



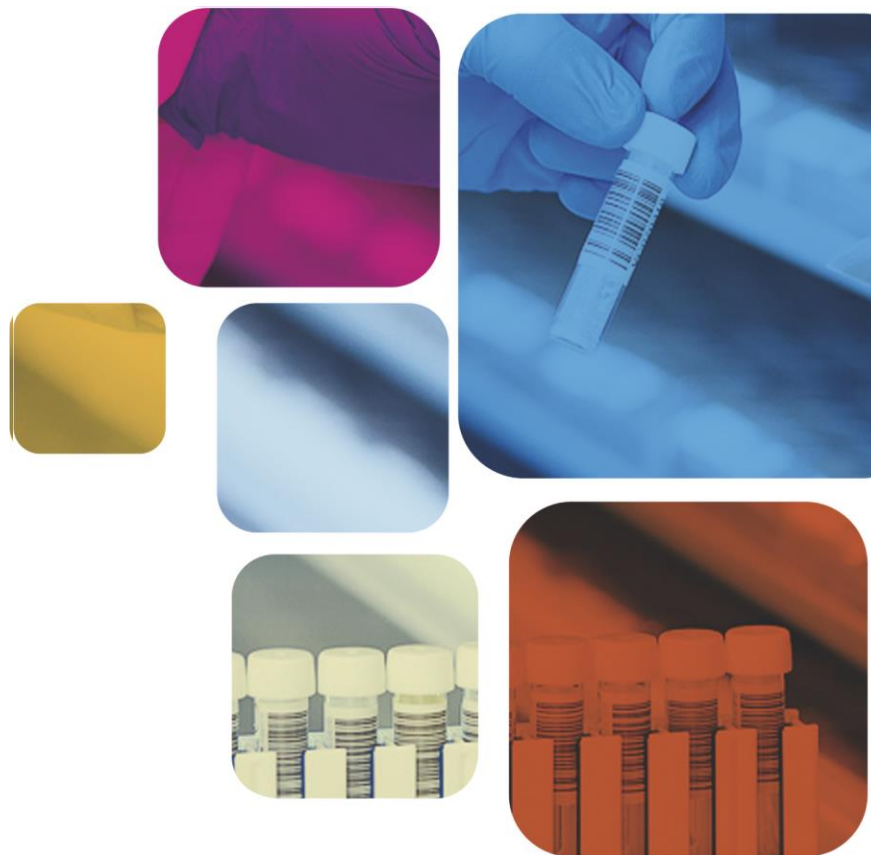
mosaic
SAMPLE MANAGEMENT SOFTWARE

Using Mosaic for managing ChemAxon-registered substances

Marcus Oxe

Budapest

May 10th, 2017



Your proven partner for sample management

www.titian.co.uk



Titian Software

- Founded 1999
- Titian HQ in London UK, US office in Westborough, MA and Polish office for development and support.
- Specializing in software and services for sample management
- 90+ total employees
- Team of 50+ software engineers working full-time on Mosaic development
- 3 fully-staffed “Titian Direct” Support Teams (Westborough, London, Shanghai)
- Mosaic is our product suite for sample management
 - Configured to specific customer needs



Titian Products

Created for the management, accessing and processing of R&D life science samples.

