna kontrola: Sú laná bez prasknutého jedného prameňa, prasknutých drátov, bez deformácií, sú správne uchytené konce lana, je lano v drážkach bubna a

Navigation

Gallery

Start

End

Resources

Voice

Picture

Video Rec

Worker smart-glass view



The technologist defines work instructions


Logout

Save Delete

Home > step > step > step > step > step

Details

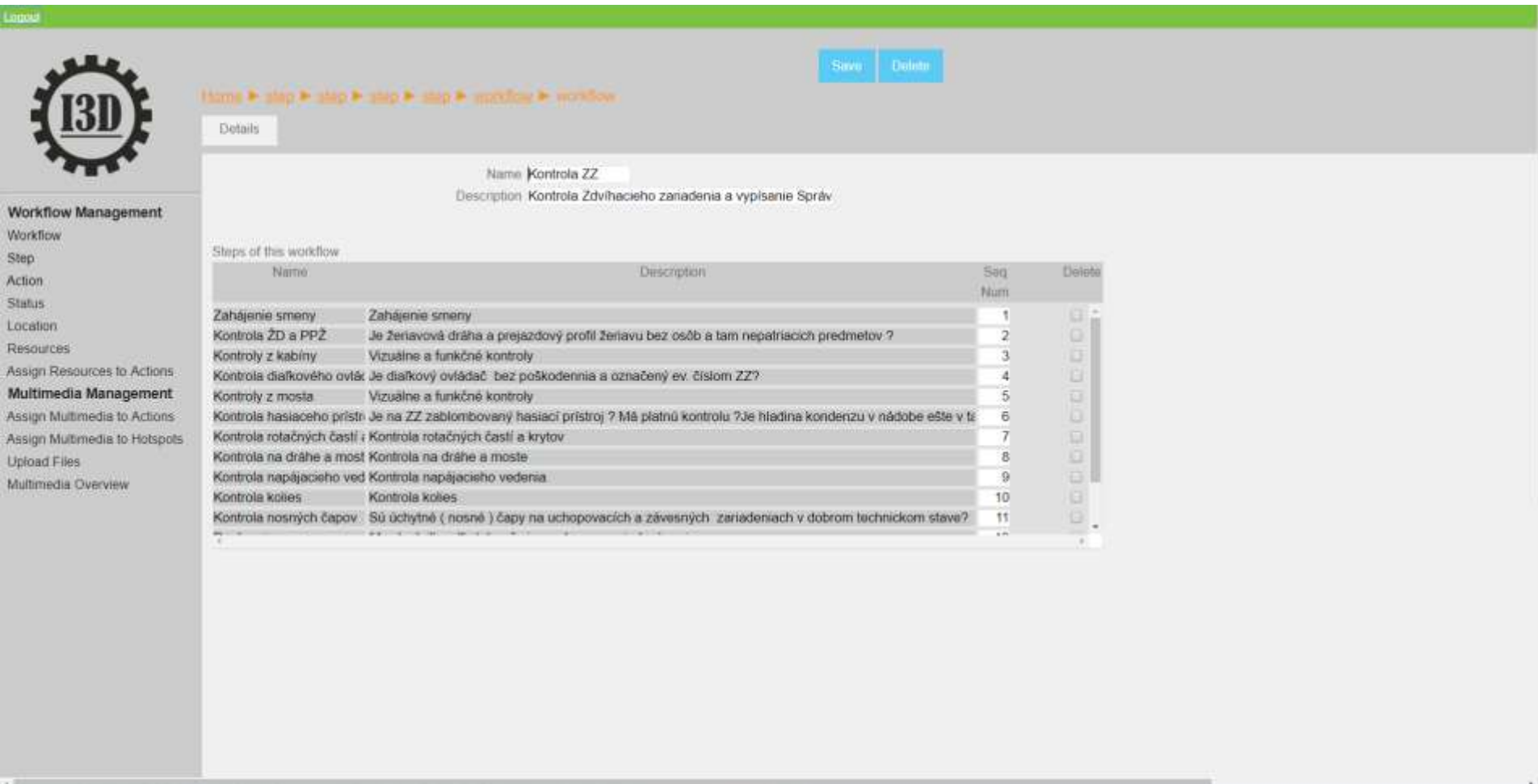
Name:
 Description:
 Seq Num:
 Location: Most
 workflow_id: Kontrola Zdvhacieho zariadenia a vypísanie Správy o technickom



Actions related to step

Name	Description	Planned Time	Sequence number
Zistenie stavu lán	Vizuálna kontrola: Sú laná bez prasknutého jedného prameňa, prasknutých drátov, b	15	1
Zápis stavu lán	Sú laná bez prasknutého jedného prameňa, prasknutých drátov, bez deformácií, sú s	5	2
Zistenie stavu brzdového mechan	Vizuálna kontrola: Je brzdový mechanizmus zdvihu, pojazdu a otoču v bezchybnom	10	3
Zápis stavu brzdového mechaniz	Je brzdový mechanizmus zdvihu, pojazdu a otoču v bezchybnom stave? Má brzdov	5	4
Zistenie stavu spojovacích súčastí	Vizuálna kontrola: Sú dotiahnuté skrutky, matice, čapy a iné spojovacie súčastky? S	10	5
Zápis stavu spojovacích súčastok	Sú dotiahnuté skrutky, matice, čapy a iné spojovacie súčastky? Sú všetky? (viditeľn	5	6
Zistenie stavu prevodových skriň	Vizuálna kontrola: Je tesnosť prevodových skriň vyhovujúca a je v nich dostatok oleja?	10	7
Zápis stavu prevodových skriň	Je tesnosť prevodových skriň vyhovujúca a je v nich dostatok oleja?	5	8