Mosaic

Mosaic SampleBank™

Mosaic
FreezerManagement



Mosaic Modules



Inventory Tracking



Automation Integration



Ordering



Tracked Shipping



Sample Processing



Connectivity



Assay Requesting



Concepts: Registration vs. Inventory

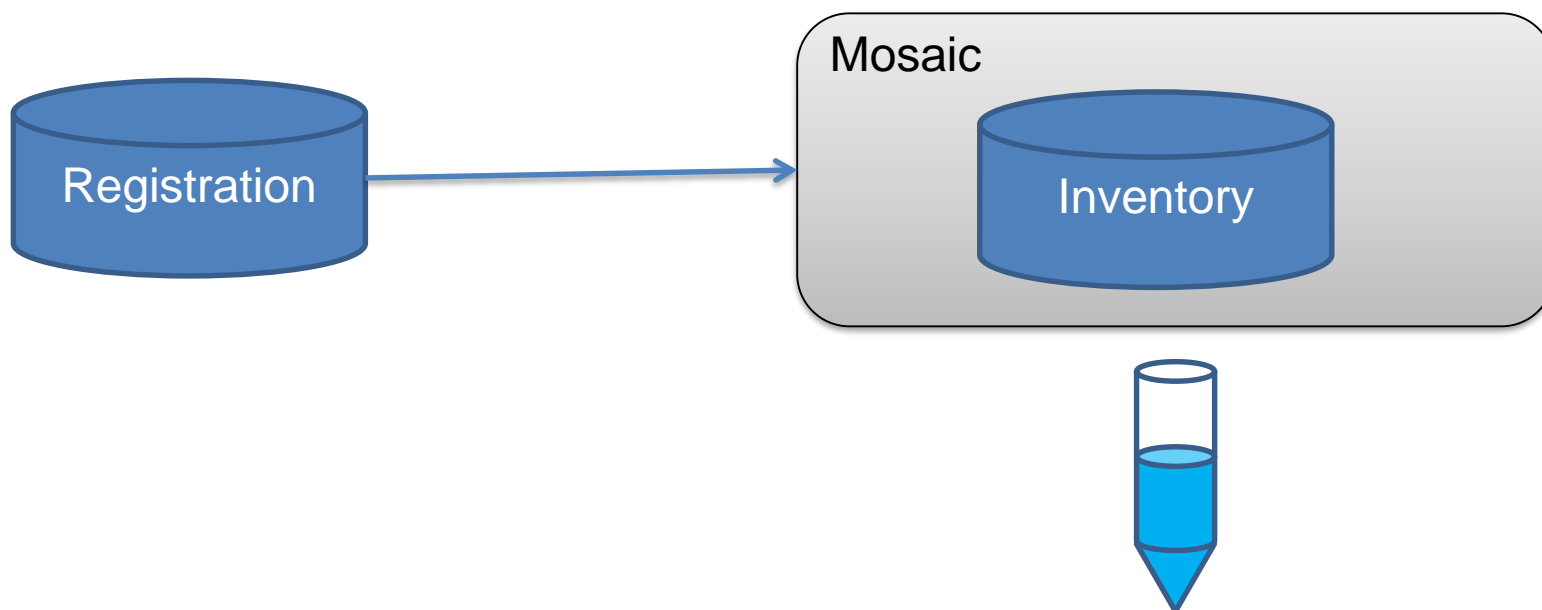
Titian and ChemAxon have partnered to showcase an integration between Mosaic and ChemAxon Registration

Background and Concepts:

- Mosaic Inventory contains physical container-level information
- A Registration System holds details about the contained substance
- Many customers (particularly small-molecule) may already have a registration system. Mosaic integrates with this to avoid data re-entry
- Mosaic also has a registration system which may be used in place of, or in addition to, an external registration system
 - Gives the flexibility to manage multiple substance types in one inventory



Registration vs. Inventory



Substance Id	56784
Name Part 1	CXN2-001
Name Part 2	CXN2A
Molecular Weight	206.285 g/mol
...	

Labware Item Id	3678
Amount	25 μ L
Concentration	4 mg/mL
...	
Substance Id	56784



Demo

We have worked with ChemAxon to define a standard integration that can be used for a customer that wishes to use both Mosaic and ChemAxon Registration together

The demo video shows:

- Registering a new molecule in ChemAxon Registration
- Creating some tubes of it in Mosaic via integration
- Placing the tubes into a store
- Viewing information about the molecule in Mosaic, including a hyperlink back to the molecule in ChemAxon Registration



Demo

The screenshot shows the Titian web application interface. The browser address bar displays the URL: <https://ps-reg-titian.chemaxon.com/RegistryCxn/client/index.html#/registra>. The page has a blue sidebar on the left with a magnifying glass icon and a folder icon. The main content area is divided into several sections:

- Registration Staging**: At the top, it shows "Source REGISTRAR", "Created by chemist", and a "Register" button. Below this, there is a toggle for "Advanced mode" set to "OFF".
- Submission Details**: This section contains several input fields:
 - LntRef**: A text field with the value "E.g. N1111-1-1".
 - Source**: A dropdown menu currently showing "REGISTRAR".
 - Specified molweight**: An empty text field.
 - Submitter**: A text field with the value "chemist".
- Additional Data**: A section with a dropdown arrow, containing:
 - Project**: A dropdown menu.
 - Stereochemistry**: A dropdown menu.
 - Geometric isomerism**: A dropdown menu.
 - Comment**: A large text area.
- Chemically Significant Text**: A section with a text input field containing "Enter any text" and a dropdown arrow.
- Actions**: A section with a menu icon and the word "Actions".

In the center of the main area, there is a large empty box with a camera icon and the text "Click to draw structure". Above this box, it says "No salts or solvates added" and "Add new".



Mosaic integration with ChemAxon Registration

Benefits:

- You can combine the registration benefits of ChemAxon registration with the sample management and processing of Mosaic
- Hyperlinks provide easy navigation between the two
- Shows Cloud capabilities
 - For the purposes of the integration demo, each application resides on a separate Cloud server
 - In the future it would be possible to purchase both products in the Cloud and “switch on” the integration between them
 - Equally both applications may reside on customer’s own server(s)
- Mosaic can manage inventory of all of your different materials in one place
 - Demo is a small molecule example
 - Integration can be extended to other registration systems and substance types
 - Biological registration, chemical registration – external registration or Mosaic-registration





Other Mosaic features

Creating samples in Mosaic – Bulk Import



- Bulk Import via Mosaic Labware Importer
 - File-based upload of sample and substance data
 - Ideal for moderate batches of samples
 - Uploaded sample data is validated before acceptance

Import File

Bulk Import/Update

Type of File to Import: Create Labware

Add Items to a Set in Folder:

- \Sets
 - Non-Orderable
 - Orderable

Add Items to Set: (None)

File to Import: Browse...

Validate Only ☐

A	B	C	D	E	F	G	H	I	J	K	L
Rack Barcode	Rack Labware Type	Tube Barcode	Tube Labware Type	Well Alpha	Amount	Concentration	Solvent	Solvent Concentration	Compound Type	Contact	
BC0383712	Mini Tube Rack	d2t1	HR Tube (2.5 mL)	A01	1.0mL	10mM	DMSO	100	Small Molecule	Administrator	
		d2t2		A02	1.0mL	10mM	DMSO	100	Small Molecule	Administrator	
		d2t3		A03	1.0mL	10mM	DMSO	100	Small Molecule	Administrator	
		d2t4		A04	1.0mL	10mM	DMSO	100	Small Molecule	Administrator	



Searching for Samples



- Choose input parameters, and output columns
- Sort results, export to Excel or Pick List
- Save or publish searches

Inventory Search

Open Saved Search ▾ Save Search ▾[View recent searches](#)

Search: Blocks, Slides, Tubes

ParametersColumns & Sorting

Edit Parameters

Substance Type	= ▾	Antibody ▾
Tag Name	Contains ▾ ⓘ	HIS
Isotype	= ▾	IgG ▾

Results (84)

Barcode ↑	Labware Type	Substance Type	Location	Concentration	Tag Name	Notebook Reference	Date Received
AB0009	2D Mini Tube (1.4 mL)	Antibody	\Home\Bld_01	55 ng/mL	6-HIS	1234-653	23/03/2015 00:00
AB0010	2D Mini Tube (1.4 mL)	Antibody	\Home\Bld_01	5 pg/mL	6-HIS	1234-653	23/03/2015 00:00
AB0041	2D Mini Tube (1.4 mL)	Antibody	\Home\Bld_01\Lab_01\Brooks SampleStore II	55 ng/mL	6-HIS	1234-653	23/03/2015 00:00
AB0042	2D Mini Tube (1.4 mL)	Antibody	\Home\Bld_01\Lab_01\Brooks SampleStore II	100 ng/mL	6-HIS	1234-653	23/03/2015 00:00
AB0043	2D Mini Tube (1.4 mL)	Antibody	\Home\Bld_01\Lab_01\Brooks SampleStore II	34 pg/mL	6-HIS	1234-653	23/03/2015 00:00
AB0044	2D Mini Tube (1.4 mL)	Antibody	\Home\Bld_01\Lab_01\Brooks SampleStore II	5 mg/mL	6-HIS	1234-653	23/03/2015 00:00

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May 10th 2017



mosaic



Automation Integration



Mosaic SampleBank™ Automation

Automated Stores

Brooks Automation
Remp
RTS
Nexus
Matrical
Hamilton Storage Technologies
TAP Biosystems
TTP Labtech
Kardex Stores linked to PDA

Online Liquid Handling

Agilent BioCel, BenchCel, Bravo, VPrep
CyBio CyBi-Well
Hamilton STAR, STARlet, STARplus
Labcyte Echo, POD, Access
Thermo Scientific Matrix Platemate
Perkin Elmer Multiprobe II
Remp APR
TAP Biosystems BasePlate
Tecan EVO
TTP Labtech Mosquito
Zinsser Lissy

Offline Liquid Handling

Interact with any liquid handler through a managed file transfer between Mosaic and the automation.