Shop floor manager composes the work instructions from workflows



The screenshot displays the I3D Shop floor manager interface. At the top left is the I3D logo. A navigation breadcrumb shows: Home > step > step > step > step > workflow > workflow. Below this is a 'Details' tab. The main content area shows the details for a workflow named 'Kontrola ZZ'. The description is 'Kontrola Zdvhacieho zariadenia a vypísanie Správ'. Below this is a table titled 'Steps of this workflow' with columns for Name, Description, Seq Num, and Delete. The table lists 11 steps, from 'Zahajenie smery' to 'Kontrola nosných čapov'. On the left side, there is a sidebar menu with sections for 'Workflow Management' and 'Multimedia Management', each containing several sub-items.

Save Delete

Home > step > step > step > step > workflow > workflow

Details

Name: Kontrola ZZ
Description: Kontrola Zdvhacieho zariadenia a vypísanie Správ

Steps of this workflow

Name	Description	Seq Num	Delete
Zahajenie smery	Zahajenie smery	1	<input type="checkbox"/>
Kontrola ŽD a PPŽ	Je žeriavová dráha a prejazdový profil žeriavu bez osôb a tam nepatriacich predmetov?	2	<input type="checkbox"/>
Kontroly z kabíny	Vizuálne a funkčné kontroly	3	<input type="checkbox"/>
Kontrola diaľkového ovláča	Je diaľkový ovládač bez poškodenia a označený ev. číslom ZZ?	4	<input type="checkbox"/>
Kontroly z mosta	Vizuálne a funkčné kontroly	5	<input type="checkbox"/>
Kontrola hasiaceho prístroja	Je na ZZ zablonbovaný hasiaci prístroj? Má platnú kontrolu? Je hladina kondenzu v nádobe ešte v tí	6	<input type="checkbox"/>
Kontrola rotačných častí	Kontrola rotačných častí a krytov	7	<input type="checkbox"/>
Kontrola na dráhe a moste	Kontrola na dráhe a moste	8	<input type="checkbox"/>
Kontrola napájacieho vedenia	Kontrola napájacieho vedenia	9	<input type="checkbox"/>
Kontrola kolies	Kontrola kolies	10	<input type="checkbox"/>
Kontrola nosných čapov	Sú úchytne (nosné) čapy na uchopovacích a závesných zariadeniach v dobrom technickom stave?	11	<input type="checkbox"/>

Workflow Management

- Workflow
- Step
- Action
- Status
- Location
- Resources
- Assign Resources to Actions

Multimedia Management

- Assign Multimedia to Actions
- Assign Multimedia to Hotspots
- Upload Files
- Multimedia Overview

Download Instructions to smartglass

I3D - VR mode

[Exit](#)

Select Workorder:

< 2017-005-002

[Start](#)[Description](#)[Settings](#)

Workorder Details

Title:	El Compliance check
Scheduled Start:	2017-10-18 10:00:00
Scheduled End:	2017-10-18 11:00:00
Scheduled Net Time Dur.:	1:0:0
Actual Start Time:	2017-10-18 10:03:11
Actual End Time:	2017-10-18 10:55:15
Actual Net Time Dur.:	0:52:4
Status:	Running
Lead Provider:	Viliam Spaleny
Author:	Operator
Contact Person:	Ivan Kruty
Contact:	ivan.kruty@teledom.sk

The generic service solution – smartglass worker view



2017-1204-001

8. Kontrola na dráhe a

1. Zistenie stavu

00:00

Hide Menu

x

Enter text...

Pred kontrolou Po kontrole

Vizuálna kontrola: Sú zaistené zaist'ovacím lankom zhrňovače, narazníky a nárazky, atď'?

Navigation Gallery

Ok Not Ok PROBLEM

Voice Picture Video Rec

All visible and manageable in EPSON BT2000 and HMT-1 smartglasses



2017-1204-001

8. Kontrola na dráhe a

1. Zistenie stavu

00:00

Hide Menu

x

Nárazník je opotrebovaný

Pred kontrolou Po kontrole

Vizuálna kontrola: Sú zaistené zaist'ovacím lankom zhrňovače, narazníky a náražky, atď?

Navigation Gallery

Ok Not Ok PROBLEM

Voice Picture Video Rec

Why to invest to the new workplace technology ?

1. Improve quality of work by (a) online information support of worker (b) more efficient learning of work
2. Reduce adaptation phase of new worker
3. Flexibility in changing/updating work instructions
4. Exact measurement of the duration, result and cost of work instructions
5. Reduced administration overhead

I3D bottom lines:

1. Easy to implement – and customize
2. Open source SW

Companies and Development Partners are Welcome.

Youtube link to the I3D demo video: <https://youtu.be/ltViHBliBt0>