Dry Powder Handling

Mettler Toledo balances
Mettler Toledo Flexiweigh
Sartorius balances

Other Automation

BioMicroLab tube sorter

2D Rack Scanners

BioMicroLab
FluidX
Matrix
Thermo
RVSI, Siemens
Ziath
Micronic



Thank you for your time and participation!

Are there any questions?

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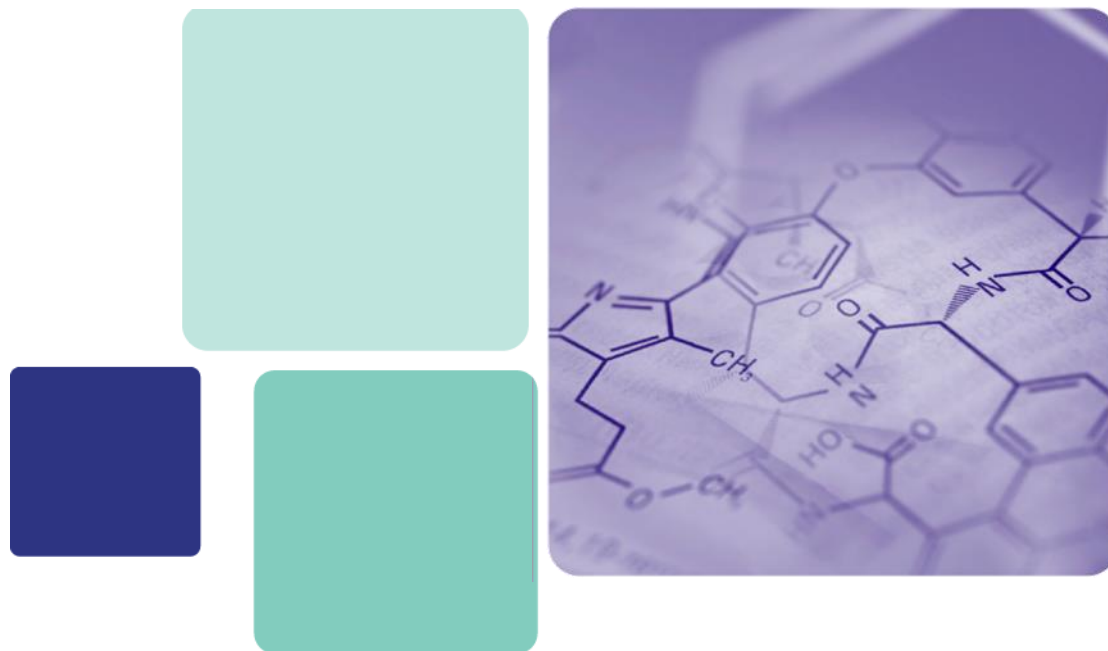
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Additional Information

Mosaic – Inventory Tracking



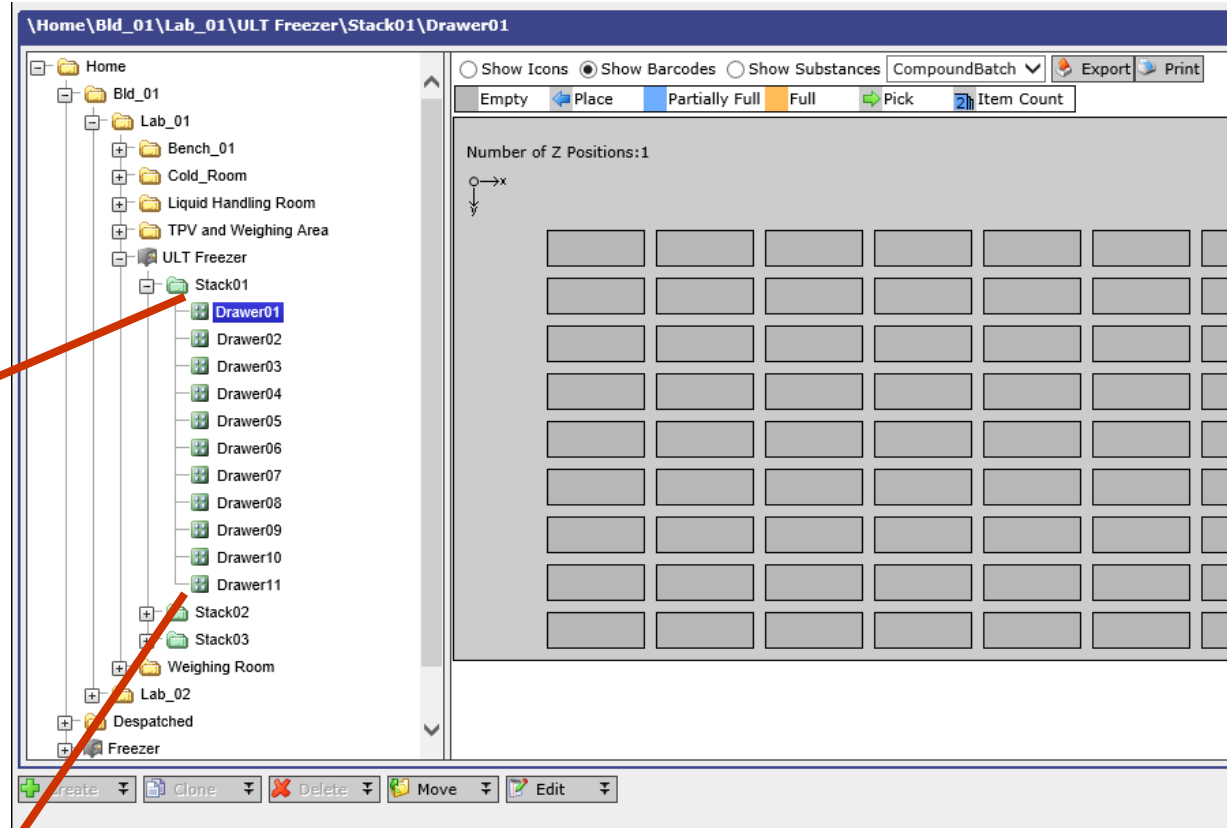
- Mosaic works with **any type of substance**
 - Small Molecule
 - DNA
 - Antibodies
 - Cell Lines
 - Proteins
 - Blood / Plasma / Serum
 - ... or any other substance type
- Mosaic works with **any type of labware**
 - Vials
 - Plates
 - Microtubes
 - ... or any other labware type
- Mosaic tracks mass amounts, volume amounts, and concentrations



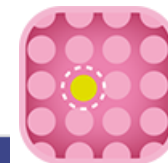
Mosaic – Inventory Organization




- Hierarchical organization of locations, laboratories, storage areas, shelves, etc.



Mosaic – Inventory Browsing



 **Mosaic** Plate d3p1

Orders

View Order
Orders
Create Order

Inventory

View Labware Item
View Substance
Import / Update
Create Substance
Create Rack/Box
Generate Barcodes
Print Labels
Sets
Lists

Stores
Automated Stores
Locations
My Pick List
My Place List

Search/Report
Inventory Search

Fulfilment
Offline Runs
Import Ad Hoc Results
Despatch

Admin
Users
Roles
Restrictions

Content Map

	1	2	3	4	5	6	7	8	9	10	11	12
A												
B												
C												
D												
E												
F												
G												
H												

A01 Sample

Position:	A01
Substance Type:	Small Molecule
CompoundBatch:	d3c4-b1
Name:	
ID:	
Sample Amount:	150 µL
Available Amount:	150 µL
Concentration:	10 mM
Solvent:	DMSO
Solvent Concentration:	100.0%
Total Thaw Count:	0

Edit Sample

Content List

Expand to view

Plate Details

Barcode:	d3p1
Type:	SWP 96
Creation Date:	01-Dec-2015 09:41:20
Thaw Count:	0
Comment:	
Children:	96@A01 : d3p2/96@A01

Location

Location Path:	\Home\Bld_01\Lab_01\Bench_01
----------------	------------------------------

Set Details

Folder:	
Name:	

Edit Plate

View Audit Trail

Solubilise

Add to Pick List

Pick

Add to Place List

Create Plates

Dispose

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Creating samples in Mosaic



Substances and Containers created via user interface

- Ideal for individual samples
- Data entry is validated
- Mosaic can allocate unique barcodes

Create Substance

Substance Type
Type: Mammalian Cells

Properties
Name: 184B5
ID: * ☒ Auto ☐
Notebook Reference: ELN3756
Mammalian Cells Sub-Type: * Primary
Species: * Human
Vector Resistance Marker: Neomycin
Contact: Ash, Alice (Administrator)
Date Received: 19/10/2016
Source: In House
Passage Number: 6

☒ Create

Create Tubes

Ash, Alice (Administrator) ?

Barcodes
☒ Generate 10 Barcode(s) from Range: Mosaic Barcodes (B000000000 - B999999999) ☐ Barcodes
(0 items entered)

Details
Labware Type: * 2mL CryoVial
Expiry Date: (None)
Thaw Count: * 0
Comment:
Location: * \Home\Bld_01
Despatched: ☐
Requires Secure Storage: ☐

Contents
Substance Type: Mammalian Cells
Substance: * ☒ CompoundBatch ☐ ID ☐ Name
Amount: * 1 mL Measured
Concentration: * 5 E6 cells/mL
Total Thaw Count: * 0
Medium/Buffer: LB

☒ Create ☐ Cancel



Mosaic FreezerManagement Automation

Automated Stores

Brooks Automation
Remp
RTS
Nexus
Matrical
Hamilton Storage Technologies
TAP Biosystems
TTP Labtech
Kardex Stores linked to PDA

Online Liquid Handling

Agilent BioCel, BenchCel, Bravo, VPrep
CyBio CyBi-Well
Hamilton STAR, STARlet, STARplus
Labcyte Echo, POD, Access
Thermo Scientific Matrix Platemate
Perkin Elmer Multiprobe II
Remp APR
TAP Biosystems BasePlate
Tecan EVO
TTP Labtech mosquito
Zinsser Lissy

Dry Powder Handling

Mettler Toledo balances
Mettler Toledo Flexiweigh
Sartorius balances

Other Automation

BioMicroLab tube sorter

2D Rack Scanners

BioMicroLab
FluidX
Matrix
Thermo
RVSI, Siemens
Ziath
Micronic

Offline Liquid Handling

Interact with any liquid handler through a managed file transfer between Mosaic and the automation.





Mosaic SampleBank

Mosaic SampleBank

Everything from Mosaic FreezerManagement plus:

- Create Check and Submit **Orders**
- View Order (**workflow**) Progress
- Approve Restrictions
- Perform workflow-driven fulfilment using web-based **Manual Pipetting**
- Perform workflow-driven fulfilment, e.g. use the **Mosaic Weighing application** to fulfil a dry dispense workflow step, or use **offline processing** to fulfil a liquid transfer workflow step
- Approve, Fulfil, Cancel and Modify Orders
- Ship and Despatch Labware
- Create Edit and Delete Restrictions
- Receive Despatched Items



Mosaic SampleBank

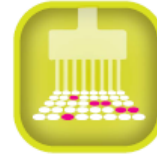
- Tracks locations and contents of vials, tubes, and plates
- Sample Requesting for
 - Neats
 - Solutions, both single point and serialised in all possible plate layouts
- Optional available modules
 - Tube Position Verifier
 - Offline liquid handling
 - Online Weighing
 - Automated Stores
- Rapid project – 3 months from PO to production



Mosaic SampleBank™ Modules



Inventory Tracking



Automation Integration



Ordering



Sample Processing



Connectivity



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Mosaic

Functionality

Everything from Mosaic FreezerManagement and SampleBank plus:

- Multi-site deployment
- Global Ordering
- Assay Requesting
- Tracked Shipping between sites
- Mosaic software customizations
- Development of new software functionality
- Development of new automation integrations
- In-depth Titian Consulting and Analysis efforts (3-6 months)
- Project approach could include multiple phases
- Project durations of 12- 18 months



Mosaic Modules



Inventory Tracking



Automation Integration



Ordering



Tracked Shipping



Sample Processing



Connectivity



Assay Requesting



In Conclusion



- Titian has been in business since 1999
- Scientists on staff and global support
- Track samples through their entire life cycle
- Mosaic is a comprehensive and evolving product line
- Extensible for the future: scale up in use, functionality and automation integration
- 60+ sites across the world including 13 of the Top 20 Biopharma



mosaic

